THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

convenes the

TOWN HALL MEETING

NORA

NATIONAL OCCUPATIONAL

RESEARCH AGENDA

The verbatim transcript of the Town Hall Meeting of the National Occupational Research Agenda held in Houston, Texas, on January 23, 2006.

C O N T E N T S

January 23, 2006

TRANSCRIPT LEGEND

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-- (sic) denotes an incorrect usage or pronunciation of a word which is transcribed in its original form as reported.

-- (phonetically) indicates a phonetic spelling of the word if no confirmation of the correct spelling is available.

-- "uh-huh" represents an affirmative response, and "uh-uh" represents a negative response.

-- "*" denotes a spelling based on phonetics, without reference available.

-- (inaudible)/ (unintelligible) signifies speaker failure, usually failure to use a microphone.

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P R O C E E D I N G S

(9:00 a.m.)

OPENING REMARKS

DR. SARAH A. FELKNOR

DR FELKNOR: Good morning, and I think we're ready to get started. My name is Sarah Felknor and I'm the interim director of the Southwest Center for Occupational and Environmental Health at the University of Texas School of Public Health. And I'd like to begin this morning by introducing our Dean, Dr. Guy Parcel, who has some words of welcome. Dr. Parcel.

DR. PARCEL: Thank you very much, Sarah. My role in this is very -- very brief, and so I'll keep my remarks brief. On behalf of President Willerson*, president of the University of Texas Health Science Center, I extend a welcome to all of you who are participating in this town hall meeting, and especially send warm welcomes from the faculty, staff and students of the University of Texas School of Public Health. We consider ourselves unique in -- among schools of public health in that we have a main campus here in Houston, but we also have regional campuses throughout the state,

including Brownsville, El Paso, San Antonio and Dallas. So we attempt to provide education, training, research and community services throughout Texas.

I especially extend warm welcomes to Dr. Howard and to all of the NIOSH staff who are here today, and to Dr. Levin and colleagues attending with him from UT Tyler, one of our sister schools within Texas.

We greatly value our occupational health and safety programs here in the school, both from the standpoint of our teaching program and our research program. The Southwest Center for Occupational Health and Safety is one of our leading research centers within the school, and we think it's one of the leading NIOSH-funded centers in the country. We're very proud of the work that the Center's doing, and we're very pleased to have this opportunity to host this town hall meeting today.

And I'd like to finally express my appreciation to Sarah Felknor for her leadership for the town hall meeting, and to George Delclos and Sarah for their leadership in directing the Southwest Center for Occupational Health and

Safety.

Welcome, everybody. I hope you have an enjoyable and productive day. Thank you.

DR. FELKNOR: Thank you, Dr. Parcel, for your comments and support. It's a real pleasure to host this meeting in the School of Public Health, and I'd like to also acknowledge our co-partner at the University of Texas Health Science Center at Tyler, Southwest Center for Agricultural Health, Injury Prevention and Education, which is directed by Dr. Jeff Levin. It's a particular honor to welcome Dr. John Howard from NIOSH, who's made special arrangements to attend this town hall meeting. And I'd like to also recognize Dr. Max Lum and all of his associates at NIOSH who've worked tirelessly to organize these town hall meetings all over the United States.

And finally I'd also like to thank Dr. George Delclos and my colleagues at the Southwest Center for their help in coordinating this event.

Every day in the United States thousands of workers are either injured or become ill as a result of the work that they do. Over 12,000

injuries and illnesses are reported each day in this country, and many more go unreported, for a variety of reasons including inadequate surveillance systems, fear of retribution or lack of training. The burden of workplace injury and illness is often disproportionately borne by more vulnerable worker populations, including hourly and non-documented workers, and those without sick leave or health insurance.

As we open this town hall meeting we're reminded of the 12 miners who lost their lives 21 days ago in the Sago Mine disaster. In March of 2005 in Texas City, just ten miles from here, an explosion in the third largest petrochemical plant in the United States killed 15 workers and injured 170 others. These workplace fatalities are statistics without tears. Almost 500 people lose their lives every month in workplaces across the country. This town hall meeting includes a special focus on the hazards of healthcare workers. Health care is a particularly complex industry due to its multiplicity of hazards and risk factors not found in other workplace settings. The

healthcare industry employs approximately 13.5 million workers, almost 500,000 of whom are self-employed contract workers. Contract workers represent a particularly vulnerable population that is often lacking in safety training, administrative controls and reporting systems.

As the face of workers in the United States changes, so do our challenges as we incorporate an increasingly diverse work force into the U.S. economy. Most of the Hispanic workers in the United States were foreign-born, and many have higher workplace fatality rate than their non-Hispanic peers. The cultural differences and language barriers of the diverse work force create additional challenges for health and safety professionals.

While our progress in occupational health and safety has been significant, there is still much to do. This town hall meeting gives us a forum to speak for those who do not have a voice, and to contribute to the development of a National Occupational Research Agenda that provides a framework for investigation into the causes and conditions of workplace injury and

illness so we can prevent lives from being lost, and reduce the risk of injury or illness because of the work we do. This is our chance to contribute to an open process of comment and consideration, and to hear from key informants from industry, worker organizations, researchers and occupational health practitioners, and to participate in this crucial data-gathering activity.

This is also an exciting opportunity for our students of public health -- who'd better be here -- to see first hand the important role that front line workers, researchers and policy makers play in setting priorities for future funding initiatives. So I encourage you to contribute to this process, to listen carefully and to remember the person behind the statistic.

We have representatives here today from many industries, and we appreciate the effort you've made in being with us and we look forward to your comments.

And now I'd like to introduce our co-partner in the NIOSH town hall meeting, Dr. Jeff Levin, director of the Southwest Center for

Agricultural Health, Injury Prevention and Education at UT Tyler. Dr. Levin and his colleagues have been an important part of the organization of this event, and we appreciate their contributions. Dr. Levin.

DR. LEVIN: Thank you, Dr. Felknor. Good morning. I'm Jeff Levin and it's my privilege to serve as Center director for the Southwest Center for Agricultural Health, Injury Prevention and Education at the University of Texas Health Center at Tyler. It's also my pleasure to add to this morning's welcome to Dr. Howard, representatives of NIOSH and all of you. On behalf of the Southwest Center I would like to extend our thanks to NIOSH for its efforts relative to defining the future directions of our National Occupational Research Agenda, or NORA.

Dr. Felknor and others will be describing this process as we go throughout the day, but finally I would like to express my gratitude to Dr. Max Lum, NIOSH staff, and in particular to our colleagues at the ERC here at the UT School of Public Health, Dr. Felknor, Dr. Delclos and Dean Parcel, who have worked tirelessly to

ensure a successful town hall meeting today. At the close of this morning's session there will be opportunity to summarize briefly and to synthesize what we've all heard. Having attended another NORA town hall meeting recently, it's possible and likely that a series of recurring themes will surface. Although there will be many issues discussed this morning and in the sector-specific area of healthcare and social assistance this afternoon, I would like to suggest that an important one is the training of healthcare providers in safe work practices, and the education of the health personnel work force who will carry forward in both research and education integral to the success of NORA's future. Evaluating and defining these needs and funding for ERCs will remain essential. Secondly, the sector of agriculture, forestry and fisheries is a very dynamic one with changing work force demography, technology and external influences. Like many of the other sectors, this will require a portfolio of research efforts, developing new knowledge which impacts injury and illness rates and

addresses emerging issues because of a changing workplace environment. Future funding for this initiative will remain key as well.

Third, with terrorism and emerging infectious diseases such as avian flu remaining matters of pressing interest, research, training and other strategic approaches to ensure preparedness should continue as priorities. This is relevant for the protection of emergency responders and healthcare workers, and for the recognition and response to possible agro-terrorism. In other words, emphasis on preparedness is a cross-cutting potentially cross-sector consideration which should occur in the context of readiness for public health disasters and all hazards.

Dr. David Lakey*, director of clinical infectious diseases at the UT Health Center at Tyler, and chair of the curriculum committee for the Texas Bioterrorism Continuing Education Consortium, was unable to be here today and he sends his regrets. However, he may submit written comments later in this regard.

Finally it is critical that we make every effort to engage stakeholders in the process,

and that we explore methods for transmitting our research efforts into practice in a way that will allow employers and workers to take advantage of these best practices.

Once again, I appreciate NIOSH and all of you for the opportunity to help define NORA's ongoing and future course. With that, I turn the podium back to Dr. Felknor. I welcome again, and thank you.

DR. FELKNOR: Thank you, Dr. Levin. Now it's a real pleasure for me to introduce Dr. John Howard, the director of NIOSH. Dr. Howard has been the director of NIOSH for four years, the former director of Cal OSHA, an occupational medicine physician, an attorney, and many more -- a real renaissance man. I'd also like to mention that it's particularly pleasurable for us to be able to introduce Dr. Howard as the director of NIOSH because the founding director of RERC is Dr. Mark Keith -- Marcus Key, thank you very much; one of those moments you never hope you have -- Dr. Marcus Key, who is the founding director of NIOSH and also the founding director of RERC, so it is a real pleasure to introduce Dr. Howard.

DR. HOWARD: Thanks, Sarah. Good morning, everybody. How's everybody doing? Great, right? We need some energy here. Thanks so much for coming out today and I really want to thank the Dean and Sarah, Jeff, everybody else for -- for their lovely reception last night and offering this beautiful school of public health as the locus for our town hall meeting. I welcome each and every one of you, especially those of you who are still students, and those of us that are continuing students. I think that -- that means all of us.

This is a very important process that we're involved in. As we know, in 1996 the Institute launched the National -- the word is National -- Occupational Research Agenda. It's an agenda for all of us, for all of us who work, for all of us who employ, for all of us who are engaged in American commerce -- and even internationally through global collaborations, which all of you have excelled at, also.

I think it's very important that we come together at this beginning of a new decade. There's nothing particularly to mark this decade. The Congress is appropriating our

money every year for NORA. But we thought it's important, since the original NORA launch in 1996 was a decade-long effort, we thought it was important to sort of retool our agenda. And what we've done for this second decade is to use a sector-based -- an industrial sector-based approach focused on bringing research to practice, to the people out there -- all of us who practice occupational safety and health in the employment setting -- for the good of workers who are always our beneficiaries for all the activities that we do.

So I think it's extremely important that you be here today and that you comment. We have many people here from NIOSH who are good listeners, and that's our job today, so that we can retool the NORA agenda for this next decade.

It's extremely important that we do this because we value three important core values for NORA and throughout our Institute. One is relevance. Our work has to be relevant to the problems of the real world, and that's what we want to hear about today. We have to prioritize our scarce resources. We wish they were more abundant, but they are scarce, so we

have to prioritize our work to the most relevant problems. And that's tough, because priority-setting is a very tough process.

Second is quality. We have to make sure that the work that we do, both intramurally, within the Institute, and by the grant process that we have so that individuals, such as you here at the University of Texas, can take the money that the Congress appropriates to us and, according to our priorities, produce solutions to our problems. But the quality has to be the best scientific quality it can be.

The third is impact. We have to make sure that we're not doing research for research's sake. We have to have endpoints. We have to have measures. We have to have metrics to figure out whether we're achieving impact. And that's extremely important because stakeholders -- as workers and stakeholders, as employers want to know, as taxpayers should know, what are we getting for those dollars that we give you.

So it's extremely important that you all be here today. We're thrilled to be here ourselves. I have been at the University of Texas School of Public Health before and it's a

wonderful institution, and so it's a great place for a town hall meeting. Plus, as you know, in our sector-based approach we're looking at healthcare as a separate sector. We've separated it out from services. The North American Industrial Classification System, which was just launched a few years ago, separated out a whole bunch of services. Well, we've left services as a big lump, but we've separated out healthcare because it's extremely important, for so many reasons. And it's very appropriate that we be here in Houston. I think we're in the center of an employment setting of tens of thousands of healthcare workers, and we hope to hear about their issues today.

David Weissman, who is the manager of our healthcare sector program, is here. Terri Palermo, who is our coordinator for that program, is here today. So I'm very glad to see each of you and I hope we have a great day. I know we will, and thank you again, Sarah, for your dynamic organization, and for Jeff for being our co-sponsor. I look forward to a great day. Thank you very much.

INTRODUCTION TO RESEARCH AGENDA PROCESS

SID SODERHOLM, NIOSH

DR. SODERHOLM: Yes, energy. I'll -- I'll try to follow here, John. I'm going to talk a little bit about the process today. And Mary, I've lost all my screens. I don't see how to turn the projector on so all my right-hand screens are empty. So let me start talking here -- oh, I betcha I just have to touch it... Ah, very good. Okay. Thank you, Mary.

So, talking about the National Occupational Research Agenda, we are here seeking broad input. We want to hear from everyone. So the NORA vision -- we -- we've heard a lot about the second decade of NORA. A lot of -- some people have heard about some changes, so let's talk first about the NORA vision, what -- what hasn't changed.

It has been and will remain a national partnership effort to define and conduct priority research. The vision includes stakeholder input, and that's what -- that's the -- part of the process that we're in the middle of now, 13 town hall meetings. I get to see my wife now on -- again this -- this winter, but -- but it's an important process.

We're -- this information will be used to identify research priorities for the nation, and I'll describe how that's going to -- to happen. But describe -- but setting the priorities isn't the end of the process. We've got to work together to address those priorities. NIOSH is not in the position to be able to do everything that needs to be done, by any means. It's the partnerships of NIOSH with many different organizations and individuals that will have the real impact that NORA and the money from Congress and the efforts, the resources of the nation can -- can really focus to make a difference in this -- in this problem.

So leveraging those funds to support research in priority areas is important. During the first decade we had a fair amount of success in leveraging some NIH funds where there were cross -- where there were issues that were of interest to NIH institutes as well as to occupational safety and health. But I think there's a lot more that can be done, and we're looking forward to finding ways to do that.

The second decade of NORA will be a little

different from the first. We're focusing, as John said, on moving research to practice in workplaces, and these sector-based partnerships -- these partnerships are going to be key to doing that. So this approach will address the most important problems.

And by problems -- that's a fairly ambiguous word. It might be risk. We might think of it in terms of exposures, injuries, diseases, or failures of the system, or you know, things that need to be improved in the system that deals with all these issues.

The approach -- we'll have at least one research strategy, what are the important issues and how are we going to work on them, for each of the eight sector groups, and I'll at least name those here in a minute. The -- but we may need to have strategies for subsectors. Some subsectors are going to be different enough that the decision may be made to have a different research strategy for two or three different subsectors within a sector.

And we're not losing -- we're not missing -- the problem of all these issues we worked on for ten years, which are really cross-sector,

cross-cutting issues, those problems haven't gone away. Occupational hearing loss is still very important, for example. And we're not going to lose those. You -- we will index, we will show within the sector agendas where these cross-sector issues that we've been wrestling with appear, so researchers who tend to define themselves in terms of "I work on occupational hearing loss", for example, will be able to see where that priority has been pointed out in each -- you know, which sectors, and what types of research has been called for within those sectors. So the cross-sector needs are still there, and they will be identified in this process.

Why sector-based? Well, workplaces, workers, organizations tend to identify themselves by sector. Research needs, some are very similar across sectors, but many differ by sector. We think this approach is really going to help us focus on the goals, objectives and the results. And especially through partnering, it'll be an efficient process for getting the results back into -- getting the results into the workplace. We'll have the input from the sector as to what

the issues are that need to be worked on. When new knowledge and new products are put together through the NORA process, we will then have the partnerships to introduce those products that are being -- being waited for into the sectors so they can make a difference. That's the vision of the sector-based approach.

Here are, in -- in some abbreviations, the names of the eight sectors. As John mentioned, we're using the North American Industrial Classification System. They define about 20 sectors, and we've done some -- some grouping. And healthcare and social assistance actually is a sector in the NAICS system. If you go to our web site you can see the links to all these definitions if you want to delve into that.

So we will have eight NORA sector research councils, and they will interact with a cross-sector research council. The cross-sector research council -- well, each research council will have a co-lead, someone from within NIOSH and a stakeholder representative outside of NIOSH will be co-leading. And certainly more than half, maybe more than two-thirds, of the members of each research council will be

stakeholders outside of NIOSH. The co-leads of each of the eight sector research councils, those 16 people will be the core of the cross-sector research council. So this will be a group that will provide for some consistency. And on the scientific side particularly we'll be looking for those themes that are running across sectors and where those can be gathered. And more can be gained by putting these together and working on these across sectors in some situations.

NIOSH's role is one of stewardship and providing infrastructure. There are many contributions from other organizations to keep all these groups going. We know that from the experience of the NORA teams in the first decade of NORA, so we're not the only ones providing the infrastructure, but we take responsibility for making sure the process is able to continue moving forward.

So to say a little bit more about the research councils, diverse input will be processed by these research councils, will be considered by these research councils, and lead to robust research strategies and then actually working

on those strategies together.

So the initial research council work will be to take the various inputs. Front and center is the stakeholder input that we're receiving now, and I'll talk a little more about how that's going to be handled. But of course members sitting at the table will have their own expertise. And there's the surveillance data that we rely on when we can, to -- you know, to the extent it's available. All these inputs will be used by the research -- each research council through their own priority-setting process to come up with a draft research strategy.

This will then be put on the web. We've asked people if they'd like to be reviewers of draft documents. We'll let you know when draft documents are on the web. And with additional stakeholder input then, this will become a -- you know, for the moment, the research strategy.

But these are dynamic strategies. As progress is made, every few years we anticipate looking at the research strategies to see where they need to be updated.

So this talks about the initial work. The overall goal of the research council is not only to put together the research strategies but to serve as a focus for bringing the partners together who need to make the progress.

So moving right along, why are we here today? We want your participation in providing input. But we also would like you to volunteer to be on a research council, for example, or to be a reviewer, a sort of named or a reviewer on the list to be notified when a document is ripe for review. So please volunteer. You can give your information to me or at the front desk, or go into the web site -- I'll give you the information in a minute -- and we can, you know, learn about your interest and be able to see who is willing to volunteer and then be able to tap those that would make a diverse and balanced research council.

So what's going to happen with your input? Well, first of all -- he isn't as obvious today; in some of the other town hall meetings he's been sitting right up front -- we have a transcriptionist who will be taking a -- will

be providing a verbatim transcript of everything we say. And that -- those comments will be entered into the NORA docket. Actually Christie Forrester in the second row here, from NIOSH, will be parsing that and putting it into the web site, just as we -- we've made opportunities for people to enter information on the web site directly. Then those comments will be visible on the web site.

If you've visited our web site and -- oops, actually -- ah, there it is on the first line. If you visit our web site you'll see there's a place to type in text with your comment. And to the left of that there is a place that says "view comments by others", and so within, you know, a couple of weeks we should have the transcript. Within a few more weeks we'll be putting those on the web site. You'll be able to see your comments and the comments of everyone else on the web site.

And those are divided into very broad categories initially, the eight sectors, plus comments that are specifically on cross-sector areas, plus comments on the process. So they will be entered into that NORA docket. And

everything in the docket will -- is actually available, if someone wants to travel to Cincinnati to look at it in person, and most of it will be on the web.

There are -- if you have pictures, tables, other kinds of information that won't go into a text box on a web site, you can e-mail that to the docket. And we don't currently have a way to put that on the web site, but that will be available in the docket and I'll talk to you about how it's going to be provided to the sector research councils.

So everything in the docket will be provided to each of the sector research councils as individual comments. Everything -- the context of what you've said, all your comments will be there. But we will group them and we'll index them according to category. So a research council will certainly get all the comments relating to their sector, say healthcare and social assistance, but also if they're interested in what was said about, you know, occupational injuries or motor vehicle accidents -- which tends to be a problem in most sectors -- there will be an in-- they'll

be able to read each comment that was provided about motor vehicle accidents through this indexing process, regardless of how it came into the system and what sector it was initially aimed at.

So -- so the NORA sector research councils will have a lot of information, all the information you've provided, coming their way and they will be processing that.

Your input will be outlined at the NORA symposium. This will be happening in -- at the end of April, April 18 to 20 in Washington. And there are many parts of the symposium and I encourage you to visit the web site and learn about it. You can register now. It's too late to submit an abstract, but we've very excited because we received almost 200 abstracts for posters, so this is going to be a very rich, scientific symposium. So please, come joint us. We'll celebrate what we've accomplished in the ten years of NORA, for example, by looking at all these abstracts of all this work that's been done. We will celebrate the 35th anniversary of the Occupational Safety and Health Act. We will say thank you to our NORA

teams, the -- who -- who worked hard for ten years. And now with the new process the teams are being called research councils and are sector-oriented. And we will have workshops to talk about the input that was received and do some initial multi-voting to get an initial set of what the group assembled feels the priorities are within -- within that sector. So it's going to be I think a very rich symposium and I hope you'll consider joining us there.

So talking about today's process, what are we looking for? We're looking for information on top problems, and I mentioned those could be diseases, injuries, exposures, populations at risk, failures of the system -- or, you know, anything else that you can think of that helps define the problem for you. But in addition, if you have ideas -- what are the key partnerships in order to make progress, what's the research that's going to make a difference, what kind of studies, what kinds of information, what kinds of information transfer will make a difference. We're looking for brief presentations. We realize that people

are bringing passion and often a lifetime of work, and please, put all that into written documents and either submit them to the web directly or give them to us. But we're looking for the highlights. We're looking for those exciting kernels that'll -- that'll give us an idea of what you're thinking about in a brief five-minute presentation today. And we will be trying to, you know, move the process along and asking for input. If you didn't sign up, we hope to have time at the end of each block to ask, is anyone, you know, at this point ready to come up and give some -- some input. You don't have to have signed up, assuming we have time. So that's one reason we want to keep our presentations brief.

And we're all here to listen. We're asking that we avoid criticism of the earlier presenters. But listen, reflect -- offer a different view, for sure, if that's what you feel you want to do -- but we're not here to criticize what others offered as their opinion, but to get everyone's opinion.

So thank you. Some final thoughts, if you aren't already registered for the NIOSH e-news,

please register. There's news -- there's a little -- for -- once a month an e-mail will come to your mailbox and it will give you just a 100 or 200-word summary about different things happening in NIOSH. We have short summaries of what's happening in NORA, for example, and lots of other information. If you're too busy, you can ignore it, but I think you'll find it's quite quick and very interesting reading.

You can provide input at the NORA web site, and if you have any questions, want to volunteer, please feel free to use me as the focal point. My title is NORA Coordinator, and I will be glad to either answer your question myself or get the right people who can do that. So there's a separate e-mail address there. I have cards on the registration table if you want to pick one up, and that has my direct e-mail also. I check them both every day.

So I thank you, and at this point I'll turn it back over to Sarah. And we can turn the presentation off. Thank you.

DR. FELKNOR: Thank you, Dr. Soderholm. Now we're ready to get into the meat of the matter.

REGIONAL AND LOCAL SESSION: STAKEHOLDER PRESENTATIONS

MODERATOR: SARAH A. FELKNOR

What we've -- we've organized those who have already registered with us into groups of panels, and so I'd like to start each -- the beginning of each section of presentations by asking those of you who are in this panel to please move up to the front if you're not already here so we'll have less time delayed in getting folks to the podium for the presentation.

The first panel this morning is Martha Vela Acosta, Eva Shipp, Bobbi Ryder and Ron Sokol and Ben Amick. If you could move a little bit closer to the front of the auditorium, we'd appreciate it.

If -- again, we'd like to make sure that you hand in written copies of your testimony. If you have that available today you can leave it with us in the front, or any of the NIOSH staff at the registration table. And you can also file those on-line.

Yes?

UNIDENTIFIED: (Off microphone) (Unintelligible)

DR. FELKNOR: Yes, we have a very well-trained

timer here today. And I've been trained in enacting her wishes. So we'd like to try to keep comments to five minutes and -- so that we have plenty of time for everyone to contribute. And also there is an opportunity for you to contribute additional comments. If you run out of time and you really have things that you want to say, you're invited and encouraged to please register those on-line as written comments as well. So it's an attempt to just keep this forum as open and broad as possible. And also as a courtesy, would you please turn your pagers and telephones to the courtesy mode, and we'll go ahead and get started with Dr. Vela Acosta.

If you -- if you would please state your name and your affiliation at the beginning of your comments, please. Your name and affiliation.

DR. VELA ACOSTA: Buenos dias.

(Whereupon, the speaker continued a greeting in Spanish, without an interpreter.)

And I am the same, Martha and Soledad, so the title of my presentation is Advancing an Occupational Health Agenda for Farm Workers. NIOSH is the only agency that can adequately

address the occupational health and safety of migrant and seasonal farm workers in this country. If NIOSH places priority on applied research designed to yield practical results for this population, researchers will be responsive to that lead.

The National Agricultural Workers Survey is the only national information source addressing this population. It reported that 62 percent of the farm workers live in poverty and they represent almost half of the population employed in seasonal agricultural work. Spanish was reported as the native language for 81 percent of those farm workers, 41 percent they cannot speak English and 53 percent they could not read English at all. The average annual individual income for those farm workers was between $10,000 and $12,000, and the family incomes was averaged between $15,000 and $17,000 every year. Fifty-two percent of workers reported that they would not be covered by workers' compensation for a work-related illness or injury, and only 23 percent said that they were covered by health insurance. Culturally appropriate interventions are needed

for all Spanish-speaking farm workers. In my years working with migrant educators, the potential avenue for occupational health and safety curricula is an avenue to reach those young farm worker programs. This partnership approach is demonstrating the building capacity for promoting occupational health and safety education and to develop sustainable programs that are workable and effective. In my experience, many agricultural employers welcome partnerships with researchers. They are willing to collaborate to find out what practices work better to prevent occupational diseases and injuries at their workplace. These types of collaborations are a genuine opportunity for researchers, for employers and for NIOSH, but they will be much more likely to occur if NIOSH specifies these types of projects in their call for research.

The National Occupational Research Agenda recognizes that no single organization has the resources necessary to conduct occupational safety and health research to adequately serve all the needs of this diverse work force in the U.S. Partnerships and coordinating addressing

the scarcity of bilingual resources in occupational health and safety research are required to determine the efficacy of intervention techniques and strategies. The research initiatives set forth in NORA should be applauded, but they could be strengthened through integration of a specific call for applied collaborative research projects targeting Spanish-speaking farm workers.

DR. FELKNOR: Is this microphone working -- no.

UNIDENTIFIED: (Off microphone) (Unintelligible)

DR. FELKNOR: It is? Okay, great. Okay, thank you.

All right. Our next presenter will be Eva Shipp -- Dr. Shipp.

DR. SHIPP: My name is Eva Shipp and I'm a recent graduate in the occ-epi program here at the UT School of Public Health, and currently I'm working at the Texas A&M School for -- School for Rural Public Health. And today my comment is going to be on back pain in farm worker youth.

Many of the one to four million hired seasonal and migrant farm workers in the United States

are children. Unfortunately, enumerating this population is difficult because of their mobile nature. In 1996 the USGAO estimated that there were 290,000 farm workers ages 15 to 17 alone. This population is largely foreign-born and unauthorized. Although they play an important role in our agricultural economy, many are impoverished, and few have employer-provided health insurance.

Despite the hazardous nature of agricultural work, very few studies focus on back pain in farm workers, and even fewer include adolescents. However, agricultural tasks may be particularly harmful to the musculoskeletal system of growing youth. Hazards include sustained bent, stooped and awkward postures; repeated bending and twisting; and heavy lifting. These are very common in tasks such as harvesting from the ground. An assessment of farm chores performed by youth indicated that the physical demands were comparable or even greater than those associated with high-risk industrial jobs that we have deemed inappropriate for adolescents.

While the consequences of back strain during

adolescence are unknown, injury at such a young age is a concern because the musculoskeletal systems are not yet fully developed. Therefore these young workers may be more vulnerable to injury, or more likely to sustain injuries with lasting effects, including back pain in adulthood.

I recently completed my dissertation here at UTSPH. Working with investigators at the Texas A&M School for Rural Public Health we began to address issue-- gaps in the literature. Using data from a project funded by the Southwest Center at Tyler, we estimated the prevalence of severe back symptoms among high school students from Starr County, a population that includes many migrant farm workers. During a nine-month period the prevalence of severe back symptoms among 345 farm workers was 15.7 percent, compared to 12.4 percent among 1,547 non-farm workers.

During this same period I was somewhat surprised to find that well over a third also held a non-farm job. A third of the farm workers. The prevalence of severe back symptoms on these workers increased to 19.1

percent. We also found that farm work exposures remained significant in a multiple logistic regression model that adjusted for the effect of non-work factors. Our results are similar to those reported by Park* and colleagues on a study of adult male farm workers. They also recommended further investigation of the relationship between back pain and working both farm and non-farm job simultaneously.

In 2002 NIOSH sponsored a conference that focused on the prevention of MSDs in children and adolescents working in agriculture. But many of the research gaps identified during this meeting remain and require our attention. Among others these include identification of the most pertinent risk factors for targeted interventions. Further research could also guide legislation that addresses the health of farm worker youth specifically. This includes legislation such as the Children's Act for Responsible Employment that seeks to provide the same protections to youth agricultural workers, as well as young workers employed in other industries.

In summary, since the livelihood of many of these young workers depends on their ability to engage in physically demanding work, both now and in the future, more research is critical in this population of young disadvantaged workers. Thank you.

DR. FELKNOR: Our next speaker is Bobbi Ryder from the National Center for Farm worker Health. Good morning.

MS. RYDER: Thank you very much, Dr. Felknor. I'd like to try and make ten points in five minutes. Who's my timekeeper here? Can you give me a one-minute warning, and I may talk really fast in that last minute.

My name is Bobbi Ryder. I'm with the National Center for Farm worker Health, and I am going to try and give you my life's work in five minutes. The first point about current demographics, we estimate that there are about three and a half to five million farm workers and their dependents in the United States currently performing either migratory or seasonal agricultural labor where they don't move from one place to the other. We include in that group folks who are residents who've

been farm workers for many generations, citizens, as well as immigrants, both documented and not documented. They're doing work as defined by the Department of Health and Human Services as agriculture which, in a broad sweep, does not include animal husbandry nor packing nor slaughterhouses. Other than that, anything grown in and on the land is their definition of agriculture.

They are a hard to reach and hard to serve population. And as a result, they're also hard to research. Their mobility, the inaccessibility of their living arrangements in rural, country labor housing and crowded into back lots in semi-urban areas makes them very hard to serve. And as a result, if we do manage to reach them for some basic research, very, very hard to go back to to follow up to see what the outcomes are. That was my second point.

Third, let's make a leap here and instead of just looking at the occupational risks and illnesses, let's look at the patient as a whole, because there's a direct implication between access to care and their ability to

perform their jobs. I would like to suggest a partnership between NIOSH, the Health Resources and Services Administration, and the Agency for Healthcare Research and Quality, otherwise known as ARQ. There are 150 grantees funded by HRSA to deliver services to farm workers in approximately 500 service delivery sites around the country. They're currently serving approximately 700,000 patients -- user patients, unduplicated. So where do the rest of the three and a half to five million patients go? Well, they don't all go anywhere. Many of them use the emergency rooms. Many of them go across the border for their healthcare. But an even larger number simply have no access to healthcare at all.

My fifth point, we have a lost opportunity to create -- to have created greater access to care for farm workers in this Presidential administration. There was a Presidential initiative to increase access to care for all populations, including farm workers. And that Presidential initiative had the goal of increasing access by 100 percent. In order to do so and compete effectively to set up a new

access point for delivery of services to migrant farm workers, we needed national data that's not available for the population. We've increased services to this small segment of the overall community health center user population by less than ten percent in those five years. And how did that happen? It's because of what we don't know about the population. There's a deal breaker in the front part of the application process. It's called a need for assistance worksheet. You have to have national data. You can't use your own practice-based research data. It has to come from somebody else. And so where else do we turn? We've heard about the NAWS, thank you very much, Dr. Acosta. We didn't hear anything about health status in the NAWS. We heard pure demographics. The Bureau of Vital Statistics is no help because there's not one in the country that documents death or infant mortality by occupation. So we don't know. The U.S. Census made a significant effort to reach out to include farm workers in the population in the last census, but they still didn't document occupational status in that

census data.
There's several ways of collecting research. The one that I'm most fond of is practice-based research. And there is a national sampling that exists of existing records of registered patients that can give us a lot of data. That was conducted in 1989 and it was only a midwestern sampling. This is the model that we would like to see replicated on a national basis. I appreciate your point, Dr. Howard, that this is a national occupational research agenda.
Okay, I've made six of my ten points, I've got a one-minute sign here. I guess I'm going to blend the rest of them altogether and simply say that the fabric of our society is woven with an interesting tapestry of ethnicities from many waves of migration into the United States. Someone once asked me -- excuse me, someone once said to me that slavery was our most expensive mistake in this country. I prefer to think of it in human terms, but if you want to look at it in economical terms, education, lack of education and health disparities among African-Americans has been a

significant problem in this country.
Likewise, we have imported workers from Mexico for many, many decades to do work in this country, and we have a significant health problem among this population, which is not documented.
My last comment, in presentation to the Surgeon General's Conference on Occupational Health in I believe 1989 or 1990 I talked about the significant health problems that we were seeing on the front line. And after that presentation an academician came up to me and kind of looked down his nose at me and said well, we're not seeing that in the literature. And I said you know what, you're not looking in the right place.
Please, let's look in the right places together. Thank you.
DR. FELKNOR: Thank you. Now changing themes a little bit, Ron Sokol will be talking to us about the petrochemical industry.
MR. SOKOL: My name is Ron Sokol. I'm executive director of the Contractors Safety Council in Texas City, Texas. And I'd ask our panel to kind of leave the farm and now come

into the industrial environment. I'd like to talk to us specifically about the process safety management compliance for the petrochemical industry, including contractor operations during turnarounds and maintenance activities.

As many of us know, the Occupational Safety and Health Administration promulgated safety management standard in 1992 as a result of two catastrophic incidents that occurred here in the Houston Area, specifically the Phillips Chemical complex and the ARCO Refinery in Channelview. As a result of this -- these two incidents that caused over 40 lives to be lost, the process safety management outlined a systematic process for the industry to evaluate catastrophic events within their own industry. Within the process safety management standard, 14 elements were identified. One of the principal concerns addressed in the standard was the use of contractors for maintenance and turnaround activities. As a result of this standard, many in the petrochemical industry have initiated programs to evaluate the safety performance of contractors used in both

turnaround and general maintenance activities. The result of this is that many of the contractors working within the industry have achieved accident and illness rates that are far superior to the permanent plant workers. One of the areas that I would like to see NIOSH be involved with is to evaluate many of these best practices that have been developed within the industry, and there's a need to be able to review, communicate and share these best practices with the rest of the petrochemical industries for others can share in these results.

Consequently, though, the fatality rates of contractors within the petrochemical industry is higher than that of permanent plant workers. One of the initiatives that I would like to see evaluated is a -- not only a compliance effort, but within our organization we have instituted a process within our petrochemical industry to assure that every contract worker is drug free, security background checked, safety trained and skill assessed. These four cornerstones of contractor compliance needs to be implemented throughout the whole industry. The events of

September -- or the events of March 23rd on 2005 only involve contractors at the BP facility in one area, and that was in the area of fatalities. There was not one contractor man-hour that was spent in that unit that exploded. The only event was regarding contractors' locations within the facilities for facility siting and location of trailers. This also needs to be an area that needs to be investigated and researched within this initiative to ensure that we have safe distances, determine what those distances are to ensure that these people are not placed in harm's way in the event of catastrophic explosion.

Secondly, the process hazard analysis requirement within the standard needs to be evaluated. Over ten years have passed since the initial PHAs had to be completed. It is imperative that we review the effectiveness of these PHAs to ensure that it is not just a checking the box once we completed the initial PHA in 1995. What effectiveness do we have to ensure that we've incorporated management of change activities into these PHAs? How are the

information being communicated, not only to the operators, the maintenance personnel and the contractors, but the effectiveness of this communication is imperative.

The events of March 23rd, 2005 at the BP refinery in Texas City needs to be a catalyst to use the resources of NIOSH to be able to evaluate these issues and share the findings with the rest of the industry.

Lastly, other issues involve the effectiveness of the mechanical integrity processes for the petrochemical industry, and the need to conduct research on the best practices on mechanical integrity and share these throughout the industry and with other trade organizations such as API, NPRA, Texas Chemical Council, and other industry trade associations. Thank you.

DR. FELKNOR: Thank you, Ron. And now Dr. Ben Amick will talk to us about ergonomics in the workplace. No? Injury.

DR. AMICK: Good morning, Director Howard, members of the NIOSH NORA team. Thank you for the opportunity to speak. I would also like to thank Dr. Sarah Felknor for bringing this town meeting to Houston. Thank you, Sarah. My name

is Ben Amick and I'm associate profession of behavioral science and epidemiology, and a member of the Southwest Center for Occupational and Environmental Health.

First I would also like to take the opportunity to congratulate NIOSH on the success of NORA I, and your vision for NORA II as a sector-based approach. I would like to speak to you today about injury prevention and control in the healthcare sector. I will use broad brush strokes to paint the picture today, but will provide more well-documented written comments.

My comments are shaped by my own work experiences. I had the privilege of working for five years in the U.S. Congress as a policy analyst. I have collaborated with industry and labor on the first large-scale chair* intervention study and -- that demonstrated both health and productivity effects. And am now intervening in a variety of nursing homes, hospitals and social service organizations with a new program we've developed, the (unintelligible) vocation program, to change work. And finally, I am the co-developer of the most commonly-used presenteeism (sic)

scale, the work limitations questionnaire, and a new series of scales to assess organizational policies and practices in injury prevention, disability management and return to work.

My messages are simple. We must scale up our intervention efforts to create scientific knowledge that can provide the evidence base needed for scientifically credible recommendations. Pre post-only test interventions with no control groups are unacceptable. We can no longer continue to support interventions that have fatal flaws in them and therefore are subject to the criticisms, both by labor, employers and the scientific community with respect to the evidence.

Multi-site interventions are critical. We must no longer do single-site interventions, but multi-employer, multi-site interventions to demonstrate that interventions can be conducted and implemented at multiple sites and multiple companies and in both the public and private sector.

We must recognize that health promotion and health protection are integral in the

successful implementation of interventions. They are synergistic. We often go into work sites assuming that everybody that's in the work site is willing and ready to change. This is wrong. Many people exist and live in our society and they are constantly told that they cannot engage in any successful change, and therefore we must engage in both health promotion programs to bring everybody up to the same place, and then the health protection programs. They act in synergy. These are critical to provide the types of information necessary for systematic reviews.

We must ensure our valuable research dollars are effectively used by developing consensus on the outcome measures. When each scientific group uses different measures, we are faced with difficult challenges in research synthesis. We have just finished a research synthesis of the office ergonomics intervention literature, and unfortunately we were unable to integrate the scientific -- the published information into a single set of effect measures because there is no consensus on the outcomes used. We must have consensus and part

of NORA II has to be developing consensus panels on the measures to be used in large-scale intervention studies or we will not be able to leverage our science.

We must measure outcomes that are meaningful to all stakeholders, including measures of productivity and human burden of occupational injury. While there has been a clarion call for measures of objective productivity and measures of presenteeism, which I think are very important for many people, we must also remember many workers work with injuries and absorb a burden. So we must also capture the burden of those injuries on the individual worker, their family and the household. Those are a different set of measures. They need to be measured differently, but they're equally important.

We must transfer knowledge by conducting systematic literature reviews that meet acceptable scientific standards for research synthesis, but also answer questions that are relevant to all stakeholders. To produce a literature review which answers a question which a group of scientists find interesting

but nobody else finds interesting is really not enough anymore. We must engage stakeholders in the questions that we answer in our literature reviews. We have just finished one on office ergonomics and are just starting one on nursing homes, and liter-- systematic reviews provide a public face to our science. And we must be engaging in them in a continuous process where they get re-reviewed every other year, and this is the type of knowledge that allows us to engage in work with workers.

Zero? Okay, let's see, one last comment. We must recognize that employers and labor are not passive receptors of scientific knowledge, but active agents of change that should be studied. We have left this organizational context out of most of our research, and I would just remind you all that if you go back to Barbara Silverstein's original paper on force and repetition, the exposure effect was equally as large as the five plants that were implemented as indicator variables in the studies, so there's something going on at the plant level that matters. And we should be studying that context because how we -- understanding that

will help us succeed in doing interventions. Thank you.

DR. FELKNOR: Thank you very much, Dr. Amick. I'd like to check -- before we move to the next panel -- with any NIOSH staff to see if we've had any additions to this panel? None that we know of? One? I'm sorry, Sid, you're going to have to register if you want to speak.

DR. SODERHOLM: Get my noisemaker turned on here. I have one -- one request. I had asked that if anybody would like to put in their written comments to please do that by giving them to us here at the front or at the registration desk. Our transcriptionist is finding we're using some terminology, and some acronyms especially, that is going to be very difficult to accurately collect and reflect in the transcription so he's asking -- we're asking if you could -- if you have written comments to please leave us a copy. You can check with the registration desk if you, you know, absolutely only have one copy. Maybe we can get a copy made. And so we're asking those who speak and had a written -- to please leave us a copy to help with the transcription. And

I am not aware that anyone has been added. I don't see -- (Unintelligible), has anyone been added this session? Okay. Let's see, what's the -- Vanna White, is this what we're doing here?

UNIDENTIFIED: (Off microphone) Just one (unintelligible).

DR. SODERHOLM: Okay. So any time would be okay for this person? Oh, at the end, Chip Carson.

DR. FELKNOR: Okay. Then moving into our next panel of presenters for the morning session, if you would please move a little closer to the front of the podium, that will save us some time -- Dr. Arnold Schecter, David Coultas, Michelle McHugh and Dr. Lawrence Schulze. And we'll begin with comments from Dr. Arnold Schecter, if you would please come forward.

DR. SCHECTER: Thank you, Dr. Felknor. Much of the -- I am an occupational medicine physician also. I work and teach at the University of Texas School of Public Health, Dallas Regional Campus. I want to talk to you about brominated flame retardants, worker safety and health. Brominated flame retardants, especially

polybrominated diphenyl ethers, are widely used in the United States to reduce fire injuries. They are found in television sets, computers, fax machines, in some textiles, styrofoam in chairs and mattresses and in carpet paddings. These brominated flame retardants are currently found in all people studied in the United States, whether blood, milk, fat tissue or fetal liver.

Levels of one of these types, the polybrominated diphenyl ethers, or PBDEs, are orders of magnitude higher in the US than found elsewhere worldwide. High levels have been reported in U.S. household vacuum sweepings and on office computer and computer monitor wipes. There is both structural and toxicological similarity of PBDEs to PCBs. Animal studies with PBDEs show similar health outcomes, cancer, reproductive and developmental toxicity, endocrine disruption and central nervous system alterations. No human health studies have been published at this time. The only occupational study worldwide is from Sweden. There are no U.S. studies on worker safeties. Worker studies in Swedish electrical

recycling workers showed elevated PBDEs in the blood of workers. After worker protective measures were instituted, levels decreased. The elevated PBDE levels reported in exposed Swedish workers, the exposed Swedish workers, were lower than the general population levels for the United States.

It is believed that some U.S. workers are at risk from PBDE and other brominated flame retardant exposure. Exposure and health studies are urgently needed to document exposure and possible adverse health consequences from such exposures, as well as to take preventive measures.

Workers at risk include those involved in manufacture of brominated flame retardants, including the one type that's still being manufactured in the United States; those involved in putting brominated flame retardants on or into electronic, textile, styrofoam; those involved in recycling such materials; first responders, such as firefighters, police and emergency medical specialists; as well as garbage disposal and incineration workers.

Since PBDE levels in humans have gone from not

detectable in the 1970s in the USA to the highest in the world in the early 2000s, while at the same time dioxins, dibenzofurans* and PCBs have declined -- government regulations are working with respect to these persistent organic pollutants -- that it is of considerable urgency to determine which exposures (sic) are exposed, how such exposures can be decreased, and what the health consequences are of worker and general population exposure.

Hopefully NIOSH, the National Institute of Environmental Health Sciences and EPA, along with partners in university and industry can work together to decrease this potential human health hazard. Thank you.

DR. FELKNOR: Thank you, Dr. Schecter. Dr. David Coultas from the University of Texas Health Science Center in Tyler. Good morning.

DR. COULTAS: Good morning. Thank you. Again, my name is Dave Coultas. I'm a pulmonary physician and chairman of medicine at the University of Texas Health Center at Tyler. As a pulmonary physician and epidemiological researcher I've had a longstanding interest in

occupational and environmental lung diseases, health disparities and prevention of chronic lung diseases.

During my training as a pulmonary physician over 20 years ago, my perspective on occupational lung diseases was largely limited to the classical dust-induced diseases from inorganic dust, including asbestos, silicosis and coal workers' pneumoconiosis, and organic dust such as farmers' lung. Subsequently my knowledge about occupational lung diseases was greatly influenced by my clinical and research work with miners in New Mexico and Colorado. Over the past 20 years we have learned that many more workplace exposures are associated with a much wider range of acute and chronic lung diseases than these classic dust-induced diseases. Occupational exposures are associated with non-malignant diseases such as asthma, chronic obstructive pulmonary disease known as COPD, and idiopathic, quotes, interstitial pneumonias and malignant respiratory diseases.

First, chronic airflow obstruction from asthma and COPD has huge public health and economic

impacts in the U.S., and a substantial proportion of morbidity from chronic airflow obstruction is attributed to workplace exposures. Of the over 16 million adults with asthma in the U.S., up to 33 percent of over five million are estimated to have work-related asthma, either caused by or worsened by exposures at work. And of the 12 million persons -- estimated 12 million persons with COPD, growing evidence over the past ten years strongly suggests that up to a quarter, or about three million of COPD may be attributed to workplace exposures. In addition, of all the causes of death in the U.S. such as heart disease, stroke and cancer, COPD is the only one with rising rates of mortality in the U.S. While these estimates for the number of persons affected by chronic airflow obstruction from workplace exposures are large, these numbers are probably underestimated because the true number of affected persons with asthma and COPD are frequently under-diagnosed. Furthermore, the proportion of persons with chronic airflow obstruction affected by workplace exposures varies between racial and ethnic groups,

estimated at 22 percent among whites, 23 percent among African-Americans, and strikingly 50 percent among Mexican-Americans. A wide variety of workplaces have been associated with increased risk for chronic airflow obstruction including the armed forces, rubber, plastics and leather manufacturing, utilities, textile product manufacturing, construction, metal and automobile manufacturing, food product manufacturing, and agriculture.

Well, the -- now, switching gears from chronic airflow obstruction to the chronic fibrotic lung diseases, including asbestosis, silicosis and coal workers' pneumoconiosis are among the classic occupational lung diseases, there is growing evidence that other fibrotic lung diseases also may be associated with other occupational and environmental exposures. For example, the "idiopathic" interstitial pneumonias, chronic pneumonias with no known cause, may in fact result from a wide variety of occupational and environmental exposures including farming, metal and wood dust exposure, silica and cigarette smoking.

In a meta-analysis that I conducted recently of

six case-control studies of idiopathic pulmonary fibrosis, also known as IPF, the population-attributable risk for cigarette smoking was estimated at 49 percent, and 20 percent for farming.

While the idiopathic interstitial pneumonias are not as common as asthma and COPD, there's no effective therapy for IPF, and this evidence suggests that there may be an opportunity for prevention.

Similarly, effective treatment for lung cancer -- switching gears again -- is very limited and prevention offers the greatest hope. Nearly 60 agents found in a wide variety of workplaces are established or suspected human carcinogens, and it's -- the estimated attributable risks range from five to 35 percent, and it is estimated that in the U.S. over 16,000 lung cancer deaths may result from occupational exposures.

So in summary, we have strong evidence that combined chronic respiratory diseases from workplace exposure in the U.S. result in a substantial public health burden. Moreover, workplace exposures that cause respiratory

diseases disproportionately affect non-white and lower socioeconomic populations who have traditionally been overexposed in hazardous industries.

Thank you very much.

DR. FELKNOR: Thank you, Dr. Coultas. Our next presenter is going to be Michelle McHugh, doctoral student, School of Public Health -- one of my students who's accounted for during her health and safety program management class; thank you, Michelle.

MS. MCHUGH: I swear I'm not doing (unintelligible) --

DR. FELKNOR: I see the rest of you. I just want you to know that.

MS. MCHUGH: Good morning. My name is Michelle McHugh and I'm a doctoral student in Environmental and Occupational Health Sciences here at the University of Texas School of Public Health. I'd like to thank NIOSH for coming to Texas to gather our contributions for the second National Occupational Research Agenda. I'm pleased to say that this is my second time participating in NORA, having been on the other side of the microphone in 1995

when I helped organize the town hall meeting in Seattle, Washington with staffers from Dr. Rosenstock's office.

I would like to focus my comments on answering the question of how I can make a difference for workers. Without the graduate traineeship I receive in industrial hygiene through the NIOSH Educational Research Center we have here at the University of Texas School of Public Health, I'd have to say not as big as I would like. My comments today focus on the importance of continuing to fund the 16 NIOSH ERCs located throughout the United States. Funding for these centers to train occupational and environmental health specialists through graduate-level academic programs and continuing education courses is vital to conducting the research that will reduce work-related illnesses and injuries, as well as the promotion of safe and health workplaces. I need to caveat that and say the research and practices.

I've had the opportunity to directly benefit from two of the ERCs in the last 12 years. My first association was as the program

coordinator for the University of Washington's occupational and environmental medicine residency program, and later as a continuing education coordinator in the Northwest Center for Occupational Safety and Health. Both programs are components of the University of Washington's ERC.

My time at the University of Washington introduced me to the field of occupational health and safety, and ignited my desire to work to protect the health, safety and well-being of those in the workplace and community. While at the University of Washington I truly worked with professionals dedicated to this mission, and their commitment to the field is what led me to pursue graduate-level training in occupational and environmental health.

My second association, with another ERC, is through my funding as a doctoral student in industrial hygiene at the University of Texas Southwest Center for Occupational and Environmental Health. My NIOSH-funded traineeship enables me to focus on a field that is truly my passion, and contribute to progresses in occupational safety and health.

I am able to work and learn from another set of professionals equally as dedicated as those I worked with in Washington.

In closing, I sincerely hope NIOSH will continue to fund these centers, as the individuals trained in the graduate-level programs and continuing education courses are going to be the ones who can answer the questions posed here today: Who is at most risk? How serious is the issue? What research is needed? Who are the stakeholders and partners, and how we can make a difference.

Thank you.

DR. FELKNOR: Thank you very much, Michelle. I'd like NIOSH to know that that was a self-initiated presentation. And now Dr. Lawrence Schulze will talk to us about ergonomics, petrochemical industry.

DR. SCHULZE: Actually I'm -- I'm splitting; I have a split personality today, so if you could give me a zero after the first one, then a second one. I have two topics, actually. You can look on your list.

I'd like to thank Director Howard for the opportunity, sir, for putting this together,

School of Public Health. I'm Lawrence Schulze. I'm from the University of Houston and the School of Public Health. I'm an adjunct professor here.

My first topic is regarding the petrochemical process workers on the heel of Ron Sokol. I'm not sure which sector this fits into. You may consider a ninth sector as the petrochemical industry.

The average age of a petrochemical process worker in the United States is about 55 years old, predominantly male, predominantly overweight or obese, and deconditioned. Injury distributions are about 50 percent back injuries, 20 percent shoulder, 20 percent wrist, and about ten percent head, face and neck injuries.

Where do these injuries come from? The most common factor is opening and closing manually-operated valves, either by hand or by using -- the most common is either a pipe wrench or the new aluminum valve wrench. When putting an aluminum valve wrench on steel, aluminum loses out, they tend to slip. And then there's reaction forces that the worker has to deal

with.

We conducted a pilot study funded by NIOSH -- thank you very much -- looking at rotational force capabilities of males and females between the ages of 35 and 55. We simulated the opening and closing of valves using actual valve hand wheels, heights taken from the workplace, using a rotational force transducer that allowed us to adjust height, pitch angles, et cetera. We also compared these results to standards that are published by the American Bureau of Shipping, published in books by Kodak, Van Cotton, Kincaid, which is typically the most referenced references that people use for designing workplaces, and compared the 35 to 55-year-old data to the data in these standards which was collected on 18 to 24-year-old military personnel straight out of boot camp.

What did we find? We found that every measurement that we took for pitch angle, height and distance was nowhere near the capabilities of these young workers that we have established as our standard.

What do we need? We need to collect data from

workers, the deconditioned worker out in the workplace. We don't have any of this data. We need to do that, or we're designing systems for 18 to 24-year-olds that 55-year-olds are working. I don't know about you, I'm 48 and I know I can't do what I used to be able to do at 18.

So my next topic. This is healthcare related, and because I was told I couldn't do one in the morning and one in the afternoon, I'm doing this in the morning. This information is fundamentally related to many of the healthcare presentations that you're going to hear this afternoon.

New demographics addressing the nursing shortage in the United States is being affected by Filipino, Indonesian, Malaysian populations, as well as Latin American populations. These Latin American populations happen to be mostly from Costa Rica, Honduras and Nicaragua.

What does that mean? This is similar to what we saw in the early '90s, for those who have been in the healthcare industry around the Texas Medical Center back then when we had a nursing shortage crisis. We had an influx of

nurses from other countries, which essentially brings down the average height of the workers. What do we know also that's going to happen in the next ten years? About roughly 65 percent of the U.S. population is going to be 55 years or older. Here comes the baby boom population. What do we also know? That for women the average dress size in 1989 was eight, and now it's 16 to 18. Which means that our populations are heavier -- that's from the textile industry, by the way. Our population is -- two-thirds of our population is overweight or obese.

What does that mean for someone who is five foot tall or five foot two trying to move a patient that's 165 pounds? You have the potential for musculoskeletal injuries that you're going to hear about, other injuries, back injuries -- and we know the lifetime back injury rate for nurses is 80 percent. Some -- 80 percent of the nurses will suffer some type of back injury in their career. What does that mean for the shorter-statured worker?

We've also looked at the data that we've been using for years, the NASA 1024* standard, which

by the way, the most popular standard that we use. And we've also looked at the CAESAR data, the Civilian Anthropometric and European Surface Anthropometric Resource, that was funded partially by the government and military, the car makers and the textile industry. CAESAR has 2,400 usable individual people in it. When you stratusfy (sic) that data by the socioeconomic level that they talk about, age and gender, you roughly get 15 people per cell.

So what did we decide to do? One of my students getting her master's degree is from Peru, so she decided to collect some data on Latin American nurses. She'd collect data for 30 nurses and compared it to that 15, and what did she find? She found that no anthropometric data point matched any of the CAESAR data. So we are using CAESAR data -- the car industry, the textile industry, the patient industry like the Hoyer lift, et cetera, for all equipment being used, and they're using the CAESAR database. Doesn't match what's out there. We've got a problem.

Also on top of that, the human factor's an

ergonomic society and you hear the United States has endorsed the use of the ISO-7250 standard, which is the European standard for anthropometric measurement. By doing that it negates many of the data points that we're using in the CAESAR database or in the NASA 1024 database -- any database pre-2000 negates and makes them obsolete.

What do we need to do? We need to collect some real data on real people that are out there in the workforce. Not the people who volunteered, like myself, to go get measured for the CAESAR database. We need to measure nurses. We need to be designing the workplace to protect the nurses, using real nursing data from real nurses, not from the general U.S. population because that population does not appear to match the data that we're using to design.

I'd like to thank you for the opportunity for this short brief moment to present these two -- what I feel are very important issues with the petrochemical process industry, as you know, and also with healthcare topics that you'll be hearing more about this afternoon. Thank you very much.

DR. FELKNOR: Thank you, Dr. Schulze. Christy -- Christy, do we have any additions to this panel that you know of? No? Okay.

Moving on to the next group of speakers then, I'd like to ask John Johnson, Luke Metzger, Lawrence Whitehead, David Dedrick and Chip Carson to move closer to the podium if you're sitting in the back of the auditorium. And we'll begin with comments from John Johnson. Mr. Johnson?

MR. DEDRICK: No, but I did happen to talk to him this morning and he's not going to make it.

DR. FELKNOR: Okay. And you are?

MR. DEDRICK: I'm Dave Dedrick.

DR. FELKNOR: Okay. Is Luke Metzger here?

(No responses)

No? Lawrence Whitehead? Dr. Whitehead.

DR. WHITEHEAD: Okay. Good morning. My name's Larry Whitehead and I direct the industrial hygiene program here at the Texas ERC. I spend a lot of time in national academic activities, various committees and such, where the programs try to figure out what it is we're doing as we educate industrial hygienists, but the data also suggest that we still need industrial

hygiene education and graduates, but should be broadening the scope of that education. Graduates in environmental science in schools of public health dropped by 29 percent in the ten years 1994 to 2004, according to the Association of Schools of Public Health. Many industrial hygiene programs observed the same pattern. Other public health majors were steady or grew in number. So why is this? Well, no one in the various school programs is completely sure. Answers most likely include lack of awareness of graduate study in environmental and occupational health among the undergraduates who might be coming here; not realizing the jobs exist, although I tend to doubt that many undergraduates are aware of the IH job market directly; an increase -- and I think this is a big one -- in attractive jobs in other areas. For example, the growth of molecular biology has suddenly made biology majors look very seriously into that direction, and there is a lot of employment. And perhaps reduction in social focus on environmental issues.

To address these issues among undergraduates

the American Industrial Hygiene Association recently published a video on the profession that's really very good, as well as a PowerPoint and a number of print materials, all of which they have available on-line and have distributed to the identifiable academic programs in the country for industrial hygiene. The schools are present on the internet, as they must be, but they need to be efficiently found by search engines. That's our problem to figure it out, but we're working on it. Our ERC and our Division of Environmental and Occupational Health Sciences, for example, have redesigned our web sites, and also this fall e-mailed information on our programs to just about all the science departments we could find and student clubs -- which is a useful means -- in biology, chemistry and pre-med at approximately 25 four-year colleges and universities within a reasonable driving distance because we offered to speak at these and made about a half-dozen campus visits. We're just getting started on figuring out how to recruit (unintelligible) graduates. You'd think -- been doing it for 20 years. No, we

really didn't need to in industrial hygiene, and now we have to figure it out. We'll know very soon if the applicant pool was increased. There are jobs in industrial hygiene, but the situation is complex. Many industries have mature occupational health programs but basically have only a replacement employment market that is not expanding or is shrinking somewhat. Consulting appears to also be at a replacement level.

Why do I mention that? Well, a third of hygienists are consultants. The IOM/NIOSH monograph, Safe Work in the 21st Century, discussed the need also for occupational health services in the service industries and in small and medium-sized businesses which is not being addressed. I don't think that's solved yet. Data suggest the job demand is changing. A thesis here by Virginia Rodriquez examined trends in utilization of Certified Industrial Hygienists since 1990. The number of active CIHs is down about five percent from its peak just a few years ago. This may not yet be a trend, but it's the first substantial drop in almost 20 years. Consultants make up about a

third of the profession, but that group has leveled off.

Industries that traditionally need many hygienists show little or no growth -- excuse me -- little or no growth in the numbers of hygienists, or are shrinking, and these include chemicals, refining, insurance and transportation equipment. For example, Ford this morning announced cutting 14 North American plants in the next few years, and 25,000 to 30,000 jobs over roughly the period 2007 to 2012. Only the industries of, quote/unquote, consulting and educating -- and educational services were both among the top ten in numbers of hygienists in 1990, and have grown at at least five percent per year on average since then. But consulting is now flat. It depends on everyone else needing industrial hygiene services, and that's gone down.

So where are we? Manufacturing demand is flat, averaged over the last 14 years. Some major industries are dropping. Industries that utilize consulting are not currently expanding that need. The service sector grows, but in

most portions of this sector, one IH supports many more workers than in manufacturing. Possible exceptions to this include educational services and healthcare services.

Okay. In closing, industrial hygiene is changing. Our education includes more safety, environmental and management content. These are converging. Traditional industrial hygiene I think is shrinking if you define it the way it's been defined for 50 years. But as we redefine what it means to practice a broader field, I think industrial hygiene will not be shrinking, but it will be changing, and the academic programs need to figure this out. NIOSH training will continue to be vital to this future, as it has been for 30 years. Thank you.

DR. FELKNOR: Thank you, Dr. Whitehead. And now we'll hear from David Dedrick from the Linbeck Group to talk to us about the construction industry. Mr. Dedrick?

MR. DEDRICK: (Off microphone) Thank you to NORA for putting this on and NIOSH for attending.

(On microphone) I probably don't need this

because I spent 20 years in the Marine Corps --
DR. FELKNOR: But the trans--
DR. SODERHOLM: (Off microphone) (Unintelligible)
MR. DEDRICK: I understand. I'll stay in the vicinity. All right?
How are our workers getting hurt in the construction industry? We looked at this problem within our company and did a little bit of research. We took three years where 100 injuries had occurred, and we analyzed how they got hurt. And I've also subsequently done this in several other construction companies or in conjunction with them, and I'll offer this graph in evidence that -- it's of -- where -- how injuries occur in the construction industry. What it says is 84 percent are primarily behavior. The employee knew better, but he chose to do something different. Another 12 percent of those involved a behavior and a condition that caused him to get hurt, and generally speaking that's where the most serious injuries occurred. And only four percent of our injuries were conditions or miscellaneous type injuries that we couldn't

quite account for because of the data may be in improper reports. But I found this to be within five percent of all the five different -- four or five different times we've done this. So this kind of tells me that maybe measuring -- and please, don't anybody take offense by this -- the amount of sand that we breathe every day is not where we need to spend out time, but maybe in how to get the worker to want to work the way we train him to work.

We analyzed our incidents and came up with a graph showing where people got hurt. The highest frequency came in eyes on their path, not looking where they were going, making a quick step first before they thought about it or planned it. Line of fire, getting between a fixed and a moveable object. And lifting and carrying was probably one that maybe needs a little more work, but the person knew how to lift; he just chose to bend his -- bend at the waist as opposed to bending the knees. He knew -- he knew how to lift. When you'd ask him, he'd say yes, but it didn't look that heavy so I just picked it up. Okay?

Does this work in the construction industry? I

spoke of behavioral safety now back in October, and I knew I was going to get that question so I put together a few statistics. We invoked a behavioral safety system where we do have workers doing observations of one another and giving one another feedback and developing the communication at the job site level. And being (unintelligible) behavioral safety now, I thought I'd throw them a curve ball and I said Tom Krause doesn't know anything about workers getting hurt. And -- my God, I don't want to say this; I'm having one of those moments -- Scott Geller's a fool and the consultant that we used to develop our program, Terry McSween, doesn't know how to spell safety so he calls it value-based safety.

We did our first observation and feedback session on the 15th of July, 2003 and we had three pilot projects for the remainder of 2003 that were doing behavioral observations. We had 272 observations per month during that -- remainder of that year at only 37.6 percent participation, but they were 97.3 percent safe. 2004 we rolled it out across the whole company to see how it would work across a commercial

construction company. Okay. We turn over employees about as fast as anybody -- let's just put it that way; I'll be polite with this crowd -- and in 2004 we jumped up to 784 observations per month at 58 percent participation across the whole company, and 97.5 percent safe.

2005 up through the beginning of the conference I ran it per month again and we jumped even farther to 876 observations per month with 73.1 percent participation, and a rate of 97.8 percent safe.

These numbers seem to indicate that the workers will do this, even in an environment where it had never been tested before, the commercial construction environment.

Is this important to us? Well, from my perspective, 18,179 times safety was talked about on a Linbeck project by peers. And to me, that's important.

DR. FELKNOR: Thank you very much. And now we'll hear from Dr. Chip Carson.

DR. CARSON: My name is Chip Carson. I'm a faculty member here at the UT School of Public Health in the Southwest Center for Occupational

and Environmental Health. I'm also the director of the occupational and environmental residency program housed here at University of Texas in Houston. I'm the incoming director of the National Association of Occupational Medicine Residency Directors. And I am myself a recipient of a NIOSH traineeship during my doctoral training at another ERC in Cincinnati some years ago, and have benefited greatly from that.

What I'd like to talk to you a little bit about today is education of occupational health professionals and the needs we have for that -- a continuing need.

Recent reviews, analyses and published opinion papers have pointed out there is a dramatically-changing landscape in occupational health practice in this country. It's very different from what it was back in 1970 at the passage of the Occupational Safety and Health Act and when the concepts of the roles of occupational health professionals became really fixed.

Injuries and illnesses in the American workplace are addressed by a number of systems.

One of those notable of course is the workers compensation system. Well, who staffs the workers compensation system in terms of occupational health professionals? It's primarily primary care professionals -- primary care physicians, nurses --with no occupational health training -- retired surgeons, various other professionals who get into this who have really no formal occupational health training. So where are all our occupational health trainees going? They're being absorbed by the system to perform management, administrative, oversight functions for programs within industry or the healthcare industry, as well, or in academia -- which is a true need -- but they are not able to provide services. And this is because there are so few of them. There's been an identified shortage for many years of occupational health professionals, and this continues to exist. And very few of them are now getting directly into occupational health practice.

These trained people are now absorbed to do designing, monitoring and directing of the programs that are in existence, and to manage

those programs that exist. This defines a true manpower shortage in occupational health professions. The shortfall comes in part from the limited funding for training that's provided in this country, most of which is provided by NIOSH and I think this agency deserves a great gratitude from us for being able to consistently provide such funding. But it's not enough, and it's not doing that job that we need to do and the job that we have consistently, in writing, identified as a big need for this country.

It is critical in our future to generate scientifically-valid needs analysis and productivity research to highlight not just the need for occupational health professional education, but also its value to our country as a whole, to its value to the productivity of business, and to its value for the maintenance of health of our human resources.

The American workforce is a prime laboratory for this kind of research. Practice-based research is an ideal mechanism for generating this kind of information, and there is also an opportunity for which we as occupational health

professions are in a unique position to provide translational research for basic science research that is being generated in the academic setting, and put that into practice in the workplace in saving lives, preventing illness and injury.

I think we should take advantage of this to generate the necessary research that will provide a background to show this value, will leverage additional training elsewhere with currently existing funding in occupational health content, and establish liaisons of research agenda between not only NIOSH and practicing occupational health professionals, but also basic science research throughout the United States. Thank you.

DR. FELKNOR: Thank you, Dr. Carson. Do we have an additional speaker?

(Pause)

Has Luke Metzger arrived?

(No responses)

No. Okay. Next we will hear from Mr. Bronson Frick. Mr. Frick, are you here? No?

UNIDENTIFIED: (Off microphone) I'm not sure.

DR. FELKNOR: Okay. Mr. Frick? No. Okay.

Well, is there anyone else who would like to speak this morning?

(No responses)

Then we'll take a short break -- why don't we do that. It's about ten of 10:00 (sic). Why don't we take a ten-minute break and we'll reconvene back here at 11:00 o'clock.

(Whereupon, a recess was taken from 10:50 a.m. to 11:05 a.m.)

DR. FELKNOR: We're ready to reconvene, please. We have at least one more speaker for this panel this morning, and we're also wondering if Luke Metzger has arrived from Austin. Mr. Metzger, are you here?

(No responses)

Okay, if we could get back to our seats, please, so we can continue, we're in the home stretch of the morning session. And we're going to hear from Mr. Bronson Frick, who's just come in from the airport. Mr. Frick.

MR. FRICK: Hi, thank you very much for folding me into the schedule. My name is Bronson Frick. I'm with the organization called Americans for Non-smokers' Rights. We're a national member-based organization

headquartered in Berkeley, California. Our sister organization, the American Non-smokers' Rights Foundation, is our 501(c)(3) arm that does public education around a smoke-free workplace policy and the benefits of smoke-free air.

I'm here today to encourage NIOSH and NORA to conduct further research into occupational exposure to second-hand smoke. This research is incredibly important for helping point the way to solutions to that problem in a variety of workplace settings. Although many workers throughout the country are now protected from second-hand smoke, thanks to either corporate policies or the growing number of smoke-free workplace laws and ordinances, many other workers are left behind, particularly those in the manufacturing sector or in the hospitality sector, especially venues like casinos, restaurants, bars, bowling alleys, hotels and pool halls. Those workers are typically left behind, and they have one of the highest cancer rates of any occupational sector in America. According to the Centers for Disease Control, at least 38,000 Americans still die every year

due to exposure to second-hand smoke, and thousands more suffer disease. It remains a leading cause of preventable death -- leading cause of preventable death and disease in the United States, and it's all too preventable. The new 2005 California EPA report now finds a causal link to breast cancer in pre-menopausal women from exposure to second-hand smoke. The California Air Resources Board will be voting in a couple of weeks to -- whether or not to make -- classify second-hand smoke as a toxic air contaminant, putting it in the same category as diesel fumes, so that relates to NIOSH's mission.

ASHRAE, the American Society of Heating, Refrigeration and Airconditioning Engineers, which is meeting right now in Chicago, they issued a board policy statement in 2005 reaffirming that ventilation systems are not a solution to second-hand smoke because there is no known safe level of exposure.

The U.S. Society of Actuaries issued a report in 2005 finding that second-hand smoke costs the U.S. economy about $10 billion a year in lost productivity and higher healthcare costs,

so it remains of vital interest to the economy for having a healthy workforce -- a healthy, productive workforce and a way to control spiraling healthcare costs.

NIOSH is prepared to do air quality and second-hand smoke-related studies in two casinos in Law Vegas this month -- I believe it's this -- actually this week -- based upon the complaints of two casino workers that were exposed to second-hand smoke and -- so we're grateful for NIOSH -- for responding to their complaints. Unfortunately the casino workers have been fired for having filed the complaint with NIOSH. After the original two filed their complaint, 200 other casino workers joined in the complaint and so the casinos obviously have acted against the original two as a way to scare off other workers.

Other workplaces -- like I said, factories, we still hear about like car manufacturing plants where people smoke on the line, and particularly other kinds of hospitality sectors. Our organization receives calls every week from casino workers, bar workers, they're hospitalized because of their exposure to

second-hand smoke. But they're caught in this awkward place where if they quit their job then they're not able to feed their kids, or they might become homeless or unemployed.

Okay. So that's all I have. So thank you again to NIOSH for looking into the ongoing problem of occupational exposure to second-hand smoke. And we greatly value and appreciate your research that helps to quantify the health problem and point the way to solutions. Thank you.

DR. FELKNOR: Thank you, Mr. Frick. Has Luke Metzger arrived?

(No responses)

Okay. No? Any additional speakers for this morning's sessions?

(No responses)

Going once, twice -- okay. Now Dr. Levin is going to summarize the key points that we heard this morning. We want to thank all of the speakers and look forward to the summary. Dr. Levin.

CLOSING: JEFFREY LEVIN

DR. LEVIN: I'd like to add my thanks to the speakers, as well. What I'm going to just try

to do is take a couple of minutes to hit the high points of what we thought we heard this morning. We'll start with NORA, the town -- this is -- the town hall meeting is an important part of the process to define our agenda -- and I think there's an emphasis on "our" agenda -- in that this second decade creates an opportunity to retool our research for an R2P process that focuses on relevance, quality and impact. And that NIOSH's role in this will be to provide an infrastructure to nurture and prioritize research strategies and to spark the process of carrying through with the agenda.

Some specific top priorities that were mentioned, as you'll recall, are that culturally-appropriate interventions are needed to develop sustainable programs and partnerships; that enumeration is going to be an important issue, particularly among groups like migrant and seasonal farm worker populations, including youth, and looking at such things as the impact of working multiple jobs.

It was mentioned that we'll have to examine the

impact of agricultural work on health and propose partnerships among multiple stakeholders in order to conduct necessary research that'll be important to collect practice-based research and look for -- and I quote -- information in the right places; that it'll also be important in various areas of industry to evaluate best practices, share them throughout industry, examine the effectiveness of process safety and ensure compliance to protect contract workers. And then it was also mentioned that scaling up intervention standards and developing consensus standards for measuring outcomes will be an essential part of the process.

There was a good deal that was mentioned about education of the occupational health workforce. To summarize about that, the need to stimulate student interest in areas such as industrial hygiene as that -- as that area is redefined, to focus on addressing the shortage of practicing occupational health professionals and emphasizing the value of occupational health practice.

There was some specific mention about

conducting worker studies of health effects related to exposure to polybrominated diphenyl ethers and its widespread use in industry, and to also look at the many workplace exposures that increasingly have been associated with a wide array of pulmonary diseases that merits ongoing research.

Finally there was mention that it would be important to collect data from current workers to establish occupation-specific ergonomic and equipment standards. We heard at the end of our session this morning that there is needed emphasis to study ways to help workers behave and work more safely, and the need to develop pilot methods to try to do that. And then finally, as you just heard, ongoing research needs to evaluate occupational exposure to second-hand smoke. So quite a wide array of topics, but some recurring themes regarding partnerships, education, training and the like.

DR. FELKNOR: Thank you, Dr. Levin. I'd like to add two other points to the summary, and one is the recurring theme of the disproportionate distribution and burden of occupational illness and injury as it falls across different

demographics, whether the demographics are by race, ethnicity, obesity, age, gender. And I think we heard that in a variety of sectors that presented.

And also to highlight the comment that was made by Dr. Amick is using the NORA -- the next decade of NORA as an opportunity to develop consensus about the measurements that we're going to use, in addition to conducting the research. But -- but have that process bring us to a point of consensus. Let us know when you're able to do that.

So this morning's session was intended to be for a wide variety of different sectors because, as was noted early in the morning, this is intended to be a national research agenda. And we appreciate everyone's comments. Are there any other comments to be made at this time?

(No responses)

Dr. Lum?

FINAL REMARKS: MAX LUM

DR. LUM: Thank you. I'm Max Lum. I'm the communication lead at NIOSH, and I know people have thanked you for coming. I'm going to

thank you for staying and to urge you to come this afternoon and also hear the speakers that we have this afternoon.

But it's a pleasure -- my next chore here is to really thank both of the sponsors of this meeting. This is a lot of work, and the leadership that we've had here in Houston helping us to put this on has been terrific, and also at Tyler. This has been a -- really a long process, so I'd like to present the Southwest Center for Occupational and Environmental Health just a plaque -- let me read it for you -- it's for your leadership in organizing a town hall meeting for the National Occupational Research Agenda. We appreciate your dedication in advancing the safety and health of workers in your region and throughout the nation. Thank you very much.

And we're -- and we're still talking, so that's good, there's -- you know, at this point.

DR. FELKNOR: Wait until Tuesday.

DR. LUM: Yeah, right. And also to Jeff Levin, thank you very much, the Southwest Center for Agricultural Health, Injury Prevention, and Education again, I think, for your leadership

in organizing and help us with the town hall meeting. I think in the wording there's a couple of really key points, and I think that's in your dedication is clear and your support for us has really been unfailing. And the other issue is of course leadership. Thank you very much, Jeff.

Yeah, we'll reconvene at 1:00 o'clock. Can we come back at 1:00, if that's possible? We might begin just a tad early. And just let me ask one more question. I know there's someone in this audience that wants to speak, that's thinking no, I just don't have it together; I just don't have it quite together. So I'm asking that person, would they -- aha, there we go. Would you like to come forward, please? And if there are other folks, please, think -- this is a great opportunity. This information goes into the NIOSH docket. It makes its way to our researchers, you're -- you've come out today so please let us hear from you.

DR. DEFOY: Thank you.

DR. LUM: Yeah.

DR. DEFOY: Hi, my name is Walt DeFoy. I'm a disability medical director for Aetna Insurance

Company. I've come here through several channels, but the main reason I'm here is that I serve an advisory committee for Social Security through America's health insurance plans and I'm a member of the American psychiatric task force to develop guidelines for return to work assessment for behavioral health professionals.

We have reached a point in all of these areas where we don't know how to assess whether a person can return to work based on a behavioral health issue. That is, can they persist in a task; can they take supervision; can they supervise others; can they work collaboratively with coworkers. The need for the development of an assessment tool to evaluate these areas is extremely important, and I think it cuts across all the areas we've talked about today. But it's particularly important in returning to work and returning workers to work who have behavioral health issues.

That's important because now Social Security's behavioral health cases represent 50 percent of the new disability case log -- huge amount. In our organization behavioral health cases

represent about 12 percent of all disability cases, but they take up to 40 percent of our resources. So this is a major area. I'm hoping that NIOSH might be able to impact or help with a research agenda in this area. Thank you.

DR. FELKNOR: Thank you very much, Dr. DeFoy. Last call for Luke Metzger.

(No responses)

Okay. I guess we'll -- yes, someone's coming?

UNIDENTIFIED: (Off microphone) Come back at 1:00.

DR. FELKNOR: Come back at 1:00? We'll --

UNIDENTIFIED: (Off microphone) We have one more (unintelligible).

DR. FELKNOR: A third comment, Dr. Schulze?

DR. SCHULZE: (Off microphone) Yes.

DR. FELKNOR: Two and a half minutes this time.

DR. SCHULZE: Yes, ma'am. I work for her. One of the things I'd like to address is I used to have an occupational safety engineering program grant and recently lost that due to our university not hiring another faculty member, which was one of the major comments, that I was a one-man show. However, I think NIOSH needs

to reconsider this approach, simply because we can make up that difference -- if we cannot hire another faculty member -- through adjunct faculty members.

Mayor Consatti's* safety engineers' Gulf Coast chapter, which I'm the president of, we have 1,400 members in the Gulf Coast area, all within driving distance of our campus. There is a huge need for safety professionals with advance degrees. We cannot provide that in this area. The only place that they get to go is Texas Tech, and there's no school around here that allows us to do that in the engineering area.

So I think, and I would like to encourage NIOSH to reconsider their position about funding one-man shows. We were doing a great job. We had a lot of students that were interested in that. We still have students who are asking where they can go to get an advanced degree in occupational safety engineering, and the only place we get to tell them is to go to Texas Tech. And I don't know if you've ever been to Lubbock or not, but they're -- the industry availability in Lubbock for getting students to

see what's happening in industry and actually putting to practice research and activities where they can actually do something and get their fingernails dirty and their hands dirty is not that available in Lubbock. It is in Houston. We have lots of industry, have a wide variety of industry. We have healthcare, we have petrochemical process, we have manufacturing, food processing industries here -- we have the gamut, and I'd like NIOSH to reconsider that position. Thank you.

DR. FELKNOR: Thank you, and we'll adjourn for lunch and we'll reconvene here in the auditorium at 1:00 o'clock. Thank you, everyone.

(Whereupon, a recess was taken from 11:20 a.m. to 1:15 p.m.)

HEALTHCARE AND SOCIAL ASSISTANCE SESSION: INTRODUCTION TO THE SECTOR APPROACH

TERRI PALERMO, NIOSH

DR. FELKNOR: Good afternoon and welcome. The focus this afternoon is going to be the healthcare industry. Over 13 and a half million people work in the healthcare industry and we're located in what we're fond of saying is the largest medical center in the world.

Over 65,000 people work in the Texas Medical Center, so that's why you can't ever get parking.

Okay, please turn off your cell phones and your Blackberries and all of that to maybe help with the interference we were having -- help avoid the interference we were having earlier. And it's my pleasure to introduce this afternoon's moderator. Terri Palermo is public health advisor to NIOSH and is the coordinator of the healthcare and social assistance sector, and is going to give us an introduction to the focus of this afternoon's session and will moderate the panelists this afternoon. Terri?

MS. PALERMO: Thank you. And we've had a request that -- there's a lot of people from NIOSH here and not everyone knows those folks, so we would like the NIOSH people to stand and introduce themselves, so -- one at a time.

(Whereupon, the NIOSH staff members introduced themselves from the audience to audience members. However, since no microphone facilities were provided for speaking from the audience, the reporter was unable to capture their introductions.)

MS. PALERMO: Okay. Do we have everyone now?

MR. WEISSMAN: And I'm David Weissman. I am the manager for the healthcare and social services sector and will be working with Terri on this session.

(Pause)

MS. PALERMO: Sorry. Well, I want to thank each of you for being here today, and I will review the NORA history and the vision, for those of you who weren't here this morning, and talk a little bit about the plans for the second decade of NORA and how you can participate, and also to take a brief look at the NORA and social assistance healthcare sector.

NORA began -- or it's the National Occupational Research Agenda began in 1996 when input of over 500 stakeholders was provided to identify 21 occupational safety and health research priorities for the nation. NIOSH leveraged resources nationwide to support research in these priority areas, and we worked together to address the priorities.

And for the second decade of NORA we're using a sector concept. We know that industry

stakeholders are key to helping us knowing and to solving occupational safety and health problems. And the partnerships that we develop are key in making a difference of moving our research products into practice. And also industry and employee groups are part -- are organized by sectors, so we decided that a sector approach for the second decade was appropriate.

Industries are developed -- are grouped into eight sectors, and each sector will be using a NORA sector research council and stakeholder input to develop its priorities. And each will have their own separate research agenda and goals, and make plans to assure funding, develop partnerships, conduct the research and also adopt the successful strategies.

The NORA research sector councils will be made up of groups of people from many different organizations, and here are some of those that are listed. And NIOSH's role will be to promote the process. We'll also be providing research and surveillance to advance the plans and support the needs of the research council, as well as providing some funding for

extramural research and training.

And there are several ways that you can participate. You can provide your ideas and your input that will shape the agenda, and that can start today with today's meeting. And also volunteer to participate on the sector research council, as well as encourage your own organization to become involved. And the NIOSH healthcare and social assistance sector research council start up in spring of this year.

We'll take a quick look at the healthcare and social assistance sector, go over what groups are included in this sector, and what are some of the major injury and illness problems and what NIOSH is currently doing.

The healthcare and social assistance sector is classified as Code 62 under the North American Industry Classification System, and there are four major employer subdivisions, which you see here. And there's an estimated 16.7 million workers in this group. And in hospitals 5.7 million; health services, excluding hospitals, is 8.2; and social assistance is 2.8. And there -- under social assistance there's

several groupings and these are listed here with their estimated number of employees. And some of the major issues in this sector are accidents and injuries, and under that are MSDs, violence, motor vehicles, slips, trips and falls, adverse exposures such as chemicals, work organization, psychosocial issues and stress. And also infectious disease, which could be airborne or bloodborne, and we need better surveillance in order to know the issues as well as to be able to measure the impact. And to have evaluation of -- I'm sorry -- intervention effectiveness.

According to the Bureau of Labor Statistics, 15.9 percent of all non-fatal workplace injuries and 18.4 percent of non-fatal illnesses are occurring in the healthcare and social assistance sector. The number of cases are listed here in hospitals, nursing and residential care facilities, ambulatory care, services and social assistance. And -- and of the 14 leading industries that -- for illness and injuries, hospitals have ranked as number -- as one of the top three in the last three years.

And NIOSH is currently conducting research by their internal scientists by providing funding and support for external scientists and academic researchers. We're supporting a wide variety of projects cutting across healthcare and social assistant issues. We collaborate with other federal agencies in developing guidelines and recommendations for healthcare facilities, and also work across this -- other CDC centers who are involved in healthcare.

And we have a new emphasis in our institute on research to practice.

And there are a number of products that we've produced over the years, and there's a number of them in the back that you're welcome to take with you.

And there's several ways that you can provide input and also to get additional information.

We have a topic healthcare page on our NIOSH web site for more information about healthcare.

We have a NIOSH e-news that comes out monthly and there'll be continuing updates in that.

And you can offer input or volunteer through the NORA web page, and also you can e-mail Sid Soderholm, who is our NORA coordinator, with

any ideas that you might have.

And also in April we're having a NORA symposium in D.C. and we'd like to see -- see you attend that. And that is also on the web site and registration information.

Is there any questions?

(No responses)

And we have listed here David Weissman, who is the manager, as he said before, and I'm the assistant coordinator, and Jim Boyana*, who's in the audience, is the assistant coordinator.

HEALTHCARE AND SOCIAL ASSISTANCE SESSION: STAKEHOLDER PRESENTATIONS
MODERATOR: TERRI PALERMO, NIOSH

MR. WEISSMAN: All right. What I'd like to do now is we'll transition into the part of the meeting where you, the presenters, will be able to come and tell us, NIOSH, about key issues. For those who were here in the morning this'll be a repeat, but just a few housekeeping issues. We'll be calling up the presenters in groups, and when Terri calls out, you know, the names in your group, please come to the front of the room to facilitate interchanges between the presenters.

Each presenter will be limited to five minutes. Ann Berry* will be the timer and she'll raise

her hand like that when you have one minute left, and she'll raise it again at the end of your time. And I have the unfortunate position of having to enforce things, so I'll try to be good cop as much as I can, but I'll get schizophrenic and be bad cop if I have to be. And I think that covers everything. I would emphasize what Sid said earlier, which is that the point of the process is to hear what people's thoughts are and what people have on their minds, and to present what you're thinking rather than react to things that other presenters have said. So please refrain from criticizing others, but basically just speak what's on your mind and what your thoughts are about the issues.

And having said that, I'll turn things over to Terri.

MS. PALERMO: Okay, we would like to have the first group of speakers come up to the -- to the front of the room -- Barbara Smisko, Linda Lee, Melissa McDiarmid, Jim Kahar and Ray Hanke (sic).

And Barbara, if you want to go ahead and come to the podium, as well, (unintelligible).

MR. WEISSMAN: At the beginning of each presentation please state your name and affiliation. Thank you.

MS. SMISKO: Thanks for your invitation to comment. I'm Barbara Smisko, director of national environmental health and safety for Kaiser Permanente. We are a healthcare services on an in-patient and out-patient basis to over 8.3 million members in nine states and the District of Columbia. Kaiser Permanente includes over 12,000 physicians and more than 148 (sic) non-physician employees. We operate 30 medical centers and more than 430 medical office buildings.

In 2004 hospitals reported more non-fatal injuries and illnesses than any other industry, and healthcare retained the fourth largest non-fatal incident rate compared to other industrial sectors. We have identified three issues -- cultural, ergonomic and hazardous exposures. These issues cut across all the aspects of healthcare systems that include hospitals, medical office buildings, laboratories, pharmacies and radiology.

First the cultural issues of healthcare. We

have a good picture of what current injury risks are, although unique cultural challenges make reducing workplace injuries extremely challenging.

The biggest challenge is creating a culture of safety within the complex hierarchical structure. Healthcare is predominantly practiced by individuals with a high degree of autonomy, and a willingness and openness to give and receive feedback needed in behavioral-based safety programs is not the norm.

Creating a culture of safety in healthcare is also challenging because of a rapid and constantly-changing environment, with new priorities arising that take the spotlight off workplace safety. New regulation is quite frequent and can consume an organization's efforts.

Recent relevations (sic) about prevalence of medical errors have shifted more focus on patient safety, which may directly compete with worker safety. The link between healthcare occupational safety and health and patient safety will be a critical component of moving the two fields forward together instead of in

opposition.
The ability of an organization to maintain a productive and health workforce is becoming increasingly difficult in the United States. The aging workforce and the prevalence of chronic diseases resulting in lost productivity and higher costs to American workforce, including our own industry.
The second issue is ergonomics. Ergonomic-related injuries are a primary contributor to the overall injury rate in healthcare. Sixty percent of Kaiser Permanente's workplace injuries are related to strains and sprains, and ten percent are attributed to work-related musculoskeletal disorders.
In addition to existing ergonomic risks, new medical technologies and electronic data systems are being introduced at a faster rate than ever before, creating new and more numerous exposures.
The changing demographics of the United States population introduce new ergonomic concerns as well. More chronically ill and obese patients who may not be able to assist themselves need assisted transfers in greater numbers than

before.

The third issue is hazardous exposures and unknown hazards. Healthcare is unique in that not only are workers exposed to known hazards like chemical disinfectants and waste anesthetic gases, but there is also a possibility that exposure to an unknown biological respiratory hazard could occur at any time. Respiratory protection continues to be one of the most difficult safety programs to implement. Healthcare specific evidence-based science is needed.

There are challenges in evaluating exposures to known hazards as well. The research on exposure and health effects does not always move quickly, so in some cases we truly do not understand what the exposures actually mean to our employees.

There is substantial evidence that hazardous drug exposures during preparation and administration may be more prevalent than previously thought. However there are few established methodologies available to measure airborne or surface concentrations of hazardous drugs, and very little dose-response

information available to evaluate exposure data.

High level disinfectants pose similar exposure concerns, with new products being frequently introduced with little or no exposure data or sampling methodologies available to assist in evaluating potential health risks to healthcare workers.

In conclusion, healthcare faces many challenges in maintaining a safe and health workplace. The biggest challenge is creating a safety culture that is adaptable to the complex hierarchical structure and multiple priorities of healthcare. In addition, the industry needs to create new ways of reducing ergonomic risks and assessing hazardous biological and chemical exposures.

We appreciate the opportunity to comment on the National Occupational Research Agenda. Thank you.

MS. PALERMO: Linda Lee.

DR. LEE: Thank you. Good afternoon. My name is Linda Lee and I'm the executive director and chief safety officer at M. D. Anderson Cancer Center. And I'm also in the interim acting

associate vice president for patient care facilities for the institution.

M. D. Anderson has about 16,000 employees, faculty and staff, and about $2.5 billion of operating funds, 9 million square feet under roof, as well as about 1,200 research labs. So we have a pretty large facility and we, as environmental health and safety professionals, have some concerns and I think that they've been voiced in some aspects.

We're certainly concerned about personal protective equipment in relation to pandemic flu and emergency preparedness and availability should we have a flu outbreak in this country.

We're also concerned and would like to see some research on patients with infectious diseases and their exhalation from patient ventilators. There are filtrations on some of them, but some of them do not.

We're also looking at assessing chemical and biological hazards from exposures to manifolded exhaust systems. In the old days you used to have a dedicated exhaust system. Your lab went out. Now because of money and concerns, we have venti-- we have ventilation systems that

are manifolded together, except in the highest hazards of BL3* laboratories.

We're looking at infectious disease risk assessments for construction workers. We're continually under renovation. We're continually under modification. In many of those things we're looking at systems where employees are taking out old vacuum systems, old facilities that had one time been exposed to blood, body fluids, chemicals, et cetera. We're looking biological exposures to housekeepers, employees who go in for an isolation patient, looking at settling times. When should it be between the time a patient goes in, a patient comes out and housekeeping goes in? We look at 30-minute turnarounds on the rooms because we're at 100 percent capacity. What should those settling times be? We're also looking at education for healthcare workers to understand the subtle differences in personal protective equipment. What's the definition of a mask, what's the definition of a respirator? And many times those are being focused on by healthcare providers in infection control without a lot of degree of

understanding between the differences of those PPE.

And then finally, one of the drugs we have major concerns of course is Ribavirin. There's a lot of information out there on Ribavirin, but we continue to struggle with protective equipment, protective environments for patients, particularly pediatric patients where the parents want to be in the room during the treatments or the patient can't stay in the room during the treatment, what -- how and how should we protect the parents of the children and what is appropriate? We focus mostly on occupational exposures, but what about the non-occupational exposures from the patients and the visitors and their family?

I'd like to thank you for this opportunity today to address you and hopefully these things will be considered in your future research. Thanks.

MS. PALERMO: Melissa?

DR. MCDIARMID: Thank you. My name's Melissa McDiarmid. I'm with the University of Maryland School of Medicine's occupational health program in Baltimore. And my topic concerns

chemical hazards in healthcare. They're high risk and high hazard, but generally poor recognition as such.

It's counter-intuitive that the healthcare industry, whose mission is the care of the sick, is itself a high hazard industry for the workers it employs. This industry sector consistently demonstrates poor injury and illness statistics, among the highest in the U.S., while it employs about ten percent of the U.S. workforce. This suggests a large population at potential risk of health harm.

It is therefore most appropriate that NIOSH has chosen this industry sector to be included in the next generation of NORA activity.

While possessing every hazard class, the biologic and musculoskeletal hazards are those typically considered in workplace safety programs. However, under-appreciated are the diverse and novel chemical hazards also present in the healthcare environment in the form of sterilants, germicidals, industrial cleaning agents and pharmaceuticals, including the highly toxic anti-cancer drugs. Many of these drugs are themselves genotoxic, carcinogenic

and/or reproductive and developmental toxicants. In recent years they have been the subject of environmental monitoring campaigns, which have demonstrated troubling results, with widespread work area contamination observed. Responding to these observations, two NORA I teams, the control technologies and reproductive hazards research teams, joined efforts to sponsor an enormously successful working group of stakeholders affected by the use of hazardous anti-cancer drugs in healthcare. Working over four years, this group considered these new data, and proposed solutions and promoted them. In a splendid example of research to practice, this groups work resulted in the publication of the NIOSH alert on the safe handling of hazardous anti-cancer drugs in health care, with a national rollout in October of 2004. The work of the group, however, is unfinished and ongoing. As NORA II receives the baton of responsibility for the research agenda in healthcare for the protection of present and future healthcare workers, it is important to build on the strengths of NORA I and capitalize on its

legacy. The task will not be easy. Biases within the healthcare industry and the safety and health community collude to limit both the awareness of hazards which do exist, and the successful application of classical approaches used to assure safe jobs. The unique mission of healthcare also adds obstacles to our efforts in that self-preservation behaviors which normally may protect workers are suspended in a culture of selfless commitment to patient care. This erroneous either/or mentality must also be addressed by our safety and health community, and changed to a both/and outlook during worker training efforts.

While daunting in scope, it is critical that NORA II address the high hazard exposures of healthcare and specifically tackle this enlarging use of highly toxic pharmaceuticals. Already underway is an explosion of technology growth in pharmaceutical applications. Noteworthy here is that about half of the present nanotechnology applications are for pharmaceutical or other medical use. But again, due to this disconnect between the hazard recognition of drugs and the traditional

lack of safety and health expertise in healthcare settings, the growth in high hazard chemical use has not been accompanied by stepped-up safety programs in hospitals. Add to this the increasing frequency of complex care delivery moving outside of the hospitals to clinics and patients' homes. The migration of healthcare hazards enlarges the potentially affected population to those transporting these hazardous materials and to patients' family members as well. There are also patient safety issues suggested by gaps in safe handling practices of drugs and other therapeutic products.

The challenge for NORA II resides in continuing the vital safety and health advances of NORA I in this complex, highly technical work sector. A comprehensive culture of safety in healthcare must be crafted and promoted that allows the provision of life-saving therapies to patients while protecting and ensuring the health, lives and livelihood of the caregivers who treat them. Thank you.

MS. PALERMO: Is Jim Kaylahar (sic) here? I don't know if I'm pronouncing your name right

or not.

(No responses)

Okay. Hank Rayhee (sic)?

MR. RAHE: Let me step this up a little bit. Hello. Did that wake everyone up? I'm a little less vertically-challenged than most, so I'll try to get this up to the right size. My name is Hank Rahe, although it's one of the most mispronounced four-letter words in the language, and I'm technical director for Containment Technologies Group, which is a small company nobody's ever heard of. Historically I spent a short 30 years at Eli Lilly & Company. During the last eight years I had responsibility for developing and implementing containment technologies to deal with hazardous compounds. I was also part, and continue to want to be part of the hazardous drug group. And in those roles I wanted to share with you a little bit perhaps of experience through describing a journey. A journey starts with a definition of a pharmaceutical. All pharmaceutical compounds are hazardous. The issue is how much and how often, because if they weren't hazardous or

were not creating an effect, they would not have any benefit in society. So given the fact that they're all hazardous, what we need to look at is how much and how often, and how do we prevent that coming to -- inadvertently to people it's not intended to come to.

Looking down that journey it's also important to understand the delivery mechanisms for those compounds. Approximately 80 percent of the drugs that are delivered are delivered in what's called solid dosage form -- tablets, capsules, a little bit of powders. The others are delivered in what I refer to as parental or injectable drugs. And as Melissa indicated, there are a lot of new and innovative forms coming which have in themselves a high -- high level of hazard to them.

So to continue on the journey, let's take a brief look at drugs and how they're evolved or developed from discovery to delivery to a patient, and what happens along that way as they're developed.

I had the pleasure and pain of being involved with the committee at Lilly that established exposure limits for -- internally for workers

and will share in the brief minutes I have a little bit of that. But one of the important things in developing a drug was to determine whether it was therapeutically effective or not, because if it wasn't there wasn't any point in evolving the compound to a pharmaceutical product.

Once it was determined to be effective, the next issue was what levels is it therapeutically effective at, and what levels, if possible, is there no effect level. The purpose of the committee that I sat on at Lilly -- which involved industrial hygiene people, development, engineering -- was to look at those drugs and provide a safe level internally for the development -- or for developing facilities and handling techniques for those compounds. And as you can imagine, in the world of pharmaceutico (sic) we weren't talking about a 250 milligram delivery, we were talking about kilogram, so facilities have been evolved to safely handle these drugs to exposure limits.

In the developing of those engineering controls three things are identified in OSHA and pretty

well practiced are the means of control -- engineering controls, work practices and personal protective equipment. Also to go with that is monitoring, because if you don't know where your journey's going to, you don't know where you've been. So you need to monitor not only the workplace for safe exposure levels, but also the people that are involved in that workplace. So developing those strategies for engineering controls, personal protective equipment and work practices, and evolving the monitoring, are extremely crucial.

That has all occurred with the major development of compounds. The major disconnect, and I think what many of us are here to express our concern over, is the communication of that knowledge base to the delivery segment, the hospitals (unintelligible) practices, the clinics that -- and the healthcare givers that provide the delivery of those compounds to the end patient. And there is a major disconnect there, for a lot of reasons that you can't cover in five minutes total time. I'll skip over those but would be glad to discuss those later.

How do we overcome those major disconnects? I think that's one of the things that we're certainly here to look at. One is there is a knowledge base out there that needs to be tapped, and that's the major pharmaceutical companies, because they do provide facilities for deli-- for manufacturing these drugs and getting them into final dosage forms.

As part of the alert group, there were over -- I'm going to be wrong in my exact number, but approximately 15 major pharmaceutical companies involved with that. I think we need to re-energize that and see if we can take advantage of that knowledge base and transfer it on to the -- to the delivery section of healthcare.

One mechanism that's been discussed many times is banning/banding* exposure limits because, as you can imagine, with -- I think in terms of just simply cytotoxics there are well over 100 drugs out there so you don't really want 100 different exposure limits floating around. It just gets too confusing, so that's one potential and an objective I think that should be seriously considered.

The second --

MR. WEISSMAN: We need to wrap up, we're over.
MR. RAHE: Okay, how about one minute?
MR. WEISSMAN: Okay.
MR. RAHE: The art of negotiation. The other major objective is self-help within understanding what goes on in the delivery process because there -- there have been many things completed, but there's no target. And as an engineer, for me to design an effective engineering control I need to understand what the exposure limit I'm trying to deal with. The typical transfer in healthcare is taking a material from a vial, using a syringe to transfer it to the mechanism that delivers it to a patient. It's not a complicated operation, but we don't understand anything officially about the exposure limits that occurs during that. We've got gross data, but what does it mean? What level of the three forms of mater -- solid, liquid and gas -- do we produce when we simply do that transfer? There's an important piece of research, if done, can help greatly.
Am I under?
MR. WEISSMAN: Thank you very much. And please

-- if you have additional comments, please submit them in written form. Thank you.

MS. PALERMO: We would like to ask the next group of speakers to come forward, please. Loretta (sic) Wright, Shelby VanMeter, and Ann Maheta (sic) and Ilise Felshans (sic). And you're...

MS. VANMETER: Shelby.

MS. PALERMO: Okay. Do you want to go ahead and start, Shelby, then?

MS. VANMETER: My name is Shelby VanMeter and I'm a registered nurse. The reason I'm here today is because not only have I been affected by an exposure at work, I'm also a patient who has to deal with this. When I was asked -- 11 years ago when I was working as a nurse-practitioner -- to help expand and develop a new stabilization area for our newborn intensive care, I was ecstatic. I thought this is going to be, you know, the best thing. I can get everything I want in that facility and, you know, it's the dream job. And I never expected that the construction from that development would not only end my career as a nurse-practitioner, but it would also affect my

life, you know, from that day on.
I was exposed to chemicals while they were remodeling. I ended up -- instead of running to a delivery of a premature baby, I ended up going to the hospital myself, and that was the first of many events where I was hospitalized or had to go to the emergency room. This is something that's impacted my life every day. Even to this point 11 years later, I'm still affected by that.
When I leave my home I carry a backpack that weighs almost 20 pounds, so that I have my nebulizer, my medications, everything that I could possibly need in case I'm exposed to a trigger going to work, at work, on my way home. I now work in an out-patient clinic, and I never thought that I would have to kind of dodge my everyday job because I have to avoid cleaners, dry erase markers, microwave ovens, anything that can put a trigger into the air. I also have to avoid construction. Even though the facility that I work at does an outstanding job in keeping that construction out of our work area, there's still vapors. There's still dust. There's still things that trigger that,

and it's just an everyday event.
I ended up leaving my job as a nurse-practitioner, which is something that I'd always dreamed about. I left nursing for four and a half years and finally, after finding an occupational environmental pulmonologist -- which was something that my workplace originally had never heard of. You know, I was fortunate to have a friend who went to the graduate school here and knew someone. But through my physician's care and new medications, I've been able to go back to work. But I can't work in-patient because of the constant exposure of chemicals, cleaning, exhaust fumes from ambulances, things that are just common every day in our hospitals. But I've pretty much found a safe environment in an out-patient clinic working with children that have cancer. But still, just these simple things cause me to have issues every single day.

MR. WEISSMAN: Thank you.

MS. PALERMO: Okay, we can -- if any of the other speakers have come in, they can come up now, or we can open it up to anyone who has

something to say.

UNIDENTIFIED: (Off microphone) (Unintelligible)

MS. PALERMO: Okay.

UNIDENTIFIED: (Off microphone) (Unintelligible)

MS. PALERMO: Okay.

MS. MALECHA: I'm Ann Malecha and I'm the director of research at Texas Women's University College of Nursing here in Houston. We have three campuses, one in Denton, Dallas and here in Houston. And I'm talking on the interaction between personal stressors and workplace violence. And I will say it's from a nursing point of view, looking at nurses as -- coming from a nursing student. Just so you know, I'm representing -- we have over 50 full-time faculty here in Houston teaching undergrad, master's and the doctoral program in nursing. And it's been overwhelming, when we started to form a research team we put a call out to faculty, would you like to meet to investigate personal stressors and how it impacts -- we know nursing students 'cause we listen to nursing students, but also nurses.

And we consistently have over 20 faculty that show up for each meeting. So we know, as faculty, our students come to us with great personal stressors, and they take those personal stressors to the workplace.

What I would like to say is there is a great deal -- lack of research on what do we mean by personal stressors. And if I look a little bit disorganized, it's 'cause I am in the process of trying to put together a literature review. There was a study that was recently put out in September, 2005 and they were just looking at how R.N.s view the work environment in terms -- just generally. And what they found is 31 percent do complain of back or musculoskeletal injury, and this was compared to 2002 data where it was 34 percent, so there was a slight decrease.

The second was episodes of violence in the workplace, and it was 28 percent in 2002 and it remains at 28 percent in 2004. And at the end of that survey the -- the conclusions were this is still a problem in the workplace in terms of high levels of violence.

It -- mostly when we talk to nurses and talk

about workplace violence, if you look at workplace violence on a continuum from incivility all the way to homicide, most of the workplace violence they are talking about is verbal abuse, harassment and emotional abuse. And there has been a literature review conducted and, again, over and over the verbal abuse is what comes out as the work-- in terms of the workplace violence that I'm talking about.

In terms of personal stressors, again, there's been limited research done on it. There's been one researcher here in Texas, and she has looked at who experiences workplace violence in terms of nurses. And the two studies that she conducted -- I have my literature review -- she looked at workplace violence -- and over and over, this is another thing that comes out in the literature if you talk about stressors, is a history of child abuse. She found 58 percent of nurses have child abuse, primarily sexual abuse, 89 percent of those childhood abuse; 41 percent witnessed adult -- witness currently adult abuse. She did a study looking at Hispanic nurses and what she basically found is

94 percent suffer emotional verbal abuse at workplace violence.

Basically, to summarize, there's a definite -- she sees a history of abuse. Nurses that report workplace violence verbal abuse have a history of personal abuse. So that's -- in terms of defining one workplace stressor is child -- a history of child abuse, as well as a history of adult abuse and current abuse.

The only other personal stressor that has been studied is finances, and that has come out as a strong personal stressor is the worry about personal finances.

And then we recently just finished a pilot study here in Houston following 99 students one year after they graduated, and we found the same thing with personal finances being a strong personal stressor. But interestingly enough, we're seeing an increase -- instead of child care being a personal stressor, that more and more nurses are taking care of other family members other than children. We find about 18 percent out of the group of nurses were concerned about not having adequate care for someone at home other than a child, compared to

only 15 percent for child care. So that's a growing concern.

But I guess to summarize, the research that's needed is what do we mean by personal stressors. There's a lack of data on that, but we do know it does impact how a nurse views workplace violence. Thank you.

MS. FEITSHANS: My name's Ilise Feitshans and I -- I teach in this field, but I also write a treatise called "Designing an Effective OSHA Compliance Program", so my comments are going to be very broad-brush comments pertaining to the history of occupational health and the future of NORA and NIOSH in light of that history and facing the challenges on the frontier of science.

When the U.S. Congress wrote the Occupational Safety and Health Act of 1970 it sought to cover a lot of ground in one bold stroke of the legislative pen. It sought to reduce injury and illness at work, to preserve our human resources by protecting the health of workers -- of every working man and woman in the nation, and to force development of new technologies through research and implementation strategies

that would ameliorate working conditions throughout the land. Several fundamental flaws in OSH Act undermine its effectiveness. The many compromises required to pass this important legislation are reflected, one, in the lack of jurisdiction over very important sectors of the working population, such as public sector, some parts of mining, agriculture, things like that. And also the failure to provide private rights to action by citizens to enforce its tenets when the citizens themselves are not the workers who are harmed.

But overall, OSH Act has done pretty well for a relatively young statute. Congress, through the authority delegated to the Secretary of Labor and to NIOSH in Sections 21 and 22 of the statute, did force new technology in occupational health and occupational safety, just as the Congress intended. If you look in contrast to 1965, which was a time when there were only a few non-profit organizations and trade associations groomed professionals who would create programs for workplace health and safety training, the statutory scheme has an

amazing track record in promoting a wonderful state-of-the-art understanding for occupational safety and health.

Successes have been talked about by other people here. My point is to say that NIOSH has been the linchpin of these developments. NIOSH research goals provided the financial resources for thousands of investigative studies, and in turn generated the impetus for many research programs in academia that would never have existed but for the government interest in the subject of their work.

So this sounds really broad-brushed when you look back from 35 years toward a new century. But as my son would say, you know, that's about as long as it takes for God to grow a fingernail. It's not really much time in the history of the world. And when we're at the dawn of a new century we have the luxury, and maybe even the obligation, to think about that new century.

So there are three things that my remarks would like to underscore in the vital areas for the work in occupational health in the future.

First, a renewed emphasis on safety now that we

have better technologies thanks to NIOSH research and the new types of jobs that are out there such as genetic technicians, nanotechnology and such.

Two, outreach to all populations. We need a classless model that embraces service industries, professional workers such as doctors, architects, engineers, lawyers, leadership people in business and government. Outreach using health promotion that embraces the special needs of changing demographics of our populations to include working moms, older workers who will use their experience beyond the seventh or eighth decade of their life, minorities who are assimilating into our workforce and have special linguistic needs. And of course across all of these categories there are people with disabilities who, that's to the Americans With Disabilities Act, have now an equal opportunity to education and will enter our workforce, regardless of the causes of injury, having a life experience of disability. This is really very different than the model at the time that OSH Act was written. And they will take their rightful place as

employers, employees and taxpayers, raising that ever-thorny question of how do you provide reasonable accommodations.

The third area is that OSH Act itself needs reform. Yes, the old statute has served us very well. And some people in Washington, D.C. do say if it ain't broke, why fix it. But in truth, 35 years, it's time for a little bit of a renewal job. Thirty-five years without modification for a statute is really an extremely long time. We need a provision in the new OSH Act statute that will provide for citizen suits and the right of individuals who are not under contract in the particular work site but may be present in that work site to complain about harms in the workplace that nonetheless have an impact on health for all.

So I speak of this from an academic perspective. I have never worked for either labor or management sides, always worked in academia. And one of the books that I've written for non-lawyers is available to the panel for your review if you need it for anything.

I really appreciate NIOSH's extremely

pioneering work, but I think that the emphasis really has to be on looking very closely, first, at the old question of safety, which is very much a changing notion. When OSHA and NIOSH were born there were consensus standards, there were organizations that were sort of loosely defined -- created standards, but there wasn't a process for doing that. There wasn't a functional analysis of what goes into a standard. Our courts have taught us subsequently through the benzene decision and other cases what that's supposed to look like, and we need to use that in looking at safety with new eyes.

As I said about demographics, it's not just that we have a different population, but we need to approach it in a way that's classless and available to groups that we have really overlooked in the past. And --

MR. WEISSMAN: Need to wrap up.

MS. FEITSHANS: Am I out of time? Okay. That's it. Thank you.

MR. WEISSMAN: Thank you.

MS. PALERMO: Is Lisa Pompeili (sic) here?

UNIDENTIFIED: (Off microphone)

(Unintelligible)

DR. POMPEII: I think I'm out of order, actually.

MS. PALERMO: That's okay.

DR. POMPEII: Okay. All right. Hello, my name is Lisa Pompeii and I'm an assistant professor here at the University of Texas, and my background is in occupational epidemiology and occupational health nursing.

I signed up to talk today about return to work issues among healthcare workers, specifically nurses and nurses aides. However, in the interest of time I would like to focus specifically on return to work issues among nurses aides after sustaining a work-related musculoskeletal injury, or specifically a back injury.

I'm currently conducting a NIOSH-funded study called "Back Pain and Work Disability Among Healthcare Workers", and the setting for the study is a tertiary care medical center in central North Carolina. And the purpose of the study is to examine risk factors for back injuries among nurses and nurses aides and the impact of work disability resulting from those

types of injuries.
While working on this study, differences in return to work issues between nurses and nurses aides started to become apparent. I'm reticent about not focusing on nurses right now because I don't want to in any way minimize the experiences that they have trying to return to work or the difficulties that they have. I just want to focus more on how these two groups are really different.
And when you dig through the literature, the occupational health literature, looking for information on nurses and nurses aides, typically these two work groups are analyzed together. They're combined. And what happens is I believe that they're portrayed as being similar, when in fact they're very different. As a result, aspects of nurses aides' jobs that may contribute to disparities in their health have not received adequate attention.
A handful of studies have reported what injury rates reflect, and that is that nurses aides lift more, they -- they twist, they bend. Their jobs are more physically demanding compared to nurses. I have seven years of

workers comp injury data, and the nurses aides have a rate of 8.4 injuries per 100 FTEs, that's occupational back pain injuries, compared to nurses that are at 4.0 -- they're still high, but nurses aides are twice that. They have higher rates of lost work day injuries, they have higher rates of restricted work day injuries.

Some fundamental differences between these two work groups, the first is latitude. When a nurses aide is not able to perform their job in the hospital setting, their ability to move to another job is very limited, compared to a registered nurse. Registered nurses have more years of education, formal education, and they may have more latitude. They can transfer within the hospital setting possibly to other jobs.

The hospital setting where I'm conducting my study, nurses aides can move to a housekeeper position, they can go to dietary, they can go to laundry or they can go to a secretarial position. One only out of those four is a -- is a desk job, and that's if they meet the educational requirements for that job.

There's the reporting structure within the nursing unit. Typically nurses aides have to manage their own work restrictions and they have to manage -- or negotiate with the nurse manager in order to do that and they may not feel comfortable. They may fear retribution or job loss if they refuse to perform work duties that are difficult, placing them at further risk for injury.

Disparities in health already exist among nurses aides with regard to significantly high rates of occupational back pain compared to the general work force. But they're at risk for further health disparities if they incur additional injuries and loss, or lose their job and the benefits of employment because of these injuries. Workers who sustain occupational back pain or have occupational work-related -- excuse me, work-related back injuries have been found to be less likely to return to work, or they have delayed return to work if they have to go back to a job that's physically demanding. We already know this.

And we also know that return to work strategies, including modified work and

physical therapy, assist workers to getting back to work. But when we conducted focus groups with nurses compared to nurses aides, we found that nurses aides didn't have that ease of returning back to work. They had a harder time negotiating with their managers. They had a harder time negotiating work restrictions. They felt isolated.

They also felt like they couldn't go to their fellow nurses and ask them for work because they felt like their jobs are very different than the nurses' jobs. So on a typical nursing unit in a shift you've got two nurses aides. And so if one of those nurses aides doesn't show up, the other nurse aide has to pick up that slack. So I asked them a question. When you -- is there ever a time when you go to work and you have back pain and you feel like you can't work but you work anyway? All of the nurses said no, that they just take time off if they can't go. The nurses aides, all of them said yes, I still go. And they go because they feel obligated. They feel committed. It isn't just because they can't afford it, but they go because they feel like they need to be there.

I know I only have a few seconds left. I would just like to recommend that future research separate these two occupational groups so that we can find out more about how to return nurses aides to -- back to work post-back injury. Thank you.

MR. WEISSMAN: Thank you.

MS. PALERMO: We have two people from earlier in the afternoon that, if they're in the audience, we'd like them to come forward. Laurette Wright?

(No responses)

And I'm not -- probably mispronouncing this name, Jim Kalahar (sic)?

Okay. So with --

MR. WEISSMAN: Well, that being the case, we're well ahead of schedule here. What I'd like would be to take a 15-minute break. If there are people here who have not signed up to make comments who would like to make comments, please come up to the table and give me your names. Thank you very much.

DR. SODERHOLM: I'd like to make a quick comment in case someone wasn't here this morning. If at all possible, we'd love to have

a copy of your written comments. If you only have one copy, we'll see if we can make a copy if you can hand it out at the registration desk. Or if you can give me a copy, that would be great. It'll help our transcriptionist a lot. So thank you very much and we have a 15-minute break, so...

MR. WEISSMAN: So we'll reassemble at half-past. Thank you.

(Whereupon, a recess was taken from 2:15 p.m. to 2:30 p.m.)

MR. WEISSMAN: If Jim Kelaher is here, please come up and we'll start with you. If not, we'll go to the next panel and I'll defer to Terri.

MS. PALERMO: We'll also see if Laurette Wright is here?

(No responses)

Okay, so we'll start with the next group, George Delclos, Paul Rountree, Stephanie Tabone, Nancy Crider, Nancy Menzel, Jan Frusca...

MR. WEISSMAN: Frustaglia.

MS. PALERMO: -- and Mary Moss.

MR. WEISSMAN: Starting with George Delclos,

if...

DR. DELCLOS: Good afternoon. I'm George Delclos. I'm on the faculty here at the University of Texas School of Public Health. I'm a professor and I direct the division of environmental and occupational health sciences. I'm also a practicing occupational and pulmonary physician, and I have submitted my detailed comments to -- to the group. Thank you for allowing me to speak today. Good afternoon.

There are approximately 16 million people in the United States with asthma, and the incidence and prevalence of asthma have been increasing in the general population, both worldwide and in the United States, for the past two and a half decade. Prevalence estimates vary widely, depending on race, ethnicity and geographic area, with some estimates as high as 19.6 percent having been reported.

Now the annual economic and social consequences of asthma are staggering, as evidence by more than 100 million days of restricted activity yearly, nearly 500,000 hospitalizations, over

5,000 deaths, and more than $27 billion in costs. Various factors have been implicated in explaining these worsening epidemiological trends, including contaminants present in workplaces.

In the United States it's estimated that there are over 20 million workers potentially exposed to occupational asthmagens, 9 million of whom are exposed to established asthma sensitizers and irritants. Work-related asthma is currently the most frequently reported diagnosis of work-related respiratory disease in developed nations, and the U.S. is no exception. In a study conducted by our group based on the adult population data from the NHANES III, we estimated that the prevalence of work-related asthma in the United States to be around 3.7 percent, and that of work-related wheezing, which is a cardinal symptom of asthma, to be about 11 and a half percent. Estimates of just how much asthma in adults is attributable to the work environment have varied widely, probably due to several reasons, including geographic area, lack of recognition, differential reporting, absence of statewide

surveillance systems for asthma and variations in what we actually call occupational or work-related asthma. However, in the review and synthesis of 43 studies, Blanc and Toren found that the median attributable risk for asthma -- for workplace asthma to be about 15 percent among the best-designed studies.

Now certain groups of workers are well-known to be at particularly high risk of developing workplace asthma, including red cedar workers, isocyanate chemical workers, construction workers, and farmers. However, whereas the magnitude of the risk and etiologic agents are well characterized for many of these occupations, this is less well studied in the case of healthcare workers, where data are largely derived from case series and relatively few population surveys.

Healthcare workers comprise eight percent of the U.S. workforce, and are one of the fastest growing sectors of that workforce, projected to increase to more than 15 million by 2012. In other words, a 30 percent increase from about 2002. The greatest growth is occurring in out-patient settings, with average annual increases

more than double those of the remainder of the U.S. economy. Healthcare-related occupations represent 50 percent of the top 30 fastest growing occupations in the U.S. And within the healthcare sectors the professions that are expected to grow by more than 20 percent include nurses, physicians, respiratory therapists, occupational and physical therapists, the dental professions and pharmacy professionals.

Following the passage of the 1992 OSHA Bloodborne Pathogens standard, which resulted in a significant increase in the use of latex-containing personal protective equipment, cases of latex-related asthma drew attention to healthcare workers. Potential asthmagens in healthcare settings, however, do go beyond latex, and include disinfectants, pharmaceuticals, sensitizing metals, methacrylates, aerosolized medications and cleaning products, among others. Furthermore, since there are potentially multiple sensitizers in healthcare environments, it is possible that interactions among these various compounds could affect sensitization

thresholds. Previous studies in several countries have described an increased occurrence of asthma among specific groups of healthcare workers, including nurses, respiratory therapists and pharmaceutical workers.

In the U.S. the health services industry is second only to the transportation equipment manufacturing sector in total number of reported asthma cases. Five of the top 11 industries and nine of the 22 leading occupations associated with significant increased asthma mortality were related to healthcare services. And recent surveillance data from California, Massachusetts, Michigan and New Jersey found that work-related asthma among healthcare workers represented 16 percent of the total reported cases, exceeding the proportion of the workforce made up of healthcare workers. Agents most frequently associated with these reported asthma cases include, still, latex -- although we're doing a better job with that -- cleaning products, and poor indoor air quality.

Now in our own NIOSH-funded study of asthma

prevalence and risk factors that we've been conducting in a large representative sample of over 5,600 Texas healthcare workers, analysis of which is still ongoing, the overall prevalence of a physician diagnosis of asthma was 14.7 percent, ranging from a high of 17 percent among respiratory therapists to a low of 12 percent among physicians. These asthma prevalence figures are substantially higher than those reported for the general Texas and U.S. populations. Furthermore, the prevalence of asthma with onset after entry into healthcare -- into the health professions, which could be used as a surrogate for work-related asthma, was likewise high. In addition to latex and based on self-reported exposures, the preliminary analyses showed elevated odds ratios for women, obesity, years as a health professional, exposure to aerosolized medications, and exposure to glutaraldehyde and cleaning products.

In summary, there's evidence that workers in healthcare settings are at an increased risk of work-related asthma. However, important gaps exist in the healthcare worker literature with

respect to risk characterization of healthcare worker subgroups, identification and assessment of specific exposures to asthmogenic compounds, estimation of the impact of asthma on work patterns and productivity among healthcare workers, and implementation of proper preventive measures.

I urge NIOSH to support and expand continued research into this important topic, and I thank you for your time.

MS. PALERMO: Paul Rountree?

DR. ROUNTREE: Good afternoon. I'm Paul Rountree. I'm on the faculty at University of Texas Health Center at Tyler. I think I can speak with some credibility about aging among healthcare workers.

You know, the day that we have awaited for has finally arrived. We've come to 2006 when the boomers begin to reach age 60. So the question is, what will be the effect of this boomer generation on healthcare?

Now we know that as you age you have certain physiologic changes that occur that we call normative aging. In addition to that, we also know that you have higher prevalence of chronic

conditions like arthritis, heart disease, lung disease and the like as you mature. So I think that it's fair to assume that we're going to have a burgeoning increase in the demand for healthcare services in our country.

This comes at a time when we have currently a shortage of 126,000 registered nurses in the United States, and it's projected that this increase is going to continue faster than we can in fact replace them. And we also are dealing with an aging nurse population. The projection is that the average registered nurse in the United States by 2010 will be age 50. So we basically have a changing workforce, and we have a workforce that's aging, and we have an increased demand. What does this mean for the registered nurse, then?

We know that registered nurses already are working more hours and have more mandatory overtime. And we know that studies have shown that mandatory overtime impacts on job-related stress, as well as patient safety. We know that registered nurses have increased rates of injury, as do all healthcare workers, but particularly registered nurses and nursing care

assistants, and earlier speakers have alluded to that.

It's clear that older workers also have delayed recovery, and there's much data from the Bureau of Labor Statistics that would attest to this fact. So I think it's reasonable to assume, among the registered nurse population that's injured, that we need to examine causes of delayed recovery.

I suggest to you that we need to look at the interactions between job-related stress, between co-morbid conditions that nurses may have, as well as behavioral characteristics in an attempt to explain issues about recovery from injury in this particularly important group of people.

I am currently working with the College of Nursing at the University of Texas at Tyler, and we are involved in a cross-sectional study that's unfunded looking at registered nurses in a large number of institutions in rural health communities in east Texas. It's really been remarkable that we've had support from a number of large hospitals -- from the chief nursing officers at a number of these large hospitals,

who are actively supporting our research because of their issues and concerns about nurse retention as a result of the various influences that I've described. And I hope that NIOSH will take an interest in the -- in the synergism that exists between these varied influences, work-related injury and recovery. Thank you very much.

MS. PALERMO: Okay. Is -- Jim Kelahar (sic)?

UNIDENTIFIED: (Off microphone) Just arrived.

MS. PALERMO: Yeah.

DR. KELAHER: Well, thank you very much. I think, like everyone else, I appreciate the opportunity to provide input to NIOSH as they form their agenda for the coming decade. Just by way of quick background, I'm a physician whose practice is devoted exclusively to occupational medicine. Within OcMed, most of my encounters involve healthcare sector workers. For example, I'm a medical director at Baylor College of Medicine. In all we have about 10,000 employees. I also serve as an out-source director, basically, for other healthcare entities. So most of my dealings are with health -- healthcare sector employees.

I have two primary themes to consider for developing a research agenda, the first of which entails new diagnoses and novel problems within healthcare. Medicine invariably is responding to new challenges all the time. Some of these things are conditions or problems that have never been described or discovered, whereas others may be known problems but are merely being approached in a new way. If you consider even recent events, physicians, nurses, paramedics, everyone within the healthcare sector has been called upon to respond to various things such as natural disasters. New conditions such as SARS, bird flu, which for all practical purposes really has not developed into a problem but might, and yet we're all expected to know how to respond, how to take care of others, while at the same time we incur risks.

And we incur health risks largely to the unknown, especially when you're dealing with a new condition, a new problem. It's hard to tell what long-term problems are going to arise from being exposed to it, or working with patients who are exposed to it. So invariably

there need to be mechanisms to help define what the problems are going to be and to properly define exposures in the present so that we can properly assess people in the future.

And this issue of new problems, new diagnoses, new conditions goes beyond even the clinical realm. It's as prevalent, if not more prevalent, within the setting of medical research. We like to think of medical research as always being on the cutting-edge, as developing new techniques, new strategies, dealing with new technologies. But again, we're also dealing with problems that have not been described before.

We have healthcare workers exposed to various things like oncogenes, adenovirus vectors, and yet we know very little about the long-term effects from exposure. We're not sure of morbidities that may arise. And yet there's very little in the way of appropriate guidance for what to do to protect people. There's certainly little that's known as far as any outcomes in working around these entities and what types of tasks pose the biggest problems.

So I think definitely the new -- the new,

emerging conditions that we're faced with in society are also some of the new, emerging conditions that we're faced with in research.
The second theme I just wanted to hit upon briefly as far as the research agenda is being sure to consider healthcare trainees within the scope of any sort of research project. We think of trainees traditionally as students. In many ways we're all students throughout our lives. But the trainees are often disenfranchised from the rest of the system. If you think about a typical employer/employee relationship that occurs, there's perhaps more accountability that goes on. Some of it is legally prescribed, some of it is -- just occurs through tradition. Yet healthcare trainees often don't share in the same protections that employees share in.
And there's some practical issues that arise in trying to account for trainees. This includes the fact that many of them are transient, for example, in institutions that they rotate in. Institutions may not be very well aware of their presence. They may know in general that they're there, and I think for a large part a

lot of institutions try to incorporate them to the extent they can within safety programs. But the bottom line is that a lot of trainees don't have access to the same resources employees do -- things like training, PPE, certainly ongoing healthcare and surveillance. A lot of that, when it does occur, is pushed onto the employee, meaning they have to follow up through their own health plan or they have to buy their own equipment. This is something that's almost unheard of within the employment sector. Not to say that we need a workers comp system for students, but they definitely need to be considered within the context of any sort of medical surveillance.

Just as important as far as their vulnerability, if you will, is the fact that a lot of them are pursuing second careers, third careers. A lot of them have been engaged in healthcare for quite some time by the time they hit a -- quote, a career goal. So often we're picking up healthcare employees, we're roping them into some sort of surveillance program or workers comp or risk management program because they just started employment with us. But by

virtue of the fact of what they've been doing the last ten years, they've really been healthcare employees for ten years. So if you consider a nurse or a medical aide who has -- who is just starting work, this is a person who may have been working as a paramedic or an aide for several years before becoming a nurse. And yet on day one when they develop low back pain, we measure their exposure from the time of employment and we often overlook their, quote, pre-employment exposures. So the relevance of a person's student status as their career, if you will, just can't be downplayed enough.

MR. WEISSMAN: We'll need to wrap up.

DR. KELAHER: Okay. I'm right there. So again, I think their consideration into any sort of surveillance program and monitoring program is a -- is a must in any sort of research agenda. So thank you very much.

MS. PALERMO: Stephanie Tabone?

MS. TABONE: Hello, my name is Stephanie Tabone. I'm a registered nurse and director of practice at Texas Nurses Association. As a representative of Texas Nurses Association I'd like to thank you for the opportunity to

provide input into the future research agenda for occupational health and safety in the area of healthcare.

Registered nurses constitute the largest healthcare occupation group in the country. Then-NIOSH director Linda Rosenstock testified before Congress in 2000 that nursing personnel have one of the highest job-related injury rates of any occupation. And she related in that same testimony that the rate of injury specifically for R.N.s was greater than that of workers in construction and agriculture. In fact, construction and agriculture work is safer now than it was a decade ago. Not something that can be said for healthcare. Moreover, characterization of the nursing profession by the Bureau of Labor Statistics lists hazards, including ergonomic injuries and acquisition of infectious disease, exposure to chemicals, shocks from electrical equipment, and hazards posed by compressed gases, not to mention emotional strain from close contact with critically ill patients. The statistics and characterization of the work of nurses reinforce the perception that providing patient

care is hazardous and that nursing is undesirable work.

Because R.N.s make up such a large component of healthcare delivery system, hazards to nurses in the workplace constitute a serious public health concern. This is true not only in terms of real injury, but in their potential to impact the capacity of the healthcare system to deliver essential services to those whose health is compromised. It is also the case that most hazards that accompany the delivery of patient care are preventable, or at least can be mitigated by improving safety processes.

Texas Nurses Association would like to commend NIOSH for its research in the area of healthcare and in particular in resulting guidance in the areas of violence prevention and recent guidelines for lifting in long-term care settings. This work has enabled Texas Nurses Association to advocate for and get enacted legislation that requires nurses and healthcare organizations to work together to produce increase -- policies and procedures that increase safety in these areas.

Safe patient-handling initiatives decrease

injuries that cause harm to patients and result in increasing cost of care, while violence prevention has the compassionate outcome of helping to limit persons in moments of crisis from hurting themselves or others. So not only do these efforts protect nurses, they also have the added effect of helping patients.

Evidence-based guidance and best practices provide essential components when nurses seek to improve the delivery of care. The need for continuing research in healthcare in the area of workplace safety cannot be over-stated. As the population ages, the need for provision of care is projected to increase, while the number of persons available to deliver that care is projected to decrease.

It is essential for us to develop safety processes that increase the desirability of nursing as a profession by eliminating, to the extent possible, unsafe practices in all delivery settings, as well as identifying ways that an aging healthcare workforce can continue to deliver that care safely. To this end the American Nurses Association and Texas Nurses Association have brought talking points to this

-- to this session, and they are listed in the written testimony.

As we review how each of the issues -- I'm going to go over the issues just briefly -- that impact the nursing profession, we must always remember that those things that are unsafe for nurses have equal, and sometimes more profound, effects on patients.

Safe patient handling itself, by looking at that as a patient safety issue, has allowed nursing to now start to get some very important things into the workplace to help with lifting. And another speaker I think will speak to that. Others have talked about chemical exposures, so I won't go into that, either. I think the things that have been said are very good and important.

There's two things that I'd like to add. One is in the area of worker fatigue. There's a lot of work -- we know that worker fatigue has an impact on omission of care. What we do not know is how long it takes someone to recover after they have become fatigued. Neither do we know the additive effects -- just one second more -- the additive effects of things like

emotional strain to that fatigue, so we don't have those add-on things.

And in the area of infectious exposure, what we don't look at often is how many opportunities there are to do something -- for example, hand-washing being a simple example. There may be many times or many more opportunities in a -- in a time of care to do hand-washing than there are minutes in the day. So when we ask somebody to do something that's more safe, we sometimes do not look at how much time that takes in relationship to the actual process the person's involved in. And that's something I think really needs to be looked at when we ask people to do things that are safer. And I'll end my comments there. Thank you.

MS. PALERMO: Nancy Crider, come forward?

MS. CRIDER: Good afternoon. Thank you for the opportunity to present today and have input into the agenda. My name is Nancy Crider. I'm a master's-prepared nurse, currently full-time doctoral student here at the UT Health Science School of Public Health in management, policy and community health with a minor in occupational and health safety. I've been a

registered nurse for over 25 years. My primary background is nursing administration and education. I've been a past president of the Houston Organization of Nurse Executives and on the board with the Texas Organization of Nurse Executives.

Much of what you heard today I want to repeat and emphasize with a couple of additional factors. As you know, it's well documented that the hospitals and healthcare organizations present a wide variety of biological, chemical, radiological and musculoskeletal hazards. Employee health and safety for those of us in administration are key issues in maintaining a viable workforce that's able to meet the healthcare needs of our populations, and also to be prepared on a whole-hazards approach for emergency preparedness that we're currently gearing -- been gearing up to, even more so since 2001.

Many safety initiatives have been initiated from the NORA I. Bloodborne pathogens is clearly -- are getting attention. They create new hazards as we do the personal protective with -- with gloves. Issues that are still out

there as far as airborne exposures to both infectious disease, and particularly the occupational hazards as we do new construction and renovations in our hospitals. The air handling and exposure there are still issues that need to be addressed in practice.

One issue that I have heard this morning, but not this afternoon as much, is the changing demographics of the workforce is creating new challenges. Many employees have -- both at the professional and the unlicensed level are not native-born and English is not their first language. We have a challenge here I think in the research to look at the cultural competency, a culturally-appropriate training strategy to look at where we have opportunities for safety. We have literacy issues. And even those who are fully literate in their own native language, when you get into the nuances of health and safety in the United States hospital and healthcare organization are not totally fluent, and that creates a great deal of misunderstanding. So I would adhere to this needs to be additional behavioral and social research as far as the culture of safety and

training for both licensed and unlicensed personnel as to how to bridge the gap between knowledge of safety -- knowledge of safety practices and the behavior in the workplace. Additional time I want to do is the workplace fatigue and safety. We know from aerospace and transportation that the effects of fatigue are similar to alcohol in the bloodstream. And not only do we have employees working long hours, again we have multiple -- the economic conditions are multiple jobs, and they come from work to the work site without adequate rest. So the timing of what it needs to recover becomes important, not just for scheduling in our own institution, but knowing whether you have contract workers in, knowing whether you have trainees in, people who are going to school full-time and working full-time. It's created a additional need for training there.

Finally, ergonomic studies, as you develop -- the development and manufacture of assistive devices, I will reiterate -- looking at the workforce, who are the workers using it. We have an aging workforce, in many cases

deconditioned and suffering from chronic illnesses themself (sic) who are caring for obese patients. They are -- arthritis, the musculoskeletal risks, and we also have the foreign workforce who may be, as a speaker this morning said, a petite Filipino nurse who clearly cannot manage the same as a strapping 18-year-old, five ten, 180-pound male.

In summary, I'd like you to continue the NORA initiatives. Look at the multi-cultural, the training issues, the literacy issues and the gap -- bridging the gap between knowledge and practice of PPE. Thank you.

MS. PALERMO: Nancy Menzel?

DR. MENZEL: Hello, I'm Nancy Menzel from the University of Florida College of Nursing. I'm an occupational health nurse-researcher in musculoskeletal disorders in direct patient care providers. I also received a NIOSH traineeship 25 years ago to attend the Harvard School of Public Health, so thank you, NIOSH. And I also graduated from the University of South Florida College of Public Health Sunshine ERC with a Ph.D.

This morning Dr. Howard spoke about relevance

of research, and I can't imagine anything much more relevant than the nursing shortage the previous speakers have spoken to. This is a problem where by 2015, in fewer than nine years, they predict a 20 percent shortage of nurses. And we really must do something to prevent their leaving the workforce.

The University of Florida graduates 180 new baccalaureate-prepared R.N.s every year, and within two or three years most of them have left the bedside. So the problem really isn't supply, it's keeping the workforce at the bedside.

Part of that is the healthy worker effect. They realize that they're going to get injured if they continue, because being a nurse is very hazardous to your health. The solution is not to go to developing nations and steal their supply of R.N.s with better wages and bring them to the United States and hurt them as well. Nurses are not hatched like eggs. However, if they were and the farmer noticed that 75 percent of them were being broken during production, there would be something done about it. Instead we continue to injure

our nurses.
I prepared a summary of gaps and needs for further research which I distributed earlier, and I'd just like to go over some of the main highlights from my vantage point. One of them is the pathogenesis of work-related musculoskeletal disorders in nurses. How early does this start? Does it start in nursing school? Where -- what are the exposures there? What are the biomarkers of musculoskeletal damage that's occurring to these nurses? Exposure assessment, the methods that we use now are observation. I think NIOSH has used things where they put little clickers on machines to see if the lifting equipment is being used. But we must develop more sophisticated methods than that.
Under-reporting of work-related musculoskeletal disorders, we're using as a metric occupational injuries. That's rather like counting the number of planes that crash each year as our metric. I think we can do better than that.
Contributions of psychosocial factors to these disorders in nurses, what is the contribution of stress or organizational factors?

Patient handling technology, although we've seen research that demonstrates that injuries are lowered, with this technology many nurses continue to resist its use because it's awkward to use and it's inconvenient and it takes a long time. We still don't have any equipment that assists a nurse to turn a patient from side to side, and that's one of the biggest exposure points.

Adoption of technology, I've alluded to some of the reasons why nurses don't use the technology, but what is the reason that employers are not wholesale adopting this? They complain about the nursing shortage, and yet they fly recruiters to the Philippines to bring Philippine nurses back, but they don't invest in the technology. What can be done?

And the relationship of work-related musculoskeletal disorders to quality of care and patient safety. When I did my dissertation at an unnamed facility, I worked with nurses who were working 12 and 16-hour shifts, and I followed them around and wrote down what they did, and it was pretty exciting for me. But many of them stopped turning patients and

ambulating them toward the end of their shift because they were physically exhausted. So I know that there's a relationship between patient safety and nurse safety.

These issues need to have further investigation and funding by NIOSH. Thank you.

MS. PALERMO: Jan Frustigala (sic)?

MS. FRUSTAGLIA: Good afternoon. I'm Jan Frustaglia --

MS. PALERMO: I'm sorry.

MS. FRUSTAGLIA: -- that's okay -- and I'm the executive chair of my organization's -- of continuing education for AOHP, and that organization is the Association of Occupational Health Professionals in Healthcare. On behalf of AOHP organization, I thank you for allowing our input at this public meeting of the second decade of NORA.

AOHP is the primary association for occupational nurses and other professionals providing occupational health services to workers in healthcare. The occupational health nurse, usually called employee health in a hospital setting, performs a multitude of services that evaluate, screen and monitor the

environment and the worker in healthcare settings. Prevention of injury, illness and disability is the primary practice objective. Health promotion, wellness, is one method to those objectives. But realistically, the practice objectives become more challenging due to the everyday hectic pace in the healthcare facility. The patients are sicker, the healthcare worker works more hours with less support from their administration, and the outcomes can be seen in the loss run data. And we can see these in benefits, dollars being spent for more medical and mental health care. This presentation is focused to the following broad issue that we feel NORA could include in the next decade:

Examining the research on health habits and attitudes, then apply and expound them specifically to the healthcare worker. Seek the answers to why so many healthcare workers are basically unhealthy, and what can be done to improve the mental and the physical human factors of the healthcare worker. For this healthcare worker, continued research is needed in behavior modification, mental health

management, coping with work stressors, and how the practice of motivation factors can lead to optimal health maintenance. Examine the employer's medical benefits incurred costs. They have continued to climb year after year. Is that because the healthcare worker is inappropriately using their medical benefits? Is it because the worker is less healthy and requires more medical prescriptions and services under their employer's medical benefits? Is the solution better case management? Should the employer and/or the insurance company be held more accountable to provide strategies around prevention versus continually raising the premiums to the healthcare worker? More facilities can take what has been learned about managing injury under the workers compensation systems in all the various states and apply those learnings to case management of their employees' medical benefits.

Secondly, AOHP commends NIOSH and NORA for your research, and we want continuation of strategic research to gain an accurate picture of the environment inside healthcare setting -- its

stressors, hazards, potential exposures -- mentioned by many of my colleagues this afternoon -- and inherent risk. Continue to advise on risk avoidance, disease detection and the disability limitations that can be integrated into work practices. Provide research to practice on the human factors of disease and disability. Thank you very much for this opportunity.

MS. PALERMO: Mary Matz?

MS. MATZ: Good afternoon. I'm Mary Willa Matz and I'm with the Veterans Health Administration. I am an industrial hygienist and an occupational safety and health researcher, so I'm not a clinician so I'm coming from a little bit of a different vantage point.

Representing the VHA is certainly something that I have also talked with some of our -- our -- excuse me, I'm getting off-track here. I should just read my notes here.

As the largest healthcare organization in the United States, VHA has a unique vantage point for identification of important occupational safety and health issues. On an annual basis

the VHA records more than 25,000 injuries, which afford us a really vast database from which to determine issues in need of study and intervention.

The VHA injury data consistently finds the following types of injuries as top ones, and you should have a pie chart on that. But if you don't, I can read them to you. Slips, trips and falls are consistently the number one source of injuries in the VA for about the last four or five years, at around 20 percent of our injuries. Struck by/against, approximately 13 percent, as well as bloodborne pathogens and body fluid-related exposures, also 13 percent. We show approximately 12 percent from lifting and repositioning patients, 8 percent from manual materials handling, and 6 percent from assault/workplace violence.

Due to the limitations in time I'm going to briefly discuss some of the recommended research topics. Full descriptions and supporting data for our recommendations, as well as research and partnership suggestions, will be provided separately through the on-line submission process.

The VHA recommends and requests the continued focus on sharps injury prevention, especially use of technology in that prevention. And we request then increased attention on seven different items, obviously that I won't be able to get into -- in too detail, but I did want to speak on these somewhat.

The first is occupational burdens, including work organization, shift work, job assignments and others. And these have already been spoken on earlier.

Another topic which hasn't been addressed is the implementation of evidence-based and best practice programs. We have the information out there. We have the interventions. But quite often the nursing staff are not willing or not able, for whatever reasons, to actually put these into practice. That needs to be looked upon.

Under-reporting of injuries, this is a huge issue. We don't really know what's going on out there. OSHA has estimated that for every musculoskeletal injury reported there's a similar one that's not reported. The 2001 VHA task force on workplace violence prevention

showed that there's a factor of under-reporting of five. And similar under-reporting can be seen in blood and body fluid exposures, et cetera.

So each of these areas have unique considerations and conditions surrounding them, therefore unique issues may be related to their under-reporting. And in order to know the true state of injury incidents, under-reporting must be addressed.

Continuing on to another topic, emerging pathogens protection. There's concern that the respiratory protection standard as written in the pandemic flu plan may not adequately protect healthcare workers from transmission of disease. The plan recommends wearing, quote, a surgical mask or a procedure mask for close contact with infectious patients. N-95 respirators or surgical masks do not adequately defend against penetration, nor the airborne nature of viroparticles. Much higher levels of respiratory and other protection are needed until scientific evidence -- including volume and virus produced per cough, size of particles, aerodynamic properties, et cetera --

is generated that can be used to identify control measures such as respirators that will reliably protect healthcare workers from the organism in question. We recommend that NIOSH, OSHA and CDC and CID/NCID* collaborate to review and determine a scientifically-defensible posture regarding airborne pathogen transmission issues. We also suggest testing existing N-95 respirators and surgical masks for protective capacities, as well as developing new technology that will control transmission of known infectious diseases, and from this information develop criteria that can be extrapolated for new pathogens encountered. Next topic, slips, trips and fall incidents -- can I have another few minutes since I have so many more and I'm the last --

MS. PALERMO: (Off microphone) (Unintelligible) time, so --

MR. WEISSMAN: (Off microphone) Yeah, we have to (unintelligible).

MS. MATZ: Okay. Thank you. Slip, trip and fall incidents. Slips, trips and falls are the leading cause of occupational injuries among hospital workers. The national average for

falls on the same level per 10,000 FTE in hospitals in 2003 was 31.6, as compared to 19.9 for general industry. BJC Healthcare, a large private healthcare organization, reports 26.3 falls on the same level in 2005, with over a million dollars in workers comp claims. Very significantly, as I reported earlier, the majority of the injuries for the Veterans Health Administration come from slips, trips and falls. And once again, these are reported injuries, though.

Small, sort-term intervention studies dealing with behavioral aspects of STF incident causation rather than large studies that have been difficult to manage and track are suggested. As well, cost effectiveness of existing and new strategies would be beneficial, as would continuation of descriptive studies.

Next topic, and the last one -- excuse me, it's the next to the last one -- is workplace violence. Violence in the workplace, both physical and psychological, is a major concern. Almost two-thirds of non-fatal assaults at works (sic) happen in hospitals, nursing homes

and facilities that provide health or social services. Our VHA task force on violence prevention showed that nurses and nursing assistants were most likely to be victims of injurious violence, and incidents were most likely to occur in in-patient and nursing home settings. Among other topics of research, the effectiveness and cost benefit of existing strategies is important to determine. Organizational factors and unit organizational cultural influence on the risk of workplace violence may also shed light on this subject. And the next and last issue, and it's been addressed elsewhere, is patient handling. And I won't go into statistics on this, but I will say that continued innovations in technology are needed for control of risk. As well, program implementation facilitators and barriers need to be identified for improvement in safe patient handling compliance. As well, with the new -- new construction and renovations going on in the healthcare industry, it's critical to have acceptance and inclusion of ergonomic design by architects and engineers. But the science behind ergonomic

recommendations for safe patient handling, especially for bariatric and total dependent care patients is lacking. So we see that science is needed to support ergonomic design criteria.

And I will say that we have also -- have a list of recommendations for these topics that I provided to you earlier, and we also will be addressing these -- these issues on-line -- through your on-line process. Thank you.

MS. PALERMO: We have -- all of our scheduled speakers have already talked, so we open the floor to anyone who would like to add to the discussion. You're welcome to come forward.

UNIDENTIFIED: I'm not really prepared to talk on this topic but I don't think it was mentioned this evening and I would just like to express this issue personally. I do feel a bit like we have a choir here and that we preached to the choir on occupational health issues.

And I did want to say that since we're talking about the healthcare sector that at least in my mind there remains a relative lack of awareness or recognition among the healthcare community itself of the implications of work on health,

whether that is from an economic perspective in terms of trying to maximize the number of patients that a nurse has to care for, how to manage a case of occupational illness and how to deal with the employment implications of that illness, how to search for an occupational pulmonary physician who might recognize that there is a relationship between an occupational exposure and a disease, so I think it would be prudent to at least raise the issue that we have to focus on what our role and responsibility should be to make sure that the healthcare community itself is more aware of occupationally-related issues.

DR. SODERHOLM: Could we have your name for the transcript, please?

DR. LEVIN: I'm sorry, Jeff Levin from Tyler.

MR. WEISSMAN: Any other -- any other presentations from the audience? Would anyone else like to come up and make a comment?

(No responses)

SUMMARY: DAVID WEISSMAN, NIOSH

If not, it falls upon me to do a brief summary of our session, and I'd really like to start by thanking our partners, the people who really

did the heavy lifting here to put together this session. First of all, the folks from the University of Texas School of Public Health and the Southwest Center for Occupational and Environmental Health, Sarah Felknor and George Delclos. I'd really like to thank you and your folks for the wonderful job that you did and the hospitality that you showed us.

In addition, I'd like to thank the folks from the University of Texas at Tyler and the Southwest Center for Agriculture Health, Injury Prevention and Education, Jeff Levin in particular, for the -- just the great work in putting this together. Thank you so much.

And finally I'd like to thank all of the presenters who took the time to come here and to put together a presentation, a focused presentation and get up in front of the audience and talk and tell us what you think about the priorities. We really appreciate you. I mean partners are very key to this NORA process. As you've heard many times, our slogan is really research to practice through partnerships, and the partnerships are really, really key so that we can achieve the goals

that John Howard spoke about earlier, the goals of relevance, the goals of quality and the goals of impact for our research. So we really appreciate your participation in this meeting, and we also really appreciate your continued involvement by giving additional comments via the web site, by e-mailing us, or by volunteering to participate in the sector research councils.

I'd like to talk a little bit about some of the issues that we -- that we heard about here today, and I won't be able to sort of exhaustively cover everything, but we heard -- and I like this overall comment. We heard about the need to develop a culture of workplace safety and health in the healthcare and social services sector, and address the inherent tension between the motive to self-preservation and then the motive to selfless patient care that involves getting in there and taking care of people, even if those people are a potential hazard to you. And I remember early in the HIV epidemic when people were scared to take care of HIV-infected patients, and you could really see the difference between

those who were truly motivated to take care of people and then the people who were there for other purposes, based on people's willingness to get in there and take care of people even if there was some potential perceived self-risk there. So it's very important that we develop a culture that values safety and recognizes that the -- but still recognizes that there is risk. And part of that culture of safety is to have adequate surveillance, and we've heard about the importance of having surveillance so that we know what's happening and so that we know if our interventions actually work, and we've heard that.

We've heard a lot about accidents and musculoskeletal injuries, slips and trips and falls, back injuries from lifting, the need for patient handling technologies, the need to assess what are the predictors of recovery from injury, and the finally how to prevent injury due to workplace violence, which unfortunately many people in the healthcare sector are very exposed to.

We've heard about hazardous exposures and there are a broad range of hazardous exposures we've

heard about. We've heard about chemical exposures and radiological exposures, biological exposures. We've heard about inhalation exposures to asthmagens. And then thinking about exposure broadly, not just as substances, we've heard about exposure to psychosocial problems and exposure to personal stressors including verbal abuse.

We've heard about work organization and worker fatigue and the risk that that can pose to both workers and patients.

And then finally we've heard concerns about new kinds of exposures, such as new exposures due to application of nanotechnology in the workplace and use of new sorts of genetic therapies. One type of exposure that we've heard a great deal about are exposure to infectious agents, both agents capable of transmitting disease via the airborne route and agents capable of transmitting infection through contact or through injury -- things like bloodborne pathogens.

We've heard about sharps injury prevention. We've heard about the need to better understand airborne transmission and what kind of

respiratory protection is appropriate for emerging infectious diseases.

There was mention of the special needs of people who are involved in emergency response and in response to disasters. And people who are involved in those sorts of situations have all these kinds of exposures, but under the very stressful conditions that can exist, as we've unfortunately seen in the Katrina situation.

Finally we've heard about populations at risk and the need to reach out to all of these populations, be they disadvantaged; be they minorities, especially people who speak English as a second language; be they those with disabilities or the elderly. We've heard about the need to think about people who aren't directly involved in patient care, people like family and visitors and housekeepers and construction workers and trainees, all the kinds of people that you don't necessarily think of immediately but are very important exposed people in the healthcare and social services sector.

And finally let's mention the group that's the

reason the healthcare and social services sector exists, which are patients, who also have many of the same exposures that all the rest of us have.

So we've heard some really important ideas and some really important priorities, and we take this very seriously. We value your input as we develop our agenda, and we greatly, greatly appreciate your participation in this meeting.

And with that, I'll turn things over to Sid Soderholm to finish up.

ADJOURN
SID SODERHOLM, NIOSH

DR. SODERHOLM: Well, thank you. Dave did a very nice job of thanking. I'd like to thank David and Terri for their leadership this afternoon and for this journey they're embarking upon in leading the NORA efforts in this sector over the next several years.

A few real quick notes. If you talked and have some notes you can leave with us, that would be very helpful. There are a number of CDs, NIOSH healthcare-related publications prior to April, 2005. We're going to have to take these back with us if you don't take them with you, so please -- please make use of those.

And if you did not sign in on the way in, we really are trying to -- a part of accountability -- capture a record of the number of people and who were here today, so if you haven't signed in, please -- please do so on the way out.

And this is just the beginning of the process. Keep up with e-news, volunteer to be involved on committees or as reviewers. Keep -- keep tracking and keep giving feedback so -- so we can keep working on the highest priorities and having the right people involved.

So thank you very much and have a safe trip home.

(Whereupon, the meeting was adjourned at 3:30 p.m.)

CERTIFICATE OF COURT REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of January 23, 2006; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 21st day of February, 2006.

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STEVEN RAY GREEN, CCR

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