# FDA REGULATION OF MEDICAL DEVICES, INCLUDING THE STATUS OF BREAST IMPLANTS

## JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON HUMAN RESOURCES AND INTERGOVERNMENTAL RELATIONS

AND THE

SUBCOMMITTEE ON NATIONAL ECONOMIC GROWTH, NATURAL RESOURCES, AND REGULATORY AFFAIRS

OF THE

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# FDA REGULATION OF MEDICAL DEVICES, INCLUDING THE STATUS OF BREAST IMPLANTS

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TUESDAY, AUGUST 1, 1995

U.S. HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON HUMAN RESOURCES AND INTERGOVERNMENTAL RELATIONS, JOINT WITH THE SUBCOMMITTEE ON NATIONAL ECONOMIC GROWTH, NATURAL RESOURCES, AND REGULATORY AFFAIRS OF THE COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,

*Washington, DC.*

The subcommittees met, pursuant to notice at 9:45 a.m., in room 2154, Rayburn House Office Building, Hon. Christopher Shays (chairman of the Subcommittee on Human Resources and Intergovernmental Relations) presiding.

Subcommittee on Human Resources and Intergovernmental Relations present: Representatives Shays, Souder, Morella, Davis, Chrysler, Martini, Towns, Barrett, and Fattah.

Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs present: Representatives McIntosh, Fox, Tate, Gutknecht, Shadegg, Hastert, Peterson, and Kanjorski.

Ex officio present: Representative Clinger.

Staff present: Lawrence J. Halloran, staff director and counsel; Anne Marie Finley and Robert Newman, professional staff; Thomas M. Costa, clerk; Mildred Webber, staff director; Jon Praed, professional staff; Liz Campbell, minority staff assistant; and Kevin Davis, minority professional staff.

Mr. SHAYS. I'd like to call this hearing to order and to welcome our witnesses, our very distinguished witnesses, and our guests at this hearing and to say from the outset that this is going to be a long day. We have 16 witnesses and we want to make sure the witnesses have a chance to tell their story.

We want to give an opportunity to Members to question our witnesses. This is also a joint hearing held with Mr. McIntosh's Subcommittee on Regulatory Affairs. So we have really two subcommittees that are participating in this hearing.

And I'm going to invite all Members who want to, to have opening statements, the two chairman and the two ranking members for the record are required to have opening statements and so we will read these into the record and encourage other Members to summarize their statements, but they are also welcome to give statements.

And I would like for the record to get some housekeeping out of the way and ask unanimous consent that all members of the subcommittee be permitted to place any opening statement in the record and that the record remain open for 3 days for that purpose.

Without objection, so ordered.

And I also ask unanimous consent that our witnesses be permitted to include their written statements. I mean, some of the statements of our witnesses are very long and we would appreciate a summary of the main points.

Without objection, so ordered.

This joint hearing reflects the importance all Members attach to our oversight responsibilities, especially in matters affecting public health. The Food and Drug Administration, FDA, has been charged by Congress to stand as the scientific and regulatory gatekeeper between the public and the makers of foods, drugs, medical devices, and cosmetics. It is a complex and often controversial mission, particularly when attempting to discern the benefits and risks of medical devices.

Today, we will confront four questions generated by the unique circumstance of silicone gel breast implants, but questions just as relevant to the FDA's current approach to medical device regulation in general. First, what is the agency's current view of the safety of silicones as a biomaterial, specifically silicone gel-filled breast implants.

Second, when and on what basis will the agency be able to reach final conclusions on the safety and efficacy of these devices? Third, what is the impact of the FDA approach to breast implants on the development of new medical devices and the availability of biomaterials? And finally, what standard should guide the FDA in the quantification and evaluation of the benefits and risks of medical devices and biomaterials.

These are important questions, important to women who deserve the benefit of the best scientific analysis to date on the safety of the materials they have or will put into their bodies, and important to patients whose lives will depend on the availability of medical devices not yet invented. For if the system intended to insure the safety and efficacy of these devices is litigated and regulated to a standstill, public health will suffer and lives will be lost.

There is a tragic irony to the history of breast implants. The 1976 device amendments to the Food, Drug and Cosmetic Act brought added protections and assurances of safety to users of new medical devices, but to patients who had or who would need breast implants, the application of the device law froze the technology in a regulatory and legal limbo from which it has yet to emerge.

Now, 19 years later, 19 years later, the very regulatory process designed to produce scientifically valid answers to questions of safety and risk seems unable to do so with regard to breast implants. We need to know when this tragic uncertainty will end.

The vacuum created by that uncertainty has spawned junk science and a litigation feeding frenzy that now threatens to devour other devices and biomaterials, even those scientifically determined to be safe. In such a litigious environment, let it be clear that we are not here to produce evidence for any plaintiff or defendant. Rather, our purpose is to determine what the responsible Federal

agency, the regulated industry, and doctors are doing to resolve outstanding questions on silicones and other biomaterials. Patients deserve access to the information they need to make informed decisions. Scientists, not lawyers, judges, not juries must be relied upon to validate scientific conclusions.

Our goal is also to assure the public that life saving devices will be available and that those devices have been determined to be reasonably safe relative to the known risks. Reasonableness is the standard that must apply, but which can also easily elude us. We yearn for certainty, but science yields only reasonable probability.

If we eliminate risk and punish risk taking, we will all be the victims. If we ignore risks or overstate benefits, doctors and patients will be unable to make important health choices and people will suffer. Between smothering paternalism and a callous reliance on caveat emptor, let the buyer beware, stands only the reasonable assurance that the benefits of a device or a procedure will outweigh the risks. It is that critical balance that we explore today.

Again, I welcome the witnesses. I'm going to invite, if I might, the ranking member of my subcommittee and then go to the chairman of the other subcommittee to make a statement. And so I ask now Mr. Towns if you have a statement.

[The prepared statement of Hon. Christopher Shays follows:]

PREPARED STATEMENT OF HON. CHRISTOPHER SHAYS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

This joint hearing reflects the importance all our members attach to our oversight responsibilities, especially in matters affecting public health. The Food and Drug Administration has been charged by Congress to stand as the scientific and regulatory gatekeeper between the public and the makers of foods, drugs, medical devices and cosmetics. It is a complex and often controversial mission, particularly when attempting to discern the benefits and risks of medical devices.

Today, we will confront four questions generated by the unique circumstances of silicone gel breast implants; but questions just as relevant to the FDA's current approach to medical device regulation in general: First, what is the agency's current view of the safety of silicones as a biomaterial, specifically silicone gel filled breast implants? Second, when and on what basis will the agency be able to reach final conclusions on the safety and efficacy of these devices? Third, what is the impact of the FDA approach to breast implants on the development of new medical devices and the availability of biomaterials? And finally, what standards should guide the FDA in the quantification and evaluation of the benefits and risks of new medical devices and biomaterials?

These are important questions. Important to women who deserve the benefit of the best scientific analysis to date on the safety of the materials they have, or will, put into their bodies. And important to patients whose lives will depend on the availability of medical devices not yet invented. For if the system intended to ensure the safety and efficacy of these devices is litigated and regulated to a standstill, public health will suffer and lives will be lost.

There is a tragic irony to the history of breast implants. The 1976 Device Amendments to the Food, Drug and Cosmetics Act brought added protections and assurances of safety to users of new medical devices. But for patients who had, or would need breast implants, the application of the device law froze the technology in a regulatory and legal limbo from which it has yet to emerge. Now, nineteen years later, the very regulatory process designed to produce scientifically valid answers to questions of safety and risk seems unable to do so with regard to breast implants. We need to know when this tragic uncertainty will end.

The vacuum created by that uncertainty has spawned junk science and a litigation feeding frenzy that now threatens to devour other devices and biomaterials, even those scientifically determined to be safe. In such a litigious environment, let it be clear that we are not here to produce evidence for any plaintiff or defendant. Rather, our purpose is to determine what the responsible federal agency, the regulated industry and doctors are doing to resolve outstanding questions on silicones and other biomaterials. Patients deserve access to the information they need to

make informed decisions. Scientists, not lawyers, judges or juries, must be relied upon to validate scientific conclusions.

Our goal is also to assure the public that life-saving devices will be available, and that those devices have been determined to be reasonably safe relative to the known risks. Reasonableness is the standard that must apply, but which can so easily elude us. We yearn for certainty, but science yields only reasonable probability.

If we eliminate risk, and punish risk taking, we will all be the victims. If we ignore risks or overstate benefits, doctors and patients will be unable to make important health choices, and: people will suffer. Between smothering paternalism and a callous reliance on caveat emptor stands only the reasonable assurance that the benefits of a device or procedure will outweigh the risks. It is that critical balance that we explore today.

We welcome our witnesses this morning, and I look forward to a thorough and balanced discussion of an important public health issue.

Mr. TOWNS. Thank you very much, Mr. Chairman. Let me begin by thanking you for convening this hearing. I think it's a very, very important hearing and your leadership on this issue, I want to let you know, is greatly appreciated.

The subject of today's hearing FDA's regulation of medical devices and more specifically the silicone breast implants is a public health issue of fundamental importance. Given that over 1 million women have breast implants and a sizable portion of them have reported problems, we must ensure that these devices are both safe and effective.

When the Human Resources Subcommittee last focused its attention on this issue in 1990, we knew far less about the safety of silicone breast implants than we know today. At that time few scientific studies had been conducted, and speculation about the safety of the implants was rampant. As a result of scientific uncertainty, suggestions that silicone breast implants lead to connective tissue disorders such as lupus and also rheumatoid arthritis, the FDA issued a moratorium on the use of silicone breast implants until science could substantiate their safety.

Since that time, numerous scientific studies have been conducted that put to rest a number of prior safety concerns. These studies have found no significant increased risk in connective tissue disorders resulting from the use of silicone breast implants. At a minimum, these findings should prompt the FDA to review its position with respect to the regulation of silicone breast implants.

These findings should not, however, be looked upon as conclusive in this debate over safety. I think the debate over safety should continue. There are still a number of outstanding safety issues not addressed in these studies and I would counsel caution until these issues have been resolved.

Beyond the issue of breast implant safety, this hearing speaks to the much larger issue of risk assessment within the FDA. From our previous oversight hearings, the picture has emerged of an agency that is tremendously risk-averse. While I applaud the agency's efforts to provide an assurance of safety for products and devices it regulates—and I think that is good—it is impossible, though, to expect these products to be completely and absolutely risk free.

The FDA should not keep potentially life-saving products off the market for fear that some extremely remote hazard will be realized. We cannot have an FDA whose duty is to protect public health and safety being the primary obstacle between a patient in need and a lifesaving device.

In addition, there is a concern that the FDA's actions in the past with respect to silicone implants and concerns over liability threaten to lead the withdrawal of numerous products from the market. I have with me a list of such products, and I could just go down the list but the point is that I would like to ask the chairman that we include this list in the record, dialysis and heart surgery, blood transport. I could just go on and on naming these items. And I would like to just sort of include it in the entire record.

Mr. SHAYS. Without objection.

[The information referred to follows:]

Hydrocephalus shunts (brain cavity fluid drain for children)
Cardiac pacemaker pulse generators and leads
Cardiac defibrillator pulse generators and leads
Central nervous system and peritoneal shunts
Urological catheters
Implantable drug delivery pumps
Dialysis and chemotherapy ports
Needle and vial lubricants
Ostomy systems and bags
Tracheal and feeding tubes
Intravenous drip systems
Dialysis and heart surgery blood transport tubing
Any number of other grafts, shunts and guidewires used in less invasive surgery
Ear drains
Incontinence devices
Retina and eye socket repair
Tear ducts
Small joint orthopedics (finger and wrist joint replacement)
Intra-aortic balloon angioplasty devices
Wound drainage sets
Norplant birth control device
Condom lubricants
Blood oxygenator defoamers
Antigas-antiflatulence preparations
Intraocular lens
Infusion (drip bag) systems
Certain heart valve designs
Interferon production process
Scar treatment

Mr. TOWNS. In light of these concerns, I welcome the FDA and all of these witnesses, and I look forward to hearing their views on the issues raised. Mr. Chairman, as you well know, I am committed to working with you and again commend you for convening this hearing. We have some very outstanding witnesses, some that we served with in the Congress and of course had great respect for in the Congress and have great respect for them now they're out of the Congress and of course some that are still with us in the Congress and it's a pleasure to have them and all the witnesses here.

So at this particular time I would yield back and look forward to hearing from the witnesses.

[The prepared statement of Hon. Edolphus Towns follows:]

PREPARED STATEMENT OF HON. EDOLPHUS TOWNS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. Chairman, thank you for convening this hearing which continues the Human Resources Subcommittee's oversight of the Food and Drug Administration. The subject of today's hearing—FDA regulation of medical devices, and more specifically, silicone breast implants—is a public health issue of fundamental importance. Given that over 1 million women have breast implants, and a sizable portion of them have reported problems, we must ensure that these devices are both safe and effective.

When the Human Resources Subcommittee last focused its attention on this issue in 1990, we knew far less about the safety of silicone breast implants than we know today. At that time, few scientific studies had been conducted, and speculation about the safety of the implants was rampant.

As a result of scientific uncertainty, and amid suggestions that silicone breast implants led to connective tissue disorders such as lupus or rheumatoid arthritis, the FDA issued a moratorium on the use of silicone breast implants until science could substantiate their safety.

Since that time, numerous scientific studies have been conducted that put to rest a number of prior safety concerns. These studies have found no significant increased risk for connective tissue disorders resulting from the use of silicone breast implants.

At a minimum, these findings should prompt the FDA to review its position with respect to the regulation of silicone breast implants. These findings should not however, be looked upon as conclusive in this debate over safety. There are still a number of outstanding safety issues not addressed in these studies, and I would counsel caution until these issues have been resolved.

Beyond the issue of breast implant safety, this hearing speaks to the much larger issue of risk assessment within the FDA. From our previous oversight hearings, the picture has emerged of an agency that is tremendously risk-averse. While I applaud the agency's efforts to provide an assurance of safety for products and devices it regulates, it is impossible to expect these products to be completely and absolutely risk-free. The FDA should not keep potentially life saving products off the market for fear that some extremely remote hazard will be realized. We cannot have an FDA whose duty is to protect public health and safety, being the primary obstacle between a patient in need and a life-saving device.

In addition, there is a concern that the FDA's actions in the past with respect to silicone implants, and concerns over liability, threaten to lead to the withdrawal of numerous products from the market. I have with me a list of such products.

I ask, is this a course that we wish to follow?

In light of these concerns, I welcome the FDA and all of the witnesses and I look forward to hearing their views on the issues raised. Mr. Chairman. As you well know, I am committed to working with you, and again, I commend you for convening this hearing.

Mr. SHAYS. Thank you. At this time I'd like to call on the chairman of the National Economic Growth, Natural Resources, and Regulatory Affairs Subcommittee, Mr. McIntosh, and then we'll hear from the ranking member and then we'll invite Mr. Clinger, the chairman of the committee to make a statement.

Mr. MCINTOSH. Thank you, Chairman Shays. And I appreciate you holding this hearing today. I think it's of vital importance to all Americans.

This morning we will be addressing a matter that is of vital importance to all Americans, the process by which the Food and Drug Administration approves medical devices for use by the public. Specifically, the process the FDA has used to review the safety of silicone breast implants in cancer patients.

The issue today is whether FDA is killing women, specifically, is FDA causing more women to die of breast cancer because its failure to reach a conclusion about the relative safety of artificial breast implants for women who suffer with that disease.

Let me say at the outset this is not only a women's issue, it is also an issue for which men must share responsibility. After all, we all have mothers, wives, sisters, and other loved ones who may already or may someday in the future suffer from breast cancer. Today's statistics show 1 in 8 women in America are likely to suffer from breast cancer, and the chances are getting worse every day.

Let me also say that this is a personal issue. When I started dating my wife Ruthie, who is here today, her mother Sherry McManus was diagnosed with breast cancer. Sherry is also here

today. She is a survivor. And I'd like both of them to stand and be recognized. [Applause.]

At the time Sherry had her surgery, which included reconstruction of her breast with an implant, Dr. Kessler scared the living daylights out of women across America by telling them that such procedures could be risky or even fatal. And on top of this, there is the very real fear that the cancer may reoccur and they may be untreatable.

My mother-in-law chose to go forward with her procedure, but I shudder to think of the women who chose not to go forward or who hesitated to have surgery or were even fearful to have a mammogram because they didn't know the awful truth, that they might have breast cancer.

Reconstructive surgery has done wonders to help women who do have breast cancer receive treatment and live with dignity. Yet tens of thousands of women die each year because they do not act quickly to do everything to detect and eradicate their own breast cancer.

FDA's failure to act promptly to allay their fears about breast implants contributes to those needless deaths. Mastectomies and lumpectomies coupled with chemotherapy have cured millions of women of breast cancer. The procedure can also disfigure a woman and potentially have debilitating and life threatening side effects.

Yet every day, people elect to accept the real and high risks associated with that treatment, because it offers them a chance to live. Many times, however, patients and doctors are robbed of this choice. Instead, the Federal Government specifically the FDA prohibits them from accepting risk for treatments they need. The government should not be allowed to make such critical decisions for American women, but the FDA does.

As a result, the FDA is depriving women from access to necessary treatments which they desire to try and see whether they will succeed in spite of the risks. This morning we will examine a case of silicone breast implants which will allow us to study the questions of risk assessment and the government's role in permitting or denying patients' access to medical devices.

The FDA has agreed that scientific research performed to date tends to show there is no connection between silicone implants and connective tissue diseases, which has been the main medical concern about silicone implants.

In fact the scientific research is much more conclusive. A June 1995 study in the New England Journal of Medicine states, "We found no evidence of an association between silicone breast implants and either connective tissue diseases defined according to a variety of standardized criteria or signs of symptoms of connective tissue disease."

In spite of this, the FDA has refused to go further. After so many years and so many studies, I want to know why. I also want to know if the FDA shares my concern that until we put the breast implant controversy to rest, there will be those who choose to withhold or withdraw life saving products from the market and there will be women who choose to put off mammograms and delay or forego mastectomies and who ultimately die needlessly.

I want to welcome all of our witnesses, and especially Dr. Kessler, who has done his own risk assessment and concluded that the benefits of being here today outweigh the risks.

This hearing entails difficult and complex questions and a great degree of emotion. I hope we will focus on the science and that we will answer women's questions and concerns about breast implants. But I also hope we will examine the difficult questions of how risk is measured, what level of risk is acceptable, and who should determine if the benefits of medical treatment outweigh the risks.

Thank you very much, Mr. Chairman, for holding this hearing.

[The prepared statement of Hon. David M. McIntosh follows:]

PREPARED STATEMENT OF HON. DAVID M. MCINTOSH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA

This morning we will be addressing a matter of vital importance to all Americans—the process by which the Food and Drug Administration approves drugs and medical devices for use by the public.

Everyone in this room agrees that drugs and medical devices must be "safe." But I'm not sure we all agree on the definition of "safe."

"Safe" should not mean that there are no risks associated with a drug or device. We know that there are very real risks associated with some of the most important and necessary medical products available today.

For some devices or drugs, the risks are so high that they outweigh the benefits—so high that the government must prohibit them from the market. They simply are not "safe."

But, for many devices or drugs, a high level of risk is appropriate and necessary. Chemotherapy has cured millions of people of cancer. It also has debilitating and life-threatening side effects. Every day, people elect to accept the very real and high risks associated with that therapy because it offers them a chance to live.

Many times, however, patients and doctors are robbed of this choice. Instead, the federal government, specifically the FDA, prohibits them from accepting risks for treatments they need. The government should not be allowed to make such critical decisions for the American people, but it does. As a result, the FDA is depriving Americans from access to necessary treatments which they desire to try in spite of the risks.

The FDA restricts the availability of new products to patients who want and need them. Many Americans are forced to travel abroad to access drugs and new procedures that can help them. When the Subcommittee on Regulatory Affairs held a field hearing in Pennsylvania in June, we heard testimony from David Samowitz, a young man who has suffered from epilepsy all his life. In order to obtain the only two medications that will curb his disease and allow him to lead a relatively normal life, David must go to extreme lengths and have them shipped from a pharmacy in London. If the shipment does not arrive in time, or if there is a problem with customs, David is left without the medicine he must have to survive.

This morning we will examine the case of silicone breast implants which will allow us to study the questions of risk assessment and the government's role in permitting or denying patients' access to medical devices.

The FDA has agreed that the scientific research performed to date tends to show that there is no connection between silicone implants and connective tissue diseases—which has been the main medical concern about silicone implants. But it has refused to go any further. After so many years and so many studies, I want to know why.

I also want to know if the FDA shares my concern that until we put the breast implant controversy to rest, there will be those who will choose to withhold or withdraw a life-saving product from the market.

I want to welcome all our witnesses, and especially Dr. Kessler, who has done his own risk assessment and concluded that the benefits of being here today outweigh the risks.

This hearing entails difficult and complex questions and a great degree of emotion. I hope we will focus on the science that will answer women's concerns about breast implants. But, I also hope we will examine the difficult questions of how risk is determined, what level of risk is acceptable, and who should determine if the benefits of medical treatments outweigh the risks.

Mr. SHAYS. Thank you, Mr. Chairman. And I just want to say that all witnesses here today are very welcome and we appreciate that they're here today. And at this time I ask Mr. Peterson if he has a statement for the record.

Mr. PETERSON. Well, thank you, Mr. Chairman. I appreciate your calling this hearing and your leadership on this issue.

What I hope we can determine today are four fundamental issues, what is the FDA's current view of the safety of silicone as biomaterial and specifically silicone breast implants. Second, when will the agency be able to reach final conclusions on the safety and efficacy of these devices. What impact has the FDA's approach to the regulation of silicone breast implants had on the development of new medical devices and the availability of biomaterials, and finally, what standard should guide the FDA in risk assessment of new medical devices and biomaterial.

So I hope that, Mr. Chairman, we can get some answers and some insight into these four fundamental issues. I will concluded with that, because we have a number of witnesses that we want to hear. I again appreciate your leadership in calling this hearing and look forward to hearing the testimony of the witnesses.

Mr. SHAYS. I thank the gentleman. Those are excellent questions that need to be asked, and at this time I would ask the chairman of the full committee, Mr. Clinger if he has a statement.

Mr. CLINGER. Thank you very much, Mr. Chairman. I am very pleased to have the opportunity to participate in this joint subcommittee hearing today on this important issue of FDA regulation of medical devices, and to look at the breast implant issue and the safety concerns that swirl around this.

It is my hope that this hearing will shed light on some of the difficult issues surrounding breast implants. I am sympathetic toward the women who are faced with these difficult decisions, those that have breast implants, and those who must make decisions in the future.

We're going to be hearing testimony from many different points of view on this issue today. One of the hardest things about this issue is, quite frankly, the lack of information. Since 1992, the FDA has declared a moratorium on silicone implants for other than reconstructive purposes because of insufficient information. But the FDA has yet to assess the studies and make a judgment regarding the safety and efficacy of the implants.

The FDA has been far too slow in helping us gain a full understanding of the issue of both the risks and the benefits. The sooner the FDA can provide the necessary information to the public in some definitive form, the better off everyone will be in terms of making these hard decisions.

Decisions should not be based on anecdotal or piecemeal information. Without some definitive guidance, we are simply taking a walk in the dark down a very rugged path. The information we are seeking includes: What are the risks? Are the risks any higher for developing autoimmune diseases with the implants? Are the risks so high that no one should have silicone breast implants? What are the benefits of silicone implants? Once the risk factor is known should we allow individuals to make their own choices? Since the moratorium has been in effect, what has the FDA done in evaluat-

ing the known studies and when do they plan to issue their opinion?

We need to get some answers to these questions now. The answers have been much too slow in coming. How much longer will it take?

So, Mr. Chairman, I look forward to the testimony of our witnesses today on this very critical issue affecting the lives of thousands of women. Thank you, Mr. Chairman.

[The prepared statement of Hon. William F. Clinger, Jr., follows:]

PREPARED STATEMENT OF HON. WILLIAM F. CLINGER, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF PENNSYLVANIA

I am pleased to have the opportunity to participate in this joint Subcommittee hearing today on the issue of FDA regulation of medical devices, and to look at the breast implant issue and safety concerns. It is my hope that this hearing will shed light on some of the difficult and painful issues surrounding breast implants. I am sympathetic towards the women who are faced with these difficult choices, those that have breast implants and those who must make decisions in the future. We will be hearing testimony from many different points of view on this issue today.

One of the hardest things about this issue is the lack of information. Since 1992 the FDA has declared a moratorium on silicone implants (for other than reconstructive purposes) because of insufficient information, but the FDA has yet to assess the studies and make a judgment regarding the safety and efficacy of the implants. The FDA has been too slow in helping us gain a full understanding of the issue—both the risks and the benefits. The sooner the FDA can provide the necessary information to the public in some definitive form, the better off everyone will be in terms of making these hard decisions. Decisions should not be based on anecdotal or piecemeal information. Without some definitive guidance, we are simply taking a walk in the dark down a very rugged path.

The information we are desperately seeking includes: What are the risks? Are the risks any higher for developing autoimmune diseases with the implants? Are the risks so high that no one should have silicone breast implants? What are the benefits of silicone implants? Once the risk factor is known should we allow individuals to make their own choices? Since the moratorium has been in effect what has the FDA done in evaluating the known studies and when do they plan to issue their opinion?

We need to get some answers to these questions now. The answers have been much too slow in coming. How much longer will it take?

I look forward to the testimony of our witnesses today on this critical issue affecting the lives of thousands of women.

Mr. SHAYS. Do other Members have statements? Mr. Souder, do you have a statement?

Mr. SOUDER. No.

Mr. SHAYS. Mr. Fattah.

Mr. FATTAH. In the interest of time, Mr. Chairman, I'll forego an opening statement.

Mr. SHAYS. Thank you. It will be submitted for the record, if you have one.

Ms. Morella.

Ms. MORELLA. Yes. I'd like to give just a brief statement, Mr. Chairman. First of all, to thank you for scheduling this hearing on FDA regulation of medical devices, specifically as we focus on breast implants today.

In anticipation of this hearing, I've been provided with materials from a variety of individual groups and companies, ranging from those critical of the FDA response to the breast implant issue who point to the data from recent studies, to those who believe that the FDA took appropriate action and that the risks associated with silicone breast implants continue to be significant.

I have received letters from women who have suffered from autoimmune diseases and other health problems linked with breast implants who contend that these implants were rightfully banned and the FDA, while agreeing that recent studies are providing helpful data, believes that the evidence of silicone breast implant safety continues to be inadequate.

So I approach today's hearing, Mr. Chairman, with the hope that we can learn from this experience and apply these lessons to our efforts to improve and streamline the FDA approval process. As many of us have discovered over the past several months, risk assessment is a very tricky business.

I strongly believe that we have a responsibility to protect the health of our citizens and to continue to provide careful analysis of medical devices before approving them for use by the public, and at the same time we cannot allow a cumbersome approval process to prevent lifesaving devices from reaching the market in a timely fashion.

So I look forward to hearing from our witnesses today. I particularly want to thank and bid a strong, warm greeting to Marilyn Lloyd, with whom I had the pleasure of serving in Congress and on the Science Committee and our two incumbent Members of Congress, Congressman Traficant and Congressman Ganske.

Thank you very much, Mr. Chairman.

[The prepared statement of Hon. Constance A. Morella follows:]

PREPARED STATEMENT OF HON. CONSTANCE A. MORELLA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. Chairman, thank you for scheduling this hearing on FDA regulation of medical devices, specifically focusing on breast implants.

In anticipation of this hearing, I have been provided with materials from a variety of individuals, groups, and companies, ranging from those critical of the FDA response to the breast implant issue who point to the data from recent studies to those who believe that the FDA took appropriate action and that the risks associated with silicone breast implants continue to be significant.

I have received letters from women who have suffered from autoimmune diseases and other health problems linked with breast implants, who contend that these implants were rightfully banned. And the FDA, while agreeing that recent studies are providing helpful data, believes that the evidence of silicone breast implant safety continues to be inadequate.

I approach today's hearing with the hope that we can learn from this experience and apply these lessons to our efforts to improve and streamline the FDA approval process. As many of us have discovered over the past several months, risk assessment is a very tricky business.

I strongly believe that we have a responsibility to protect the health of our citizens and to continue to provide careful analysis of medical devices before approving them for use by the public. At the same time, we cannot allow a cumbersome approval process to prevent lifesaving devices from reaching the market in a timely fashion.

I look forward to hearing from our witnesses today as we ponder these issues. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentlelady.

Mr. Martini, do you have a statement? Mr. Fox.

Mr. MARTINI. Yes. Thank you, Mr. Chairman. And just briefly, I would also like to thank you, Mr. Chairman, and Mr. McIntosh for holding these hearings this morning.

In the context of this discussion, I'd like to just address my concerns, really, Mr. Chairman, the medical device manufacturing community in my opinion is currently standing at a crossroads. The

access for millions of Americans to lifesaving implantable medical devices such as pacemakers, heart valves, hip and knee joints, and artificial blood vessels are in serious jeopardy.

The litigation that arose from the breast implants scare has forced the Nation's raw materials suppliers to restrict their sales to medical device manufacturers. Recently, DuPont, Dow Chemical and Dow Corning have announced that they would no longer supply biomaterials to medical implant manufacturers.

Medical device manufacturers represent about 1 percent of the business for these large corporations but about 80 percent of the litigation exposure. As we all know, Dow Corning has recently filed for Chapter 11. Dow Corning is the Nation's leading supplier of silicones for medical use, and silicone, as we know, is used in many critical medical devices.

Without an adequate supply of this material, we will be severely threatening the American peoples' access to vital medical devices. If Congress fails to act swiftly and certainly, we are going to drive the domestic medical device manufacturing industry out of the United States.

Mr. Chairman, I believe this committee should commit itself to exploring the full ramifications of the biological materials shortage. And before I conclude my remarks, I would like to submit for the record a list of medical devices whose supply may be in jeopardy. And I would urge my colleagues on the committee to examine this list so that they may fully understand how serious a problem we are facing.

And I would just like to submit for the record, Mr. Chairman, a comprehensive list of many of the medical devices that are impacted by today's hearings. Thank you, sir.

Mr. SHAYS. Without objection. Any testimony that the Members wish to submit will be submitted for the record without objection.

[The information referred to follows:]

Potentially* Affected Temporary Implants

[Less than 30 days]

| Product | Biomaterial (Generic Polymer) |
|---|---|
| Auto Transfusion: | |
| Chest Drainage Unit | urethane |
| Other | polyester, sABS, polycarbonate |
| Balloons: | |
| Intra-aortic | silicone |
| Other | polyester, urethane, polycarbonate |
| Blood Filters | polyethylene, nylon, polyvinylchloride, polyester |
| Blood Pumps | polyester, silicone |
| Blood Pressure Transducer Attch | polycarbonate |
| Blood Temperature Monitors | acrylic |
| Bone Growth Stimulator (Implantable) | silicone |
| Breathing Circuit Connectors | polypropylene |
| Cannulae: | |
| Coronary | silicone |
| Femoral | polyurethane |
| Inducer | polypropylene, polycarbonate, polyethylene, ABS |
| Other | polyvinylchloride |
| Cardiac Insulation Pads | polyethylene |
| Cardiac Jackets | polyurethane |
| Catheter: | |
| Angioplastic | polyester, polyethylene, nylon, polyurethane |
| Cardiovascular | silicone, polyvinylchloride, urethane, polyamide, ABS |

Potentially* Affected Temporary Implants—Continued

[Less than 30 days]

| Product | Biomaterial (Generic Polymer) |
|---|---|
| Cholangiography | silicone |
| Coronary Laser | PTFE, polyurethane, epoxy |
| Diagnostic | polyester, polyethylene, nylon, polyurethane |
| Dilatation | polyethylene |
| Epidural | PTFE, nylon |
| Epistaxis | silicone |
| External CFS Drainage | silicone, polypropylene |
| Foley | silicone, polyurethane, PTFE-coated |
| Gastrointestinal | silicone, polyester elastomer, polyvinylchloride |
| Guiding | polyester elastomer, PTFE, polyamide, urethane, aramid fiber, ABS |
| Nephrostomy | silicone |
| PCTA Balloon | polyester |
| Peripheral Laser | PTFE, polyurethane, epoxy |
| Vascular | PTFE, polyvinylchloride, polyurethane |
| Venous | PTFE, silicone, polyurethane, polycarbonate, PVDF, polymethyl pentaene, polyphenyleneoxide |
| Other | PTFE, polyester, polyurethane, silicone, polyvinylchloride, polyacetal, polycarbonate |
| Catheter Introducer Kits | polypropylene, FEP, polyamide |
| Catheter Shafts | polyester, polyethylene |
| Covers: | |
| Blood Filter | polyester yarn |
| Sterile | PETG, polyethylene |
| Dialators | polyethylene |
| Dialyzers | polyurethane, polyethylene, polyurethane, polysulfone |
| Disposable Temperature Probes | polyvinylchloride |
| Drainage Products: | |
| Drainage Tubes | polyurethane, polyethylene |
| External CFS Drainage & Monitoring System | polyethylene |
| Wound Drainage Set | polyvinylchloride, silicone |
| Drapes | polyethylene |
| Ear Wicks | merocel, polyurethane |
| Electrodes: | |
| Fetal Scalp | polyethylene |
| Vaginal | silicone |
| Embolic Device | n-Butyl cyanoacrylate |
| Esophageal Stethoscopes | polyvinylchloride |
| Fracture Fixation Device | polyethylene |
| Gloves | polyvinylchloride |
| Guide Wires | PTFE, silicone |
| Hemofiltration Device | polysulfone, polycarbonate, polypropylene, polyurethane, styrene acrylonitrile |
| Hubs | polyurethane, polyethylene, polyvinylchloride |
| Intra-Arterial Blood Gas Sensor | silicone, polycarbonate, urethane, PTFE, urethane adhesives |
| Intracardiac Suction Device | polyester, polyvinylchloride |
| Intrauterine Pressure Device: | |
| Fluid Filled | polyethylene |
| Transducer Tipped | polypropylene, silicone, polyurethane, polycarbonate |
| Leads: | |
| Neuro (& accessories) | silicone, PTFE, polyurethane, polyacetal, nylon, sunoprene |
| Pacing | polyethylene, silicone, polypropylene |
| Lead Inducers: | |
| Cardio | PTFE |
| Lead/Catheter | polyethylene, PTFE, polypropylene, polystyrene |
| Nasal Septal Splints | silicone |
| Nasal Tampons | polyurethane |
| Needles | silicone coated |
| Ophthalmic: | |
| Glider | polyethylene |
| Lacrimal (DCR) | silicone |
| Sealant | n-Butyl cyanoacrylate |
| Orthopedic Implant Size Testers | acetal |

Potentially * Affected Temporary Implants—Continued

[Less than 30 days]

| Product | Biomaterial (Generic Polymer) |
|---|---|
| Oxygenators: | |
| Dialyzer | polycarbonate, polyurethane, polyethylene |
| Long Term | silicone |
| Surgical Membrane | silicone |
| Other | polyester, silicone defoamer, polypropylene |
| PAP Brush | polyvinylchloride, nylon |
| Patient ID Bands | homopolymer acetal, polyethylene, polyester, vinyl, polystyrene, tyvek |
| Periodontal Fiber Adhesives | 2-octyl cyanoacrylate |
| Pessary | polyurethane, polyvinylchloride |
| Prosthesis: | |
| Hip | polyethylene |
| Knee | polyethylene |
| Retention Cuffs (Enema Tip) | silicone elastomer |
| Sets: | |
| Electrolyte Testing | polyvinylchloride, ABS, PCB |
| Infusion | polyvinylchloride, PCB |
| Peresis | polyvinylchloride, silicone, nylon, polyethylene, ABS |
| Reinfusion | polyvinylchloride, ABS |
| Thoracostomy | polyvinylchloride |
| Sheeting | silicone |
| Staples/Clips | PTFE, silicone coating |
| Stomach Ports | silicone |
| Surgical Instruments | PTFE, silicone, polyacetal, FEP, polyethylene, polypropylene, polysulfone, nylon, polyester foam |
| Transducer Protectors | PTFE |
| Tubes: | |
| Blood Line | silicone, polyvinylchloride |
| Gastrointestinal | polyvinylchloride |
| Reservoir Bags | silicone |
| Stomach Feeding | silicone, polyurethane |
| Tippinostopy (Ear Implant) | silicone |
| Tracheal | polyvinylchloride, polyurethane |
| Other | silicone |
| Ureteral Stents | silicone, polyethylene, polyurethane |
| Vaginal Contraceptives | silicone |
| Valves: | |
| Holder | polyacetal |
| Sizer | polysulfone |
| Other | silicone |
| Vascular Vessel Clamps | acetal homopolymer, nylon |
| Vessel Loops | silicone |
| Water and Saline Bottles | polyethylene |

* At this time the potential impact of a biomaterials embargo on temporary implants is uncertain.

Biomaterials Embargo: Potentially Affected Permanent Implants

[More than or equal to 30 days]

| Product | Biomaterial (Generic Polymer) |
|---|---|
| Acetabular Cups | polyethylene |
| Annuloplasty Ring | polyester, PTFE |
| Aortic/Coronary Locators | silicone |
| Artificial Pancreas | PTFE, acrylic |
| Batteries: [1] | |
| Defibrillator | PTFE |
| Pacemaker | PTFE, polyimides, ETFE, FEP |
| Bone Cement | PMMA, n-Butyl Cyanocrylate |
| Breast Implants | silicone |
| Cardiac Materials: | |
| Fabrics | polyester |
| Felts | polyester, PTFE |

Biomaterials Embargo: Potentially Affected Permanent Implants—Continued

[More than or equal to 30 days]

| Product | Biomaterial (Generic Polymer) |
|---|---|
| Mesh | polyester |
| Patches (vascular repair) | polyester, PTFE |
| Catheters: | |
| CAPD | silicone |
| Central Venous | polyester, polyurethane |
| Chest | silicone |
| Intra-Skomal Corneal Ring | PMMA |
| Peritoneal Dialysis | silicone, polyester |
| Other | polyester, silicone, polyethylene terepthalate |
| Catheter Introducer Kits | polypropylene, FEP, polyamide |
| Cement Spacers | PMMA |
| Clips: | |
| Aneurysm | polyester |
| Ligation | polyacetal |
| Vena Cava | polyester, PTFE |
| Cochlear Implant | silicone |
| Contraceptive | silicone |
| Defibrillators | PTFE, polyester, ETFE, silicone, polyimide, polyurethane |
| Embolic Device | n-Butyl Cyanoacrylate |
| Frekote Lubricant (general) | PTFE |
| Generators: [1] | |
| Defibrillator pulse | PTFE, nylon |
| Pacemaker pulse | silicone, polyurethane, parylene C |
| Other | epoxy, silicone |
| Grafts: | |
| A–V Access | silicone, polyester |
| Intra-aortic | polyester |
| Valve | polyester, PTFE |
| Vascular | polyester, PTFE, silicone |
| Implantable Pumps | silicone, nylon, polyacetal, polyimide, polypropylene, PTFE, polyester, polyvinylidene fluoride |
| Impotence Implant | silicone, PTFE, polyacetal |
| Incontinence Implant | silicone, PTFE, polyacetal |
| Intraocular Lens | PMMA |
| Leads: | |
| Cardio | PTFE, polyester, FEP, silicone |
| Defibrillator | polyester, silicone, polyurethane |
| Pacemaker | polyester, silicone, polyurethane |
| Vagus Nerve | polyester, silicone |
| Lead Adapters | silicone, polyurethane |
| Lead Connectors | silicone, polyurethane |
| Molded Components (Catheters, etc.) | silicone |
| Nasal Button | silicone |
| Orbital Implant | silicone |
| Orthopedics: | |
| Finger Prosthesis | silicone elastomer |
| Fracture Fixation Device | polyethylene |
| Hip Joint | polyethylene, PMMA |
| Knee Joint | polyethylene, PMMA |
| Partial/Total Ossicular Replacement | polyethylene, silicone, PTFE |
| Plug (hip fracture stem) | silicone |
| Shoulder Joint | polyethylene, PMMA |
| Spinal Systems | polyethylene |
| Tibia Insert | polyethylene |
| Pacemakers | polyimide, PTFE, FEP, ETFE, silicone, nylon |
| Patellar Buttons | polyethylene |
| Penile Implant | silicone |
| Pledgets | PTFE |
| Ports: | |
| Infusion | silicone, polyethylene, polyurethane |
| Injection | acetal |
| Osteoport | silicone |
| Vascular access | silicone, polyacetal, polypropylene, polysulfone |

Biomaterials Embargo: Potentially Affected Permanent Implants—Continued

[More than or equal to 30 days]

| Product | Biomaterial (Generic Polymer) |
|---|---|
| Other | silicone, polyurethane, PVDF |
| Prosthetic Heart Valves | polyurethane, polyester, silicone, polysulfone, polyacetal, PTFE |
| Sheeting (Scar tissue prevention lining) | silicone, PTFE |
| Shunts: | |
| CNS | silicone, polypropylene |
| Dialysis | PTFE, silicone |
| Hydrocephalus | silicone, polypropylene |
| Peritoneal | silicone, PTFE, polypropylene |
| Other | silicone, polyester |
| Stimulators: | |
| Bone Growth Implant | silicone |
| Functional Electrical | silicone elastomers, polyester, epoxy, PTFE |
| Neuro (& Accessories) | PTFE, polyacetal, silicone, polyurethane, hysol epoxy, parylene C |
| Sutures | polybutester, polyester, PTFE, nylon, polypropylene, silicone |
| Tubes: | |
| Myringotomy | silicone, PTFE, polyethylene |
| Otological Ventilation | silicone |
| Vent | silicone |
| Umbilical Tape | polyester |
| Valved Conduits | polyester, PTFE |
| Vascular Access Device | silicone elastomer, polyester mesh, polysulfone, acetals |
| Vascular Stents | polyester |

Listing includes devices that are impacted, will be impacted, might or might not be impacted.
PMMA—polymethylmethacrylate
FEP—fluorinated ethylene propylene
ETFE—ethylene-tetrafluoroethylene copolymer
ABS—acrilonitrile butadiene styrene
sABS—stabilized ABS
PVDF—polyvinylidene fluoride
PCB—polychlorinated biphenyl
—polyacetal/acetal
PTFE—polytetrafluoroethylene
PET—polyethylene terephthalate(polyester)
PETG—PET with glycol additive
[1] Contained in device; not directly exposed to skin.

Mr. SHAYS. Mr. Fox or Mr. Tate, do you have a statement? Mr. Fox.

Mr. FOX. Mr. Chairman, thank you. And I thank you and Mr. McIntosh for your efforts today and in organizing today's hearing on the Food and Drug Administration's regulation of medical devices, including the status of breast implants.

We all know that the Food, Drug and Cosmetic Act authorized the FDA to regulate the safety and effectiveness of medical devices before, during, and after marketing. The FDA is therefore responsible for evaluating the safety and the effectiveness of medical devices prior to marketing and sale.

Americans want safe medical devices, they want a strong FDA that will keep unsafe products off the market, but I believe they want to see more emphasis on the value of giving patients a choice and access to accept risks for the treatments they so desperately need.

By illustration, let me speak of the 20 million diabetics in the United States many of whom need to take insulin injections to survive. In effect, diabetics are supposed to measure their blood sugar levels several times a day to determine the amount of insulin they need at a given time. Currently, Mr. Chairman, the only approved method is to stick the finger and apply blood to a test strip several times a day. Because the pain associated with the frequency of this

procedure, many diabetics refuse to test themselves, thus leading to medical problems which include diminished eye sight, organ degeneration, and wounds which often lead to amputations.

The knowledge exists now, Mr. Chairman, which would allow diabetics to test themselves without experiencing the pain associated with the needle-stick method. Research in this noninvasive medical device has been going on since 1986, and there are 20 different companies trying to get devices on the market. However, no one has been successful because the FDA continues to require additional testing. Meanwhile, people continue to live in pain without being given the choice to take advantage of a necessary product.

Through my illustration this morning we explore the case of silicone breast implants which will allow us to study the questions associated with risk assessment and the government's role in permitting or denying patients' access to medical devices.

We have impressive panels of witnesses, Mr. Chairman, before us today. The issue of today's hearing will invoke a strong degree of emotion; however, we look forward to hearing from each witness as we seek a balanced discussion on such an important health care issue.

Thank you.

Mr. SHAYS. I thank the gentleman. Mr. Tate.

Mr. TATE. Thank you, Mr. Chairman. I'd like to thank the chairman as well as the chairman of the other subcommittee, Mr. McIntosh, for their interest in this issue. I'll keep my remarks brief, because I think it's more important that we hear from the witnesses today than myself.

I'm here to find out the answers. Women deserve the right to know the effects, the benefits, the costs of these sort of procedures, and that's the hope that I have from these committees, is just to find the answers. I'm here to learn, to listen and to find out, and that's the hope of the people of my district and the hope of the people of this country.

And I look forward to getting started with the debate.

Mr. SHAYS. I thank the gentleman and, again, I want to thank the witnesses. To be helpful to panel 3, it's my judgment we will probably not come to you until somewhere between 12:30 and 1:30. So I would just say to panel 3, if you need to do something else in the meantime, you have our permission certainly.

At this time I will swear in our witnesses and thank Marilyn Lloyd, a former Member of Congress, and James Traficant and Greg Ganske, Dr. Greg Ganske. All three of you, we swear in all our other witnesses, so we feel it's appropriate to swear in Members and former Members as well.

[Witnesses sworn.]

Mr. SHAYS. For the record our witnesses have answered in the affirmative. All three of you have very important statements to make and this isn't going to be pro forma where we get you in and out. You're free to make your statements and make your points, and we welcome all three of you here today. Thank you for coming.

We're going to go in the order that you're seated and we'll start with you, Congresswoman Lloyd and it's nice to have you back.

[The prepared statement of Hon. Gene Green follows:]

PREPARED STATEMENT OF HON. GENE GREEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. Chairman, I would first of all like to express my appreciation to you for holding these hearings on such an important subject. It is of vital importance that we provide ourselves and the American people with the necessary information on the approval of all medical devices especially silicone-gel breast implants. Thousands of women have experienced a variety of medical problems as a result of these implants and we owe it to them as our wives, mothers, sisters and daughters to assure these problems will cease to be overlooked. Every person in this country should feel a certainty and confidence in their doctor and their judgement. This hearing will help to bring this assurance to our constituents. With the testimonies of our panels today we can hopefully bring to light where improvements can be made in our approval process of medical devices and in effect reduce, and hopefully eliminate, future medical problems caused by any device or implant.

## STATEMENT OF HON. MARILYN LLOYD, A FORMER REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE; HON. JAMES A. TRAFICANT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO; HON. GREG GANSKE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

Ms. LLOYD. Thank you. Thank you very much, Chairman Shays, Chairman McIntosh, Chairman Clinger, Mr. Towns, Mr. Peterson, Connie Morella, all my good friends. It's good to be here, and believe me, it's good to sit on this side of the table.

I speak to you today as a former Member of this House, as a former chair with oversight responsibilities and jurisdiction of the FDA, and I come to you as a woman, a 4-year survivor of breast cancer and after 2-years the recipient of a gel implant.

I don't suppose there is anyone here with a greater personal or professional interest in this hearing than I have, so thank you so very much for inviting me today.

I suppose my personal story began in June 11, 1991, when I participated with other women in front of the Capitol on the Breast Cancer 2000 Rally. The purpose of the rally was to educate more women about this deadly epidemic, to bring it to our Nation's conscience, to educate more women on the reality of disease, and at the same time to create a greater awareness of the need for more funding to find a cure for breast cancer.

But in all reality, Mr. Chairman, that rally saved my life, because I was determined that week, when I went back home to Tennessee, to have a mammogram, which I did on the following Friday. This mammogram revealed a very suspicious lump. The following morning, Saturday, I had surgery for a biopsy, and I informed my surgeon that if he found a malignancy, not to awaken me but to go ahead and do a mastectomy.

When I awakened the malignancy was gone and so was one breast. This shock was beyond description, but I was resolved to get on with my life. My plans were to have chemotherapy and radiation followed by my reconstruction. And in surgery through chemo, I only missed 2 weeks away from Washington. I worked very hard for recovery.

But I was looking forward to the day that I wouldn't have to get up in the morning and look at my disfigured body and I would not have to wear an uncomfortable prosthesis. Silicone gel implants

were my choice. To me and for other women, they might mark the final stage of recovery from breast cancer.

Cancer was not my choice. Implants were. But before my scheduled reconstruction surgery, the FDA under Dr. David Kessler's direction restricted my access to a product that my personal physician and I agreed was right for my full recovery. And the tragic part of this story is the FDA acted without adequate data to warrant this very unnecessary decision.

The decision was based on fantasy and not science. There is no scientific evidence to support the decision to withdraw silicone implants. This is a quote from Dr. John E. Woods, vice chair of the Department of Surgery at Mayo Clinic, "So instead of protecting the health and concerns of women, this moratorium caused undue stress and anxiety for women with implants and women who wanted them around the world."

But the point I want to make to you all this morning is that real women, mothers, daughters and wives died because of this tragic decision and the FDA knows this. Since my surgery, I have tried to help women who have been diagnosed with the disease and I try to speak out on awareness. And I know it is a fact that there is a fear among women to have an exam when they know that they might find a problem.

And because of the work that I've done and other women who are survivors, many women say that they have found the courage to go ahead and to act responsible. And I can tell you that without the prospect of reconstruction and the thought of facing life disfigured and wearing an uncomfortable prothesis such as this for the rest of their lives, many women are going to put off a check-up until it is too late.

Remember, time is all we have. We don't have a cure.

I'd like to look at some numbers. Last year there were 182,000 new cases of breast cancer in women. Two years ago it was 170,000. But if 1 in 100 victims finds the prospect of going through life disfigured too dismal to bear, and they wait an extra 6 months before they see a physician, that's 1,820 women that will go undetected. If it's 1 in 1,000, that's 182 women that will die needlessly.

We don't know the exact numbers, but the numbers are there and we know that they're real, and we know that a lot more women died because of this mandate than could ever be killed by silicone.

Dr. Kessler, in defending his undefensible decision, repeatedly said that his first obligation as a physician was to do no harm. Well, Dr. Kessler has done harm, considerable harm to thousands of women around this world.

I try to make it my business both professionally and personally to be as informed as possible and not to have a biased attitude. Mr. Chairman, these are the facts as I see them today. The moratorium did more harm than an implant. There was not then, nor is there now any scientific evidence that implants are unsafe for women. The decision was based on unsubstantiated claims and not good science.

Two, women who had implants were terrified, and even though the FDA said they didn't need to, they had them removed unneces-

sarily. Three, other women sadly did not have a breast exam in time because of fear and many of them died as a result.

The United States lost it's biomedical silicone industries. Biomedical research which depends upon silicone has declined. Four, health costs have increased, and six, lawsuits have been filed by the thousands.

Well, this is history and we can't change the past, so you say, well, why are you here this morning. Well, I'm here this morning because I care. I care about the women and families who must make the tough decisions that I had to make. They should have the most advanced care and treatment that we as a Nation can provide for them. And the choices should be theirs alone, with the very best scientific information available and not the opinion of junk scientists.

And I care about our research community. We should do all we can as a Nation to foster the finest research facilities and medicines that can be produced. We should encourage our good doctors and scientists and not continue to put these unnecessary controls and restrictions on their efforts to develop new products and medicines.

So I hope that by being here today that I have done a very small part in helping to rein in a misguided and inept FDA, who, in my opinion, is more interested in promoting itself as a regulatory agency than listening to the respected medical community and protecting the lives of women.

Thank you, Mr. Chairman.

[The prepared statement of Ms. Lloyd follows:]

PREPARED STATEMENT OF HON. MARILYN LLOYD, A FORMER REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

I speak to you today as a former member of this House, a former chair of a subcommittee with jurisdiction and oversight responsibilities for the FDA, and I come to you as a woman who is now a four-year survivor of breast cancer and, after two years, a recipient of a silicone breast implant. I doubt anyone here has a greater personal and professional interest in this hearing. I deeply appreciate the invitation to testify this morning.

I suppose my personal story began June 11, 1991 when I participated in a Breast Cancer 2000 rally in front of the Capitol. I was there that day with other women Members of Congress and women from every state in the Union as a means to bring the breast cancer epidemic to our nation's conscience—to educate more women on the reality of the disease and to create a greater awareness of the need to provide more funding for research for a cure. Perhaps this rally saved my life. I decided to schedule a mammogram for myself for the following Friday in Tennessee. The mammogram revealed a suspicious lump. The next morning, Saturday, I had surgery for a biopsy. I instructed my surgeon not to awaken me if he found a malignancy, but to do a mastectomy. When I awakened, the malignancy has been removed and so was one breast. The shock was beyond description. But I resolved to get on with my life. My plans were to have chemotherapy and radiation followed by reconstruction. From surgery through chemo I missed only two weeks away from Washington and worked hard for recovery. I looked forward to the day I would not have to look at my disfigured body each morning and would not have to wear an uncomfortable prosthesis. Silicone gel implants were my choice—to me, they marked the final stage of my recovery from cancer. Cancer was not my choice, but implants were.

But before my scheduled reconstruction surgery, the FDA, under Dr. David Kessler's direction, restricted my access to a product that my personal physician and I agreed was right for me for a full recovery. The tragic point of this story is that the FDA acted without adequate data to warrant this unnecessary and senseless decision. The decision was based on fantasy—not science. There was not scientific data supporting the decision to withdraw silicone implants. This is a quote from Dr. John E. Woods, Vice Chair, Department of Surgery, Mayo Clinic.

So instead of protecting the health and concerns of women, this moratorium caused undue stress and anxiety for women with implants and woman who wanted them around the world. But the point I want to make this morning is that real women (mothers, wives, and daughters) died because of this tragic decision, and the FDA knows this. Since my surgery, I've tried to help women who are diagnosed with the disease and speak out on awareness. There is a fear among many women to have an exam and to find a problem. Because of my work, many woman said they found the courage to be responsible. I can tell you that without the possibility of reconstruction, and the thought of facing life disfigured, many women will put off their check-up until it is too late.

Let's look at some numbers. In 1995 there were 182,000 new cases of breast cancer in women. If one in 100 victims finds the prospect of going through life disfigured too dismal to bear and waits an extra six months before seeing a physician, that's 1,820 women who go undetected. If it's one in 1,000, that's 182 women who die needlessly. We don't know the exact numbers but the numbers are there and we know that a lot more women died because of the mandate than could ever be killed by silicone.

Dr. Kessler, in defending his indefensible decision, repeatedly stated that his first obligation as a physician was to do no harm. Dr. Kessler has done harm—considerable harm to the well being of hundreds of thousand of women around the world.

I made it my business both professionally and personally to be as informed as possible and not have a biased attitude. Here are the facts as I see them today.

1. The moratorium did more harm than an implant. There was not then, nor is there now any scientific evidence that implants are unsafe for women. The decision was based on unsubstantiated claims and not good science.

2. Women who had implants were terrified and even though the FDA said they didn't need to—had them removed unnecessarily.

3. Other women, sadly, did not have a breast exam because of fear, and many died as a result.

4. The U.S. lost biomedical silicone industries. Biomedical research which depends upon silicone has declined

5. Health costs increased.

6. Lawsuits have been filed by the thousands.

This is history—it has happened and we can't change the past. So you ask, why am I here today at this hearing? I'm here because I care about women and their families who must continue to make the tough decision I made. They should have the most advanced treatment and care we can provide. These choices should be theirs alone with the best scientific information available—not the opinion of junk scientists.

I care about our research community. We should do all we can as a nation to foster the finest research facilities and medicines that can be produced. We should encourage our good doctors and scientists and not continue to put unnecessary controls and restrictions on their efforts to develop new products and medicines.

I hope that by being here today I have done a small part in reining in a misguided and inept FDA who, in my opinion, was more interested in promoting itself as a regulatory agency than listening to the respected medical community and protecting the lives of women.

Mr. SHAYS. I thank you, Congresswoman Lloyd. And I now I call on our very articulate and distinguished Member from Ohio, Mr. Traficant. You have the floor, Mr. Traficant.

Mr. TRAFICANT. Thank you, chairman. Thank you for holding these hearings, I'm glad to be here with former Member Marilyn Lloyd and Dr. Ganske.

I'm not a scientist, I'm still trying to figure out the tax code. I have 260 women in my congressional district that have had problems health related, that all have one thing in common, they had a silicone breast implant.

Frankly, I'm not trying to chase away American jobs, nor do I want to export the silicone industry, and I can't accept that many of the devices that are in fact in use are not only useful but in most cases as you had stated, their benefits probably outweigh the risks.

But in looking at this issue it takes me back to another concern, and if the Congress of the United States would have allowed to-

bacco companies to make a decision whether or not they would put warning labels on the side of those packs of cigarettes, I do not believe we would have warning labels on those packages.

And Congress has a responsibility, a responsibility to at least inform the American citizens, the taxpayers, of possible risks associated with important medical procedures. I am not a doctor, but I do know this, there is much more document and evidence available than what we the consuming public have been lead to believe and what the FDA and this Congress in fact has received.

In fact, as clear back as the 1950's, Dow Chemical and Dow Corning knew of such medical studies that indicated there was a potential threat to human health. I'd like to submit for the record a number of documents and studies, much of it never having been submitted to the Congress.

And when we get to my testimony, in 1990, Mr. Rylee, a vice president of Dow Corning, testified that there were in fact no problems with silicone breast implants and silicone gel. Yet, I have here a document dated December 20, 1990, 2 days after his testimony, submitted from the corporate medical director of Dow Corning, Chuck Dillon, that said that in fact Mr. Rylee had sent down one of his attorneys and asked that a scientist for the company, Marianne Woodbury, destroy all copies of a memo she circulated 2 days previously.

This scientist felt that it would compromise the integrity of in fact their company and her professional capacity and refused to do that. Now, much of the most recent claims of safety come from the Harvard Nurses Study of 1994. What very few people realize, in 1993, there was a nurses study as well at Harvard. I don't know if it was known as a Harvard Nurses Study, but I will just read to you Table 6 of this study that never was made known to the American people.

Table 6 indicates that women with breast implants did not appear to be at increased risk of developing breast cancer, significant arthritis or arthritis other than rheumatoid arthritis. However, these women might be at a 45 to 59 percent increased risk of developing rheumatoid arthritis.

You have 400,000 that are claiming a health-related problem. You have one side saying it is overzealous attorneys trying to make a buck. You have now another side saying that a company with clear documentation withheld that documentation because of the perceived, at least, risk from the documents that they held in their possession.

Now, what were these studies? In 1955, V.K. Rowe, a Dow Chemical scientist, indicated in an internal memo that Dow Corning silica is capable of causing diffuse cellular infiltration and fibrotic changes in the lungs and other organs. That was relative to certain types of animals studied at that time by Dr. Rowe.

In 1956, scientists for Dow Chemical and Dow Corning found that silicone migrates to other parts of the body. In 1961, a Dow Chemical study reported liver, kidney and lung abnormalities in rats exposed to silicone. A 1975 study by Dow Corning found that a particular type of silicone gel called D-4 is highly toxic to the human immune system. This study was only revealed to the public in 1994, and through a court order.

According to recent court documents, between 1950 and 1960, Dow Chemical conducted hundreds of tests on Dow Corning silicones which proved silicone could cause adverse health effects. In a July 1994 article by Dr. Kossovsky, reviews a number of significant medical studies which indicate a link between silicone breast implants and autoimmune disease.

What bothers me, though, is this same subcommittee in 1990 held a hearing, Chairman Weiss from New York and Robert T. Rylee, the vice president for health care businesses testified before that subcommittee. And I'm going to quote some of his testimony.

"Dow Corning has not and would not keep important evidence of a health risk from the FDA and surgeons who have the professional responsibility to discuss all risks with their patients. Our ethics and our code of business conduct as employees of this corporation would demand that we report evidence of a health risk should one ever be discovered from our research." December 18, 1990.

December 20th there is an internal ethics inquiry from a scientist who states she was asked to destroy copies of a memo that lead to and in fact exchange certain information relative to hazards. If someone is going to be swearing in under oath here, you better swear in Dow Corning people.

I don't want to lose another American job, but I have 260 women in my district, 400,000 in the United States of America, and these are not like many of these devices. These are in the hardened total form, and I'm not a scientist and I don't know what a difference is between the different composition and the chemical make-up of the silicone gel.

And I don't want one woman to be denied silicone gel if it is safe. I do not want to damage one bit of research, but for Members of Congress, one woman seated at the Congress, here at the table, 90 to 95 percent of all Federal research dollars go to mens' diseases. That is a shame. The bill we passed last year at least opens up a health research facility for women.

But let me say this to the Members of Congress, if 90 to 95 percent of all Federal research dollars are going toward men, who is in fact financing the women's research here? It's the private sector. Am I saying Dow Corning lied? No, I'm not. But Hershey's chocolate wouldn't be researching silicone breast implants, neither would AT&T, neither would IBM. What is the vested interest?

I'm saying, look, the last statement that I'll make here is that after Robert Rylee's testimony before this same subcommittee, here's the report language, the report clearly notes, "That Dow Corning subsequently refused to provide all the documents," any documents. That, my friends, is a direct violation of Federal statutes including 2 U.S.C. 192.

Now, I want to know—I'm not a scientist, but I would not be overrun by all these jobs issues and job claims and not get to those facts. I appreciate that and all my information is here. I ask that it be included in the record.

[The prepared statement of Hon. James A. Traficant follows:]

PREPARED STATEMENT OF HON. JAMES A. TRAFICANT, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Chairman Shays, Chairman McIntosh, and members of the committee, I am pleased that you have given me the opportunity to speak at this hearing on the risk assessment standards used by the FDA in evaluating medical devices, including silicone breast implants.

The manner in which Congress and the FDA interact with companies that produce medical devices is vitally important in ensuring public health and safety. That's why I am here today.

For the past several months I have been reviewing a wealth of data concerning Dow Chemical, Dow Corning and silicone breast implants. The more I look into this issue, the more concerned I become.

The subcommittee will hear a lot of testimony this morning about how safe and effective silicone breast implants are—how they have dramatically improved the lives of thousands of women.

You will hear how important silicone is in the development of other life-saving medical devices.

You will hear that there is no scientific evidence that silicone breast implants are connected to immune diseases.

Yes, thousands of women have had extremely positive experiences with silicone breast implants. But thousands more have become seriously ill.

Yes, there may be legitimate and important medical uses for silicone products.

But don't let this testimony cloud the real issues and get in the way of the facts.

There is clear evidence that, as far back as the 1950s, Dow Chemical and Dow Corning knew of medical studies which indicated that silicone poses a threat to human health.

Dow Chemical and Dow Corning withheld this information from the general public, from the FDA and from the United States Congress.

At this time, Mr. Chairman, I would like to submit for the record a number of documents which outline the findings of some of these studies.

Let's look at some of these studies:

- In 1955, V.K. Rowe, a Dow Chemical scientist, indicated in an internal memo that Dow Corning silica is capable of causing "diffuse cellular infiltration and fibrotic changes in the lungs and other organs of certain types of animals." (This memo was only recently made public through a court order.)
- In 1956, scientists for Dow Chemical and Dow Corning found that silicone migrates to other parts of the body.
- A 1961, Dow Chemical study reported liver, kidney and lung abnormalities in rats exposed to silicone.
- A 1975 study by Dow Corning found that a particular type of silicone gel called "D4," is highly toxic to the human immune system. This study was only revealed to the public in 1994 through a court order.
- According to recent court documents, between 1950 and 1960, Dow Chemical conducted hundreds of tests on Dow Corning silicones which proved silicone was not inert and could cause adverse health effects.
- A July 1994 article by Dr. Nir Kossovsky reviews a number of significant medical studies which indicate a link between silicone breast implants and auto-immune disease.

Let me talk a little about the impact these independent studies have had in recent months.

In May of this year, Chairman Shays, you wrote to the FDA and indicated that the French and British Governments have issued statements declaring that scientific studies show no casual relationship between connective tissue disease and silicone breast implants.

On May 17, 1995 the French Government withdrew silicone breast implants from France and banned the importation, manufacture, sale or use of these medical devices.

In announcing the ban, the French Minister of Health noted that silicone breast implants expose women to the risk of rupture with spread of silicone and that silicone can be associated with local and systemic complications.

It is interesting to note that the French Government banned silicone breast implants just one week after Dow Corning claimed in ads placed in major U.S. newspapers that silicone breast implants were safe because France permitted them.

Chairman Shays, I'd like to say a few things about Dow Corning's testimony before your subcommittee in 1990.

On December 18, 1990, Robert T. Rylee, II, Dow Corning's vice president for health care businesses testified before your subcommittee. The chairman at the time was the late Ted Weiss.

I would like to submit for the record a copy of Mr. Rylee's 1990 testimony and excerpts from the subcommittee's report. Let me read part of Mr. Rylee's testimony:

> "Dow Corning has not and would not keep important evidence of a health risk from FDA and surgeons who have the professional responsibility to discuss all risk with their patients . . . our ethics, and our code of business conduct as employees of this corporation, would demand that we report evidence of a health risk, should one ever be discovered from our research."

On page 202 of the committee report on the hearing, it is noted that Chairman Weiss specifically asked Mr. Rylee to provide to the subcommittee certain documents regarding Dow Corning's research on silicone breast implants.

The report clearly notes that "Dow Corning subsequently refused to provide the documents." This is a direct violation of Federal statutes. including 2 U.S.C. 192.

I'd like to touch on the Harvard nurses study, which was published last June in the New England Journal of Medicine.

Dow Corning would have the public believe that this study conclusively shows that silicone breast implants are safe. A few facts about the study:

- The study's authors excluded from their study all women who developed diseases after May of 1990, thereby excluding many women who developed symptoms years after receiving implants.
- There are women included in the study who had implants in place for as little as one month. (Many other studies report that symptoms of auto-immune disease do not manifest themselves until 8 to 15 years after implantation.)
- The study did not look for the atypical diseases reported by thousands of women across the country who have received breast implants.
- The study group was so small that it would not have found an association between cigarette smoking and cancer!
- Three of the study's authors, Dr. Jorge Sanchez-Guerrero, Dr. Graham Colditz and Dr. Matthew Liang, were either personally receiving monies from breast implant manufacturers or had agreed to act as a paid consultant for a breast implant manufacturer while they were conducting the study—yet they failed to disclose this conflict of interest at the time.
- Dr. Liang later resigned from another study due to this conflict of interest.
- While Dow Corning had no direct involvement in the study, it was provided with a copy of the questionnaire before it was sent to the study's participants.
- Dow Corning contributed $7 million to Brigham & Women's Hospital, the institution conducting the study, while the study was in progress.
- Even the study's authors admit the study does not prove that silicone breast implants are safe.

If the FDA and Congress are to effectively review and assess the safety of medical devices, they need to have all the facts.

The main manufacturer of silicone breast implants—Dow Corning and its parent company Dow Chemical—withheld key information and medical studies which indicated that their medical devices pose a threat to human health.

Up until the time the French Government banned silicone breast implants on May 17, 1995, Dow Corning continually pointed to the French Government's approval of silicone breast implants as proof that their product was safe.

Can't the reverse now be true? At the very least, the French Government's action should be taken very seriously by Congress.

I urge the committee to examine the facts I have presented. I would also respectfully urge the committee to conduct a full and separate inquiry into this matter.

With that I conclude my statement, and would be happy to answer any questions you might have.

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ATTACHMENTS

ATTACHMENT 1: V.K. Rowe internal Dow Corning memo marked "Not For Outside Distribution" concerning the harmful effects of silica when inhaled (1955).

ATTACHMENT 2: "The Physiological Assimilation of Dow Corning 200 Fluid" which found silicone throughout the bodies of dogs and rats (1956).

ATTACHMENT 3: "The Toxicity To Rats of Vapor Resulting From Heating of Silicon Containing Fluids" which reported liver, kidney, and lung abnormalities in rats exposed to silicone (1961).

ATTACHMENT 4: "Action of Polydimethylsiloxanes on the Reticuloendothelial System of Mice" indicated D4 silicone gel is highly toxic to the immune system (1975).

ATTACHMENT 5: "Silicone Breast Implant Pathology" by Dr. Nir Kossovsky reviews significant medical studies indicating link between silicone breast implants and auto-immune diseases (1994).

ATTACHMENT 6: Excerpt from The New York Times regarding the French government's decision to withdraw silicone breast implants from the market (June 21, 1995).

ATTACHMENT 7: Excerpts from Robert T. Rylee's testimony before the House of Representatives Human Resources and Intergovernmental Relations Subcommittee (December 18, 1990).

ATTACHMENT 8: Memo to Dow Corning's Ethics Committee regarding an employee's refusal to shred memos containing information regarding problems silicone breast implants (1990).

ATTACHMENT 9: Questions and answers regarding the 1995 Harvard Nurses' Study and the 1993 Mayo Clinic Study.

ATTACHMENT 10: Unpublished Preliminary Interim Report from the Harvard Women's Health Study showing an increased risk of rheumatoid arthritis in women with breast implants (1993)

ATTACHMENT 11: "The Physiological Activity of Dow Corning 200 Fluid" found silicone in the organs of injected rabbits (1957).

ATTACHMENT 12: "Report Prepared for the Dow Corning Corporation, Midland, Michigan on Six Silicone Materials" which indicated deleterious effects in the livers of injected rats (1957).

ATTACHMENT 13: Report on the "Histopathologic Examination of Livers, Dow Corning Z-4141". Indicated silicone globules may be present in the livers of injected rats (1957).

ATTACHMENT 14: Excerpts from "Dow Corning News" indicating Dow Corning's concern over the toxicity of D4 (October 1963).

ATTACHMENT 15: Memo from H.C. Spencer regarding Dow Corning hydrophobic silica and toxicity from dust inhalation, and corresponding tests (1954).

ATTACHMENT 16: Compilation of published scientific articles on silicone and silicone implants.

[Note: The 16 attachments referenced above have been retained in the Subcommittee on Human Resources and Intergovernmental Relations files.]

Mr. SHAYS. I thank the gentleman and it will be part of the record. Dr. Ganske, Congressman Ganske, we have a visit from a Senator who wants to introduce some constituents. Do you mind if he does? I'm not used to Senators having time like this.

Mr. KYL. No. No.

Mr. SHAYS. Mr. Ganske, it's wonderful to have you as a Member of Congress. You're a wonderful addition to Congress and I welcome your statement.

Dr. GANSKE. Thank you, Mr. Chairman.

I must admit that I debated with myself whether to appear before you today. As you may know, prior to the November election, I was a practicing plastic and reconstructive surgeon, and I wondered whether I was too close to this issue.

However, I believe that it is important for Congress to take advantage of the experiences and diverse backgrounds of its Members. I have 130 boxes of patient charts in my basement. My practice is closed. I have never been involved in implant litigation, or any lawsuits for that matter, but for some personal reasons which I will tell you about, I am very interested in the problem of availability of these medical devices.

In 10 years of private medical practice, I cared for many patients, both cosmetic and reconstructive, with silicone gel and silicone saline breast implants. Part of the pre-op consent always included discussions of possible complications of both the surgery,

such as infection or bleeding, and the implant, such as hardening of the implant which is actually tightness of scar tissue around the implant.

I have always been concerned about my patients' safety and I know my colleagues are, too. And I've read most of the scientific literature on this issue. Let me summarize what I think the scientific literature shows to date. And I have a number of points in—the paper that you received. I'm only going to talk about two—because of the time constraint.

First, I believe that there is strong evidence that implants do not cause cancer, and I would like to submit this study from the New England Journal of Medicine of 11,676 women in Canada who underwent cosmetic breast augmentation. That study found that implants do not increase the risk of cancer.

Second, there is no concrete evidence that silicone implants cause any form of autoimmune disease or rheumatologic disorder. Mr. Traficant has been very eloquent, but you're going to hear testimony today from some of the real experts on this issue, allergists and immunologists, and I would ask that you listen to them very carefully. There are now 17 such studies from three different countries that find no relationship.

And I would like to submit for the record a June 22, 1995, article from the New England Journal of Medicine which reported that in a large, 87,000 women, cohort study there was no, let me repeat, no association between silicone implants and connective tissue diseases.

Mr. Chairman, this is about much more than breast implants. Silicone has hundreds of uses, both inside and outside the body. The administration of drugs and perineal fluids as well as hemodialysis and cardiac bypass technology depend on liquid silicone. Droplets of silicone coat plastic syringes and over time diabetics accumulate substantial amounts of silicone. An infant getting one dropper full of pediatric mylacon approved by the FDA, I might point out, has just ingested more silicone than it could ever get from mother's milk.

Now, we are talking about whether there will be available other medical devices to treat other diseases. Mr. Chairman, I am also submitting a partial list of medical products that depend on the supply of raw materials.

Now, I would like to briefly tell you about three people who have needed silicone products. These photos show you a young man who had a severe head injury in an automobile accident prior to and after bone-graft reconstructed his skull.

He is functional, but has a paralyzed right arm. And the story of his rehabilitation is heroic, but my point in showing this is that he needed a silicone silastic cerebral spinal fluid shunt, just like this, to protect his remaining brain. Thanks to this medical device and good medical care from a number of people who took care of him in the emergency room, Tim is doing just fine today.

I wish I could say the same thing about my wife's sister. In the early 1950's, Cathy was born with spinabifida and developed hydrocephalus. She did not have the benefit of this CFS shunt, and she developed severe hydrocephalus with a head like a pumpkin and she passed away when she was 4.

I am pleased you will have testimony today from live, happy children who can benefit from silicone silastic products like this.

And when my mother was 21 years old, she developed breast cancer and she had a radical mastectomy that saved her life. But when I was a kid, I remember mom's external prosthesis as she called it, her falsie, slipping in her swimming suit at the beach. Only years later did I learn how that constant deformity, as Mrs. Lloyd has pointed out, can always remind a woman of her cancer and the fear that that causes her and her spouse.

Nine years ago my mother had a breast reconstruction with a silicone gel prosthesis, and I'm happy to report she is very happy with it. And if I ever thought that this implant was causing her problems, I'd recommend its removal in a second.

Now, I know that my friend Jim Traficant here, somebody I have grown to really enjoy and like in my brief stay here in Congress, has a heart as big as this room, and my heart too goes out to those small percentage of women who have had implants and have had problems. But we can't legislate on compassion alone. We must be right or else in being compassionate to some, we will end up being mean to others.

Thank you.

[The prepared statement of Hon. Greg Ganske follows:]

PREPARED STATEMENT OF HON. GREG GANSKE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

Thank you, Mr. Chairman, for the opportunity to testify today. I must admit that I debated with myself whether to appear before you today. As you may know, prior to the November election, I was a practicing plastic and reconstructive surgeon and I wondered whether I was too close to this issue. However, I believe that it is important that Congress does take advantage of the diverse backgrounds of its members. I have 130 boxes of charts in my basement and my practice is closed. I have never been involved in implant litigation, or any lawsuits for that matter. For personal reasons which I will explain, I am very interested in the problem of availability of medical devices.

In ten years of private medical practice I cared for many patients, both cosmetic and reconstructive, with silicone-gel and silicone-saline breast implants. Part of preoperative consent always included discussions of possible complications of both the surgery such as infection or bleeding, and the implant such as "hardening" implant which is actually tightness of scar tissue around the implant. I've always been concerned about my patient's safety and have read most of the scientific literature on this issue.

Let me summarize what I think the scientific literature shows to date:

- There is strong evidence that implants do NOT cause cancer. I would like to submit this study from The New England Journal of Medicine of 11,676 women in Canada who underwent cosmetic breast augmentation which found that implants do not increase the risk of cancer.
- There is also theoretic concern that breast implants can delay cancer detection. Several recent studies have shown that this appears to be only a theoretic risk since the stage of detection of breast cancer in women with implants appears to be identical or better than that of the overall population.
- There is NO concrete evidence that silicone implants cause any form of auto-immune disease or rheumatologic disorder. There are now seventeen such studies from three different countries that find no relationship. I would like to submit for the record a June 22, 1995 article from The New England Journal of Medicine which reported that in a large (87,501 women) cohort study, there was NO association between silicone breast implants and connective tissue diseases.
- The evidence that surgical removal will reverse any systemic disorder allegedly caused by these devices is ambiguous and mostly unconvincing.
- There are no lab tests that can determine silicone spread, immunogenicity or toxicity.
- There are no laboratory tests that are useful in determining an association between implants and any known disease.

- There is no evidence that silicone is a teratogen.
- There is no evidence that silicone is found in breast milk.
- The silicone gel of an implant does not spread diffusely throughout the body in any detectable amount even if the implant is broken.

Mr. Chairman, this is about much more than breast implants. Silicone has hundreds of uses both inside and outside the body. The administration of drugs and parenteral fluids, as well as hemodialysis and cardiac-bypass technology, depend on liquid silicone. Droplets of silicone coat plastic syringes, and, over time, diabetics accumulate substantial exposure to silicone. An infant getting a dropper full of pediatric Mylicon to treat infant gas with FDA approval has just ingested more silicone than it could ever get from mother's milk.

We are talking about whether there will be available other medical devices to treat other diseases. Mr. Chairman, I am also submitting a partial list of silicone medical products that depend on a supply of raw materials.

I want to tell you about three people who have needed silicone products. The photos show you a young man who had a severe head injury in an auto accident prior to, and after, I bonegraft reconstructed his skull. He is functional with a paralyzed right arm and the story of his rehabilitation is heroic.

But my point of showing this is that he needed a silicone silastic cerebral spinal fluid (CSF) shunt like this to protect his remaining brain. Thanks to that medical device and good medical care, Tim is doing just fine.

I wish I could say the same about my wife's sister. In the early 1950's, Kathy was born with a spina bifida and developed hydrocephalus. Without this CSF shunt that was available to Tim, she developed severe hydrocephalus and a head like a pumpkin . . . and passed away when she was 4. I am pleased that you will have testimony before you today from live and happy children with CSF shunts.

And when my mother was 21 years old she developed breast cancer and had a radical mastectomy that saved her life. But when I was a kid I remember Mom's external breast prosthesis (she called it her "falsie") slipping in her swimming suit at the beach. Only years later did I learn how that constant deformity can always remind a woman of her cancer and the fear that causes for her and her husband. Nine years ago, my mother had a breast reconstruction with a silicone-gel prosthesis and is very happy with it. And if I ever thought that it might cause her any problems, I'd recommend its removal in a second.

I know that my friend Jim Trafficant has a heart as big as this room, and my heart, too, goes out to those women who have had problems with their implants. But we can't legislate on compassion alone, we must be right . . . or else in being compassionate to some, we will be mean to others.

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# BREAST AUGMENTATION: A RISK FACTOR FOR BREAST CANCER?

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**Abstract** *Background.* A relation between breast augmentation and the subsequent risk of breast cancer has been postulated. Since an estimated 2 million women in the United States alone have received breast implants, even a small increase in the risk of breast cancer could have considerable public health consequences.

*Methods.* We performed a population-based nonconcurrent cohort-linkage study. All women in Alberta, Canada, who underwent cosmetic breast augmentation from 1973 through 1986 were included in the implant cohort (n = 11,676). This cohort was compared with the cohort of all women in Alberta in whom a first primary breast cancer was diagnosed (n = 13,557). The expected number of breast-cancer cases in the implant cohort was estimated by applying age-specific and calendar year–specific incidence rates of breast cancer (obtained from the Alberta Cancer Registry) to the implant cohort. Standardized incidence ratios were calculated by dividing the observed by the expected number of breast-cancer cases in the implant cohort.

*Results.* Forty-one patients with implants were subsequently found to have breast cancer. The expected number was 86.2. The standardized incidence ratio was thus 47.6 percent, significantly lower than expected ($P<0.01$). The average length of follow-up in the implant cohort was 10.2 years, and the average length of time from breast augmentation to the diagnosis of breast cancer was 7.5 years.

*Conclusions.* Women who undergo breast augmentation with silicone implants have a lower risk of breast cancer than the general population. This finding suggests that these women are drawn from a population already at low risk and that the implants do not substantially increase the risk. (N Engl J Med 1992;326:1649-53.)

PROSTHETIC breast augmentation and reconstruction have been practiced for several decades and have been considered to be safe and accepted surgical procedures. Smooth-walled silicone implants (filled with silicone gel or saline) have been the most common type of prosthesis used. Scar encapsulation of these implants frequently leads to compression and undesirable firmness. To overcome these complications, implants covered with polyurethane sponge were reintroduced in the 1980s in the United States and Canada. Recently, however, concern has been raised about the carcinogenic potential of the breakdown products of polyurethane. The breakdown products (i.e., toluene 2,4-diisocyanate and toluene 2,6-diisocyanate diamines) were reportedly found in the urine of a patient with polyurethane-sponge–covered implants.[1] These substances are known to cause sarcomas in rats.[2-6] An expert panel of the Canadian Medical Association concluded, however, that "surgical removal of polyurethane-foam–covered breast implants solely for reasons of potential risk of cancer does not appear to be indicated."[7] Despite this statement there has been considerable public concern about the potentially increased risk of breast cancer after cosmetic breast augmentation.[8-10] In the scientific literature few studies have addressed the issue. To our knowledge only four studies have been reported to date, and three of these consisted of surveys mailed to plastic surgeons.[11-13] Although no excess risk was found, the strength of the evidence in this type of study is limited because of the great potential for ascertainment and recall bias. In one epidemiologic study, no increased risk was found.[14]

It is estimated that 2 million women in the United States have received breast implants. Thus, from a public health perspective it is important to determine the extent of any increase in risk in these women, even if it is only a small one. To evaluate the potential difference in the risk of breast cancer among women who have undergone breast augmentation, we decided to perform a nonconcurrent cohort-linkage study.

## METHODS

Alberta, Canada, has had a comprehensive, compulsory, government-sponsored health care insurance program since 1966. Physicians submit claims for payment of approved procedures to the Alberta Department of Health, which keeps computerized records of these claims. From 1969 through 1986 breast augmentation was an approved procedure for which surgeons could submit claims. Unfortunately, records for the years before 1973 were not accessible at the time of our study. The Alberta Department of Health provided us with data on all women who had undergone breast aug-

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mentation from 1973 through 1986. All women who had received implants as reconstructive surgery were then excluded from further analyses. The remaining women constitute the implant cohort. The data obtained from the Alberta Department of Health were checked for validity and coding errors.

The Alberta Cancer Registry was initiated in the early 1940s and became a comprehensive population-based registry in the early 1960s. Data on all patients with cancer in Alberta are entered in the cancer-registry data base, which is maintained by the Alberta Cancer Board's Division of Epidemiology and Preventive Oncology. The completeness of the registry has been estimated to exceed 95 percent.[15] Data on all patients with first primary breast cancers, diagnosed from 1973 through 1990, were selected from this population-based cancer registry. These patients constitute the breast-cancer cohort.

The study design is shown in Figure 1. In short, the two cohorts (implant cohort and breast-cancer cohort) were linked to determine which women had both breast cancer and implants. The linkage was performed with each patient's full name (surname, maiden name, and first initial), date of birth, and Alberta Health Care Insurance Plan number as matching variables. Allowance was made for logical errors in data entry, such as spelling mistakes and reversal of the order of month and day in the date of birth. For each positive match the patient's clinical charts were reviewed. The end points for the study were the diagnosis of breast cancer, death (from any cause), or the end of the study (January 1, 1991), whichever was earliest. In order to calculate the number of person-years at risk in the total cohort of women with cosmetic implants, we determined the vital status of the women by linking the implant data base with the Alberta Vital Statistics file. For women who died, the date and cause of death were obtained.

### Statistical Analysis

The observed number of cases (the number of patients who received implants and subsequently were given a diagnosis of breast cancer) was determined through the linkage of the two data bases. The expected number of cases was calculated by applying age-specific and calendar year–specific incidence rates for breast cancer prevailing in the general population in Alberta to the implant cohort. The incidence rates were obtained from the Alberta Cancer Registry[16] and were calculated with the use of data only on women with first primary malignant tumors of the breast. The standardized incidence ratio was then determined with the formula (observed cases/expected cases) × 100 percent, in which the observed number of breast-cancer cases is expressed as a percentage of the expected number.[17] Thus, a value of more than 100 indicates an incidence that is higher than expected. The significance of the standardized incidence ratio was estimated with Bailar's method for estimating significance factors for the ratio of a Poisson variable to its expectation.[18]

## Results

The original implant cohort consisted of 14,545 patients. A total of 2869 were excluded from further analysis for the reasons given in Table 1. The majority (60 percent) were excluded because they had duplicate records. In these cases the first year (and the records pertaining to that date) were retained in the data base. These women were included in further analyses. Also excluded from the implant cohort were 315 women who had received implants as part of reconstructive surgery after mastectomy for breast cancer. After these exclusions, the implant cohort consisted of 11,676 women. From the cancer registry data base we selected all the patients with first primary breast cancers diagnosed from 1973 through 1990. During these 18 years a total of 13,557 women in Alberta were given such a diagnosis. These women constituted the breast-cancer cohort. The cancer registry has a continuous quality-control monitoring program in place; therefore, we are confident that the data on breast-cancer cases from the registry are complete and valid.

Table 2 shows the age distribution of the two cohorts. As expected, the implant cohort was much younger: 86.0 percent of the women in this cohort were less than 40 years of age, whereas 91.6 percent of the women in the breast-cancer cohort were

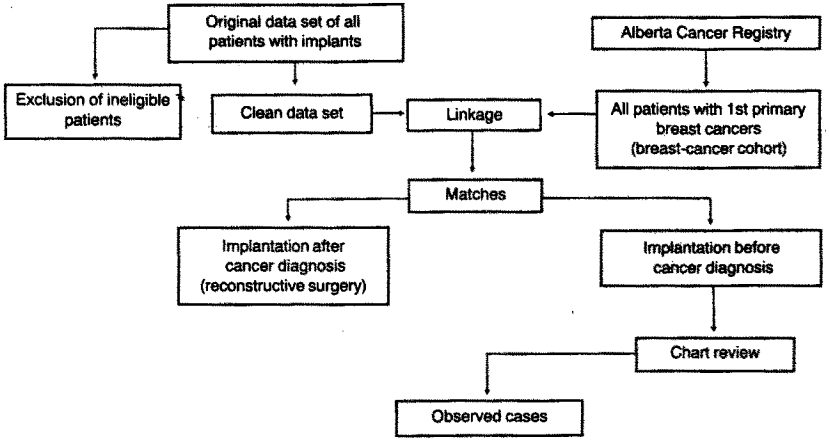


Figure 1. Design of the Study.

Table 1. Reasons for Exclusion from the Implant Cohort of 14,545 Patients.

| Reason for Exclusion | No. of Patients |
|---|---|
| Male sex | 218 |
| Treated outside study period | 102 |
| Exceeded age limit | 512 |
| Duplicate record | 1,722 |
| Reconstructive surgery | 315 |
| Total | 2,869 |
| Total after exclusions | 11,676 |

at least 40 years of age at the time of diagnosis.

The two cohorts were linked, and a total of 47 matching women were identified in whom breast augmentation preceded the diagnosis of breast cancer. The hospital charts of these women were reviewed, and in six of them no evidence of an implant procedure was found. Neither the medical history of the patient nor the mammograms revealed any evidence of breast augmentation. These six women were excluded from further analyses. The 41 women confirmed to have had implant procedures before cancer was diagnosed had bilateral augmentation. These 41 women constituted 0.4 percent of the original cohort of 11,670 women with implants.

The total number of person-years at risk for the women in the study was 124,494. The average follow-up was 10.2 years (range, 1 to 18); 58.1 percent of the cohort had at least 10 years of follow-up (Table 3). Only 29 of the women in the implant cohort (0.2 percent) were followed for less than five years.

A total of 86.2 cases of breast cancer were expected, and only 41 were observed. The standardized incidence ratio was thus 47.6 percent — significantly less than expected ($P<0.01$). The age-specific standardized incidence ratios are shown in Table 4. In all age groups the standardized incidence ratios were significantly lower than expected; in fact, the ratios were remarkably constant across the age groups.

A short interval between the date of implantation and the date of diagnosis of the cancer could indicate that a tumor was present subclinically at the time of augmentation. We therefore determined the length of this interval for the 41 women; the average was 7.5 years. In 80 percent of the women (33 of 41), the implant procedure was performed at least five years before the diagnosis of the cancer. The interval between implantation and the diagnosis of breast cancer was at least 10 years in 11 cases (27 percent).

The mean age at implantation of the 41 women in whom breast cancer later developed was 38.3 years (range, 20 to 64); the mean age at diagnosis was 45.7 years (range, 30 to 68).

## Discussion

Using the same design as in our study, Deapen et al.[14] reported a standardized incidence ratio of 57 in a cohort of 3111 women who were followed for an average of 6.2 years. The average length of follow-up in our study was almost twice as long (10.2 years), and more than half of our cohort were followed for at least 10 years. The question arises, however, whether even this length of follow-up is adequate to allow a plausible lead time between exposure (implantation) and outcome (the diagnosis of breast cancer). To evaluate this problem, we excluded all women from the implant cohort for whom fewer than 10 years of follow-up data were available. This adjustment resulted in the exclusion of 4892 women (Table 3). Applying the same methods as described earlier, we found that the expected number of cancer cases in the remaining 6778 women was 67.8. Eleven cases of breast cancer were observed. The standardized incidence ratio in this subcohort with a long follow-up was 16.2. Thus, in women with long-term follow-up after implantation (the average number of years of follow-up in this group was 13.3 years; range, 10 to 18), no increased risk of breast cancer was found.

The size of the cohort in our study was nearly four times that of the study by Deapen and colleagues (11,670 vs. 3111). In the latter the implant cohort consisted of patients treated by 35 plastic surgeons in Los Angeles; therefore, it was not a population-based study — a factor that could give rise to ascertainment bias. In our study all women who had breast augmentation in Alberta from 1973 through 1986 were included in the study and matched with patients from the population-based cancer registry. We believe that this makes ascertainment bias an unlikely explanation of our results.

Our study yielded a result similar to that of the study by Deapen et al.[14]: there was no increased risk of breast cancer after breast augmentation. In addition to these two cohort studies, the results of three surveys among plastic surgeons, inquiring about the frequency of cancers in women with implants, have been reported.[11-13] Although the evidence in this type of study is not strong, these studies also did not indicate an in-

Table 2. Age Distribution of the Women with Breast Implants and the Women with Breast Cancer.

| Age Group | Implant Cohort* | Breast-Cancer Cohort |
|---|---|---|
| yr | number (%) | |
| 20–24 | 1,997 (17.1) | 12 (0.1) |
| 25–29 | 3,287 (28.2) | 114 (0.8) |
| 30–34 | 3,048 (26.1) | 351 (2.6) |
| 35–39 | 1,711 (14.6) | 662 (4.9) |
| 40–44 | 824 (7.1) | 1,079 (8.0) |
| 45–49 | 436 (3.7) | 1,502 (11.1) |
| 50–54 | 232 (2.0) | 1,531 (11.3) |
| 55–59 | 94 (0.8) | 1,613 (11.9) |
| 60–64 | 41 (0.4) | 1,580 (11.6) |
| ≥65 | — | 5,113 (37.7) |
| Total | 11,670 | 13,557 |

*Six women in the implant cohort were excluded because there was no evidence of breast augmentation.

creased frequency of breast cancer. Case reports[19-22] do not allow an evaluation of the question of a difference in risk.

Could the result of our study be explained by the influence of biases? As mentioned, ascertainment bias is unlikely to explain the absence of an increased risk. The very nature of the nonconcurrent cohort-study design eliminates recall bias as a potential explanation. From the data on radiation risk, it appears that younger women are more sensitive to a radiation effect than older women. The question thus arises whether the age of women at implantation could be a confounding factor in the determination of the subsequent risk of breast cancer. By using age-specific and calendar year–specific incidence rates in calculating the expected number of cases of breast cancer, however, we have controlled for a potential age effect.

In the study by Deapen et al.,[14] a large number of patients were lost to follow-up (approximately 14 percent) because of the mobility of the California population and the difficulty of gaining access to out-of-state records. A study in Alberta of women with cervical cancer found that approximately 10 percent of the cohort moved out of the province (Woodhead SE: personal communication). Nevertheless, women who were living in Alberta but whose cancers were diagnosed or treated in another province would also have been reported to the Alberta Cancer Registry. We believe that the loss to follow-up cannot explain the low standardized incidence ratios found in our study.

We found six false positive matches. In these cases, the wrong fee code was probably used or entered in the Alberta Department of Health data base. It is possible that there were also false negative "matches," resulting in a lower observed number and therefore in an artificially low standardized incidence ratio. However, since we allowed for logical errors in data entry during the linkage procedure, we do not believe that undermatching is a plausible explanation of the low number of breast cancers observed. To eliminate this possibility, we randomly selected a 1 percent sample of patients with breast cancer in the registry and reviewed their charts to evaluate whether there was any evidence of implantation. In all cases there was no indication of implantation either in the medical history or on the mammograms. We believe there is no possibility that false negative matches explain the results of our study.

Table 3. Characteristics of the Implant Cohort.

| CHARACTERISTIC | NO. OF WOMEN | % OF TOTAL |
|---|---|---|
| Date of implant | | |
| 1973–1975 | 1518 | 13.0 |
| 1976–1979 | 3221 | 27.6 |
| 1980–1983 | 4085 | 35.0 |
| 1984–1986 | 2846 | 24.4 |
| Years of follow-up | | |
| <5 | 29 | 0.2 |
| 5–9 | 4863 | 41.7 |
| 10–14 | 4581 | 39.3 |
| ≥15 | 2197 | 18.8 |

Table 4. Age-Specific Standardized Incidence Ratios.

| AGE (YR) | PERSON-YR AT RISK | NO. OF CASES | | SIR* |
|---|---|---|---|---|
| | | OBSERVED | EXPECTED | |
| <30 | 24,033 | 0 | 1.2 | 0 |
| 30–39 | 58,358 | 10 | 21.2 | 47.2 |
| 40–49 | 30,846 | 20 | 38.6 | 51.8 |
| 50–59 | 8,889 | 8 | 18.3 | 43.7 |
| ≥60 | 2,368 | 3 | 6.9 | 43.5 |
| Total | 124,494 | 41 | 86.2 | 47.6 |

*SIR denotes standardized incidence ratio.

Another possible explanation of the low standardized incidence ratio found in our study could be that cancer in women with implants is diagnosed at a later stage (i.e., it has not yet been discovered, thus lowering the number of observed cases). Preliminary results of a survival analysis of the group of women with implants who had cancer showed no difference in survival between these women and women without breast implants who had cancer. We therefore do not think that there is a substantially longer latency period in women with breast implants before a tumor is diagnosed.

Finally, one could hypothesize that women who undergo augmentation mammoplasty have a much lower a priori risk of breast cancer, which may or may not be affected by the presence of the implants. No information about the base-line risk of breast cancer or the prevalence of risk factors among women who have implants is available. Theoretically, therefore, one could argue that the results of our study do not permit the conclusion that implants do not increase the risk of breast cancer (because of the unknown base-line risk), despite the fact that any such risk does not reach that in the general population of women of comparable age during the same period. Strictly speaking, then, we have not ruled out the possibility that implants increase the risk of breast cancer in a highly selected group of women with a very low base-line risk. Women who undergo breast augmentation are in general of higher socioeconomic status (a factor that increases the risk of breast cancer). On the other hand, augmentation for cosmetic reasons is usually done in slim women with small breasts, and small breasts have been considered a favorable factor, lowering the risk.[23,24] The relation between breast size and the risk of cancer is controversial, however.[25,26]

This study focuses on women who had silicone implants for cosmetic breast augmentation. Approximately 85 percent of the women received smooth-walled implants filled with silicone gel, whereas the remainder received smooth-walled implants filled with saline. During the study period, prophylactic mastectomy followed by reconstructive surgery was

very rarely done. Polyurethane-sponge–covered implants were not used in Alberta during the study period. It probably will not be possible to evaluate the effects of such implants for 5 to 10 years, at which time a sufficient number of person-years at risk will have been accumulated in women with this type of implant.

In summary, our study did not find an increased risk of cancer among women who had received breast implants, although the length of follow-up, the completeness of follow-up, and the size of the cohort would have allowed the detection of such a risk. Questions that remain to be answered include what the risk estimates are for other cancers and what the survival experience is of women who had breast cancer after cosmetic breast augmentation.

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# SILICONE BREAST IMPLANTS AND THE RISK OF CONNECTIVE-TISSUE DISEASES AND SYMPTOMS

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**Abstract** *Background.* Silicone breast implants have been linked to a variety of illnesses, the most controversial of which are connective-tissue diseases and symptoms. To study this relation, we analyzed data from 14 years of follow-up of the Nurses' Health Study cohort.

*Methods.* Women who were free from connective-tissue disease in June 1976 were followed through May 31, 1990, before there was widespread media coverage of the possible association of breast implants and connective-tissue diseases. Information was collected through biennial and supplementary mailed questionnaires and blinded reviews of medical records with the use of standardized criteria. Relative risk, the measure of association, was defined as the incidence rate of connective-tissue disease among women with breast implants divided by the corresponding incidence rate among women without breast implants.

*Results.* Among 87,501 women who were eligible for follow-up, 516 were confirmed as having definite connective-tissue diseases and 1183 as having breast implants (of which 876 were silicone-gel–filled, 170 saline-filled, 67 double-lumen, 14 polyurethane-coated, and 56 of unknown type). The mean (±SD) period of follow-up after surgery was 9.9±6.4 years (range, 1 month to 40.5 years). Three of the patients with definite connective-tissue disease — all had rheumatoid arthritis — had implants (one silicone-gel–filled, one saline-filled, and one double-lumen). The age-adjusted relative risk of a definite connective-tissue disease among women with any type of implant was 0.6 (95 percent confidence interval, 0.2 to 2.0), as compared with women without implants. For women with silicone-gel–filled implants, the comparable relative risk was 0.3 (95 percent confidence interval, 0 to 1.9). The relative risk of self-reported signs or symptoms of connective-tissue disease for women with implants was 1.5 (95 percent confidence interval, 0.9 to 2.4); the risk of having any 1 of 41 signs, symptoms, or laboratory features of connective-tissue disease was 0.7 (95 percent confidence interval, 0.3 to 1.6).

*Conclusions.* In a large cohort study, we did not find an association between silicone breast implants and connective-tissue diseases, defined according to a variety of standardized criteria, or signs and symptoms of these diseases. (N Engl J Med 1995;332:1666-70.)

SINCE 1962, approximately 1 million to 2.2 million women in the United States and Canada have received silicone breast implants as part of reconstruction following surgery for breast cancer or prophylactic mastectomy or for cosmetic reasons.[1,2] Silicone breast implants have been linked to a variety of illnesses, the most controversial of which are connective-tissue diseases and symptoms.[1-3] Since 1982, at least 293 patients with connective-tissue diseases or rheumatic illnesses and silicone breast implants have been described in the English literature; many additional cases have been reported in abstract form.[4] On April 16, 1992, the Food and Drug Administration banned further use of these devices, except for limited use in research settings.[1]

To study the relation between silicone breast implants and connective-tissue diseases, we analyzed data from 14 years of follow-up of the Nurses' Health Study cohort with respect to connective-tissue diseases that were diagnosed before June 1, 1990. Widespread media coverage in the United States of a possible association began in December 1990, after a program on the subject was aired on national television.[5]

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The Brigham and Women's Hospital has received grants from Dow Corning to study silicone breast implants in a separate study, the breast-implant substudy of the Women's Health Cohort Study, being conducted by the Division of Preventive Medicine. From these grants, Dr. Sánchez-Guerrero received $7,500 toward tuition at the Harvard School of Public Health in September 1992 and Dr. Karlson received $25,800 in salary and fringe-benefit support between February 1, 1994, and June 30, 1994. Dr. Liang received $2,525 from four legal firms representing Dow Corning or McGhan for 8.5 hours of consulting between June 16, 1993, and August 26, 1994. The other authors have not received compensation from companies that manufacture breast implants or from lawyers involved in breast-implant litigation.

*Editor's note:* This disclosure statement is in accord with our usual policy but is somewhat more detailed because of the intense public controversy over the health effects of breast implants.

## METHODS

### The Nurses' Health Study Cohort

The Nurses' Health Study cohort was assembled in June 1976. Questionnaires were mailed to all registered nurses who were female, married, 30 to 55 years of age, and living in California, Connecticut, Florida, Maryland, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, or Texas. Seventy percent of the women invited to participate returned the base-line questionnaire. Information was sought on a variety of health conditions and practices. Subsequently, biennial questionnaires have been sent. The overall response rate to follow-up questionnaires has been more than 90 percent. The study protocol has been approved by the Human Research Committee of Brigham and Women's Hospital in Boston. All subjects have given informed consent.

### Ascertainment of Exposure to Silicone Breast Implants

By 1992, the number of women still alive and participating in the study was 109,750. Among many other topics on the 1992 biennial questionnaire were questions about whether participants had ever had breast-implant surgery or silicone, paraffin, or collagen injections. After three mailings, 89,376 women (81.4 percent) returned the questionnaire, including 88,153 who answered the questions related to breast implants and injections. A supplementary question-

naire was sent to the 1861 women who reported having received breast implants of any sort or silicone, paraffin, or collagen injections. The supplementary questions were intended to confirm the breast-implant surgery and to ascertain whether it was unilateral or bilateral, the side of the implant, the reason for the surgery (cancer treatment, prophylaxis, cosmetic reasons, or other), type of implant, date (or dates) of surgery, and complications, if any. Although all breast implants are contained in silicone envelopes, there are differences in structure and filling. The implant types were categorized as silicone-gel–filled, saline-filled, double-lumen (a silicone-gel–filled envelope within a saline-filled envelope), polyurethane-coated (a silicone-gel–filled implant coated with polyurethane foam), other, or unknown.

Overall, 1809 of the 1861 women (97.2 percent) responded to the supplementary questionnaire; 330 without breast implants reported silicone, paraffin, or collagen injections; 117 reported breast-implant surgery after May 1990; 22 had received implants after the date of diagnosis of a connective-tissue disease; and 157 provided incomplete information about the breast-implant surgery. The remaining 1183 women with confirmed breast implants in May 1990 or earlier were included in the analysis. Researchers who entered data on implant history were blinded to information about the medical histories of the women.

### Validation of Breast-Implant Information

A validation study of self-reported information on breast implants was conducted for a random sample of 100 women. Permission was requested to review their medical records. Sixteen women did not give permission, the medical records for 11 were not available after multiple mailings, and the medical records for 6 were not received from the surgeon or hospital. For the 67 women whose medical records were obtained, we confirmed that surgery had been performed and ascertained which side the implant was on, the reason for the surgery, the type of implant (or implants), and the date (or dates) of surgery. Medical records were abstracted by physicians using a questionnaire identical to that completed by the subjects. Self-reports agreed with blinded record reviews at the following rates: surgery — 99 percent; side of the implant — left 91 percent, right 100 percent, and bilateral 99 percent; reason for the surgery — cancer 93 percent, prophylaxis 91 percent, and cosmetic reasons 95 percent; type of implant — silicone-gel–filled 100 percent, and saline-filled 89 percent; and date (or dates) of surgery — same date 78 percent, within one year 84 percent, and within two years 95 percent.

### Case Identification of Connective-Tissue Disease

Questions regarding rheumatic conditions that had occurred since 1976 were included on all questionnaires after 1980. There were specific questions about diagnosis by a physician of systemic lupus erythematosus in the 1982, 1984, 1986, and 1992 questionnaires; about rheumatoid arthritis in 1982 through 1992; about scleroderma, polymyositis, dermatomyositis, and Sjögren's syndrome in 1992; and about "other major illness diagnosed" on every biennial questionnaire.

In 1992, we mailed a screening questionnaire on connective-tissue disease[6] to participants who had reported any rheumatic, musculoskeletal, or connective-tissue disease before June 1, 1990, and had answered the 1992 questionnaire. These diseases included rheumatoid arthritis, scleroderma, morphea, systemic lupus erythematosus, dermatomyositis or polymyositis, Sjögren's syndrome, "connective tissue disease not further specified," or "any other arthritis (excluding osteoarthritis and fibromyalgia)." Those who did not respond initially were sent second and third mailings. Those who still did not respond were sent a shorter questionnaire, once or twice, asking specifically about the occurrence of these conditions, or were telephoned by trained interviewers who asked the same questions and sought permission to obtain further details regarding the diagnosis. Of the 5086 participants who were sent the screening questionnaire, 4598 (90 percent) responded to the mailings or telephone calls.

The screening questionnaire on connective-tissue disease[6] contained 30 questions about symptoms or signs of connective-tissue diseases ever experienced by the subject, based on the classification criteria of the American College of Rheumatology for rheumatoid arthritis,[7] systemic lupus erythematosus,[8] and systemic sclerosis[9]; Alarcon-Segovia and Cardiel's criteria for mixed connective-tissue disease[10]; Bohan and Peter's criteria for inflammatory myositis[11]; and Fox et al.'s criteria for Sjögren's syndrome.[12] Validation of questionnaire data on 253 subjects with connective-tissue disease and 340 control subjects showed a sensitivity ranging from 83 to 96 percent and a specificity of 83 to 93 percent for detecting any of these six connective-tissue diseases.[6]

For this study, we used a more conservative screening rule to maximize sensitivity. A positive questionnaire was defined as one indicating at least two swollen joints for more than six weeks or at least three positive answers to questions about connective-tissue disease symptoms. Medical records were requested to validate the diagnoses for all subjects who had reported connective-tissue diseases and had positive questionnaires. Exposure information was separated from the medical records by a research assistant, and the records were then reviewed independently by two rheumatologists blinded to exposure. Definite connective-tissue disease was identified according to the standardized classification criteria on which the questionnaire was based. When the rheumatologists disagreed, the complete medical information was reviewed by a third independent rheumatologist and a final judgment was made by consensus of all three rheumatologists. The date of onset of the connective-tissue disease was the date of diagnosis indicated in the medical record. The analysis was based on records received through May 1994.

### Population for Analysis

Women for whom information on breast implants was missing or whose connective-tissue disease was diagnosed before 1976 or after May 1990 were excluded, leaving 87,501 women eligible for follow-up. The period from June 1976, the start of the study, through May 31, 1990, was chosen to avoid potential bias from the widespread news-media attention to this topic, which began in December 1990. During the 14-year period, we accrued 1,181,244 person-years of follow-up.

Since the classification criteria for connective-tissue diseases excluded patients with milder or atypical cases and those who did not fulfill the criteria early in their disease, the true incidence of the diseases could have been underestimated. We performed three additional analyses using less stringent case definitions that included (1) patients who reported a rheumatic disease on any biennial questionnaire; (2) patients who had a positive screening, as defined on the connective-tissue disease screening questionnaire; and (3) patients who had any 1 of 41 signs, symptoms, or laboratory features of a connective-tissue disease that were included in the six classification-criteria sets that were abstracted from the medical record.

We performed analyses according to type of implant: silicone-gel–filled, saline-filled, double-lumen, or polyurethane-coated.

### Statistical Analysis

For each participant, the number of person-years was assigned to the appropriate breast-implant category. Once a subject had surgery for a silicone breast implant, she was defined as having been exposed to silicone, regardless of whether an implant was subsequently removed. The number of person-years was calculated from 1976 until May 31, 1990, or until the date of diagnosis of any connective-tissue disease, whichever came first.

The analysis was based on incidence rates. Relative risk, the measure of association, was defined as the incidence rate of connective-tissue disease among women with breast implants divided by the corresponding incidence rate among women without breast implants. Age-specific rates were calculated in five-year categories of age and used to compute age-adjusted relative risks, with 95 percent confidence intervals.[13] When fewer than five cases involving exposure were observed, we calculated exact confidence intervals.[14]

## Results

During the 1,181,244 person-years of follow-up, connective-tissue diseases were confirmed in 516 subjects. Among the 87,501 women in the analysis, 1183 (1.4 percent) reported having had some type of breast im-

plant between 1976 and May 31, 1990; gave complete information; and were free from connective-tissue disease before the implantation. Women with breast implants accounted for 11,170 person-years of follow-up. Information about the breast-implant surgery is summarized in Table 1.

The mean (±SD) period during which any kind of breast implant was in place was 9.9±6.4 years (range, 1 month to 40.5 years). Among women with silicone-gel–filled implants, the mean period was 10.0±6.2 years (range, 1 month to 37.5 years) (Table 2).

### Definite Connective-Tissue Disease

Among the 516 women who met the criteria for connective-tissue disease, the observed incidence rate per 100,000 women was within the ranges reported in other studies (Table 3). Three of the patients with definite connective-tissue disease had breast implants (silicone-gel–filled in one, double-lumen in another, and saline-filled in the third). All had rheumatoid arthritis; their cases had no unusual features. The age-adjusted relative risk of any definite connective-tissue disease among the women with any type of breast implant, as compared with the women without breast implants, was 0.6 (95 percent confidence interval, 0.2 to 2.0) (Table 2).

We also examined risk according to the type of breast implant, specifically the silicone-gel–filled implants. One woman with a definite connective-tissue disease had silicone-gel–filled implants. The age-adjusted relative risk among women with such implants was 0.3 (95 percent confidence interval, 0.0 to 2.0) (Table 2). No patient with polyurethane-coated breast implants had any of the connective-tissue diseases studied.

The age-adjusted relative risk of rheumatoid arthritis was 0.9 (95 percent confidence interval, 0.3 to 2.6) with any breast implant, 0.4 (95 percent confidence interval, 0.1 to 2.4) with silicone-gel–filled breast implants, and 1.4 (95 percent confidence interval, 0.2 to 9.7) with saline-filled implants, as compared with no breast implants. No patients with scleroderma, systemic lupus erythematosus, inflammatory myositis, mixed connective-tissue disease, or Sjögren's syndrome had any type of breast implant.

Table 1. Breast-Implant Surgery in 1183 Women from the Nurses' Health Study.

| VARIABLE | NO. OF WOMEN (%) |
|---|---|
| Indication | |
| Cosmetic reasons | 587 (50) |
| Cancer | 387 (33) |
| Prophylaxis | 138 (12) |
| Unknown | 71 (6) |
| Type | |
| Silicone-gel–filled | 876 (74) |
| Saline-filled | 170 (14) |
| Double-lumen | 67 (6) |
| Polyurethane-coated | 14 (1) |
| Unknown | 56 (5) |
| No. of operations* | |
| 1 | 911 |
| 2 | 191 |
| 3 | 52 |
| 4 | 29 |
| Side | |
| Unilateral | 224 (19) |
| Right | 112 |
| Left | 112 |
| Bilateral | 937 (79) |
| Unknown | 22 (2) |

*Each operation was counted as one, irrespective of whether a bilateral operation was performed.

Table 2. Age-Adjusted Relative Risk of Connective-Tissue Disease among Women with Breast Implants as Compared with Women without Implants.

| CASE TYPE | NO IMPLANT (N = 86,318) | BREAST IMPLANT | |
|---|---|---|---|
| | | ANY TYPE (N = 1183) | SILICONE-GEL–FILLED* (N = 876) |
| Self-reported connective-tissue disease | | | |
| No. of cases | 5054 | 32 | 21 |
| Age-adjusted relative risk | 1.0 | 0.7 | 0.6 |
| 95% Confidence interval | | 0.5–1.0 | 0.4–0.9 |
| Self-reported signs or symptoms of connective-tissue disease† | | | |
| No. of cases | 1277 | 17 | 11 |
| Age-adjusted relative risk | 1.0 | 1.5 | 1.2 |
| 95% Confidence interval | | 0.9–2.4 | 0.7–2.2 |
| Documented signs or symptoms of connective-tissue disease‡ | | | |
| No. of cases | 898 | 6 | 4 |
| Age-adjusted relative risk | 1.0 | 0.7 | 0.6 |
| 95% Confidence interval | | 0.3–1.6 | 0.2–1.6 |
| Definite connective-tissue disease | | | |
| No. of cases | 513 | 3 | 1 |
| Age-adjusted relative risk | 1.0 | 0.6 | 0.3 |
| 95% Confidence interval | | 0.2–2.0 | 0.0–1.9 |
| Duration of implant | | | |
| Mean (±SD) yr | | 9.9±6.4 | 10.0±6.2 |
| Range | | 1 mo–40.5 yr | 1 mo–37.5 yr |

*This category is a subgroup of "any type" of implant.

†The signs and symptoms are those included in the screening questionnaire on connective-tissue disease.4

‡Data were derived from the medical-record review. Documented signs and symptoms included proximal weakness, a high creatine kinase concentration, positive electromyogram, positive muscle biopsy, proximal scleroderma, sclerodactyly, digital scars, bibasilar lung fibrosis, malar or discoid rash, photosensitivity, nasopharyngeal ulcers, nonerosive arthritis, pleuritis, pericarditis, proteinuria, renal casts, seizures, psychosis, hemolytic anemia, leukopenia, lymphopenia, thrombocytopenia, positive test for lupus erythematosus, antibodies to double-stranded DNA, biologic false positive serologic test for syphilis, positive test for anticardiolipin antibody, positive antinuclear-antibody test, Raynaud's phenomenon, morning stiffness for more than one hour, arthritis in three or more joint areas, arthritis in hand joints, rheumatoid nodules, positive rheumatoid-factor tests, radiographic changes characteristic of rheumatoid arthritis, keratoconjunctivitis, xerostomia, salivary-gland biopsy positive for Sjögren's syndrome, and anti-Ro, anti-La, anti–extractable-nuclear-antigen, and anti–U1-RNP antibodies.

### Risk of Connective-Tissue Disease or Symptoms Based on Less Stringent Diagnostic Criteria

We studied women with possible early, milder, or atypical forms of connective-tissue disease or with any sign or symptom of a connective-tissue disease who did not meet standard classification criteria (Table 2). These groups were not mutually exclusive.

Since 1976, 5087 women have reported having a connective-tissue disease or rheumatic disorder on the biennial questionnaires. Thirty-two had some type of breast implant, including 21 with silicone-gel–filled implants. The age-adjusted relative risk of any connective-tissue disease was 0.7 (95 percent confidence interval, 0.5 to 1.0) for those with breast implants as compared with those without breast implants. For wom-

Table 3. Incidence Rates of Connective-Tissue Diseases in the Nurses' Health Study (1976 to 1990).

| Disease | Nurses' Health Study | | Incidence Range in Other Studies† |
|---|---|---|---|
| | No. of cases | Incidence rate* | |
| Rheumatoid arthritis | 392 | 33.2 | 24–50 |
| Systemic lupus erythematosus | 96 | 8.1 | 1.8–7.6 |
| Scleroderma | 14 | 1.2 | 0.4–1.9 |
| Polymyositis or dermatomyositis | 12 | 1.0 | 0.5–1.1 |
| Sjögren's syndrome | 2 | — | — |
| Mixed connective-tissue disease | 0 | — | — |
| Any connective-tissue disease | 516 | 43.68 | — |

*Rates are per 100,000 person-years.

†Range of incidence rates reported in 10 other studies.[15-24]

en with silicone-gel–filled implants, the age-adjusted relative risk was 0.6 (95 percent confidence interval, 0.4 to 0.9).

Signs or symptoms of connective-tissue disease were reported on the screening questionnaire by 1294 women, including 17 with some type of breast implant and 11 with silicone-gel–filled implants. Of these 17 patients, 3 fulfilled the classification criteria for rheumatoid arthritis on review of the medical records. Two patients, one with symptoms of arthritis and Raynaud's phenomenon and another with Raynaud's phenomenon alone, could not be classified as representing definite cases. Nine patients had other rheumatic or musculoskeletal conditions (five had osteoarthritis, one chondrocalcinosis, one trochanteric bursitis, one cervical strain, and one familial Mediterranean fever). In three patients, no evidence of rheumatic disease or symptoms could be found. The age-adjusted relative risk of self-reported signs or symptoms of connective-tissue disease was 1.5 (95 percent confidence interval, 0.9 to 2.4) among the women with any type of breast implant as compared with those without implants (Table 2). For the women with silicone-gel–filled breast implants, the age-adjusted relative risk was 1.2 (95 percent confidence interval, 0.7 to 2.2).

We also studied 904 participants with any of 41 signs, symptoms, or laboratory findings seen in connective-tissue diseases that were validated by review of the medical records (Table 2). Six of these women had some type of breast implant, including four with silicone-gel–filled breast implants. As compared with the group without breast implants, their age-adjusted relative risk of having the signs or symptoms of connective-tissue disease was 0.7 (95 percent confidence interval, 0.3 to 1.6) with any breast implant and 0.6 (95 percent confidence interval, 0.2 to 1.6) with silicone-gel–filled breast implants. The analyses for other implant types had similar results (data not shown).

## Discussion

In this large cohort study, we did not find an increased risk of any connective-tissue disease or of 41 signs or symptoms of connective-tissue disease among women with any breast implant or with specific types of breast implants. Connective-tissue diseases occur infrequently. For this and other reasons, our study cannot be considered definitively negative. The upper bound of the 95 percent confidence interval for the relative risk of definite connective-tissue disease (2.0), for example, does not exclude minor associations that would still be of public health importance. Since information on exposure was based on self-report, there may have been some misclassification of breast-implant surgery. However, we found high rates of agreement between self-reports and medical records in our validation study of self-reported breast implants.

In all epidemiologic studies of rheumatic diseases, diagnosis is a major problem. We identified and confirmed cases through a multistep procedure and blinded medical-record review. Sixty-five percent of the 904 subjects who had any signs or symptoms of connective-tissue disease as determined by chart review had seen physicians who were active members of the American College of Rheumatology. The observed incidence of connective-tissue diseases was within ranges previously reported in population-based studies.[15-24] The application of strict criteria for any connective-tissue disease may exclude some true cases or milder cases and hence underestimate the true incidence of disease. With a rare disease, a slight underestimation of the incidence rate is less important in a study of etiology than is the misclassification of participants without disease as having disease.[25] In this situation, misclassification adds a small number of true cases to the very large number of true non-cases and has a negligible influence on estimates of the exposure among the non-cases. Less specific criteria might add non-cases. Since the number of cases is relatively small, the non-cases could make up an appreciable proportion of the total cases. Thus, the distribution of exposure among cases might be inaccurate. If the misclassification is random, the risk estimate will be driven toward the null value.

We found no association between breast implants and previously reported signs and symptoms,[26-29] such as Raynaud's phenomenon, photosensitivity, arthritis, morning stiffness, xerostomia, dry eyes, sclerodactyly, positive antinuclear-antibody tests, and positive rheumatoid-factor tests. We could not study subjective and largely unverifiable symptoms, such as fatigue, decreased ability to sleep, frequent sore throats, cognitive deficits, arthralgias, lymphadenopathy, or dizziness, or diseases such as fibromyalgia.

The 5514 women who died during the 14-year study period could not be studied because information about breast-implant surgery was not available for them. It is unlikely that this potential limitation biased the results, unless women with breast implants and connective-tissue disease died at a higher rate than women with connective-tissue disease who did not have breast implants.

Our results are based on data about registered nurses, about 95 percent of whom were white. Whether

these results can be generalized to include other women may be questioned. In 1989, a national survey of 40,000 households in the United States found that approximately 60 percent of breast implantations were performed for cosmetic reasons and that 95 percent of women with implants were white.[30] The prevalence of breast implants was higher in the South and West than in other regions of the country and increased with household income. Furthermore, the breast-implant rate in our cohort, 1.4 percent, is within the range of 0.7 to 2.0 percent estimated for U.S. women. For these reasons, the women in our study are likely to be representative of women in the United States who have breast implants.

Our results are consistent with the findings of published epidemiologic studies of breast implants and rheumatic diseases[31-36] and reports in abstract form.[37-40] In a population-based retrospective cohort study,[31] 749 women in Olmsted County, Minnesota, who received breast implants between January 1964 and December 31, 1991, were followed for a mean of 7.8 years and compared with 1498 control women of similar age without implants. In 5 case subjects, as compared with 10 in the control group, one of the specified connective-tissue diseases was diagnosed (relative risk, 1.06; 95 percent confidence interval, 0.34 to 2.97).

In conclusion, we found no evidence of an association between silicone breast implants and either connective-tissue diseases defined according to a variety of standardized criteria or signs or symptoms of connective-tissue disease.

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Medical Procedures/Patients Affected by a Biomaterials Shortage (April 1994)

| Medical Specialty and Affected Procedure | Number of Procedures/ Patients (Annually) | Affected Device |
|---|---|---|
| **CARDIOLOGY & THORACIC SURGERY (Source: American College of Cardiology and Society of Thoracic Surgeons)** | | |
| Angioplasty | 331,000 | angioplasty catheter[2] |
| Diagnostic Cardiac Catheterization | 1,057,000 | cardiac catheter[2] |
| Implantable Cardiac Defibrillator | 35,000 | cardiac defibrillators |
| Open Heart Surgery | 342,600 | blood filters,[2] cardiotomy reservoir,[2] heart/lung oxygenator[2] |
| Pacemaker Implantation | 140,000 | pacemakers |
| Valve Implantation | 35,000 | mechanical valves, tissue valves, annuloplasty rings |
| Vascular Graft Related | 330,000 | polyester grafts, other grafts |
| Number of Patients Affected | 2,270,600 | |
| **ORTHOPEDICS (Source: American Academy of Orthopedic Surgeons)** | | |
| Arthroplasty | 617,000 | hand and finger prothesis, hip prothesis, knee prothesis, shoulder joint orthopedic |
| Other Orthopedic Related | data not available | bone growth stimulator, fracture fixation device |
| Number of Patients Affected | 617,000 | |
| **OPHTHALMOLOGY (Source: American Academy of Ophthalmology)** | | |
| Cataract Surgery | 1,500,000 | phacoemulsification unit,[2] foldable silicone intraocular lens |
| Glaucoma Shunts | 3,000 | eye valve implants |
| Punctum Plug Related | data not available | silicone punctum plug |
| **NEUROLOGY (Source: American Association of Neurological Surgeons)** | | |
| Ventricular Shunt | 75,000 | CNS shunt |
| Number of Patients Affected | 75,000 | |
| **UROLOGY (Source: American Urological Association)** | | |
| Anti-incontinence Operations | 2,500 | urinary sphincters |
| Diagnostic Ureteroscopy/Cystoscopy | 500,000 | endourology devices[2] |
| Laser Prostetectomy | 250,000 | laser fibers[2] |
| Multiple Urology | 100,000 | section drains[2] |
| Penile Prothesis Procedure | 50,000 | penile prothesis |
| Prostetectomy/Reconstructive | 250,000 | silicone urinary catheter[2] |
| Multiple Urological & Other | 1,000,000 | ureteral catheter/stents[2] |
| Stone Manipulation | 500,000 | basket graspers[2] |
| Testicular Prothesis Procedure | 1,000 | testicular protheses |
| Number of Patients Affected | 2,653,500 | |
| **RECONSTRUCTIVE SURGERY (Source: American Society of Plastic & Reconstructive Surgeons)** | | |
| Breast Augmentation | 29,607 | saline-filled breast implant, silicone gel-filled breast implant |
| Breast Lift | 7,963 | saline-filled breast implant, silicone gel-filled breast implant |
| Breast Reconstruction | 32,607 | saline-filled breast implant, silicone gel-filled breast implant |
| Other Reconstructive/Plastic Surgery | data not available | cheek implants, chin implants, tissue expanders |
| Hand Surgery | [1] 138,233 | no device data available |
| Number of Patients Affected | 208,410 | |
| Total Number of Patients Impacted by a Biomaterials Shortage. | 7,406,210 | |

[1] The total number of hand surgeries is listed; however the percentage of these which will be affected is sall uncertain.

[2] At this time, the impact of a biomaterials shortage on (or the unavailability of) temporary implants or devices which temporarily come in contact with the body is not as certain as that on permanent implants.

Note: Estimates compiled from Medicare/Medicaid records, federal records (where available), and input from physicians, manufacturers, and regulatory representatives. Current private sector statistics are generally not tracked and are difficult to obtain. Figures may be understated.

Mr. SHAYS. I thank all three of our witnesses. We will proceed with some questions, but I'll ask a witness who was not sworn in, Mr. Kyl, evidently you have some individuals you would like to introduce. Do you have a statement as well that you want to make?

Mr. KYL. Mr. Chairman, I don't have a statement. I simply wanted to make brief comments in the way of an introduction of the witnesses you'll hear this afternoon.

Mr. SHAYS. That would be very nice. We welcome you.

Mr. KYL. Would you like for me to be sworn to give the introduction?

Mr. SHAYS. No, not for that.

Mr. KYL. Well, Mr. Chairman, if I could proceed at this time, then, I appreciate your courtesies. Two of you—well, about four of you know that this was a committee on which I sat when I was in the House of Representatives, and it's a pleasure for me to be back at this committee today, and also to be with Marilyn Lloyd.

I worked with Marilyn on issues relating to breast cancer when I was in the House with Jim Traficant, who has been aptly described as a friend and someone who is very courageous. And Dr. Ganske who has just presented, I think, some extraordinarily important testimony. My comments will bear on what he has just said.

I very much appreciate the opportunity to appear at this hearing this morning. And as I noted, I'm not here as a witness, but to introduce two remarkable women from my State of Arizona. The first is Tara Ann Ransom. She's a very young woman, just 8 years old. She's an exceptionally bright and active third grader. She jumps rope, roller skates, and is the top student in her class at the Magnet Traditional School in Phoenix.

She reads on the sixth grade level and has recently finished all 14 books of the Wizard of Oz series. She scores in the—and she'll talk to you more about that. She scores in the 99th percentile on national academic achievement tests.

Tara is a hydrocephalic child. She can do all the things that a normal 8-year old can do and more with the help of a little piece of plastic silicone very much like this. It's a little smaller, but it looks almost exactly like this. And I think she'll show that to you this afternoon.

This plastic tube is called a shunt, and it drains excess fluid from her brain. Without the shunt the pressure on her brain would increase, causing severe disability and ultimately death. She wants us to make sure that when she outgrows her current shunt she will be able to get a new one.

Unfortunately, there is a real danger that the companies that produce the raw material for shunts will stop supplying it because of product liability concerns and FDA regulatory overreach. I learned about Tara from her mother Linda, a devoted mother who is fighting for her daughter's life. She's also fighting for the lives of all of the approximately 50,000 citizens in Arizona and all over this country who depend on silicone plastic shunts.

It is important to note that more than 7 million Americans have some kind of implants made of silicone. She has my support and the support of the senior Senator from Arizona Senator McCain, and I hope she'll have yours. In May, the Senate passed S. 565 the Product Liability Fairness Act. This bill contains a provision that would limit the liability of suppliers of the raw materials that are manufactured into medical implant devices.

The House passed Product Liability Bill H.R. 956 as a similar provision. But regulatory reform is also needed. That is the purpose of this hearing, to determine whether the FDA has gone so far in trying to protect some Americans that it has in fact jeopardized the lives of others like Tara.

Mrs. Ransom and Tara will testify this afternoon, but I'd like just to read one paragraph from a letter that Tara wrote to me, "Some issues, like the life of a child—" excuse me, Mrs. Ransom wrote this letter to me. "Some issues like the life of a child seem so basic, but as you know all too well they are anonymous statistics to many bureaucrats. There has to be a solution to this problem. Tara will die without a shunt. What more can be said?"

And Mr. Chairman, members of the committee, I hope that you will be moved by the testimony of Tara and Linda Ransom this afternoon. I believe that they have entered the hearing room this morning, and if they are here I wonder if they would at least stand and be recognized.

Mr. SHAYS. It's very nice to have both of you here, you bless our company with your presence and we look forward to both of your testimonies. And I thank you, Senator, for taking the time to come and introduce them.

Mr. KYL. Thank you again for your courtesies, Mr. Chairman. With your leave, I will absent myself now, unless there are any questions.

Mr. SHAYS. Well, you're very kind to come here to introduce two people and thank you very much. It's very important you did that.

I open now—our witnesses are invited to respond to some questions and I would ask Mr. Clinger if he has a question or two for the witness.

Mr. CLINGER. Thank you, Mr. Chairman. I just have one comment and a question. I just want to commend all three of the witnesses for very compelling testimony and delighted to see our former colleague Ms. Lloyd here today and hear her testimony and Jim Traficant our good friend and Dr. Ganske. I think you have all done yourselves very well in this testimony.

I have one question I wanted to ask you, Jim, and it has to do with the French study which you referred to, the French moratorium which you referred to. My question is, that study or that moratorium or taking it off the market was not precipitated by any study that showed that there was a chemical problem or a causative problem with cancer or any sort of tissue-related diseases; is that your understanding?

Mr. TRAFICANT. Yes. My understanding, though, and the reason why I brought up that whole incident regarding the French decision is Dow Corning used extensively in their advertisements as documentation and further support for the safety of their silicone

gel breast implants that France and Britain had in fact accepted those products and found them to be safe.

Some 2 weeks after a lot of that extensive advertising campaign, France in fact banned totally the manufacture or sale of all of those products.

Mr. CLINGER. But I believe that there is a moratorium pending further study, not a permanent condition, as I understand it.

Mr. TRAFICANT. Yeah. The French Minister of Health noted that silicone breast implants—this is their exact statements—"Expose women to the risk of rupture with spread of silicone and that silicone can be associated with local and systemic complications."

Let me just say sitting here between these two, a great former Member and certainly a dynamite young Member, I'm not here today totally about the safety of this issue. I think Congress must get to it. What I am here putting on the record was there documentary evidence withheld, knowingly and with intent, by Dow Corning.

Did Dow Corning in 1990 knowingly and willingly within intent to deceive the Congress of the United States withhold certain particular salient points from the Congress. Did they lie to Congress. Did they ever comply with the 1990 request of Chairman Weiss to give us all the documentation of the claim that they made that their product was risk-free.

So I'm not talking about this device. I support them. I'm not talking about all these other devices. I'm not a scientist, but I'm talking about the silicone breast implants and did in fact our government get all the information it could have from the private sector driven research, much of it conducted by those with vested interest in such research.

Mr. CLINGER. In reference to the study that was done as a result of Congressman Weiss's inquiry. There was a report put out at that time, it was controversial because it was not—it was never approved by the committee, it was actually issued by the staff and never had the imprimatur, as you would say, of the committee itself. So I think it has some basis to question that.

Mr. TRAFICANT. Well, I believe then that we could check the report of that language. My language basically—the information that I have says that the report clearly notes, "That Dow Corning subsequently refused to provide the documents."

Now, I'm sure we could look at the report language and the report of that subcommittee process.

Mr. CLINGER. Thank you.

Mr. SHAYS. I thank the gentleman.

Mr. Towns.

Mr. TOWNS. Thank you very much, Mr. Chairman. Let me begin by thanking all the witnesses for their testimony and of course Mr. Traficant and of course Dr. Ganske and Congresswoman Lloyd.

What I would like to do is just basically ask you, Congresswoman Lloyd, what action would you encourage the FDA to take in the near future with respect to the regulation of silicone breast implants. What would you suggest?

Ms. LLOYD. I think they should do as I called for when I was a Member of Congress, to allow women to make—and I cosponsored

legislation to this and I believe Mrs. Morella did also—to allow women to make an informed consent decision.

It should be her decision alone, and I think that this is the way that we should have moved ahead instead of providing this terrible, terrible moratorium. As I said, it's cost the lives of many women. You know, I think it's very important, Congressman Towns, that we listen to the respected medical community. And that's really all I ask of this committee today.

If you're interested in why the French Government made the decision they did, I think you should ask the French Government. I think if you want to know if there is any problem with implants, I think it should come from the medical community, and to the information available to me at the present time, there is no information from the respected medical community, the New England Journal of Medicine reports here on the table, that indicates in any way that silicone gel implants are unsafe to women if they are handled properly.

This is my opinion. You know that science can never prove negative propositions entirely, but I do think that we've harmed many, many women with the decision to move ahead as we have. And I hope that this committee will shed further light on it and review the harm that has been done. Thank you.

Mr. TOWNS. Thank you very much. Let me just conclude, Mr. Chairman, by saying I think that when we have people in the Congress like Dr. Ganske who has had a tremendous amount of practical experience in terms of dealing with many issues, to come and to testify, I think that that is very, very important in terms of what we have to do in terms of documenting and making a decision in terms of the future.

Also, good for you, Mr. Traficant, in terms of the fact that you want to make certain that if there is any information out there that we need to have, we need to—we want to make certain that we do have it.

Let me just say that in terms of 1990, as I remember what happened, some of the things that happened was that Congressman Weiss became ill and someone else was actually filling in as the chair of the committee, so—and I understand there was a breakdown there in terms of information sort of flowing the way it should have. So I think that was also part of the problem.

So the 1990 situation is something that was not clear, because of the fact that the chairman became very ill and was not able to follow through on many of the issues that were raised during that time.

Thank you very much. I yield back the balance of my time.

Mr. SHAYS. I thank the gentleman.

Mr. McIntosh.

Mr. MCINTOSH. Thank you, Mr. Chairman. I've got essentially two questions. First, Congresswoman Lloyd, thank you for coming today. I remember very vividly your testimony around the time of your treatment in which you were in between having had the mastectomy and having had the opportunity to have an implant.

I remember it very vividly and it was very moving at the time and I appreciate your willingness to put your personal story into the public record that way about a very emotional and trying issue.

Let me ask you this. It's my understanding that all sorts of organizations, including the National Cancer Institute, the Society of Surgical Oncology, and prominent physicians have all indicated that they believe that women will be less likely to either submit themselves to mammography or other procedures for detection of breast cancer because of the fear that they will not be able to take care of the disfigurement that may occur should they have that disease.

Ms. LLOYD. That's the point that I was trying to make. You know, the only thing we have in the fight in breast cancer is time. That's the reason I had my surgery done immediately. All you have is time. And if you wait 6 months, many times it can be fatal.

So we must do more to educate women and to let them know—you don't have to go through life wearing an uncomfortable prosthesis, you don't have to go through life lopsided, that we do care as a country and we are going to have the treatment that you need.

Mr. MCINTOSH. And isn't it true that women often will find excuses to put off going in for a mammography? My mother, when I asked her whether she had received one recently said, "No, they're terribly uncomfortable. I don't want to do that." And don't we need to do everything possible to encourage that type of screening?

Ms. LLOYD. This really, in a woman's mind, marks the final stage of her recovery. You go through chemo, you go through radiation, you go through the wig bit, but you're always looking forward to that day when you can say it's behind me.

Mr. MCINTOSH. Which is 5 years?

Ms. LLOYD. That's right.

Mr. MCINTOSH. Let me also turn to Mr. Ganske, and I appreciate you coming and sharing your expertise as a doctor who has treated patients. I wanted to know, was it your experience when you were practicing as a physician that your patients did try to avoid either detection of breast cancer or treatment and that you often had to work hard to persuade them to move forward with those two procedures?

Dr. GANSKE. I was not infrequently referred patients who had a diagnosed breast cancer who had told their general surgeon that they would not proceed with a mastectomy, which for their particular circumstances was probably the best treatment, unless they could have a breast reconstruction.

Mr. MCINTOSH. So the ability to have a reconstruction was critical for their decision to be treated?

Dr. GANSKE. Absolutely.

Mr. MCINTOSH. And let me ask you a hypothetical question, Dr. Ganske, and that is to put yourself in the position of Dr. Kessler as head of FDA, given the 17 studies that you're aware of, would you be able to approve finally with certainty the use of silicone breast implants in the cases of women who had breast cancer?

Dr. GANSKE. I want to answer in a little bit more detail. I believe that Dr. Kessler's first decision in which he ignored the advice of the first advisory panel was ill-advised. His first advisory panel basically said there is no substantial proof that there is a problem with implants.

Yes, let's proceed with some additional studies, but I believe that he overreacted. And I believe on the basis of the subsequent science that has come out, that breast implants either saline filled or gel filled are safe.

Now, I want to say one thing. There is no medical device that is 100 percent free of any complications. Hip prostheses will break. Finger prostheses made of silicone can break. They need to be replaced occasionally. There is no surgical procedure that you can do that is 100 percent free of complications.

Any time you place a knife to the skin, there is a small chance of infection, there is a small chance of bleeding, there is a small chance of excess scar formation, but those are things that are distinct from a medical device in relationship to the complications of surgery. And if we're going to use any medical devices at all, we have to weigh the benefits versus the small acceptable risks of complication. That is a cost benefit analysis that I think this Congress needs to be involved in.

Mr. MCINTOSH. Thank you, Dr. Ganske. And specifically, the testimony that Dr. Kessler will give us later in written testimony indicates that there is not a general risk of the autoimmune disease but there is a small and perhaps significant risk that they may increase certain types of diseases, mainly because it's never been disproven.

Dr. GANSKE. You cannot prove the negative.

Mr. MCINTOSH. In all of this. Would you be willing to advise your patients that those small risks are worth the potential benefits of having an implant?

Dr. GANSKE. When I, as a physician, talked to a patient, I do as Congresswoman Lloyd has suggested, you lay out what the possible complications are, and then the patient should have the right to make an informed decision.

Mr. MCINTOSH. Thank you, Dr. Ganske. I have no further questions for this panel.

Mr. SHAYS. Mr. Peterson.

Mr. PETERSON. Thank you, Mr. Chairman. I want to thank the panel for their testimony.

Congressman Traficant, I'm aware that you've sent several letters to Attorney General Janet Reno requesting that the Justice Department investigate whether Dow Corning knowingly mislead Congress and withheld information on the safety of silicone breast implants.

What has been the Justice Department's response to your requests?

Mr. TRAFICANT. We have not had a specific response, but we have cited the circumstances why we believe that it should at least be looked into.

And I think that is part and parcel of what we're discussing here today. I am not in disagreement with many of the things that Dr. Ganske has stated and testified to, nor Marilyn Lloyd, but I think the record is quite clear that there has been an awful lot of withholding of information and what I consider to be worthy of investigation, lying to Congress.

But everybody is predicating what is we're hearing on this 1994 study. And one of the reasons why I've asked for such an informa-

tion is that I want to know if three of the studies authors were either personally receiving moneys from breast implant manufacturers or had already agreed to act as paid consultants for a breast implant manufacturer while they were conducting that study.

I also want to know if Dow Corning contributed $7 million to Brigham and Women's Hospital, the institution conducting this study while this study was in progress. Let me say this, I don't want to see any of these devices withheld.

Mr. MCINTOSH. Excuse me. Would the gentleman yield? I have a question for the witness. Are you impugning the integrity of that university?

Mr. TRAFICANT. No, I'm not.

Mr. MCINTOSH. What was the purpose of pointing out the fact that they received a contribution?

Mr. TRAFICANT. I want to know if Dow Corning made a $7 million contribution.

Mr. MCINTOSH. But are you stating that that would affect the University in their scientific study?

Mr. TRAFICANT. Whether or not it would have, I know this, if they received $7 million at about the time they were in fact performing that study, from a company that had concerns about the study they were performing, I just want to know if in fact that is the case. Those are reports that I have had.

Mr. MCINTOSH. But it may be an irrelevant fact.

Mr. TRAFICANT. If it is, then they can certainly explain that, Congressman.

Mr. MCINTOSH. Unless you're implying that they've been influenced by that?

Mr. TRAFICANT. If it is, they could certainly explain that.

Mr. MCINTOSH. I don't think that Dow Corning would be able to explain that. I think the University whose integrity is at stake here would be the one that you would question about that.

Mr. TRAFICANT. Then let me rephrase my answer to you. If in fact the research is coming out of an institution, and a company with a tremendous problem at stake has made a sizable contribution to that institution, I'm not saying that it in fact impacted the decision, but that seems to be a very timely donation of significant amounts and I want to know.

Let me also say to this Congress, you have an industry that has agreed to the largest settlement in American history of over $4 billion. Now, I'm just a regular lay taxpayer here. I'm not a doctor. I haven't had one of these devices. But I'll tell you this, if I was a major corporation that had a completely safe product, I'm not so sure that I would have in fact agreed to such a settlement then filed bankruptcy.

Was the filing of the bankruptcy—did Dow Corning and Dow Chemical in fact collude to in fact make a settlement then file the bankruptcy? The only final point I'm making to you is this, I am not necessarily here to stop silicone breast implants, but my God, if there is a safety risk associated with it, it shouldn't be the advice of a good conscientious doctor that says there may be a risk.

Congress took upon themselves to warn people the health hazards of tobacco, and if there is a potential health risk, my God, let's get all the facts in. Did they keep those facts from us?

Mr. SHAYS. Let me just say for the record Mr. Peterson has the floor, and I didn't hear you say yes, and I didn't jump in soon enough. I apologize to the gentleman.

Mr. PETERSON. Oh. That's fine. I think we are all learning from these exchanges.

One final thing. I was just wondering if you're aware of any of the documents that support your claim that Dow Corning knowingly mislead Congress, whether they have been introduced into evidence in any of the cases that are currently pending against Dow Corning?

Mr. TRAFICANT. I don't know if they've been submitted into evidence. I'm sure they probably have, but I have submitted all the documents that I was able to uncover, and I placed them before you and your committee. And in such a short period of time, I did not go into many of them. I'd advise that somebody be assigned to go through and distill and digest all of those reports. That's the only advice I'll make to the committee.

Mr. PETERSON. Thank you. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentleman.

Ms. Morella, you have the floor, and you've been very patient.

Ms. MORELLA. Thank you very much. I want to thank our three witnesses' very eloquent testimony given very passionately, because you all in your own areas of expertise believe strongly, and I appreciate that very much.

I just have one question, perhaps to Congresswoman Lloyd, and I think it will be the kind of question I'll probably direct to Dr. Kessler on the next panel, because what I'm curious about is, is it true that breast cancer survivors do have access under certain circumstances to silicone breast implants? I mean, it seemed to me that there was some element of choice, maybe it isn't very clear, if they are involved with a clinical trial or—I think there was some stages—are you aware of that?

Was anyone telling you about that, Congresswoman Lloyd, or do you think it's not adequate? I wanted to get your response.

Ms. LLOYD. No. When I received mine, I had to take part in a clinical study, and there is a certain element of fear in this. Connie, I think it would have been much better, as I stated earlier, if we would allow women when the issue came up after the Connie Chung story, if we could have had an informed consent decree for women.

But I would just like to remind you one more time, that more women died because of this moratorium than could ever be killed with silicone gel implants.

Ms. MORELLA. Because of the anxiety, the concern?

Ms. LLOYD. We went about it in the wrong way.

Ms. MORELLA. So you think of course informed consent, but at this point, we'll find out from Dr. Kessler whether there is a way that women can still get the silicone gel implant.

You think it's too complicated?

Ms. LLOYD. Is silicone only harmful in women's breasts? Why did we pick women's breasts as a topic for use of silicone? Why didn't we pick up some of these other medical devices made of silicone?

Mr. SHAYS. Excuse me, Marilyn. Could you make sure you're talking into the mike. When you look this way we don't pick you up as well.

Ms. LLOYD. It seems to me that if we're talking about the safety of silicone gel, why could it be bad only for women's breasts, why not some of these other devices that we have listed here.

Ms. MORELLA. I guess what I'm trying to get at is, can we have these silicone gel implants now under certain—can anybody have—if they get into a trial?

Ms. LLOYD. I can have them, but as far as I know, women cannot have them that want to have cosmetic surgery. And there again, I think this is a real put-down for women that other people can decide whether—they need or should have an implant.

Ms. MORELLA. Well, that it is part of choice, I would agree with you in that regard. Thank you. Thank you, Mr. Chairman. I really have no other questions.

Mr. SHAYS. I thank the gentlelady.

Mr. Fattah, you have the floor.

Mr. FATTAH. Thank you, Mr. Chairman. And let me ask former Congresswoman Lloyd a question, since you served in this body and were involved in this issue in a number of different ways. We seem to be having a debate about the validity of research conducted by the private sector. Have there been, and what is your view point about, Federal efforts to do research on this issue so that we could find some objective information on which to base, say, informed consent or some further ruling by the FDA in this matter?

Ms. LLOYD. Congressman, I think we should listen to the advice of our knowledgeable medical community, from our scientists and our doctors. I don't think that the opinion of junk scientists should come into play.

Mr. FATTAH. But my question is whether there has been federally sponsored research on this question?

Ms. LLOYD. Oh, yes. A lot of very fine doctors and scientists work for the Federal Government. As you know, when I was a Member of Congress, I worked very hard to increase the funding for more research, and certainly I hope the Federal Government will continue funding needed research and I hope the FDA will act responsibly.

What we need is more research, but until we do find a cure, all we have is time.

Mr. FATTAH. It seems though that this phenomena related to implants seems to leave out, at least most of the research that I've seen, any real reference to minority women. And I note that breast cancer has a disastrous effect in terms of its impact upon minority women in this country.

Ms. LLOYD. I'm glad you bring out this point, because there are more minority women—especially Hispanics—that develop breast cancer and die because they did not receive timely treatment. And, again, all we have is time, and all we can do is try to educate more women to take control of their body, to do their monthly exams and have check-ups. It's one of the reasons that the Congressional Women's Caucus has called for having mammograms paid for by

Medicaid. We must have our mammograms for at-risk women financed annually.

So I would hope you would continue as a Member of this Congress to fight for Federal research dollars for women's health, with special attention to needs of minorities.

Mr. FATTAH. Well, I intend to, and thank you very much for your very compelling story. I'm glad that the chairman arranged for you to be here.

Let me move now to Congressman Traficant. I think it's fascinating that we could have Members of the Congress now be concerned about making statements that could impede the integrity of institutions, given all of the statements that have been made in this Congress over the last several months that are absolutely irresponsible.

But I think that your point, having served on a number of university boards and particularly related to our health care institutions in Pennsylvania, it is not irrelevant, that a major grant would be made at the time that supposedly objective research was being conducted. And any university or board thereof should be concerned if such an offer were made of such a significant amount.

I'm glad that you've raised it, and we need to find out whether it's true, because I do think that it does rise to the level of significant questions about what the impact of such research would be.

Mr. TRAFICANT. Yeah. Just let me just respond, because I think you've touched that point very well. But I think more importantly, everybody is overlooking the fact is we're talking about more research. I'm not so sure the Congress of the United States has seen all of the research on this issue.

That's what my goal is. What was withheld from the Congress of the United States. What documents were not submitted. Was there in fact scientists who performed certain studies that also had a monetary link to those with vested interests.

We have—I don't think anybody more than the chairman there, Mr. Shays, has looked at an issue relative to tobacco where for years tobacco was completely safe and much of the research was generated from that industry. And you'll get still scientists today on the payroll of those tobacco companies tell you how safe they are.

Both my parents died of complications directly attributed to smoking. They were always wondering good, bad, indifferent, like many Americans. Much of the study performed in that 1994 Harvard Study, none of it dealt with women who had had breast implants after 1990. Much of it was done on women that had a short experience with breast implants.

Now, if we looked at a 25-year old sample of American people and looked for health-related issues from tobacco and health, I don't think we'd find that many. But you start looking at 55, 60-year-olds and what I'm saying is that is something I believe Dow Corning has, in my heart, they haven't shared with us.

I'd like Congress to say, look, give us the truth, give us the facts.

Mr. FATTAH. Let me just ask the final member of the panel a quick question. Congressman, is there any medical reason why—and I'm going back to the question that was asked by former Congresswoman Lloyd—one would be concerned about this material in

a breast implant but not concerned about it in these other—in the shunts or in other ways that this material is used?

Dr. GANSKE. Well, the silicone gel material has been used in penile implants and in testicular implants, but hasn't generated as much interest as this.

But let me, if you would, respond to Mr. Traficant's statement about this recent study that has come out from Harvard on silicone breast implants and the risk of connective tissue disease.

In an effort to be up front, the authors noted at the beginning that in a prior study they had received grant money from Dow, but this study was funded by the NIH. And furthermore, if you read how the methodology of this study was done, specifically it says that researchers who entered data on implant history were blinded to information about medical histories of the women.

So, in other words, there were proper precautions taken to avoid bias in this study, and furthermore, the reason the study was done with a cutoff in 1990, was to eliminate bias in a study related to all the publicity that has surrounded this subject. And the follow-up in fact on the average was 9 to 10 years plus minus 3 to 4 years. So it's a pretty good study and I think it is unbiased.

Mr. FATTAH. Are you satisfied that there is enough research on this issue that an informed opinion can now be made on this question?

Dr. GANSKE. Yes. I believe that the American College of Rheumatology for instance has looked at all of this, and they are much more expert in rheumatology than I am by any means. They have looked at all of the evidence to date on this, and have basically said that they see no connection between silicone gel implants and connective tissue diseases. And so I think that informed consent should be sufficient to allow these implants to be used.

Mr. FATTAH. Thank you very much, Mr. Chairman.

Mr. SHAYS. I thank the gentleman.

Mr. Fox.

Mr. FOX. Thank you, Chairman Shays. Congresswoman Lloyd, we do appreciate your testimony today and you're coming here with your very poignant account of what has happened in your life and how it affects many women across the country. We're very hopeful that as a result of your testimony and your support and leadership, that we can make some changes in the country which are beneficial to all women and we in Congress are certainly appreciative of your efforts. I'm sorry I didn't get a chance to serve with you, but we certainly are continuing by working together here at this stage.

In your opinion, how should the FDA have weighed the fact that many women avoid or delay cancer detection screening due to the fear of a disfigurement in the agency's assessment of the risks and benefits of silicone gel breast implants?

Ms. LLOYD. Well, certainly, it's my opinion as I stated earlier, that the moratorium did more harm than implant could have done. As Dr. Ganske stated we don't have any evidence that the implants have done any harm.

But I truly believe that if we had just moved ahead as the first FDA advisory panel had suggested to the FDA, and they had allowed women to look at all the evidence and then make the decision for themselves, I think it would have been a much wiser

course of action. And I think that should still be the woman's decision, and I think that she has the information available to her that she should make this for herself and her family. It's a tough choice.

Mr. FOX. Well, women do have access to the implants, but it is a special exception, this creates an uncertainty about safety. Was the uncertainty because the FDA has failed to act to discourage women from seeking treatment, in your opinion?

Ms. LLOYD. Well, Congressman, frankly, I think the whole thing for the past 4 years has been so blown out of proportion that at the present time, most women that go in to have a mammogram are scared to death, and they aren't having the regular screenings that they should have.

And look at the women who have had them removed unnecessarily, they spent thousands of dollars having them removed. So, yes, I think great harm has been done, and I think that we should move ahead and put the facts before the women of this country and let them make their decision with their doctor on what is right for them.

Mr. FOX. This question would probably be for you and Congressman, Dr. Ganske, and what I've learned from testimony from Sherry McManus who is with us today is that there has been a great deal of paperwork required in order to get the exception, and I wondered whether you found in your studies and the involvement that it might take a physician as much as 1 day or more to fill out the paperwork that's connected with this procedure, Doctor?

Dr. GANSKE. Well, I think there is a lot of paperwork, but that doesn't particularly bother me. I mean, I personally used three or four forms, including ones that have been, of course, put out by the FDA. And that to me is just part of informed consent and I don't mind. I didn't mind going through that. If you had to go through it two or three different times, it was all right.

Mr. FOX. Did that cause a burden for you, Congresswoman?

Ms. LLOYD. I felt informed consent when I received my implant, yes.

Mr. FOX. What would you have the FDA do now at this point?

Ms. LLOYD. What?

Mr. FOX. What would be your course of action if your words today could be a single message to the FDA, what would they be?

Ms. LLOYD. I would allow all women who want to have an implant to have them with an informed consent. She and her physician would have all the valid information before her, that it would be her decision based on sound research. I think it's very patronizing for women that the FDA can decide whether or not they deserve an implant.

Mr. FOX. Very good. Thank you, Mr. Chairman. Thank you panel.

Mr. SHAYS. I thank the gentleman.

Mr. Barrett, welcome to the committee. You've been here for a while and I appreciate your patience.

Mr. BARRETT. Thank you, Mr. Chairman. Maybe, Mr. Traficant, I can follow-up on the question that was just asked of Congresswoman Lloyd who it's nice to see back here. You heard her say that she would like to see the FDA have a policy of just informed consent. What is your response to that?

Mr. TRAFICANT. Well, I think, No. 1, that we should get all the facts out, review it very carefully. And I believe, if in fact, what we have found in some of the studies, that neither has talked about, that it usually takes 8 to 15 years before you can really define whether or not there has been any damage to the autoimmune system, that at least there should be a warning.

That, if in fact, the Government of the United States, after reviewing all these documents in evidence believes that it is the woman's choice, that there could be certain risks related, cite what those risks are purported at least to be, and let the woman have enough information so that she could make a decision.

I certainly don't want any woman to die from cancer because they were afraid that they would be disfigured by going in and finding out the truth. But on the second hand, let me say this, if there are related health risks, that Congress can at least come with a policy that says, OK, there are certain risks. Whether or not this side is right and this side is right, there is enough smoke here to say, there is a possible risk, here is what the risks are, and in fact, mandate that those risks be known to women.

And if women are then going to go forward, that would be their choice. So I am not here trying to stop Marilyn that opportunity, I really mean that. I am here about lying, withholding, shredding documents on or about the time where an individual, a vice president testified before this same subcommittee in 1990, in 1990, Mr. Chairman.

And if I could just maybe close with this, Mr. Barrett, the specific incident occurred on Friday, December 14, at 5:15 p.m., Greg Tyse a senior litigation attorney in the corporate legal department approached Marianne Woodbury a research scientist of my staff in her office. He asked that she destroy all copies of a memo she circulated 2 days previously.

The memo contained a data analysis of a recent National Center for Health Statistics survey of surgical device, et cetera. This was submitted by the company's corporate medical director to the company's ethic's committee that felt that their whole operation would be compromised by some executive coming down and asking them to destroy documents.

Now, I don't know what the truth is here. I'm not trying to stop women from breast implants. But I want women to know the truth of this issue, and I'm not satisfied from what I've seen that they're getting that truth.

Mr. BARRETT. Congressman Ganske, how satisfied are you?

Dr. GANSKE. I think that with informed consent, with the studies that have been done, not just in the last couple of years, but have been ongoing for 20 years, showing that implants are safe, that no medical device is without some risk of complication, that when you balance the benefits, I believe that it comes down in favor of being able to utilize these devices.

And I must say that gel implants were used as opposed to saline, because many people thought that they were better implants. And practically speaking, at this point in time, gel implants aren't available because of the litigation problem.

Mr. BARRETT. You referred to the litigation problem, how concerned are you with their safety when you look at the lawsuits that

have been settled? How does that factor into your analysis? In other words, as a person who is not a medical person at all, if I saw that there were billions or millions or whatever the figure is in lawsuits, I would think, well, maybe it's not just a spurious lawsuit.

Dr. GANSKE. I think there are a lot of examples of litigation in the past where over the years the science has proven that there was minimal to no risk. We can go into the instances of anti-nausea medicine for women in pregnancy and so whether the science is valid or not and that the risk is exceedingly small, that doesn't necessarily mean that you're going to ignore a litigation problem in terms of whether you use or do not use a medical device.

I think it really does affect whether these devices are available or not.

Mr. BARRETT. And I understand that in terms of the wide array of different procedures and devices on the market, but specifically with respect to this one, are you comfortable enough with the litigation to say, OK, there's no problems?

Dr. GANSKE. I am personally comfortable enough with my review of the literature that these devices are safe.

Mr. BARRETT. Congresswoman Lloyd.

Ms. LLOYD. I believe the scientific information supports my belief that they are safe, and as I stated earlier, we must do all we can to encourage women to see their physicians and have regular checkups. They should have their self-examinations and do all they can to be knowledgeable. And we should never forget there is no cure for breast cancer. All we have is time.

Mr. BARRETT. Let me ask you if I could to make sure, because I'm new on this issue. With the moratorium, if a woman has had a mastectomy, can she have the implant following that? What is the FDA rule on that? Does that fall into cosmetic or not? I honestly don't know. Do any of you know?

Dr. GANSKE. Let me answer that. A woman can use, obviously, silicone saline implants are available, but this is a matter that is coming up for additional FDA review. The silicone gel implants are available, but you need to get—enter a patient into a registry and go through a number of things, and I think that as I said before, practically speaking, because of the litigation situation, just a lot of plastic surgeons just will no longer use them.

Mr. BARRETT. OK. Thank you very much.

Mr. SHAYS. Mr. Gutknecht, do you intend to ask questions? You're welcome to do so.

Mr. GUTKNECHT. I'd like to, Mr. Chairman, if I could, ask one quick question of Representative Traficant. Do you have any concern—and one of the things that I've heard, and we have a lot of research and medical technology companies up where I come from—and one of the big concerns that I hear from many of the researchers and the companies is that because of the litigation and some of the things that have gone on, many of the major companies—particularly the major chemical companies—don't want to offer things like Dacron and simple component products that would go into some of these new technologies.

Does that concern you at all?

Mr. TRAFICANT. Absolutely. I think that there has been litigation in the past, it was designed in fact to cause problems. It has. I have great concern over a fine, large company that employs an awful lot of Americans where a technology is being, many times, from what I hear now, exported overseas. And I'm the No. 1 guy in the Congress probably to oppose those types of phenomenons.

But I don't see that as the crux of this issue. I see full disclosure and that's my purpose here. I think you should be able to make a decision predicated on all the facts not just that that has been force-fed to you. And I have doubts, and I believe I have submitted in documents evidence now that will prove that those doubts really exist.

Let's get it all on the table. I am most likely in agreement with both of my co-panelists here. But I believe there is more of a risk than what has been stated and the reason why we're not getting all that risk is because of the tremendous amount of litigation that is there and what are the costs implications.

Now, that's unfortunate because I'm not concerned about the costs in the litigation process, but what is the valid health situation of the American women. Do they have all those facts as a 30-year and say, look, when you're 40, 55 years old, there is a possible link to rheumatoid arthritis, et cetera, and do they have all those facts.

And so I think that is more or less what my purpose is here. Did they withhold documents? Did they lie to us? Did they shred documents that spoke to salient points that could give us the truth of this issue? Are they in fact driving the litigation process by denying facts? We've only seen the studies that support their positions. That's all I'm saying. I'm saying, get all of the facts.

When we get all the facts, I'm sure we will make a good decision.

Mr. GUTKNECHT. Thank you, Mr. Chairman, I yield back.

Mr. SHAYS. I thank the gentleman. All three of you have been excellent witnesses.

Mr. TOWNS. Mr. Chairman, excuse me. Let me ask one question just before you close out.

And I just sort of really—something you said is sort of—it's on my mind, Congressman Traficant, are you suggesting that Congress should require manufacturers of silicone implants to issue warnings similar to those issued on cigarette packaging?

If so, unlike the case of with cigarettes, most women receiving the implant would never see the packaging. How could Congress act to ensure that women are adequately informed of safety concerns? Am I understanding you correctly?

Mr. TRAFICANT. Mr. Towns, I used the tobacco issue as a co-relative issue that has spoken to years of research driven by vested interests. And it took the Congress years to come to some position where the Congress mandated certain warnings for cause.

Now, I'm not saying that every breast implant should have a tag put on it and say the Congress of the United States warns everybody this could be dangerous to your health. But I think in some process—I'm first saying, get all of the facts, after we do, I believe that women should be—have the total truth objectively from all parties.

Maybe Dr. Ganske is right. Maybe the industry is right. Maybe there are no complications here, no safety risks. But I have some real doubts when people shred documents withhold evidence, do not submit reports, and then we find things in files. I'm saying get that and then we construct a policy. I'm not trying to withhold anything, but so that women would know the truth.

I question the truth at this point on this whole issue, and I think it's driven by the industry, and I think Congress is incumbent upon us to get to the bottom of it and get all the facts.

Mr. TOWNS. Thank you very much, Mr. Chairman, I yield back.

Mr. SHAYS. I'd like to again thank all three witnesses. You have been extraordinarily helpful in serving the ball into play and giving us—I think a very balanced view of the differences. We really appreciate you being here and in terms of your point, Mr. Traficant, all of the facts won't be heard today and we're not going to be getting into some of the facts.

In deference to corporate funding of studies, I just make the point to you that in some cases the FDA requires corporations to do studies, ask institutions to do them, and ask them to fund it. And so I just want to provide that information as well.

Dr. Ganske, Mr. Traficant, and Congresswoman Lloyd, thank you.

We call on our second panel. It is comprised of Dr. Kessler and he brings with him Bruce Burlington, and if you have anyone else that you choose to come and assist you in answering questions, Dr. Kessler, we'll swear them in as well.

Let me just say that if there is anyone else that you may call to answer a question, even if they are sitting behind you, I would want them to be sworn in. So if anyone who might assist you and so on, and we welcome as well. So any of those who will be, in fact, testifying, if they would rise at this time to be sworn in.

[Witnesses sworn.]

Mr. SHAYS. I will affirm that everyone has answered in the affirmative. If we could, Dr. Kessler, just those who have stood up, if they could introduce themselves and we'll start with you, Joseph Levitt and if you would just explain who you are and your job. We'll just go through the introductions so we know who is here.

Mr. LEVITT. My name is Joseph A. Levitt. I am the Deputy Director for Regulations and Policy in FDA's Center for Devices in Radiological Health.

Mr. SHAYS. Thank you. Bruce Burlington, if you would introduce yourself.

Dr. BURLINGTON. I'm Donald Bruce Burlington. I'm a physician, and for 2½ years I have been the Director for the Center of Devices in Radiological Health at FDA.

Dr. MERKATZ. My name is Ruth Merkatz. I am a nurse and I am the Director of the new Office of Women's Health at FDA.

Mr. SHAYS. What we'll do is if we call on someone who is sitting behind you we'll have them introduce themselves at that time. Dr. Kessler, let me just say that in your business you have to have thick skin, and I know you are a dedicated public servant. I know there is going to be lots of disagreement on what you say, and you're aware of that.

We're going to try to stay on topic and deal with this extraordinarily important issue. I am happy you were here for the testimony of the three Members of Congress, because I think it is a good introduction to this issue and I appreciate your willingness to listen to their testimony as well.

And so what I'm going to suggest is that you give your statement as you choose. I think it would be good to summarize, but you've heard the testimony before, you know the issue, and I think it's important for you to put everything on the record that you feel needs to be put on the record.

We're going to go through and ask questions of the Members and we'll do the 5-minute rule. If a Member needs to pursue a question, we might give them a little more than 5 minutes and we will then do a second pass with the Members that are here.

So, Dr. Kessler, welcome and thank you for being here.

**STATEMENT OF DAVID KESSLER, DIRECTOR, FOOD AND DRUG ADMINISTRATION, WASHINGTON, DC; ACCOMPANIED BY DONALD BRUCE BURLINGTON, DIRECTOR, THE CENTER FOR DEVICES IN RADIOLOGICAL HEALTH; JOSEPH A. LEVITT, DEPUTY DIRECTOR; AND RUTH MERKATZ, DIRECTOR, THE OFFICE OF WOMEN'S HEALTH**

Dr. KESSLER. Thank you very much, Mr. Chairman. My prepared testimony provides considerable detail about silicone gel-filled breast implants and broader questions about medical grade silicone used in medical devices. And Dr. Burlington will comment after I am done on the broader questions.

Since that statement has been submitted for the record, I would like to focus on its most important points. Although the scientific and regulatory issues raised by silicone gel breast implants are indeed complex, the task of the FDA can be simply stated. It is the job of the FDA to ensure that breast implants are safe and effective.

The role of manufacturers is to provide evidence of safety and effectiveness. This is an affirmative duty. Simply put, manufacturers must show that their products are safe. Because breast implants were marketed for some 30 years because they were grandfathered under the medical device law, there has been some confusion about that point.

In April 1991, FDA called for the safety and effectiveness data for these medical devices. That November, at a 3-day meeting, an FDA advisory panel of outside experts agreed that the manufacturers' data were insufficient to establish the safety and efficacy of breast implants.

Nevertheless, the panel recommended continued availability of the implants under certain conditions while manufacturers collected additional data under a strict time table set by the FDA. After that meeting, FDA received a large volume of documents that suggested that adequate quality control procedures were not in place to prevent safety problems, that animal safety studies were not consistently completed or even undertaken before the products were promoted for use in women, and that indications of problems including implant rupture, gel bleed and migration and contracture had been evident years earlier.

This new information convinced us of two things. The advisory panel needed to revisit the issue and women might be at greater risk than had been realized. On January 6, 1992, I requested a voluntary moratorium on the distribution and implantation of silicone gel-filled breast implants.

The advisory panel met in February, reviewed the newly available data about implants and connective tissue diseases and the relationship between implants and rupture and expressed greater concern about implants than it had in November. The panel recommended that further use of implants be restricted to women participating in clinical trials.

After 30 years of use, after this device had been implanted in an estimated 1 million women, we still did not know how long it lasts in the body? How often it ruptures? How frequently it had to be replaced? And what are the consequences of that rupture?

To answer these questions and to preserve the option of access for patients with breast cancer, on April 16, 1992, FDA lifted the voluntary moratorium and announced that silicone gel breast implants would be available with informed consent and under clinical trials.

In the 3 years since 1992, important research has been undertaken on some of the critical scientific questions concerning these products. In these and other areas more research is still needed.

Let me take a moment to summarize the current state of knowledge. Safety concerns fall into two categories, local complications and systemic disease. Examples of local complications are implant rupture, capsular contracture, infection and surgical complications. Although my formal testimony cites several studies on the rupture rate of silicone gel breast implants, the bottom line is that we still do not know what that rate is or how it changes over time.

Several published studies suggest that the rupture rate may be much higher than the 0.3 to 1.1 percent rate manufacturers originally estimated, and that the rate may increase as the implant ages. In a 1992 published study, that analyzed the screening mammograms of 350 women, there was a 5 percent rupture rate in asymptomatic women who did not suspect a rupture had occurred. It was referred to as silent rupture.

In a 1995 study, investigators found frank ruptures in 51 percent of patients and either frank rupture, severe silicone gel bleed or both in as high as 71 percent of the patients. Published studies to date suggest a rupture rate between 5 and 51 percent, an enormous range, and unfortunately we do not know with any confidence where within that range the real rupture rate lies.

While local complications are clearly related to the presence of the breast implant, possible links between systemic disease and implants are much more difficult to prove or disprove. We are talking about a type of autoimmune disease called connective tissue disease including the very rare conditions such as scleroderma and more common conditions such as rheumatoid arthritis. It is only within the past year and a half that several epidemiological studies of this possible connection have been published.

There are two important conclusions to be drawn from that. We now have reasonable assurance that silicone gel implants do not cause a large increase in traditional connective tissue disease.

These studies, however, cannot rule out either a small but significant increased risk in traditional connective tissue disease or the risk of atypical disease.

If 1 million women have silicone gel implants, even 1 percent translates to 10,000 women. So for some women we still do not have all the answers. In the end, Mr. Chairman, this is about getting the important data FDA needs to protect and inform consumers.

Dr. Burlington.

Dr. BURLINGTON. Thank you, Mr. Chairman. If I may briefly touch on a couple of issues that Dr. Kessler has asked me to address for him.

I'd like to make three points. First, silicone is not one product but in fact a wide array of chemicals used in many different products. Second, that in the concern about the availability of silicone materials, the agency and industry have worked closely together to allow new silicone manufacturers to be used as material suppliers by existing device manufacturers.

Third, the risk benefit assessment provided in the statutory framework is flexible. It's categorized according to the level of risk, and it's appropriate given the broad array of products that we regulate as medical devices.

In addressing the question of biomaterials, if you'll look to the chart on my left, your right, you can see silicone products that are in fact polymers. We have a drawing of a monomer that is one building-block of these polymers. It has silicone and oxygen in the center and carbon atoms going off the top and bottom.

These monomers are strung together in long chains and sometimes in circles in a wide array of ways. You can see in the second line that they can be oils which are usually linear polymers without a lot of substitutions and without a lot of cross-linking.

In the middle we have an illustration of gels where there is limited cross-linking, but usually not fillers. And these gels have a semi-solid consistency. And at the bottom we have a drawing to illustrate silicone elastomers which are highly cross-linked and contain fillers and other substances in order to give them a rubberlike consistency.

I assure you the chemistry of these products is almost as complex as that which we know as organic chemistry. What we need to understand from this is that there are a wide array of properties, often valuable properties in interactions with the human body that are potentially attributable to these different chemicals.

They are not one—they are not all the same. The concerns have been greatly less for the elastomers and for the oils. We have a large number of approved products in these categories. In fact, we've gone through and counted over 155 classes of products, either approved or under investigation, including products that you have illustrated on the exhibit table in front of us here and that we've heard previously testified about.

The issue of materials availability, as this committee knows, came to a head when Dow Corning in December 1992, announced the discontinuation of implant-grade silicones to be effective in March 1993, at least on the open market.

Subsequently, new companies have entered into the market place and the agency and the industry have worked together to define that minimal set of testing which would be appropriate to allow substitution of materials from these new companies in the many valuable applications. Where necessary, we have looked beyond that minimal core set of testing and there is one particular product previously at issue here, the hydrocephalus shunt, where because of direct exposure to brain tissue, there is a particular concern about the various chemicals used in manufacture of the elastomer to make sure there is not a toxicity to brain tissue.

A second aspect of concern about that shunt is it contains a flap valve, a valve to make sure that fluid drains out of the brain but doesn't reflux back into the brain. That flap valve has got to open at the right pressure. If it becomes sticky, as rubber is wont to do over time, and doesn't open right, then the shunt won't function right.

For that specific instance in a critical application we are working with manufacturers to accelerate the testing and assure the continued availability of these critical products.

Beyond looking at substitute sources biomaterials, it's important to understand that we don't look at the materials in the abstract. We look at the materials in the context of a product in which they are used, because the risk varies tremendously whether they are used outside the body, on the surface of the body, for a temporary implant or for a tube going through the body wall or for a permanent implant. And that requires a different level of assessment of what is the level of scientific data needed to assess safety and efficacy.

The assessment is based on the standard of valid scientific data, not conjecture. However, where there are risks because of areas that are simply not known, where we did not have data to address the risks, we must also take that into consideration in classifying products into class 1, 2 or 3 and in terms of interpreting the standard for entering the market.

I believe this structure provides flexibility appropriate to the diversity of products that we regulate. Some are used for life or death situations, like implantable cardiac defibrillators or hydrocephalus shunts. Others are as straight forward as tongue depressors and clearly need a lesser level of data and scrutiny.

In summary, I would like to reiterate silicones are many materials, not one. The agency looks at these materials in the context of the products in which they are used and the specific risks attributable and benefits attributable to those products. We have had a lower level of concern about elastomers and oils than has been raised about gel over the last few years, and the agency and industry have continued to work together to assure availability of silicones and silicone made products so that the health needs of the American public can be met. Thank you, Mr. Chairman.

[The prepared joint statement of Dr. Kessler and Dr. Burlington follows:]

JOINT PREPARED STATEMENT OF DAVID A. KESSLER, M.D., COMMISSIONER, FOOD AND DRUG ADMINISTRATION AND D. BRUCE BURLINGTON, M.D., DIRECTOR, CENTER FOR DEVICES AND RADIOLOGICAL HEALTH, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH AND HUMAN SERVICES

Thank you, Mr. Chairman. My name is David Kessler, Commissioner of Food and Drugs. With me this morning on the panel are Dr. Bruce Burlington, Director of FDA's Center for Devices and Radiological Health (CDRH); Mr. Joseph A. Levitt, Deputy Director for Regulations and Policy, CDRH; and Dr. Ruth B. Merkatz, Director of our Office of Women's Health. I am pleased to be here this morning to discuss the issues surrounding silicone gel-filled breast implants and the implications for other medical devices that utilize medical grade silicone.

BACKGROUND ON SILICONE BREAST IMPLANTS

Silicone breast implants came onto the market in the 1960s. They pre-date the 1976 amendments to the Federal Food, Drug, and Cosmetic Act (the Act), which requires FDA to review and approve the safety and effectiveness of many new medical devices. Those amendments also require FDA to establish a systematic way to collect and evaluate data relevant to devices on the market before 1976. Manufacturers of these devices, when called to do so by FDA, are required by law to provide safety and effectiveness data for devices, like breast implants, that had been marketed for many years.

In January 1982, FDA published a proposed rule to classify silicone gel-filled breast implants into class III. The final rule was published on June 24, 1988. Under the law, manufacturers have a minimum of 30 months following final classification to submit the data on safety and effectiveness. On January 6, 1989, FDA announced that silicone gel-filled breast implants were one of 31 class III devices with the highest priority for requiring the submission of safety and effectiveness data. FDA published a proposed rule to require safety and effectiveness data on May 17, 1990.

FDA called for the safety and effectiveness data for silicone gel-filled breast implants in a final rule on April 10, 1991. Premarket Approval Applications (PMAs) were due to FDA by July 9, 1991. Once submitted, the law gives FDA 180 days to reach a final decision. Let me emphasize that the law requires manufacturers to prove affirmatively, with valid scientific data evaluated by FDA, that their devices are safe and effective. Several manufacturers submitted data in the form of PMAs. The applications from four of these manufacturers did include some clinical data. The applications also contained, however, major scientific deficiencies. In the Agency's opinion, none of the applications provided sufficient data to assure safety and effectiveness.

FDA brought to its General and Plastic Surgery Devices Panel the applications from these four manufacturers. Despite their major deficiencies, FDA believed these applications warranted public evaluation by the advisory panel. The purpose of the panel was to advise FDA as to what we could tell the public about the safety and effectiveness of these medical devices based on those data.

This advisory panel was composed of a broad range of experts, including representatives from the fields of plastic surgery, oncology, epidemiology, internal medicine, immunology, radiology, pathology, gynecology, toxicology, sociology, biomaterials, and psychology, as well as industry and consumer groups.

The panel spent three days, November 12, 13 and 14, 1991, listening to information regarding the PMAs, and hearing from physicians and patients, advocacy groups and others. Significant concerns were discussed regarding implant rupture; bleed; and potential carcinogenicity of implant materials. Questions were raised about the possibility that an implant might interfere with the detection of breast cancer through mammography. On the other hand, many individuals who testified before the advisory panel presented information about the psychological benefits of implants. The panel heard from those who strongly supported continued availability of these implants, as well as from those who felt the devices were unsafe and urged FDA to remove them from the market.

The panel's deliberations resulted in a series of conclusions and recommendations. First and foremost, they concluded there were not sufficient data about the risks and benefits of these devices. Basic questions were unanswered regarding the chemical properties of the silicone gel, the physical properties of the implants, including the shell, and the possible adverse effects of implants. The panel agreed with the assessment of FDA scientists that the clinical data provided in the applications were not adequate to allay safety concerns. Panel members expressed the view, however, that the devices appeared to serve what could be viewed as a public health need. They recommended, therefore, that silicone gel-filled breast implants continue to be available under specified conditions, and that a patient registry be established while

manufacturers collect additional data. They also urged FDA to hold manufacturers accountable to collect the additional data without delay.

After the meeting concluded, FDA became aware of information about the implants that was not available for presentation to the panel.

First, FDA received a large volume of documents that suggested that adequate quality control procedures were not in place to prevent safety problems, that animal safety studies were not consistently completed or even undertaken before the products were promoted for use in women, and that indications of problems—including implant rupture, gel bleed and migration, and contracture—had been evident years earlier. In addition, FDA was advised that some physicians and researchers were suggesting an association between connective tissue disorders and breast implants. The Agency contacted a large number of physicians who specialize in diseases of the immune system. These individuals confirmed that there was a concern regarding a possible link between silicone gel implants and the development of one of these diseases.

We became convinced of two things. First, consumers might be at greater risk than we had anticipated earlier. Second, the advisory panel needed to revisit its recommendations in light of this new information. On January 6, 1992, therefore, I requested a voluntary moratorium on the distribution or implantation of silicone gel-filled breast implants until FDA and the advisory panel had an opportunity to consider the newly-available information. The manufacturers agreed to comply with the voluntary moratorium.

Shortly after the moratorium began, another issue of significant concern came to light: the phenomenon of "silent rupture." These were situations where implant ruptures were undetected by the patient. In the case of rupture, the gel has the potential to spread through neighboring tissues. When rupture occurs, the standard practice is to have the device surgically removed and replaced.

We re-convened the advisory panel for a second meeting on February 18, 19 and 20 1992, to review this new information and reach a decision regarding the future availability of silicone gel-filled implants. The committee was asked to look at the incidence and hazards of rupture and bleed, the possible link to autoimmune disease. and the industry's record on testing, reporting and marketing of these implants over the last thirty years. The members expressed heightened concern regarding the safety of the implants. The panel recommended:

- That further use of implants be restricted to women participating in scientific protocols. Women who need breast reconstruction should be allowed unrestricted access to the protocols. The number of augmentation patients, however, should be limited to that needed to answer specific safety questions about the implants.
- That epidemiological studies be conducted to assess the risk of autoimmune disease, though concluding that no causal link had been established between autoimmune disease and silicone gel-filled breast implants.
- Women with breast implants, even if asymptomatic, should be checked regularly by their physicians. Women should not be routinely x-rayed to check their implants if they are not having problems. If a woman with implants is in the age group where regular mammograms are recommended, she should be sure to have them. Special mammography techniques are necessary in order to detect breast cancer in women with implants.
- Manufacturers must provide adequate preclinical data on the implants, such as the chemical and physical characterization of the implant materials and their resistance to stress and rupture.

At this point, the Agency had three options on how to proceed under the statute. It could: (1) approve the applications; (2) deny the applications; or, (3) if there was a public health need, allow continued availability of the products while the manufacturers supplemented their applications with additional scientific data.

Approval was not justified given the absence of data to support a finding of safety and efficacy. Complete denial of the PMAs would have resulted in removal of the products from the market, making them unavailable even to women who required reconstructive surgery. A compelling case had been made that a public health need existed for women seeking reconstructive surgery. The Agency, therefore, decided on a combination of the second and third options, based on the indications for use.

The PMAs for implants used in breast reconstruction were held open to allow continued availability while the needed data were collected. Consistent with the panel's recommendations, we required that women seeking breast reconstruction with these implants enroll in scientific protocols so that the needed scientific information would be obtained. The deadline for completing the submission of data and the Agency's subsequent review, as defined in the medical device law, has been extended indefinitely based on public health need. The data required to complete the review must

be collected by the manufacturers and submitted to FDA. To date, those data have only been partially collected.

The PMAs for breast implants used in augmentation were officially denied by FDA. These devices may be used for augmentation only with an Investigational Device Exemption (IDE) in an FDA-approved research study.

In either case, for breast reconstruction or augmentation, silicone gel-filled breast implants are available only through clinical studies conducted under a protocol. This is the way to answer the questions of women, doctors, and FDA, and those of our advisory panel of outside experts, regarding the safety and effectiveness of these implants. With these actions on the PMAs on April 16 1992, the moratorium ended. Manufacturers can fulfill their legal, affirmative obligation to demonstrate the safety and effectiveness of silicone gel-filled breast implants by conducting the required clinical studies.

## CURRENT INFORMATION REGARDING THE SAFETY OF SILICONE GEL

Today I would like to give you an update on the safety of silicone gel breast implants based on the published literature and respond to some of your questions about silicone in general. The good news is that in the three years since 1992, important research on these products has been undertaken, some by FDA staff, on some of the critical scientific questions. In these and other areas, more research is still needed. FDA has worked with the industry and academic community to encourage needed research and to establish a research agenda.

Let me take you back more than three years, to review with you the kinds of questions facing the Agency in early 1992. At that time, very little was known about the safety of silicone gel implants.

The questions included:

- How frequently do these devices rupture or cause other local complications?
- What do we know about the relationship between silicone gel implants and auto-immune (connective tissue) disease?
- What are the possible mechanisms of silicone gel-mediated immunological reactions?

These questions are very important, and they are not easily answered. But we do have much more information about some of them than we did three years ago. Vigorous research has been conducted over the last three and a half years that has provided a larger body of epidemiological, laboratory and clinical studies than previously existed. We now are beginning to get the kinds of studies that were unavailable in our earlier review of these products.

The safety issues that concern us fall into two categories: local complications which, when they occur, we know are directly attributable to the breast implants. Examples of local complications are implant rupture, capsular contracture, infection, and surgical complications. With the second category of safety issues—systemic disease—the association between breast implants and disease is more difficult to establish. Systemic diseases include auto-immune diseases, particularly connective tissue diseases, such as scleroderma, lupus, and rheumatoid arthritis.

Let me first review what we now know about local complications.

## DEVICE FAILURE AND LOCAL COMPLICATIONS

I am going to cite several studies that examine the rupture rate of breast implants. FDA has to be concerned about the durability of any kind of implant—how long it lasts in the body, how often it fails, how frequently it has to be replaced, and what are the consequences of failure.

I want to begin with an important point about rupture rate: today we still do not know what the rupture rate is in women with silicone gel implants, or how that rate changes over time. Several studies, however, suggest that the rate may be much higher than the one percent rate manufacturers originally suggested, and that the rate may increase as the implant ages.

The study that first elevated our concern on the rupture rate issue was conducted by Dr. Judy Destouet and her colleagues and published in 1992 in the *American Journal of Radiology*.[1] They retrospectively analyzed screening mammograms of 350 women with breast implants. In sixteen of the women—five percent—there was evidence of implant rupture. It is very important to keep in mind that women in whom

[1] Destouet JM, Monsees BS, Oser RF, Nemecek JR, Young VL, Pilgram TK. Screening mammography in 350 women with breast implants: Prevalence and findings of implant complications. AJR 1992;159: 973–978.

rupture was suspected were specifically excluded from this study—the 5% percent rate, then, was in asymptomatic women who did not suspect a rupture had occurred.

A more recent study was performed by Dr. O. Gordon Robinson, Jr. and others and published in the *Annals of Plastic Surgery in 1995.*[2] Of 495 women who consulted with Dr. Robinson on their silicone breast implants, 300 women decided to have them removed. The study focuses on these 300 women. In some cases the women made the decision because they suspected an implant-related problem, and in other cases the decision was made on the basis of a general concern about silicone gel-filed implants. The investigators found frank ruptures in 154 or 51% of these patients. In a total of 71% of the patients, they found either frank rupture, severe silicone gel bleed, or both. They concluded that the likelihood of rupture increases as the implant ages. As a result, Dr. Robinson recommends to his patients that they have their implants removed prophylactically, preferably within eight years of implantation—prior to rupture.

In another study of 31 women who had 51 implants removed, whether the implant was ruptured was clearly related to the age of the implant.[3] Of those implants aged 1–9 years, 35.7% were ruptured; of those aged 10–17 years, 95.7% had either ruptured or were leaking silicone gel. In a similar study of 57 women who had 102 implants removed, of the implants aged 2–10 years, 25.6% were ruptured; of the implants 11–26 years old, 53.6% were ruptured.[4] These two studies are not representative of the rupture rate in all women with implants, but rather in women who are going to their doctor because they are having problems with their implants. They indicate, however, that the risk of implant rupture increases as the implants age.

Published studies to date suggest a rupture rate between 5 and 51%—an enormous range—and unfortunately, we do not know with any confidence where within that range the real rupture rate lies.

In addition to rupture rates, I want to mention one other complication that may affect the majority of women with implants: capsular contracture. This occurs when the scar around the implant contracts. In its severest form, it may cause painful, rock hard breasts. The frequency of this complication is unknown. Like rupture, reports in the medical literature vary considerably but suggest that some degree of capsular contracture may occur in the majority of women with implants.[5]

There are other local complications, including infection and surgical complications. While some of these are of greater concern than others, we simply have no solid information at this time about their frequency.

## SYSTEMIC DISEASES

Unlike local complications, which are clearly related to the presence of the implant, there are a constellation of diseases that some suspect silicone gel breast implants also cause. It is more difficult, however, to prove or disprove such a link. It is only within the past year and a half that several epidemiologic studies addressing this issue have been published.

The diseases in question are a type of autoimmune disease called connective tissue disease. Included in this category are very rare diseases, such as scleroderma and lupus, and relatively more common conditions such as rheumatoid arthritis.

The two types of published epidemiologic studies on this subject are cohort studies and case control studies. Cohort studies compare groups with the exposure of interest—in this case breast implants—with an unexposed group, and assess whether the rate of disease is different in the two groups. In contrast, case control studies take patients who have the disease of interest and then compare the rate of exposure—breast implants—to those who do not have the disease.

Each of these study types has its limitations. Cohort studies are most useful when studying common diseases and are of limited use when the outcome or disease is rare. Case control studies are used when the disease of interest is rare but the exposure may be more common.

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[2] Robinson OG, Bradley EL, Wilson DS. Analysis of explanted silicone implants: A report of 300 patients. Ann Plast Surg 1995;34: 1–7.

[3] deCamera D.L., Sheridan J.M., Kammer B.A. Rupture and aging of silicone gel breast implants. Plast and Reconstr Surg. 1993:91;828–834.

[4] Peters W., Keystone E, Smith. Factors affecting the rupture of silicone-gel breast implants. Ann Plast Surg 1994;32:449–451.

[5] Burkhardt BR. Capsular contracture: Hard breasts, soft data. Clinic Plast Surg 1988;15:521–532.

The two largest cohort studies published to date are the Mayo Clinic study performed by Dr. Sherine Gabriel and her colleagues[6] and the Nurses Health Study from Dr. Jorge Sanchez-Guerrero and his colleagues at Harvard.[7]

Dr. Gabriel's study was a population-based study of all women in Olmsted County, Minnesota who received a breast implant between 1964 and 1991—a total of 749 women. These women were compared to similar women without breast implants. The study found no association between breast implants and those connective tissue diseases studied.

Dr Sanchez-Guerrero's study was based on a large survey of nurses that began in 1976. It included 876 women with silicone gel breast implants. It also found no increased risk of common connective tissue diseases in women with silicone gel implants.

Neither of these studies, however, could rule out a small but significant increase in risk for rare connective tissue disease nor could they fully answer the question of whether the implants might lead to atypical symptoms related to the immune system in some women.

The only published case-control study we are aware of that examines the association between breast implants and scleroderma is by Dr. Helen Englert and her colleagues in Sydney, Australia.[8] It was published in the *Australian/New Zealand Journal of Medicine* in 1994. This study involved women in Sydney who had scleroderma or a related ailment. These women were compared to similar women without the disease. The authors concluded that they had failed to demonstrate "an association between silicone gel breast implantation and the subsequent development of scleroderma, to a risk level as low as 4.5 with 90% power." This means that this study was large enough to detect whether women with breast implants were 4.5 times more likely to have scleroderma than women in the population. But the study was too small to document any smaller increase in risk. So while ruling out a large increase in scleroderma, this study also was unable to rule out a small, but significant, risk of disease.

There are two important conclusions to draw from these studies. Based on the published studies to date, we now have, for the first time, a reasonable assurance that silicone gel implants do not cause a large increase in traditional connective tissue disease in women who have those implants. This is particularly important for those women who already have implants and have suffered from an absence of scientific information on this subject. The second conclusion, however, is that these published studies simply cannot rule out either a small but statistically significant increased risk in traditional connective tissue disease or the risk of atypical disease. Given the fact that an estimated one million women (an estimate still in question) have received these implants, even one percent translates to 10,000 women. Thus, for some women, we still do not have all the answers.

## THE BIOLOGICAL ACTIVITY OF SILICONE GEL

It also is important to review the basic science related to the biological activity of silicone gel. Recently published laboratory studies have focused on the potential molecular mechanisms that might be a basis for autoimmune reaction triggered by the silicone gel material in breast implants.

Let me briefly summarize some recent reports.

### *1. Antibodies to Silicone Gel*

Development of an assay for antibodies to silicone gel is a difficult technical challenge, and there is still disagreement over assay reliability. Given this caveat, a significant increase in anti-silicone antibodies has been reported in women with implants compared with groups of women without implants.[9] There was no discussion, however, of health problems in these women or a possible association between adverse reactions and anti-silicone antibodies. In another study, anti-silicone antibodies were reported in two children who experienced an inflammatory reaction

[6] Gabriel SE, O'Fallon WM, Kurland LT, Beard CM, Woods JE, Melton LM. Risk of connective tissue diseases and other disorders after breast implantation. NEJM 1994;330:1697–702.

[7] Sanchez-Guerrero J, Colditz GA, Karlson EW, Hunter DJ, Speizer FE, Liang MH. Silicone Breast implants and the risk of connective tissue diseases and symptoms. NEJM 1995;332:1666–70.

[8] Englert HJ, Brooks P. Scleroderma and augmentation mammoplasty—a causal relationship? Aust NZ J Med 1994;24:74–80.

[9] Wolf, LE. Lappe, M. Peterson, RD et al. Human immune response to polydimethylsiloxane (silicone): screening studies in a breast implant population. FASEB J 1994; 7:1265–1268.

around implanted silicone tubing.[10] It was concluded, however, that antibodies likely were not involved in the inflammatory reaction.

Neither these nor other studies,[11] provide convincing evidence that anti-silicone antibodies, if present, are responsible for adverse effects.

*2. Auto-antibodies to Connective Tissue and Other Proteins*

With assays specifically designed to detect auto-antibodies to altered proteins, several reports have provided evidence consistent with the hypothesis that proteins adsorbed to gel can induce auto-antibodies to connective tissue and other proteins in women with breast implants.[12] The question remains, however, whether these or other auto-antibodies can induce clinical manifestations of disease. A recent study on the relationship between auto-antibodies and silicone gel implants concluded that "there is no conclusive evidence that silicone-gel implants are related to the development of connective tissue disease."[13]

Much recent attention has been paid to auto-antibodies; less to other potential mechanisms of autoimmunity involving the cellular immune response, cytokines (soluble immune mediators), and effects of chronic inflammation. Although progress has been made, additional well-controlled studies are needed to understand silicone gel's biological activity.

Let me also note that although most reports have focused on silicone gel, other silicones—including low molecular weight contaminants and silicone oil that bleeds through the elastomer shell—also are being studied in experimental animals. One compound of particular interest, D4, was able to enhance the antibody response to a foreign protein in experimental animals, but only at levels exceeding those found in implants.[14] Gel bleed did not have detectable adjuvant activity.[14]

*Reaching a Final Conclusion on Safety and Efficacy*

A second general topic of interest to the subcommittee involves when FDA will be able to reach a final conclusion on the safety and efficacy of these devices.

Mr. Chairman, the short answer is: when the manufacturers submit data supporting their PMAs. That is quite simply because sponsors of medical devices, not the FDA, generate data to support product approval. Until such time as a sponsor has submitted a complete application for marketing approval of a breast implant, and there are adequate data to support the safety of the implant, FDA cannot under the law allow the general marketing of silicone gel-filled breast implants. I also should say that any marketing application needs to be product-specific. As part of our evaluation, we would need to examine the implant's specific design characteristics and the way it is to be manufactured.

But that is hardly the entire answer. The FDA has stated publicly the kinds of data we will be looking for in a marketing application for breast implants. We have done this specifically in a written guidance document for breast implants that contain silicone gel. We also are developing guidance for implants that might be filled with alternative materials, based on a major workshop on non-silicone gel implants we held last October. It is fair to say that the data needs are well-known, involving: chemistry, materials science, toxicology, and the clinical data on local complications and systemic diseases, as described above, as well as the product's benefits. We need sufficient data to evaluate the product's safety and prepare informative labelling for surgeons and patients. The manufacturer also must be able to establish adequate quality systems in its manufacturing of the product and pass an on-site FDA inspection. We have been working closely with manufacturers and with the academic community to encourage studies that will provide the information needed on the safety of these products.

OUTREACH TO WOMEN

The uncertainty about the safety of breast implants is alarming, naturally, to women who have or may consider implants. The FDA, as a consumer protection agency, takes their concerns very seriously and has undertaken the following initia-

[10] Goldblum, RM. Pelley, RP, O Donell, AO. et al. Antibodies to silicone elastomers and reactions to ventriculoperitoneal shunts Lancet 1994z: 340;510–513.

[11] Vojdani, A. Brautbat, N. Campbell, AW. Antibody to silicone and native macromolecules in women with breast implants. Immunopharmacology and Immunotoxicology 1994;16(4): 497–523.

[12] Kossovsky, N. Teuber, SS. Rowley, MJ. Yoshida, SH. Anti-collagen autoantibodies are found in women with silicone breast implants J Autoimmunity 1993; 6:367–377.

[13] Peters, W. Keystone, E. Snow, K. Rubin, L. Smith D. Is there a relationship between autoantibodies and silicone-gel implants? Ann Plast Surg 1994: 32;1–7.

[14] Klykken, PC, White, KL Jr. The adjuvancy of silicones: Dependency on compartmentalization. Current topics in micro & immun 1995: In press.

tives to both educate consumers with the latest information about implants and ensure their participation in the debate.

• In September 1991, FDA published a notice in the Federal Register requiring manufacturers to relay to physicians information on the risks of breast implants. Physicians then would be better able to advise their patients before having implant surgery. I met with consumer groups, health professional groups and manufacturers to discuss this notice.

• Over sixty consumers and consumer representatives testified at the 1991 and 1992 panel meetings on breast implants. Each panel had two members who represented different perspectives from women with implants.

• Following the panel meetings, the Agency established an 800 telephone line dedicated to questions about breast implants. Between February and June 1992, over 40,000 women used this line. Our Office of Consumer Affairs still maintains it and receives approximately 75 calls per week.

• In 1992, the Agency developed Breast Implants: An Information Update, which contains current findings about known and possible risks of implants, information about their availability, advice for women with implants, and resources for further information. It has been distributed to over 30,000 women. We have brought copies of our July 1995 update for distribution at this hearing. It includes information on the new published epidemiological studies on the question of connective tissue disease, as described above, as well as the new Patient Information Sheet for Women Considering Saline-Filled Breast Implants, which physicians are to provide to women considering them.

• The Agency reached out to approximately 350 consumer groups for a public (Part 15) hearing on saline breast implants held in July 1994. Twenty-seven consumers and consumer representatives testified.

Throughout this controversy, the Agency has met repeatedly with representatives of patient groups to share information and improve our awareness of the needs and concerns of these women. In addition, we have written articles for newspapers, professional journals, women's magazines and the FDA Consumer to provide further information to women and their physicians. We have issued press releases, backgrounders and talk papers. We will continue to use these and other vehicles to communicate to the public the most current information about breast implants.

Mr. Chairman, that brings me to the other areas of interest to you and your colleagues: the development and availability of new biomaterials—and of new medical devices. Let me turn to my colleague, Dr. Bruce Burlington, who is in charge of FDA's medical device program.

## SAFETY OF SILICONE BIOMATERIALS

The next question we would like to address is the safety for biomaterial use of the broad class of materials known as silicones. Silicones are a large family of polymers. What they have in common, as you can see from the attached chart, is that they are all made from a monomer building block called siloxane. They can be substituted with a wide variety of side chains, they can be linked in different ways, and they can have a lot of different elements like phosphorus or nitrogen, attached to the side chains.

Their chemistry is almost as complex as the carbon-based chemistry we call organic chemistry. These many silicones are very versatile materials.

In our discussions of silicone materials and devices, keep in mind there are three broad families of these materials—oils, gels, and elastomers. The lower molecular weight products are called oils. The mid-molecular weight products with some cross-links are called gels because they have the consistency of gel at room temperature.

More highly cross-linked products are called elastomers. An elastomer is the so called "silicone rubber" we see used in lots of ways, such as the pads in the nosepieces of eyeglasses.

The different silicones have been found to be very valuable in medicine. There are over 155 types of devices in which one or another silicone is used. These products vary from silicone rubber eyeglass pads to urinary catheters to waterproof coverings for pacemakers and pacemaker wires, to shunts used to treat hydrocephalus.

Silicone oil is used to lubricate essentially all disposable syringes, including insulin and vaccine syringes. Other oils are used to treat potential blindness from retinal detachment by being injected into the eye to help hold the retina in place. Silicone oils, gels and/or elastomers are used in plastic surgery implants for chins, small joints of the hand, and of course, for breast implants. Silicone elastomers and oils predominate in approved medical product use; silicone gel is used in a very small number of products.

The breast implants which Dr. Kessler has discussed are composed of a silicone elastomer envelope filled with either silicone gel or saline.

Do we have the same level of concern about all silicone materials? The answer is no. In fact, we have drawn a clear distinction between the use of approved silicone oils and elastomers in medical devices, on the one hand, as compared to the use of silicone gel, on the other. Our policy, as well as our practice, is based on our conclusion that there have been far fewer concerns raised about the potential risks associated with the use of approved silicone oils and elastomers than with silicone gel. We continue to clear for marketing many medical products containing silicone elastomers or oil, consistent with our higher level of scientific confidence in them.

Our level of confidence or concern is dependent on where experience or research has raised questions and on the information we have about the answers to these questions. For example, with approved silicone oil, we have data from prospective safety and effectiveness studies for retinal tamponade. These data provide a reasonable assurance of the safety of approved silicone oils, reasonable in the context of its use and its benefits in that use. We also have looked at extractable chemicals and data from animal studies and human experience with implants filled with silicone gel as opposed to the implants which are a silicone envelope filled with salt water. These studies show there are distinct differences in the total amount of key chemicals that get into the body and, hence, to which patients are exposed. For example, one of the silicone chemicals, D4, which has been identified as immunologically active in animals, is 500-fold lower in the saline-filled silicone elastomer envelope than in the silicone gel-filled implant. Thus, the different degrees of exposure and different types of silicone pose different levels of risk.

One specific area where biological effects have been assessed is with the contraceptive implant, Norplant. This product is a piece of closed tubing of silicone elastomer filled with crystals of drug that delivers the drug over a 5-year period. The biological safety of the tubing has been studied in laboratory and animal toxicity tests. The silicone materials caused the expected local reactions but tests to detect immunologic reactions were negative. In addition, reported cases of autoimmune or potentially immune-related disorders among women using Norplant are consistent with the expected rate in this population. With this product, however, there are local complications that can arise and these are described in the patient package insert.

## BIOMATERIAL AVAILABILITY

Let me turn to a discussion of product availability and potential shortages of these useful products. FDA has publically expressed concern about the potential for shortage of raw materials which might result if materials suppliers no longer sell to this industry. Dow Corning announced in December 1992 that, effective March 31, 1993, it would no longer sell certain silicone materials to medical device manufacturers. The list of materials to be withdrawn has slowly expanded since that date.

The Agency and the device industry, and particularly Health Industry Manufacturers Association (HIMA), met several times in the winter of 1993 and have worked closely together to develop a policy on alternative materials suppliers. For most materials, where description of the materials specifications are clear, the company can ascertain on their own authority that alternate suppliers meet their needs. For more complex materials, such as silicone, FDA needs to look at the data. With silicone, we looked at data submitted in master files allowing us to review the data quickly, yet avoid requiring individual 510(k) submissions.

For silicone materials, because of the concerns discussed earlier in the presentation, FDA and the industry developed a policy, announced in the Federal Register in June 1993, to facilitate access to alternative suppliers. This policy is based on core but minimal testing by the industry, and expedited review by FDA.

While Dow Corning continued to market to a limited number of manufacturers under special arrangements, the marketplace has changed. Two new companies, Nusil and Applied Silicone, have come forward as alternative suppliers of silicone raw materials. A great number of substitutions of materials suppliers has taken place with the result that we have not had a shortage or withdrawal of critical products.

In particular, we have only a single group of products where we have needed to go beyond this minimal level of testing. Shunts for hydrocephalus, plastic tubes implanted into the ventricles of the brain to drain excess fluid and so prevent the complications of hydrocephalus, are an application where silicone elastomers have clear advantages. But we need to be especially careful of the accelerating agents and other chemicals used in silicone manufacture because brain tissue is directly ex-

posed to the silicone. These shunts use valves to have the fluid drain out only and to prevent reflux back into the brain. But, silicone elastomer, like other rubbers, can get "sticky" and can self-anneal over time. We also need to be sure that the flap valve has the right opening pressure and that the opening pressure does not change during the storage life of the product or during the time the product is implanted. In this instance as well, we are working with manufacturers to accelerate testing and to ensure an uninterrupted flow of products for this critical use.

I also would like to address the more generalized questions about the relationship between our review of silicone breast implants and the other products we review. Fortunately, breast implants are an atypical product example. Most products do not have a history of use by a million patients before we first look at the marketing application. Most do not raise questions of rupture, bleed and systemic disease, and most have benefits describable in clearer health-related terms.

The general structure for evaluation of the risk/benefit of products are derived from the statute. We look for benefits that are greater than risks. When we evaluate benefits and risks, that evaluation is based upon valid scientific evidence. We also need to take implicit risks into account when there is not data to address them. This structure provides the Agency with the necessary flexibility to deal with the huge array of products we regulate. They cover the entire spectrum of risks from products used with life and death risks, such as implantable defibrillators, to those as straightforward as tongue depressors.

In summary, silicone is not one thing, it is many. The silicones used in a wide array of medical products are oils, gels and elastomers, although use of oils and elastomers predominate. We have good reason to have confidence in the continued marketing of he many products containing silicone elastomers or oils. The Agency and the industry are working together to assure the continued, timely supply of critical medical products while addressing the potential health consequences of looking at new manufacturers for these materials.

Mr. SHAYS. In a hearing like this I try to ask myself, what is the bottom line? And I have come to the conclusion as it relates to FDA, Dr. Kessler, that the bottom line is that nothing gets resolved, whether it's food additives or this issue. And when I read through your entire testimony, I was still left with the feeling when are we going to have a decision, when is there going to be some resolution.

Now, in fairness to your department, breast implants were on the market and then we passed a law in 1976, that says you have to regulate them, it was absurd in a sense to have a premarket review when the device is already on the market. But in both your testimony, I am very unclear as to what is in your mind-set in terms of how this gets resolved and when? And I'd like you to address that.

Dr. KESSLER. Mr. Chairman, let me—can I just ask one clarifying question, so I understand?

Mr. SHAYS. You can ask any question.

Dr. KESSLER. When you say when will it get resolved, there are several questions for women today who have the implants, for women today who want the implants, what is the regulatory, as far as marketing decision, those are different questions. And I just want to make sure I'm answering exactly what you are asking, when you say when will it get resolved?

Mr. SHAYS. It's a very fair question. The challenge that I have in general is that with food additives we go back 20 years and decisions haven't been made, even though the statute says they should be made within 180-days. In this instance how do you see it playing out as it relates to breast implants? Are you waiting for applications? Are you acting on applications? Are you governed by Federal requirements to make a decision in 180 days? In your own mind, what brings this to a conclusion?

Dr. KESSLER. The regulatory legal status, as you mentioned, is complex, in part because these were pre-amendment devices.

Mr. Chairman, this is very different than a food additive petition where there is an application with all the data where the manufacturer has submitted all the data and then is awaiting FDA approval.

It is the responsibility of the manufacturers or the sponsor to submit data. We in 1992, issued guidance to manufacturers of what we would require after we lifted the moratorium, after we allowed these devices to be used with informed consent in clinical trials, after the initial questions of the panels had been raised. We looked at it again in 1994, and reviewed it again in 1995.

That guidance sets out the kind of information that is necessary to answer basic questions, such as how long these devices last, what percent rupture, what are the consequences of those rupture. It is incumbent upon the manufacturer to submit that data.

Technically the PMA's submitted in 1992—because these were pre-amendment devices—were left open for breast cancer. Cosmetic use requires an IDE. In essence, the bottom line is it's the responsibility of the manufacturer to submit data.

We do not have, if I'm correct, Dr. Burlington, any supplemental data that has been submitted to the agency today.

Mr. SHAYS. Is the bottom line, that the ball is in the manufacturer's court?

Dr. BURLINGTON. Mr. Chairman, the manufacturers need to provide us with product specific information as well as general information. The general information which we have heard earlier testimony about is certainly part of the answer.

Mr. SHAYS. Let me cut through this. Do you have an application and do you need an application from a manufacturer?

Dr. KESSLER. We need the data from manufacturers.

Mr. SHAYS. OK. Do you have an application from the manufacturers?

Dr. KESSLER. There are applications pending that were left open to provide women access to the devices. Those applications need to have the data.

Mr. SHAYS. Whose applications would those be?

Mr. LEVITT. When we acted on the applications there were two companies' applications that were denied, in part, for argumentation purposes.

Mr. SHAYS. What companies were those?

Mr. LEVITT. And in part extended for reconstruction. The two companies are No. 1, Mentor Corp. and, No. 2, McGann Medical Corp.

Mr. SHAYS. So you have two companies technically that have applications pending. The other companies do not have applications. Was that because they were already in the business or were they withdrawn?

Mr. LEVITT. The other companies' applications were withdrawn.

Mr. SHAYS. OK. Now, do you have any requirement to act on these applications in a specific time?

Mr. LEVITT. No. The statute provides that the review period may be extended to provide availability of the implants while additional data is being conducted.

Mr. SHAYS. Is it being conducted?

Dr. KESSLER. There is one prospective study that I have knowledge is being conducted by one company. I think some 12,000 women have been enrolled in that study. I think the study started around 1992 or 1993, again, by one company.

Mr. SHAYS. I get the sense from your testimony that you're less concerned about the bleeding of silicone than you are about the rupture, and you put more emphasis on the severity of a rupture, and that you're putting more of your focus and concern on the rupture; is that accurate?

Dr. KESSLER. There's two—there's always—the questions that we asked the panel in 1992.

Mr. SHAYS. Dr. Kessler, could you just answer the question more simply. Are you more concerned about the rupture or are you equally concerned? What's the answer?

Dr. KESSLER. I am concerned about rupture.

Mr. SHAYS. The reason I ask the question is you seem to point out that the failure rate of this device is quite significant.

Dr. KESSLER. May be, Mr. Chairman. I don't have good data. I have several published studies that I cited. None of them in my estimation are good studies. They certainly raise concerns.

Mr. SHAYS. Is it the obligation of the manufacturer to provide you with those studies?

Dr. KESSLER. If they want an approved application, the answer is yes.

Mr. SHAYS. So should I draw any inference from Mr. Traficant that if a company wants a study and they ask for it to be done that they pay for the study?

Dr. KESSLER. Yes.

Mr. SHAYS. Yes, what? That's their requirement to do that?

Dr. KESSLER. We have a private system of device development in this country. Yes, the companies do the studies and then we go in and audit those studies.

Mr. SHAYS. So if you have a university that is conducting a study and you have the manufacturer that is providing the funding, that is a common practice accepted and in fact encouraged by FDA?

Dr. KESSLER. That's the way we study devices and drugs in this country.

Mr. SHAYS. My time has ended right now, but I'm going to come back to the issue of when you believe this issue will be resolved. Because I believe the FDA and the manufacturers have gotten very used to a situation whereby if they don't think an application is going to be approved, they just ask you to slow down and whether it's food additives or whether it's breast implants. I bet 10, 15 years from now, you could be the witness and you'd be saying almost the same thing. That's my concern.

And at this time I would ask the ranking member of my subcommittee and then we'll go to you, Mr. McIntosh.

Mr. TOWNS. Thank you very much, Mr. Chairman.

Dr. Kessler, let me again thank you for coming. Would it be unreasonable to ask the FDA to allow use of silicone breast implants outside of clinical trials, making the product available to patients who have given their informed consent? Would that be unreasonable?

Dr. KESSLER. Congressman, we are making them available to women with informed consent. There is open availability so women can get them. I mean, these are not controlled trials where the women are randomized. These are open availability studies. Because of that there is access for these women with informed consent.

The advantage of doing it that way is that it does get the data. Now, I'm talking about women with breast cancer.

Mr. TOWNS. Right. Let me ask you a question which is—I want to make sure I understood it correctly. I think a witness before you this morning indicated that the advisory panel indicated one thing and that you made the decision to do something else. I'm talking about the moratorium, that the advisory panel actually made a recommendation and you ignored their recommendation and called for a moratorium; is that correct?

Dr. KESSLER. Let me be very clear what the November 1991 recommendation was. That first panel said the manufacturer's data were insufficient to establish the safety and effectiveness of breast implants. It did go on to say because there is a public health need for these devices exception, that we should use that public health need exception to continue to make these devices available and that information about them should be gathered. But the first panel concluded the manufacturers had not in fact established the safety and effectiveness of these devices.

It then went on to say they should be available under the public health need. Then the now-infamous Dow documents become available. We reconvened the panel, the panel again said there was insufficient data and said at this point the devices should be available in controlled trials so we get the data.

Mr. TOWNS. Let me ask you this, let me put it this way. How many times, Dr. Kessler, have you gone against the advisory panel on any issue? You've been around now how many years?

Dr. KESSLER. I'd have to submit that for the record. I had an advisory panel several months ago recommend that I release blood knowing that people who had Creutzfeldt-Jackob disease had in fact donated blood. They said the blood should be released. I had certain questions about that. I contacted the CDC and, they raised certain questions as well. I convened another panel.

But the exact percentage, Congressman, I can't tell you off the top of my head.

Mr. TOWNS. Does it happen a lot?

Dr. KESSLER. It doesn't happen a lot, but I have in fact in certain instances convened second panels.

Mr. TOWNS. But you have no idea until—you really don't know how many times you've done that?

Dr. KESSLER. I can't give you an exact number. We would have to look at it. Sometimes it takes a number of panel meetings on an issue before we resolve it.

Mr. TOWNS. Maybe I'm not asking the question correctly. What I'm saying is this, is that if you have a panel and a recommendation is made by the panel, do you ignore the recommendation that's made by the panel and decide in terms of what you want to do or do you—they did not say what you want them to say, then you go out and get another panel? I mean, that's the question, Dr. Kessler.

Dr. KESSLER. The issue, Congressman, is if you have new evidence or there are new concerns. For example, with respect to the incident I mentioned the CDC raised significant concerns and I convened a second panel. So new information certainly convene second panels.

Mr. TOWNS. I don't want to just sort of keep pushing that point, but I think that it is something that I would like to, Mr. Chairman, to ask that we hold the record open to receive that information. I think it's very valuable in terms to this discussion.

Mr. SHAYS. Are you clear as to exactly what is being asked?

Dr. KESSLER. Right.

Mr. SHAYS. Because we will make sure we follow up on it.

Dr. KESSLER. Sure. I'd be happy to submit that for the record. But the first panel concluded that the evidence was not sufficient and said there should be availability under the public health need.

Mr. TOWNS. I'm talking about a situation wherein if the panel states, this is what we recommend, how many times have you ignored what they have recommended?

Dr. KESSLER. And, again, I would be happy to submit that number for the record.

[The information referred to follows:]

Under no circumstances has the Agency "ignored" the recommendation of one of its advisory panels. There are many instances in which final Agency action does not conform to official panel recommendations. In most such instances, however, prior to taking final action, the Agency addressed the concerns expressed by the panel.

The following information, covering panel meetings that occurred within the last five years, are instances in which final Agency action did not conform to the advisory panel recommendation. This includes instances in which the panel's concerns in making the recommendation were addressed by the Agency.

This list cannot be considered exhaustive because there is no system of record-keeping in place specifically linking final Agency actions to the recommendations. The information was compiled from the institutional memories and limited records of the panel Executive Secretaries.

To put this information in perspective, over 450 panel meetings have occurred in the last five years.

CENTER FOR BIOLOGICS EVALUATION AND RESEARCH

*Blood Products Advisory Committee*

• 12/94—FDA presented to the BPAC data regarding cases of blood donors infected with Creutzfeld-Jakob Disease (CJD). Panel members recommended the retrieval of in-date blood components and notification of recipients, but recommended against retrieval of plasma derivatives or notification of recipients of those derivatives, based on a remote risk of transmission. Due to concerns expressed by the hemophilia community, FDA convened a Special Advisory Committee on CJD that met in June, 1995. That panel recommended that all blood products be withdrawn and all recipients notified. FDA subsequently issued guidance to the industry reflecting the recommendations of the Special Advisory Committee.

• 6/95—Nine of fifteen members present were of the opinion that donor screening for HIV–1 antigen is not likely to provide a significant public health benefit which outweighs the potential risks. FDA recommended that blood establishments should implement donor screening for HIV–1 antigen screening because of the benefit that it will provide to a small number of blood product recipients, as a partial preventive measure against the possibility of any increase in HIV–1 "window period" donations and to decrease the virus burden in plasma pools for fractionation.

CENTER FOR DRUG EVALUATION AND RESEARCH

*Nonprescription Drugs Advisory Committee*

• 6/1/93—At a joint meeting with the Arthritis Committee, the panels recommended against over-the-counter (OTC) status for naproxen sodium. Based on comments from the members, changes were made in the labeling of the product and FDA approved it for OTC marketing.

• 7/29/94—At a joint meeting with the Gastrointestinal Drugs Advisory Committee, the panels recommended against OTC status for famotidine for heartburn until certain questions were resolved. After resolving the questions, the Agency gave its approval.

*Cardiovascular and Renal Drugs Advisory Committee*

• 3/25/94—The panel recommended approval of Rythmos (propafenone), conditional on further review of a major clinical trial. The study failed under subsequent review and the Agency did not approve the drug.

*Gastrointestinal Drugs Advisory Committee*

• 7/28/94—The panel reviewed an NDA supplement for Actigall for primary biliary cirrhosis. They recommended approval if a reanalysis of certain aspects of the data supported it. On reanalysis the results did not support approval and the Agency did not approve the supplement.

CENTER FOR DEVICES AND RADIOLOGICAL HEALTH

*Gastroenterology and Urology Devices Advisory Committee*

• 4/5/90—The panel reviewed a PMA supplement for a Teflon paste used for treatment of urinary incontinence in adults sixty or older, recommending conditional approval. Based on a re-review of the data, performed in development of the Final Report of the Committee for Clinical Review Based on a Review of Selected Medical Device Applications, FDA determined that the data submitted in the PMA did not meet the standard of valid scientific evidence. This was because the data came from only one investigator who had been using the product in his practice for this new indication. The Agency issued a not approvable letter stating that a more controlled trial would be necessary to support approval.

*General Hospital and Personal Use Devices Advisory Committee*

• 3/5/91—The panel deliberated on a PMA for an Infusaid programmable, implantable infusion pump indicated for the treatment of liver cancer. The panel recommended approval with conditions. FDA later determined that there were significant deficiencies in the variation of the pump's flow rate, which could adversely affect safety and effectiveness. This information had not been presented to the panel. FDA, therefore, did not approve the PMA.

• 3/5/91—The panel deliberated on a PMA for an infusion pump by Therex, Inc. for specific indications and recommended approval with conditions. Upon closer examination of the data, FDA identified some significant deficiencies in the design of the pump that resulted in catastrophic failures of the device. FDA did not approve the PMA.

*Clinical Chemistry and Toxicology Devices Advisory Committee*

• 11/4/91—The panel recommended approval for the PMA for the AWARE OTC urine specimen collection container with mailing tube and laboratory screening for drugs of abuse. The decision was subsequently reviewed by staff within the Office of the Commissioner, who overruled OTC distribution. It was their opinion that the panel meeting was not adequately represented by advocates of children's rights, consumer groups and drug treatment professionals. A new panel meeting was proposed whereby these additional concerns could be addressed. The sponsor declined to invest the additional resources that would be required for a meeting of this scope. The Agency issued an approval restricted for professional use.

*Ophthalmic Devices Advisory Committee*

• 4/19/90—The panel reviewed a PMA for a posterior chamber intraocular lens and recommended approval with a condition for a post-approval contrast sensitivity/glare study. The Agency did not concur with the panel's recommendations because we believed the data were necessary before a final decision on the application could be made. The Agency issued a non-approvable letter stating this.

• 4/19/90—The panel reviewed, for the second time, a PMA for a silicone posterior chamber intraocular lens and recommended approval with conditions. FDA believed there was not adequate scientifically valid evidence to support the approval recommendation. We were concerned about a high lost-to-followup rate in the data presented to support safety, a lack of information on the effect of YAG capsulotomy on lens dislocation, and inadequate data to be presented in the package insert. The Agency issued a non-approvable letter.

• 1/23/92—The panel recommended approval of a PMA for a posterior chamber intraocular lens with multifocal optic. FDA believed the application lacked safety and effectiveness information regarding contrast sensitivity. The panel did not thor-

oughly review and discuss all the issues related to the contrast sensitivity. FDA issued a not approvable letter to the sponsor.

*Hematology/Pathology Devices Advisory Committee*

• 6/7/93—The panel reviewed a PMA for the Cytyc Corp. Thin Prep Processor and recommended approval. After a subsequent inspection, the company withdrew the PMA.

*Dental Products Advisory Committee*

• 10/13/94—The panel met to discuss several issues, including classification of muscle monitoring devices. During the deliberations, the panel discussion expanded to include sonographic muscle monitoring devices. The panel unanimously recommended the devices be placed in class III. Two manufacturers of sonographic muscle monitoring devices claimed harm because of: 1) inadequacy of public notice regarding the classification of the devices; 2) biased selection of consultants to the panel; 3) the unbalanced views of the speakers; and 4) a conflict of interest on the part of the Chairperson. The Agency decided to set aside the recommendations of the panel and re-examine the classification of muscle monitoring devices at a future meeting of the panel.

*Clinical Laboratory Devices Advisory Committee*

• 5/1/95—The panel voted (five to four) to require, as a condition of PMA approval, that the sponsor for the ChemoResponse assay conduct additional reproducibility tests at five to seven sites or reanalyze the data. The DCLD PMA Team asked the sponsor to conduct inter-site reproducibility tests at three sites.

*Device Good Manufacturing Practices Advisory Committee*

• 5/29/91—The panel recommended the Agency adopt verbatim ISO 9001 as the standard for GMP compliance, adding elements FDA believed were important but not addressed by the standard. The Agency later determined it could not adopt ISO 9001 verbatim because a review of the language revealed potential enforcement problems. In addition, it is a copyrighted document. FDA decided to revise its own GMP regulation, incorporating provisions contained in ISO 9001.

NATIONAL CENTER FOR TOXICOLOCICAL RESEARCH

*Science Advisory Board*

• 11/16/93—The full Board approved a draft report on the Nutritional Modulation of Risk and Toxicity Program, which recommended that we separate and manage the Program as two individual activities. After a review by NCTR management, FDA decided to continue managing the two activities as a single program due to the uncertainty of funding for one of them, the Project on Caloric Restriction.

FDA ADVISORY COMMITTEES BY CENTER

Center for Biologics Evaluation and Research—4
Center for Drug Evaluation and Research—17
Center for Devices and Radiological Health—19
National Center for Toxicological Research—2
Center for Veterinary Medicine—1
Center for Food Safety and Applied Nutrition—1

Mr. TOWNS. That's clear. Mr. Chairman.

Mr. SHAYS. Yes. That's very clear. And, also, if you would state what they are.

Dr. KESSLER. Sure. I'd be happy to.

Mr. TOWNS. Let me just ask one more question, very quickly before I move on.

Dr. Kessler, in your testimony you suggest that the FDA will only be able to make a final conclusion on the safety of silicone breast implants when manufacturers submit additional data to support their pre-market approval application. The problem I have with that is many companies have no interest in financing further studies because liability concerns have scared them out of the marketplace. Do you have any suggestions as to how you might encourage research? I think that that has to be a concern.

Dr. KESSLER. Congressman, I think that is a very important question that you asked. When there are important public health questions and there isn't a company whose interested in doing the research or producing a product, I think that there is a responsibility on the Federal Government, if it's an important public health question, to get the answers.

For example, the NCI is doing a large study now on breast implants, but the Federal Government can always do more. I found myself in a situation a year or two ago where no company was interested in making certain drugs for tuberculosis, and we have an increase in drug-resistant tuberculosis. There wasn't the incentive to do that. We stepped in, we had to find somebody.

I don't manufacture drugs. I don't manufacture devices. I don't test them myself. We do a little research, but we're really not primarily a research organization, but we do work with our sister agencies, the NIH, for example, and there certainly can be more Federal research into important public health questions.

Mr. TOWNS. Well, you know, in closing out, what would you advocate that we do. Let's switch the roles for a moment.

Dr. KESSLER. Just help me understand this. Specifically, get more information and more data.

Mr. TOWNS. And encouraging research.

Dr. KESSLER. Encouraging research into silicone. I think that with the litigation environment, the research is not being pursued in quite the way that many people would like, I think it's reasonable to ask for more of a Federal presence in doing that research.

You need to understand, Congressman, there has been a lot of research, in the last couple of years. We know a lot more now than we knew in 1991 and 1992, and a lot of the research that's been done has been good. But there is certainly—there is no question that more research certainly would be very helpful and very helpful to us.

I would like very much to be able to answer the chairman's question of when would I have the answers, but the problem is, I don't do the major research myself, so I don't control that.

Mr. TOWNS. Thank you very much, Mr. Chairman.

Mr. SHAYS. With leave of the committee, I just want to just follow up that point. That's where I have a problem with the FDA, because I think it's incumbent on you to suggest exactly what you need. I mean, we're really in this catch-22 situation as pointed out by the gentleman here.

You have helped stimulate concern about what's happening. There are court cases that are in process. You are not going to have manufacturers seeking to get into this business. They're not going to want to do the studies, but you're saying they have to do the studies. So when I come back to my questions, I want to know specifically what you need in order to make a decision, and if there are others around you who can get that answer in that time.

Mr. McIntosh.

Mr. MCINTOSH. Thank you, Mr. Chairman. Let me start out by saying that I don't think our concern here is whether manufacturers can manufacture this product so much as whether women will be able to have the product available to them when they need it.

And I did a quick count of the room and noticed that there were about 86 women here present. I may have miscounted one or two so it could be off. If they are correct that 1 in 8 has an expectation of getting breast cancer, that means that potentially 10 people here today will suffer from breast cancer.

Now, if any one of them is reluctant to go and get a mammogram or reluctant to get a surgery as Dr. Ganske and Mrs. Lloyd mentioned was possible, then I think we've done a terrible disservice to them and every woman around the country. I think it's important for us to note what this question, about it's the responsibility of the manufacturers to do research, is really all about.

I mean, I think it's a dodge of the responsibility that all of us have as government officials of reassuring people about the safety of this particular procedure. And we heard from Dr. Ganske that local complications are inherent in any surgical procedure. We heard from Dr. Ganske that the studies, 17 studies, show that there wasn't any connection between systemic diseases and breast implants. And as far as I can tell, the record shows there aren't any studies that ever indicate there is a serious connection between those.

It looks to me like we're being asked to study this, literally, to death in order to prove something that is perhaps statistically unprovable. And I think the chairman's question is a good one, how many more studies will we need all of which conclude that there is not a connection before the agency is willing to make that statement and go forward with the product approval?

Dr. KESSLER. Congressman, you didn't ask Dr. Ganske, or no one asked Dr. Ganske, how long these devices last, what percent fails what are the consequences of that. You focused on autoimmune disease, and there has been good research on that, but the guidance that we issued in 1992, on what we needed to know to be able to answer the very important questions for women who have these devices in them today, involves research on all those questions.

Mr. MCINTOSH. Let me interrupt you for a second, Dr. Kessler. I think that is a red herring. I think that if you've got a chance that somebody is going to avoid treatment for breast cancer, we ought to let them know we don't know how long this will last. We don't know whether there is a chance that a certain percentage of them will disintegrate, but we do know that it is available today and that there are women out there who have had this implant in the past and they have lived perfectly healthy lives.

And we do know that all of the studies to date show that there is no connection between some other disease.

Dr. KESSLER. Congressman, we have worked very hard to encourage over the last year—you gave us responsibility for ensuring the quality of mammography facilities and mammography awareness. Every woman, certainly, who is in the appropriate age group and younger women who have the risk factors should have a mammogram. There are a lot of reasons why somebody doesn't want to go for a mammogram; it's scary.

Mr. MCINTOSH. Why hasn't the agency articulated that factor in this whole issue? Why haven't we looked at the relative benefits of going forward in approving this product?

Dr. KESSLER. In 1991 and 1992, clearly the risks and the benefits were weighed. The manufacturer has to submit data both on the risks and the benefits. The availability of these devices, especially for women with breast cancer, is very important. And that's why we've continued to make these available through informed consent, but I've also insisted that as we do that we also get the data so we can answer the questions.

Mr. MCINTOSH. But, I guess, let me turn back to my original question. How many more studies will we need that show that there is no connection between the diseases in order to have a product approval?

Dr. KESSLER. The number of studies that it takes to answer a basic question of how long do these devices last, what percent rupture, what are the complications of that rupture. That's what it's going to take.

Mr. MCINTOSH. And how many is that, in your estimation?

Dr. KESSLER. A few good studies could be sufficient to do that. But today I'm sitting before you and I can't tell you with any degree of confidence what the rupture rate is or how long these devices last.

Mr. MCINTOSH. Why do you need to know that before you can allow a woman to make that choice that is potentially lifesaving?

Dr. KESSLER. How does someone make a choice if you don't have information. In informed consent, at least you give some information.

Mr. MCINTOSH. Now, Dr. Ganske tells us that all devices eventually wear out and break and that it is standard procedure to replace them when that happens.

Dr. KESSLER. That certainly wasn't the impression back in 1991, where the rupture rate was generally viewed at about 1 percent. Women deserve to have that information as part of an informed choice and we need to get that information.

Mr. MCINTOSH. My problem is that until then, we're not going to send them a clear signal that it's safe to go forward with this and that some women will choose not to go forward with the procedure and that on a cost benefit analysis, we're doing more harm than good.

Dr. KESSLER. Which procedure?

Mr. MCINTOSH. To have reconstructive surgery or to have a biopsy?

Dr. KESSLER. But again, I just want to emphasize as strongly as I can the need for early detection. I agree with you. There are a lot of reasons why people are scared to go in for a mammogram or a biopsy, and I am very sympathetic to that. But that doesn't mean that one should allow a device on the market if you have questions for which—and for which there aren't answers. I am not aware of a decrease in the number—perhaps you are—who didn't go for mammograms during the 3 months when we said there was a voluntary moratorium.

Mr. MCINTOSH. But what we did hear earlier today is that women delayed going forward with the process to correct the problem and that they continue to do so if there is a fear that the device will not be available, it will be unsafe.

Dr. KESSLER. Dr. Merkatz perhaps can answer this question much better than I can, Congressman. But my understanding is women don't go in for mammograms for a lot of different reasons.

Dr. MERKATZ. Well, I think one of the most important reasons is that women need to be assured that the mammogram that they will have will be a quality mammogram, and that is one of the reasons why many women came to Congress to testify, for improved quality in mamographies.

Mr. MCINTOSH. But is it your opinion that one of the reasons that they may delay detection or treatment is the uncertainty about reconstructive surgery?

Dr. MERKATZ. We asked that question at our advisory panel meetings in November and in February in 1992, and we're not able to obtain any data to substantiate that claim.

Mr. MCINTOSH. Have you seen any data since then?

Dr. MERKATZ. No.

Mr. MCINTOSH. And were you listening to the testimony earlier today by Dr. Ganske?

Dr. MERKATZ. Yes, I was.

Mr. MCINTOSH. Is that not persuasive?

Dr. MERKATZ. I believe that there are many reasons. Women are more afraid of breast cancer than almost any other disease—and women need to be encouraged in order to have this procedure done, and we are doing everything that we can at FDA. For example, we've just opened up a new hotline to help women find certified facilities in their geographic areas.

Mr. MCINTOSH. Were you persuaded by Dr. Ganske?

Dr. MERKATZ. It is hard to be persuaded based upon my own clinical practice of over 30 years in terms of why women choose to have a mammogram or not to have a mammogram. It's a very complicated issue.

Mr. MCINTOSH. I think he was saying that some patients decline or are reluctant to have surgery to treat them, after the disease has been detected.

Dr. MERKATZ. I think women will ask questions about whether they need to have a mastectomy versus a lumpectomy, which is a very important question for women to ask and that decision should be given every consideration because even with reconstructive surgery, I think most women, if possible, would prefer the lumpectomy.

Again, the testimony was very compelling. I do not deny that, but I do feel it's a very complicated issue.

Dr. KESSLER. Congressman, can I just add one point, if I may.

Mr. MCINTOSH. Sure.

Dr. KESSLER. Your concern and our concern is one of the reasons why we allowed—again, with considerable controversy—continued open availability of silicone implants for women for reconstructive surgery with informed consent and data collection. That's why I was persuaded to allow open availability.

Mr. MCINTOSH. I'll defer to later for other questions.

Mr. SHAYS. I thank the gentlemen, because we will have a second round.

And at this time, Mr. Barrett, you have the floor.

Mr. BARRETT. Thank you, Mr. Chairman. You talked about the woman who could get it for reconstructive surgery. Under the current FDA regulations, which women or when would women not be able to have the open opportunity to do so?

Dr. KESSLER. Let me let Dr. Merkatz talk about the eligibility criteria under the protocol.

Dr. MERKATZ. There are two types of breast implants currently available for women with breast cancer. The silicone gel, which is available through clinical trials. If a woman is in the clinical trial—and this is open across the United States, the sites where clinical trials are being conducted for silicone gel—so a woman with breast cancer may have a silicone gel implant provided she is enrolled in the trial; otherwise, she may have a saline-filled breast implant.

Mr. BARRETT. What is the purpose for requiring her to be enrolled in the trial?

Dr. MERKATZ. So that we can get the data that we have tried for so long to obtain. And the trial also guarantees that she will have an informed consent procedure used as part of having her reconstruction done, that there would be a frank discussion about the risks and benefits.

Mr. BARRETT. Does that slow her down in getting the implant?

Dr. MERKATZ. We do not think it slows her down. The kind of discussion that is required in informed consent really is the kind of discussion that should go forward when a woman is confronting either type of implant surgery. It is not our impression that an informed consent procedure would slow down the process.

Mr. BARRETT. OK. For the woman who wants a saline-filled breast implant, she could get it if she's in a trial?

Dr. MERKATZ. Exactly.

Mr. BARRETT. OK. Let's go on. Go on to which women can't get them. Who is being stopped right now?

Dr. MERKATZ. Women who are—who would like to have augmentation, cosmetic augmentation, surgery for other reasons, reasons other than breast cancer are currently not being enrolled into gel trials, but they may have saline implants.

Mr. BARRETT. OK. Dr. Burlington, if your mother or your wife or your sister said she wanted to have an implant, what would you say to her?

Dr. BURLINGTON. It would be my frank advice that we would need to look at the reasons promoting that request. If it was a question of reconstruction following mastectomy, I think that the benefits attributable to that are different, that we've heard those discussed earlier. I think there has been a strong feeling throughout the community from our advisory panel and from the agency. Those benefits make sense to enroll in the trial through the registry, through informed consent. It's not a complex or lengthy procedure.

If on the other hand the issue is augmentation, the risk benefit ratio is different, and in that case I would counsel that we wait and find out when we have more evidence on specific products and what their rupture rate is. After all, a woman contemplating anatomic change through augmentation needs to know how long is that anatomic change going to last. When is she going to have to

be reoperated. What is the risk of scarring. Is she going to get the anatomic change she's looking for.

Mr. SHAYS. Would the gentleman yield for a second?

Mr. BARRETT. Yes.

Mr. SHAYS. He will definitely have his time. What I find interesting is you talk about new products. We have a system right now designed not to create new products. So if you're going to wait to see what new products are going to come on the line, tell me, what new products are you aware of that are going to come on the line?

Dr. BURLINGTON. Mr. Chairman, we have a million women implanted, very large numbers with products quite similar to those made by the two companies that have applications still held open but back with the companies.

Mr. SHAYS. That's not my question.

Dr. BURLINGTON. These specific products don't have the sorts of information I was just addressing.

Mr. SHAYS. That's not my question. You said that you would counsel your wife or your daughter that you should see what new products would come on line?

Dr. BURLINGTON. What new information needs to be available, if I may correct myself, Mr. Chairman.

Mr. SHAYS. OK. But are you aware of any new products that are coming on line?

Dr. BURLINGTON. Yes, Mr. Chairman, there is one company with a current clinical investigation in this country.

Mr. SHAYS. And what company is that?

Dr. BURLINGTON. We generally need to protect commercial confidential information.

Mr. SHAYS. Have they taken out an application?

Dr. BURLINGTON. Yes, for investigation Mr. Chairman.

Mr. SHAYS. So we have two companies that have taken out applications. Am I to infer that there is a third company that has taken out an application?

Dr. BURLINGTON. For a different type of product, Mr. Chairman.

Mr. SHAYS. OK. I thank the gentleman for yielding.

Mr. BARRETT. Dr. Kessler, what would you tell your mother if she said she wanted to have an implant?

Dr. KESSLER. I agree with Dr. Burlington. I would just add that I think you need to look at all the available procedures and the risks and benefits of all types of reconstruction.

Mr. BARRETT. But you're talking to your mother. What are you going to tell your mom? Your mom calls and says, what should I do, David, you're a sharp guy, what do I do?

Dr. KESSLER. Mr. Barrett, I'm a pediatrician.

Mr. BARRETT. All right. Your daughter.

Dr. KESSLER. I would certainly ask her to talk to her surgeon, but I do think that there are a number of reconstructive options, and you need to look at all those reconstructive options and look at the risks and benefits. But it is not unreasonable to enroll in the clinical trial and get information as long as you do it with your eyes wide open.

Mr. BARRETT. OK. Let me ask, would you have one? I'm sorry, I can't see your name there, I apologize.

Dr. MERKATZ. You're talking to someone who doesn't even take vitamins. I probably would make a decision against any type of implant, but that's my own personal feeling.

Mr. BARRETT. OK. If I can now draw the distinction between the breast augmentation and reconstructive surgery and I apologize if I'm offending anybody, but I may be showing my ignorance here. I would think that many times when a woman wants to have it after breast cancer, that she wants it—obviously, I think, in part for cosmetic reasons. And it seems to me that we're drawing a distinction between cancer and if it's just pure vanity, it's just pure vanity. But I don't know that that is necessarily a valid distinction.

Why is that a valid distinction?

Dr. KESSLER. Congressman, it's one of the hardest questions that we've grappled with. I think that the use in breast cancer is not exactly the same as its use in cosmetics. I think that it's fair to state that its use—reconstruction is an integral part, I mean, of breast cancer therapy and as I said earlier, getting on with one's life.

I think in the end it's very different.

Mr. BARRETT. OK. I don't disagree that for breast cancer it's very important and it's part of therapy, which is the word you used. My question is, couldn't it be therapy in another situation?

Dr. KESSLER. Sure. I mean, there are other conditions: colon anomaly, certain congenital deformities, trauma, for which I believe we have also allowed access under the protocol. So it's not just breast cancer.

Mr. BARRETT. OK, you were talking about the procedure before and the burden being on the company to come forth with the information—and, I'm sorry, the gentleman to the left—maybe you could tell me again the procedure as to how much more information is going to be necessary, and the timeframe here. I think that you were talking about the procedure that is used.

Mr. LEVITT. As Dr. Kessler stated, we have tried to describe for the companies, as we do with a wide range of products, the range of testing that's needed, some of which has already been done, and some of which hasn't. It's really out of our control how long it takes the companies to perform those tests. It is at their option. We cannot require them to do tests quicker than they have the resources or will to do.

Mr. BARRETT. OK. One final question for you, Dr. Kessler: Do you agree with Mr. Traficant that Dow did not supply all the information?

Dr. KESSLER. When I agreed to come here, Congressman, I spoke with the chairman and I had one request, and that is, if I could stay on the public health and scientific issues and not get involved in other issues. I apologize, but I would rather stay on the scientific/public health questions.

Mr. BARRETT. I understand. Maybe I can ask a followup question, and maybe you don't want to answer this one either. If you do have a situation where a company does not provide you with information, in a generic sense, and you find out about that, what is the response of your agency?

Dr. KESSLER. There are regulations that do require data to be submitted. If, in fact, there's a violation of those laws, then we

make referrals and work with our colleagues in the Department of Justice. If, in fact, the documents—and let me just make sure counsel will shake her head behind me—are "material" to our determination.

Mr. BARRETT. OK. Thank you very much.

I yield back the balance of my time.

Mr. SHAYS. Thank you.

We would now like to call on Mrs. Morella, and note for the record, she is the only woman on this panel right now. You're going to have a little more than an extra 5 minutes for your patience and your perspective.

Mrs. MORELLA. Thank you, Mr. Chairman. I may not need it, because I've been listening to this testimony.

First of all, mothers know best, dependeth not what sons—children—say. Mothers know best. So let the record show.

I just want to clarify what I have heard, because it seems to me, if you're talking about reconstructive surgery with the silicone gel-filled implant, that it is obtainable after a mastectomy if you are involved in a clinical trial. Will those clinical trials deny anybody the opportunity to have it? I mean, is there enough range for somebody in Oklahoma to say, "I want the implant?" Are we denying anybody the opportunity who falls into that category?

Dr. KESSLER. Let me let Dr. Merkatz answer that question.

Dr. MERKATZ. The answer, first of all, is, the trials are open around the country. The problem, however, I believe relates to the feeling that many of us may have about going into a clinical trial. I know, for example, that the Women's Health Initiative, which is going on right now across the country in 45 centers, which is the largest trial ever to be conducted in women, their biggest challenge is recruitment of women into the trials.

I think that we are going through a period where we're trying to do a great deal to educate people about the importance of being in trials and what a trial really is all about. So I would say that, yes, it is available, but we have to make more people aware of the fact that it is available through clinical trials and do everything that we can, which is what we are trying to do at the Food and Drug Administration about the availability.

Mrs. MORELLA. The clinical trial, does it involve checking in every week?

Dr. MERKATZ. No.

Mrs. MORELLA. What kind of an impediment is it?

Dr. MERKATZ. No, it's a followup schedule, but there are no invasive procedures that would be involved. It's really getting the kind of follow-up very similar to what we have recommended that women follow in any case. And it is not a randomized trial where some women will be chosen to have the procedure and others will not.

All women who choose to be in the trial will have the gel implanted, and they must have followup visits to make certain that the data is being collected on how they are doing with their implant.

Mr. LEVITT. If I may just amplify or add on a little bit. Currently, for the Mentor study, Mentor being the company whose study is open now for women seeking reconstruction, there are over 1,400—

over 1,400—surgeons now participating in that study. This is, I think, quite a large number.

I'm not aware of any complaints or concerns we've had about geographic availability. I think it is pretty diverse across the country, through, probably, virtually all the major medical centers, and certainly all the major cities having that procedure available. And, again, so far over 12,000 women have enrolled, and we've tried to make it simple.

Mrs. MORELLA. It seems to me that one of the things we also need is an education program to make sure that women are availed of the fact that informed consent with a clinical trial, which is just follow-up—did you want to comment?

Dr. MERKATZ. Yes. I agree we need education. One of the things that we have done is, first of all, we have an 800 number at the FDA for women who want current information. And we have a booklet that we continually update, that we will mail out upon request, that gives a full description of the availability of the trials, resource lists of groups around the country where women can get more information, as well as a discussion of risks and benefits.

Mrs. MORELLA. Also, you mentioned, Dr. Kessler, the NCI study that's going to be done next week. We've had a lot of discussions about this study, that one, 17 more going on, who pays for them, et cetera. What is that going to point out? Is it going to be something about rupture, et cetera, and how valuable do you think it's going to be?

Dr. KESSLER. Again, Congresswoman, we worked very hard in 1992 with our colleagues in other agencies to get a number of studies up and running. This one was set up primarily to look at the incidence of breast cancer, but it was expanded to look at a whole host of other questions.

I think it will be an important study. But there have been, in the last couple years, some other important studies that have been published, and I think they will contribute significantly to our information.

Mrs. MORELLA. From what I have heard, am I correct in saying that you feel that, in general—well, the link between whether women are concerned about seeking mammograms or treatment of breast cancer because they are concerned about the fact that they might have a problem with the breast implant, the silicone gel-filled implant.

Dr. KESSLER. I think we need to do everything possible. You've worked very hard with us, Congresswoman, to make sure that we encourage all women, when appropriate, to get mammograms. Dr. Merkatz has worked tirelessly. We have inspected now and accredited 10,000 mammography facilities, and mammograms do save lives.

Now, there are a lot of reasons why people don't go for mammograms, but we need to encourage women to get mammograms. The First Lady has worked very hard to do that. We need to encourage all women to take advantage, really, of that life-saving technique.

Mrs. MORELLA. I think it's very important that we all become aware of that. I remember when 2.6 million petitions were brought to the White House of survivors of breast cancer. The fact that we have the race for the cure, the fact that in Medicare, now, there

is coverage every other year, the fact that we're moving toward also giving free coverage for mammograms in communities, I just question whether there was a part that the implantation played in whether women would have mammograms.

Dr. KESSLER. I'm not aware of any data.

Dr. Merkatz, are you aware of any data?

Dr. MERKATZ. No. We tried to get that data, and we looked through the literature, because we have heard that many, many times. And I believe, even without data, it's a very important consideration for us to consider, which is why we want very much to know more about breast implants so that we can do everything that we can, from many different angles, to encourage women about early determination and breast cancer.

Mrs. MORELLA. I think we have to encourage our biomedical firms to continue working in that area. Again, educate the public about the need for the examination, the quality mammogram, again, which is legislatively mandated, as well as coming to a conclusion with regard to the need for informed consent and offering people the opportunity to make a choice. Thank you.

Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentlelady.

Mr. Kanjorski, you have the floor.

Mr. KANJORSKI. Thank you very much, Mr. Chairman.

Dr. Merkatz, you said something about vitamins, and I'm particularly interested, you don't take vitamins. Do you know something that we don't know about vitamins?

Dr. MERKATZ. No. That may have been a slip, but I'm just someone who—has been fortunate. I've been healthy and haven't had to make those though choices.

If I could just add one more thing, perhaps, to the statement I made. Not having been in the situation, if I were, I would ask a lot of hard questions, and I would want information before I would feel comfortable making a decision.

I think that's basically what we're after, the kind of information so people who would like the answers, whether they are people who ask hard questions or maybe they are a little bit afraid to ask the questions, which often is the case, I just think we all would like to have a few more answers.

Mr. KANJORSKI. Dr. Kessler, I know you don't wish to get into the legal aspects, but because of the sophistication of modern technology and the reliance on large corporations in a litigating society such as ours, is there something that the Congress should be doing to establish, perhaps, an information trust with immunity to encourage companies like Dow to make a deposit of all their studies and all their information, pro and con, just to protect prior scientific study, or even indications which may subject them to liability if used in a court of law, so that we don't have a selected release of information and a withholding, from the public or from the Federal agency, of information?

Dr. KESSLER. Congressman, you raise a very important point. As I told the chairman, one of my reluctances of late is to be very careful not to, in any way—I mean, there are a lot of plaintiffs and defendants at war with each other, and we try very hard not to get involved in that.

But you raise a point that, even though with my reluctance not to get involved in liability, I think really is the key. In the end, we're never going to know everything about a device even when it's approved, and especially if it's an implant. In some ways, drugs are easy. You take a drug for 2 weeks. It has a half-life of 6 hours, 12 hours. You take it for 2 weeks. We know how to study that.

How do you study an implant that's not just in there for 2 weeks or 6 months or 1 year but may be in for 5 years, 10 years, 30 years? How do you study that? And there is no way to be able to get all the information up front before FDA makes a decision. So we're going to need postmarket surveillance, and we're going to need the willingness to continue to follow patients and get the answers.

My biggest concern is that these devices were used for 30 years without good procedures to follow and monitor patients. We're sitting here 30 years later and still don't have the answers. If we really knew how to monitor and monitored carefully, we would be in a much better position.

One of the hard parts for any company, once it puts a device on the market and it monitors that device, is that if a company finds a problem after it's device is on the market, that company is put in a very difficult situation. If it admits a problem, all the lawyers descend. Yet, what we need at the FDA is, we need that information. And what patients need is to know if there are problems.

In fact, we're going to put a device on the market and we're going to approve it, and there may be problems down the road. We need a company to feel comfortable that it can step up to the plate without its survival being jeopardized and say, "Hey, you know, there are some problems," and we can talk openly and honestly about those problems.

That's very important for medical devices, especially implants, because you need to be able to follow those devices over 30 years.

Mr. KANJORSKI. Are there some recommendations? I mean, it seems to me that this Congress, in reevaluating legal reform, have been willing to put a cap on punitive damages, certainly have talked about limitations on compensatory damages.

It seems to me that, if we're getting into that area where we're starting to reduce potential size of verdicts, we ought to look at the other side that, concomitantly, we could find some way to grant immunity or establish a public trust, if you will, that information could be relayed or that a company isn't encouraged to destroy prior studies that may have raised the issue.

Dr. KESSLER. I think there should be an incentive to do postmarket surveillance, especially on implants. We're not going to know everything up front. We need to create incentives for companies to be able to monitor and do that postmarket surveillance.

Mr. KANJORSKI. To come forward.

Dr. KESSLER. And to be able to step up to the plate and say, "Gee, you know, there may be certain problems," and not to feel that, if it does that, it's survival is in jeopardy.

Mr. KANJORSKI. Is there some thought process at your agency that could aid the Congress in legislating some national archives of scientific information?

Dr. KESSLER. Again, we really don't have expertise in the whole issue of tort liability, and I try to stay out of it. As far as the archives is concerned, you know, manufacturers submit a lot of data to us, but under the law that data is protected with extreme confidentiality, in most instances, because they contain trade secrets, because they contain competitive advantage.

So we are, in some ways, very limited as to how we make information available. I leave it to you and to the Congress as to whether that's a wise policy. I don't have any expertise in that.

Mr. KANJORSKI. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentleman.

Mr. Gutknecht.

Mr. GUTKNECHT. Thank you, Mr. Chairman.

I would hope that at some point, Dr. Kessler, you would go back and maybe play back the tape of this meeting to you and some of your senior staff, because I think it expresses sort of the frustration that we have. And I know that Chairman Shays, in his line of questioning, said a lot of the things that I think a lot of us feel about this whole area.

In fact, there was in the Union Pacific railroad engineers manual an expression that said, "If two trains should approach each other on the same track, both shall come to a complete stop. Neither shall advance till the other has passed." Sometimes when we hear from some of our constituents about the FDA, and particularly in the medical technology industry, it seems that way.

In fact, in the hearing, in the questioning and so forth, what we have heard so much of is, "Well, the answer to that question is, we need more studies; we need more data." At some point, I think, you have to say, "Based on what we know—" in fact, even on the question about your own mother, you equivocated. I mean, I think there's sort of this culture that has developed that, we're never going to get to an answer, a yes or a no. That's sort of an observation.

I think I would pursue the line of questioning at least that Mr. Kanjorski finished with, and that is, can you offer some advice? Is there a way that we can break this?

Because one of the concerns I have—and you see some of the devices on the table up here, several of them were designed and/or built in my home State—it concerns me that many of those companies are moving to Europe, and they are moving to Japan, and they are taking their technology and the research other places, in part because of litigation, but also because it is so very difficult to get FDA approval for anything.

Does that cause you any concern?

Dr. KESSLER. Sure, it concerns me. I think it's very important today that we be clear where our concerns lie. Dr. Burlington put that chart up there. I know there are a lot of squiggles and a lot of science on the chart. But what's very important is, we're talking about a silicone gel and the incidence of rupture and the consequences of that gel migrating and what that does.

That is a whole different level of concern than with something like the CFS shunt. We don't have concerns about the CFS shunt. I mean, that shunt should be used; it should be manufactured. We're working with companies to make sure that it continues to be

made available. There are some tricky aspects to that shunt, and we have to make sure that it works well, but it's very important not to generalize.

I read stories in the media that, well, there are concerns about silicone gel, so there are concerns about Norplant. Norplant is a solid silicone elastomer. Now, there are some problems when you take them out, and there are some issues, but it's a whole different world as far as a medical device.

We've tried to make it clear, but we need to continue to repeat that not all silicones are the same, and certainly not all types of silicones present the same kinds of questions.

Mr. GUTKNECHT. Well, let me pursue one other point that was raised earlier about some of the issues that Representative Traficant made.

Are you satisfied—I want to say this correctly—do you have the power to go after some of those documents, if you believe a company has withheld documents?

Dr. KESSLER. I did go after documents. We took a very unusual step in late 1991.

Maybe counsel can join us at the table.

There was a report of a finding about certain documents, and they raised certain concerns. They were under seal, and we took the very unusual step—I just want to make sure I'm correct—of going into court to ask the court to lift that seal so that we could look at those documents.

Now, I think, in the end, if I'm correct, the company made those documents available, but we did go into court first doing that. So, yes. We don't have subpoena power. Lifting protective orders is difficult and requires us going into court, but perhaps counsel would like to answer that a little more fully.

Ms. REIDY. I think Dr. Kessler has answered that question. In addition, there were other documents that were under protective order, and they have all been made available to the FDA.

Mr. GUTKNECHT. Could we get your name?

Ms. REIDY. Arlene Reidy. I'm with the Office of General Counsel.

Mr. GUTKNECHT. OK. Another question that I'm interested in, and that is, a number of the major chemical companies, there are some concerns that they are not going to produce some of the component parts, simple component parts like Dacron thread and fibers and so forth. Do you have that concern, and do you have a plan of how to deal with it?

Dr. KESSLER. It is very important for us to continue to have these biomaterials available. Don Marlowe, who is our Acting Director of Science and Technology in our Devices Center, is an expert on that question.

Mr. GUTKNECHT. For the record, could you give your name?

Mr. MARLOWE. Mr. Congressman, my name is Don Marlowe, from the Center for Devices and Rad Health, Office of Science and Technology.

We have worked very hard with the industry, particularly the silicone industry, to ensure that the devices made out of silicone continue to be available. We've worked in public meetings with the manufacturers of those devices, and they know our concerns. And we've put in place a specific set of written documents, and an-

nounced them in the Federal Register, to describe exactly the type of exemption that firms who wish to change from one supplier of silicone to another would have to go through to make sure that their product stayed on the market.

Mr. GUTKNECHT. My time has expired, but I want to pursue this. What about some of the other materials, stainless steel, other plastics, Dacron?

Mr. MARLOWE. There's a general policy for the availability of materials. It's probably not common knowledge, but it's certainly known to the manufacturers in the industry that they are allowed to change from one material supplier to another. As long as they do not change the purchase specification for their raw material, they are allowed to change from one supplier of that raw material to another, without even notifying the FDA that they are doing so. And that is commonly done in the industry.

Mr. GUTKNECHT. So you're satisfied, from the FDA's perspective, that's not a problem.

Mr. MARLOWE. Yes, sir. We live in fear, of course, that a material would vanish. That would be the worst-case situation, from our perspective.

Mr. GUTKNECHT. But what about from their perspective, as it relates to litigation? That's really not your—that's not your problem.

Mr. MARLOWE. I'm not even knowledgeable to speak to that, sir.

Mr. GUTKNECHT. Thank you, Mr. Chairman. I yield back.

Mr. SHAYS. I thank the gentleman.

Mr. Peterson, you have the floor.

Mr. PETERSON. Thank you, Mr. Chairman.

Dr. Kessler, we keep hearing about how we need to know more information and we need to study things more. If the Harvard study and these other recent studies are so inconclusive, if we don't know enough from them to decide these things.

I'm told that plaintiffs' attorneys and their allies are going out of their way to discredit them, so I'm interested in knowing why that's happening and why they try to have them declared inadmissible in court, as I'm told that they do, why they are attempting to harass and intimidate scientists who conducted these studies, which I have been told they have, and why they question or even lie about sources of funding.

My bottom line question is, why do these attorneys involved in this behave as if they believe these studies are more conclusive than you do?

Dr. KESSLER. The Harvard Nurses Study is a good study. It answers certain questions. I can't comment about lawyers on either side going after studies. But the Harvard Nurses Study is a good study, as I said this morning. It does provide with the Mayo Clinic study—reasonable assurance, from an epidemiological point of view, it provides reasonable assurance that there is not a large increased risk of typical connective tissue disease.

Because of the limitations of the study, because of the methodology, I also said that it doesn't rule out a small but significant increased risk. It also doesn't look for other atypical forms of connective tissue disease. But there are a lot of other questions. The Harvard Nurses Study, the Harvard Nurses Study doesn't tell me how

long these devices last, what percent rupture, or what the consequences of rupture are.

So the Harvard Nurses Study is an important study.

Mr. GUTKNECHT. So you're not sure why these attorneys, then, are more excited about this?

Dr. KESSLER. Are more?

Mr. GUTKNECHT. Well, there apparently has been a lot.

Dr. KESSLER. There have been ads about this study in the media. There have been ads run by both sides. And it's one of the reasons why I have tried very much to, in part, be very prudent, because I don't want this agency used by either side in litigation.

I think it is very important for the women who have these devices. That's what I care about. The women who have these devices and women who may need these devices need information. And that's why I'm here today. But I'm very reluctant to get involved in the war between the trial attorneys and the defense counsel.

Mr. GUTKNECHT. But a lot of these women's groups have implored FDA and yourself to reassure the many hundreds of thousands of women that have been scared over this, to come up with some way to alleviate the scare that I think, to some extent, you folks have helped to create out there.

Don't you think that you have some obligation to reassure these women rather than just say, "We've got to study this some more?"

Dr. KESSLER. Congressman, that was not my testimony today. I think I try to call it with the current state of knowledge in the published literature. I'm not sure.

Mr. GUTKNECHT. That's still not reassuring.

Dr. KESSLER. We've looked very hard at all the research, and I try to call it the way that research says, and call it straight on what that research says.

Look, as a doctor, I'd love to be reassuring. You always want to be reassuring. You always want to tell patients, "Don't worry." The chairman asked us to come and talk about the state of the science. My testimony is a very detailed analysis of the state of the science. I think it answers some questions; it doesn't answer others. It allays some concerns, but it raises other concerns.

Mr. GUTKNECHT. How long is it going to be, do you think, before we can know, definitively, and we will be able to reassure these folks?

Dr. KESSLER. It's the one thing I regret, because it's the one thing about which I feel I'm not answering the committee's questions, and I'm not trying to be difficult. But we're not a research agency. Without being a research agency, I can't do that kind of research and do the kinds of trials that really are necessary.

We can work with people to get them done, but we really have a private system of device development in this country. And if a company is not willing to do those studies, then maybe the NIH should do those studies or another sister agency should do those studies.

I know that I'm not being helpful.

Mr. SHAYS. If the gentleman would yield.

Mr. GUTKNECHT. Yes, I would yield.

Mr. SHAYS. Let me just say to you that that's heartfelt on your part, but it's not acceptable. And we have to find a way to resolve

this. We're going to go a second round here, but I just want to say, I just don't want the record to lay open with your basic comment that you don't know and it's, in a sense, not your responsibility to know. Because that's what's coming across.

Dr. KESSLER. We set out we need the answers to certain questions. We've looked at the research to date. It allays concerns in certain areas; it doesn't allay concerns in other areas. That data has not been submitted by any sponsor to the agency to date. We're even relying on published reports.

Mr. SHAYS. You know, with all due respect, we may end up with no sponsors, and we may end up with no manufacturers, with that kind of attitude. So it's almost a self-fulfilling prophecy. I think your agency needs to help sort this out. I'd like to get this issue in the second round. I appreciate the gentleman for yielding.

Mr. GUTKNECHT. I appreciate your comments, and I look forward to hearing more.

Mr. SHAYS. Let me just say, to give everyone an update on where we're at, we're going to get you out of here, Dr. Kessler, by 1:30. And we're talking about a half-hour more. We are going to start the next panel by 1:30, possibly sooner, but we will definitely start it by 1:30.

We have two Members who haven't gone the first round, then we're going to get into this issue, I think, in more depth in the second round, with those Members who are here.

Dr. KESSLER. Absolutely.

Mr. SHAYS. Mr. Fox.

Mr. FOX. Thank you, Mr. Chairman.

Doctor, since the 1992 moratorium, more than a dozen epidemiological studies have been reported, in either complete or abstract form, on the reported relationship between implants and connective tissue disease, and no link has been found in any of them.

How could the FDA say, in its June 22 statement on the study, that research is only beginning to emerge on this issue?

Dr. KESSLER. Mr. Fox, Congressman, again, there are a number of questions about breast implants: How long do they last? What percent rupture? What are the consequences of those ruptures? The epidemiological studies you refer to talk about the link between breast implants and certain connective tissue diseases. That's why, I believe, we made that statement.

Mr. FOX. But I'm saying, from your position, is there a causal link between the silicone breast implant and any connective tissue disease?

Dr. KESSLER. The advisory committee, in 1992, stated there was no evidence that supports a causal link between breast implants and typical connective tissue disease. And I maintain that that statement was the best science in 1992, and I think that statement is also appropriate today. And I think there is much more evidence today to back up that statement.

Mr. FOX. You say additional research is needed into ruptures and autoimmune diseases. How long should it take to complete that research to a degree that satisfies FDA.

Dr. KESSLER. If I know what the rupture rate is over a reasonable period of time, using both retrospective and prospective stud-

ies, and that data is submitted, we will act very quickly on that data.

Mr. FOX. Would it take months? Would it take years? Do you know how long?

Dr. KESSLER. For us to act on that data? Once that data is submitted to the agency, I think we can act within months.

Mr. FOX. What do you say to women with implants in the meantime?

Dr. KESSLER. That's very important. And I think that is what I said in our testimony today, that the evidence to date provides reasonable assurance that there is not a large increase in risk in connective tissue disease. I can't tell you that it rules out a small but statistically significant increase. It doesn't rule out atypical forms of disease.

And I don't know today how long these devices last and what percent rupture, although I have some very significant concerns based on the published reports. But those published reports on rupture rate are not satisfactory. I think the patient selection and the size of those studies are not very adequate.

Mr. FOX. I think the concern that the chairman and the committee have today with FDA saying, "We need to study it more and study it more," is not acceptable, I think, to the American public. I mean, in my opinion, if the FDA launched Apollo 13, it would still be orbiting the moon because you want absolute certainty.

Dr. KESSLER. Congressman, I think before you put an implant in somebody, you should be willing and understand the consequences. You should know what percent rupture, how long they last. There is an affirmative duty on the manufacturer—beating up on the FDA and holding FDA responsible for everything may be in vogue.

Mr. FOX. I think that Congress is seriously pursuing this because we want to jointly make sure that we're protecting the public.

Dr. KESSLER. I understand that, and I welcome that.

Mr. FOX. I think there still has to be an end point, Doctor, by which the public can expect some definitive answers so we can move forward.

Dr. KESSLER. And what I said, Congressman, is that, when the data is submitted to this agency that answers those questions, we are committed to reviewing that data within months.

Mr. FOX. Well, don't you think the FDA needs to take a proactive approach in making sure that the data, either independently received or that which is already in good science, comes to some resolution in the near term? Because I think that, while no one is trying to bash FDA, I think the fact is, we need to work together to make sure there's an end point to which the FDA comes to conclusions, so that women who have to face this issue can do so with as much available knowledge that you give them, as much as industry can give them.

Dr. KESSLER. Congressman, you are correct. But my only point is that we need certain partners in order to do that. We need industry and our sister agencies who are going to work together with us to be able to get the answers to those questions.

Mr. FOX. Well, as a result of the silicone scare in 1992, which was set off by FDA, don't you think there has been a spill-off effect to development of new medical devices because of the fear by in-

dustry to offer them, because of the concerns that may be long-term and time-consuming, while they may be life-saving or life-extending, they aren't offering them because of the concerns that have happened as a result of what happened with the FDA scare on breast implants?

Dr. KESSLER. Let me ask, again, Mr. Marlowe to—you know, there has been a lot of discussion about whether there is a crisis in a lack of availability of silicone that has delayed or impeded the development of new products and other products. I would like Mr. Marlowe, who is an expert, to answer that.

Mr. MARLOWE. Mr. Congressman, I think that it's fair to say that there is a slowdown, if you will, in the development of brand new medical device materials in this country. There is perhaps a reluctance to introduce some of these currently available materials in areas where there is apparently a high risk associated with those devices.

But I think that the materials remain available today. A manufacturer who wished to find a material to make a medical device could find one today available in the marketplace.

Mr. FOX. Thank you, Mr. Marlowe, but my concern is, if we have FDA not acting fast enough to get information with certainty to women who need to have it, then we could have the ripple effect that other medical devices that are needed by the public are not going to be introduced in this country but rather in other countries because we have been too slow to move ahead the approval process, to get the scientific data, and to get the information back to a public that is waiting for it. That's my concern with FDA.

Dr. BURLINGTON. Mr. Congressman, we are seriously concerned about that, as well, and the agency did, in fact, fall far behind on its time schedule for review of devices. Over the last couple of years, we have moved arduously to correct that.

We put in place a number of new policies. We have very substantially shortened the time to review for the abbreviated applications. We are working now with manufacturers to shorten time for the comprehensive applications, PMA's, because we also believe that having a vigorous industry, having new products is important to the American public health.

Mr. FOX. We share that, obviously, with you to try to move ahead, because the speed with which our constituents and your patients and our citizens can get it is very important, because we want to have life-extending and life-saving devices available, and we want to make sure we do it as quickly as we can.

Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentleman.

Mr. Chrysler, you have the floor.

Mr. CHRYSLER. Thank you.

Actually, I had the opportunity to communicate with Dr. Kessler this year, in May, and he gave me a very good response by the end of May. I had my questions answered, and I appreciate your promptness in those replies. Maybe I would just have one quick question.

You mentioned about the large study from the National Cancer Institute, can you give me any further progress on that study?

Dr. KESSLER. Sure. Let me ask Dr. Lori Brown to talk a little about that study. She's our epidemiologist within this area.

Dr. BROWN. I'm Lori Brown. I'm from the Center of Devices and Radiological Health also.

The study that you're talking about is one which is being conducted at the National Cancer Institute by Dr. Louise Briton and is subcontracted out to a company which is doing it. It will include 14,000 women who have breast implants and a control of 4,000, so the total study population will be 18,000 women.

They are currently collecting the first phase of the data, which is looking through doctors' records of women who have had breast implants. They have started now to contact women, and they are getting information from these women. The third phase of the study will be to examine the medical records of other doctors other than the implanting surgeons who were involved. So you can see this is a very large and complex study.

They are funded through 1996, and after 1996 they may seek more funding, but it's not clear whether they will or not. They have completed some of the data collection, but data collection is ongoing. The original intent of the study was to examine cancer—it's at the National Cancer Institute—but they also will be studying connective tissue disease and local complications.

That's the information that we have on that study. I am in contact with Dr. Briton probably every couple months and so am keeping up with the progress of their study.

Mr. CHRYSLER. Thank you very much. I yield back my time, Mr. Chairman.

Mr. SHAYS. I thank the gentleman.

We're going to go through a second round of questioning, Dr. Kessler. When I started out, I asked you if you were more concerned with ruptures or autoimmune issues dealing with silicone safety. And I didn't think you were very forthcoming, because, as I listened to your response, you kept coming back to your concern, and it was always on rupture, almost every time.

So I'm struck with the fact—I'd like to give you an opportunity—are you concerned about silicone safety, or do you feel that there have been enough studies done on this issue?

Dr. KESSLER. I think that the studies on connective tissue disease, the Mayo Clinic study and the Harvard Nurses Study, as I said before, I think those are good studies. I think that those allay significant concerns on autoimmune disease. I don't see the same good studies on rupture. I see some numbers that I see as high in rupture; I don't see good studies.

Mr. SHAYS. I think that's helpful information. And I have to tell you, as I read your testimony, it was clear that you were very concerned about ruptures. After reading some of the testimony of witnesses, I have a concern about that, as well. So describe for me the study that would give the data on ruptures that would answer your concerns.

Dr. KESSLER. The first question you would have to answer is, how long do you need to monitor that? When is there a suspicion that these devices may fail, when they may fall apart, and over what period of time? I think, if you look at the science to date, there's reason to suspect that you're dealing, maybe, with a bath-

tub curve, where you see failure initially and then failure after a period of time.

But that's only a hypothesis. So you need to be able to get rupture rates over a period of time, and you may not be able to do that and be able to wait, prospectively. There's a prospective study under way by one company that has enrolled 12,000 patients. Now, that's planned to go on for some period of time, but how do you get the information at 7, 8 years where there may be a significant increase? So you may have to go back and use a prospective study as well as retrospective. It's the totality of the evidence. There are always going to be, Mr. Chairman, certain weaknesses.

Mr. SHAYS. No, I understand. I want to just kind of nail down some of these key points. You've provided helpful information to me to say that rupture is a bigger concern.

Dr. KESSLER. It's a real concern.

Mr. SHAYS. In one sense, we have an advantage, because we have people who for years had these devices, and we can go back and look.

Dr. KESSLER. Some of the science is a little difficult on that.

Mr. SHAYS. One of my concerns is, basically, we have 1980 technology, because I don't see a lot of manufacturers trying to incrementally improve these devices.

My colleague gave this wonderful description, which I share, of two trains coming and hitting each other, and you're basically describing in graphic detail what's happening, as if you're not a player in this process, like maybe you can, you know, stop one train and maybe we can get one train off the track.

I almost view it differently, that they are going parallel, and they are never going to meet. And they've got to meet eventually, and they are never going to get on the same track. That's why I believe we can go on indefinitely.

You say manufacturers have an affirmative duty to provide and submit data. So have you specifically outlined to manufacturers what kind of data you want on ruptures, because that is your concern?

Dr. KESSLER. Again, I just want to be specific. The guidance that we put out in 1992 covers a number of areas. Rupture is certainly a very significant part of that. Let me let Dr. Burlington comment.

Dr. BURLINGTON. Mr. Chairman, the guidance that Dr. Kessler refers to provides a great deal of information on what we would look to a manufacturer to tell us about the way the product is made, about what its laboratory, what its animal testing, and tissue culture testing might be.

Mr. SHAYS. I'm talking in regard to rupture right now.

Dr. BURLINGTON. It is, however, somewhat vague regarding what—it says what we're looking for; it doesn't get down to specifics about how long, how many patients, that sort of thing.

Mr. SHAYS. Let me just interrupt you, sir, if I could. Wouldn't it be helpful, if you could nail down exactly what you need, to specifically spell it out to the manufacturers and get this process moving?

Dr. BURLINGTON. Because of concern that manufacturers would think that this was an insurmountable goal, either for this product or for alternatives, I asked the staff to put together a workshop which we held last fall, for alternatives, in part to address this,

with outside input from our external advisors. I believe that was fruitful.

We now have one manufacturer who we're sitting down and talking with very specifically about what is appropriate, in terms of a data package, to move forward with their product. I would welcome the opportunity to do that with one of the silicone gel manufacturers. That would require a manufacturer coming forward and saying, "We're serious about doing this. We're ready to do these trials."

Mr. SHAYS. Hold up a second. Hold on a second.

Dr. BURLINGTON. Yes, sir.

Mr. SHAYS. I asked if you had any applications. You said you had applications from two manufacturers. We know some manufacturers have gotten out of the business. Are you saying that they are not sincere in their applications? So, in a sense, is my question a meaningless question? Do we have anyone who wants to get in this business? Do we have serious applications?

Dr. BURLINGTON. For silicone gel breast implants, we have two applications which, as discussed earlier, are technically open, Mr. Chairman.

Mr. SHAYS. Do you view them as serious applications?

Dr. BURLINGTON. I would welcome an opportunity for those companies to come in and sit down and say they are serious about this, and move forward as rapidly as we can. I have not seen that happen.

Mr. SHAYS. Mr. Burlington, I don't mean to be disrespectful, but they probably don't think you're serious either. Because, in my judgment, this is a very serious issue Dr. Kessler—I feel like you all are on the sidelines just waiting for somebody else to do something. And I would encourage you to be very proactive on this issue.

We have nailed down, in my judgment, one issue: you are more concerned by ruptures. So let's deal with rupture.

Dr. BURLINGTON. Mr. Chairman, with due respect, I believe we have made efforts to be proactive, specifically in putting out the guidances, specifically in putting out those offers to meet with companies, and would welcome the opportunity to move forward on that issue.

Mr. SHAYS. But you did state to me, Mr. Burlington, that you weren't very specific as it related to rupture issues, that you were very vague. I mean, I just heard you say it.

Dr. BURLINGTON. The guidance put out 6 months before I arrived was, in fact, vague on the rupture. It addressed the generalities; it did not address the specifics.

Mr. SHAYS. How long have you been there?

Dr. BURLINGTON. Two and one-half years, sir.

Mr. SHAYS. So what prevents you, in 2½ years, from being specific?

Dr. BURLINGTON. We have moved forward, last fall, with an additional discussion. If a manufacturer is forthcoming, we will indeed sit down.

Mr. SHAYS. I just want to say that that kind of attitude just confirms to me that we're going to get nowhere, that we will be in this limbo. And I have some experience now, having had the second hearing with FDA where we have this 180-day requirement on food

additives, and applications have been pending for 20 years. Obviously, that is not your fault, but the sense that the law doesn't even have to be abided by.

Dr. KESSLER. Congressman.

Mr. SHAYS. Yes, sir.

Dr. KESSLER. I became Commissioner in December 1990.

Mr. SHAYS. Right.

Dr. KESSLER. I wish the data was collected and submitted to the agency to answer the questions at least, you know, a decade before.

Mr. SHAYS. OK. They weren't.

Dr. KESSLER. We need to get that data. We will work with companies to get that data. Once that data comes in, we will review that data. But let me make sure that I don't misspeak.

An application contains information on a lot of areas. It will contain information on autoimmune disease. It will contain information on tensile strength. It will contain information on chemistry. I've not yet reviewed or audited like we do the published studies that we've talked about; I've talked about them based on the literature.

We will look at the entire application. There will be weaknesses in certain areas; there will be strengths in another. In the end, the question is whether the data submitted to the agency allows the agency to make a reasonable scientific judgment that the risks are acceptable in light of the benefits.

I just don't want to say that the only data that needs to come into the agency is rupture. We need to look at all the data.

Mr. SHAYS. Dr. Kessler, I don't disagree with the general thrust of your comments, but all you do is confirm to me this issue will never be resolved. It is a mind-set and an attitude on your part and the departments's part that troubles me.

Let me just ask you, as it relates to the Food, Drug, and Cosmetic Act, it says, "The Secretary may not enter—" may not enter—"into an agreement to extend the period in which to take action with respect to an application submitted for a device subject to a regulation promulgated under Subsection (b), unless he finds that the continued availability of the device is necessary for the public health."

So are you functioning under the "unless"?

Mr. LEVITT. Yes.

Mr. SHAYS. OK. Now, where is the agreement?

Mr. LEVITT. At the time of that decision, we entered into written agreements with each company which outlined all of the relevant provisions. We set forth, concurrent at that time, a three-stage procedure, which was outlined in the Commissioner's statements at that time.

Mr. SHAYS. We only have two companies; right?

Mr. LEVITT. One company progressed to the second stage and never pursued the third stage. The second company was never able to satisfy existing regulations on good manufacturing practices: meaning how you make the product, what its quality is, and what is consistently between products. So that company never started the prospective clinical trial stage.

In contrast, Mr. Chairman, if I might say—because you have a clear concern about us being proactive.

Mr. SHAYS. I think you're proactive, but sometimes I think you're proactive in the wrong way. And I don't mean that disrespectfully. I think you can be very active and very determined, but I don't feel this kind of determination to resolve this issue.

Mr. LEVITT. If I may just say, in the area of saline breast implants, we have been working with these very same companies. We have set forth a research agenda and schedule, and those companies are pursuing that. One thing I derive from that is that we do understand when the companies are seeking to perform the studies and when the companies, for whatever of their own reasons, are not.

Mr. SHAYS. I understand that companies—and I want to let other Members ask questions—I understand that companies sometimes, if they don't think they are going to like your answer, they aren't eager to get the answer and may not encourage you to give them the answer.

But it is your sworn testimony that there are agreements. Now, have these agreements been modified, and are they in writing?

Dr. KESSLER. I'd be happy to——

Mr. SHAYS. I know. But are those—I thought your testimony was that, basically, they couldn't abide by the agreement; they couldn't meet what you wanted. We have only two people in this business, probably we will soon have one, and maybe we will have none, and you will still be waiting for some company to take an affirmative action.

My point to you is this: You have both told me they have not met the agreement.

Mr. LEVITT. No, no, no. That's not what we said.

Dr. KESSLER. I don't think I've said that. I'm not an expert in the agreement at all.

Mr. SHAYS. You didn't answer the question, Dr. Kessler.

Dr. KESSLER. I'm sorry.

Mr. LEVITT. There are written agreements.

Mr. SHAYS. It is in writing.

Mr. LEVITT. It is in writing. I honestly can't recall if it was modified along the way; it may have been.

Mr. SHAYS. We will have a second followup hearing, and we're going to get into more depth here.

Mr. LEVITT. Right. The agreement sets forth, as I recall it—it will speak for itself.

Mr. SHAYS. Well, you know, since you don't really remember it, we're not going to talk about it right now.

Mr. LEVITT. All right.

Mr. SHAYS. The point, for the record, is, there is an agreement. We will be able to get it, and we will be able to get you back here and question you on it.

I will just say, for the record, before I turn to my colleague, that I'm absolutely convinced that whether the trains are headed in the same direction and they are going to crash, or whether they are on separate tracks, never to meet, either scenario, it's a no-brainer; it's never going to happen. We're never going to resolve this issue. It is going to be in continued limbo, just like the 20-year pending food additives applications.

And Dr. Kessler, I think you—I'm not asking you to do it—but you need to delegate to someone to find a solution. It seems to me you need to map out, in very specific terms, what you need, and I don't think that agreement is going to be doing that.

Mr. MCINTOSH. Mr. Chairman, thank you. Let me also say, if you feel you need to have more questions to get to the bottom of this, I'm 100 percent behind your line of questioning there.

My question is—and I think that the chairman is onto something here—that we're not seeing a rush of companies come forward to want to do these studies to allay the fears about rupture or any of the other issues that are there. And I think we have to be honest with ourselves that part of the reason for that is the context of extreme liability risks in the world, and that any business who has a general counsel is going to say, "We'd better look at this very closely before we decide to pursue this further."

But I think we may be able to make a breakthrough here in an area that affects that fairly significantly by parsing a little more carefully the different concerns that, Dr. Kessler, you raised in some of my questions earlier. I was talking with you a great deal about the studies on autoimmune deficiencies, and I think you correctly indicated your concern about rupture and that there weren't sufficient studies there.

Turning back to the question of autoimmune disease, given that there are these 17 studies that Dr. Ganske mentioned and that there is a good record in that area, can't we have the agency, at this point, make a statement that we don't think there's a risk of autoimmune disease; we still want to get the data on rupture, and we're still waiting for the National Cancer Institute study on cancer to nail that down for sure—although I have the impression that people are a lot less concerned about that risk than they were in the early 1990's.

Dr. KESSLER. Mr. McIntosh, let me let you hear from an expert, Dr. Brown. First of all, when you say 17 studies, there is—I assume, Dr. Brown—a range of different quality within those 17 studies.

But from an epidemiological, scientific point of view, you ask me to make a statement that there is no risk associated.

Mr. MCINTOSH. Let me rephrase that. No relative risk, given the fact that there are women who, this hearing has indicated, are being discouraged from receiving treatment.

Dr. KESSLER. With regard to typical connective tissue disease, I've tried to be clear today—and, again, Dr. Brown can correct my words—but I think, based on a scientific analysis of those studies, what those studies provide is a reasonable assurance that there is not a large increased risk of typical connective tissue disease. They don't rule out a small, but significant risk of typical connective tissue disease, and don't really address this question about atypical connective tissue disease.

Dr. Brown is the expert, and she can correct me.

Dr. BROWN. We review these studies as they are published, and we have reviewed the studies that have been mentioned this morning, the Mayo study, the nurses study; there's another study which is on scleroderma. Connective tissue disease is not a single entity. There are connective tissue diseases which are extremely rare, like

scleroderma, and there are other connective tissue diseases which are more common, like rheumatoid arthritis.

So the studies that have been done by Mayo Clinic and the Harvard Nurses Study have ruled out a large increase in connective tissue diseases, in general, but they have not ruled out specifically such diseases as scleroderma, which are very, very rare.

The types of studies that were done by Mayo and the Harvard Nurses Study are cohort studies, and these studies typically are very good for finding out relationships between the outcome and something that may be causing it, when it's very common, but they are not as good at detecting rare outcomes.

Mr. MCINTOSH. Did the Harvard Nurses Study have a single incidence of scleroderma that was in the woman who had breast cancer?

Dr. BROWN. I don't recall whether there was a single incident or not. There may have been.

Mr. MCINTOSH. My recollection, upon reading it, is that there wasn't.

Dr. BROWN. OK. Scleroderma is an extremely rare disease, and so the Harvard Nurses Study had, roughly, I think it was 83,000 women in it. You would not expect to find many women, in 83,000 women, who had scleroderma. The Harvard Nurses is a study which is better prepared to detect more common diseases such as, perhaps, rheumatoid arthritis, but it is not as well equipped to detect scleroderma.

The type of study which is used in order to detect very rare diseases is a case-controll study. In this type of study what they do is, they find many women who have the disease and they look for the exposure, in this case, breast implant. In the single published study, which is by Dr. Engler in Australia, they were able to rule out a large increase in risk, along the lines of fivefold, for scleroderma, but they were not able to rule out a smaller risk, which may be significant, for women who have breast implants.

So these are all pieces of the puzzle.

Mr. MCINTOSH. So the Australian study did address scleroderma and it ruled out a large risk, but there might be a small risk associated with it.

Dr. BROWN. Yes, that's correct.

Mr. MCINTOSH. Let me turn now to Dr. Kessler on this question.

As head of the agency, are you going to require them to do that type of study for every single one of these rare connective tissue disorders, or when is enough enough on connective tissue disorders and autoimmune deficiency?

Dr. KESSLER. Let me let Dr. Burlington answer that question.

Mr. MCINTOSH. You're going to defer to her in making that decision?

Dr. KESSLER. Dr. Burlington.

Mr. MCINTOSH. Sorry. To him.

Dr. KESSLER. Yes, I defer.

Mr. MCINTOSH. So if he says enough is enough, you're going to say, "OK. Fine. We're going to say we're satisfied."

Dr. KESSLER. Dr. Burlington makes the decision of whether—I mean, every day he has final sign-off on whether a device is approved or not today.

Dr. BURLINGTON. Mr. Chairman, thank you.

On this issue, it's very hard, because there are, as we all know, a number of questions that have been raised about atypical rheumatologic disorders, about poorly defined rheumatologic disorders, about something that has been tentatively labeled "silicone disease," which is a collection of symptoms which is not even itself well-defined. Those are questions we would have to consider.

I think we do have a substantial body of evidence that is useful in providing information to women on classic connective tissue diseases. In contemplating moving forward on an application, what we would do is go back to an advisory committee to get a broad input from the biomedical community and say, "What about all the rest of this? If we don't have specific studies on it, nonetheless, are we at a point where it makes sense to label the product describes that which we do not know and put it out in the market for regular marketing?"

Now, in order to get there—and I think this is one of the questions that Chairman Shays has been asking—we would certainly anticipate looking at additional information on rupture rate and other local reactions, and then we will be prepared to report.

Mr. MCINTOSH. Dr. Burlington, let me interrupt you for just 1 second. How long would that process take? And my question is, can't you take a step short of issuing a product approval and make a very clear statement by the agency that there isn't a safety risk here, so that businesses would come forward and provide you with the data on rupture?

Dr. BURLINGTON. Mr. Chairman, we have disseminated to the Members, we have disseminated to the companies involved, as well as to consumers, information on the agency's assessment that substantial reassurance is offered by the emerging epidemiologic data. We recognize that some of it is yet to come, the Cancer Institute study that Dr. Briton is doing. But, to date, we do have that substantial reassurance, and we have tried to make that as clear as we can.

Mr. MCINTOSH. Well, apparently, it's not clear enough, because there's a great deal of uncertainty out there about what the agency's views are.

Do you think the cancer study will provide additional data in this area that will be satisfactory to make a categorical statement that the relative risks are acceptable?

Dr. BURLINGTON. We look at the risks of products in their totality. It certainly will address things within the scope of the study. It, I expect, will augment the existing body of evidence on classic connective tissue diseases, which tells me that we have excluded a high level of increased risk, but we will never get to perfection. We can't prove a negative, as the Congressman testified earlier, and we wouldn't seek to.

Mr. MCINTOSH. After the cancer study, even if it came back with a conclusion that there are no significant risks, you would not, at that point, say, "We're satisfied that we can say there's not a risk of autoimmune disease caused by this product that is significant enough that we're going to keep it out of women who have breast cancer?"

Dr. BURLINGTON. Mr. Chairman, I appreciate your having qualified the start of your sentence with—this basically gets to the question of, are we satisfied that we have enough information that we can adequately label these products we can say there is a residual, unknown risk, and that that's information that we communicate to women contemplating having one of these products.

That seems an appropriate position. It, however, has to be looked at in the totality. It has to be accompanied by reasonable information on what the durability of the product is. When something is knowable, through readily available techniques—a million women have these products—finding out what the rupture rates are should be doable.

Mr. MCINTOSH. So you're saying you're not willing to address the safety issue until you're satisfied about the rupture question, which to me is a disservice to American women.

Dr. BURLINGTON. Mr. Chairman, I believe we have substantially addressed the safety issue to the extent that data is available to us today.

Dr. KESSLER. We will address the question when the data is submitted to the agency and we can review it in the marketing context. We have an obligation to women who have these devices in them today to keep them informed. That's very important, because they want the answers.

Mr. MCINTOSH. Dr. Kessler, let me say, I think you're failing on the safety issue by moving the ball, first from cancer to autoimmune disease, now to rupture, and saying, "We can't give you a categorical statement." It reminds me of Charlie Brown and Lucy, where every time he comes up and he tries to kick the football, she's going to move it down the goal post.

Dr. KESSLER. Mr. Chairman, can I just disagree?

Mr. SHAYS. If I could just interrupt a second. I think this is important to follow. I'm going to apologize to you as the panelists. We will be going for another 10 minutes. I just want to make sure Mr. Gutknecht and Mr. Fox get to ask—and I'm the guilty party here; I asked too many questions. So, at any rate, we're going to go a little longer.

Dr. KESSLER. Can I just answer this?

Mr. SHAYS. You have time to answer the question. We don't want to put words in your mouth.

Dr. KESSLER. If I can just answer the chairman's question. If you look, in 1992, the three questions that we asked the panel on February 7, 1992, "Does the newly available information—" and that's the information from the Dow documents that we presented, as well as other information—"does the newly available information on the incidence and hazards of rupture and bleed increase your concern and/or uncertainty about these products?" That was the first question.

The second question: "Is the evidence of a possible link between silicone gel-filled implants and autoimmune disorders strong enough to increase your concern and/or uncertainty about these products?" That was the second question.

The third question: "Does the industry's record in testing, reporting, and marketing these implants over the last 30 years—" in ref-

erence to the documents before it—"increase your concerns and/or uncertainty about these products?"

Those were good questions back in 1992; they are the same questions I'm asking today in 1995.

Mr. MCINTOSH. And my position is, that second question could be answered today and it's not, and that is a disservice to the American public.

Dr. KESSLER. Mr. Chairman, if you're asking me to answer that question beyond what the science allows me to answer, I can't.

Mr. MCINTOSH. I'm asking you to take an honest and fair look at the science.

Dr. KESSLER. And we have, and I think I've stated it. I've said, on that question, based on the published studies—and I've not looked behind those studies at the data; we normally do that. I think I've made it very clear how we view those published studies to date.

You may not agree with my statement, but I said there is reasonable assurance that there is not a large increase in typical connective tissue disease. I've also said they don't rule out a small but statistically significant increase in typical and it doesn't address atypical.

Now, other scientists are free to disagree. That's the best judgment. When I talk to our scientists, that's what they tell me the current state of the science allows us to conclude. I'm not sure what more I can do than tell you how we read the published studies to date.

Mr. MCINTOSH. I will defer to the chairman.

Mr. SHAYS. I thank the gentleman.

Mr. Gutknecht and Mr. Fox, you both have questions.

Mr. GUTKNECHT. Yes, Mr. Chairman, I will try to be brief, because there are some other witnesses, and one, in particular, that I want to hear from.

The chairman liked my story of the railroads, and I will share another story, because I think it fits what we're talking about here. I think it was President Harry Truman who said what he wanted more than anything else was a one-armed economist, because he said they would go through these long presentations about what was going to happen with the economy, and when they would finally reach what he thought was a conclusion, they would say, "But on the other hand."

And I think that's sort of the frustration that we have up here, and I think a lot of the people in the industry have, is that once they think they have satisfied all of your questions, then it's like, "Oh, but on the other hand," there's this whole new set.

We don't want an adversarial relationship. I think the Congress wants to work with you. I think we have the same goals. But there is a high degree of frustration, and it's not just with this particular issue, but I think it's with a lot of the new medical technologies and new products.

This really isn't a question as much as just an invitation to try and work with you. Because, I must tell you, I hear from an awful lot of folks who are incredibly frustrated. In fact, one of the most troubling things that I've heard is from a venture capitalist in my district—or in my State—who does a lot of investment in things

like this, but he won't invest now in any product or procedure or new technology that requires FDA approval. He says it's just not worth it. The return is way down the road, the costs are too great, and it's just not worth it.

That is a very troubling thing for me. Somehow, I think we've got to work together to get the trains running on time, rather than having them all sitting there looking at each other. So, basically, I would just offer this invitation to you and your department: We want to work with you to come up with some ways that we can get the trains running, get the technology happening here in the United States, to get the investment back in the United States, to get the jobs back in the United States.

And I think we have to look at that whole big picture, because right now I'm afraid the system is not working the way it's supposed to, and it's almost a dysfunctional system as it relates to new technologies coming on line.

I would yield back to the Chair.

Mr. SHAYS. I thank the gentleman.

Mr. Fox.

Mr. FOX. Thank you, Mr. Chairman.

As a follow-up to what Congressman Gutknecht was talking about, in trying to get an end point to where we are on research and the conclusions of the agency, if I were to give you a check today, Dr. Kessler—I'm sure you'd like to have that from Congress, because we're not quick on giving checks—but assume it came from me personally, how long would it take you to design, implement, and conclude a study to determine the rupture rate and understand the associated complications? Can you give me a timeframe?

Dr. KESSLER. If you gave us the resources to do it and we had the research capability to do that?

Dr. Burlington.

Mr. FOX. Is there a time?

Dr. KESSLER. Having all the research capability and having the funds to do it?

Dr. BURLINGTON. Mr. Congressman, we would attempt to look at that in two ways: In one way, we would say, "Let's find out what the general experience with similar products is out there among the many women who have received these."

That would be an epidemiological study that would probably take several months to get up and ready to run, a period of data collection, and then a period of data analysis, perhaps 1½ years, maybe 2 years for a typical epidemiological study on a substantial scale. With sufficient resources, that can be accelerated.

The other side of it is, we would look and say, "Is there a product-specific issue?" And if it were, for instance, the Mentor product, which, as we have heard, has been under prospective data collection for a couple years already, it may be that that data could be similarly collected from the existing experience of women who have today received implants. If it's a company that has to start from today moving forward with new implants, we would be looking at early experience to say, "Is there a manufacturing problem inherent in that?"

So, taken together, I would say it depends on the company, but that realistically that could easily be done in 1½ years, and with sufficient interest and resources that could be accelerated.

Mr. FOX. Well, I appreciate your agency answer, but the fact is, I think that some would say that the information already exists upon which you can make such conclusions. I think the problem that the Congress is having, whether it be silicone breast implants or drug approval or disapproval, we need to speed up the process for prompt resolution, for the public's purpose.

Let me just get, if I can, to Dr. Kessler about one more question.

You said you're reluctant to get involved in certain ways that would cause more litigation. I would submit to you—and you may have a different point of view—that the fact that you have not concluded, with regard to the silicone breast implant, some of these concluding statements that the women in the United States are looking for, that we are actually helping some of the litigation attorneys move forward because of the lack of action by the FDA.

Dr. KESSLER. I would certainly let other people who are more expert than me comment on what influences litigation. Again, I see ads run in the paper. I see a lot of things going on, and I certainly would leave it to other experts to know what influences litigation.

I've been reluctant to get dragged in over the last several months. There is a lot at stake for all sides in this, and that's one of the reasons I try to be prudent, Congressman. It's not easy.

Mr. FOX. I understand that. What we're trying to have you look at, as we move forward from this hearing to try and help the public, is that we try to do, with all resolute dispatch, the concluding information that women need in order to make intelligent decisions with informed choices.

Dr. KESSLER. Congressman, you're 100 percent correct. That is our mutual goal.

Mr. FOX. Thank you, Mr. Chairman.

Mr. SHAYS. Dr. Kessler, you have been a very agreeable witness and spent a great deal of time, as have your assistants, and we appreciate it. I think this has been a helpful dialog back and forth. We would like to work with you on helping you understand a little more clearly how we think your providing more specific guidance, and even trying to work on some timetable, would be helpful to patients around the country.

We just have one basic technical question I would like my counsel to ask. It relates to the agreements. First, the agreements with these two companies, Mentor and McCann, they are both the applicants, have they signed these agreements?

Dr. KESSLER. I'm not an expert myself in these agreements.

Mr. SHAYS. They agreed to these agreements?

Mr. LEVITT. Yes.

Mr. SHAYS. OK.

Mr. HALLORAN. For the record, my question is: The documents that you provided—and we will copy them and give you back the originals—in the Mentor agreement, at Section 5, there's a provision that says, "In a letter to the applicant, dated—" blank—"the agency denied approval of the applications for use of the device for augmentation."

Similarly, in the guidance document, which is marked "Draft"—is that a final, by the way? The guidance document issued in 1992 on studies, is that final?

Mr. LEVITT. I believe that's the existing guidance.

Mr. HALLORAN. OK. In the guidance document you say, "On April 16, 1992, the Commissioner announced all PMA's had been denied and protocols were being formulated." So, again, we need to clarify for the record the legal status under which these agreements operated, if indeed PMA's have been, in some sense, denied.

Mr. LEVITT. Again, I believe that the chairman read the provision under which those agreements operate. The PMA's were denied insofar as they relate to the augmentation use. They were extended under that particular provision of the statute, by agreement with the companies, for purposes of breast reconstruction following mastectomy and some other very specific uses, such as after trauma from an accident, and so forth, and revision for a women who has an implant rupture.

Mr. HALLORAN. So these agreements are in force, and they are the basis of the Commissioner's statement that the companies have a legal obligation to conduct further studies?

Dr. KESSLER. My statement is based on the general provisions in the statute.

Ms. ROTHSTEIN. Yes, that is the legal basis.

I'm Beverly Rothstein. I'm with the General Counsel's Office of FDA.

We also have, if you would also like us to provide to you, the letters dated April 16 to the two sponsors.

Mr. HALLORAN. That would be helpful, yes.

Ms. ROTHSTEIN. I don't have those with me.

Mr. HALLORAN. There's also an appendix to the Mentor agreement reference, which I think is the list of studies, or there's an Appendix F reference in the agreement which is not here. Would you provide that, as well, please?

Ms. ROTHSTEIN. Yes. There were, I think, eight attachments to the agreement. We could get you that.

Mr. HALLORAN. Thank you.

Mr. SHAYS. Dr. Kessler, I mean this sincerely, I thank you very much for being here. You have helped this hearing tremendously, as Dr. Burlington and the others who have testified. And thank you, as well, Mr. Levitt.

Dr. KESSLER. Thank you very much, Mr. Chairman. We look forward to working with you.

Mr. SHAYS. Likewise.

Dr. KESSLER. Thank you.

Mr. SHAYS. Thank you. And I mean that sincerely. We do look forward to working with you.

We have a very patient third panel. It is comprised of basically nine members; I will call them. We will proceed in this order: John Sergent, Douglas Shanklin, Sherine Gabriel, Elizabeth Connell, Linda Ransom and Tara Ransom, Sybil Goldrich, Sharon Green, and Jama Russano.

If you would all—if they are still here; if they survived—I would love to have you come and take the witness stand.

Before I swear the witnesses in, let me just give you a sense of how we're going to proceed through this panel. We have four physicians, and they will give their testimony. Then we have four patients who will proceed to give their statements, as well.

Are we missing one of the panelists? Who are we missing? Dr. Connell is not here. I would like to make sure we have a chair for her. I will swear all of you in at the same time.

Let me just say that we have Mr. Shadegg here who, like Senator Kyl, is from Arizona, and would like to take the opportunity to welcome one of our witnesses.

Tara, that happens to be you. It's very rare when you get a Senator and a Congressman both who want to welcome you, but I don't blame them.

Mr. Shadegg, you have the floor.

Mr. SHADEGG. Mr. Chairman, thank you very much.

I appreciate this opportunity and express my appreciation to both you and the other chair of the joint subcommittees. I do serve as a member of the other subcommittee, though I have missed these proceedings this morning because I'm in the concluding day of the Waco hearings, which I'm pleased are concluding.

Mr. SHAYS. Thank you for your work there.

Mr. SHADEGG. It is a privilege to introduce both Tara Ransom, who is 8 years old and who will be testifying before this panel today, as well as her mother, Linda Ransom. Both are residents of Phoenix, AZ, which is a part of my district, though they are not my constituents; they are constituents of Congressman Ed Pastor.

Linda, Tara's mother, is a patient advocate on behalf of families who have been affected by hydrocephalus shunts, including her daughter Tara. Tara is 8 years old, and she received a hydrocephalus shunt shortly after her premature birth. She requires this shunt for the balance of her life, in order to drain fluid from her brain.

Linda Ransom and, of course, Tara are deeply concerned that the controversy, and it is an important controversy that you are looking into today, will somehow, and already has to some degree—and you will hear this in their testimony—reduced the availability of other implants made from silicone.

Materials such as silicone, teflon, and the plastics that are used in sutures, pacemakers, artificial valves and joints, and many other applications are key to the survival of patients all across America. Makers of those products, in many instances, have either stopped or are contemplating stopping the production of the materials used in the manufacture of those biomaterials because of their concern about possible liability implications.

Whenever we legislate, Mr. Chairman, we deal very much with the law, which never gets discussed, of unintended consequences. That is the issue here. In our efforts to deal with the direct problem that is before us, we need to be certain that we do not, through an unintended consequence, place people like Tara, whose life is truly dependent upon these materials, in jeopardy.

I simply would also further like to mention that Senator John McCain has introduced legislation on this issue, trying to make sure that there will be a continuing availability of materials for these types of medical devices, including the type of brain shunt

that Tara wears. His legislation is, hopefully, moving through the Senate and making progress.

I would call upon my colleagues on this committee to, please, as you would all witnesses, listen carefully to the testimony of Tara. I think you will find it compelling. She has written it herself and edited it herself. I urge you to listen to both Tara and Linda.

I welcome, Tara, you and your mother, Linda, to this committee.

Thank you very much, Mr. Chairman.

Mr. SHAYS. Thank you for your comments.

Now, I would like all the witnesses to stand.

Tara, we're going to swear in all the witnesses. Legally, we can't swear you in, but we're more than happy to have you participate in this process, and then I'm going to be asking you a question afterwards.

If all the witnesses would stand up and raise their right hands. Tara, we're giving an oath of office about speaking the truth.

[Witnesses sworn.]

Mr. SHAYS. I note for the record, everyone has answered in the affirmative.

The one thing I am absolutely certain of, Tara, is that you know the difference between the truth and something that's not true. That's why we don't need to swear you in.

We're just going to go right down. We're going to ask you to keep your words fairly concise. We don't have as many Members asking questions, but there will be a number of questions. So feel free to use your 5 minutes, and then we will have some good questions and answers, hopefully. We will certainly have some good answers.

**STATEMENT OF JOHN S. SERGENT, M.D., VANDERBILT UNIVERSITY; DOUGLAS R. SHANKLIN, M.D., UNIVERSITY OF TENNESSEE, MEMPHIS; SHERINE E. GABRIEL, M.D., MAYO CLINIC; ELIZABETH B. CONNELL, M.D., EMORY UNIVERSITY; LINDA RANSOM AND TARA RANSOM, PHOENIX, AZ; SYBIL NIDEN GOLDRICH, COMMAND TRUST NETWORK; SHARON GREEN, Y-ME; AND JAMA KIM RUSSANO, CHILDREN AFFLICTED BY TOXIC SUBSTANCES**

Dr. SERGENT. Thank you, Mr. Chairman.

I'm John Sergent, chief of medicine at St. Thomas Hospital and professor of medicine at Vanderbilt University in Nashville. In 1992–93, I was president of the American College of Rheumatology. When Dr. Kessler called for the voluntary moratorium on silicone gel breast implants and reconvened the FDA panel in 1992, I was one of two rheumatologists asked to be on that expanded panel.

Like most rheumatologists, I was familiar with the reports of rheumatic diseases following breast implantation, and when Dr. Kessler called for the moratorium, I assumed that we were going to hear new and convincing evidence that there truly was some relationship between breast implants and rheumatic diseases. However, the only clinical reports we heard were anecdotal series by rheumatologists and others whose views were well-known and whose patient referrals included large numbers of women referred by lawyers. There was no epidemiologically sound evidence presented.

The reason that good epidemiology was required to answer this question is that out of the million or so women that the FDA estimates had breast implants, one would expect to see 10,000 to 20,000 cases of rheumatoid arthritis develop over the years, along with several thousand cases of lupus and the other connective tissue diseases. Fibromyalgia, a symptom complex consisting primarily of diffuse aches and pains, could be expected to occur in even higher numbers.

All of these would be expected in any population of a million women, with or without silicone implants, and represent the background noise which can only be sorted out by good epidemiology. In 1992, at the time of the implant hearings, there had been no solid scientific studies done to look at this problem.

However, beginning that year and extending through last month, there have been a number of large studies using a variety of epidemiologic techniques. Some of the medical centers which have reported studies on this issue include Johns Hopkins, the University of Pittsburgh, M.D. Anderson, the University of Michigan, the Mayo Clinic and Foundation, the University of South Florida, and Harvard.

All of these studies reached the same conclusion: There is no increase in musculoskeletal symptoms or in any rheumatic disease in women with breast implants. So, from a scientific standpoint, the issue is resolved. I disagree with Congressman Ganske and with Dr. Kessler. The negative has been proven. As Dr. Shaun Ruddy, the current president of the American College of Rheumatology, put it, the only thing keeping this issue alive is litigation, not scientific inquiry.

But the litigation, fueled in part by the FDA moratorium, has had effects that go far beyond the issue of silicone implants. Good scientists, from outstanding universities, have been harassed by plaintiff lawyers, and they and their universities have been injured in the process. A distinguished editor of the New England Journal of Medicine has been similarly harassed for expressing her views. This will surely make doctors reluctant to get involved in answering similar questions in the future.

The FDA moratorium and the explosion of litigation will also have long-term repercussions in the whole field of implantable medical devices, as has already been discussed today. The United States has been the acknowledged leader of the world in this area. I wonder how enthusiastic U.S. companies will be about new product development in the years to come.

Finally, I would like to comment on the process the FDA used to examine this issue. The panel on which I served was called primarily to answer the question of whether FDA action was called for in light of the reports of various rheumatic diseases occurring in women with implants.

I maintained publicly at the time that the panel was almost uniquely unqualified to answer such a question. It contained only two rheumatologists, Dr. Nate Zvaifler and myself, neither of whom is an epidemiologist. The only epidemiologist on the panel had no apparent familiarity with the diagnostic difficulties involved in complex rheumatic diseases, as was also true of the panel's only immunologist.

Others on the panel were already on record as opposing implants for a variety of reasons, most having little or nothing to do with rheumatic diseases. For example, one panel member, in explaining her vote to restrict implants, stated that she decided to change her vote after a confrontation by the director of women's studies at her university.

The question before the FDA in 1992 was this: Is there an increased incidence of any rheumatic disease following silicone breast implantation? That fundamental epidemiologic question can only be answered one way, by good science. Good science is not decided by voting in a media-charged atmosphere such as the FDA hearing; it is decided by careful inquiry. In the case of breast implants and rheumatic diseases, all of the solid science shows that there is no relationship.

The primary responsibility of the FDA is to protect the public, but that public protection should be carried out with respect for the principles of good science and honest inquiry, not the junk science of poorly designed and unconfirmed laboratory tests, and anecdotal reports from doctors whose practice consists largely of women referred by plaintiff lawyers.

The FDA moratorium on silicone breast implants was an enormous error. Unless the fundamental process of decisionmaking by the FDA is changed, we can only expect more of the same in years to come.

Thank you.

[The prepared statement of Dr. Sergent follows:]

PREPARED STATEMENT OF JOHN S. SERGENT, M.D., VANDERBILT UNIVERSITY

I am John Sergent, Chief of Medicine at St. Thomas Hospital and Professor of Medicine at Vanderbilt University School of Medicine, both in Nashville, TN. I am a clinical rheumatologist, and in 1992–93 I was President of the American College of Rheumatology. After Dr. Kessler called for the voluntary moratorium on silicone gel breast implants and reconvened the FDA panel, I was one of two rheumatologists asked to be on that expanded panel.

Like most clinical rheumatologists, I was familiar with the Japanese articles which had appeared in the 60s and again in 1980s, and I was also familiar with a few anecdotal reports by physicians reporting various symptoms in patients with breast implants. At that particular time, scleroderma, a potentially fatal disease, had been reported in women with implants, especially in the Japanese papers.

Again, like most rheumatologists, I thought there might be something to this association. We already had evidence that drugs and environmental factors can cause clinical features that resemble scleroderma.

When I read that Dr. Kessler had called the moratorium, and then was asked to be on the panel, I assumed that we were going to hear new and convincing evidence that there was truly some relationship between breast implants and rheumatic diseases.

I was very disappointed by what occurred at the FDA panel. The only clinical materials presented were anecdotal series by physicians who had publicly stated that there was a relationship between breast implants and rheumatic diseases. It was clear that the pattern of referral of these physicians was based almost entirely on the fact that their views were widely known, and much of it was from plaintiff lawyers. I was disappointed that none of these physicians had made any attempt to look objectively at their data in an epidemiologic way.

At this point, I think I need to explain to you a little bit about the rheumatic, or connective tissue, diseases. The major rheumatic diseases bringing people to rheumatologists' offices, roughly in order of frequency, are as follows:

1. Fibromyalgia—this is a poorly defined symptom complex that consists primarily of aches and pains, sometimes with poor sleep patterns and other symptoms. It is extremely common, although no exact incidence figures are available. It is estimated by some rheumatologists that as many as 40% of their patients have this disease.

It is also said to be the most common cause of a rheumatology consultation in the country. Virtually all of these patients are women, usually between ages 25 and 50.

2. Rheumatoid arthritis—this disease affects between 1 and 2 percent of the population, or about 10–20,000 cases per million people. Approximately 70% of the patients are women, and the peak age of onset is about 40, although it is seen at all ages.

3. Systemic lupus erythematosus—this disease occurs at a frequency of about 1 case per 1–2,000 women, and approximately 90% of the patients who have the disease are women. Most of the cases occur between age 15 and 45.

4. Scleroderma—this is much less frequent, with about one new case per year per 100,000 people. It is also more frequent in women.

The other systemic inflammatory connective tissue diseases, including inflammatory muscle diseases, are also seen at a higher incidence in women than in men, although they are much less frequent.

Therefore, the reason that good epidemiology is required to answer questions in rheumatology is that out of the million or so women that the FDA estimates had breast implants, one would expect to see 10–20,000 cases of rheumatoid arthritis develop over the years, along with several thousand cases of lupus and the other diseases. Fibromyalgia could be expected to occur in much higher numbers. All of these would be expected in any population of a million women, with or without silicone implants, and represent the "background noise," if you will, which can only be sorted out by good epidemiology.

In 1992, at the time of the implant hearings, there had been no solid epidemiologic studies done to look at this problem. The first, later that year, was a retrospective look at a large population of patients with scleroderma at Johns Hopkins and the University of Pittsburgh. Out of 741 women with scleroderma 7 had undergone breast implantation, and the overall incidence of implantation prior to scleroderma was 0.6%, a figure not different from estimates of the incidence of breast implants in the population at large.[1]

Since then a number of important epidemiologic studies have been performed, and all have shown no increase in any rheumatic disease among implant recipients. Briefly summarized, the following are among the most important:

1. A study comparing women with silicone breast reconstruction after cancer surgery, compared to women who underwent breast reconstruction using their own tissues.[2] This study showed no increase in any rheumatic disease due to silicone.

2. A large study from the Mayo Clinic[3] which looked at 749 women with silicone implants and compared them to controls without implants. They also found the same incidence both of rheumatic diseases and of various musculoskeletal symptoms in the two groups.

3. A large study from Australia[4] which found no relationship between silicone implants and scleroderma.

4. Finally, a Harvard study[5] looked at 121,000 women, and found 448 cases of rheumatic diseases. There was no association between silicone implantation and any rheumatic disease, nor were musculoskeletal symptoms reported with increased frequency, which would make it extremely unlikely that silicone had caused a new previously undefined, disease.

In addition, in a unique approach a group from the University of South Florida[6] examined women who had had silicone breast implants and compared their symptomatology to women who had undergone other forms of plastic surgery not involving silicone. There were no significant differences in their musculoskeletal symptoms, again refuting the emergence of any new disease due to silicone.

So, from a scientific standpoint I believe the issue is closed. As Dr. Shaun Ruddy of Richmond, the current President of the American College of Rheumatology, put it, the only thing keeping this issue alive is litigation, not scientific inquiry.

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[1] Wigley FM, Miller R, Hochberg MC et al: Augmentation mammoplasty in patients with systemic sclerosis: data from the Baltimore Scleroderma Research Center and Pittsburgh Scleroderma Data Bank. Arthritis Rheum 35:S46, 1992 (abstr).

[2] Schusterman MA, Kroll SS, Reece GP et al: Incidence of autoimmune disease in patients after breast reconstruction with silicone gel implants versus autogenous tissue: a preliminary report. Annals Plast Surg 31:1–6, 1993.

[3] Gabriel SE, O'Fallon WM, Kurland LT, et al: Risk of connective tissue diseases and other disorders after breast implantation. N Engl J Med 330:1697–702, 1994.

[4] Englert HJ, Brooks P: Scleroderma and augmentation mammoplasty—a causal relationship? Aust NZ J Med 24:74–79, 1994.

[5] Sanchez-Guerrero JS, Colditz GA, Karlson EW, et al: Silicone breast implants and the risk of connective-tissue diseases and symptoms. N Enal J Med 332:1666–70, 1995.

[6] Wells KE, Cruse CW, Baker JL, et al: The health status of women following cosmetic surgery. Plast Reconstr Surg 93:907, 1994.

But the FDA moratorium has had effects that go far beyond the issue of silicone implants. Good scientists from outstanding universities have been harassed by plaintiff lawyers, and they and their universities have been injured by the process. A distinguished editor of the New England Journal of Medicine has been similarly harassed for expressing her views. This will surely make doctors reluctant to get involved in answering similar questions in the future, especially if there is a great deal of pending litigation.

And while I know little of the process involved in making implantable medical devices, I know something of the devices themselves. They are used for such things as artificial joints, heart valves, pacemakers, eye lenses, and various shunts, just to mention a few. The United States has been the acknowledged leader of the world in this area. One can't help but wonder if the result of the FDA panel won't have major repercussions in the area of new product development for many years to come.

Finally, I would like to comment on the process the FDA used to examine this issue. The panel on which I served was called primarily to answer the question of whether FDA action was called for in light of the reports of various rheumatic diseases occurring in women with implants. I maintained publicly at the time, and believe even stronger today, that the panel was almost uniquely unqualified to answer such a question. It contained only two rheumatologists, Dr. Nate Zvaifler and myself, neither of whom is an epidemiologist. The only epidemiologist on the panel had no apparent familiarity with the diagnostic difficulties involved in complex rheumatic diseases, as was also true of the panel's only immunologist.

Then that group was mixed with additional people who were already on record as opposing implants for a variety of reasons, most having little or nothing to do with rheumatic diseases. For example, one panel member, in explaining her vote, publicly stated that she had been confronted by the director of women's studies at her university because the original FDA panel, on which she also sat, had favored no restrictions.

The question before the FDA in 1992 was this: Is there an increased incidence of any rheumatic disease following silicone breast implantation. That fundamental epidemiologic question can only be answer one way: by good science. Good science is not decided by voting in a media-charged atmosphere such as the FDA hearing. Indeed, the argument could be made that the FDA panel, and all the publicity, have made it more difficult to do good prospective epidemiologic research. The conclusion the FDA reached was flawed, and it was flawed because the fundamental process of decision-making was flawed.

Mr. SHAYS. Doctor, thank you very much.

Dr. Shanklin.

Dr. SHANKLIN. Thank you, Mr. Chairman.

I'm Radford Shanklin. I've been a physician for 40 years. And as a physician and pathologist who used to be in clinical practice, I've seen many unusual and marvelous things. Over this time, however, I've not seen anything quite so distinctive as the tissue changes which are found actually in the women who have problems arising as a result of their implants.

I think there is another transportation vehicle that should be in the metaphor of the morning's hearing. There is another vehicle—whether it's a jet airplane or a truck on the parallel highway, we will find out—but that is the impetus given by basic clinical problems these women have, which have been reflected in both clinical and basic laboratory research. As a pathologist, I'm qualified to speak to that.

One of the things that is very impressive to me about the tissue diseases that they actually show is, in fact, the consistency that the findings appear to be from woman to woman, and the duration and consistency that they stay with that particular woman over many years.

I view the hearings today as not only the inheritor of the 1990 hearings, but, as I have indicated in my printed remarks, of the 1936 hearings of the 74th Congress on the Gawley Bridge disaster

in West Virginia, which was an industrial disaster with an acknowledged death toll of nearly 500 people, due to what we would call today accelerated silicosis.

The reason for mentioning that is very clear. The chart has been taken down, but it showed filler in the elastomer which is on the outside of the shell of the implant. That filler is amorphous silica and accounts for about 25 percent of the physical mass of that device, at that level.

There has been some talk about and some claims about amorphous silica being nontoxic. That is not true. There is an abundant literature, dating from the 1950's, showing that amorphous silica has similar reactions in the body to so-called crystalline silica, and we see that, certainly, in the pathological material that I have been privileged to examine over the last 10 years.

In addition to that, we recently made a presentation on the T-memory cell response to the various forms of silica, which was published in a FASEB journal in March of this year. It was a presentation, in abstract form, at their national meeting in Atlanta in April. All of these forms of silica are part of these products.

In addition to that, the basic chemistry indicates very clearly that the silicone can redegrade back to silica through the medium of silicate formation and then recondensation. The thermodynamics and the physics are very clear that this will happen, and we see it.

I brought some photographs to show the committee, but we're not able to do so. However, the staff does have my notebook, which I sent through, which shows similar pictures illustrating many of these lesions. We're talking about a real thing here, Mr. Chairman.

Not only that, in deference to my colleague to my right, he is essentially correct. The classical diseases of autoimmune type are not being seen with any increased frequency. This is a new disease, because this is a new substance that the human species has come into contact with. We have referred to it, in some of our writing, as an alien disease. It's actually sort of a wry joke, because it's man-made. Silicones do not occur in nature.

These things come together in my mind, as a basic scientist, because I see them in the tissues, and they cause a profound reaction which has immunological consequences. Some of the studies have indicated that there is not sufficient information about the atypical forms of disease. We have done peptide tests on the serum of women with so-called silicone disease, and their peptide profile is different from that of classical autoimmune processes.

Accordingly, the study by my colleague on my left is correct in that regard, but there is good evidence beginning to evolve in laboratories all over the country. Witness was given to this by the hearing, or rather, workshop, more correctly stated, at NIH in March, at which a number of basic researchers came forward and presented their material.

There was a consensus out of that that the products bleed gel into the tissues and that gel causes an immunological reaction. We have published work on that. The reaction or positivity rate is upwards of 90 percent of women with implants.

Another question which comes to my mind, as a physician and basic scientist, is the magnitude of the problem. We heard numbers

today of a million women. There is no data validating that available. The best guess is probably about half of that. The reason is because inflated figures were used early on in an attempt to gain attention, but we do a disservice to everybody if we persist in using false numbers.

On the other hand, if 80 percent or 90 percent of women become sensitive, ultimately, to their product, to their device, that still could constitute a very significant burden on public health facilities in the United States, because we're talking about 400,000 or more women.

The other question is, how long does it take for these things to show? Gordon Robinson, a surgeon, plastic surgeon, in Birmingham, AL, published a few months ago a study of 300 patients who had been followed for 20 years. The rupture rate in his report approximates 100 percent at the end of 20 years; that's 5 percent per year.

And he came up with a recommendation which really startled me, despite my familiarity with this field; namely, that these devices be removed by 8 years, which would be at a 40 percent rupture rate. That's a pretty high rupture rate, 40 percent. That is his clear recommendation. This is a man who spent much of his professional career putting these things into patients, for various reasons.

Now, the other question which comes to my mind is the immunological response. We see that in about 90 percent of individuals who have these implants. We see it in other types of individuals with different kinds of implants, but at a lower level.

I have no problem with hydrocephalic devices; they need to be done as a primary form of treatment. Breast reconstruction is a secondary form of treatment, and perhaps there should be a distinction there. It's still valuable. You have to know what the risk is. Time will tell. The length of time it takes to cause these diseases may be measurable by 15 or 20 years.

Dr. Kessler was unwilling to give a figure as to how long it's going to take. I would suggest that the real knowledge is now coming in. And if you look at the publications that have already come out in 1995, you see that there is a turnaround in these publications. It's now coming from basic centers, not from affiliates of any particular point of view, but the basic research is beginning to come forward from private sources, stimulated by clinical problems.

I realize the FDA is not a research organization, and perhaps they are not quite up-to-date on the literature either. But the data is coming forward, and it will show that there is enough information, in my personal opinion, to make a judgment on this. And the judgment is that implants are not safe, and when they cause disease, they should be removed.

Thank you.

[The prepared statement of Dr. Shanklin follows:]

PREPARED STATEMENT OF DOUGLAS R. SHANKLIN, M.D., UNIVERSITY OF TENNESSEE, MEMPHIS*

During my 40 years as a physician and pathologist I have seen many unusual and marvelous things but I have yet to see anything more impressive than the tissue changes due to silicone and silica after use of mammary implant devices, findings impressive for consistency of effect between different patients and for persistence over many years in various individuals.

Mr. Chairman, I view these hearings as the direct inheritors of investigations by Congress on two prior occasions. The more recent was on December 18, 1990 by this subcommittee on closely similar topics. But equally to the point, in my opinion, were the hearings of the 74th Congress, second session, on January 16, 17, 20, 21, 22, 27–29, and February 4, 1936 on the subject of the industrial disaster in the Hawks Nest Tunnel, at Gauley Bridge, West Virginia. There were 476 acknowledged deaths among tunnel workers from what modern medicine would now call accelerated silicosis.

This tragic event is relevant to the issues surrounding silicone breast implants because (1) amorphous silica is part of the envelope or shell on the outside of the device, and (2) because silicones degrade spontaneously and in the body to silicates which recondense into silica. The pathological evidence is now compelling: gel bleed from implants occurs into the surrounding human tissue (the periprosthetic capsule) as a matter of course and silica is often found in both scars and in nearby granulomas. The granulomas are a product of immunopathic responses mediated by various cells of the immune system, macrophages and lymphocytes. The lymphocyte response is through an interleukin-2 receptor process, one of the ways in which cells of the immune system signal to each other.

The body develops a memory through T-lymphocytes of the presence of both the silicone and the silica of these devices. The reaction is more severe to the silica, making these lesions, in effect, a form of silicosis, one which can be designated as capsular silicosis. It differs from the so-called traditional medical view of silicosis in that the lung is bypassed by surgical implantation of these devices.

Several years ago the objection was raised that the devices make use of amorphous silica whereas it is crystalline silica which is most readily found in the tissues of these women. This is a distinction without a difference. First, there is ample evidence in the scientific literature that amorphous silica causes the same reaction as crystalline silica. Extensive animal work was published in 1957 specifically on Dow Corning Degussa amorphous silica and a number of papers have appeared since demonstrating significant clinical disease in humans under certain industrial conditions. If anything, amorphous silica is somewhat more toxic. Second, direct comparative T-lymphocyte tests show no effective difference in cellular memory in implant patients to amorphous, fumed amorphous, or crystalline silica. The full range of autoimmune diseases seen in implant patients, including atypical and mixed forms, is seen in classical silicosis. Thus, the disaster at Gawley Bridge is directly relevant to our problems today.

I have said the pathological findings are compelling. We recently published a detailed survey of tissues on 100 patients which strongly supports this statement. The March 1995 N.I.H. Workshop on Silicone Immunology had multiple presentations confirming this work. But the immunological findings are also compelling. The reactivity of T-lymphocytes to silicone and its byproducts have been shown now in three independent laboratories and changes in immunoglobulins have been shown to tend toward abnormal forms associated with malignant transformation of B-lymphocytes. Abnormal antibodies are developed, in part due to chemical changes in surrounding tissue proteins. Since silicone gel itself can migrate all over the body these consequences are free to develop at sites far removed from the breast. The immune factors, of course, circulate freely in the lymphatic and blood circulations. I autopsied a woman about 50 years old whose death was septic from silicone interference with normal immune function; it was found in her brain and chest cavity among other extramammary sites. This case is just one of six autopsies I have been consulted on.

Some of the tissue and protein reactions are not those of traditional autoimmune diseases. This is one of the reasons why various epidemiological studies, some receiving disproportionate publicity, have failed to find a link. They have been looking

*Dr. Shanklin has served as an expert witness in the past, mainly but not exclusively for claimants, and has one case in active mediation. Review of diagnostic materials has been voluntary and funding for all research published and in progress has been internal. He was not a witness in the Hopkins case. A leading recent paper from our laboratories and a disease flow chart are attached to this statement. He represents no institution or group in these hearings.

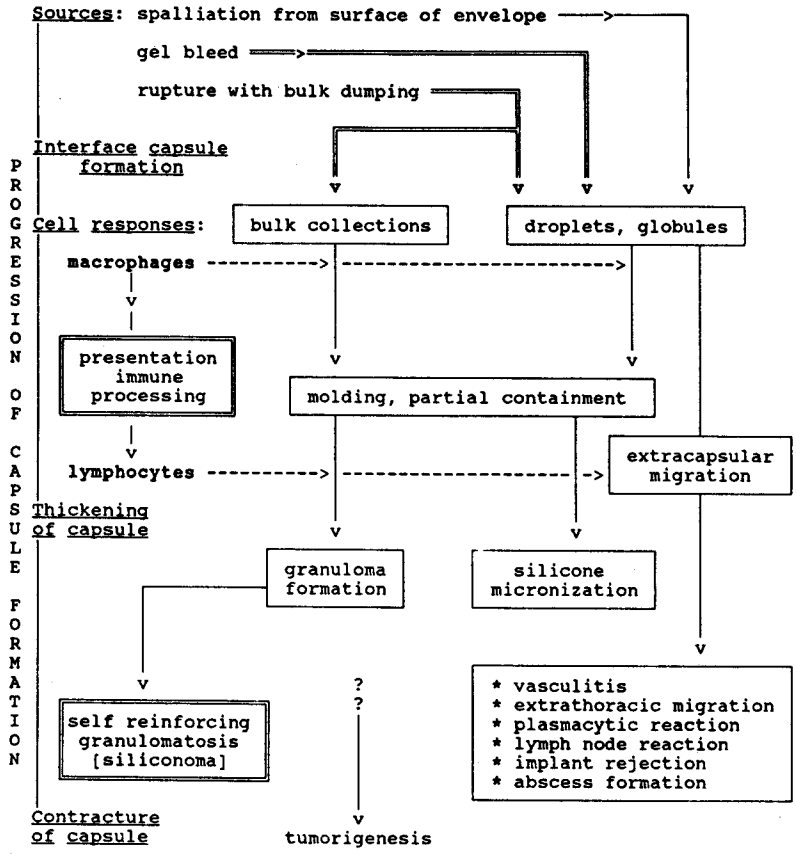
for the wrong diseases in addition to certain failures of method including poor sample power. This set of circumstances has prompted the American College of Rheumatology to form a special study group to formulate appropriate diagnostic criteria for a new autoimmune disorder, silicone disease, or whatever the formal designation may come to be.

We are talking here about strongly empiric findings, ones that cannot be refuted by insensitive field surveys or by promotional literature. Some of what is known today has come from industry documents discovered during litigation including many studies on immune factors, which were never offered for medical publication. Had these been generally available when done, beginning in the 1950s, these hearings would not have been necessary because the medical problems would have surfaced decades ago. The January 1992 moratorium on implants by Commissioner Kessler was the right thing to do on medical and toxicological grounds. It must be understood, however, that it was not the result of FDA staff work or a historical time review of implant manufacture compared to the progress of immunopathology, but in large measure from litigation documents. The language of Doctor Kessler's declaration in *Hopkins* v. *Dow Corning*, requesting release of the protective order for purposes of public disclosure, some 24 days after his request for a voluntary moratorium (which was heeded), and after the jury verdict for the claimant, does not clearly indicate whether Dow Corning supplied certain documents (including some in the case cited) requested by FDA before or after the FDA received other various documents from outside sources [Kessler, 30 January 1992, C88–4703 TEH]. The ultimate release of many such documents in 1992 has been followed by others as part of the Multi-District Litigation. Correlation of industry research shows awareness of the involvement of the immune system in silicone disease but, in general, these studies were of limited scope and little follow up has been found in similar records.

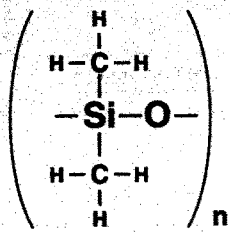
One set of internal documents was especially revealing: memoranda by Woodbury and Delongchamp showing that estimates of 1–2,000,000 women with implants simply could not be validated [Document DCCK MM 489617, December 10, 1990; document DCC 080011571–2, December 12, 1990]. Their estimates settled down to 320,000 women by mid-1990. This figure seems valid in retrospect. There were just over 400,000 registrants with the claims office of the MDL by June 1995 and almost 100,000 physician certifications have been filed for these women so far. The public health is not well served by touting falsely high numbers of women at risk. On the other hand, 100–400,000 sick or potentially chronically ill women is a large burden on the health care facilities of the nation. The trends are clear pathologically: more and more women will need explantation and a cogent therapy will have to be devised. The risk of malignancy remains to be determined and may not become obvious for a decade or more in the future, due to the long induction period of many human cancers. In addition, there is now accumulating laboratory and clinical evidence of second generation effects in children born to women after implantation. The good news is, when explanation is done along with careful removal of the capsular scar tissue surrounding the implants, the health of most women does improve. The extent of recovery is a subject for future study, as numbers are presently small. For women satisfied with their implants and unaware of any illness brewing within their bodies one can only say, may it ever be thus for you. The growing evidence of a limited product life, especially for implants of the late 1970s and the 1980s, is against them. Present data indicate a practical product life of twenty years within the body; Robinson now recommends removal at 8 years [Ann. Plast. Surg. 34:1–6, 1995]; the FDA is wrong not to recommend removal. Not all ruptures are recognized as such.

In summary, my experience in studying human tissues for almost ten years tells me that silicone devices are not inert in the human body, that gel filled ones leak and rupture with profound pathological and immunological consequences, that women can and do die from effects of their implants, and devices of this type are not the medical solution to post mastectomy reconstruction, or for mammary aplasia.

CELLULAR INTERACTIONS AND FATE OF SILICONE IN CAPSULAR TISSUES



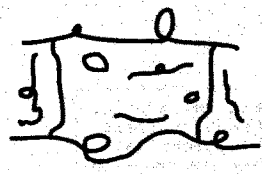
# STRUCTURE OF SILICONE POLYMERS



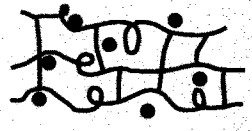

**Siloxane Monomer**

**OILS**
***Linear Polymers***

**GELS**
***Lightly***
***Cross-Linked Polymers***



**ELASTOMERS**
***Cross-Linked Polymers***
***Reinforced with Fillers***



RESEARCH COMMUNICATION

# Immunologic stimulation of T lymphocytes by silica after use of silicone mammary implants

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ABSTRACT **Difficulties in showing the biologic activity of silicones in vitro have contributed to the controversy over effects of silicone mammary implants in vivo. We adapted a standard lymphocyte stimulation test to detect evidence of cellular immunity in patients with silicone gel implants. Initially, lymphocytes were harvested from 70 implant patients, 76 normal controls without implants or symptoms, and 18 patients with classic rheumatic disorders and without a history of silicone implants. The harvested lymphocytes were stimulated with PWM, PHA, Con A, and pharmaceutical grade colloidal silicon dioxide (silica). Implant patients showed increased SI compared to controls and those with rheumatic disorders. The mean SI of implant patients was 195.0 ± 19.3, 18-fold that of normal controls (<0.0001). Patients with rheumatic disease showed the same SI as controls ($P$ = 0.3577). A follow-up study included 220 normal controls without implants, 942 silicone gel implant patients with demonstrable rheumatic symptoms, and 34 implant patients without symptoms at the time of the study. The average SI for the 220 normal controls was 10.0 ± 0.41. Among the symptomatic implant women, 860 (91.3%) had SI significantly above those of the normal controls. Of these, 171 (18.2%) had SI between 25 and 50, 316 (33.5%) had SI between 50 and 100, and 373 (39.6%) had SI over 100. The data presented confirms that silicone implant patients respond immunologically to the silicon dioxide contained in mammary prostheses.—Smalley, D. L., Shanklin, D. R., Hall, M. F., Stevens, M. V., Hanissian, A. Immunologic stimulation of T lymphocytes by silica after use of silicone mammary implants. *FASEB J.* 9, 424-427 (1995)**

*Key Words: lymphocyte stimulation · silicon dioxide · silicone breast implants · silicones*

DURING THE PAST SEVERAL YEARS, much debate has centered over the effects of silicone breast implants on women. The authors of one study claimed the "natural" incidence of autoimmune diseases was higher than that seen in implant patients (1). Yet reports of systemic sclerosis (2), scleroderma (3), and connective tissue disease (4) in implant patients continue to be published. Studies have established the physical presence of silicon (4, 5) and silicones (6, 7) in tissues at or closely adjacent to the prostheses, including axillary lymph nodes (8, 9). Antibodies to silicone elastomers have been reported in patients with silicone ventriculoperitoneal shunts (10) as well as after silicone mammary implants, especially after leakage or frank rupture (11). Such evidence, although confirming the presence of silicones and/or breakdown products outside prostheses and the existence of silicone antigenicity, has not resolved whether or how autoimmune disease might result from implanted silicone mammary prostheses. The results reported here demonstrate cell mediated immune reactivity, specifically the response of T lymphocytes when stimulated with silicon dioxide (silica).

## METHODS AND MATERIALS

The initial study was done on 164 patients. It included 70 implant patients with two or more of the symptoms previously described (12), 76 normal adult female controls without implants or symptoms, and 18 patients with classic rheumatic disorders without history or use of silicone implants. Of the rheumatic disorder group, 4 had lupus erythematosus, 10 had fibromyalgia, and 1 each had been diagnosed previously as mixed connective tissue disease, rheumatoid arthritis, osteoarthritis, and scleroderma. None of the 18 had silicone mammary implants and were otherwise typical of the clinical disorders noted. The average age of women with silicone implants was 43 with a range of 24-67 years; average implant time was 12.4 years with a range of 3-25 years. The average age of the control group was 42 with a range of 19-52 years.

An expanded study of 1,196 patients was done. It included 220 normal adults, both male and female, with no history of silicone implants, silicone injections, or other known exposure; none had any clinical symptoms of rheumatic disorders. The normal controls had an age range from 18 to 52 years. A total of 942 silicone gel breast implant recipients were tested; their ages ranged from 24 to 69 years. All demonstrated two or more of the symptoms previously reported as common in breast implant patients (12). These included excess fatigue or flu-like symptoms, arthralgia, myalgia, skin rashes, alopecia, night sweats, headaches, sicca syndromes, lymphadenopathy, and the Raynaud phenomenon. There were also reports of poor memory or cognitive dysfunction, shortness of breath, dyspnea on exertion, photosensitivity, and esophageal dysfunction. Thirty-four silicone breast implant patients without demonstrable symptoms were also tested. Their age range was 36-56 years.

The methods used to test lymphocyte response make use of venous blood lymphocytes (13). Briefly, 20 ml of blood drawn by standard venipuncture was placed into tubes containing acid citrate dextrose as anticoagulant. Blood was transported to the laboratory within 24 h for testing. Lymphocytes were recovered by standard ficoll-paque (Pharmacia LKB Biotechnology AB, Uppsala, Sweden) and washed three times in RPMI-1640 tissue culture medium (Grand Island Biological, Grand Island, N.Y.). Purified lymphocyte suspensions were used in microtiter plates. Three thorough washings were done to minimize nonspecific background reactivity. The initial stimulation studies used triplicate testing of unstimulated cells in RPMI-1640, mitogen stimulated cells in pokeweed mitogen (PWM),[2] phytohemagglutinin (PHA), and concanavalin A (Con A), and stimulation with colloidal pharmaceutical grade silicon dioxide (Paddock Laboratories, Minneapolis, Minn.). The larger, expanded study was simplified by using only Con A as the comparison mitogen, with unstimulated cells in RPMI-1640 and test cells with colloidal silica as before.

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[2]Abbreviations: Con A, concanavalin A; PHA, phytohemagglutinin; PWM, pokeweed mitogen; SI, stimulation index or indexes.



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TABLE 1. *Mean stimulation indexes for implant patients compared to normal adult controls, initial study*[a]

| Stimulant | Controls | Implant Patients | p |
|---|---|---|---|
| | ($n$ = 76) | ($n$ = 70) | |
| PWM | 23.5 ± 1.85 | 23.7 ± 1.86 | 0.9380 |
| PHA | 290.8 ± 28.1 | 258.5 ± 26.1 | 0.4052 |
| Con A | 455.3 ± 29.3 | 452.4 ± 37.1 | 0.9148 |
| Silicon dioxide | 11.4 ± 0.73 | 195.0 ± 19.3 | <0.0001 |

[a]Mean ± SEM.

The choice of soluble Con A as the sole comparison mitogen was based in part on T cell specificity of the agent (13) and in part on our accumulated experience with this agent for 8 years before the start of this work. Over time we have adjusted the strength of Con A when a new supply was put into use to maintain a constant range of lymphocyte response to Con A. This has made it possible to compare the results of current testing with previous samples, but has led to a different concentration in the methods reported by Geha and Merler (13). They reported maximal T cell responses at final Con A concentrations of 5–10 μg/ml; SI for Con A in their Table 2 was 45.3 (overall reported range = 45–71) with an average raw count for unstimulated cells of 684 (13). We found the most effective concentration for hand harvesting was 83 μg/ml. This has maintained the expected range of raw counts for unstimulated cells at 18–49 with only rare outliers in contrast to the value of 684 reported by Geha and Merler (13). Our raw counts for Con A ranged consistently between 7,000 and 14,000/min, less than half their mean of 31,015/min (13). We use at least five washings per test, with visual control of cell harvest. This has been our consistent practice for 8 years and keeps background counts low. Standard tritiated thymidine incorporation [0.5 μCi/ml) was the method of detection for lymphocyte proliferation (14). This contrasts to the strength of tritiated thymidine used by Geha and Merler (13), which was 1.0 μCi/ml. Beta counts were recorded for 5 min and reported as counts per minute. Triplicate values were averaged and results for lymphocytes stimulated by mitogen or silicon dioxide were expressed as a stimulation index found by dividing the average minute count for each agent by the count for unstimulated lymphocytes. The final result is also dependent on total cell culture time and thymidine incubation time. Geha and Merler (13) reported 72 h for cell culture and 16 h for tritiated thymidine pulse labeling. We used 96 h and 18 h, respectively. Standard statistical methods were used for determining the mean indexes, standard errors of the mean, and values of $P$ through the unpaired, two-tailed Student's $t$ test. Internal analysis of relative strengths and times accounts for the differences in raw counts; our system is more tightly controlled with consistently lower background counts (16).

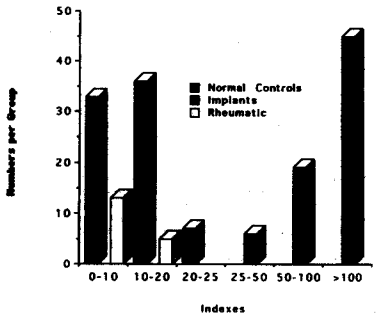


**Figure 1.** Stimulation indexes of 70 symptomatic breast implant patients compared to 76 normal controls and 18 rheumatic disorder patients after lymphocyte stimulation with silicon dioxide (silica, initial phase).

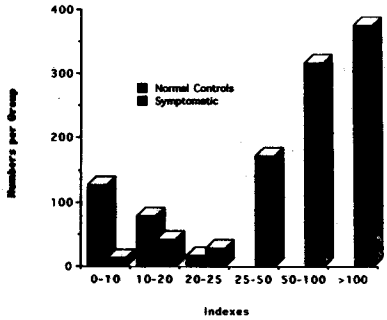


**Figure 2.** Stimulation indexes of 942 symptomatic breast implant patients compared to 220 normal controls after lymphocyte stimulation with silicon dioxide (silica, expanded phase).

## RESULTS

In the initial study, all but three implant patients demonstrated normal lymphocyte stimulation by PWM, Con A, and PHA. These three individuals had low stimulation indices after PWM but were well above the expected response with the other mitogens. The implant group showed an increased stimulation to silicon dioxide compared to normal controls (**Table 1**). The mean index of this group was 195.0, which is approximately 18-fold the index for the control group.

The correlation coefficient between duration of implant and the index was $r = -0.1556$, representing no correlation. There was no statistical difference between the silicone patients and controls for the three standard mitogens (Table 1) with $P$ values from 0.4 to >0.9. The results of mitogen and silicon dioxide stimulation for women with rheumatic disorders was indistinguishable from the normal controls ($P = 0.3577$). The average stimulation index for silicon dioxide in the rheumatic disorder patients was 7.1 (**Fig. 1**).

Among the 220 normal adults tested in the expanded study, the mean stimulation index (SI) was 10.0 (**Fig. 2**). To assess the distribution of SI for the implant patients, we used 2.5 times the mean of normal controls, 5.0 times the mean,

TABLE 2. *Mean counts/min of implant groups separated by level of response compared to normal controls (expanded study)*

| Group | Unstimulated CPM | Con A CPM | Silicon dioxide CPM |
|---|---|---|---|
| Normal controls ($n$ = 220) | 31 | 8690 | 281 |
| SI, 0–25 ($n$ = 82) | 33 | 7897 | 500 |
| SI, 25–50 ($n$ = 171) | 34 | 8740 | 1308 |
| SI, 50–100 ($n$ = 316) | 28 | 8357 | 2101 |
| SI, >100 ($n$ = 373) | 24 | 9264 | 3912 |

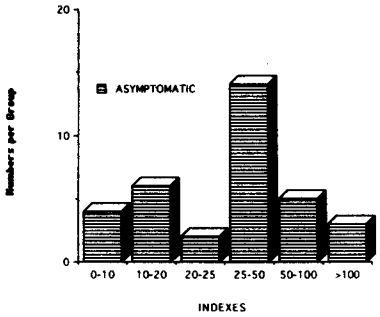


**Figure 3.** Stimulation indexes of 34 asymptomatic silicone breast implant patients after lymphocyte stimulation with silicon dioxide (silica, expanded phase).

and 10.0 times the mean as points of significant levels. Nine hundred forty-two implant patients were tested; 860 (91.3%) had SI above 25 (2.5 times the control mean), which we established as the threshold for positivity. One hundred seventy-one (18.2%) of the symptomatic patients had SI between 25 and 50; 316 (33.5%) has SI from 50 to 100; and 373 (39.6%) had SI greater than 100, more than 10 times the control mean (Fig. 2). As shown in **Table 2,** the mean unstimulated counts per minute for all groups had little variance as did the mean for Con A counts per minute. The raw counts for implant patients after stimulation with silicon dioxide varied from 500 to 3912 as reflected in the range of SI.

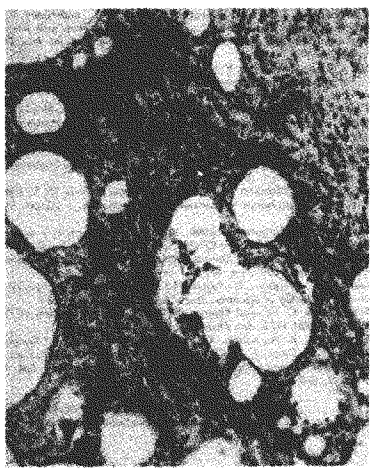

**Figure 4.** Intense lymphocytic infiltration about varied globular pockets of silicone, mammary prosthetic capsular tissue. Hematoxylin and eosin. Original magnification, 100X.

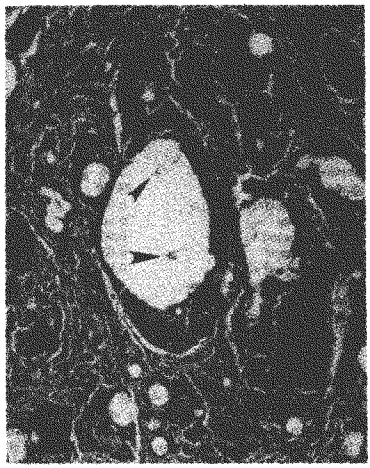

**Figure 5.** Granuloma formation with silicone within foreign body giant cells in mammary prosthesis capsular tissue. The substage has been set down slightly to enhance the optical quality of the silicone, which does not stain (arrows). Hematoxylin and eosin. Original magnification, 100×.

The SI distribution for asymptomatic women is shown in **Fig. 3.** Twenty-two (64.7%) of these women were above the index of 25 and 19 of the 22 (86.4%) were below an index of 100. As shown in **Fig. 4,** the lymphocyte reaction is occasionally very severe in human implant capsules with globular silicone throughout the tissue; sometimes the reaction is essentially pure foreign body granuloma (**Fig. 5**). Both reactions to silicon dioxide are commonplace in human and animal material; studies with fumed amorphous silica have shown it to cause a more severe lymphocyte reaction (15).

## DISCUSSION

The data demonstrates clearly that women with silicone mammary implants develop a cell-mediated immunopathic response to silica. Previous observations confirmed the specific cellular response was $CD3^+$ T lymphocytes (16). The lack of correlation between the T cell SI and the length of prosthesis exposure time is suggestive of variable reactivity among recipients over time and supports the belief that sensitization occurs early. In assessing patients with leakage or ruptures confirmed by ultrasound, magnetic resonance imaging, or surgical observation, we found the amount of leakage did not correlate with the level of response. Among 64 patients in the 0–25 range of SI, 33 (51.6%) had confirmed leaks. In the remaining groups with confirmed leaks, 60 of 148 (40.5%) patients had SI between 25 and 50; 126 of 280 (45.0%) patients were in the range 50–100; and 122 of 303

TABLE 3. *Principal ingredients of representative envelope ("shell") material in use, 1967–1992*

| Envelope material by stock number* | MDF-077 | Q7-2423 |
|---|---|---|
| Dimethyl methylvinyl siloxane, dimethylvinyl-terminated | 63.29% | 6.32 |
| Dimethyl siloxane, dimethylvinyl-terminated | 0.00 | 57.52 |
| "Amorphous silica" | **26.50** | **26.18** |
| Methylhydrogen siloxane | 0.00 | 4.77 |
| Dimethylhydrolyate | 0.00 | 3.08 |
| Hexamethyldisiloxane | 0.00 | 1.90 |
| Hexamethyldisilazane | 8.83 | 0.08 |
| Dimethyl methylvinyl siloxane | 0.00 | 0.08 |
| Dimethyl methylhydrogen siloxane | 1.07 | 0.00 |
| Chloroplatinic acid | 0.15 | 0.07 |
| Methylvinyl cyclosiloxane | 0.15 | 0.00 |

*Dow Corning Corporation.

(40.3%) patients had SI greater than 100. These findings suggest exposure to low molecular weight gel bleed and the outer silicone shell (**Table 3**). Mitogenic studies among the implant patients confirm that normal stimulation occurs and that it is not different from the normal controls. None of the initial patients had SI below 25; however, in the expanded study nearly 10% of symptomatic patients showed no increased response to silicon dioxide. This may represent a group of women postexplant with immune quiescence or they may be nonresponders to silicon dioxide with the possibility their symptoms are due to some other cause or causes.

A large percentage (91.3%) of symptomatic implant patients did demonstrate T lymphocyte response to silicon dioxide. Silica accounts for a quarter of the envelope (Table 3) (17), and in vivo degradation of silicone has now been established by nuclear magnetic resonance (18). In addition, clear evidence of spread of silicone and its metabolites to nearly every major organ may facilitate the immune reaction and account for many specific symptoms among implant patients (19).

The demonstration of specific T lymphocyte response to silica is in agreement with the comparative studies recently reported by Ojo-Amaize et al. (20). These authors studied lymphocyte responses to elemental silicon, unspecified silicone, silica, and various other metals, including beryllium, chromium, and nickel. Silica caused a consistently more vigorous result than either silicon or silicone as well as all other substances that were compared (20).

Asymptomatic implant patients clearly show a different distribution of SI. Of the 34 tested so far, 22 had SI below 100. This suggests some patients may be immunologically reactive at low levels and have not begun to manifest symptoms. Another possibility is the data are showing a group of nonresponders with the need for assessment for genetic markers for tolerance.

The present study confirmed that lymphocytes from women exposed to silicone gel mammary implants can be antigenically stimulated by silicon dioxide. Accordingly, human tissue reactions to substances in or from the implants follow the expected immunopathic sequence of processing by macrophages, sometimes leading to granuloma formation, and presentation to lymphoid centers for specific T cell production. This study shows a T lymphocyte response to silicon dioxide (silica), which likely contributes to tissues changes seen pathologically and to the spectrum of clinical silicone-associated disease. FJ

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Mr. SHAYS. Thank you, sir.

This is an interesting panel.

Dr. Gabriel.

Dr. GABRIEL. Thank you.

Mr. Chairman, members of the committee, my name is Sherine Emily Gabriel. I'm a rheumatologist and associate professor of medicine and epidemiology at Mayo Medical School and the principal investigator of the study entitled "Risk of Connective Tissue Diseases and Other Disorders After Breast Implantation," which was published in the New England Journal of Medicine on June 16 of last year.

Connective tissue diseases are autoimmune disorders such as rheumatoid arthritis and lupus, which are characterized by inflammation of the joints, skin, and internal organs, as you have heard. Since 1962, approximately 900,000 North American women have received silicone breast implants. An increased risk of connective tissue diseases related to implants has been postulated in the medical literature. This is an important concern for many of these women.

Mr. Chairman, strong scientific evidence now indicates that there is no link between breast implants and an increased risk of these conditions. My testimony will focus on that evidence.

In order to establish whether breast implants cause connective tissue diseases, it is not enough to note that some women with implants have developed these conditions. Instead, it is necessary to determine whether women with implants are developing these conditions at a higher rate than women of the same age and health who do not have implants.

The only way to determine whether the rate of these diseases is higher among women with implants compared to women without is to perform what is known as a controlled study. In the absence of a control group, that is, a comparison group of women without implants, the conclusion that medical conditions among women with implants are, in fact, caused by these devices is not scientifically valid.

Until recently, the published medical literature describing the relationship between breast implants and connective tissue disorders consisted virtually entirely of case reports and case series; that is, descriptions of one or more women with implants who subsequently developed a variety of medical problems. Such reports contribute virtually no scientifically valid information bearing on the question of whether implants cause connective tissue diseases.

As you have repeatedly heard today, numerous controlled, scientifically valid studies have now been published which specifically address this question. As an aside, Dr. Brown earlier testified to the relative strengths and weaknesses of case control and cohort studies, citing a single case control study.

There are, in fact, several others which are referenced in my testimony, including a multicenter case control study among 869 women with systemic sclerosis, recruited from three university-affiliated rheumatology clinics and 2,061 matched community controls. The relative risk of that study was also not statistically significantly different from unity.

Our study included virtually all Olmsted County women who received breast implants between January 1, 1964, and December 31, 1991, a total of 749 women with implants who were compared to 1,498 community women who did not have implants. We found no connection between breast implants and connective tissue diseases. These results have been confirmed in numerous additional controlled studies, as I have mentioned.

Most recently, a controlled study from Harvard also found no association between silicone breast implants and an increased risk of either connective tissue diseases or a list of 42 related symptoms among 121,700 registered American nurses followed since 1976. And these results also, as you have heard, were published in this year's New England Journal of Medicine, this June.

To summarize, not one of these controlled epidemiologic studies identified a link between breast implants and connective tissue diseases. These remarkably consistent results prompted the governments of some countries to review this topic. For example, in December 1994, the medical devices agency of the Department of Health in the United Kingdom reported their evaluation of the evidence for an association between breast implants and connective tissue diseases.

The resulting 60-page document, which included critical appraisals performed by an independent scientific expert advisory group, concluded that "There is no evidence of an increased risk of connective tissue diseases in patients who have had silicone gel breast implants and therefore no scientific case for changing practice or policy in the United Kingdom with respect to breast implantation."

In light of this overwhelmingly consistent accumulation of scientific research, I respectfully recommend that the Food and Drug Administration assemble an independent panel of scientific experts who have no ties with industry and have not been involved in breast implant litigation. This panel would carefully review the available evidence specifically regarding an excess risk of connective tissue diseases among women with breast implants and provide a public policy statement. It is my hope that this statement will reduce some of the anxiety that women with implants feel regarding the future.

Finally, Mr. Chairman, this was not part of my prepared comments, but there have been some comments made this morning about research funding, so I would just like to clear the air on this issue with respect to my own study. For my study, there were three sources of funding.

Mayo Foundation provided the initial funding. We then successfully competed in a peer-reviewed research grant competition from the Educational Foundation of the American Society for Plastic and Reconstructive Surgeons. And, finally, the National Institutes of Health provided the funding for the Rochester epidemiology project, which is the underlying data resource upon which this study was based.

I wanted to emphasize that my interest in the breast implant issue has always been strictly scientific. And while we did receive the grant from the Plastic Surgery Educational Foundation, the study was independently conceived, designed, and implemented by the research team under my direction.

In fact, the design was complete and the study was already under way, using Mayo funds, before the grant was awarded.

The Plastic Surgery Educational Foundation had no input into the design, analysis, or interpretation of the results, and they placed no limitations or restrictions on the publication of the results. The bottom line, Mr. Chairman, is that we would have done exactly the same study, exactly the same way, regardless of who funded it.

Thank you.

[The prepared statement of Dr. Gabriel follows:]

PREPARED STATEMENT OF SHERINE E. GABRIEL, M.D., MAYO CLINIC

Mr. Chairman, members of the committee, my name is Sherine Emily Gabriel. I am a rheumatologist, and an Associate Professor of Medicine and Epidemiology at Mayo Medical School. I am also the principal investigator of the study entitled "Risk of Connective Tissue Diseases and Other Disorders After Breast Implantation" which was published the New England Journal of Medicine on June 16, 1994.[1] Connective-tissue diseases are autoimmune disorders such as rheumatoid arthritis and lupus, which are characterized by inflammation of the joints, skin, and internal organs.

Since 1962, approximately 1 to 2.2 million North American women have received silicone breast implants.[2,3] An increased risk of connective-tissue diseases, related to implants, has been postulated in the medical literature.[4–15] This is an important concern for many of these women. Mr. Chairman, strong scientific evidence now indicates that there is no link between breast implants and an increased risk of these conditions. My testimony will focus on this evidence.

In order to establish whether breast implants cause connective-tissue diseases, it is not enough to note that some women with implants have developed these conditions. Instead, it is necessary to determine whether women with implants are developing these conditions at a higher rate than women of the same age and health who do not have implants. The only way to determine whether the rate of these diseases is higher among women with implants compared to women without implants is to perform what is known as a controlled study. In the absence of a control group, i.e.,

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a comparison group of women without implants, the conclusion that medical condidons among women with implants are, in fact, caused by these devices is not scientifically valid.[16] Until recently, the published medical literature describing the relationship between breast implants and connective-tissue disorders consisted virtually entirely of case reports and case series, i.e., descriptions of one or more women with implants who subsequently developed a variety of medical problems. Such reports contribute virtually no scientifically valid information bearing on the question of whether implants cause connective-tissue diseases.

Over the past 18 months, 7 controlled, scientifically-valid studies have been published which specifically address this question. Our study included virtually all Olmsted County, Minnesota women who received breast implants between January 1, 1964 and December 31, 1991; a total of 749 women with implants and 1498 women who did not have implants.[1] We found no connection between breast implants and connective-tissue diseases. These results have been confirmed in 6 additional controlled studies.[17-22] Most recently, a controlled study from Harvard found no association between silicone breast implants and an increased risk of either connective-tissue diseases or related symptoms among 121,700 registered American nurses followed since 1976.[17] These results were published in the New England Journal of Medicine in June of this year. To summarize, not one of these 7 controlled epidemiological studies identified a link between breast implants and connective-tissue diseases.

These remarkably consistent results prompted the governments of several European countries to issue policy statements on this topic. For example, in December 1994, the Medical Devices Agency of the Department of Health in the United Kingdom reported their evaluation of the evidence for an association between breast implants and connective-tissue diseases.[23] The resulting 60-page document, which included critical appraisals performed by an independent expert advisory group, concluded that "there is no evidence of an increased risk of connective tissue diseases in patients who have had silicone gel breast implants and therefore no scientific case for changing practice or policy in the United Kingdom with respect to breast implantation". Likewise the French Ministry of Health stated in a press release on January 24, 1995 that "an analysis of international scientific literature demonstrates that the risk of a patient developing an autoimmune disease or cancer following the implantation of gel-filled breast prostheses is no greater than the risk of such diseases in the general population . . . and that the moratorium of January 1992 . . . has been lifted".[24]

In light of this overwhelmingly consistent accumulation of scientific research, I respectfully recommend that the Food and Drug Administration assemble an independent panel of scientific experts who have no ties with industry, have not been involved in breast implant litigation, and have not participated in the existing studies. This panel would carefully review the available evidence, specifically regarding an excess risk of connective-tissue diseases among women with breast implants, and provide a public policy statement. It is my hope that this statement will reduce some of the anxiety women with implants feel regarding their future.

Thank you for your attention.

Mr. SHAYS. I thank you, Doctor.

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Dr. Connell, nice to have you here.

Dr. CONNELL. Good afternoon. I'm Dr. Elizabeth Connell.

Mr. SHAYS. You were probably expecting you were going to be able to say "Good morning."

Dr. CONNELL. You read my notes. I have crossed out "morning" and substituted "afternoon." I realized this was inevitable.

Mr. SHAYS. We're new at this, and we have to learn to maybe have some of the panels come later. But we're learning.

Dr. CONNELL. Oh, I wouldn't have missed this for the world.

Mr. SHAYS. Nice to have you.

Dr. CONNELL. I am professor in the Department of Gynecology and Obstetrics at Emory University in Atlanta. Mr. Chairman, I want to thank you for inviting me today.

This is a meeting which I believe is critical in its importance, particularly to American women. As I thought about what to talk about that might be useful, I thought I would try to base my testimony on three things: First, a doctor who has provided health care to women for more than 40 years; second, as an advisor to the FDA for 25 years; and then, also, as a teacher, researcher, author, and program director.

First and foremost, I am a physician. I was a general practitioner in rural Maine for 5 years. I got my training in OB/GYN, spent a year doing cancer surgery. While I was in rural Maine, I took care of men, women, and children, from all walks of life, with all types of diseases.

I have delivered women of their babies under ideal circumstances, in aseptic, brightly lit hospital delivery rooms. One cold, bitter night, I also delivered one woman of her baby by moonlight on the front seat of an ancient pickup truck, surrounded by her distraught husband and seven utterly fascinated children. I might add, parenthetically, they never paid me.

I then went into practice and developed clinics in New York City. I worked for the Rockefeller Foundation as a philanthropoid for about 5 years. At the Federal level, I was on the research advisory council to the State Department. And during these same years I also managed to have six wonderful children, five sons and one daughter.

I originally thought it might not be appropriate to approach my testimony in this very highly personal fashion, but I thought it might be useful to share with you my national and international experience in these areas.

When I was first invited to chair the General Plastic Surgery Devices Panel, convened first in 1991, I was told the reasons for this were two: first of all, my many years of working in women's health care; and second, because of my extensive experience serving on FDA advisory panels. I've now been on six, and I've chaired three of them.

As you have heard, our mandates from Dr. Kessler were two in number: First, we were to evaluate the PMA's of four companies making breast implants; second, we were asked, was there a public health need for these devices. After three rather arduous, stress-filled days, we gave our recommendations.

First of all, we said that the data from the four companies were not adequate for approval. However, I think it's absolutely critical

that two points be made. This in no way said that the panels felt these devices were unsafe or that they posed a threat to women. If this were the case, we would immediately have recommended getting rid of the devices.

Second, I think it has been misconstrued, the fact that we did not approve these PMA's. It's not the least bit unusual for PMA's not to be approved, to be asked to come back with additional information. I think it's critical that we make these distinctions.

As regards the second question, we said, yes, we have heard from both augmentation and reconstruction patients that these were critical to them. We felt, as a panel, they should continue to be made available, but with informed consent.

You know about the moratorium, and we were reconvened in February 1992 and, happily, were joined this time by Dr. John Sergent. We were asked to look at three issues: documents from Dow Corning, information on local issues—you've heard a lot about that this morning—and then additional case reports—I emphasize "case reports"—looking at a possible connection between silicone gel breast implants and autoimmune disease.

We were asked two questions: Given these concerns about leakage, rupture, and so forth, what should we tell women who were wearing devices? And, second, should they continue to be available; and if so, under what circumstances?

We concluded that, again, we did need additional data and that there was a public health need. We recognized that there were local conditions. These had been known for many, many years. They are in labeling. We felt women should be given the best possible scientific advice, and they should make their own informed decisions, along with their physicians.

We again concluded there were no significant data linking breast implants and connective tissue disease. This time we said, yes, we should continue to make them available; we should develop protocols, FDA, NIH, and others, that will allow us to answer the unanswered questions.

Now, the third area I would like to look at is what the current climate is doing to many of us, particularly the health care of women. I strongly believe that there are critical implications for a number of important and, as you have heard, life-saving devices, and I am particularly concerned, as a researcher, about what is going to happen in the future, in terms of development of new, innovative, and creative technology.

I would hasten to point out that there has been a lot of discussion about the data. The data we had at the hearings was strictly anecdotal. It came from case reports, and you never can answer questions of this type with that type of data. Very happily, as you have heard, we then had a series of excellent studies published in our leading scientific journals. You have heard the decision of the British.

I think it is critical to point out that I believe we should put an end to this. This has had a profound effect on women, the medical profession, the research community, the pharmaceutical industry. We have seen fear. We have seen panic. We have seen many women who are asymptomatic undergoing surgery, with attendant risks.

In addition, I would like to point out that many women have been advised to have extensive and costly laboratory tests carried out, and I would like to read you a position statement of the College of American Pathologists. "Such tests provide no findings uniquely indicative or supportive of purported silicone-induced autoimmune disease in implant recipients. To date, the FDA has not approved any such tests."

I think, even more unfortunate, women subjected to these tests have submitted to untested, expensive, unapproved, and possibly dangerous treatments. Many of these women do, in fact, have autoimmune disease; they blame them on their implants. They do not get a correct diagnosis, nor do they get effective therapy. As somebody who spent 5 days last week worrying about what if the mass in my breast was cancer or not, I can assure you the agony of this wait is horrendous.

I would like to point out, as OB/GYNs, we have lost Bendectin, a series of IUDs; we are about to lose Norplant. I firmly believe that the time has now come to give visibility to this issue. I would like to make two recommendations:

First of all, I think the new information should be made available. I think it's time that the FDA made a public statement about the scientific consensus. There is no question there is a chilling effect on industry, what is going on now. And I would like, finally, to recommend to you that you urge, in some fashion, the various agencies, the FDA, NIH, and others, to convene a scientific—and I would say urgently—scientific meeting in order to finally put to rest the question of silicone autoimmune disease.

I really believe that only in this fashion will be begin to see the end of this extremely destructive and tragic situation.

Thank you very much.

[The prepared statement of Dr. Connell follows:]

PREPARED STATEMENT OF ELIZABETH B. CONNELL, M.D., EMORY UNIVERSITY

Good morning. I am Dr. Elizabeth B. Connell, professor in the Department of Gynecology and Obstetrics, Emory University School of Medicine in Atlanta, Georgia.

Mr. Chairman, I would first like to thank you for inviting me to appear before you today. I fully recognize the tremendous importance, particularly to American women, of the course and the outcome of this hearing. When one first receives such an invitation, one has a moment of introspection—what should I talk about that would be of maximum value to you and your colleagues today and possibly in the future? After much thought I decided that there were three key areas in which I might possibly be able to make a contribution based on my own personal experience: (1) As a doctor who has provided health care to women for over 40 years; (2) as an advisor to the Food & Drug Administration (FDA) for 25 years; and (3) as a teacher, researcher, author and program director.

First and foremost I am a physician. I was a general practitioner in rural Maine for five years. Following this, I received my training in obstetrics and gynecology and spent an additional year doing cancer surgery. While in rural Maine I took care of a wide variety of patients—men, women and children from all walks of life, suffering from many different diseases. I have delivered women of their babies under ideal circumstances in aseptic, brightly lit hospital delivery rooms and one bitter cold night I also delivered one woman of her baby by moonlight on the front seat of an ancient pickup truck, surrounded by her distraught husband and seven utterly fascinated children.

After completing my training I went into practice in New York City. I also began to develop clinics in Spanish Harlem, offering health care to women, first at New York Medical College and subsequently at Columbia University's College of Physicians and Surgeons. During these years I had the opportunity to conduct numerous

research projects and I began to publish scientific papers which now number close to 200.

Following this, I had the privilege of working for five years at the Rockefeller Foundation in New York City, as the Associate Director of Health Sciences. On the federal level, I have been associated with the U.S. Department of State, Agency for International Development, serving as a member of their Research Advisory Committee. During these years I also managed to have six wonderful children, five sons and one daughter.

I originally shrank from approaching my testimony in such a highly personal fashion. However, it seemed to me that my multiple areas of experience, both nationally and internationally, might perhaps prove to be of some value to you today.

When I was first invited to chair the General and Plastic Surgery Devices Panel to be convened in 1991 to evaluate silicone gel-filled breast implants, I was told the reasons for this were two in number: first, because of my many years of experience working in various aspects of women's health care and second, because of my extensive experience serving on FDA advisory panels, now numbering six, three of which I have chaired.

I would like to first describe for you the mandate given to the Panel and the conclusions it reached during the first hearings which took place from November 12–14, 1991. When Dr. David Kessler, the FDA Commissioner, opened our meeting, he gave us two major charges. First, we were to evaluate Premarket Approval Applications (PMAs) of four manufacturers who had submitted data on the safety and efficacy of their breast implants, and then advise the FDA whether or not the PMAs were adequate for approval. Silicone breast implants had been on the market for 30 years. Secondly, we were asked to consider whether there was a public health need for breast implants. In this context, we were asked additionally to decide whether particular groups of patients, specifically those who had undergone major breast surgery or had significant deformities, should be viewed as distinct from the larger group of women who had had their implants put in for augmentation.

After three arduous, stress-filled days of hearing from dozens of witnesses followed by our Panel deliberations, we p;ave our recommendations to the FDA regarding these two mandates. First, we did not find the data from the four manufacturers to be adequate for approval. However, it is absolutely critical to point out at this juncture that this in no way was a statement by the Panel that these devices were unsafe or that they posed a threat to the health of the women who were wearing them. If we had felt that this was the case, we would have recommended that they immediately be removed from the marketplace. As to our second mandate—whether there was a public health need—we unanimously agreed that there was; we felt that there was ample evidence that silicone breast implants were of significant importance to both augmentation and reconstruction patients.

Following this meeting, on January 6, 1992, the FDA requested a voluntary moratorium on the use of silicone breast implants pending the evaluation of new evidence. It also promised that we would be reconvened as a panel within the next 45 days. This second meeting occurred from February 18–20, 1992. The panel membership remained essentially the same; however, three additional consultants were added, most importantly, two individuals expert in the field of rheumatology, Dr. Nathan J. Zvaifler and Dr. John S. Sergent, one of your witnesses today.

As he had done in the previous November meeting, Dr. Kessler gave very specific mandates to the Panel. He first advised us that we were not being asked to revisit the decisions regarding the PMAs that we had made at our first meeting. He said that we had been asked to reconvene because of new information that had become available to him. He listed three sources: documents from one manufacturer, Dow Corning; second, information from clinicians about issues such as breast implant rupture, leakage and bleed; and third, additional case reports suggesting a possible connection between silicone gel breast implants and inflammatory and autoimmune disorders.

We were asked at this meeting to answer two basic questions:

First, given concerns about leakage and rupture, what recommendations should be given to women who already had breast implants?

Second, in light of the new information, should these devices continue to be used and, if so, under what conditions?

Following another three arduous days of testimony and deliberations, the Panel continued to conclude that, although additional data on the implants themselves and on their safety and efficacy should be required, there continued to be a public health need for these devices. The Panel recognized that there were complications, including rupture, bleed, and contracture, which resulted from the use of breast implants; but these had been known and documented for many years. The panel therefore recommended that the best available scientific information be given to women;

those who were asymptomatic were advised to continue their use, if so desired, and those with any symptoms should consult their physicians. However, on the key safety issues, the Panel again concluded that there were no scientific data that silicone breast implants posed a significant health risk to women, most specifically in the area of connective tissue or autoimmune disease.

Thus, the Panel this time again concluded that the devices met a public health need and should continue to be available but should be studied in order to answer the remaining safety questions. In this regard, the Panel recommended that breast implants be made available to all individuals who needed them for reconstruction, most importantly, those women who had breast cancer. In addition, the Panel recommended that some women be allowed to have implants for augmentation. In both cases, the Panel recommended that the implantations be done under clinical protocols to be designed by appropriate agencies and organizations such as the FDA, NIH, plastic surgeons and other relevant groups, in order to gather new and statistically valid scientific information.

The third area which I would now like to turn to is a more general consideration of what has transpired in the three years since our second Panel meeting, including an overview of the current climate with regard to the health care of women. I believe strongly that there are critical implications of the current situation for a number of important and sometimes life-saving devices we already have and for the future development of new and innovative products needed in the field of medicine in general and the field of women's health care in specific.

The material which came to the Panel suggesting a possible association between silicone breast implants and autoimmune diseases was derived exclusively from anecdotal information and case reports. These types of information can never provide an adequate scientific basis on which to prove a causal relationship. Following our deliberations, as we had urged, a number of controlled epidemiologic studies were undertaken to look at the possible association. These studies have uniformly failed to demonstrate a statistically significant association between silicone breast implants and any autoimmune disease, connective tissue disease or symptom complex. A list of some of the most important of these, along with their conclusions, is attached to my testimony.

It is important to note that in contrast to the earlier anecdotal information available to the Panel, these studies originated from research done in some of our most highly qualified medical institutions such as the Mayo Clinic, Harvard Medical School, University of Michigan School of Public Health, Johns Hopkins Medical Institutions, Emory University, and M.D. Anderson Cancer Center. These researchers looked not only at the medically recognized connective tissue diseases such as systemic lupus erythematosis, scleroderma, and rheumatoid arthritis, but also evaluated a large number of symptoms—more than 40—which have been alleged to have an autoimmune origin. Also, it should be noted that the publications which I have listed for you have not only originated in our best medical centers but have been and continue to be published in our most outstanding scientific journals, including the New England Journal of Medicine, the Journal of Clinical Epidemiology, and Arthritis and Rheumatism.

It is, I believe, of great interest and importance that similar evaluations of silicone breast implants have been carried out by regulatory agencies in other countries. Two of the most extensive and important of these were conducted in 1992 and 1994 for the Medical Devices Directorate of the U.K. Department of Health. It set up an Independent Expert Advisory Group which reviewed all of the relevant literature and studies available and concluded "that there is no evidence of an increased risk of connective tissue disease in patients who have had silicone gel breast implants and therefore no scientific case for changing practice or policy in the U.K. with respect to breast implantation." Similar evaluations reaching the same conclusion, have been carried out in other countries.

Finally, I would like to conclude by examining the effect this series of events has had on women, the medical profession, the research community and the pharmaceutical industry viewed from my perspective of many years as a practitioner, researcher and advisor. My greatest concern is for the women who either are presently wearing silicone breast implants or are contemplating their use in the future. Because of the intense and often misleading media coverage of this issue, particularly after the moratorium, we have seen fear, panic, and incredible levels of distress all over the country among those women who have been led to believe that they were wearing very dangerous devices and were at risk of serious health consequences, particularly in the area of autoimmune disease. Women, including many who were asymptomatic, have requested explantation of their prostheses, often not an inconsiderable as well as expensive surgical procedure, usually requiring general anesthesia with its own attendant risks.

In addition, many women have been advised to have extensive and costly laboratory tests carried out on blood, urine, and tissue, looking for abnormalities alleged to be caused by their breast implants. In a recent position statement of the College of American Pathologists it was pointed out that "such tests provide no findings uniquely indicative or supportive of purported silicone induced autoimmune disease in implant recipients." It further noted that, "To date, the FDA has not approved any such tests."

Even more unfortunate, many women have been subjected to expensive, untested, unapproved and possibly dangerous treatments based on the results of these tests. Moreover, symptomatic women who actually are suffering from some form of autoimmune disease, which they blame on their implants, fail to obtain a correct diagnosis and effective medical therapy.

Another major, very critical and potentially very damaging outcome of the current scene is the rapidly escalating number of lawsuits filed against the manufacturers of silicone gel-filled breast implants, many of them by women alleging autoimmune sequelae resulting from the use of their devices. This is ironic and inappropriate inasmuch as there is now a general consensus in the medical community, particularly amongst those involved in the field of rheumatology, that such an association does not exist. The recent epidemiologic studies suggest that these are women who would have developed their autoimmune problems in any event and who only coincidentally also had silicone breast implants.

Finally, in the broadest possible sense, I believe that it is critical to evaluate the impact of what is going on in the United States today as the direct result of this type of litigation, particularly as it relates to the impact on the health care of women. For example, Bendectin, the only drug we had available to treat severe nausea and vomiting of early pregnancy, disappeared from the medical armamentarium based solely on litigation, not on scientific evidence. We have also seen the withdrawal from the marketplace of several intrauterine devices, for the same reason, despite the fact that they are still FDA-approved. We are currently witnessing massive litigation being mounted against an excellent contraceptive product, the silastic subdermal implant named Norplant. Plaintiffs' attorneys once again claim that it causes autoimmune disease in the total absence of scientific evidence.

There is also growing concern about the possible fate of other critical medical devices made of silicone such as testicular implants, hydrocephalic shunts, pacemakers, heart valves, artificial joints, etc. There is even greater concern about the potential loss of medical materials made out of silicone by manufacturers based on the very real fear of litigation. Valuable time, money and effort are now being spent looking for possible replacements for these materials. Even more ominous are the incredible pressures currently being applied by claimants' lawyers to individual researchers, their institutions and their publications.

It is even more frightening to look into the future. We are seeing companies who previously spent major portions of their time and money developing new and innovative medical drugs and devices, particularly those for women, disappearing from the scene. The United States, very sadly, is rapidly losing its previous leadership role in the development of medical technology. A significant number of American companies are starting to develop and market their new products overseas; many of these products may never become available to American consumers.

I believe that the time has come to give great visibility and credibility to the recent epidemiologic studies which I have discussed. There are known complications of the use of silicone breast implants such as rupture, bleed, and contracture that do exist. These risks can and should be discussed with any woman using; or considering implants, allowing her then to make her own informed decisions in conjunction with her doctor. Even more important, however, women, their doctors and the public need to be made aware of the new studies dealing with the alleged risk of autoimmune disease.

The Panel members were often deeply impressed by the testimony of many women as to the importance of these devices. This led to our conclusion, on both occasions, that implants should remain available inasmuch as they served a public health need. Repeatedly, we heard about what the availability of implants meant, particularly to women who faced major surgery for breast cancer, a matter of growing concern for women, given the rising incidence of this disease. Again, on a very personal—and I hope appropriate—note, I spent five agonizing days last week waiting to find out whether the lesion just discovered in my right breast was malignant or not; happily it turned out to be benign. Thus I am painfully aware of the agony women suffer while awaiting a final diagnosis. The importance of implants, particularly to women faced with the ultimate adverse diagnosis of a malignancy, ought not to be underestimated. We also were told by a number of women—somewhat to

our surprise—that they would forego mammography looking for early cancers, if implants were not going to be available.

I would like to conclude by making two recommendations to the Subcommittee. First of all, I would urge that ways be found to make this growing body of scientific information immediately and widely available to the scientific community, the public and the media. It is the legal and moral obligation of the FDA and other federal agencies to protect the public health. At the same time, there is an equal obligation not to overreact to anecdotal evidence and to give full credence and visibility to new and valid medical and research information. In this regard, I believe it is now time for FDA to make a public statement about the consensus which has developed in the medical community that there are no scientific data linking breast implants with autoimmune disease.

It is also clearly the function of such groups to establish reasonable criteria for evaluating the safety, efficacy and risk: benefit ratio of all medical drugs and devices. Having done so, it is then incumbent on them to make firm, accurate and appropriate decisions based on their findings.

It must also be pointed out that the continuing escalation of litigation, often unsubstantiated, has had a chilling effect on our ability to carry out research to develop new and better drugs and devices. It is increasingly difficult or impossible for companies to obtain adequate protection against potential product liability claims and enormous punitive damages, thereby encouraging many of them to abandon this critical medical field. What has unfortunately transpired in recent years is that scientific conclusions have often been drawn by the media, trial lawyers, and by juries, rather than by the scientific community and relevant agencies.

My last recommendation would be that you urge that the various agencies and groups involved with silicone breast implants—the Food & Drug Administration, the National Institutes of Health, and other relevant agencies, organizations and individuals knowledgeable in this field—to rapidly convene a scientific meeting on all of these issues in order to put the entire question of autoimmune disease and breast implants into its proper scientific perspective. I believe that only then will we begin to see the end of this extremely destructive and tragic situation.

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EPIDEMIOLOGICAL STUDIES

Dugowson, CR, et al. Silicone Breast Implants and Risk for Rheumatoid Arthritis. Arthritis Rheum. 35[9] (Supp.), Abstract 192:S66, Sept. 1992.

"These data do not support an increased risk for rheumatoid arthritis among women with silicone breast implants."

Englert, HJ, et al. Scleroderma and Augmentation Mammoplasty—A Causal Relationship? Aust NZ J Med 24:74–79, 1994.

". . . this study failed to demonstrate an association between silicone breast implantation and the subsequent development of scleroderma."

Gabriel. SE. et al. Risk of Connective-Tissue Diseases and Other Disorders After Breast Implantation. NEJM 330[24]:1697–702, 1748–49, June 1994.

"We found no statistically significant elevation in the relative risk of any of the specified connective-tissue diseases or other disorders among the women with breast implants as compared with the control subjects."

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". . . those with a history of breast implants were no more likely to have diagnostic considerations of a connective tissue disease, whether the analysis was matched or unmatched."

Sanchez-Guerrero, J., et al. Silicone Breast Implants and the Risk of Connective-Tissue Diseases and Symptoms, The New England Journal of Medicine, Vol. 332, No. 25, June 22, 1995.

"In a large cohort study, we did not find an association between silicone breast implants and connective-tissue diseases, defined according to a variety of standardized criteria, or signs and symptoms of these diseases."

Hochberg, et al. Association of Augmentation Mammoplasty with Systemic Sclerosis: Preliminary Results From a Case-Control Study. Arthritis Rhem. 36:871.

"These data extend previously published preliminary results and fail to demonstrate a significant causal association between augmentation mammoplasty and the development of SSc [systemic sclerosis]."

Schottenfeld D. [U. Mich.], a doctoral dissertation reflecting an epidemiologic study later described in Schottenfeld, et al., The Design of a Population-Based Case-

Control Study of Systemic Sclerosis (Scleroderma), Journal of Clinical Epidemiology 48:583 (April 1995) [University of Michigan].

"In summary, this study found no statistically significant association between silicone breast implants and scleroderma."

Sanchez-Guerrero, J., et al. Silicone Breast Implants (SBI) and Connective Tissue Disease (CTD). Arthritis Rheum. 1994; S232. Harvard Medical School, Abstract (October 1993).

". . . We found no association between silicone breast implants and connective tissue disease."

Schusterman, et al. Incidence of Autoimmune Disease in Patients After Breast Reconstruction with Silicone Gel Implants Versus Autogenous Tissue: A Preliminary Report. Ann Plast. Surg. 1993; 31(1):1–6. [MD Anderson Cancer Center]

"The incidence of autoimmune disease in mastectomy patients receiving silicone gel implants is not different than in patients who had reconstruction with autogenous tissue."

Strom B.L. et al. Breast Silicone Implants and Risk of Systemic Lunus Erythematosus. J. Clin. Epidemiol. 1994; 47(10):1211–1214. [University of Pennsylvania]

"In conclusion, based on this very large case-control study of SLE [lupus], no association was seen between silicone breast implants and the subsequent development of SLE."

Weisman, et al. Connective Tissue Disease Following Breast Augmentation: A Preliminary Test of the Human Adjuvant Disease Hypothesis. Plastic and Reconstructive Surgery, 1988; 82[4]:626–630.

"Our survey did not reveal a single subject with an inflammatory rheumatic disease or condition following breast augmentation."

Wells, et al. The Health Status of Women Following Cosmetic Surgery. Plast Reconstr Surg. 1994; 93(5):907–912. [University of South Florida].

". . . Although anecdotal reports of human adjuvant disease or silicone-associated connective tissue disease are present in the medical literature, the existence of a causal relationship is unproven."

See also: Medical Devices Agency of the United Kingdom, Silicone implants and Connective Tissue Disease: Evaluation of Evidence for an Association Between the Implantation of Silicones and Connective Tissue Disease, December 1994. This was a systematic review of the literature which concluded:

". . . [T]here is no evidence of an increased risk of connective tissue disease in patients who have had silicone gel breast implants and therefore no scientific case for changing practice or policy in the United Kingdom with respect to breast implantation."

Mr. SHAYS. Doctor, I thank you very much and appreciate your suggestions.

Both Ms. Ransom and Tara, you are on. I don't know in which order you would like to proceed.

Mrs. RANSOM. I'll start first.

Mr. SHAYS. OK. And are we OK? We kept you waiting a long time. Tara?

Mrs. RANSOM. She will be fine. Thank you.

Mr. SHAYS. OK. Tara, I'm in awe. I have a young daughter, and I think she's a pretty sharp kid, but I think you have been a wonderful participant today. And it's nice to have both of you here, as well as the others.

Mrs. RANSOM. We thank you for letting us use the conference room. She enjoyed that.

Good afternoon. I'm Linda Ransom, patient advocate. Translated, that means mother, frightened and frustrated.

Tara was 9 weeks premature and experienced an intraventricular bleed which created scar tissue and blocked the flow of cerebrospinal fluid down the spinal column, much like a clogged drain. She was shunted for hydrocephalus. The shunt is a flexible, silicone plastic tube with a pressure-regulating pump

which drains off the fluid and which can only be corrected or adjusted with additional surgery.

She has scored in the 99th percentile on the Iowa Test of Basic Skills for 2 consecutive years at the Magnet Traditional School where she will be in third grade.

Before silicone plastic shunts were developed, there was no treatment for hydrocephalus, and most infants died. Those who survived were severely handicapped and had tremendously enlarged heads. Unless the current trends in scientific research and implant availability are changed, Tara may not have a future.

Her neurosurgeon told us that shunts are so scarce in Russia today, they are removed from bodies during autopsies and then used in new patients. Would you want a used device, such as a pacemaker? Will there be waiting lists or buying devices on the black market? Just like fan belts and batteries on cars, implants sometimes need to be adjusted or replaced. Our expectations need to be more realistic.

We know all too well that the shunt only controls the hydrocephalus. Tara's long-term future lies in the realm of medical research. Not enough people are going into research today because of the frustrations of getting raw materials needed to produce a device for experimentation.

If a device can be produced, years may pass before final approval allows it to be marketed. How many people die waiting? If we lived in Europe, Tara might have access to more technically advanced shunts.

Which use of silicone might you or your family need someday, a life-saving device like a pacemaker, an angioplasty stent, or just a life-enhancing one like an artificial hip or cataract implant?

Tara needs a ventriculoperitoneal shunt. Surgery is scary for all of us, but it is our only hope today. If we cannot replace her shunt whenever she needs one, the increasing pressure on her brain will cause progressive retardation, paralysis, blindness, and death. And, yes, Tara has been told this. If things continue and silicone is removed from the market, shunts could disappear and so would our hope.

We can deal with possible complications tomorrow but only if we have a tomorrow. Some perspective and reason needs to be put back into the research and approval of medical products. What difference does it make to know if a device could potentially cause cancer in 20 years if your life expectancy without it is days or months?

Life-enhancing and life-saving devices should have different testing criteria. No one wants unregulated devices flooding the market. This goes into my daughter's brain. However, when regulations and politics interfere with the availability of life-saving devices and people die, something needs to be changed.

How many years and inventions preceded the first successful airplane flight? Medical strides have been just as tenuous. Progress today in all fields of science is being made faster than any agency can evaluate. Maybe what needs to be regulated is the research institutions, not the specific devices.

Certified peer review committees could evaluate the science and testing procedures. There needs to be responsibility from the medi-

cal industry and scientific community, but there also needs to be legislative and regulatory responsibility. Patients need to accept that not every product will have the same outcome for everyone. We do not ban penicillin and aspirin because patients experience allergic reactions.

Don't allow the silicone shunt to be taken from Tara. Can you look at Tara today and guarantee that a shunt will be available when she needs one? The only thing I know for sure is that the farther away we are from her last surgery, the closer we are to the next. Can you even guarantee that the silicone from which the shunt is made will be available for medical uses tomorrow?

This shouldn't be a legal business or a political issue; it is a medical issue. Tara is not a Democrat or a Republican; she's an 8-year-old child. We appeal to you to use common sense in evaluating the legislation in this very critical area.

Congressman John Shadegg was quoted following a day of Waco testimony as saying, "I think it's frustrating. We spent 80 percent of the day on red herrings that have nothing to do with the purpose of this hearing." Don't be sidetracked from the real issue, the availability of raw materials and implants necessary to preserve the lives of very real people.

There are approximately 50,000 shunt-dependent hydrocephalics in this country. You're talking numbers equivalent to the Vietnam battle deaths, but there will be no wall with their names. We need you to recognize what the impact of any new legislation or the failure to provide real reform will have on your life and that of your family.

Don't take hope away. Tara sits before you today; put her before you when you make your decisions.

Thank you. Now, Tara.

[The prepared statement of Mrs. Linda Ransom follows:]

PREPARED STATEMENT OF LINDA RANSOM, PHOENIX, AZ

I represent the Ransom family—particularly a 4-foot-tall, 50 pound, 8-year-old, 3rd grader named Tara Anne. I have found myself listed as a "Patient Advocate". The correct title is "Mother."

In April, 1987, Tara was delivered 9 weeks prematurely because my liver and kidneys were failing. She weighed 3 pounds 9 ounces, and breathed on her own. Within 24 hours she was moved to the Annex of the NICU and listed as a feeder/grower.

Obviously, the story only starts there. Seventy-two hours later she began vomiting. A spinal tap revealed blood in the spinal fluid. An ultrasound confirmed an intraventricular bleed which I was later told was a Grade 3 with Grade 4 being the most severe. Over the next month efforts were made to resolve the hydrocephalus—including 3 different lumbar drain attempts—all to no avail. At the age of 1 month she was shunted, and shortly thereafter discharged.

Cerebralspinal fluid is produced constantly within the brain to coat it and keep it pliable. The excess fluid drains down the spinal column and is reabsorbed by the body. In Tara's case, the bleeding created scar tissue which blocked the flow of fluid much like a clogged drain. The shunt is a flexible silicone plastic tube with a pressure regulating pump which drains off the fluid. One end is implanted in the ventricles of her brain, the pump is just under her scalp, and the tube is threaded through the tissue of her neck and chest wall into an incision in her abdomen and the peritoneal cavity. The surgery requires two incisions, and a surgical infection usually causes meningitis, because the brain is involved. The shunt is totally contained within the body. The only way to make any correction or adjustment is with surgery. Shunts are outgrown, some have tissue invade the ends like tree roots grow into sewer pipes, and some need to be replaced to change the pressure. It is just as damaging to the brain to have too much fluid drain off as too little.

At 11 weeks old, she was rehospitalized with meningitis—a staph bacteria. The swelling around her optic nerve blinded her. She had hypotonia and was a limp rag doll. According to all I read—her prognosis was not very promising.

Today the hypotonia is barely noticeable and she has mastered skipping, jump rope, roller skates and all the other skills with her peers. Her sight returned and until this last year, she didn't even need glasses. She never read the "risk" statistics because she has been too busy reading the original 14 books of the Wizard of Oz series—not the edited-for-children versions.

Tara has always attended the Magnet Traditional School, a highly structured program emphasizing academic performance, where she will be in 3rd grade in the fall. She has been the top student in her class for 2 years. She has also scored the 99th percentile on the IOWA Test of Basic Skills for two consecutive years. Her composite grade equivalent score is 5th grade 6th month and her reading equivalent to 6th grade 2nd month.

We know that she has achieved much more than should have been medically expected of her. She is the perfect example of hope, the surgeons' skills, advances in medical technology, improvements in the shunt itself, and faith. Faith largely based on the belief that God's miracles are the hands of the surgeons and the minds of the scientists who make the discoveries and create the devices. Shunts were not successful before improved flexible silicone plastics were developed. Before shunts there was no treatment for hydrocephalus and most infants died within months. Those who survived were severely handicapped and had tremendously enlarged heads.

Tara has had 5 shunt surgeries and will need more. There are no guarantees that there won't be any complications from the surgeries or the materials in the shunt, but there are also no guarantees in life. She could be killed by a drunk driver or paralyzed in a random shooting leaving this building today.

Unless the current trends in scientific research and implant availability are changed, Tara may not have a future. If the current course is followed, medical implants may well disappear from use or become so scarce as to lead to the ethical questions which are raised when someone famous like Mickey Mantle gets a liver transplant. Will there be waiting lists or buying devices on the black market? Someone needing a shunt may have as little as 4 to 5 hours before the fluid starts to crush brain cells and cause permanent brain damage. There would be no time for any committee decisions. Tara's neurosurgeon told us of how shunts are so scarce in Russia today that they are removed from bodies during autopsies and then used in new patients. Would you want a used device like a pacemaker?

Common sense needs to return to the "practice" of medicine. Just like fan belts and batteries on cars, implants sometimes need to be adjusted or replaced. Our expectations need to be more realistic. Implants are designed to help control a medical problem, but they are not a cure. We are just very grateful to have a shunt to keep Tara alive.

We know all too well that the shunt only controls the hydrocephalus. Tara's long-term future lies in the realm of medical research. We have no idea if it will take the form of a device which can be altered without surgery or only a minor procedure, a drug to control the production of the fluid in the first place, or a procedure which will be able to reduce the area of scarring and remove the obstuction. Like cancer, which takes many forms and responds to different interventions, hydrocephalus is caused by different traumas and some genetic causes. One solution will not "cure" all of the victims.

Today, not enough people are going into research because of the frustrations of getting devices off the drawing board to test. Often raw materials needed to produce a device to experiment with are unavailable because of industry fears of liability. No one thinks of suing the pulp mill because of words written on paper produced from the wood pulp, but large companies and institutions are targeted under today's law.

If a device can be produced, years and even decades may pass before final approval allows it to be marketed. How many people die waiting for a lifesaving drug or device to become available? The irony is that if we lived in Europe, Tara might very well be able to get more technically advanced shunts than living in Phoenix, AZ, which is home to the Barrow Neurological Institute. Barrow's is a famous medical facility which offers the most skilled surgeons and techniques in the world, but not necessarily the most advanced devices as their availability is controlled by agencies and the proverbial red tape.

Tara may be the person to find the cure for AIDS or become the first woman President. Maybe, she'll choose to become the mother of that person. Whatever Tara's future—she has a future because of a little piece of silicone plastic which we know will need surgical revisions and replacements in its current form.

Allan Bergman of the United Cerebral Palsy Associations is quoted as saying that "Every person under 65 years of age will experience, directly or indirectly through a family member, disability or chronic illness as a result of illness, disease, injury, the aging process or the birth of their next child, grandchild, niece or nephew." Who is that person in your family? Is it you? Your spouse? Your child? Which use of silicone might be needed—a life-saving device like a pacemaker, an angioplasty stent, or just a life-enhancing one like an artificial hip or cataract implant? Tara needs a ventriculoperitoneal shunt! Maybe you have been lucky enough to already have a device before they disappear.

My husband Jerry and I wish we had never heard of hydrocephalus and a shunt, but wishes aren't reality. We want both Lindsey, our 10-year-old daughter, and Tara to have the same opportunities to grow up, get an education, and eventually have their own families.

When I became aware of the current problem involving raw materials for medical devices, I was frantic. I still am very frightened, though I have tried to educate myself to the issues and help find solutions. I immediately wrote to all 538 Senators and Congressmen on the list. I had 12 replies and my first lesson in political protocol. I have worked closely with Arizona Senators John McCain and Jon Kyl, as well as Congressman Ed Pastor. Although they are not from my district, I am also receiving support and encouragement from Congressmen John Shadegg, J.D. Hayworth, and Matt Salmon.

I had more success contacting the chemical companies, having received replies from each letter that I wrote. In fact, Mr. Richard Hazelton of Dow Corning personally called me to reassure me of their commitment to make life-saving raw materials available. Unfortunately, the Chapter 11 filing may make that impossible.

I have also been invited to speak as a patient representative on a panel entitled "Medical Science and Device Industry Put Tort Law on Trial" sponsored by the American Institute for Medical and Biological Engineering and endorsed by the American Association for the Advancement of Science Section on Engineering and Society for Biomaterials in Atlanta, Georgia in February, 1995. Participating with me were Mr. Bruce Burlington of the FDA, Mr. Richard Hoover of Dow Corning, and Mr. James Benson of HIMA (Health Industry Manufacturers Association). In May, 1995 I spoke at a conference entitled "Tough Decisions II: Risk-Free Medicine?" sponsored by the Memorial Blood Centers of Minnesota in Minneapolis. Dr. Susan Alpert of the FDA sat next to me on the same panel and I met Ms. Barie Carmichael of Dow Corning who participated with a different group.

Only my actual expenses were reimbursed. I have never been paid for anything related to my activities. I have spoken to many people and no one yet can guarantee that a shunt will always be available when Tara needs one. I will not stop until I have that assurance. Saving Tara's life is our only motivation.

Surgery is scary for all of us, especially for Tara, but it is our only hope today. We at least need that chance for her. The risk of complications is not really an issue. We've dealt with them before, and we'll deal with them if they occur again. If we cannot replace her shunt as often as she needs one, we all lose our future. The increasing pressure in her brain will cause progressive retardation, paralysis, blindness, and death. If things continue and silicone is removed from the market, shunts could disappear—and so would our hope.

We do not want to put some untested product into Tara's brain. A contaminated shunt could kill her. But so can the lack of any shunt! We would risk an experimental device if the alternative was death.

Some perspective and reason needs to be put back into the research and approval of medical products. What difference does it make to know if a device could potentially cause cancer in 20 years if your life expectancy without it is days or months? You can deal with the complications if you are still alive! I think it is reasonable to put different testing requirements on different product usages. Life-enhancing and life-saving devices should have different criteria. Decisions related to product availability need to be based on scientific research.

No one wants unregulated devices flooding the market. In Tara's case, the shunt is implanted directly into her brain. Of course, we want a sterile, safe device. However, when people start dying because regulations and politics interfere with the availability of life-saving devices, something needs to be quickly and radically changed.

Also, rather than punish companies and institutions for their attempts to advance medicine, they should be encouraged to participate with products and talent.

History is full of failed attempts before success is finally achieved. How many years and inventions preceded the first successful airplane flight? Medical strides have been just as tenuous—successes and failures. We don't want Tara to be part of an experiment, but we are not willing to let "nature take its course" either.

Progress today in all fields of science is being made faster than any agency can evaluate. Maybe what needs to be regulated is the research institute, not the specific device, and have certified peer review committees to evaluate the science and testing procedures. Yes, there needs to be responsibility from the medical industry and scientific community, but there also needs to be legislative and regulatory responsibility. Patients also need to accept that not every product will have the same outcome for every patient. We do not ban penicillin and aspirin because patients experience allergic reactions. Don't allow the silicone to be taken from Tara.

Can you look at Tara today and guarantee that a shunt will be available when she needs one? I can't tell you if shunt failure will occur in a few hours or a few years. Medically, Tara is stable now. The only thing I know for sure is that the farther away we are from her last surgery, the closer we are to the next.

Can you even guarantee that the silicone from which the shunt is made is going to be available for medical uses tomorrow? This shouldn't be a legal or business issue. It shouldn't be a political issue. It should be a medical issue. Tara is not a Democrat or a Republican. She is a child. She could be your child, grandchild, or even yourself. Shunts are simply used to treat head injuries and tumors when something interrupts the normal flow of fluid from the brain.

We appeal to you to use common sense in evaluating the legislation in this very critical area. Congressman John Shadegg was quoted in the Arizona Republic on July 20, 1995 following a day of the Waco testimony as saying "I think it's frustrating. We've spent 80 percent of the day on red herrings that have nothing to do with the purpose of this hearing." Don't be sidetracked from the real issue; the availability of raw materials and implants necessary to preserve the lives of very real people. Today's regulations will not insure implant availability for tomorrow.

There are approximately 50,000 shunt-dependent hydrocephalics is this country. You are talking numbers equivalent to the Vietnam battle deaths. They would never get a wall, but they would leave just as many devastated families.

We need you to recognize what the impact of any new legislation, or the failure to provide real reform, will have in your life and that of your family. Don't take hope away from either yourselves or Tara. She sits before you today. Put Tara before you when you make decisions.

Miss RANSOM. Hello. My name is Tara Ransom. I'm 8 years old. My favorite book is the Wizard of Oz. I like to jump rope, bike ride, and run. I'm going to be in third grade this year.

I have a shunt. It is this bump on my head. I have a shunt because I have hydrocephalus. The shunt goes into my brain. The tube goes down my head and neck, down my chest, down into my tummy. I got the hydrocephalus when I was a baby. I can't do gymnastics or stand on my head, but I can do lots of other things.

I need a shunt to live. The shunt is made of silicone plastic. I need you to save the plastic shunts to save the people.

[The prepared statement of Miss Tara Ransom follows:]

PREPARED STATEMENT OF TARA RANSOM, PHOENIX, AZ

Hello.

My name is Tara Ransom.

I am 8 years old.

My favorite book is the Wizard of Oz. I like to jump rope, bike ride, and run. I'm going to be in 3rd grade this year.

I have a shunt. It is this bump on my head. I have a shunt because I have hydrocephalus. The shunt goes in to my brain. The tube goes down my head and neck, down my chest, down into my tummy.

I got the hydrocephalus when I was a baby.

I can't do gymnastics or stand on my head. But I can do lots of other things.

I need a shunt to live. The shunt is made of silicone plastic. I need you to save the plastic shunts to save the people.

Mrs. RANSOM. And Tara wrote that herself.

Thank you.

Mr. SHAYS. Thank you, Tara.

Mrs. Goldrich, you're on.

Ms. GOLDRICH. Thank you for the opportunity to be here today.

I am a bilateral mastectomy patient. I was offered breast implants. I accepted breast implants in 1983. Breast implants were removed because they called me a breast implant failure. I don't believe I failed; I think the product failed.

In 1988, I had a hysterectomy and bilateral salpingo-oophorectomy. Silicone was found in my uterus, my ovaries, and my liver. I have been an activist in making sure that women get adequate information to make an informed decision to get or not get breast implants. I was reconstructed with a new technology called a flap operation, which is formidable but doable, for cancer patients. So there are alternatives for some cancer patients that don't require the use of a medical device.

And I must tell you that I would defend the right of a child or any human being to a life-saving device, just as I will defend my daughter's right to have absolute truth about the product that they may have to choose, whether they want to or not, because they are at greater risk of developing breast cancer because I had breast cancer.

So today I offer you five suggestions to how we might be able to solve some of these problems. In 1976, Congress left a loophole in the Food, Drug, and Cosmetic Act when it grandfathered this device into place. And it wasn't until many, many years later, probably about 30 years later, that women became alarmed and came forward with problems.

I can't understand why a manufacturer, who had 30 years or even from 1976 to 1983 to come forth with adequate data to prove this product safe, which they knew was the standard from day one, and they haven't done it. Where are they? They should have had the studies already. They have been given borrowed time.

When David Kessler came on the scene, he stopped a regulatory stance that allowed women to be used as human guinea pigs. Before Dr. Kessler came, we had diethylstilbestrol and we had the Dalkon Shield. I know you will agree that none of us want to see that period in our history, our medical history, repeated.

The current FDA and current scientific ethical and legal standard for medical devices is that they be proven safe and effective. Proven not unsafe, and proven not ineffective is not the standard. It never was the standard and should never be the standard. And the manufacturers of these products knew that all along.

Products made of silicone—this is my second suggestion—should be made available in life-and-death situations only when the recipients are fully informed of all risks and benefits. Tara has been informed. I was not informed.

In the case of breast implants, full disclosure would require that patients be advised that Dow Corning tampered with the early silicone studies and was later found guilty twice of fraud. Those cases are, for your reference, *Stern* v. *Dow Corning* and *Hopkins* v. *Dow Corning*. The *Hopkins* v. *Dow Corning* fraud was upheld by the Supreme Court of the United States, and during those trials, causation was proven using the Daubert standards for scientific accuracy.

It seems to me that some of these companies—you asked Dr. Kessler so many times why all these companies are not coming forward with studies. They don't come forward because they don't

have them, and they knew they were required to have them. People in foreign countries come here for redress for products that are made by companies in the United States. That's unfortunate. We don't get a great reputation out there. Nobody wins from that kind of sale.

When silicone can make a difference between life and death for a patient, a lack of long-term data may be irrelevant. But where anything less than life is at stake, it's important that the long-term effects of a product should be known, because otherwise the patient is committed to life imprisonment without the possibility of parole.

My third suggestion is that you limit tort reform as it deals with medical devices. At this point, it seems that Congress wants to provide further protection for industry and to limit consumer protection. At the same time, it is attempting to guide the scope and responsibility of the FDA to move faster.

Last year, the U.S. Senate failed to pass the Sunshine In Litigation Act; it failed by one vote. That would have allowed people to know when a court case had information in it that would affect public health, that that information would be made available to people. Instead, they have sealed these documents with secrecy orders.

So, in 1983, when Maria Stern won her case about causation of silicone problems for her autoimmune disease, I was having my first breast cancer surgeries, and I wasn't told that because the court sealed it. So please pass that kind of legislation so that we can be forthright with people who need to know.

It might be a good idea to reform the bankruptcy laws to make it difficult and even impossible for manufacturers to hide in bankruptcy only to leave the citizens and taxpayers to pick up the tab for product liability and corporate wrongdoing. People who are injured by these products, by breast implants, have been waiting a long time for the resolution of the case and certainly the resolution of the science, which is definitely not forthcoming.

The financial burden will fall on local governments and will fall on medical programs sponsored by the States, and will also require Social Security disability for those women who are severely disabled. Once again, the taxpayers are going to pay the bill for a corporate bailout, because they had the opportunity to come forward with the science in the first place.

It was Dow Corning that wanted those records sealed in the Stern case. It was Dow Corning that tampered with those studies, for which they were found guilty of fraud. The best tort reform will come when everybody serves on jury duty and we don't have all of these massive jury verdicts to change the structure of who has and who has not any money in this country.

When corporate executives are given—and doctors and lawyers—are perhaps given a tax credit for serving on juries, we would probably have a more meaningful effect than passing major laws about tort reform, because you would then hear exactly what the people want.

Manufacturers whine about the costs of litigation and the legal aspects of medical device production, but for every plaintiff's lawyer they cite as making tons of money with contingency fees, there is a defense firm racking up millions, on an hourly basis, paid up

front and regularly. The defense bar has a disincentive to find quick resolution for product liability cases. By the way, Dow Corning has spent $200 million on their legal fees.

My last two I will do very quickly. Please don't release a product before it's appropriately tested. We must remain mindful of the privacy needs of patients, but perhaps, when a medical device is issued, the person should appear on a registry of sorts. And information, information, information; it must be free-flowing and correct. It must not be weighted and manipulated, and it must be readily available in language that is understandable.

The Pope asked Michelangelo when he would be finished with the Sistine Chapel. I can't recall the name of the movie at the time, but it was Rex Harrison who asked whoever was playing Michelangelo—the Agony and the Ecstasy. The Pope said, "When will it be done?" And Michelangelo said, "When it is finished." So that's what I would like to see done with the science, appropriately, this many years after the product was released on the market.

Thank you.

[The prepared statement of Ms. Goldrich follows:]

PREPARED STATEMENT OF SYBIL NIDEN GOLDRICH, COMMAND TRUST NETWORK

Mr. Chairman and Members of the Committee: I speak to you this morning as the co-founder of Command Trust Network, the largest information clearinghouse and advocacy group for women with breast implants. And I speak to you, this morning, as a cancer patient who had bi-lateral mastectomies and who was reconstructed in 1983 and 1984 using seven implants that failed and an innovative reconstructive surgery that succeeded: the trans abdominal island flap. I have survived my cancer for thirteen years but I have been plagued with problems arising from migrating silicone and decomposed polyurethane foam since 1983.

My medical records describe me as "an implant failure". I do not accept that description because it was breast implants that failed me by leaking and spreading silicone gel throughout my body. I have had a total abdominal hysterectomy, bi-lateral salpingo oophorectomy and liver biopsy with silicone being detected in representative slides of my uterus, ovaries and liver. I have had five tumors removed from my ankle, thigh and wrist respectively. Tumors such as these are frequently found to form around mass collections of silicone but, at this point I ask my surgeons only if the tumors are benign or malignant because there is no known way of removing silicone from the body; there are ways to treat a person for cancer.

If it were not bad enough for people like me to have been sold a product that was inadequately proven and released for sale prematurely, now we are inundated with after-the fact, scientific studies claiming to prove that breast implants were safe all along. Manufacturers of these unsafe devices are pouring money into research projects designed, however poorly, to provide evidence for courtroom confrontations. Alas, for already injured patients and patients who need silicone based products to help manage matters of life and death, there is not now, nor will there ever be an answer that can be trusted. Where the silicone is contained in a product that can make the difference between life and death for a patient, the absence of long-term answers may be irrelevant. But where anything less than life is at stake, the lack of information is a term of life imprisonment with no possibility of parole.

Thirty years after the release of breast implants on the market there are no valid scientific studies to prove the product safe. The scientists who developed breast implants and other silicone based products committed fraud in their basic research. This finding of fraud is cited in *Stern* v *Dow Corning* and in *Hopkins* v *Dow Corning*. Evidence admitted in *Hopkins* v *Dow Corning* withstood the rules cited in Daubert (the case that defined the standards for scientific evidence). Further, the *Hopkins* case was taken to the Court of Appeals in California and the Supreme Court of California and the fraud count was upheld. The Supreme Court of the United States, by allowing the decision to stay, affirmed the fraud count against Dow Corning.

Scientific findings emanating from fraudulent basic science can never be proven and certainly can never be taken seriously. Once there is fraud, there is no con-

gress-person, physician, scientist, government regulator, or medical ethicist who can dispute that.

Please accept the following five suggestions as a way to avoid another medical device debacle:

1. A STRONG FDA WITH STRONG AND CAREFULLY ESTABLISHED REGULATIONS IS ESSENTIAL. Congress did a good thing by passing the 1976 Food, Drug, and Cosmetic Act Amendment. However, they left a loophole that in many instances denied Americans the chance to have implantable medical devices that were proven to be safe and effective. It was Congress that allowed products to be "grandfathered" into the marketplace. Few, if any, congress-people are scientists. But, Congress is not exclusively to blame. It was a weakly run FDA, seduced by medical device lobbyists and plastic surgeons, who made sure that breast implants were not re-examined until women began to report injuries en masse. It was not until David Kessler came on the scene that anyone took seriously the fact that the FDA's weak regulatory stance had allowed more than a generation of women to be used as human guinea pigs. Before Dr. Kessler, we had Diethylstilbestrol (DES) and the Dalkon Shield. I would venture that nobody would ever want that period in America's health history repeated. Dr. Kessler has made great strides toward maintaining the scientific, ethical and legal standard that medical devices must meet the safe and effective scientific threshold. Not proven unsafe and not proven ineffective is not the standard, never was the standard and should never be the standard.

2. LIFE AND DEATH SITUATIONS ONLY WHEN THE RECIPIENTS ARE FULLY INFORMED OF THE ALL RISKS AND BENEFITS. Patients and their loved ones can then perform their own risk benefit analysis. Only after that information is provided them can there be true informed consent which is a choice made freely and after consideration. Then manufacturers of such products could be provided immunity from suit. As an extension of this process, efforts to develop alternative and safe products to improve the risk/benefit ratio must be supported.

3. LIMIT TORT REFORM AS IT DEALS WITH MEDICAL DEVICES. The Congress is attempting to provide further protection for industry and strip consumers of protection at the same time as it is attempting to limit the scope and reach of responsibility by the FDA. If there is to be reform, then reform the bankruptcy laws to make it difficult, if not impossible, for manufacturers to run to hide in bankruptcy only to leave the citizen/taxpayer to pick up the tab for corporate wrongdoing.

If our system of compensation via the judiciary is further limited, people who are injured will not have enough money to care for their expanded medical needs. They will increasingly turn to local government for medical assistance and to the Federal Government for Social Security disability. And once again, taxpayers will foot the bill for a bailout of enormous proportions.

Lobbyist groups welcome former FDA employees into their midst with enthusiasm. There should be a waiting period for all former government employees to join lobbying groups and trade associations. Even the most honorable FDA employee who is planning to become a lobbyist has a mixed agenda. In this case, the appearance of impropriety is impropriety itself because it impugns the integrity of the FDA as an institution.

For every plaintiff's lawyer that tort reformers cite as earning tons of money, there is a defense firm making much more money on a regular basis and up front. As a member of the Tort Claimants Committee for the Dow Corning Bankruptcy, I can assure you that Defense law firms have billed Dow Corning for well over thirty-six million dollars. Plaintiff's attorneys haven't collected a dime and may never collect a dime. In the past two years, defense firms have billed $190 million in costs to implant manufacturers. This fact was placed in record during the bankruptcy hearings of Dow Corning before Judge Arthur Spector of Michigan.

4. NEVER RELEASE A PRODUCT BEFORE IT IS APPROPRIATELY TESTED. The standards of the FDA are that a product must be proven safe. Not Proven Unsafe is decidedly different. It is important to the health and safety of every American that you and the lobbyists who approach you remain mindful of this basic truth. That standard—to be proven safe—must never be altered. We are entitled to that security. A product/recipient registry would make for easy recall of a faulty product.

5. INFORMATION, INFORMATION, INFORMATION. It must be correct and free flowing. It must not be weighted and manipulated. It must be readily available in language that is understandable. Without it, consumers of medical devices are doomed. Their doctors are doomed by the liability of failure to inform. Manufacturers are doomed by failure to inform and breaches of responsibility. Dow Corning stated the risks of auto-immune disease in their 1985 package insert—more than twenty years after the development of their silicone product. They did so only after

losing *Stern* v *Dow Corning*, a case where a woman proved causation of autoimmune response by silicone. Information, correct, clear and available is essential.

I implore you, as our representatives in Congress, to provide citizens with the safeguards necessary to assure life, liberty and the pursuit of happiness. Science, after the fact, regardless of what it shows, is too little too late. Decreasing regulation and decreasing opportunity of redress may keep some re-election coffers full, but it does not provide just service to the Americans you represent.

ADDITIONAL NOTES ON THE HARVARD NURSES STUDY

Scientific studies with enormous flaws are touted by the manufacturers and their publicity agents to be "the truth". Let us look at the Harvard University Nurses Study, for an example. District Court Judge Sarn C. Pointer, Jr., who heads MDL 926, Breast Implant litigation has ordered that the raw data of the Harvard Nurse's Study be made available for review.

1. Some of the women had implants for only two months. Nobody thinks implants can cause autoimmune disease that quickly. They should have compared three groups: no implants, implants for less than 5 years, and implants for more than 5 years. This criticism also applies to other studies that purport to show that implants are safe—they need to focus on women who have had implants for at least 5–7 years.

2. The article stated that some of the women had breast implants for forty years, thirty-seven years, etc. This can't be. Breast implants had only been on the market for thirty years when the study was conducted. Even if the very first breast implant recipients were in the study (which seems very unlikely) they could not have had implants for more than thirty years. This obvious error makes one wonder if the authors knew anything about breast implants.

3. Most women with breast implant problems describe their symptoms as chronic fatigue, etc. They do not fit in a perfect diagnostic category, such as scleroderma. When researchers study scleroderma, that does not really answer questions about whether implants cause immune problems or connective tissue diseases.

4. Researchers doing this study are also paid as expert witnesses by Dow Corning Corporation and have had to step down from the project.

Just because a study has the words "Harvard University" attached to it does not mean that the study is without taint or flaws. Now, with regret for my appropriate cynicism, consumers must investigate who writes the check for the research at the same time as the research is evaluated.

Mr. SHAYS. Thank you very much. We appreciate your testimony, as well.

Thank you, Sharon Green.

We're coming to conclusion, and we will take some questions after Jama Russano.

Ms. GREEN. Thank you. I'm Sharon Green, the executive director of the Y–ME National Breast Cancer Organization. Joining me today is Rosemary Locke, a Y–ME volunteer and implant recipient.

I want to thank the committee for the opportunity to speak on behalf of the thousands of individuals who contact our national hotline each year on all aspects of breast health. Every day our national hotline counselors offer compassion and understanding to women devastated by the loss of a breast due to breast cancer. We also hear from hundreds of women living with implants who are seeking reassurance or direction on decisions they made years ago.

Y–ME did not agree with the FDA's decision to restrict the availability of silicone gel implants, but we accepted it because there was a strong mandate to do further research. Meanwhile, we have worked tirelessly to calm the anxiety over breast implants and ensure that women have access to the latest information.

We have promoted participation in the clinical trials that were created to answer remaining questions. We have worked with the FDA, reviewing and distributing patient materials, even though we have been frustrated by the lack of opportunity to review final documents before they are released.

Y–ME has a solid reputation for providing information based on science and not hearsay. We recognize that no treatment or device exists without risk. We believe that women must be part of their health care choices, and this includes accepting the risks associated with those choices.

There are people who say that breast cancer survivors should be happy to be alive and that a breast is not important. Tell that to a breast cancer survivor who cannot nurse her baby, or wear her favorite bathing suit, or feels that her sexuality has been compromised by the loss of her breast.

The implant debate is out of control, and, as a result, we all lose. Women who want silicone gel implants have little or no access. Women with perceived problems have been exploited by unscrupulous doctors and labs who offer bogus treatments that are far riskier than implants and tests that tell us nothing. Women with breast cancer fear that their insurance will be canceled, not because of cancer but because of their implants.

Lawsuits based on junk science are siphoning off much needed dollars from health care delivery and research. The major concern of the device panel that restricted gel implants was the relationship to immunological diseases. Renowned researchers have published studies that find no significant increase in these disorders.

The fact that some of these studies include women with ruptured implants should be even more reassuring. We allow drugs and devices with much higher risk profiles than silicone gel implants on the market. Are we creating a new set of standards for breast implants?

Now that the results of studies are being published and other governments are accepting them, Y–ME looks forward to a timely statement from the FDA, the very agency that requested them. On May 31, 1995, Y–ME representatives met with members of the FDA Center for Radiological Devices. We inquired if the FDA would be making a statement regarding these new studies so women living with gel implants could get on with their lives.

The FDA representatives said that some of the studies were too small and that the meta analysis was flawed. Yet they have accepted even smaller studies on other aspects of implants. When we asked how they defined acceptable risk, they refused to answer. They turned the discussion to their own concerns about rupture, even though this was not a priority concern raised during the earlier panels.

Y–ME knows that there is a possibility of rupture, and we support continued research to determine the actual rates so that replacement guidelines can be developed. In our view, that is an acceptable risk and not one that should prevent the availability of implants as the studies continue.

We sent a letter requesting a public statement from the Commissioner, on June 9, 1995. Every day without an official statement encourages women to rely on information from tabloids, talk shows, and courtrooms. A response was FedEx'd to my home last Saturday, and our major questions remain unanswered.

Dr. Kessler voiced great concern for women living with gel implants when he announced the moratorium, yet he is allowing this media and legal frenzy to flourish by not defining acceptable end

points to the inquiry. We believe it is time to bring this issue back to a sound scientific process. The FDA must establish measurable and consistent guidelines for answering questions on risks and benefits. If they cannot do it, maybe it is time to turn this over to someone else.

Silicone gel implants provide the easiest, most inexpensive method of breast reconstruction, with some of the best cosmetic results, yet they are an almost obsolete option for women with breast cancer. And contrary to what was said this morning, we have found the current clinical trial system not adequate. Thank you.

[The prepared statement of Ms. Green follows:]

PREPARED STATEMENT OF SHARON GREEN, EXECUTIVE DIRECTOR, Y-ME

I am Sharon Green, Executive Director of the Y-ME National Breast Cancer Organization. Joining me is Rosemary Locke, a Y-ME volunteer and implant recipient. I want to thank the committee for the opportunity to speak on behalf of the thousands of individuals who contact our national hotline each year on all aspects of breast health. Every day, our national hotline counselors offer compassion and understanding to women devastated by the loss of a breast due to breast cancer. We also hear from hundreds of women living with implants who are seeking reassurance or direction on decisions they made years ago.

Even though we did not agree with the FDA's decision to restrict the availability of silicone gel implants, we accepted it because there was a strong mandate to do further research. Meanwhile, we have worked tirelessly to calm the anxiety over breast implants and insure that women have access to the latest information on these devices. We have promoted participation in the clinical trials that the FDA and the manufacturers agreed were needed to answer remaining questions. We have worked with the FDA on reviewing and distributing patient materials even though we have been frustrated by the lack of opportunity to review final documents before they are released.

Y-ME has a solid reputation for providing information based on science and not hearsay. We are realistic about risks and benefits and recognize that no treatment or device exists without risk. We believe that women must be part of their health care choices and this includes accepting the risks associated with those choices.

There are some in this room who will say that breast cancer survivors should be happy to be alive and that a breast is not important. Tell that to a breast cancer survivor who cannot nurse her baby or wear her favorite bathing suit, or feels that her sexuality has been compromised by the loss of her breast.

The implant debate is out of control—and, as a result, we all lose. Women who want silicone gel implants have little or no access. Women satisfied with implants have to deal with increased anxiety. Women with perceived problems have been exploited by unscrupulous doctors and labs who offer bogus treatments that are far riskier than implants, and tests that tell us nothing. Women with breast cancer fear that their insurance will be canceled—not because of cancer—but because of their implants. We anticipate increased insurance rates or decreased benefits because lawsuits are siphoning off much-needed dollars for health care services and research.

The major concern of the device panel that restricted silicone gel implants was the relationship of immunological diseases to these devices. Renowned researchers have begun publishing studies that find no significant increase in these disorders in women with silicone implants. The fact that some of these studies include women with ruptured implants should be even more reassuring. The FDA says that manufacturers are responsible for getting these studies done, but when these studies are criticized because they are funded by manufacturers, the FDA remains silent.

We allow drugs and devices with much higher risk profiles than silicone gel implants on the market. Are we creating a new set of standards for breast implants?

Now that the results of studies are being published and other governments are commenting on them, Y-ME looked forward to a timely statement from the FDA—the very agency that requested them. On May 31, Y-ME representatives met with members of the FDA's Center of Radiological Devices. We inquired if the FDA would be making a statement regarding the latest scientific studies on silicone gel implants, so women living with these devices could bring some closure to their concerns. The FDA representatives said that some of the studies were too small and that the meta-analysis was flawed. When we asked how they determined acceptable

risk, they refused to answer. They turned the discussion to their concern about rupture, even though this originally was not the focus of the recent studies. Y-ME knows that there is a possibility of rupture and we support continued research to determine the actual rate so that replacement guidelines can be made. Like other implanted devices, one's silicone implants will probably need to be replaced during their lifetime. In our view, that is an acceptable risk and not one that should prevent their availability as studies continue.

We formally requested a public statement from the Commissioner on June 9. Every day without an official statement encourages women to rely on information from tabloids, talk shows and courtrooms.

Dr. Kessler voiced great concern for women living with implants as he announced the moratorium on silicone gel implants, yet he is allowing this media and legal frenzy to flourish by not defining acceptable endpoints to the inquiry. We believe it is time for the FDA to bring this issue back to a sound scientific process. They must establish measurable and consistent guidelines for answering questions on risk and benefits. If they cannot do it, maybe it is time to turn the issue over to the Institute of Medicine or other body that puts science before politics.

Some say that this debate is good because it forces the industry to create better products. If you were a biotech company, would you go into the implant business? The reality is that silicone gel implants provide the easiest, most inexpensive method of breast reconstruction with some of the best cosmetic results, yet they are no longer a viable option for women with breast cancer. What silicone product will be the next to go?

Mr. SHAYS. Thank you very much, Ms. Green.

Ms. Russano.

Ms. RUSSANO. Thank you for allowing me to address the committee. It seems appropriate for me to be the last speaker today, for the children have been the last on the list when it comes to the relationship of silicone. Joining me is Tom Talcott, biomaterial expert, an ex-Dow employee.

I asked for a few extra minutes because of the children's issue and because this is new to you, as well as many. I speak before you representing hundreds of thousands of children, from teenagers who were implanted with breast implants to infants born to mothers with silicone and saline breast implants. I would like to show you the snowball effect of the manufacturers' negligence in totally discounting proper research, falsification of laboratory animal tests, lack of manufacturing quality control, suppression of information, and flagrant irreverence to be forthcoming with Congress and the FDA.

My question is: Has the FDA really had sufficient funds to look into this issue properly?

I want to point out how the medical community never recognized, or addressed, or stood up for the effects of silicone's compositions and derivatives used in the breast implants. There were no human studies relating to pregnancy, breast-feeding, or documentation during the development of a young girl's body. Misinformed, the FDA and consumers could not make a valid decision regarding the safety and efficacy of a breast implant.

My name is Jama Russano. I live in Northport, NY, and I've been married for 15 years. I had a breast implant at age 14 due to a problem at birth. I have decided not to go into my health history because I felt it would take too long, but I would like to take the opportunity, and I would also like to show you some pictures of what no one has discussed here today, and that is the effects, what after having a silicone breast implant looked like.

Nobody told me that trying to take this thing out would discard [sic] my body and millions of other women's that have had im-

plants. Nobody told me of the incredible cost of medical bills that it would take. Nobody told me that I would be lying on an operating table. So I would be happy, at any point in time, to discuss that issue with you. These are just a few samples of the disfigurement after having implants taken out.

During my 22 years—the first implant remained in for 19 years—during my 22 years of implantation of two Dow Corning Silastic implants, Silastic I and Silastic II, I gave birth to two beautiful boys, now aged 9 and 12, and I wish I had brought them here today. They weren't invited.

I have had 20 years of experience in sales and marketing with various consumer product companies. Additional personal information, as well as my health history, will be provided in written testimony. I have been on both sides, to live with a deformity, to have a perfect body, and to live with the latter, the disease. And I would take the decision of having a nonperfect body.

My children suffer the same symptoms as I, a particularly rare disease, esophageal motility disorder. I am fighting for their lives as well as mine. Questioning the relationship of causation to silicone breast implants and my children's health problems, I realized there was very little information as well as very few studies answering my question. Is there a correlation between the mother's experience with silicone breast implants and miscarriages, infertility, birth defects, and childhood illnesses?

We have been scared for years, not understanding the reaction of our disease from silicone implants. That has pushed us to go from doctor to doctor. That has sent the junk scientists out there. I mean, we need answers. We could have had answers many years ago. Shouldn't the manufacturer have known how to remove a product before they put it in?

In 1992, I felt it was vital that these questions be answered, and I formed a not-for-profit foundation, Children Afflicted by Toxic Substances, C.A.T.S. for short. C.A.T.S. was designed the spearhead the evaluation and research necessary to answer the compelling questions. C.A.T.S. developed a questionnaire centralizing medical information in a data base. In 3 short years, we have heard from 5,000 families reporting the health status of their children.

C.A.T.S. has worked closely with Dr. Jeremiah Levine and Dr. Norman Illowite to author the January 1994 JAMA article, "Sclerodermalike Esophageal Disease in Children Breast-Fed by Mothers with Silicone Breast Implants." This small study compared the health of 11 implant children, 8 breast-fed and 3 bottle fed, to that of 17 whose mothers did not have implants but who had similar gastrointestinal complaints.

Their findings: 6 of the 8 breast-fed children suffered esophageal dismotility. The continuation of this study in larger numbers shows a consistent pattern. This study was criticized by the implant manufacturers, but the fact remains that it is the only study that has been performed on children exposed to breast implants.

The hydrocephalic shunt study, reference Lancet Journal 1992, Volume 340, pages 510–513, also produced an immune response, and its safety is still an issue, but the material is solid and doesn't seem to migrate through the lymph system to other organs as sili-

cone and secondary chemicals in the implants. In addition to the difference in medical necessity between women receiving a silicone breast implant and hydrocephalic children, the difference in material between gel and solid materials used in silicone shunts makes any comparison between the two extremely difficult.

My question is: What happens to children who are now silicone-sensitive, born to the exposure of an implant, that may need a product, a silicone product, but cannot because they may have an allergic reaction to it?

The manufacturers of silicone breast implants have had 40 years to conduct proper studies; however, only recently did Dow Corning, plastic surgeons, and other breast implant manufacturers help fund the studies of the Mayo Clinic and the Harvard study. I have before you, and I would like to present this for documentation, a Harvard study that was done years ago.

I would like to read—note: This is a Harvard study of 212,500 nurses and includes 6,019 who reported breast implants and is therefore far more powerful than the nurses' study which included 1,183 of the Mayo Clinic study, with 749 implant women. In fact, it includes more implanted women than all cohort studies that have been done on implanted women combined. It finds a statistically significant 50 percent increased risk of rheumatoid arthritis in women with implants by 1980, but only a smaller, nonsignificant risk associated with implants in the latter.

These are the same authors of the latest Harvard study. Why was this study never published? Why was this study never publicized?

These studies did not ask the right questions. They did not look at the children's issue of birth defects, childhood illnesses, miscarriages.

Mr. SHAYS. Ms. Russano, I just want to have a sense of how much more your testimony is.

Ms. RUSSANO. A couple minutes.

Mr. SHAYS. OK.

Ms. RUSSANO. They did not look at the children's issue of birth defects, childhood illnesses, miscarriages, rupture, or infertility. Researchers relied on industry for research funding. This makes one concerned that there is an impact on the results, including the types of questions one may ask in an epidemiological study.

Studies concerning the effects of reproductive performance of the fetus were initiated by Dow Corning in the 1960's. I won't take the time to reference the study. I will read quickly that in this study in the 1960's, in the rabbit and three rats employing both dermal and subcutaneous routes of exposure, "Regarding fetal abnormalities, there was a significant increase in skeletal defects following dermal treatment with PDMS," which is a silicone compound.

In the 1970's, a small study, D-4, using a similar chemical make-up as was used in the Silicone Silastic Gel, showed the chemicals transcend to the placental barrier, working their way to the pituitary gland, and passing the liver, kidney, and spleen. It was also found to atrophy the reproductive organs of test animals. The same chemical application is used as an insecticide for roaches.

The question: Were these tests repeated on new, better Silastic II Gel, or was it assumed that the response would be the same? If

the manufacturers were so confident bearing children and breast-feeding with silicone implants did not cause a problem, why was the subject not addressed in their literature? If the implants were such a small and unprofitable part of their business, why did they continue to conduct business without proper studies or research, or the real question is, is Dow Corning and Dow Chemical protecting the thousands of patents that they hold on other silicone products?

An executive of Dow Corning recently stated, "Dow's philosophy was to ignore the problem and it will go away." I have news for them, we are not going away.

C.A.T.S. recently published a preliminary report of 250 mothers. I have the report here. I would be happy to discuss the report, but I won't go into it because of length of time. There are strong suggestions from old data and new data that children may be adversely affected. Dr. Levine's work and C.A.T.S.' data comprise the largest study to be done on children of implanted mothers.

Are we giving carte blanche to the manufacturers, or is this giving them a message that their studies need to be better, that they need to look harder? Does the FDA have as much money as they need for this issue? I would suggest that the committee arrange to speak with women on both sides of the issue to fully understand the effects. How can we ask individuals to pay the price of science if there is no health reform in place?

Every day questions are being asked of the medical community, mostly consisting of plastic surgeons, pediatricians, lactation specialists, and La Leche league. Is it safe to have a baby and breast-feed? Today this "yes" is used freely, and there is still no documentation by the Pediatric Society or the manufacturers. They do not acknowledge that there have not been proper tests on child-bearing or breast-feeding.

The medical community based this information on pure hearsay, fueled by an erroneous endorsement of the manufacturer's sales representative who quoted a report which was admittedly fictitious. The Human Milk Banking Association, a not-for-profit organization that administers breast milk banks to U.S. hospitals, now screens for women with implants. They have issued a directive, in March 1994, that stated, "Mothers with silicone breast implants will not be accepted as donors." A Tylenol bottle has more information pertaining to breast-feeding and pregnancy than the package insert of a breast implant.

[The prepared statement of Ms. Russano follows:]

PREPARED STATEMENT OF JAMA KIM RUSSANO, CHILDREN AFFLICTED BY TOXIC SUBSTANCES

Dear Subcommittee Members, Thank you for allowing me to address the committee. It seems appropriate for me to be the last speaker today, for the children have been the last on the list when it comes to the relationship of silicone.

I speak before you; representing hundreds of thousands of children from teenagers who were implanted with breast implants to infants born to mothers with silicone and saline breast implants. I would like to show you the snowball effect of the manufacture's negligence in totally discounting proper research; falsification of laboratory animal tests; lack of manufacturing quality control; suppression of information and a flagrant irreverence to be forthcoming with Congress and the FDA. I want to point out how the medical community never recognized or addressed the effects of silicone's composition and derivatives used in breast implants. There were no human studies relating to pregnancy, breast feeding or documentation during the

development of a young girls body. Misinformed, the FDA and consumers could not make a valid decision regarding safety and efficiency of the breast implants.

My name is Jama Kim Russano. I live In Northport, NY, and have been married for 15 years. I had a breast implant at age 14. During my 22 years of implantation of 2 Dow Corning implants, Silastic I and Silastic II, I gave birth to 2 beautiful boys, now ages 9 & 12. I have had 20 years of experience in sales and marketing with various consumer product companies. Additional personal information as well as my health history is provided in written testimony.

My children suffer some of the same symptoms as I, particularly a rare disease, Esophageal Dismotility. Questioning the relationship of causation to my silicone breast implant and my children's health problems, I realized there was very little information as well as very few studies answering my question, "Is there a correlation between the mother's experience with silicone breast implants, miscarriages, infertility, birth defects and childhood illnesses?"

In 1992, I felt it was vital these questions be answered and I founded a not-for-profit foundation, Children Afflicted by Toxic Substances (C.A.T.S. for short). C.A.T.S. was designed to spearhead the evaluation and research necessary to answer these compelling questions. C.A.T.S. developed a questionnaire, centralizing medical information in a database. In three short years we have heard from 5,000 families reporting the health status of their children.

Our research has assisted Dr. Jeramiah Levine and Dr. Norman Ilowite to author the January 19, 1994. JAMA article, "Sclerodermalike Esophageal Disease in Children Breast Fed by Mothers with Silicone Breast Implants". This small study compared the health of 11 "implant" children (8 breast-fed, 3 bottle-fed) to that of 17 children whose mothers did not have implants, but who had similar gastrointestinal complaints. Their findings?: 6 of the 8 breast-fed children suffered esophageal dysmotility. The continuation of this study in larger numbers shows a consistent pattern.

This study was criticized by the implant manufacturers. But the fact remains that it is the only study that has been performed on children exposed to breast implants. The Hydrocephalic Shunt study, reference Lancet Journal—1992, Volume 340, pgs. 510–613, also produced an immune response and its safety is still an issue. But the material is "Solid" and does not seem to migrate through the lymph system to other organs as the silicone and secondary chemicals in breast implants. In addition to the difference in medical necessity between women receiving a silicone breast implant and children Hydrocephalic, the difference in material between gel and the solid material used in silicone shunts makes any comparison between the two extremely difficult.

The manufacturers of silicone and breast implants have had 40 years to conduct proper studies. However, only recently did Dow Corning, Plastic Surgeons, and other Breast Implants manufactures helped fund studies from the Mayo Clinic and Harvard. Those studies did not ask the right questions. They did not look at the children's issue of birth defects, childhood illness, miscarriages, ruptures or infertility. Researcher's rely on industry for research funding. This makes one concerned that there is an impact on the results, including the type, of questions' one may ask in an epidemiological study.

Studies concerning effects on reproductive performance and the fetus were initiated by Dow Corning in the 1960's. I reference Dow Corning Wright Silastic Gel Saline Mammary Implant H.P. and Silastic MSI Gel Saline Mammary Implant H.P. PreMarket Approval Application for the record. Teratology tests of PDMS include four studies in the rabbit and three in the rat employing both dermal and subcutaneous routes of exposure. "Regarding fetal abnormalities, there was a significant increase in skeletal defects following dermal treatment with PDMS".

In the 70's, a study using a similar chemical make up as Silicone Silastic Gel showed the chemicals transcended the placental barrier, working their way to the pituitary gland and passing the liver, kidney and spleen. It has also been found to atrophy the reproductive organs of test animals. The same chemical application is used as an insecticide for roaches.

The question. Were these tests repeated on the "new, better Silastic II Gel, or was it assumed that the response would be the same? If the manufactures were so confident bearing children and breast feeding with silicone implants did not cause problems, why was the subject not addressed in their literature? If breast implants was such a small and unprofitable part of their business, why did they continue to conduct business without proper studies or research? Are Dow Corning and Dow Chemical protecting over 1,000 or more patents they hold on other silicone products? An executive of Dow Corning recently stated "Dow's philosophy was to ignore the problem and it will go away". I have news for them; we are not going away!

C.A.T.S. recently published a preliminary report of 250 mothers with silicone implants and the health of 151 children born before and the health of 362 children born after implantation. There is a significant pattern of complaints with children that are breast-fed over bottle-fed. Children that are born to mothers with an implant of 5–6 years or older (at the time of birth) are displaying more symptoms. There are strong suggestions from the old data and new data that children may be adversely affected. Dr. Levine's work and C.A.T.S. data comprise the largest study to be done on the children of implanted mothers.

Every day, questions are being asked of the Medical Community, mostly consisting of Plastic Surgeons, Pediatricians, Lactation Specialist and Le Leche League, "Is it safe to have a baby and to breast feed?" Today this "YES" is used freely, and still there is no documentation by the Pediatric Society of the Manufactures. They do not acknowledge that there have not been proper tests on childbearing or breast feeding. The medical community based this information on pure "hearsay", fueled by an erroneous endorsement of the manufactures sales representatives who quoted a report which was admittedly fictitious. The Human Milk Banking Association, a nonprofit organization that administers breast milk banks to US Hospitals, now screens for women with implants. They issued a directive in March 1994 that stated, "Mothers with silicone breast implants will not be accepted as donors." A Tylenol bottle has more information pertaining to breast feeding and pregnancy than the package insert of a breast implant.

Unfortunately, as a non-profit organization, we rely totally on donations. Since we are contra to manufactures, there is no source of their funds. In addition, research we attempt may be considered biased as we are a benefited party. However, WHO is going to fund the research and collect the data to fully understand the effects if these products to insure future generations be born healthy and that Government and Taxpayers are not burdened with their medical costs.

Women and children rely on the safety and fair treatment of elected officials. Our laws serve as a bulwark protecting the weaker against the stronger and promoting the common good (in this case the health and safety of all Americans) against those who would sacrifice it to their quest for personal and corporate gain. We work hard for a decent living and rely on our system of laws and justice to protect ourselves and our children from unsafe products, corporate greed and dishonesty.

Due to the Bankruptcy of Dow Corning and the lengthy time it will take for women and children to get needed medical care, we ask this subcommittee to strongly consider issuing immediate emergency funding for research programs relating to this issue as well as an explant fund that is so desperately needed.

I would be happy to expand on the numerous topics at hand today and I would like to thank you for your valuable time expression of concerns for women and children.

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CHILDREN AFFLICTED BY TOXIC SUBSTANCES RESEARCH STUDY PROGRAM

CLINICAL HISTORY VIA QUESTIONNAIRE

Methods

*Randomly Selected (n=250)*

Children born to mothers before implants (n=151)
Children born to mothers with breast implants (n=352)

Background

DOCUMENTED DISEASES IN WOMEN WITH SILICONE IMPLANTS

*Possible second generation affects*

- Incidence of associated diseases
- Disease patterns in affected children
- Specific type of implant

Results—Women: n=250 Average Age=37

| | Gel | Polyurethane | Double Lumen |
|---|---|---|---|
| Type of implant: | 64% | 9% | 27% |
| | 11.5 yrs | 3 yrs | 7 yrs |
| Health of women: | | | |
| | 27% | 16% | 18% |
| Fair | 23% | 29% | 32% |
| Poor | 50% | 55% | 50% |
| Miscarriages | 28% | 2% | 2% |

Results—Children Born Before Implant (n=151)

Health

| | Silicone Gel | Polyurethane | Double Lumen |
|---|---|---|---|
| | 84% | 91% | 76% |
| Fair | 16 | 9 | 24 |
| Poor | 0 | 0 | 0 |

Most frequent diagnosis: ear infections, allergies, asthma.

Results—Children Born After Implants (n=352)

Age: 8–10 Years

Age of Implant at Birth: 5–6 Years

| | Gel | Polyurethane | Double Lumen |
|---|---|---|---|
| Method of feeding: | | | |
| Breast fed | 65% | 64% | 78% |
| Bottle fed | 35 | 36 | 22 |
| Health: | 23 | 39 | 52 |
| Fair | 33 | 18 | 30 |
| Poor | 44 | 43 | 18 |

Results—Specific Symptoms

| Symptoms | Gel | Polyurethane | Double Lumen |
|---|---|---|---|
| Gastrointestinal: | | | |
| Abdominal pain | 81% | 61% | 51% |
| Esophageal | 41 | 36 | 9 |
| Rheumatologic | 35 | 25 | 24 |
| Sicca | 49 | 28 | 7 |
| Fatigue & Weakness | 53 | 43 | 27 |
| Renal | 4 | 0 | 0 |
| Lymphadenopathy | 25 | 32 | 17 |
| Rashes | 34 | 21 | 17 |

Most common complaints: Allergies, Upper Respiratory Infections, Abnormal bone growth, muscle weakness, Leukemia, Precocious puberty.
81% of children born to Silicone implants are reporting symptoms.
47% of children born to Double Lumen are reporting symptoms.
50% of children born to Polyurethane are reporting symptoms.

CONCLUSIONS—MORE STUDIES ARE NEEDED

*Motility Disorder:*

Abdominal pain
Esophageal symptoms

*Neurologic:*

Are children's fatigue/weakness due to neuropathies? How does ADD fit in?

*Rheumatologic:*

Are children following the same pattern as the mothers?

*Renal:*

Stenosis of urethra & frequent bladder infections are common in boys.

*Rashes:*

Rashes come and go. Are children displaying an allergic reaction?

Mr. SHAYS. Thank you very much.

I'm somewhat in a quandary on how to proceed, because not only do we have pros and cons, but we have people who have very personal experiences, and we have experts who have spent their lives studying these issues.

I guess I would like to start out—Dr. Sergent, you started in the beginning. I would like you, if you wouldn't mind, to just comment on some of the testimony you have heard that followed you and your kind of reaction with the different testimony that you heard.

Dr. SERGENT. With regard to the last comment, the Harvard study that was referred to, that was a preliminary report, and it was not 200,000 patients; it was 200,000 person-years. A person-year is determined by taking the number of people in the study and multiplying it by the number of years that they have been followed.

The final Harvard study had well over 1 million person-years, and it clearly showed no—as a matter of fact, the patients with implants had a slightly decreased incidence of rheumatoid arthritis, although not statistically different, and nobody would make anything of it. But that was a preliminary report, and it is certainly not the complete data.

With regard to the doctor at my left, I would say that I'm very disturbed by people who make no effort to try to look at the global picture. There's no question that women are sick. There's no question that women with implants have rheumatic diseases. The issue is, are these diseases occurring at an increased frequency?

With regard to the so-called new disease that he spoke of, I would say that both the Mayo Clinic study, the study from Harvard, and the very interesting study from the University of South Florida all looked at a variety of musculoskeletal symptoms, and they were looking at it specifically to see if some new disease that was nondefined might be appearing in this population. And in all of those studies the answer was, no, there is no new disease appearing in the breast implant population.

Mr. SHAYS. Dr. Shanklin, I feel like, in a way, it's a description of the economists, the left and the right. I was hoping that all of you would solve our problem here, but you obviously have much disagreement. Bottom line: How did you get into this issue, and what has given you such an impetus to proceed the way you are proceeding? Because I get the sense that you are not in the mainstream.

Dr. SHANKLIN. Well, I don't know. I may be the future.

Mr. SHAYS. Well, the mainstream isn't necessarily the future.

Dr. SHANKLIN. Well, I don't know about that. I'm a pathologist. I look at the tissues when they come out. I performed an autopsy on a woman who died of direct complications of her implants. I know of eight other similar deaths. The FDA has records of some sort on 52 deaths. They have not even shared the details of these with the medical profession in summary or specific form. I would

like very much to know what they have. I don't even know if they have in their records the ones that I have.

There is a cellular toxicity and a tissue toxicity of silicone. That has been shown clearly. There have been deaths which have followed directly upon injection of silicone into the body. That's why silicone injections were banned a long time ago, and they are against the law in certain States because of the inherent danger of that.

There is very little difference, in terms of the toxic load in the body, between something that is injected by a syringe and that which comes there because a device ruptures. As a matter of fact, you get a lot more of it in the body when a device ruptures. We're talking about, oh, say, two average sized implants, if they both rupture in a woman, we're talking about 1 pound of silicone gel that is released into her body. And the body does respond to it. It responds to it when it bleeds out of the envelope.

Mr. SHAYS. Let me ask you, if this is a man-made device and man-made material, how do you find out what will happen in the future. Obviously, in this case, this device was already in people's bodies, and we can go backwards.

Dr. SHANKLIN. Yes.

Mr. SHAYS. But, in general, any man-made device, my challenge is, how would you know the effect 50 years from now or 40? I mean, it seems to me then you would basically put an end to every type of device development.

Dr. SHANKLIN. Well, the point is well-taken, Mr. Chairman. There is an imponderability over that period of time. As a consequence of that imponderability, a variety of animal research has to be done, on a broad enough scale, over a long enough time to give an indication relative to life span of given animals.

The amount of work that was done and published in the medical literature up until, roughly, 1980 was rather minuscule. There was a lot of work done by industry which they never brought to the public light, which has come to our awareness only because of litigation.

It's a long-term problem. The consequences over time are difficult to estimate, I grant you.

Mr. SHAYS. Are you involved in any litigation yourself?

Dr. SHANKLIN. I have been in the past. I have nothing active at the moment. I have one case in mediation; I don't really know what's happening to it.

Mr. SHAYS. Dr. Gabriel, you speak with a tremendous sense of confidence in your study and the results of it, and you're sharing your study. How would you transfer your study into other areas? Does this lead you to just have total confidence in silicone not being a problem, or does it just lead you to believe that your study shows in this instance?

Dr. GABRIEL. I think my confidence stems from looking at all of the data, not just my study. I have a lot of confidence in our methods and the way we did the study, and I stand behind that. But the confidence that I expressed was due to the totality of the data of the controlled studies, and I think that's really the most impressive thing is that all of the well-done, controlled, epidemiologic

studies done to date are all negative. And that's what has impressed me.

Mr. SHAYS. So it's not just your study, but when you continue to look at other studies, you get reinforced with your position.

Dr. GABRIEL. Right. Exactly. All the case control and cohort studies.

Mr. SHAYS. Dr. Connell, you have been involved in this process, and I was intrigued by trying to figure out your position until the end. And your position is that it should be resolved. Do you have the same confidence level that Dr. Gabriel has?

Dr. CONNELL. I do. I have thought so often, in recent years I wish we had had her data when we were meeting in November 1991 and February 1992. As John Sergent pointed out, we anticipated, when I returned and he joined us in 1992, that we were going to see a lot of very negative, very dangerous information forthcoming. We were, I think, all of us, quite disappointed—actually, rather delighted that this was simply not the case.

I think it's critical to look at then and at now. At that point, we made judgments based on anecdotal information and case reports. Today would be very different.

Mr. SHAYS. If I could interrupt, the point is that you made a decision earlier on, and it has been reinforced, as well, by the studies.

Dr. CONNELL. We've been absolutely delighted to see these studies come out because they answered many of the questions that we had. And we felt very discomforted that we couldn't answer them at that time. That's the reason we said there's a public health need, that women get them with informed consent, and let's get some answers.

Mr. SHAYS. My only regret in this hearing is that we've had no votes, because, if we had, I would have loved to have taken Tara on the floor of the House. I can do that if she's my daughter, and I would have adopted her for a short period of time. But evidently we won't have a vote before you all leave.

I'm just interested to know if you have any additional comment based on other points that were made, or if Tara does, before you all catch your plane, which you have rescheduled.

Mrs. RANSOM. We had to, yes. Basically, I think that everyone needs to remember that there are two types of implants. One type goes into a nonhealthy body. It controls the problem, much like an insulin, has its own problems, maybe, maybe not. But you are weighing one direction against another. In Tara's case, it's very simple: life or death.

The other thing is when you choose to put an implant into a healthy body. What does an oyster do to a seed of sand? It makes a pearl. Bodies are not designed—they are very hostile environments, basically—they are not designed to have implants. It's going to fight against it. Somebody may have a problem. I'm not saying that they do or they don't. I don't know. I'm not a scientist. But what I do know is that for some people it is the only alternative. You can learn to deal with the problem if you get to tomorrow, but that's what we need to do.

Mr. SHAYS. We're going to continue with other questioners. I'm going to go to Mr. Barrett. I just need to say that if any witness

does need to leave, obviously, you are free to. I don't want you to all get up and leave, but we will be going on a little bit more.

Mrs. RANSOM. I think I will let Tara go back to the room.

Mr. SHAYS. I sure understand that.

Mrs. RANSOM. Thank you. Did anyone have a question for her before she left?

Mr. SHAYS. Yes. Let me just say to any Member who would like to ask Tara a question or her mother, let's do that, and then I will come right back to you.

Mr. Barrett.

Mrs. RANSOM. I can stay. It's just Tara.

Mr. MCINTOSH. Mr. Chairman, no question, but just a comment. Thank you very much for coming today.

Mr. BARRETT. I'd like to know from Tara who her favorite character is in Wizard of Oz?

Mr. SHAYS. That is a very good question.

Mrs. RANSOM. Who's your favorite character? Tell him.

Mr. SHAYS. You have to answer a Member of Congress.

Mr. BARRETT. Who's your favorite?

Mr. SHAYS. Maybe the question is, do you have a favorite?

Mrs. RANSOM. She has to think. It's all the books.

Mr. SHAYS. You're just convincing me that you're a young lady who's 8 years old.

Mrs. RANSOM. Dorothy.

Mr. BARRETT. Thank you very much.

Mrs. RANSOM. She brought a rabbit with her that has a little gingham dress. Tara doesn't want to write her story, but Dorothy Rabbit is going to write her story about going to Congress.

Mr. BARRETT. That sounds very good.

Mr. SHAYS. I would love to see that story if you would send it to me. Thank you very much.

Mrs. RANSOM. We'll try.

Mr. SHAYS. Thank you very much, Tara.

I'm going to ask Mr. Barrett, you have questions, and you can ask any the other witnesses who their favorite ones are, too.

Mr. BARRETT. Ms. Green, I was interested in a comment that you made sort of at the tail of your testimony, when you talked about what appeared to be your disagreement with the FDA in terms of the effectiveness of the trial mechanism they have for women to receive implants. If you could comment on that further.

Ms. GREEN. Right. Well, the trials are restrictive in some regard. First of all, a woman's doctor has to indicate that this would be the very best implant for her, so she can't be a candidate for saline or some of the other method, and that she would need the silicone to get the best result. So there is a restriction there.

Second, you have to go to a doctor who is part of the trials. And people who are part of HMO's and I believe some of the military groups do not have a plastic surgeon who is part of the trial. So, therefore, a woman would not have access to them.

Our own medical advisors, several who are plastic surgeons, have told me most of them, even though they prefer the silicone implant, are using saline just because of the difficulty in guaranteeing whether a woman can get a replacement down the road or that her

hospital is concerned on using silicone implants because of the climate in the legal system.

So they really aren't as available. And besides, just the overall media frenzy, you know, adds that little bit of doubt.

Mr. BARRETT. OK.

Ms. GREEN. And also—one thing I forgot—that basically they are not going to be available. I think there are enough to complete some of the trials now, but if there are no manufacturers in the business—they are not open-ended studies. As soon as the product is gone, so are the studies.

Mr. BARRETT. OK. Ms. Ransom, have you had difficulty in getting the shunts for Tara? I understand, obviously, where your concern lies.

Mrs. RANSOM. Not yet. Tara's last surgeries were when she was 3½. She's 8 now. And extended life on a shunt is somewhere around 8 years. They fail because of growth. They fail because the brain tissue invades them. I've got one in my purse, if you'd like to see it later, that literally the brain tissue invaded the end of it. And they can fail because of illness. They have to be removed because they cannot guarantee that the illness will not travel up the shunt right into the brain.

Mr. BARRETT. What is your understanding now? If you had to have the operation now, would it be available?

Mrs. RANSOM. My understanding now comes from working with trying to contact Congress and also going direct to the manufacturers, and basically, as long as Dow Corning can sell the silicone, then we're OK. If that bankruptcy judge sitting there now with the case says no, we could be in some real trouble.

Mr. BARRETT. OK.

Mrs. RANSOM. I want the reassurance that whenever, whether 1 year, 5 years, or 25 years from now that Tara needs to go to the hospital, there will be an available medical technology that works as well as the shunt. Now, maybe it will be something new. That's our hope for her, because surgery itself has complications, anesthesias, things like that.

We realize this is not—if I had my wish right now, it would be never to have heard of hydrocephalus and the shunt. But barring that, we have to deal with the fact that I need the knowledge, and I don't have that comfort level yet.

Mr. BARRETT. OK.

Mrs. RANSOM. A year ago I did. Now I do not.

Mr. BARRETT. Dr. Shanklin, you obviously hold some strong opinions on the safety issue here. How do you respond to Ms. Ransom? How should we be dealing with that issue? Do you view that issue differently from the silicone breast implant?

Dr. SHANKLIN. Well, first of all, Congressman, let me say that my opinion has evolved over the 10 years I've been studying this problem as a physician. Initially, I saw some very interesting and challenging things in tissue and went to the literature to see what this was all about. And I found, in 1986, there were already about 100 papers on the subject. There's now over 400.

I asked myself questions: Are we evolving a data base, published data base, that correlates, that gives us an answer? In my judgment, over this period of time, yes. There's been a lot of isolated

reports which are not correlated, but the basic thing coming up from the basic science laboratories, particularly in immunology, is now fairly clear.

There is a profound reaction which is self-perpetuating, which produces granulomas, since the stuff migrates all over the body—we know that for a fact, both in animals and humans. This is going to happen anywhere. And then it becomes a matter not of whether an adverse reaction occurs but in how many of the people who have these implants?

Our current figures, in Memphis, 90 percent of the women with silicone gel implants have positive T-cell memory tests. Not all of them are equally symptomatic; that will happen in time. We also have studied something about the way it changes over time as things happen to the women.

Mr. BARRETT. But do you have the same concerns about the shunt?

Dr. SHANKLIN. No, I do not. I have no problem with the shunt; I said that.

Mr. BARRETT. OK. My question then is, how do we ensure that products such as the shunt stay on the market when, at the same time, whether it's the litigation pressure or it's pressure from the FDA, or wherever it's coming from, is making the suppliers of it less likely to want to keep that product on the market? What should we be doing to make sure that the shunt stays in existence?

Dr. SHANKLIN. The figure was given of 50,000 hydrocephalics with shunts in place. I don't know where that number comes from, but let's take it for purposes of discussion.

Mr. BARRETT. Fine.

Dr. SHANKLIN. That's a pretty good sized market. Maybe it comes under the orphan drug concept that it should be encouraged. I mean, we have to have a little common sense here. That's a primarily therapeutic method for a very particular problem. Some of the other uses of silicone devices may not be primary therapeutic. They may be secondary therapeutic or nontherapeutic but useful.

Mr. BARRETT. So you would draw that distinction, then, between primary therapeutic and secondary?

Dr. SHANKLIN. Absolutely. Absolutely.

Mr. BARRETT. All right. I think my time has expired.

Thank you, Mr. Chairman.

Mr. SHAYS. Gentlemen, the chairman is recognized.

Mr. MCINTOSH. Thank you, Mr. Chairman.

My first question is for Sharon Green, and I was wondering if you could share with us what Y–ME's view of the fact that breast implants are available for cancer survivors and reconstructive surgery but not for cosmetic purposes, do you think that's an appropriate difference to be made?

Ms. GREEN. That was a question we struggled with quite a bit, and actually we felt it was rather outlandish of us to have an opinion for one group of people that we didn't hold with someone else. So our opinion is that they should be available to anybody who wants them and feels that they need them.

So we really don't distinguish between people with cancer and those without, because some of the needs that the women who don't have cancer have for these devices have been very compelling,

and I would be, I think, overstepping my line if I put my morals and my opinion on those people.

And I would like to point a concern out about the clinical trials and the studies. By eliminating women who don't have cancer, we really are compromising the studies in some way. Here we are, only looking at these diseases in people whose immunological system has already been upset by cancer. So if we're getting relatively good results from this group, I suppose we can say that it would be even probably better for the augmentation patient. But it really is an unfair study.

Mr. MCINTOSH. Thank you. I appreciate that.

Let me also ask Dr. Gabriel, is it common practice, when these studies are being done, that financing for them comes from outside sources, including sometimes companies that may end up manufacturing the product or components in it?

Dr. GABRIEL. It's not unusual.

Mr. MCINTOSH. And does that, in your experience, compromise the integrity of the science?

Dr. GABRIEL. It depends on the institution, and it depends on the funding agency. In this case, at least in my case, the funding agency had specific guidelines set out which they followed, in terms of how the proposals were evaluated and how the studies were funded and what kind of interaction there should be. Likewise, my institution has very similar restrictions put on those relationships.

Mr. MCINTOSH. So when there are safeguards like those present, then we can be assured of the integrity of the study?

Dr. GABRIEL. I believe so.

Mr. MCINTOSH. Do the other doctors share that perspective?

Dr. SHANKLIN. Yes. May I add also that the plastic surgeons, many of whom I know by their first names, are actually desirous of determining what's going on here, because it obviously has an influence upon their future practice.

Dr. CONNELL. I think it's important to point out, as was said earlier, most of the drugs and devices that we currently have available came through this particular route. And I think we have all been investigators looking at drugs and devices, and I think it is a misunderstanding and actually a little insulting to investigators to impugn their honesty simply because it's accepted practice to investigate drugs and devices not only within NIH money but with pharmaceutical, foundation money, and others.

Mr. MCINTOSH. You have to pay for it somehow.

Dr. CONNELL. I don't believe any decent investigator is ever influenced by the source of the funds. They are influenced by what they find.

Ms. RUSSANO. I'd like to say something. I think that it's not the fact that the companies are giving these institutions money, because we know that basically that is one way that the institutions function. I would like to present to the committee tomorrow a stack of all of the foundation money that was given to the institutions across the country and show, basically, how long this was researched and that fact that why is it, now that the implants are in litigation, why is it now coming out?

Why hadn't this information come out far before? That's the real question here. It's not that the—you know—and the problem is, do

the lawyers come up to the step of the manufacturers and also do their studies? Is that ethical? Are we all on the same playing field here?

We are in a disaster situation. You're going to end up with hundreds of thousands of women with the problem and hundreds of thousands of kids. How do we work this out?

Mr. MCINTOSH. Let me ask you a slightly different question, Ms. Russano. If all of this information is made available to patients, and they nonetheless decide they want to go forward, either because they are suffering from disease or for cosmetic reasons, to have these types of implants, should we allow that, or should we make a decision that perhaps, as the government, we know better than they do and not allow them to make that choice?

Ms. RUSSANO. Well, I think that, first of all, like formaldehyde and other toxic products we have found over the years, silicone may fall into that category, and that is yet to be determined. So it's basically like I've spoken to many, many women who have said, if only the doctor, when I asked him the question, told me that I could have a problem with breast feeding, if only I had the facts then, could I make an informed decision?

So I think that, as I said before, in young bodies this wasn't documented, in children this wasn't documented, so, as Dr. Kessler stated, there are so many questions that are left unanswered, it's almost impossible. My quest is—you know, you want an answer, well, let's get the funding to get an answer. Let's call it disaster relief and get the funding.

Mr. MCINTOSH. Or let's give people the information that we have.

Mrs. RANSOM. Mr. McIntosh.

Mr. MCINTOSH. Thank you.

Ms. GOLDRICH. I'd like to add to what Jama just said, in the sense that whatever science is coming forward now replicates the original fraud, what do we do about that?

Mr. MCINTOSH. I'm not sure I followed your statement.

Ms. GOLDRICH. In my comments—I don't know whether you were here—I presented the fact that Dow Corning was found guilty of fraud in their basic science. One of the studies that they did was a seven-dog study. When it wasn't coming out so great, they killed off two of the dogs; it became the five-dog study.

Mr. MCINTOSH. Ms. Goldrich, my real question is, where do we go forward for people who may want to make these choices for themselves?

Ms. GOLDRICH. And I'm suggesting to you that, if we're going to rely on the studies we even have now, how can we go forward? Because all of the scientific studies that are being done now replicate the original fraud. We've lost this battle. There's no way to proceed.

Yes, a woman should have a choice. Everybody should have a choice to have this product because it's been made available for far too long. But with that choice comes a responsibility of partially the government, certainly the manufacturers, to pay for what they have done.

Mr. MCINTOSH. Let me wrap up on this. Especially from the earlier testimony with Dr. Kessler, I think we're seeing an instance of what I refer to as the bureaucratic imperative, where mistakes, I think, were made earlier, in the 1991 timeframe, and the agency

doesn't want to pull back from that and finds it difficult to be able to be appearing to reverse themselves, even though, in fact, what we have is a situation where new and more data is available. And I particularly appreciated Dr. Connell's testimony urging that we do that.

I think there are some important things that came out in this hearing. We do know, based on what Dr. Kessler said, that there's no increased risk of most autoimmune or connective tissue diseases, that we can't rule out entirely a small increase of risk of very rare diseases like scleroderma, diseases that, in fact, are very rare and hard to even study.

And I think that's something that we need to make available to the public at large, because most of us don't have access to these studies. Most of us don't read the New England Journal of Medicine. Most of us couldn't understand it if we did read it. And I think it's important for the agency to move forward in clarifying the state of knowledge.

So I think Dr. Connell's point is one well-taken. But we also need to point out that there are continued risks to society by failing to act, because will we have a danger that companies won't offer the product for Tara and other children? Will women continue to avoid treatment because they are not certain that they will be able to have reconstructive surgery? I think those are important risks for the agency and all of us to also talk about and put onto the public record so that we can have a balanced discussion of this.

Mr. Chairman, I, unfortunately, have to leave to a leadership meeting, but I will try to get back for the next panel. I want to again commend you for having this hearing and putting forward all of this information.

Mr. SHAYS. It will be probably the first of a few. I thank the gentleman.

We're going to finish up with this panel with Mr. Gutknecht and Mrs. Morella, and then we're going to get on with the other one. We may have a vote at 4, and it might be nice if we can try to conclude everything. If not, the fourth panel has waited, and they will have their day. So we'll see what happens.

Mr. GUTKNECHT. Thank you, Mr. Chairman. After that admonishment I maybe shouldn't ask a question.

Mr. SHAYS. No, you ask your question. We have eight panelists here who have waited a long time.

Mr. GUTKNECHT. And let me also say that we appreciate not only the assembly and the patience of the people who are here.

Mr. SHAYS. Ask your questions.

Mr. GUTKNECHT. But I did want to ask, and maybe, Dr. Gabriel, you're the correct person, maybe not, it has been said that a little knowledge can be a dangerous thing, and maybe this is a little knowledge. But could you talk a little bit about what I think is called the herd factor; do you know what I'm talking about?

Dr. GABRIEL. No, I do not.

Mr. GUTKNECHT. OK. It's my understanding that if a certain population of people—well, Dr. Shanklin, maybe you can respond to that.

Dr. SHANKLIN. You said "hurt"?

Mr. GUTKNECHT. Herd.

Dr. GABRIEL. Herd immunity; is that what you're referring to?

Dr. SHANKLIN. Oh, herd.

Mr. GUTKNECHT. Yes. H-e-r-d.

Dr. SHANKLIN. Yes. Well, there's an old saying that if you're going to behave foolishly, go in a crowd.

Mr. GUTKNECHT. No, the question, though, that I'm asking is, if a certain population of cattle are exposed to a certain disease, there will be some that won't get it. OK. I mean, for biological reasons.

Dr. SHANKLIN. That's correct.

Mr. GUTKNECHT. In this whole issue, it's one of the frustrating things, because obviously some people may experience some negative reactions to certain things, but at what point do you say, gee, you know, maybe that's just the way it is.

Dr. SHANKLIN. Maybe just them. Maybe it runs in the family. That's the kind of thing.

Mr. GUTKNECHT. Right.

Dr. SHANKLIN. There are people who are especially sensitive to certain things which excite the formation of bronchial asthma. Status asthmaticus can be a fatal disease. I know of one clear-cut case of a women who developed fatal status asthmaticus relative to implant use. I know of another where, after a quiescent period, implants were put in because they thought "she had grown out of childhood asthma." She developed immediate severe asthma, and to the physicians' credit, they took the implants out within 2 weeks, and she was back to normal.

That's an example of a special kind of situation. I suggested to the FDA in 1989 that they consider allergic history as part of their clinical indications for use. Nothing came of that suggestion.

But you're quite right, there are some things to which we all are relatively resistant, for one reason or another, often not understand. That's what herd immunity means or herd behavior, basically.

Mr. GUTKNECHT. Well, the reason I raise the point—and I said that a little knowledge can be a dangerous thing—it's almost like, with this issue, almost too much knowledge, too much information can be dangerous, too. Because it seems like we've had study after study and all this information piled onto more information and more studies, and all it does is raise more questions. You know, at some point, we do have to make decisions and move forward. And that's the concern I have.

I do want to particularly thank the two ladies from Arizona for coming out.

And that really does get to my basic principal concern, and that is that the way we've constructed the FDA and the way it seems to be working today is that we're going to see fewer and fewer new technologies and new products and new cures and new answers coming onto the market because we've literally said that before you can leave home, you have to make certain that all the lights are green. And I'm not certain we can ever reach that point.

This whole hearing has raised an awful lot more questions, in my own mind, as far as breast implants.

Dr. Connell, did you want to say something?

Dr. CONNELL. Yes, I'd like to address this issue as a long-time researcher. There have been many, many studies, most recently

just one reported by Tufts, you may be familiar with, commissioned by one of the Federal agencies, pointing out—and I think we've all seen this—how many American companies are moving out.

I see this particularly as an obstetrician/gynecologist in the health care of women. We have lost the battle. We are a Third World country in terms of medical product development. To me, it's very distressing after working in this for many, many years to find that we are no longer the leaders. Our companies are going to Europe. They are developing products, and the likelihood of Americans, particularly American women, having the advantage of these products I think is increasingly remote.

This, to me, is a most distressing situation from many, many points of view.

Mr. GUTKNECHT. That gets back to my concern. The founder of one of the—the fellow who developed the first pacemaker, in the State of Minnesota—I think it was the first one; I believe it was the first one—he was quoted in the paper last year as saying that if he had to start over again, he would not start the company in the United States of America.

Dr. CONNELL. I read that, and he's, I think, representative of many, many companies and many, many scientists, sadly.

Dr. SERGENT. Congressman, may I make a comment?

Mr. GUTKNECHT. Sure.

Dr. SERGENT. I simply can't let this comment about asthma go unchallenged. We've now heard another disease that is being brought up exactly in the same anecdotal manner that all the others have been. There's absolutely no scientific proof that silicone breast implants cause asthma. Surgery itself can induce asthma. And the fact that Dr. Shanklin knows a case of a patient who developed asthma after surgery is certainly no indication that asthma was caused by that implant.

Dr. SHANKLIN. I didn't say it caused it. It may have aggravated the condition.

Dr. SERGENT. I think you did say it caused it.

Dr. SHANKLIN. We need to know about these things. Excuse the exception.

One of the problems of the cacophony of reports, in my judgment and professional experience, is that we're asking the wrong questions. Basic science is now demonstrating the mechanisms which occur when the body responds to silicone and silica. We know, for example, that it's an interleukin-2 receptor of a lymphocyte which is stimulated. We know that for a fact. We have studied that in many ways, and so have other people.

Once we have the basic information about the mechanism, how the body responds to this stuff, then field surveys can be directed at the proper questioning, in my opinion, to answer some of these broader policy matters. What is the risk at large? I don't think we have been looking at it yet from quite the right point of view.

Thank you.

Ms. GOLDRICH. I wanted to say something about what we're going to do now that we're a Third World country as far as medical devices are concerned. Perhaps we've behaved in a Third World way, and that is not to have done the science up front. It seems to me that when the U.S. Government has enough money to supply

people with the kind of health care that's required from a failed medical device of any kind, then you can have any device you want on the market, as long as you give information enough to have it.

Here we have a country where Dow Corning's own insurance companies are refusing to pay for the mistakes that they made. Now, where are we to turn for the money to take care of these people. You can have any device you want. You just have to figure out who's going to pay for it.

I'm a taxpayer. I would gladly pay my taxes for Tara to have a shunt, but I'm not going to pay taxes for somebody who arrogantly goes off and develops a product and then comes back to me and says, "Well, you have to pay for all the people I injured."

Mr. GUTKNECHT. But the difficult question we have is, I mean, there are I don't know how many hundred thousand women out there who are not affected. I mean, so this is not——

Ms. GOLDRICH. Wonderful. Then we don't have to pay for them, but we do have to pay for those people who are, and there are a substantial number of those people.

Mr. GUTKNECHT. My point, though, about the herd factor is that people react differently. And many times—and, you know, I'm not going to defend fraud or abuse of anybody, but, on the other hand, we cannot predict what the reaction of some people may be. Some people may take aspirin and have intestinal bleeding. Does that mean we should keep aspirin off the market or sue all the companies that manufacture it? I don't know.

Ms. GOLDRICH. No, but there's another problem. My mother just died of lung cancer in March. Did they let her have products that were not safe for her? No. I believe that the FDA had provided the kind of medication for my mother to have a peaceful end. I was grateful for that. I didn't have to look to anybody to explain her death.

The point is that, when you have women or you have anybody who is hurt and injured by an out-of-control manufacturer, there's got to be somebody to pick up the tab for that. The insurance companies aren't doing it. Certainly, they are denying the women who are now in trouble any coverage for breast care. They don't even get to have any form of cancer care should they develop it quite by circumstance.

Mr. GUTKNECHT. Ms. Ransom, you had something you wanted to say.

Mrs. RANSOM. Yes. I keep thinking that we always talk about the practice of medicine. Medicine is not a perfect science. It's an evolving science. We have to put reason in that. There is a great deal of patient responsibility. If you step in front of train, you're probably going to be injured. At what point do you have a responsibility for your part in it? Why should everybody else always have to pay for it?

Also, not every form of cancer can be treated the same way. Why does there have to be one answer for everything? It seems to me that we need to just stop and ask some of those very basic questions. What do we want from medicine today, and then how do we get it?

Ms. GOLDRICH. I would agree with what she says.

Mr. SHAYS. Excuse me. I need to interrupt.

Mr. GUTKNECHT. My red light is on, and I'll have to yield back to the chairman.

Mr. SHAYS. Yes, if that's all right. I need to get on to Mrs. Morella who has been extraordinarily patient.

Mrs. MORELLA. I'll try to just ask one question. You represent a great range, and I appreciate very much your not only being here but waiting also to be on this panel, and I value the testimony that you've submitted and, of course, the statements that you made.

I'm trying to find like common ground. Where do we all come together? It appears to me that everybody thinks that we should continue to encourage research and technology; right?

Ms. RUSSANO. With the right questions answered. I'm sorry.

Mrs. MORELLA. Who wants—you said——

Ms. RUSSANO. I said—I'm sorry—the research and technology with the proper questions answered in the beginning, not at the end.

Mrs. MORELLA. Right. I would agree with you in that regard. You also feel that we do need more studies that should not be stultified—that more studies would be very helpful. You also all believe that there should be some legal reform, that we have a litigious society, and that this also can hamper further research.

Ms. GOLDRICH. I can't agree with that totally. I think that the problem with the litigious society is that there is no other way to turn to have a person be able to confront a manufacturer if they feel they have been harmed and denied informed consent. This entire issue would never have come up if women had been told the issues involved with breast implants. They were sold a product for a lifetime. So I can't go into that tort reform with you.

Mrs. MORELLA. I can understand where you're coming from and what you're saying, and I would agree that you have the courts as access for people. But that gets into the next point, you all believe that everybody should be given the facts to be able to come up with the right answers.

Ms. GOLDRICH. Absolutely.

Mrs. MORELLA. So I think, you know, Mr. Chairman, there are a number of areas where we feel that we can come to some kind of agreement, in terms of where we go from here, the informed consent being part of it, too.

I was also very interested in what—I think it was Ms. Green—the statement that she made about the fact that all women should be included in the clinical trials. I had not even thought about that before. But whether it's reconstructive or cosmetic reasons, I think that makes some sense.

So what I'm hoping is that, as a result, as we put together the statements that have been made throughout this entire day, we can reach some conclusions, with some variation in terms of where we, as Members of Congress, go from here.

You wanted to make a comment?

Ms. RUSSANO. Yes. I'm concerned because no one seems to be addressing the children in these studies. Are we going to have before us in the next 2 years hundreds of thousands of children who have been exposed to this in the same situation that Tara is in today? I mean, how do we protect those children? What are we going to

do to those children? Are we going to wait, like DES, 20 years and say, gee, we should have thought of that?

We have an obligation. Elected officials have an obligation. Those questions were never answered.

Ms. GOLDRICH. But they were asked.

Mrs. MORELLA. Yes, Doctor.

Dr. CONNELL. I would like to go back to my final recommendation. I think we all recognize, it's very, very clear, many scientific decisions now are being made not by scientists but by litigation, by juries, and others. This is not the way to deal with issues of this sort.

You want to find out a good way to go? I think we are now suffering from the impact of nonscience. Women are terrified. Companies are leaving. My final suggestion to you is to urge that we put this thing to rest, the FDA make a statement based on Dr. Gabriel's and others' research.

But, ultimately, I think, to convince the scientific community to reflect what we have learned ever since our panel self-destructed in 1992, I think it's critical that we put a mass of scientists together, let them evaluate the current situation, and then come to some value judgment, hopefully with your help.

I don't think you're going to get a scientific outcome unless we have your help to have a good scientific evaluation of the situation, reaching a conclusion, and putting an end to this deplorable situation that we're currently in. And we need your help to do it.

Mrs. MORELLA. I think that's the reason that this whole hearing was put together. And I certainly think that we should remember the children and that we should make sure that we ask the right questions, too. Thank you.

Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentlewoman.

I think we have concluded, except I would like to say for the record, the point you made about children and how they are affected is something that this committee will have to address in greater detail. All of you have contributed, I think, a great deal to our committee, and I appreciate each and every one of you being here. Thank you very much.

Our next panel is Richard Hazleton, James Benson, and Jerome Schultz.

While those witnesses are coming to the table, I would like to recognize Mr. Fox for an introduction of someone who is visiting with us right now.

Mr. Fox.

Mr. FOX. Thank you, Mr. Chairman.

It gives me great pleasure to introduce someone who is no stranger to anyone who is in the United States. We have with us today, and I would ask him to please stand——

Mr. SHAYS. Well, why don't you have him stand when everybody is sitting. Why don't you first tell us who he is.

Mr. FOX. We have with us today, Mr. Chairman, Dr. Henry Heimlich, best known for the Heimlich maneuver that has saved many lives from choking. I did want to say that with him today is Dr. Jack Scianci from the Montgomery County Health Department and AIDS Task Force.

Mr. SHAYS. Dr. Heimlich, please stand up. I'm assuming that it's you. It's a privilege to have you here, and thank you for all your good work. Your name is well-known and deservedly so. Nice to have you here, Dr. Heimlich.

[Applause.]

Mr. FOX. May I just finish, Mr. Chairman?

Mr. SHAYS. Yes, you may.

Mr. FOX. Dr. Heimlich, while best known for his work dealing with victims of choking, is now working with many groups across the country to also have his methods used to prevent drowning, as well as working on therapy for AIDS. And the Heimlich valve was used during time of war to save many of our veterans on the field of battle.

Dr. Chen is with him and Dr. Scianci. We appreciate your visitation today and look forward to your attendance at future hearings of the subcommittee.

Thank you.

Mr. SHAYS. I thank you, Mr. Fox.

Gentlemen, you're sitting down; I'm going to ask you to stand up. As is customary, we swear in all our witnesses. If you would raise your right arm.

[Witnesses sworn.]

Mr. SHAYS. For the record, all three witnesses have responded in the affirmative.

This has been a very long day. For me, it has been a very stimulating day. It's been a very interesting day. I thank you for your patience in waiting to be the fourth panel.

I might say to you, Mr. Hazleton, you should feel free to correct the record where you think the record needs to be corrected. You sat in, I think, on most of the hearings today; is that correct?

Mr. HAZLETON. Yes, sir.

Mr. SHAYS. So there have been mentions of various companies and motives, and everything, and you should feel free to just state the record as you see it.

We will go in this order: Mr. Hazleton, Mr. Benson, and then Dr. Schultz.

**STATEMENT OF RICHARD A. HAZLETON, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, DOW CORNING CORP.; JAMES E. BENSON, SENIOR VICE PRESIDENT, TECHNOLOGY AND REGULATORY AFFAIRS, HEALTH INDUSTRY MANUFACTURERS ASSOCIATION; AND JEROME S. SCHULTZ, PH.D., PRESIDENT, AMERICAN INSTITUTE FOR MEDICAL AND BIOLOGICAL ENGINEERING, AND DIRECTOR, CENTER FOR BIOTECHNOLOGY AND BIOENGINEERING, UNIVERSITY OF PITTSBURGH**

Mr. HAZLETON. Thank you, Mr. Chairman, and good afternoon.

I am Dick Hazleton, chairman and chief executive office of Dow Corning. I want to thank you first for your patience and then for this opportunity to share my views about risk assessment, especially as it pertains to silicone breast implants and silicone materials used in other medical devices.

And I would like an opportunity to comment on some of the issues. I'd like to complete my prepared testimony, I think, and then I'm sure these things will come up in questions.

The story of breast implants clearly shows the consequences when the powerful influence of billion-dollar litigation trumps risk evaluation based on science. The testimony from many at this hearing speaks more poignantly to those consequences than I could ever hope to.

Clearly, there are many victims. I understand very well that women represented by Ms. Goldrich and Ms. Russano are sincerely convinced that they have been harmed by silicone breast implants, and it's no mystery that they are angry at my company. While I cannot agree that they are victims of Dow Corning or our products, I don't question that they are victims. They are certainly victims of their illnesses. I would argue that they are also victims of a legal environment that has done more to exploit their problems than to resolve them. Unquestionably, they deserve concern from all of us.

But there are also thousands of women with implants who are not ill but have been victimized by the fear generated by this controversy. Breast cancer survivors, represented today by Congresswoman Lloyd, Ms. Green, and Ms. Locke, feel victimized because they no longer have meaningful access to a product they believe to be very beneficial. These women deserve our concern, as well.

Another group of victims are women who have these same cruel diseases but are not breast implant recipients. Their question is what does cause their illness, since they know for sure it isn't silicone. I only wish that some of the money that we've all paid to lawyers could have gone instead into research to provide answers to these women.

Finally, there are victims such as Tara Ransom and her mother. In addition to Tara's hydrocephalus shunts, Dow Corning provides silicone materials that are vital for products like pacemakers and defibrillators, that literally keep people alive every second of the day. Our people have also developed silicones for devices that restore hearing to the deaf, mobility to arthritis sufferers, and wound healing to burn victims.

In all of these applications we've taken the business risk to innovate new medical materials that make a difference in people's lives, and we've backed that research with sound science. In fact, these silicones are among the most researched medical materials available today, yet they might follow the course of other materials and be withdrawn from the marketplace as they become litigation targets. The question is not whether Dow Corning will continue to manufacture these materials, it's whether silicone, as a class of materials, will become tainted and unavailable.

Our good-faith participation in a $4.25-billion global settlement to try to resolve the implant controversy is often characterized as an admission that our products were unsafe. Or, alternatively, in the words of Forbes Magazine, as a "splendid act of corporate cowardice." And now some view our decision to utilize the Chapter 11 to achieve resolution as an attempt to avoid responsibility. None of that is true.

It's not really very complicated. Believe me, our every instinct was to stand and fight for our principles, and we've had consider-

able success doing that in individual cases. But when our legal system has been distorted from one which seeks justice based on sound scientific evidence to a business driven by billion-dollar economic incentives, in our case resulting in nearly 20,000 lawsuits, then CEOs like me have no choice. We must make business judgments for the survival of our companies, regardless of our instincts.

As to Chapter 11, it's now the only way that we can equitably address all claims, not just those of plaintiffs whose lawyers have succeeded in getting them to the front of the line on the courthouse steps.

On the science itself, I won't dwell on the studies of autoimmune disease. The well-qualified scientists on the panel ahead of me should do that and did that well. But to me, as a layman, the most compelling summary of the evidence is the review recently concluded by the British health authorities. They examined over 250 studies and references, not only those which show no link between implants and disease, but also those that claimed to find a link. And their firm conclusion is that there is no evidence of an increased risk of these diseases among women with implants.

Let me turn briefly to another aspect of the breast implant issue, that of local complications, such as hardening of the surrounding tissues and implant rupture. We agree these deserve further attention, but they have been well-known and well-documented for many years, and the absence of a link between silicone and disease means they are not life-threatening. They can be dealt with by a patient and her physician who are in the best position to balance the benefits of breast implants with these possible complications.

I've made all this sound pretty bleak, but I hope and believe there can be a solution to this madness. It starts by ensuring that science, not scare tactics, is our standard for risk assessment. Our public health institutions must serve as a fire wall that can withstand the sometimes enormous power of those who specialize in a calculated appeal to fear over fact. And I've suggested some specific possible improvements in my written testimony.

I want to conclude with a comment to those who are convinced that they have been harmed by my company. It's very discouraging to me and to every one of my 8,300 fellow employees that all the anger and mistrust generated between some women and ourselves has made it so difficult for us to listen to each other and have much of a constructive dialog.

But despite the anger and mistrust, I hope that at least they will accept the sincerity of our intention to fairly address the claims with a resolution that does recognize what the scientific evidence says, but is also viewed by most women with implants, and by the world at large, as responsible and honorable.

Thank you for your attention, and I do look forward to your questions.

[The prepared statement of Mr. Hazleton follows:]

PREPARED STATEMENT OF RICHARD A. HAZLETON, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, DOW CORNING CORP.

Good morning. I'm Dick Hazleton, chairman and chief executive officer of Dow Corning Corporation. I want to thank Chairmen Shays and McIntosh, as well as the other members of the subcommittees, for this opportunity to talk about the issue

of risk assessment of medical devices, particularly as it pertains to silicone breast implants and silicone materials used in medical devices.

The story of breast implants clearly shows the consequences when the powerful influence of billion dollar litigation trumps risk evaluation based on science. I'd like to talk about those consequences, their causes, and potential solutions. Then I would be happy to answer any questions.

Clearly there is a broad spectrum of opinion among the participants in this hearing on the consequences of this highly-charged, divisive issue. Many women with implants disagree with the scientific evidence that shows no link between implants and disease. They remain convinced that their implants have caused a wide range of immune system symptoms and illnesses. While I disagree with that opinion, I respect the depth of their conviction. I also know that immune system diseases have afflicted some women with implants, since these diseases, by their very nature occur for more frequently in women than they do in men. But we disagree that their implants cause these diseases, and we have an equally deep conviction that responsible and rigorously conducted science must be the sole basis for determining the issue of causation

There is also a very large number of women with implants who are not convinced that implants are dangerous. But they are uncertain and scared. This widespread fear and uncertainty have significant public health consequences. For example, many women have been scared into undergoing expensive, unproven, and sometimes risky treatments like chemotherapy and steroid cocktails. In fact, the merchandising of breast implant fear has created a cottage industry of blood tests sold to women for $600 or more to diagnose diseases that are not even recognized by any medical association. Some are even questioning if women with implants should bear children. In one recent media report, the interviewer wondered on camera if an abortion should be considered for pregnant women with implants. As a recent Washington Times editorial put it, this is madness.

Breast cancer survivors can also speak to the public health consequences of the breast implant issue. Those who have elected a mastectomy have far fewer choices for reconstructive surgery. Many who would like to have silicone gel implants can no longer obtain them even in clinical trials because the fear of lawsuits has driven many physicians and hospitals away from using the device. They also fear the loss of saline implants as hospitals avoid clinical tests because of the risks of lawsuits. Their only remaining choices are to go overseas where silicone gel and saline implants remain available or to undergo major surgery involving the transfer of their own tissue. For the minority of women who can afford it, going overseas is an increasingly used option. The other option of breast reconstruction through tissue replacement is not available to many women. Women who are too slim do not have enough fat tissue for the procedure, and other women who have disqualifying medical conditions or insufficient financial means are not eligible.

The public health consequences of the breast implant issue have also affected women who do not have breast implants but who do have immune system diseases. They are seeing billions of dollars going to lawyers fees and the legal system that could be better spent researching what causes these diseases. These illnesses affect women far more frequently than men and unfortunately the cause for them is unknown. As lawsuits continue to thrive involving these diseases, manufacturers move their new product development to less litigious applications, and with that redirection go their research dollars.

The final consequence of the breast implant issue threatens the health of people like you and me and our families. We risk losing lifesaving medical devices as medical materials that are targeted for billion-dollar litigation are withdrawn from the marketplace. For example, right now the FDA-approved Norplant contraceptive device is already in the cross hairs of the plaintiffs' bar. The same lawyers who have mass marketed the fear of breast implants are now holding seminars on how to sue manufacturers, and advertisements soliciting lawsuits are being published. What's next? Silicone medical materials are critically important for cardiac pacemakers, hydrocephalus shunts, heart valves, kidney dialysis, insulin production, and many other critical health care applications. I fear that hydrocephalus shunt patients, like Tara Ransom, may not be able to access these devices if companies like Dow Corning must withdraw medical materials from the marketplace. But at the same time, as the Chairman and Chief Executive Officer, I cannot put our organization, our people, their families, and the communities in which we operate at risk by producing medical materials that are targeted for lawsuits, despite the scientific evidence,

Let me explain who Dow Corning is and what materials we make. As a person who has worked for Dow Corning for 30 years, it's frustrating to me that most people only know us from news reports that routinely lead off with, "Dow Corning, once the leading manufacturer of silicone breast implants. . . ." Certainly we no longer

make breast implants, and we will never do so in the future. But Dow Corning is more than that.

The Dow Corning that I know is 8,300 men and women from around the world whom I am proud to call my colleagues and friends. For the past 53 years, the people of Dow Corning have had the vision to innovate new products and materials that sometimes make the difference between life and death for hundreds of thousands of people. We developed the silicone material for the hydrocephalus shunts that keep children like Tara Ransom alive. Our silicone materials are vital for products like pacemakers and defibrillators that literally keep people alive every second of the day. Our people have also developed silicone materials for devices that restore hearing to the deaf, mobility to arthritis sufferers and wound healing to burn victims. In all of these applications, we have taken the business risk to innovate new medical materials, and we have backed that risk with research based on sound science. In fact, the silicone used in the devices is one of the most researched medical materials available today.

But those products are only 3% of the over 8,700 different products and materials that have allowed Dow Corning to grow to the $2.2 billion company it is now. Our people also develop and produce materials that make possible airplane travel as we know it today; materials that make automobiles safer to drive; and materials that form the basis for the enormous power of computer chips that are revolutionizing the way we communicate.

In short, the Dow Corning I know is not a breast implant company. Instead, we are a company founded on science and technology. Working with thousands of customers, we invent new applications for our materials that make a positive difference in people's lives. In fact, we are the world leader in silicone technology. And I believe we have only scratched the surface of the innovative potential of our people and the materials they develop.

Ironically, as I stand before you today, however, the Dow Corning I have just described is also a company who has filed under Chapter 11 of the United States Bankruptcy Code. We made this decision reluctantly and as a last resort, after exhausting alternative ways to resolve the breast implant issue.

If we had not taken this action, we risked compromising our ability to participate in a global settlement that would end this controversy. Let me explain. At the time we took this action, we had agreed to participate in a $4.25 billion breast implant settlement because it provided a manageable way to end this legal controversy.

But that proposed settlement—the largest of its kind in this country's history—was not enough money for some. These plaintiffs lawyers encouraged a number of their clients try to get more money through individual trials. Ultimately, we were left with 7,000 lawsuits in addition to the global settlement. By mid-1995, we faced 75 trials involving 200 plaintiffs over the next 6 months alone. Even if we had gone to trial and won the majority of those cases, the enormous resource drain represented by this number of trials risked permanently damaging our business. Without an ongoing, financially stable business, Dow Corning would not have the funds to participate in a global settlement. Therefore, Chapter 11 became our only reasonable alternative to preserve our business and, therefore, our ability to fairly resolve the claims of women with breast implants.

But these disputes are, in fact, legal disputes. The central question before this committee is scientific evidence and risk assessment. So let me turn to what the science says about the risks of breast implants. Many other far more qualified participants in this hearing have and will address that question, so I will only offer some summary comments.

The most pressing public health question concerning breast implants has been whether the devices cause immune system diseases. This concern became a national event in early 1992 with 5,000 news articles filed per month, conjuring up images of women terrified by these diseases. The stories driving this concern were anecdotal case reports. At that time, not a single peer-reviewed epidemiology study showed a link between implants and these diseases, but there were also no epidemiology studies that disproved that link. As a result, the mere possibility—not the probability—that implants might cause immune disease drove the product off the market.

Today, the British government has just finished a review of silicone breast implant research—reviewing studies that show no link between breast implants and disease and studies that claim to find one. They concluded that there is no evidence of an increased risk of disease in women with implants. In June of this year, the New England Journal of Medicine published a Harvard Medical School study funded by the National Institutes of Health that showed no link between implants and immune diseases or even the symptoms of immune disease. This study is not unique. Today there are 18 epidemiology studies conducted at prestigious medical and re-

search institutions that also show no link between the implants and immune disease. The consistency of these results has led some researchers to declare that if it weren't for the hype on this issue, this case would be closed from a scientific perspective.

Breast implants do carry some well documented risks of local complications. Many women with implants, for example, may develop a fibrous capsule around the device. In some of the cases, the capsule may become hard and painful requiring further treatment to break the capsule. In the last state-of-the-art implant that Dow Corning had developed before we permanently withdrew from the implant business, our people had nearly eliminated this problem. Rupture is another complication, which has been reported to us in less than 3% of the implants we manufactured. Both of these complications—rupture and fibrous capsules—deserve attention.

But the absence of a link between implants and disease means that neither of these complications are life-threatening. They can be dealt with by an implant patient and her physician who are in the best position to balance the benefits of breast implants with the complications.

That is the science and the data regarding breast implants risks as we know it today. But even research from institutions like Harvard Medical School, The Mayo Clinic, Johns Hopkins and others cannot compete with the public health scare that was burned into the national consciousness in early 1992. Instead, those highly respected institutions have found their very ethics attacked by those who actually claim that any funding from manufacturers—no matter how remotely connected to the actual research—inevitably compromises their work. Does anyone seriously believe that a prestigious medical institution would risk its reputation, act unethically, or commit fraud for the funding of studies? Ironically, these same critics also vilify companies like Dow Corning for allegedly not funding enough research. Frankly, I find these allegations cynical and preposterous. In truth, they are nothing more than a poorly disguised tactic to focus on anything but what the science says.

So far I've described a pretty bleak picture. But I hope and believe there can be a solution to this madness.

It starts by ensuring that public policy is driven by scientifically based risk assessment and that our public health institutions serve as a firewall that withstands the sometimes enormous power of those who specialize in made-for-the-media scare mongering. Put another way, should plaintiffs' attorneys—who stand to gain literally billions of dollars by the mass marketing of fear—determine whether a product is safe or should regulatory and research institutions like the FDA, NIH, Harvard, Mayo and Johns Hopkins? The answer should be obvious, but our experience would suggest otherwise.

More specifically, let me close by suggesting the following three recommendations for improving the process for evaluating risk in medical devices:

1. Guidelines must clearly establish what degree of risk is acceptable before a device can become available. If all devices must be totally risk-free, then informed consumers will no longer have any role in deciding for themselves what risks they are willing to assume. The government will make that decision for them and the number of devices available to consumers will be severely reduced. If devices can have a reasonable level of risk, what is the standard of evidence that must be met that both protects the consumer and maintains their right to decide for themselves what risks they are willing to take? What are the standards that determine when enough scientific evidence is enough?

2. When the guidelines and standards change for evaluating the risk of a device, the manufacturers should be aware of those changes before they are implemented. By definition, science and standards evolve. What is state-of-the-art today will not be state-of-the-art tomorrow. Manufacturers not only understand this, they most often drive these advances. But if you are competing in the high jump and the bar is raised after you started your jump, then the incentive to even enter the contest quickly goes away. This is especially true when the consequences of falling short of the rising bar can literally put well meaning companies out of business based on unproven allegations alone.

3. There is an urgent need for tort reform, particularly in the area of medical materials used in medical devices. The end device manufacturer or supplier must continue to be responsible for assuming the safety and performance of their products. However, continuing to allow medical materiel suppliers to be lawsuit targets simply because they have deep pockets will only have one result . . . the continued withdrawal of those materials from the marketplace.

I want to conclude with a few comments to those who are convinced that they have been harmed by our company. It is very discouraging to me, and to every one of my fellow employees at Dow Corning, that this issue has generated so much anger and mistrust between some women and ourselves that it is very difficult for

us to listen to each other and have much of a constructive dialogue. But despite the anger and mistrust, I hope that they will accept the sincerity of our intention to fairly and equitably address their claims. My definition of a fair and equitable resolution is one that does recognize what the scientific evidence says, but one that is also viewed by at least most women with implants and the world at large as responsible and honorable.

Thank you for inviting Dow Corning to share its thoughts on this most important subject.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ED TOWNS TO RICHARD A. HAZLETON

*Question 1.* During the Congressional hearings in 1990, the Committee Chairman at that time, the late Congressman Ted Weiss, asked Dow (Corning) to produce certain documents that contained trade secrets. Were these documents given to the Committee and if not, can you share with us the problem in not making them available?

Answer. Dow Corning believes that all documents requested by the Committee have been produced through requests from the FDA, the Justice Department and through the MDL (multi-district litigation) data base. If there are specific documents in which you have a particular interest or which you believe were not disclosed, I would be happy to identify where they have been provided or expedite procedures to make them available to you.

*Question 2.* Early studies show that Dow Chemical conducted animal research on silicone and its effects. Why then is Dow Chemical not being held accountable along with Dow Corning?

Answer. Dow Corning was founded in 1943 at the request of the U.S. Government to supply silicone materials, not available anywhere else in the world, for the war effort. Both Dow Chemical and the then Corning Glass Works, provided technology needed to start the company. Since its founding, Dow Corning has operated as a separate independent entity from its two shareholders. During the early years of the company, Dow Corning was too small to have either the facilities or the trained personnel to conduct sophisticated toxicological studies. We, therefore, as is common practice in industry and government, contracted work with outside laboratories who had the capabilities. Dow Chemical was one of several outside laboratories utilized.

Dow Chemical did not design, test, or manufacture breast implants. Those activities are solely the responsibility of the Dow Corning Corporation. I believe deep pockets, not facts, are the basis of attempts by plaintiffs attorneys to bring Dow Chemical into breast implant litigation.

*Question 3.* The medical difficulties of children born to women with breast implants has not been well publicized. First, does Dow (Corning) acknowledge that there have been health problems for these children? And, second, how can funds be found for the needed research and treatment of children affected by these implants?

Answer. There is no credible scientific evidence to suggest increased medical difficulties in children of mothers with breast implants. The single published study by Levine and Ilowite, claiming "Esophageal Disease," has been largely discredited due to gross selection bias leading to skewed results. The British Department of Health's evaluation of this work follows:

> There are, in fact, a number of significant deficiencies in the study which prevent any valid conclusions being drawn. These include the use of a highly selected group of patients with bias evident at each stage of selection, inadequate controls in terms of numbers and matching, inadequate numbers investigated, inaccuracies in clinical correlations, lack of evidence that abnormalities were clinically significant, lack of corroborative evidence, the effect of any anesthetic agents used on esophageal motility, inappropriate statistical methods and lack of any evidence that silicone was present in milk or ingested. In spite of the widespread publicity generated by this paper, it is of no value in assessing the health effects of silicones.

Nonetheless, because of the fear such studies generate, Dow Corning is sponsoring third party epidemiology work to address the claims being hypothesized. However, I feel it is unconscionable that children are now being used by some as a pawns in the breast implant litigation debate. Before we once again scare women and the families of women with breast implants, as we allowed to happen with unfounded claims of cancer, scleroderma and lupus, I hope we will require more than hearsay and anecdotes before raising an unfounded health scare for children.

Mr. SHAYS. Thank you, Mr. Hazleton.

Mr. Benson.

Mr. BENSON. Thank you, Mr. Chairman.

I also want to thank you for inviting me to be here today. Like you said, it's been a long day, but I think much information has come out, and I think even more is yet to come. As requested, I have submitted my written testimony, and I would like here to summarize that testimony.

My name is Jim Benson. I'm senior vice president for technology and regulatory affairs at the Health Industry Manufacturers Association. In my comments today I want to stress three points:

First, one of the most essential materials in medical implants, silicone, has been widely accused of being unsafe, though a growing volume of evidence suggests otherwise. Second, the vilification of silicone is one of the primary causes of current shortages of many raw materials used in medical products. And third, these shortages present a threat to patients because technology manufacturers may not be able to develop countless new technologies.

Though much of this hearing has addressed the issue of breast implants, my remarks today will not. As former Acting Commissioner of FDA and former director of the Center for Devices and Radiological Health, I am precluded by law from discussing proprietary information. I want to use my brief time today to address questions of FDA risk assessment and science that hold even broader implications for patient care.

Let me begin by focusing on risk assessment at FDA. The FD&C Act requires FDA to find a reasonable assurance of safety and effectiveness before approving a new product. To meet that standard, medical technology companies perform a variety of tests on their devices. These include clinical trials in humans; animal studies; mechanical, structural and chemical tests; and mathematic or computer modeling.

Yet, even the most rigorous testing does not and cannot yield assurance of absolute safety. That's because science itself rarely, if ever, yields absolute answers. By its very nature, science is open-ended; it's ongoing; it's never complete. No matter how thorough the testing, one can always ask one more question, study one more patient, seek one more statistic.

Congress clearly recognized the nature of science when it concluded, in the 1976 medical device law, that the agency should not seek absolute assurance of safety and effectiveness of medical devices but a reasonable assurance. That means FDA must examine the risks and the benefits of devices, then make its judgment on the balance between the two.

The job of FDA is not to hold up a product indefinitely while demanding evidence that exceeds the standard of reasonable assurance. If that happens, product approvals at FDA will stop completely, and patients will be harmed. At that point, the quest of absolutes in protecting public health will, in itself, have become a threat to public health.

Ultimately, the agency has ignored the dictates of Congress, preferring instead this "absolutist" mentality, this insistence that data prove, with total certainty, that a product will or will not have a specific effect. Let me give you an example. In recent months, some 17 or 18 epidemiological studies have all reached the same conclu-

sion: They do not find a link between breast implants with silicone gel and connective tissue diseases. These are studies that have been done by some of the world's leading institutions, such as Harvard University and Mayo Clinic.

In addition, FDA's counterpart agencies in such countries as the United Kingdom, Australia, and New Zealand, have conducted their own analyses and literature reviews. None of these countries is finding a link between silicone and connective tissue diseases. Yet, despite this growing body of evidence, FDA continues to argue with these findings.

I would like to digress here just a moment and acknowledge that Dr. Kessler said this morning, if I heard him correctly, that this body of evidence does point toward no link between silicone and typical connective tissue disease. We need to hear what he said there very carefully, and I look forward to examining the record more closely.

This is especially surprising since silicone is one of the most ubiquitous substances in our society. Each of us uses and ingests it every day. We use it in deodorants, suntan lotions, pain relievers, toothpaste, lip balm, shaving cream, soft drinks, and even french fries, to name just a few.

The everyday, routine uses of silicone combined with its long successful history in medical use, especially implants, represents an enormous body of empirical data. If any significant danger existed from silicone, it would have become obvious a long time ago.

Yet, this perception of silicone as being unsafe, together with FDA's unwillingness to acknowledge studies of the highest caliber, is having an increasing harmful impact on patient care. Unsubstantiated allegations about the safety of silicone have become the centerpiece of widespread product liability litigation and publicity in this country. This type of litigation has led many suppliers of vital raw materials for medical devices to simply leave the device market, thus creating growing shortages.

With due respect to the CDRH staff who were here this morning, and they have been working with us toward finding substitutes for some of these raw materials that have been withdrawn, we remain deeply concerned that new raw material suppliers will not enter the market. These are shortages that directly threaten patient health. Again, I'm hopeful that Dr. Kessler's comments about the relative safety of silicone this morning will positively affect these shortages.

Countless medical technologies depend upon such raw materials, including, to name only a few: heart valves used by 35,000 patients annually; vascular grafts, 300 patients annually; and certain types of surgical tools which are used to treat millions of patients every year.

Though these products I've mentioned are comprised of a variety of biomaterials, many devices depend upon silicone, in particular, and they include hydrocephalus shunts, which we've heard a lot about today; arthroplasty devices, such as artificial knees and hips, 600,000 patients a year; and catheters which are used in about a million patients a year. Some of these products are displayed here; others are demonstrated on Mr. Towns' chart.

Let me stress, Mr. Chairman, that the shortages our industry faces today in raw materials can be traced directly back to the absolutism of FDA. The roots of the problem lie in the obvious contradiction that, on the one hand, convicts silicone before all the facts are in, but on the other, refuses to exonerate silicone in the face of growing proof of its innocence. It is this attitude which unleashes a chain reaction that ultimately restricts the raw materials our industry that we need to improve lives.

We believe that four steps are necessary to alleviate this crisis: First, we urge Congress to pass biomaterials legislation now contained in House and Senate-passed product liability bills. This legislation would limit the liability of raw material suppliers.

Mr. SHAYS. Mr. Benson, let me just ask you, just so you don't lose me here. How much longer is your testimony?

Mr. BENSON. I have two more pages.

Mr. SHAYS. OK. That's fine.

Mr. BENSON. Thank you.

The biomaterials legislation would limit the liability of raw material suppliers to instances of genuine fault, thus reducing the likelihood of unwarranted lawsuits. In effect, this bill would encourage biomaterial suppliers to remain in medical device markets, but it would not, in any way, diminish the existing and future liability of device manufacturers which use these materials in their products.

Second, we believe FDA must reverse its course on silicone. It must accept the growing volume of respected evidence that is showing the unsubstantiated allegations about silicone to be wrong. FDA must, once and for all, stand up and reassure the public of the safety of silicone and the use of silicone in all of its forms. Again, Dr. Kessler took a step in that direction this morning. I hope we hear more.

Third, we recommend that FDA abandon absolutism in risk assessment. Absolutes are not achievable, and the quest for absolutes holds the potential to harm patients.

Finally, we believe FDA must view product approvals as a key element in consumer protection. Getting new, safe, and better treatments to the bedsides of patients can be just as critical in promoting better health as keeping unsafe products off the market. The fact is, we need both.

There's no question, Mr. Chairman, that FDA has a clear obligation to assess potential risks when evaluating products. Patients have a right to know. But if the agency is to truly protect public health, it must use an even-handed, objective, and rational approval process that ultimately rests upon sound science, reasonable assurance, and common sense.

Thank you.

[The prepared statement of Mr. Benson follows:]

PREPARED STATEMENT OF JAMES E. BENSON, SENIOR VICE PRESIDENT, TECHNOLOGY AND REGULATORY AFFAIRS, HEALTH INDUSTRY MANUFACTURERS ASSOCIATION

INTRODUCTION

Mr. Chairman, my name is James S. Benson. I am senior vice president for technology and regulatory affairs of the Health Industry Manufacturers Association (HIMA).

I appreciate this opportunity to testify on the risk assessment standards used by FDA in evaluating medical devices. In my testimony today, Mr. Chairman, I want to leave this Subcommittee with three points:

- First, one of the most essential materials in medical implants, silicone, has been unfairly accused of being unsafe, though decades of successful use and a growing volume of research substantiates the appropriateness of its use in the body.
- Second, the vilification of silicone is one of the primary causes of the current shortages of many raw materials which are essential to the development of new medical products;
- Third, these shortages present a threat to the health of hundreds of thousands, perhaps millions, of patients because technology manufacturers may not have the materials they need to develop countless life-saving technologies.

I recognize, Mr. Chairman, that the focus of much of this hearing will be on breast implants. But, for two reasons, my remarks today will not focus on these products—nor on the companies that produce them: First, as former Acting Commissioner of the FDA and former Director of the Center for Devices and Radiological Health, I am precluded by law and by ethical considerations from discussing proprietary information. But in addition, I want to use my brief time today to address some of the deeper questions of risk assessment and science at the agency that I believe hold implications for patient care and health that go well beyond the breast implant controversy.

## HIMA REPRESENTS MEDICAL DEVICES, DIAGNOSTICS, HIS

For those members of the Subcommittee who may be unfamiliar with HIMA, let me explain who we are and who we represent.

HIMA is the national trade association of the medical technology industry. It represents more than 700 manufacturers of medical devices, diagnostic products, and health information technologies.

During the past 20 years, these medical technologies have revolutionized medicine. Thanks to achievements in such fields as fiberoptics, imaging, electronics, and biotechnology, today's medical technologies are faster, more efficient, and more productive than ever. But most important, such products—be they lasers, scalpels, MRIs, home diagnostic tests, pacemakers, or a myriad of other products—have substantially improved health care for patients.

As I noted, many of these medical devices depend upon a variety of biomaterials, including silicone—which is one of the most pervasive of all synthetic materials and is used widely in various forms (solids, liquids, gels) in countless medical and nonmedical products. It is used, for example, in such products as toothpaste, soft drinks, deodorants, and pain relievers, as well as in a range of medical products, including catheters, artificial joints, and shunts. Were it not for substances like silicone and other biomaterials, much of the progress in medicine that each of us takes for granted would not have occurred.

## RISK ASSESSMENT AT FDA

Your chosen topic of risk assessment at FDA, Mr. Chairman, is of significant interest to virtually every manufacturer of medical products.

All of the technologies developed by our industry must be reviewed by the Food and Drug Administration or must otherwise adhere to the rules and policies established by FDA. As such, our members are fully familiar with FDA procedures and requirements regarding risk assessment. As former Acting Commissioner of FDA and Director of the Center for Devices and Radiological Health—the office responsible for device review at the agency—I, too, am familiar with FDA procedures on risk assessment.

I commend your Subcommittee for examining this issue because I believe FDA's risk assessment policies—in many important ways—lie at the heart of the problems I noted a moment ago.

Let me begin by providing a baseline for understanding just what risk assessment at FDA is and what it means. As members of the Subcommittee may be aware, the Federal Food, Drug, and Cosmetics Act (FFDCA, Section 513(a)(1)(C) and Section 515(d)(2)) requires that FDA must find a reasonable assurance of safety and effectiveness before approving a new product. Note that the term Congress chose was reasonable, not absolute, not perfect, but reasonable.

To meet that standard, medical technology companies perform a variety of tests and studies on their products. Depending on the type or nature of the product; how it is intended to interact with the body; the disease or condition it is intended to diagnose or treat; or how it will be used, where, and by whom; those tests might include:

- Bench tests, in which the products are put through a range of mechanical, structural, and chemical examinations.
- Mathematical or computer modeling, in which the product is simulated to undergo a variety of conditions which mimic virtually any human environment.
- Animal studies, in which the product or component material is tested in animals in which certain biological responses are physiologically similar to those of humans.
- Long-term or short-term clinical trials, in which the product is studied over a period of time in human subjects.
- And tests to determine how devices directly affect the tissues they contact and, conversely, how the tissues and body fluids affect the device.

The testing process often takes many years. It involves many physicians, scientists, engineers, and biomedical specialists. It involves the collection and analysis of laboratory data and clinical results. And it may require millions of dollars to complete.

Yet even the most rigorous testing, Mr. Chairman, does not, and cannot, yield assurance of absolute safety. Despite years of vigorous, aggressive, and persistent scientific inquiry, testing of any device cannot yield absolute assurances about risks because science itself rarely, if ever, yields absolute answers. By its very nature, science is open-ended. It is on-going. It is never complete. No matter how thorough the testing, one can always ask one more question, study one more patient, seek one more statistic. And when that is done, you can do it again.

That is especially true when someone is trying to prove a negative absolute—in other words, that absolutely no risk exists. The universe of evidence required for such proof is virtually limitless. So scientific inquiry must be content with finding a reasonable indication of the probability of something good or something bad happening as the result of a medical intervention.

Therefore, the standard I cited a minute ago that Congress gave to the agency and to the industry for deciding what is clinically safe and effective is especially important. Congress clearly recognized the nature of science—and at the same time, the need for new products to reach patients within a finite period of time—and concluded in 1976 that the agency should not seek absolute assurance of safety and effectiveness of medical devices, but should seek a reasonable assurance of safety and effectiveness.

Congress said, in effect: We know science can never reach absolute determinations. So let us be reasonably certain. By using this standard of reasonable assurance, patients will ultimately be better served.

Translated into everyday terms and into the context of today's hearing, this guidance means that FDA must make a judgment as it examines the kinds of studies I noted earlier. It must examine the risks and the benefits reasonably and objectively and then make its judgment on the balance between risk and benefit.

That is: The agency must ultimately ask, "Does the potential positive impact of the device on health outweigh its potential hazards?" Stated somewhat differently: "Are the predicted risks judged to be low enough in light of the predicted benefits?" The job of FDA is not to hold up a product indefinitely while demanding evidence that exceeds the standard of reasonable assurance.

I want to be clear, Mr. Chairman, that my goal today is not to blast the agency. Our industry believes the agency has an important role to play in regulating medical devices. At the same time, it is also accurate to say that the agency has suffered from a kind of "absolutist" mentality in the recent past—characterized by an insistence that data demonstrate the precise or absolute determination of risk of a product or prove with total certainty that a product will or will not have a specific effect. If that certainty is not there, the agency too frequently concludes that the data are inadequate and, therefore, patient access must be delayed or denied.

Yet this approach is fraught with danger. Carried to its extreme, it would stop virtually all products because, as I have said, absolutes in science generally cannot be achieved.

That means patients would be harmed because they would be denied access to the latest life-saving and life-improving devices. And if that happens, Mr. Chairman, the quest for absolutes in protecting public health will, in itself, have become a threat to public health. That is exactly what Congress was trying to avoid when it crafted so carefully the wording of the statute in 1976

Now let me turn from past to present. We have today what I believe to be an almost perfect example of this demand for "absolutes." I want to draw it to the Subcommittee's attention because I believe it is central to FDA's approach toward risk-assessment and the long-term implications of that approach.

As members of the Subcommittee are well aware, the breast implant controversy of recent years raised alarms about the safety of silicone. As you may know, Mr. Chairman, silicone is one of the basic raw materials used in medical implants and

in a variety of everyday commodities. Because it is often used in devices that augment or replace body organs or functions and that come into prolonged contact with body tissues, we must have reasonable assurance of its safety.

As you also recall, the breast implant controversy has prompted some to foster a perception that silicone is unsafe, dangerous, and harmful, though the greater weight of scientific and epidemiological evidence is clearly on the side of safety. Regrettably, silicone has been vilified with no basis in sound science.

As a result of this controversy, many scientific and clinical studies were developed to explore the safety of silicone. Specifically, their goal was to examine whether a link existed between silicone and the development of connective-tissue diseases in breast implant patients. In recent months, many of those epidemiological studies have reported results.

So far, some 17 of these studies have reached the same conclusion: They do not find a link between silicone and connective-tissue diseases. These are studies that have been done by some of the world's leading institutions, such as Harvard University, the Mayo Clinic, Johns Hopkins University, and Emory University. And they have been published by some of the most prestigious, peer-reviewed medical and scientific journals, such as the New England Journal of Medicine, Journal of Clinical Epidemiology, Annals of Rheumatic Disease, Journal of the National Cancer Institute, and others.

In the June 22, 1995 issue of the New England Journal of Medicine, for example, the authors of the Harvard study said this: "In a large cohort study, we did not find an association between silicone breast implants and connective-tissue diseases. . . ."[1] That is essentially what the other studies are finding as well.

In addition to these studies, FDA's counterpart agencies in other countries have conducted their own analyses and literature reviews. These include agencies in the United Kingdom, Australia, and New Zealand. None of these institutions—I repeat, none of these institutions—is finding a link between silicone and connective-tissue disease.

I quote Dr. Kenneth C. Calman, Chief Medical Officer of the UK Medical Devices Agency, as he summarized his agency's findings: "The conclusion . . . was that there was no evidence of any association between breast implants and connective-tissue disease. . . ."[2]

Now, do these numerous studies mean that we are absolutely certain that there is no link between silicone and such diseases? No. As I said, even here, one could always insist on more. If the study had 1,000 participants, why not 2,000? Why not 10,000? If it was a year long, why not two years? Why not 10 years? And so on.

But do we have reasonable assurance that there is no link on the basis of these studies? The answer is yes. The evidence to support that point is more than sufficient if your standard is a reasonable assurance of safety and effectiveness. And I believe that is the standard we must use because it is the standard which reflects truly appropriate reliance on science. It is that standard which is consistent with the expectations that Congress wrote into the law. And it is that standard, finally, which reflects simple, common sense.

Despite this growing body of evidence from all of these prestigious institutions and from all of these FDA counterparts in other countries, we find that the FDA, as well as some observers, continue to try to refute these findings. They point to statistical and other alleged scientific limitations.

Yet many of these observers were more than willing to suggest in the past that silicone might harm patients. They arrived at that conclusion without pointing to any data or any proof to support it. My question is this: How many studies, done by how many institutions, and reinforced by how many government health agencies will it take to convince FDA? In effect, FDA absolutism in risk assessment is alive and well—at least when it comes to silicone.

Let me add an additional, somewhat ironic, counterpoint to this absolutism.

Despite the anguish and passion prompted by the use of silicone in some medical technologies, silicone is one of the most ubiquitous, pervasive substances in our society. It has been thoroughly tested in laboratory animals for ingestion and implantation.

In addition, each of us uses and ingests silicone in one form or another every day—perhaps every minute of every day. We use it in deodorants, sun tan lotions,

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[1] "Silicone Breast Implants and the Risk of Connective-Tissue Diseases and Symptoms," New England Journal of Medicine, Sanchez-Guerrero J, Colditz G, Karlson E, et al. June 22, 1995, p. 1666.

[2] "Evaluation of Evidence for an Association Between the Implantation of Silicones and Connective Tissue Disease, Data Published from the End of 1991 to July 1994," Medical Devices Agency, December 1994, Foreword.

and pain relievers. We use it in toothpaste, lip balm, and shaving creams. We use it in soft drinks, hamburgers, and french fries. We use it to treat colds, burns, and allergies. And, of course, we use it in and on a variety of medical treatments. It is the lubricant on every catheter and hypodermic needle—substantially reducing the discomfort of such injections as a result—and it is the substance of many medical implants.

Let me present this point another way: Go to the grocery store and you'll find shelves of products that use silicone, from condoms to antacids. Go to the drug store and the fast food restaurant, and you'll find silicone. In effect, silicone has been used in virtually every aspect of human behavior for decades.

As a result, there is an enormous body of empirical evidence from years and years of continuous use that one must recognize and that one cannot discount. In light of this, silicone—perhaps like few other products or substances—really can be dubbed "tried and true." If any significant danger existed from this substance, it would have become extremely obvious a long, long time ago.

But the fact is, what the Harvard and Hopkins and New Zealand studies are showing is correct: The allegations about silicone in breast implants are untrue and lack foundation.

As a matter of fact, what all of these data are beginning to show is that silicone—at least as far as medical technology is concerned—has been wrongly accused. Yet now that the juries from Harvard and Mayo and the UK are providing more than adequate assurances, the FDA refuses to act on the results.

IMPACT OF UNSUBSTANTIATED ACCUSATIONS REGARDING SILICONE

My purpose in providing this background, Mr. Chairman, is not to present an educational treatise on the arcane elements of scientific reasoning or on the potential applications of a particular polymer. My purpose is to point out that this perception of silicone as being unsafe, together with FDA's unwillingness to acknowledge studies of the highest caliber, is having an increasingly negative and harmful impact on patient care.

Let me underscore a critical point: I am not referring here to breast implants. In fact, this goes well beyond breast implants. I am referring to the fact that availability of one of the most critical raw materials, silicone—which is essential to countless medical devices and everyday applications, from soft drinks to toothpaste—is seriously threatened.

More broadly, what I am also talking about is the fact that allegations about the safety of silicone—unsubstantiated allegations—have become the centerpiece of widespread product liability litigation and publicity in this country. Medical device companies and suppliers of raw materials for medical devices have become the subjects of growing litigation. At the heart of the litigation, of course, lie the unfounded charges about the health risk associated with silicone

This type of litigation has led many suppliers of such materials to simply leave the medical device market. And it's not surprising as to why. Under current U.S. product liability law, the supplier of any commodity material that is used in a medical device—no matter how unrelated the supplier is to the design, sale, or manufacture of the device—can be brought into a lawsuit involving a device that has allegedly failed. Yet despite this enormous liability exposure, the sale of such materials represents a minuscule fraction of the business of these suppliers. The annual sales of polyester yarn to the medical market, for example, is estimated at less than $200,000, while sales to other industries are estimated at $9 billion.

Consequently, the obvious recourse has been to withdraw many of these biomaterials from the device market. During the past three years, suppliers such as Dow Corning, Dow Chemical, and DuPont have all done so. This is clearly a rational business decision by raw material suppliers who must balance the revenues they receive from the device market against the liability exposure they incur.

As many of these raw material suppliers leave our industry, medical device makers are facing growing shortages of vital raw materials. A recent study of the device industry by the Wilkerson Group found that 41 percent of companies interviewed said they were having difficulty obtaining raw materials as a result of supplier concerns over product liability. Among companies producing implantable products, 73 percent said they had difficulty obtaining raw materials.

Device companies are responding to these shortages in a variety of ways. Some are stockpiling resources that are still available. Some are seeking alternative suppliers or trying to redesign products, thereby expending resources that could be used to develop new products. And some are simply dropping projects altogether.

In some cases, alternate suppliers that have been identified for certain materials have also expressed liability fears. And in many cases, no other suppliers may exist.

The effect of this shortage on patient care could be devastating. The range of materials being restricted is vast and will affect the entire spectrum of medical specialties, from cardiology and neurology to urology and ophthalmology. To give you some sense of the magnitude, consider the types of life-saving and quality-enhancing products that depend upon biomaterials. These products are either being affected by these shortages already or could be affected by them in the near future:

- Heart valves, which are used to control the flow of blood to and from the heart and between chambers of the heart. Some 35,000 patients receive heart valves annually.
- Vascular grafts, which repair or replace arteries in people whose own arteries have been injured or are in danger of catastrophic failure. Approximately 300,000 patients benefit from vascular grafts annually.
- Pledgets, which are surgical tools that buttress fragile tissue for suturing. It is safe to estimate that millions of patients benefit from their use every year.
- Intraocular lenses and related technologies used in cataract surgery. Some 1.5 million patients annually are affected by these products.

Let me stress that the products I've just listed are comprised of a variety of biomaterials. But let me also point out a number of the critical medical devices that depend upon silicone in particular.

- Hydrocephalus shunts, which drain the build-up of cerebrospinal fluid from the brains of affected infants. About 75,000 shunts are implanted annually.
- Arthroplasty devices—such as artificial toe joints and finger joints and artificial knees—which help 600,000 patients per year.
- Catheters, which are used in about a million patients annually.

And this is just a start. Other products that would be significantly affected if silicone is totally withdrawn from the market include IV drip systems, pacemaker leads, implantable infusion pumps, wound drainage sets, wrist joint replacements, ostomy systems, and any number of grafts. In fact, for some medical products—such as cardiac pacemaker leads and hydrocephalic shunts—silicone is the only approved material available for production.

Given the potential impact of restricted access to such materials, Mr. Chairman, HIMA commissioned a study[3] that forecast how certain shortages might affect patients, innovation, and product development. In the short term—that is, within approximately 1–3 years—the forecast found that:

- Many small companies, which are the prime innovators in our industry, will be forced out of business because of the costs of managing such shortages.
- U.S. manufacturers will have to direct resources away from R&D on new types of products to search for replacement materials.
- Foreign competitors will be able to focus on production of entirely new kinds of medical products, thereby seizing this country's competitive edge in many critical technologies.

But in the longer term—that is, within 3–10 years—the study projected that:

- Inventories will have diminished and a full-force biomaterials embargo—touching the very products I mentioned a moment ago and many more—could hit the device industry.
- Patients will face shortages of vital medical implants.
- Materials that have enjoyed some 40 years of beneficial use will completely disappear.
- Major segments of the medical implant industry will move overseas.
- The U.S. will lose its leadership in medical implants.

These are sobering conclusions Mr. Chairman. They hold implications for jobs, for trade, for economic growth, for competitive leadership, and—most importantly—for the continued patient health of this country. And these very issues—the fear over litigation, the shortages that result, the threats to innovation—begin, ultimately, in the kind of absolutist thinking that today pervades our product liability law and FDA's regulatory risk assessment.

The roots of this issue run deeply into the obvious contradiction by FDA and others that, on the one hand, convicts silicone before all the facts are in but, on the other, refuses to exonerate silicone in the face of growing proof of its innocence. And it is this absolutist attitude that unleashes a powerful and continuing chain reaction—a chain reaction that begins with unsubstantiated allegations, which themselves lead to widespread lawsuits, which then lead to wide-spread publicity and public belief in the allegations, which then lead to growing shortages. And it is these shortages which ultimately threaten this industry's ability to provide the medical treatments necessary to protect the public health.

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[3] Market Study: Biomaterials Supply for Permanent Medical Implants, New York, Aronoff Associates, March 1994.

RECOMMENDATIONS

Let me turn for a moment from problem to solution, Mr. Chairman. I recognize that I have touched on many disparate themes in describing a most complex problem. But let me outline a series of steps that we believe can begin to address these challenges. These are not sweeping, quick-fix answers. Instead, they address various pieces of this complex issue and, together, form the basis of a long-term solution.

*Congress must pass biomaterials legislation.*

First, we urge Congress to pass legislation now contained in House and Senate-passed product liability bills that would prevent a public health crisis by encouraging biomaterial suppliers to remain in the medical device market.

The specific legislation incorporated in the product liability bills is the Biomaterials Access Assurance Act. This legislation was introduced by Sen. Joseph Lieberman (D-CT) and Sen. John McCain (R-AZ), as well as by Rep. George W. Gekas (R-PA), and was ultimately incorporated into product liability legislation passed by both chambers. It has attracted strong bipartisan support. Rep. Dennis Hastert (R-IL) led an impressive array of Commerce Committee members in embracing these protections for raw material suppliers in the product liability measure.

The bill would be an important element in addressing the biomaterials crisis because it would limit the liability of raw material suppliers to instances of genuine fault. In effect, this change would reduce the likelihood that these companies would be burdened with unwarranted or catastrophic lawsuits where they have met their contractual agreements and strictly adhered to contract specifications.

But the bill would not in any way diminish the existing liability of medical device manufacturers—that is, of the members of our industry who use these materials in their products. As a result, the bill would not diminish the ability of consumers to seek redress against appropriate parties for harm alleged to be caused by an implant.

But we believe it would keep the biomaterials suppliers in the medical implant market and would encourage others to enter it. As such, this legislation would play a key role in addressing an acute health care crisis by ensuring that a continuing supply of vital raw materials is available.

We urge the House and Senate leadership to act quickly to pass product liability legislation this year to avert this crisis.

*FDA must reverse its course on silicone.*

In addition to encouraging Congress to adopt biomaterials legislation, Mr. Chairman, we also believe it is time for FDA to reverse its historical course on silicone. As I have shown, reliable, respected, and thorough scientific research is making clear that unsubstantiated allegations about silicone are not accurate.

It is time to accept these findings and to defuse the passion that has, too often, surrounded this substance and has snowballed into the longer-term problem I've described. Reversing the silicone conviction, as it were, is another vital component in reducing the pressure on raw material suppliers to flee the medical implant market.

I might add that we hope FDA will begin to show the same kind of openness in this area that it has shown in another critical aspect of this issue—that is, in helping smooth the regulatory hurdles for manufacturers' use of silicone from alternative sources. The FDA Center for Devices and Radiological Health worked closely with HIMA to develop clear parameters for establishing the equivalence of silicones from alternate sources.

Following that work, HIMA submitted to the Center a materials analysis paradigm that it had developed with the intent of making the materials acceptance process more systematic. FDA has agreed to work with us to develop this concept further. Continuing in this cooperative mode, I recently received a letter from Dr. Bruce Burlington, director of the Center, offering to work with and assist HIMA in addressing the potentially increasing numbers of materials shortages that could be generated by concerns over current market withdrawals and the Dow Corning bankruptcy filing.

*FDA must abandon absolutism in risk-assessment.*

I would also like to add another suggestion in this mosaic of solutions to the biomaterials crisis and risk assessment issue. That is, we urge the FDA to abandon its absolutist attitude on risk assessment generally and return to the standard of "reasonable" assurance of safety and effectiveness that the Congress wrote into the original medical device law and that remains a sound base for policy and regulation today.

FDA must recognize that absolutes are not achievable, and that the quest for absolutes holds the potential for harming patients. Only by adhering to the standard of reasonableness can we expect to encourage continued innovation and continued investment in innovation. And only by adhering to this standard can patients expect to receive timely access to new medical advances.

With respect to silicone in particular, a reasonable analysis must take into account the long-term, wide-spread empirical data from millions of uses in all aspects of everyday life—from toothpaste to french fries. These aren't narrow studies. This is real-life—and it must be taken into account.

FDA must view product approvals as a key element of consumer protection.

More broadly speaking, Mr. Chairman, our industry would also like to encourage a fundamental change in FDA's—and society's—view of consumer protection and public health.

There are those who believe that consumer protection only means protecting consumers from unsafe products—and that is certainly an important aspect of this issue. It is also one that we strongly support. But too often, we overlook another important aspect of consumer protection. That is, consumers are protected when companies bring forward new products that attack diseases that make people healthier and that often save lives.

We believe FDA must realize that getting new, safe, and better treatments to the bedsides of patients can be just as critical in promoting better health, as keeping unsafe products off the market. The fact is, we need both. This new focus should become a central tenet of FDA's entire risk assessment philosophy and day-to-day operations.

CONCLUSION

In conclusion, Mr. Chairman, such relatively arcane subjects as risk assessment, absolute vs. reasonable assurance, and the details of legislative intent are sometimes overlooked in the heat and passion of the debate over breast implants. While not dismissing in any way the importance of the breast implant debate, we believe that these deeper issues hold enormous meaning for how and if new products are developed, for whether innovation can continue to progress, and for whether patients—and future generations of patients—can continue to receive the implants and other medical technologies they need.

Without a doubt, FDA has a clear obligation to calculate risks, or potential risks, with regard to the safety of products. But as part of that, FDA should do everything within its power to debunk junk science. If we are truly to protect public health, we need an even-handed, objective, and rational FDA approval process that ultimately rests upon sound science and common sense.

There is no question that such an approach, with regard to the issues surrounding silicone, requires the agency to stand up and reassure the public of the safety of silicone and use of silicone in all of its forms. It is time for FDA to bring common sense into its views on silicone and to accept the convincing, respected, and comprehensive evidence that is now available.

Attention to this and all the related issues we have raised today is not a luxury, it is an absolute necessity. Nothing less than the future of patient health hangs in the balance.

Mr. SHAYS. I thank you, Mr. Benson, as well as Mr. Hazleton.

Dr. Schultz, we would love to hear from you.

All three of your testimony—all two of your testimony has been very interesting and generate a number of questions.

Dr. Schultz.

Dr. SCHULTZ. Thank you. Mr. Chairman, distinguished members of the subcommittee, my name is Jerome Schultz.

I'm president of the American Institute for Medical and Biological Engineering, or AIMBE, for short. We are an independent professional organization which is financially supported by member dues and foundation contributions. The core of our group is comprised of 400 distinguished physicians, scientists, and bioengineers, many of whom are responsible for the innovations that have made the United States a world leader in medical device technology. In addition, our institute can draw upon the talents of over 20,000 affiliated scientists/engineers.

Earlier Mr. Shays mentioned new and future biomedical products. Our members represent that future, and we are convinced that we must participate in public policy if this future is ever to be realized. There are technologies called gene therapy and tissue engineering which will revolutionize the whole area of medical devices, and we would like to get to that stage.

This morning I will briefly address two areas.

Mr. SHAYS. Did you say "this morning"?

Dr. SCHULTZ. That's right.

Mr. SHAYS. Is that what you actually said? Boy, we really misled you. [Laughter.]

Dr. SCHULTZ. I was going to say, as a college professor, I'm programmed to speak for an hour, so I'll try to keep it to 5 minutes.

How can we, AIMBE, help in their evaluation and use?

Mr. SHAYS. Excuse me, Doctor. As one of your students, I'm programmed to listen only 5 minutes. [Laughter.]

Dr. SCHULTZ. OK. First, I'd like to touch on the larger issue of FDA regulation of medical devices. In our written testimony, we offer specific suggestions for short-term and long-term legislative improvements, and I won't go into those here, but we think that you should consider those seriously.

Some brief comments on biomaterials. Over here on the table we see many example of medical devices and biomaterials. Actually, the modern area of biomaterials started with the development of the artificial kidney after World War II, when it was shown that blood could be detoxified by circulating it through dialysis tubing. Over the last half century, while many improvements have been made in dialyzers, still the fundamental problem with the biomaterial still exists: It causes blood clots.

So, even after 50 years, we haven't had a material that works perfectly. But most importantly, this major biomaterial deficiency has been managed by the combination of physicians and engineers developing anticoagulant therapy.

In general, biomaterials fall into two classes, so-called hydrophilic and hydrophobic. What you have to realize is the human body is like a sea of salt water, a very corrosive environment. And the silicone material falls into the category of hydrophobic; that is, it is sort of invisible to water or not water-wetting.

As a polymer of an inorganic material-sand-silicone polymers are rather resistant to attack by enzymes. Silicone-based polymers have been primarily used as a barrier or as a volume filler. An extraordinary amount of research effort and practical experience has been accumulated for the biomedical use of silicone polymers, and I believe silicones could be modified to meet new needs or modified to manage newly identified side effects.

Now, some brief comments on how we can help. Two major issues loom: First, how do we balance our desire to deliver state-of-the-art, safe medical devices when, in reality, the use of nonnatural materials in the human body carries some degree of risk? The litigious environment surrounding this issue hinders our scientific and biomedical engineers from becoming involved. The proposed legislation in the House and Senate, as mentioned earlier, may reverse this trend, and we support that legislation.

Second, how do we best use our bioengineering talent to provide meaningful guidance to the manufacturers of devices and also to the FDA in their evaluation of these devices for safety? Today we've heard concerns about the strength of gel prostheses. This is an engineering problem, and we are the group of engineers and bioengineers who can help find that answer. But there's a gap between the FDA and the manufacturers on how to get this information, and we can fill that gap.

So I make two proposals: First, we propose that a standing advisory committee be established by Congress for the development and continuous updating of our knowledge base for material implants. This panel would be authorized to develop an equivalent to a pharmacopoeia, but for biomaterials. The biomaterials pharmacopoeia should have official status; that is, its procedures must be accepted by the FDA as methods for testing and evaluation of implants.

Second, AIMBE also suggests that Congress mandate the use of outside expertise groups from the FDA. These other expertise groups, like those of our membership, can provide the technical review of new medical devices. They would function like the peer review groups of physicians that provide guidance for the treatment of specific diseases or indications.

To operate effectively, however, our proposed biomaterial and medical device advisory groups must be protected from legal entanglements. We would be pleased to provide you with some example legislation that has been enacted at the State level for this purpose.

Thank you for the opportunity to testify.

[The prepared statement of Dr. Schultz follows:]

PREPARED STATEMENT OF JEROME S. SCHULTZ, PH.D., PRESIDENT, AMERICAN INSTITUTE FOR MEDICAL AND BIOLOGICAL ENGINEERING, AND DIRECTOR, CENTER FOR BIOTECHNOLOGY AND BIOENGINEERING, UNIVERSITY OF PITTSBURGH

Mr. Chairmen, distinguished members of the subcommittees, my name is Jerome Schultz. I appear before you today in my capacity as President of the American Institute for Medical and Biological Engineering (AIMBE). I am also Director of the Center for Biotechnology and Bioengineering at the University of Pittsburgh.

AIMBE is a national scientific and educational society representing approximately 400 members of our College of Fellows who are selected for their accomplishments in bioengineering by an intensive peer review process. These physicians, scientists, and engineers have been responsible for many of the innovations that have led to medical devices in this country. AIMBE also includes 12 biomedical engineering societies comprising over 20,000 engineers/scientists, and over 50 academic bioengineering departments at universities around the United States. AIMBE is supported primarily by member dues and contributions from foundations.

I am delighted to have been invited to testify before you this morning, and will address two areas. One, some information on materials designed for use in the body, and how to improve the scientific flow of information and commercial possibilities for these materials. And two, the larger issue of improving FDA regulation of medical devices.

In an effort to provide our technical and scientific assistance to the issues that have surfaced on materials for implants and the regulation of medical devices, we have been active on a number of fronts. We have chaired several meetings to review the science related to implants and devices, we have assisted the Biomaterials Availability Coalition in preparing position statements and we have supported the National Institutes of Health in dr. Claude Lenfant's convening of a workshop on biomaterials (to be held October 25–96 in Bethesda).

This written testimony includes AIMBE's suggestions for short and long term legislative improvements of medical device regulation, which was developed over the past year. I wish particularly to thank you, Representative McIntosh, for your ad-

dress at our Annual Event this past March at the National Academy of Sciences, which was most helpful to us in developing our position statement.

## I. MATERIALS DESIGNED FOR USE WITH THE BODY

Although the average person may not be very aware of materials that are inserted in the human body for medical purposes, the vast majority of American either make use of such materials, or know somebody who has benefited from such materials. Dental fillings, cardiac pacemakers, artificial joints, vascular grafts, hydrocephalus shunts, and hearing aids are just a few examples of an array of commercial products that have been developed by engineers and scientists to improve the quality medical care. The raw materials that make up these finished commercial applications include silicone, polyurethane, polyester, and other polymers. These raw materials have come to be known as biomaterials, although in fact they are largely synthetic products developed for numerous purposes, only a few of which are in the medical and health care field.

The modern era of materials designed for use with the body started with the development of the artificial kidney after World War II. Wilhelm Kolff, then a young Dutch physician, showed the therapeutic effectiveness of circulating blood through dialysis tubing for the removal of toxic materials from the blood. Over the last half century, many improvements have been made in dialyzers, still the biomaterial problems have not been solved. Namely, the formation of blood clots on the membrane surface. This deficiency has been managed by physicians by temporarily administering an anticoagulant during the dialysis treatment.

This example is given to make two points: 1) Even with 50 years of research we cannot be assured that we can develop a perfect biomaterial that carries out the desired functions without some untoward biological response. 2) In spite of these deficiencies, satisfactory solutions can be achieved by combining the talents of physicians and bioengineers to make an eminently successful therapy.

In the last 20–30 years a strategy has evolved for the development of materials for use in the human body. Simply stated, the strategy has been to deceive the normal defenses of the body to foreign materials by either: 1) engineering materials that are seen by the body's defense mechanism as similar to itself, or 2) engineering a material that cannot be seen by the body.

The tissues of the body can be thought of as operating in a sea of salt water, and the recognition systems of the body operate in this milieu. Thus, the class of materials that are stable in water (hydrophilic = water liking) are a starting point for developing materials that may be compatible with the body's biochemical environment. On the other hand. materials that do not mix with water (hydrophobic = water fleeing) may be "invisible" to the body's defenses.

In the last decade, a new paradigm has been developing. This concept is to select a material that serves as a home for a specific cell type, so that the body does not see the material, but sees its own cells. This approach is one of the products of a new field called tissue engineering.

Silicone-based polymers fall in the category of hydrophobic materials. In addition, silicones have another advantage as implants, as a polymer of an inorganic material (sand) they are rather resistant to attack by enzymes. One major disadvantage of silicone polymers is that they generally have very poor tear resistance, and thus fillers must be used to give strength. Thus silicone-based polymers have been primary candidates for biomedical applications where one was looking for a barrier or a conduit. An extraordinary amount of research effort and practical experience has been accumulated for biomedical use of silicone polymers and I believe they could be modified to meet new needs and/or modified to manage newly identified side effects.

Two major issues loom:

First, how do we balance the need to deliver to the American public state-of-the-art, sate medical devices when in reality the use of non-natural materials in the human body carries a degree of risk? Current U.S. product liability law allows suppliers to be held liable for truce damage awards even though suppliers have no direct role in the raw material's ultimate use as a biomaterial. The litigious environment in the U.S. has led three major suppliers—DuPont, Dow Chemical, and Dow Corning—to announce that they would limit, or cease altogether, their shipments to medical implant manufacturers. Both the House and Senate have passed legislation (H.R. 956, S. 565) that incorporates provisions to allow the suppliers of raw materials used to make medical implants to obtain dismissal, without extensive discovery or legal costs, in certain tort suits in which plaintiffs allege harm from a finished medical implant. AIMBE supports these efforts to ensure patient access to materials needed in the creation of life-saving, life-enhancing medical devices.

AIMBE encourages the appointment of House and Senate conferees to work out differences in the two bills.

Second, how do we best use our bioengineering talent to provide guidance to the manufacturers of devices and to the FDA in their evaluation of these devices for safety?

Most of the leading scholars and practitioners in the field of medical device implants are members of AIMBE and/or our sister societies, including the Society for Biomaterials and the American Society of Artificial Internal Organs. Thus we, and other scientific and medical societies, have the capability to provide state-of-the-art guidance to evaluation of research materials for implantation and their use in medical devices. We propose two specific actions to effectively use this resource base:

1) We propose that a standing advisory panel be established by Congress for the development and continuous updating of our knowledge base for materials for implants. This panel would develop a "pharmacopia of materials" that would have official status, that is, its procedures would be accepted by the FDA as methods for the testing and evaluation of materials for implants. The operation of the Biomaterials Steering Committee of the Health Industries Manufacturing Association for the determination of equivalent materials for silicone rubber is an example of this type of cooperative panel (see "Biomaterials Availability: Development of a Characterization Strategy for Interchanging Silicone Polymers in Implantable Medical Devices," Gould et al, Journal of Biomaterials, vol. 4, 355–358, 1993).

2) AIMBE suggests that Congress mandate the use of other groups, outside the FDA, to provide technical review of new medical devices. This action would make use of existing expertise in the medical and scientific community to bring their experience to bear on the complex issues associated with implanted medical devices. These peer groups would be composed of physicians. scientists, engineers and knowledgeable patient, industry, and government representatives. They would function in a fashion similar to the peer review groups of physicians that provide guidance for the treatment of specific diseases or indications. A statute mandating such activity could be modeled on current state laws providing for the medical peer review activities (see, e.g., Rhode Island Code 23–17–25).

## II. LEGISLATIVE IMPROVEMENTS OF MEDICAL DEVICE REGULATION

AIMBE has concluded that legislative reform of the regulatory process for medical devices is in the national interest. Such reform is necessary in order to maintain the innovation and competitiveness of the U.S. medical industry and the biomedical research infrastructure. AIMBE has further concluded that reform can most effectively proceed in two phases: a first set of legislative remedies which must be applied without delay to address the most urgent issues in the medical device approval process; and a second set of legislative reforms incorporating a new paradigm for device regulation. This approach must be developed jointly by the academic and clinical communities, patients groups, the medical device industry, and government agencies, and must acknowledge the iterative nature of device development, and incorporate the concepts of clinical accessibility, cost effectiveness, and system wide longitudinal evaluation and surveillance. AIMBE, as a representative of the academic and clinical communities, urges congressional action to streamline FDA procedures, foster constructive oversight, and harmonize the regulatory process with U.S. trading partners around the world. AIMBE stands ready to offer its expertise to lawmakers and regulators in improving upon the current regulatory framework.

*Statement of the Problem*

As noted by the White House Office of Science and Technology Policy in its 1995: National Critical Technologies Report, "[m]edical devices and equipment make a major contribution to the health of the U.S. population and to the improvement of quality of life for individuals. These technologies provide greater independence and functionality for the elderly and the injured, allowing them to remain productive members of society longer, and contribute to the effectiveness of the U.S. health care system. They also reduce the human costs of U.S. military actions by providing injured soldiers with care on and off the battlefield and with more normal lives following battle injuries."

The Administration has also recognized the need to streamline the FDA's regulatory requirements. in its April 1995 report, Reinventing Drug and Medical Device Regulations, the White House has provided a review of current FDA procedures and suggestions for improvement. Many of the recommendations offered by AIMBE in this position paper are consonant with the above document. However, there is a difference in the mechanism of implementation of changes. While the Administration suggests addressing the issues by operational modifications within the FDA, AIMBE prefers legislative action so as to prevent drifting of guidelines over time.

Technological innovation in the medical device field during the past 20 years has been dramatic, touching the lives of virtually every American. The U.S. medical device industry that has served as the underpinning for this innovation has annual sales of $40 billion, employs 270,000 workers, and accounts for a $5 billion trade surplus. Its annual research and development investment is high at 7% of sales. It's an industry that thrives on small, creative manufacturers—90% of these firms employ fewer than 100 people. This is a business of new ideas: 80% of all the world s devices developed in the past 40 years came from the U.S.

Until 1992, the medical device industry was the second fastest growing American industry at 8.5% per year. Lately, however, the U.S. leadership position has begun to erode. In 1980, the U.S. accounted for 64% of the global sales of medical devices; by 1995, the U.S. share of global sales had dropped to 49%.

A number of factors threaten U.S. leadership in the medical device technology industry. Some of these—e.g., inadequate funding of biomedical research, the unavailability of raw materials for the development of products, the current product liability system, reimbursement of costs associated with investigational devices—are vital, but lay beyond the realm of regulatory law, the focus of this position paper.

Several trends in the U.S. regulatory framework have impeded the ability of the U.S. medical device industry to deliver new technology and products to patients. These include: 1) significant FDA delays in reviewing and approving products, which has decreased the competitiveness of the innovation-driven companies that are the core of the medical device industry; 2) FDA focus on enforcement rather than on constructive oversight, which has fostered a culture of hostility and obstructionism in FDA's dealings with industry; 3) export controls that bar U.S.-based companies from exporting non-FDA approved devices to other industrialized nations where their introduction is legal, thus providing companies an incentive to shift research, clinical evaluation, development and production off-shore at the expense of U.S. jobs and overall competitiveness; 4) the presence of a regulatory framework that is based on outdated law that fails to compete with standards enacted in Europe and other industrialized nations; 5) delays in regulatory approval of safe technologies until efficacy can be proven, which often results in reduced safety, lack of patient benefits, and added health care costs; and, 6) scientific advances that have led to the development of new products of cell based, and tissue engineered products, that need a review and approval process of their own.

Implantable devices differ from drugs in several aspects, which make the current FDA model of drug regulation ill-adapted to devices. This difference is particularly significant in the context of implants, life-saving or life-supporting devices, which have little in common with simpler, short-term medical products. It is therefore unrealistic to apply the same regulatory framework to class I, II, and III devices.

Industry is not the only victim of current regulatory practice. There is a decided ripple effect. Bioengineers, material scientists, contract laboratories, university grantees' engineering students and ultimately, health care delivery are affected as well.

Manufacturers now faced with an unduly protracted and burdensome regulatory system are committing their dollars for new technology and product development outside the United States, This is resulting in the loss of incentives and support for American academic researchers by our own industry. Current public policy thus harms science and undermines the renowned technical infrastructure of this country.

AIMBE recognizes that revision of FDA regulatory practices is controversial and complicated. A well-functioning FDA provides assurance to both the public and to industry. The public benefits by knowing that life-enhancing and life-saving products arriving at the marketplace are safe for their intended use. Industry benefits from oversight by meeting world-class standards in product development. It is important that any reorganization of federal authority result in a process that has the confidence of both the public and industry, and embodies the following philosophical principles:

- product accessibility must be promoted by prompt regulatory action.
- technologies must be safe in the context of the disease process being treated.
- medical devices must fulfill their intended performance as described by labeling.

### A. SHORT TERM LEGISLATIVE REFORM

1. Place oversight responsibility and authority for limited preliminary or investigative trials with duly-constituted institutional review boards (IRBs), not in the FDA. This action would increase the level of peer review in the scientific aspects of device development, and free up FDA resources for other oversight responsibilities.

2. Drop barriers (i.e., no FDA preapproval) to the exportation of U.S.-made medical devices (except for banned devices) to industrialized nations, providing that their import is not in conflict with the laws and practices of the receiving country. This action would serve as a stimulus for companies to keep manufacturing jobs and capital within U.S. borders, as well as increase the trade surplus of the medical device industry by making U.S. products available in those nations which have a market demand for them.

3. The newly evolving tissue engineering products cannot be regulated either as standard devices, as traditional biologics, or as conventional drugs. To allow timely introduction of these new technologies into medical practice requires that the FDA promptly implement a new approval pathway for this class of products.

4. Establish a third-party certification system by which medical device manufacturing facilities are inspected and product conformance is confirmed according to processes controlled by international standards. These third-party experts would be subject to FDA registration approval. This action would free up FDA resources while promoting international harmonization of good manufacturing standards.

5. Make public and transparent all FDA guidance documents used in the review of 510(k)s. This will provide manufacturers with the essential information that will promote better and faster compliance with federal standards. FDA guidance documents should be developed jointly with input from industry and the clinical community.

6. For setting testing and material requirements the FDA should utilize standard-setting organizations such as the American Association for Medical Instrumentation, the American Society for Testing Materials, and the International Standards Organization. These groups have assembled the appropriate standards for device and material testing with appropriate input from the clinical, manufacturing, and regulatory communities.

7. Allow FDA to use third-party review of 510(k) submissions so they can meet the mandated 90 day time period, and establish a system for all third-party review of 510(k) submissions not acted on within the mandated 90 day time period. Such actions will increase FDA flexibility to use peer review mechanisms, as well as provide immediate attention to those applications that are not reviewed in a timely fashion.

8. Facilitate reclassification procedures for preamendment class III devices, especially mature products with demonstrated satisfactory performance in human use. Decades of successful clinical use, even for high risk devices. can provide sufficient proof for reclassification to a lower risk category.

9. Allow products under premarket approval to be commercially marketed as soon as the PMA and a postmarket surveillance plan are approved. Currently many months, if not years, pass after FDA approval of a PMA and the ultimate commercialization of the product. This would allow for controlled marketing of such devices and the early generation of post-market surveillance data.

10. All FDA records with respect to a company should be made available to the company on request. Companies should be informed if they are put in an extra surveillance status.

11. Withdraw the previous FDA draft policy statement on industry supported scientific and educational activities that will prohibit American industry support of clinical conferences where off label uses of products are discussed.

12. In addition to these recommendations for implants and life-sustaining or life-supporting devices, AIMBE supports certain changes for all class I and class II devices, as follows:

a) exempt all class I devices from the premarket notification process (510K)

b) re-review all class II devices in terms of risk assessment and the postmarket surveillance requirements of the Safe Medical Devices Act to reclassify those devices with an established record of safe performance.

c) provide guidelines which allows manufactures increased options with respect to the need to file 510(K) submissions for product modifications.

### B. LONG-TERM LEGISLATIVE REFORM

Fundamental long-term regulatory reform is also required in order to maintain U.S. competitiveness in the medical device technology industry. In the long term, this must be accomplished by developing a regulatory process that is responsive to changes in science and in the increasingly competitive global economy. Recent changes in European law serve as a model for new regulatory approaches in the United States. AIMBE believes that several hallmarks of European device regulation warrant further study and incorporation, as appropriate, in U.S. law. Hallmarks of the European approach include:

• Efficacy is a medical not a regulatory determination.
• Technical definition of "essential requirements" for all devices as also detailed in ISO/TR 14283, which was approved and published March, 1995. The International Standards Organization has defined "essential requirements" as the necessary minimum requirements for labeling, preclinical and clinical testing, and the safe manufacturing of devices to allow commercialization. Legislatively mandated classification of products by risk. A regulatory process based on international standards.
• Independence of institutional review boards.
• Regulatory process implementation by independent third party accessors according to international standards.
• Unified electronic patient data collection systems. Postmarket surveillance by authority (not by mandate). Mutual transnational recognition of approved products which conform to global harmonized regulatory process.

AIMBE advocates a new approach to today's regulatory and liability conundrum focusing upon accessibility of technology as well as relative safety and intended performance. New medical device legislation must be written to sanction true and complete harmonization with the European medical device system. Without legislative reform, large device companies with international capabilities will continue to move their clinical trials, research, development, and manufacturing outside the United States. Smaller companies will continue to perish. Harmonization and mutual transnational recognition is the optimum solution—one that benefits American patients, researchers, physicians, manufactures, and ultimately our nation. Each of these groups deserve, contribute to, trust in, and expect new technology.

Thank you for providing me the opportunity to testify. I would be happy to answer any questions you may have.

Mr. SHAYS. Thank you, Dr. Schultz.

We have kind of hodgepodge here Mr. Benson, you represent a lot of different companies that are in the same field that Dow Corning is in, but you represent other companies.

We obviously have a specific instance with your company, Mr. Hazleton, of actually settling a case and getting out of the business. I have to tell you, I wasn't surprised that you settled, but I was concerned that you might have settled before it was really determined whether you were truly responsible.

And this may be a side question, but was the judgment of Dow Corning that it was, in fact, responsible, or did they just decide, based on the legal process, that ultimately it would have to settle? If you would just refresh my memory, very briefly.

Mr. HAZLETON. It was clearly a judgment that had a lot of business content to it. And I would agree with you that we settled—participated in the settlement—before there was any clear resolution of the legal responsibility and what the science was saying about that, and how the science that has come through is being played out in the legal process.

We felt we had no choice in that respect, because, in the space of 3 years time, from the end of 1991 to the end of 1994, we got to the point where we faced 20,000 lawsuits. And the financial liability, much less the physical ability to manage that kind of a litigation load, became such that it was just not possible to continue.

We have participated in trials. We've won as many cases as we've lost. When the evidence is all presented, juries do a reasonably good job, I think, of trying to sort out very complex scientific issues. But 20,000 is a lot of lawsuits to try to work your way through.

Mr. SHAYS. How many cases actually were heard before you made a settlement?

Mr. HAZLETON. Before we made the settlement, there had been, I think, about half a dozen that came to trial.

Mr. SHAYS. And the same basic evidence was presented in each trial but with different conclusions?

Mr. HAZLETON. Well, it varies from case to case as to the specific circumstances, Mr. Chairman, but the basic issue of causation was very often common, yes.

Mr. SHAYS. Now, you got out of the business. I mean, maybe it's an obvious question, but why did you get out of the business?

Mr. HAZLETON. Well, we got out of the business because, again, the litigation situation, even with the settlement—and as we've seen, the global settlement which we're talking about has not proved to be successful in resolving the issue—so, from a business judgment and viability point of view for my company, it was our conclusion that we could no longer participate in that business.

But it was also our judgment, based on the way things developed after the FDA moratorium, that there was not going to be a viable business for silicone breast implants, at least for the foreseeable future.

Mr. SHAYS. How much did breast implants contribute to your total revenue?

Mr. HAZLETON. About 1 percent.

Mr. SHAYS. About 1 percent.

Mr. HAZLETON. That's right.

Mr. SHAYS. Ninety-nine percent of your revenue came from other sources.

Mr. HAZLETON. That's right. About 3 percent of our revenue, in total, comes from our participation in the medical field, the kinds of devices that we've talked about today, and materials for uses in those devices. And breast implants, as a subset of that, when we were in the business, was never more than 1 percent.

Mr. SHAYS. Would a larger company, then, make a logical decision simply not to get in this area? I think of you having a factory that operates, and 3 days out of a year the plant operates only to make breast implants.

How much of your total operation was involved in breast implants?

Mr. HAZLETON. It would depend on how you measure, but it would be roughly—it's a very minuscule part; your point is certainly valid.

Mr. SHAYS. OK. So the bottom line is, there is no economic incentive for you to stay in that business or for future manufacturers to get into certain kinds of businesses like this, if it represents such a tiny part of their total revenue.

Mr. HAZLETON. I think that's certainly correct. If we had known 30 years ago, when we first got into the business, to the breast implant business, what would develop out of this, no economic judgment would have made sense to participate in that business.

Mr. SHAYS. Does a business that chooses to get into this area have to separate from another business and start out as a small, independent organization that would have what I'd call limited resources?

Mr. HAZLETON. Perhaps either Mr. Benson or Mr. Schultz is better qualified to answer that. What I would say is that, from my knowledge of the situation, I think it is an ironic fact that, at the time when many consumer activists are saying we need to be sure

that there's a lot of high-quality research on these things, the only companies that are able to go into these kinds of businesses and see the risks are those that are small, thinly capitalized, startup kinds of companies.

Mr. SHAYS. Doesn't the possibility that you had a settlement give validity to those who think that silicone is, in fact, a dangerous substance?

Mr. HAZLETON. Certainly that has added to that perception. That's one of the reasons that it made it a very difficult decision for us. If I could just add a point to that, and it goes to the question of what research did we do and what didn't we.

I was interested in Ms. Goldrich's point in response to the question of future research. And if I paraphrase her wrongly, I apologize, but I think I caught what she said, "What do we do if the current research, or the new research, replicates the previous fraudulent research?" by her characterization.

Now, if, in fact, the current studies and the current science concludes the same things that we have been saying about these products for 30 years, then if you believe that what we've been saying about them for 30 years is fraudulent, you reach her conclusion that there must be something fraudulent, I guess, with the current research.

There is an alternative suggestion, or possibility, and that is that if the current information is valid, it challenges the question as to whether the previous research was fraudulent or not. And I'm very willing to have the safety of my company's products and our reputation stand on what the science says today and what inferences people may draw about what our behavior and science, the quality of that, was in the past.

Mr. SHAYS. We had three basic reasons—or four questions that we, as a committee, wanted answered, and the last one is, finally, what standards should guide the FDA in the quantification and evaluation of the benefits and risks of new medical devices and biomaterials?

You were here for most of the day, and are you of the same opinion that a number of us are, that we're never going to come to a conclusion if we continue the way we are, as it relates simply to breast implants?

Mr. HAZLETON. Well, I think the question that has been asked many times with breast implants—and you could apply it to other things—is, when is enough enough, and will we ever get to enough, given the way the process works?

Mr. SHAYS. Well, I'm asking something more than that.

Mr. HAZLETON. I'm sorry.

Mr. SHAYS. I'm asking really a question of—does the FDA have an incentive to try to find a conclusion and resolve this issue, or is allowing the system to just continue, ad infinitum, almost the mind-set of an agency like the FDA?

Obviously, you have to interact with them in other ways, and I'm not looking to have you criticize the FDA. I mean, they have enough critics. I'm just trying to understand how we could change the statutes or change the agency's attitude to bring resolution to certain issues.

Mr. HAZLETON. Well, I think you spoke to it well in the comments you made in your interaction with Commissioner Kessler this morning, Mr. Chairman. And I would agree, there is a mindset issue. And I'm not trying to just score points with the FDA, but I would honestly say that it's not just with the FDA. I think there's something in our whole—I don't know—the gestalt of how we're dealing with this whole situation.

I was interested in a couple of things that Dr. Kessler said, and I think some of this testimony has referred to it, as well, when he said that he felt it was important that the FDA stay out of the litigation situation. Well, first of all, I can certainly understand why he would want to do that. Second, it is not, in my view, the FDA's responsibility to resolve litigation situations.

But he gave a couple of examples. He gave, as Mr. Benson has indicated, a pretty strong endorsement to the safety of the Norplant product. And Dr. Burlington gave us a good chemistry lesson, which I'm glad I didn't have to, on the difference in different kinds of silicones.

Mr. SHAYS. Let me say I'm going to have to interrupt you.

Mr. HAZLETON. I'm sorry.

Mr. SHAYS. Just because I do feel that I'm going over my time, and Mr. Barrett and others—I think we're going to have a vote soon, and I'd just like you to conclude your point.

Mr. HAZLETON. OK. He made a strong endorsement of Norplant, and it's a different kind of silicone. As we meet today, the same plaintiffs' lawyers who destroyed the breast implant situation are now marketing the same kind of fear with respect to Norplant. And they are not making the distinction that the Commissioner made about different kinds of silicones.

Mr. SHAYS. Point well taken.

Mr. Barrett.

Mr. BARRETT. Thank you, Mr. Chairman.

Mr. Benson, in your testimony you cite a number of products in which silicone is used: deodorant, suntan lotion, toothpaste, and go on to state that the safety of silicone is tried and true. But isn't the form of silicone used in those products different from the gel that we're talking about here today?

Mr. BENSON. Well, there are a variety of different types of silicone. Again, I think the chart summarizes it very nicely. Basically, three types: oil, which loses its fluid; gel, which is, just as the name implies, a gel; and then the strongly cross-linked product known as a solid. And a variety of those, also combined with other ingredients, go into making various products.

The point I wanted to make is that the very same basic material that we are so concerned about on the one hand, you know, is like the air we breathe and the water we drink on the other.

Mr. BARRETT. But they are different products?

Mr. BENSON. Well, they are different forms of the same product.

Mr. BARRETT. So are you implying that the dangers that we were seeing in the marketplace because of silicone gel are dangers we can expect to see with respect to toothpaste or deodorants?

Mr. BENSON. No, I would turn it and say just the opposite. I think the dangers—I don't think we're seeing dangers with silicone gel. I don't think we're seeing risks——

Mr. BARRETT. I'm talking about the marketplace reaction, your reaction, the reaction of Dow.

Mr. BENSON. Unfortunately, I think that may well be a function of the fear that gets markets, that Mr. Hazleton referenced a minute ago.

Mr. BARRETT. Do you honestly think that Dow Chemical or other companies that make products with silicone in them are going to take them off the market?

Mr. BENSON. I'm sorry?

Mr. BARRETT. Are they going to take them off the market?

Mr. BENSON. They are—other materials that go into medical devices have been taken off the market.

Mr. BARRETT. But I'm not referring to medical devices; I'm referring to toothpaste, deodorants, the things that you mentioned in your testimony.

Mr. BENSON. I don't know. I don't know. My point was not to stir that fear but rather to point out that silicone is ubiquitous.

Mr. HAZLETON. If I can just add to that, I would say that I certainly would hope that common sense would kick in somewhere along the line on this. But, frankly, that's something we've been concerned about, because 3 percent of our business is in the medical business, but if the whole thing is tainted, that's a concern for all of us.

And if I may also just correct you on one point, which I suspect was inadvertent, we're Dow Corning; we're the people that make silicones. Dow Chemical is one of our shareholders, and they are not in the silicone business.

Mr. BARRETT. I understand. I apologize for making the mistake.

Mr. Hazleton, if we could turn to the settlement. So I have a better understanding, there was a $4.25-billion settlement. Your concern, as you stated it, was that—and you had plaintiffs outside the class who continued to file lawsuits—you entered bankruptcy proceedings at that time. For those who are members of the class, are they protected now that you're in bankruptcy?

Mr. HAZLETON. Well, Congressman Barrett, I'm learning a lot about the bankruptcy laws as we go.

Mr. SHAYS. Could we, for the record, just state, your liability is $2 billion of this?

Mr. HAZLETON. Our commitment to the original global settlement agreement was to pay $2 billion into the total $4.25 billion.

Thank you, Mr. Chairman.

Mr. SHAYS. OK.

Mr. HAZLETON. There are a lot of complex possibilities as to how this will work out. There are now difficulties, as you may be aware, with the global settlement itself that are independent of the fact that we're in the Chapter 11 process. So how all of that is going to play out together, and how all of that situation is going to be resolved, has a lot of uncertainties to it at this point.

Mr. BARRETT. OK. But from your testimony, I inferred that the reason that you did was because of—we can call them the independent plaintiffs.

Mr. HAZLETON. Yes.

Mr. BARRETT. But it sounds to me now you're saying that there are no assurances that the women who were part of that original settlement are ever going to get their money; is that correct?

Mr. HAZLETON. Excuse me. I was not trying to imply that.

Mr. BARRETT. I inferred that. I'm not saying——

Mr. HAZLETON. What I'm saying is that there are a lot of uncertainties about what will happen. Our intention, in our bankruptcy process now, is to still try to find some resolution, including some kind of a global settlement, a modification of the original one, perhaps something different, but something which fairly and equitably deals with all of the claims that are valid, of all women, those that were members of the settlement class and those who are outside of it.

Mr. BARRETT. OK. You talked about other products that Dow Corning has sold, the shunt patients, heart valves, kidney dialysis, insulin production. One that you didn't mention was the TMJ devices. If you could just bring me up to date on the marketing life of that device and what happened with that one.

Mr. HAZLETON. Yes, let me try to, very briefly, both for reasons of time and because I'll get way over my head on the biomechanics, if I don't.

TMJ stands for temporomandibular joints. They are a medical device that's used to correct deformities or other problems with the jaw, and they are involved in load-bearing physics between the various parts of the jaw. And a number of materials have been used for that.

Silicones have had some part in that, historically. We have never recommended them for any device where they would be part of a load-bearing with a lot of stress on it, because that is not one of the properties of silicone that it can stand up to loads, and there's danger of it bearing down.

There have been some few instances where doctors were using those kinds of materials, along with others, that have resulted in some product claims and lawsuits. It's a relatively small number that silicone is involved in, and there are some controversies over some of the other materials that have been involved in that.

Mr. BARRETT. Mr. Hazleton, you seemed to indicate that, from your standpoint at least, your frustration seems to be more with the plaintiffs' bar than FDA; is that correct?

Mr. HAZLETON. Yes, I think that's a fair characterization.

Mr. BARRETT. And yours seems to be more with the FDA, your frustration; is that correct?

Mr. BENSON. I wouldn't say the frustration is with FDA; I would say the frustration is with the whole system that we're facing in the raw materials area. This thing you just brought up on TMJ was responsible, in no small way, for causing DuPont to withdraw from the raw materials market.

And I wanted to mention that, when Mr. Hazleton was talking about getting out of the business, there are really two businesses that I think Dow Corning is considering getting out of. One they are clearly out of, and that's the manufacture of breast implants. The one that principally concerns me is the raw materials that go into making other people's medical devices, the shunts, and so on, and that's the business that DuPont also has withdrawn from.

That's the scary part of this whole thing. When you put that together, it's a combination of, I think, FDA needing to make a stronger pronouncement about the safety of these raw materials, the relative safety of the raw materials, so that we can balance risks and benefits. So it's a combination. Litigation, I think, genuinely drives FDA's concern.

Mr. BARRETT. Mr. Chairman, if I could indulge for another 30 seconds or so, I would appreciate it.

Mr. Hazleton, I can certainly understand your frustration with the plaintiffs' bar. If I had been in litigation of that size, I would be frustrated, too.

At the same time, I guess I'm a little troubled by some of your comments, because I, frankly, had not had much exposure to this issue prior to today and heard Mr. Traficant this morning, who I assume you heard go on and on about the need for full disclosure, and then this afternoon read for the first time the document from your company—I think it's from your company—where the corporate medical director was concerned because one of his employees was asked to destroy documents.

I certainly can't put those guys in the black hats if documents are being destroyed in your company.

Mr. HAZLETON. If I can respond to that, I'd be happy to. There were no documents destroyed. We had an ethics process that, in fact, worked in that situation. And I, coincidentally, was the chairman of our corporate ethics committee at the time of that incident, so I was personally involved and knowledgeable about that.

We did look into it. Ms. Woodbury, at least initially, believed that she had been asked to destroy documents. Mr. Rylee's contention was that was not what he had requested and that this was a communication that was going on through intermediaries across a distance. He was in Tennessee, and she was Michigan.

The conclusion of the committee was that it was a misunderstanding, and, at the end of the day, no documents were destroyed. She knew exactly how to bring forward her concern when she had it, how to deal with that through our ethics process. From my view, it's a process that worked.

Mr. BARRETT. OK. Thank you very much.

Mr. SHAYS. Before I recognize Mrs. Morella, are all Dow Corning documents regarding silicone safety now in the public domain?

Mr. HAZLETON. As far as I know, certainly, Mr. Chairman, all relevant documents that relate to the safety of our products, the studies we've done, what those show, what they didn't show, are now in the public domain, through some combination of the civil litigation, the Justice Department investigation which went on for 2½ years and concluded with no findings of bringing any charges or indictments, the FDA PMA process, and various others. I believe everything relevant is in the public domain at this point.

Mr. SHAYS. We specifically haven't made the request of asking whatever Mr. Weiss asked you to ensure that all of that is before this committee, because, knowing Mr. Weiss, it was probably a great deal of information. We would only want it if we needed to use it, but just so you know, we will just follow up on that one point.

Mr. HAZLETON. Certainly.

Mr. SHAYS. And if there is something that we think is pertinent, we will ask you for it.

Mr. HAZLETON. And we would be very happy to provide any of that to you.

Mr. SHAYS. I thank you.

Mrs. Morella.

Mrs. MORELLA. We miss Mr. Weiss, too.

Thank you, gentlemen. I appreciated hearing about the criteria and a reasonable assurance and the problem of the possibility—or, you think, a reality—of the shortage of silicone. I guess I just have a few questions I'd like to direct really to Mr. Hazleton.

Are your implants safe for long-term use in a female body?

Mr. HAZLETON. I believe—if I can preface that answer with perhaps referring back to another question that Congressman Traficant raised this morning regarding Mr. Rylee's testimony—as I understand it, and I have reviewed and I'm familiar with that testimony, what he said in 1990 was that he believed, based on the scientific evidence available at that time, that breast implants were safe and effective for their intended use. I believe he also said that certainly more studies and more could be learned as time went on.

I believe the same thing today and will state the same thing today. And I think that, as we've heard today, there has been considerable science that has developed since Mr. Rylee testified that confirms that belief.

Mrs. MORELLA. Are you aware that silicone has a more severe reaction in the body of a female rather than a male?

Mr. HAZLETON. No, I am not aware of that.

Mrs. MORELLA. There are no studies that you've found that?

Mr. HAZLETON. There are no studies that I'm aware of that show any gender-specific reaction of silicone.

Mrs. MORELLA. And you have checked with the—women and men have been tested so that you feel reasonably certain that that's the case? I've heard to the contrary, obviously, and I'm very interested in the fact that women have been kept out of so many of the clinical trials and protocols, and, again, we've not tested some things with men.

Well, knowing also that silicone gel migrates if there's a rupture or a leakage of an implant, what testing has been done to determine what the effects would be of this migration?

Mr. HAZLETON. Well, fundamental testing has been on the safety of the materials that are comprised in silicone gel implants themselves. And it is known that certain low molecular weight—again, it goes back to the chemistry lesson; a lot of different kinds of silicones—low molecular weight materials, as with other things than silicones, do migrate through the body.

But the fundamental conclusion is that there is no connection that's been shown between silicones, certainly not the materials that are in breast implants, and systemic disease. And I think that's important, because the question of rupture that Dr. Kessler raises is one that, as I said in my testimony, certainly deserves more attention.

But that attention can be given in a considerably more rational environment if we accept the assumption that silicone does not cause serious systemic disease. If the assumption that has been

created by the litigation is that, whenever an implant ruptures or the slightest amount of silicone moves from one part of the body to another, that immediately sets up a terribly toxic, poisonous situation, then it's very difficult to address that issue rationally.

Mrs. MORELLA. But have there been studies that have been conducted that demonstrate this?

Mr. HAZLETON. There have been studies of silicone, various components, various types of silicone, various chemical constituents and what rate of migration—what degree of migration occurs. And that phenomenon has been studied, has been documented, and has been available to the FDA throughout the history of the products.

Mrs. MORELLA. I thank you, gentlemen.

In the interest of time, I yield back so that Mr. Fox can ask any question. Thank you, Mr. Chairman.

Thank you. We look forward to your comments about how we can resolve this whole situation, too, at the end of this hearing.

Mr. SHAYS. I thank the gentlewoman and call up Mr. Fox to end up this hearing.

Mr. FOX. I just have a couple of questions, Mr. Chairman. I appreciate the committee's indulgence and the panel.

We heard some allegations earlier about problems in children of women who have implants. Would you respond to those allegations?

Mr. HAZLETON. Yes, I'm really glad that question came up. In fact, I was trying to figure out a way to play on your invitation to correct the record, if it didn't get asked specifically. I think Ms. Russano raised a very important question, and certainly it is our responsibility to answer that question.

I will confess I'm a little nervous about doing it, honestly, because, when I do so, I will perhaps make myself vulnerable to a perception that I'm not sensitive to children's illnesses or, worse yet, maybe that I'm not as sensitive to the illnesses of Ms. Russano's children as I am about Tara Ransom. That's not true. I am very concerned about illnesses with those children, and that's why I'm willing to take that risk and be a bit direct in my response.

To me—and it comes back to the fundamental issue of the hearing—to me, the great tragedy of the breast implant situation is the amount of fear that has been caused by what I believe is unsound science related to the litigation situation, or however it came about, but the fear that's been created in women about illnesses caused by their breast implants.

If we let the same thing happen with the children of women with breast implants, we all ought to be ashamed of ourselves. If you will indulge me for a second, I'd like to read to you a few sentences from what the British health authorities have said—this is not what Dick Hazleton thinks, not what Dow Corning thinks; this is the British equivalent of the FDA—and their commentary on the studies that Ms. Russano referred to, by Levine and Illowite.

Quoting now, "There are, in fact, a number of significant deficiencies in the study which prevent any valid conclusions being drawn. These include use of a highly selected group of patients with bias evidenced at each stage of selection, inadequate controls in terms of numbers and matching, inadequate numbers inves-

tigated, inaccuracies in clinical correlations, lack of evidence that abnormalities were clearly significant, lack of corroborative evidence, the affect of any anesthesia agents used on esophageal motility, inappropriate statistical methods, and lack of any evidence that silicone was present in milk or ingested.

"In spite of the widespread publicity generated by this paper, it is of no value in assessing the health effects of silicones."

Mr. Chairman, Mr. Fox, if there are legitimate questions to be raised about the health of children and silicones, by all means we should investigate them. But if we let that kind of science create an environment—and I'm not making this up—where a television reporter can seriously suggest that pregnant women should consider an abortion because they have breast implants, then I don't know how to cope with that as a businessman or a father or a citizen of this country.

Mr. FOX. If I could just follow up with one last question. I appreciate your indulgence.

We found in the testimony today—and I think it was a frustration to the chairman as well as the rest of panel on both sides of the aisle—there was no causal connection, as far as I could tell, between silicone breast implants and connective tissue disease. And the FDA wants yet to continue studying this topic for some time.

My trouble, and I think that with the committee is, whether its silicone breast implants or drug approval or disapproval, the public needs more prompt resolution of these issues. In my view, if the FDA were in charge of the Apollo 13 instead of NASA, then they would still be circling the moon.

My concern, not only for the breast implant but, frankly, with other devices that we have, medically, before FDA, how many will go overseas, with loss of the medical benefit to our patients and loss of the jobs that go with it, to the United States, if we don't have a speeded-up process and resolution of issues by FDA.

Do you have a response to that?

Mr. HAZLETON. I think you raise very good, very valid questions that we all need to be asking ourselves. The question is fundamentally, as it's been said several times today, when is enough? I believe, in the situation of silicones and silicone breast implants, we have enough information. And, like Mr. Benson, I was encouraged by many things Commissioner Kessler said this morning.

Mr. FOX. Thank you very much.

Mr. SHAYS. I would like to thank our three panelists. But, Dr. Schultz, I want to explain why you weren't asked questions. I think your basic message is quite clear to us, that you're saying that any substance introduced to the body is going to have a reaction. And I guess my only question to you would be, is there a better material other than silicone that you know of for breast implants?

Dr. SCHULTZ. I couldn't really respond. I'm not that expert in the area. Let me just make, if I could, a comment.

Mr. SHAYS. You may. You stayed awake during the whole time we asked the other gentlemen questions. So that's all right.

Dr. SCHULTZ. It seems to me that there is a disconnect between the need for information and the generation of information. The FDA appears to rely on industry to provide information through their applications. Yet, now in this litigious society, you may not

have companies coming forward with products. If you don't have a company coming forward with products, they never get the information.

So it appears, in this environment, that there has to be another group which can generate the information and can assess the information.

Mr. SHAYS. There is a gigantic disconnect, and I came with certain preconceptions. The one that I had the most difficulty accepting is why we wouldn't see materials for other uses, medical uses, why they wouldn't still be forthcoming. And I think this hearing has satisfied that question.

I mean, I think it's a given that if we don't resolve this, not only are we going to have a continued problem with silicone breast implants and this never-never land of resolution, but I'm absolutely convinced that other very necessary medical devices will slowly disappear from the market. And I'm absolutely convinced that you're not going to see new manufacturers get into this field in the way that we need to unless we resolve this.

This is why the FDA needs to be more proactive in helping us understand how we can help the industry provide benefits to the public.

So this has been a very interesting hearing for me. It wasn't like church where sometimes my mind may disappear slightly over certain times. I was connected the whole time. I thank you.

This hearing is adjourned. I thank all the Members.

[Whereupon, at 4:35 p.m., the subcommittee was adjourned, subject to the call of the Chair.]

[Additional material submitted for the record follows:]

PREPARED STATEMENT OF HON. ED PASTOR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

This morning, the Subcommittees are turning their attention to an issue which is of great concern to me, the continued availability of raw materials, or biomaterials as they are called, for life-saving devices.

Due to a limited market, low profitability and the real potential of very high legal costs in defending against lawsuits, the manufacturers of these biomaterials, which go into medical devices such as heart valves and heart pacemakers, are no longer able to produce them or are considering removing them from the market. As such, these devices will no longer be available to those that need them to survive.

Today, you will hear from a constituent who brought the issue home to me. Eight year old Tara Ransom of Phoenix, Arizona, suffers from hydrocephalus. She is kept alive by a medical device called a hydrocephalus shunt, which allows excess brain fluids to be drained into the abdomen. As she grows, this shunt will need to be replaced periodically, and without it, Tara will die. I hope, for Tara's sake, any decision on the safety of silicone is based on sound science.

Today you are discussing silicone and the question of their continued availability. Silicone is one of the most basic raw materials and is contained in over 2,000 medical devices—devices which enable many people worldwide to enjoy healthy and productive lives. Making silicone unavailable for medical devices would be devastating as there is no known substitute. A wide range of medical devices are made with silicones and are used in the medical profession by a multitude of specialties including ophthalmology, neurology, and cardiology.

Last year, I asked my colleagues to support me on this issue by requesting that they co-sponsor the "Biomaterials Access Assurance Act" and I am pleased to report its provisions were supported by the House earlier this year. This issue remains on the agenda of many Members of Congress, and I only hope that continued availability of biomaterials will enable Tara and others like her to live long and fulfilling lives.

PREPARED STATEMENT OF THOMAS D. TALCOTT, FORMER EMPLOYEE, DOW CORNING

The speakers list for subject Congressional Hearing (as of 5 PM July 27, 1995) indicates that there is a serious imbalance between supporters and critics of silicones as safe biomaterials. The critics of silicone are continuing to make very significant strides in understanding the biochemical pathways of silicone related disorders and how it affects human health. Those familiar with the activities of the speakers and the issues will recognize this imbalance with supporters in the majority.

It will be very interesting to hear from Congress as to their concept of the nature of the real issues currently confronting the severely ill men, women and children of the world. Many children, yet unborn, are victims at birth due to the lack of warnings that silicones can affect children by crossing the placential barrier and/or also contaminating the mothers' milk. Based on my 43 years of experience with silicone and related medical devices, I see the following issues:

Physicians and surgeons involved with silicone gel-filled breast implants have been confronted for years by patients with a wide variety of symptoms which did not fall nicely into known disease categories. The medical community was unable to understand how silicone could cause such a wide variety of symptoms. They suggested that these troublesome patients seek psychiatric help. The patients bounced from physician to physician without finding helpful response.

In 1990, Congressional hearings by Ted Weiss helped expose that silicone gel-filled implants caused disease. Prior to that time, Dr. Vasey had also convinced himself and other colleagues by clinical experience that silicones were causing disease. At one hearing, I personally demonstrated the mechanism of device rupture whereby fluid gel is exposed to tissue and also how silicone fluid bleeds from the device. Drs. Anderson, Kossovsky and Blais have also testified concerning the risks of gel-filled breast implants. In reality, the lawsuits came later, initiated by women when they realized the cause of their disease.

THE HEALTH EFFECTS OF SILICONES ON HUMANS

The health of affected men, women and children is becoming better understood by many clinicians in the specialities of Rheumatology, Neurology, Immunology, Pediatrics and Toxicology. Tests concerning the understanding of the biochemical pathways, including the effects of silica from the metabolization of silicone (Dr. Garrido) and new immunological tests using patients' lymphocytes (Dr. Smalley) indicate that silicone related disorders in symptomatic humans and children are very real. Very significant health concerns were expressed at the National Cancer Institute/NIH, Immunology of Silicones Workshop, March 13–14,1995. Two days were allocated to discussing the safety and causation of silicone diseases. Two concerns included plasmacytomas caused by silicone gel but not by simple silicone fluids and precursor conditions leading to multiple myloma. Many of the speakers and authors at the NCI workshop should be included in these hearings before they are officially concluded. Other professionals that should be heard include those who wrote letters to the editor of the New England Journal of Medicine regarding the Gabriel/Mayo epidemiological study.

Thousands of destitute women are unable to pay to have their breast implants explanted to help in the resolution of their diseases. Should not some Federal Agency come to their assistance, or, how else can they be helped? There are case reports of suicides by distraught women.

The continual denial by manufacturers, medical professionals and FDA as to the migratable small silicone molecules causing chronic inflammation leading to silicone disorders, allows additional human exposure to toxic silicone poisoning to continue world wide. The start of immunological response and problems is the ingestion of the small migratable silicones by phagocytic cells.

It seems that a report is due on the FDA's critical need program. Such a report now, however, would be untimely because low bleed implants are time bombs with a much longer fuse than those which have caused current illnesses. Individuals interested and concerned about the technology should study Volume 4, Number 1 of the International Journal of Occupational Medicine and Toxicology. The authors of the articles in this special issue on silicones and disease should also be included in these hearings before the hearings are officially concluded.

The risk of individual silicone devices causing disease is difficult to assess because of the extended incubation time for silicone related disease to occur. The use of a wide variety of silicones with many and different small migratable chemicals contributes to the difficulty and uncertainty of assigning risk of disease. Breast implants are likely just the tip of the total iceberg of silicone poisoning.

A Table of Silicone Migratables in Typical Devices

| Device | Migratables | Comment |
|---|---|---|
| Gel Breast Implants | 1.5 to 28% of gel weight | More data should be collected. The amount of vinyl containing small molecules is needed. |
| Saline inflatables | To 20% of device weight | 1.2% is macrocyclics & linears. |
| Most solid devices | 4 to 6% of device weight | Need more data on specific devices and tubing. |

It would seem to be common sense that devices used at early ages in devices such as breast implants and Norplant should have warnings as to the development of silicone related diseases. At age 50 to 75 the use of silicone containing implants may be justified since the patient is likely to die of causes other than silicone related diseases.

Many medical professionals and Congressmen are concerned about the availability of silicone for life saving and other critically needed medical devices. Legislation is under consideration to exempt materials manufacturers from final device liability. Since studies are indicating that extractables are one of the main explanations of silicone related disorders, it seems that the technology of non-equilibration polymerization (used commercially for fluorosilicone products in 1958) should be used for true medical grade silicones. The new immunological tests, where lymphocytes recognize extractables and metabolites, should also be used as a method of sorting out those materials which are the least toxic for use in medical devices.

Warnings about the amount of migratables and their chemistry should be required on the labels of all materials used in medical devices. Toxicological testing of the extractables from medical devices and material components should also be required by FDA. Research will respond to such requirements by producing more suitable materials once the need is recognized by a high percentage of surgeons, regulators, end users and manufacturers. Additional research is also needed to prove filler treatment chemicals are permanently in place and not leachable from the materials when implanted in tissue.

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JOINT PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLASTIC AND RECONSTRUCTIVE SURGEONS, THE PLASTIC SURGERY EDUCATIONAL FOUNDATION, AND THE AMERICAN SOCIETY FOR AESTHETIC PLASTIC SURGERY

The American Society of Plastic and Reconstructive Surgeons (ASPRS), the Plastic Surgery Educational Foundation (PSEF), and the American Society for Aesthetic Plastic Surgery (ASAPS) are pleased to have this opportunity to provide comments on the Food and Drug Administration's approval and enforcement standards for medical devices, including silicone gel breast implants.

The ASPRS is the national medical specialty society for plastic surgeons and represents 97% of the approximately 5,000 board-certified plastic surgeons in the United States and Canada. Most American women who seek either cosmetic or reconstructive breast surgery are treated by our member plastic surgeons.

The Society's research and clinical member-education activities are managed by the PSEF, which also monitors ongoing breast implant research and provides research funding for a variety of subjects, including over $2 million dollars for breast implant research. PSEF research grant awards are the result of an open and competitive program patterned after the NIH grant review process.

ASAPS was founded in 1967 to provide board-certified plastic surgeons with additional opportunities for continuing education and research in aesthetic (cosmetic) plastic surgery. ASAPS has approximately 1,100 members who are elected to membership based on a demonstration of their special interest and wide experience in performing aesthetic procedures.

Since the FDA's active review of silicone gel-filled breast implants began, our organizations' relationship with the agency has evolved from an adversarial one to a more collaborative working relationship, which we value.

Much of the tension in those earlier days stemmed from the fact that the FDA had no established process for allowing input from the medical community. Recognizing that the Agency's defined process for review of medical devices excluded parties other than the FDA, the manufacturers, and the FDA's expert advisory panel, the ASPRS sought and obtained permission to present testimony at the FDA General and Plastic Surgery Device Panel hearings that took place in November, 1991 and February, 1992. We believed that the Panel needed to hear about plastic

surgeons' thirty plus years of clinical experience with silicone breast implants and to hear from experts in the fields of oncology, radiology, immunology, teratology, psychology and psychiatry.

After the November panel hearing, the Society filed a Citizen Petition[1] requesting that the FDA continue to make the silicone gel implant available because the device was necessary for the public health. In its petition, the Society analyzed the scientific literature, the benefits and the known and speculative risks of silicone breast implants. The Petition supported the conclusion of the FDA's Advisory Panel, which on November 14, 1991, unanimously voted to keep silicone breast implants available for general use. The Panel concluded that the continued availability of the device was necessary for the public health.

Despite the Panel's unanimous recommendation that silicone gel implants remain widely available, Commissioner Kessler on January 6, 1992 declared a moratorium on the sale and distribution of the implants. He called for another meeting of the General and Plastic Surgery Device Panel to review "new information" on the safety of the device.

Plastic surgeons were particularly troubled that the FDA's action seemed to be unduly influenced by documents from the well-publicized case of *Hopkins* v. *Dow*[2] decided in December, 1991, and by anecdotal reports from physicians based more on conjecture than science. In the Hopkins case, the jury came to a number of alarming conclusions that were not scientifically validated. It was disturbing that a lay jury's verdict seemed to carry more weight than the original FDA Advisory Panel's considered scientific opinion.

"Junk science" is occasionally used by plaintiffs' attorneys to help sway jurors in medical malpractice cases. However, we do not believe it should have any influence on the FDA's actions and decisions—rulings that may affect the lives and health of millions of Americans. A jury may be influenced by factors other than scientific information in reaching a verdict. The FDA should insulate itself from decisions played out in the legal arena, particularly those based on evidence of questionable reliability, because of the significantly different criteria in meeting scientific versus fecal standards of proof.

Cases like *Hopkins* v. *Dow* underscore the pressing need for product liability reform, as the publicity surrounding the multimillion dollar punitive award helped spur an onslaught of breast implant litigation and a $4.75 billion global settlement. The majority of the lawsuits alleged that the implants caused connective-tissue disease, a claim that has not been substantiated by recent research findings.

Nevertheless, the breast implant litigation frenzy has now given rise to a new wave of liability concerns and lawsuits against suppliers and manufacturers of medical implants of all types—artificial joints, heart valves, shunts, etc. The litigation's draining effect on manufacturers and suppliers may soon cause severe shortages in some frequently used biomaterials, and might force smaller and more innovative companies to abandon the market. Our organizations support the product liability measures recently passed by the House of Representatives to help protect these often life-saving devices.

Much of the case against silicone-gel implants revolved around "unanswered questions"; a demand for hard data proving substantial benefits to patients; a suggestion by some that, particularly in the case of cosmetic patients, any risk would be unacceptable; and a lack of scientific evidence establishing the safety of implants beyond a doubt. Although plastic surgeons argued that the vast majority of implant patients were happy with the device, the implant had a clinical safety record spanning more than 30 years, and had received concurring reviews from distinguished rheumatologists and immunologists, the FDA requested more information.

Now that some of the FDA's "unanswered questions" are being answered with hard science, we are pleased to see that medicine's views about the device's safety are being validated. A number of significant studies have been completed since the Agency's review, bringing reassurance to breast implant patients and to the medical community.

This past June, the results of a large cohort study published in the prestigious New England Journal of Medicine found no association between silicone breast implants and connective-tissue disease. The study, which searched for signs and symptoms for 41 types of connective-tissue disease among 87,501 nurses, determined that

[1] Citizen Petition to the FDA by the American Society of Plastic and Reconstructive Surgeons, requesting that silicone gel-filled breast implants remain available as the device is necessary for the public health, Nov. 20, 1991.

[2] *Hopkins* v. *Dow*, NDCA, Civ. No. C 88-4703.

on the whole, women with implants were actually less likely to have signs or symptoms of these types of diseases.[3]

Later that same month, the FDA announced the results of a study that tested the potential cancer risk of polyurethane-coated breast implants, which were manufactured until April of 1991. There was some fear and speculation that the polyurethane coating on the implants could break down and cause cancer by releasing a chemical known as "TDA". The FDA's report on the research states, "It is unlikely that even one of the estimated 110,000 women with polyurethane foam-covered implants will get cancer as a result of exposure to the TDA."[4]

A number of European governments are also standing behind the safety of silicone gel breast implants. These devices are currently available in all European countries. After reviewing all available breast implant data published between the end of 1991 and the middle of 1994, the United Kingdom's Department of Health and Medical Devices issued a report stating, ". . . there is no evidence of an increased risk of connective-tissue disease in patients who have had silicone gel breast implants."[5]

France and Italy both lifted their moratoriums on the use of the devices in January of this year. In Germany, Belgium and the Netherlands, no ban or moratorium was ever introduced.

We recognize that the FDA's evaluation of silicone implants was a difficult one. It was difficult for everyone—patients, plastic surgeons, the medical community, the Agency and the manufacturers of the device. While it is regrettable that more scientific data were not available at the time of the FDA's review in 1991 and 1992, the studies now are confirming the positive experience of the plastic surgery community and the vast majority of implant patients.

Today, the ASPRS, PSEF and ASAPS are working with the FDA and the manufacturers of the saline-filled breast implant, also a Class III device, in preparation for the agency's review of that device. Communication with the plastic surgery community has been established, and we are heartened that the FDA is taking steps to include the medical community in this more "physician-friendly" process. We hope that any reforms of the FDA will strongly support and encourage input hom the medical community in the agency's evaluation of medical devices.

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PREPARED STATEMENT OF LESLIE LILIENFELD DEHOUST, CO-FOUNDER, EAST COAST CONNECTION

"A baby nursing at its mother's breast. It is an image of tenderness, love, security. But for many mothers—those who've had their breasts enlarged with silicone implants—it may become an image of fear." Those of you who saw the July 1995 issue of Redbook will recognize that statement. It was the opening of Amanda Spake's article which featured the work of C.A.T.S. and profiled two mothers, James Russano of New York and P.J. Brent of Atlanta. It is the parallel saga of two women who believe that they unknowingly transmitted their silicone induced autoimmune problems onto their children, in uterom and again by breast feeding. It is the story of a medical profession at a loss for explanation and treatment. It is the prognosis for a new generation of young women and their future offspring if what we propose here today goes unheeded.

I am co-founder of East Coast Connection, a local silicone survivors support network (New York and New Jersey) and I am here today in support of all of our 500,000 afflicted women and their children. We beseech you to heed the testimony of Jama Russano, founder of C.A.T.S. and of Sybil Goldrich, co-founder of Command Trust Network. To date, C.A.T.S., alone, has gathered information from over 4000 women and children exposed to silicone. C.A.T.S.' research has assisted Drs. Jeremiah Levine and Norman Illowite to author the January 19, 1994 JAMA article, "Sclerodermalike Esophageal Disease in Children Breast-Fed by Mothers with Silicone Breast Implants." The answers to our fears are slowly becoming manifest. We now realize that historically everything we were advised about this substance has been proven false:

A. It is not biologically inert. It is, in fact, a strong adjuvant, provoking immune response.

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[3] Sanchez-Guerrero, J. et al. Silicone Breast Implants and the Risk of Connective-Tissue Diseases and Symptoms. NEW ENGLAND JOURNAL OF MEDICINE. 332:1666–1670, 1995.

[4] Update: Study of TDA Released from Polyurethane Foam-Covered Breast Implants. Food and Drug Administration, June 27, 1995.

[5] Gott, D. et al. Evaluation of Evidence for an Association between the Implantation of Silicones and Connective Tissue Disease. United Kingdom, Department of Health, Medical Devices Agency, Dec. 1994. ISBN 1 85839 347 7.

B. It does transcend the placental barrier and has been found to atrophy the reproductive organs of test animals.

C. Birth defects in tests animals have been recorded.

D. It has been used as, and in fact seems to be, a potent synthetic estrogen.

E. Silicone implants do not last a lifetime. Rupture rate is closer to 100% than to the proported 5%, after a decade of use. Once lose from its silicone elastomer shell, the gel is no different from liquid injectable silicone, banned by FDA.

F. It's best application seems to be as an insecticide to annihilate the roach population.

As we stand here before you, in mid 1995, more than 30 years after the introduction of these unregulated devices, we beseech Congress to support FDA in continuing the ban of these same devices. We applaud Dr. Kessler in his steadfast position on FDA's denial of approval to a device which has not demonstrated adequate safety data. We cannot assure any more unsuspecting women of the ASPRS' (American Society of Plastic and Reconstructive Surgeons) claim that these devices are "perfectly safe and will last a lifetime." We cannot assure expectant mothers that their children will be born safe. We cannot lead a new generation of young; women down the garden path to illness and disability.

There is a considerable difference in placing an experimental and possibly dangerous device into the body of an older woman who understands the risks and offers informed consent because she has been revaged by a cancer which may kill her in time. But, why should we allow teenagers and young women, only in their twenties, to be compromised by the time it takes to wear an implant to rupture? Why should we allow another generation of American children exposure to a chemical hazard before they are even born?

If you chose to believe the testimony you hear today by the advocates of the uses of silicone breast implants, you need to explain to us why thousands of documents which incriminate the manufacturers of these devices have been shredded or hidden. In late 1990, shortly after the much publicized Connie Chung exposé, a Dow Corning internal memo (introduced to this hearing by Congressman James Traficant) alleged that two company executives ordered the destruction of internal reports documenting a far higher complication rate for silicone breast implants than the company publicly acknowledged. The incident went right to the top of the corporation, involving both senior litigation attorney and Robert Rylee himself. A Dow Corning research scientist was asked to destroy all copies of a memo containing a data analysis of a National Center for Health Statistics Survey of Surgical Device complication rates, and the implant issues that summarized the overall scope and current status of epidemiology projects for the Health Care Business's Mammary implant products. It was Robert Rylee who made this request.

Congressmen and women, Dr. Kessler, ladies and gentlemen, I submit to you that as Mr. Traficant alleges, there has been egregious wrongdoing and immense harm done to American women and children by allowing the use of these unapproved devices. I allege that these same companies who have profited from our misfortune are now manipulating the legal system to deny us our in court and to deny their own responsibility for reckless disregard of human welfare. We must punish these wrongdoers. We must have medical research dedicated to helping us and our children to heal. We must be compensated and made whole economically or the burden of our maintenance will fall on the American social security and welfare systems. We must participate in the democratic process. We must make our country safe for future generations to be born healthy. We must be given "equal justice under the law."

If you discount our message here today, ladies and gentlemen, you will be participating in the perpetration of an historic sham like the Watergate scandal which brought down a presidency and like the facist propaganda campaign which tried to tell the world that there was no holocaust. These lessons of history teach us that the truth wins out and that we must honor those who survive least we allow our darkest deeds to be repeated.

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