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64

Stevenson, Todd A.

From: Ong Eng Long, Dr [drong@pop jaring my]
Sent: Tuesday, June 20, 2000 7:51 PM
To: cpsc-os@cpsc gov
Subject: Petition to declare NRL a Strong Sensitizer

The office of the Secretary,

Consumer Product Safety Commission,

Washington, DC 20207.

Fax: (301) 504-0127

Email: cpsc-os@cpsc gov

14 June 2000

Dear Sir,

Petition HP 00 – 2, Petition on Natural Rubber Latex (NRL)

With reference to the above subject, I, on behalf of the Rubber Research Institute of Malaysia which is the research center of the Malaysian Rubber Board, write to inform you that we take exception to the petition asking your Commission to declare NRL as a strong sensitizer. Our objection is based on the following reasons:

1. Products made from NRL have been used for more than a century in the billions as medical devices and consumer goods. There has not been a single reported case of fatality in the case of gloves, although there were some reported cases of Type I and Type IV hypersensitive reactions among some sensitized individuals. The total number of hypersensitive reactions related to the use of NRL products (fatal cases arguably caused by latex proteins in the latex cuff of an enema tube totaled about 15) is highly insignificant when compared to the number of latex goods sold and used. Since latex proteins and rubber chemicals are easily removed from the latex products during manufacturing, the adverse reactions are attributable more to manufacturing defects or poor quality control than the residual rubber chemicals and proteins present in the product. Since the incidence of anaphylaxis caused by the enema tube were reported, there were no further cases when manufacturers take precaution to improve the manufacturing processes.

2. Cross-reactions between food and latex proteins are well documented (V.P. Kurup T Kelly, N. Elms, K. Kelly and J. Fink. "Cross-reactivity of food allergens in latex allergy", Allergy Proc., 15, 211-216, 1994, H Hasma, M. Shahnaz, E Yip, M Azizah, K.L Mok and B.A Nasaruddin: "Binding patterns of IgE antibodies in sera of rubber tappers to fresh Hevea latex serum proteins", J. Rubb Res, 1(3), 1998). Because people are usually exposed to food proteins in their earlier lives than to latex proteins, it is very likely that the latex allergy sufferers are first sensitized by food proteins and/or agents other than latex To date, there is no concrete evidence to show that latex is the primary sensitizer rather than food and non-latex proteins We therefore strongly believe that latex proteins are generally not the causative factor for sensitization. Food proteins, pollen grains, bee stings, insect/animal bites and other agencies are the likely culprits for initiating sensitization of Type I hypersensitivity while pesticides, herbicides etc are responsible for that of Type IV. It is also believed that the so-called latex allergy anaphylaxis could be due to other conditions like asthma/exercise-induced anaphylaxis, -the mortality of which is increasing world-wide. Should one then start to label fruits such as kiwi fruit, papaya, chestnut, avocado, banana, tomato etc, peanuts, and sports as strong sensitizer?

3. The duration of use of medical devices and consumer products made from NRL such as adhesives, shoes, balloons, flock-lined household gloves and carpet backing as mentioned in your web page is generally very short with the probable exception of household gloves and pacifiers. Further more, most of these products are not used in direct contact with the users. It is therefore unlikely they are sensitizers although they might elicit some allergic responses after the atopic individuals have been prior-sensitized by agents other than latex In the case of pacifiers, the extractable protein levels are below the detection limit of the Lowry methods Furthermore, the pacifiers are normally boiled in water for several minutes before use and hence should contain hardly any extractable proteins and residual chemicals And for chlorinated household gloves, our data show that the extractable protein levels are markedly below 100 µg/g Below this extractable protein level, our collaborative study with the Tempere Hospital, Finland (E. Yip, K Turjanmaa, K P. Ng and K L Mok: "Allergic responses and levels of extractable proteins in NR latex gloves and dry rubber products", J Nat Rubber Res 9 (2), 79 –86, 1994) indicated that almost all the hypersensitive individuals tested showed no allergic response Subsequent collaborative work with the Finns (E. Yip, T. Palosuo, H. Alenius & Turjanmaa: "Correlation between total extractable proteins and allergen levels of natural rubber latex gloves, J. nat. Rubb Res. 12 (2), 120 –130, 1997) using the ELISA inhibition technique confirmed that NRL gloves with extractable protein levels of 100 µg/g or less have very low allergen content (<10 AU/ml). Thus, it is not unreasonable to infer that NRL products with extractable protein content below 100 µg/g are highly unlikely to cause sensitization. Where then is the justification for labeling products made from NRL as a strong sensitizer?

I take this opportunity to inform you that we have great sympathy for the latex allergy sufferers and are in favor of appropriate cautionary statements to ensure and enhance safety in use. But, we are against instilling unfounded fear among the consuming public like in the present case. Should you decide to accede to the petition, your Commission would in effect be instilling fear to the public, indirectly causing them to switch to alternative products such as non-NR gloves that have been known to have inferior properties to those made from NRL (D.M. Korniewicz, B. E. Laughon, W. H. Cyr, C.D. Lytle and E. Larson: "Leakage of virus through used vinyl and latex examination gloves", J. Clinical Microbiology, 787-788, 1990). This would definitely increase the risk of contracting infectious diseases such as AIDS. We hate to see the day when people especially health-care workers suffer from HIV because they have been scared away from using the medical gloves made from natural rubber latex which has the best barrier protection properties.

It is worth noting also that not all rubber consumer products are made from NRL. There are many that are made from dry natural rubbers, which have been shown to contain very low/negligible allergenicity. (E. Yip, K. Turjanmaa & Soili Makinen-Kiljunen: "The non-allergenicity of NR dry rubber products with particular reference to Type I allergy", *Rubber Development*, 48, No.3/4, 48- 52, 1995).

Residual chemicals such as dithiocarbamates and others that are known to cause Type IV hypersensitivity are also found in synthetic elastomeric products (B.B. Knudsen & T. Menne' "Contact allergy and exposure patterns to thiurams and carbamates in consecutive patients", Contact Dermatitis, 35, 97-99, 1996). In fact, both NR and synthetic product manufacturers are taking steps to continuously improve their products in terms of quality, price, comfort and, most importantly, safety in use. But, to date, NR is still the material of choice in the sum total of the properties required for barrier protection and in areas where strength and elastic properties are important.

Being the biggest NRL product producers in the world, particularly for gloves, Malaysia has demonstrated its unwavering commitment in addressing, among other things, the health and safety concern of our consumers The Government and the industry through the research institute such as ours have spent millions of dollars in R & D towards this end For example, we have introduced a Standard Malaysian Glove scheme which will have specifications requirement for the physical properties, pin hole and allowable extractable protein and powder level. It is our fervent hope that your Commission which is a respected and responsible body could weed out all unreasonable petitions such as the present one put forth by the editor of Allergy News so as to give consumers a balanced and correct view of NRL products. We believe that the labeling rules currently proposed by FDA are sufficient.

Thank you.

Yours truly,

Dr Ong Eng Long

Deputy Director General(R & D)

Malaysian Rubber Board

Tel 60-3-21611781

Fax 60-3-21620414

Email elong@lgm.gov.my

June 21, 2000

Sadye E Dunn
Office of the Secretary, Room 502
Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

Re: Petition HP 00-2 on Natural Rubber Latex

Dear Secretary Dunn:

The following comments are respectfully submitted by Centrotrade Rubber USA, Inc , Guthrie Latex Inc , and Lewis & Peat Rubber LP They are organized as follows

Section I

Statement of Interest
Re-Statement of Action Request by Petitioner
Position of Latex Group

Section II

No Clear Statutory Standard To Designate "Strong Sensitizer"
NRL Not On Par With Previously Designated Substances
NRL Does Not Meet Criteria Established in FHSA or Regulations
CPSC Has Never Designated Any Substance As "Strong Sensitizer"
Many Allergic Reactions To "Rubber" Are Not To NRL
Latex Allergy Not A Common Problem With General Public
Allergy to Latex Not As Prevalent As Allergies to Bee-Stings, Food, Other Substances

Section III

FHSA Labeling Requirements Should Not Apply to NRL
FHSA Labeling Requirements Should Not Apply to Products Regulated by FDA
Benefits of Latex Barrier Protection Acknowledged by CDC, OSHA
Response to Comments Received Thus Far

Section IV

Conclusion

Section I

Statement of Interest. These comments are submitted on behalf of the following companies

Centrotrade Rubber USA, Inc - Latex Division Centrotrade imports, stores, and distributes Natural Rubber Latex to the North American market. Globally, other offices of Centrotrade distribute Natural Rubber and Natural Latex, as well, as other commodity products

Guthrie Latex, Inc. (GLI). GLI has been selling natural rubber and natural latex in the USA and Mexico since the late 1950s Located in Tucson, Arizona, GLI has bulk terminals in Baltimore, Maryland, Savannah, Georgia, and Houston and Brownsville, Texas GLI is a leading supplier of natural latex to the North American dipping industry as well as the other industries where natural latex is used to manufacture a myriad of products The natural latex is currently produced in Malaysia and Thailand at plantations affiliated with the parent corporation, Kumpulan Guthrie Berhad of Kuala Lumpur, Malaysia, which has been in business nearly 200 years

Lewis & Peat Rubber LP. Lewis and Peat imports, stores, and distributes various grades of natural rubber latex for sale to the North American markets The company serves as the marketing group for a large Indonesian plantation which produces a NC358 (creamed natural rubber latex) Lewis & Peat also imports, stores and distributes dry natural rubber

The above referenced companies do not make a product destined for consumer use Thus, they should not be directly impacted by any labeling requirements, as proposed by the Petitioner Even so, if CPSC grants the Petitioner's request and imposes labeling requirements, the impact on the customers of these companies -- many of which are small businesses, would be significant Expensive and/or alarming warning labeling requirements would likely depress consumer use of products made with NRL. In addition to the serious economic impact on the manufacturers of latex-containing consumer products, such labeling requirements would have an indirect, but substantial impact on those who supply latex to the manufacturers. Thus, these comments are submitted to protect the common interests of the above-referenced companies, and their clients

Restatement of Action Requested by Petitioner. Petitioner has asked CPSC to do the following, under authority of Federal Hazardous Substance Act (FHSA):

1. Add to list of "strong sensitizers," Natural Rubber Latex (NRL) and products

containing NRL,

2. Designate NRL a Hazardous Substance and thus require products containing NRL to carry cautionary labels;
3. Classify toys or other articles intended for use by children which contain NRL, under "banned hazardous substances" provision of FHSA.

Position of Latex Group: Opposes all three actions requested by Petitioner for two reasons:

1 There is no clear statutory standard by which CPSC shall designate a product as a "strong sensitizer,"

2 There is no science to back Petitioner's claim that Natural Rubber Latex qualifies as a "strong sensitizer" under FHSA.

Section II

No Clear Statutory Standard. The Federal Hazardous Substances Act (FHSA) was enacted in 1960, and gave enforcement authority to the Department of Health, Education and Welfare (HEW) When HEW promulgated regulations to implement the FHSA in 1961, the regulations listed five substances as "strong sensitizers" (see below) No further designations were made by HEW. In 1973, the Consumer Product Safety Commission was established, and enforcement authority for FHSA transferred to CPSC While CPSC regulations expound upon the definition of "strong sensitizer," we have found no clear standard by which a substance shall be measured in this regard CPSC legal staff have advised that they do not have any records of the standard used by HEW in designating the original 5 substances. HEW's successor, the Department of Health and Human Services (HHS), claims to have no record of such proceedings either. In the absence of such a standard, CPSC would need to develop one internally before proceeding to designate any substance as a "strong sensitizer."

Latex Not on Par with Previously Designated "Strong Sensitizer" Substances. The following substances were designated "strong sensitizers" during the 1963 FHSA rulemaking process:

- Paraphenylenediamine and products containing it;
- Powdered orris root and products containing it;
- Epoxy resins systems containing in any concentration ethylenediamine, diethylenetriamine, and diglycidyl ethers of molecular weight of less than 2000

- Formaldehyde and products containing 1 percent or more of formaldehyde
- Oil of bergamot and products containing 2 percent or more of oil of bergamot

In the absence of any clear standard, the potential health hazard posed by any proposed substance must be comparable to the hazard posed by the current list of FHSA "Strong Sensitizers " NRL does not meet this threshold Paraphenylenediamine, formaldehyde and the specified epoxy resins are toxic chemicals Latex is not Oil of Bergamot is a photosensitizer, not an allergen The only allergen, powdered orris root, is clearly distinguishable from latex due to its extreme allergenicity. Further, according to the Food & Drug Administration, latex is harmless to the vast majority (99%) of the population. (FDA Talk Paper T97-50, "Latex Labeling Required for Medical Devices")

Latex Does Not Meet Criteria Established in FHSA [15USCA Section 1261(k)] or in FHSA Regulations [16 CFR Part 1500.3(c)(5)]. FHSA Regulations state that in order to meet the criteria for designation as "Strong Sensitizer," the substance "will induce an allergic response, including allergic photosensitivity This allergic reaction will become evident upon reexposure to the same substance " The regulations do not say that an allergic response "may" be induced, or will be induced "in some people" Thus, in the absence of some qualifying language, a substance should at a minimum induce an allergic response with some degree of consistent regularity Yet according to the Food & Drug Administration "Talk Paper" T97-50 ("Latex Labeling Required for Medical Devices") only 1% of the population is likely to suffer an allergic reaction to Natural Rubber Latex.

CPSC has never designated any substance as a "strong sensitizer" under the FHSA. While CPSC has never designated a substance as a "strong sensitizer," it has rejected a proposal to do so. In a 1973 Advisory Opinion, the Commission held that "A strong sensitizer must be a substance which affects a significant portion of the population and which may cause a strong or severe reaction." (CPSC Advisory Opinion No 12, 1973) Further, the Commission noted that "some portion of the population is sensitive in one way or another to almost every article that enters the household," (ibid) but held that it was not the intent of Congress to require labeling of substances "where the hazard is minor comparing the risk or chance of injury against the degree of injury probable or possible." (Senate Report 1158, 86th Congress)

As noted above, the Food & Drug Administration estimates that the general public's risk of an allergic reaction to latex is less than 1 percent. Other studies show that as little as 2 percent of the general population will test positive for *sensitization* to latex allergens. As the majority of those who are sensitized will likely never have an allergic reaction to latex, these studies are in line

with the FDA's estimate Clearly allergic reactions to latex are not a common problem with the general population

There are relatively few cases of serious allergic reactions resulting from skin contact with NRL. The most common response is hives (Reed testimony at OSHA hearing). Severe reaction, or Anaphylaxis, occurs primarily when NRL products contact mucous membranes, such as occurs during obstetric/gynecologic procedures, rectal manometry and surgery In fact, studies suggest that exposure to NRL via mucous membranes is a prerequisite for the anti-27-kd IgE antibody (which can result in anaphylaxis) to develop. Exposure to NRL via medical devices is already being regulated by the Food and Drug Administration, and therefore should not be regulated under the FHSA. (see discussion below)

Many allergic reactions to "rubber" are reactions to chemicals added to NRL during manufacturing, and not to the NRL itself. To quote the petitioner's own reference materials, "Natural rubber poses no hazard as a contact allergen " (Susan E Feinman, Ph D report "Rubber Sensitizers," December 1986) During the manufacturing process, however, chemicals must be added to natural rubber to prolong product life and to confer special properties Many of these additives are capable of sensitizing and can persist in the final product Thus, consumers attributing allergic contact dermatitis to "rubber" are actually reacting to rubber additives "

Accelerators are reported to be responsible for greater than 80% of glove-related allergic contact dermatitis cases (Heese, Peters, Kock, Horstein· Allergic and Irritant Reactions to Rubber Gloves in Medical Health Services Journal of American Academic Dermatology, 1991) There are few reported cases of Delayed-Type Hypersensitivity to raw latex without added chemicals In a study of 822 patients patch-tested for reaction to raw latex, only 10 manifested reaction -- only 5 through the prick-test method (Ibid) This month's **American Journal of Contact Dermatitis** reported on a patient with a history of allergic reaction limited to the area covered by the patient's socks. What originally presented itself as an allergic reaction to the latex threads in the socks, turned out to be a reaction to bleached rubber – once the patient purchased new socks, and discontinued use of bleach, the allergic reaction ceased. (Vol 11, No. 2, June 2000)

NRL Allergy Is Not A Common Problem With The General Public. As noted above, the Food & Drug Administration has estimated that the general public's risk of an allergic reaction to latex is less than 1 percent Other studies showing that as little as 2 percent of the general population will test positive for *sensitization* to latex allergens. Some of these have other risk factors as well, such as predisposition to hand dermatitis, food allergies, etc. [See attached article

from Natuurrubber (1st Quarter 2000), the newsletter of the R-S Information Center for Natural Rubber] As the majority of those who are sensitized will likely never have an allergic reaction to latex, these studies are in line with the FDA's estimate Clearly allergic reactions to latex are not a common problem with the general population.

Allergy to Latex No More Prevalent Than Allergies to Bee-Stings, Food, Bee-Stings, Other Substances. A 1996 study of volunteer blood donors found that the prevalence of detectable anti-latex IgE antibodies was far less (nearly one-third) the prevalence of detectable anti-honeybee IgE antibodies in the same population (Cobain, et al Bee Venom Hypersensitivity in Busselton [Letter] Lancet 1982) Similar studies have shown higher prevalence of detectable anti-yellow jacket venoms. (Golden, et al. Epidemiology of Insect Venom Sensitivity, Journal of American Medical Association, 1989) Further, these studies have demonstrated that while the prevalence of venom-specific IgE in unselected adults is relatively high, reported episodes of anaphylaxis are infrequent (Owenby, Ownby, McCullough and Shafer The Prevalence of Anti-Latex IgE Antibodies in 1000 Volunteer Blood Donors, Journal of Allergy & Clinical Immunology, June 1996)

Allergies to certain foods and extracted materials, such as peanuts (peanut oil), tree nuts, shellfish, soy, dairy products, etc., have been estimated to be at least as common as latex allergies Yet the Federal Government has not taken action to protect the public from these "allergens " According to the Jaffe Food Allergy Institute in New York, up to 8% of children less than 3 years of age, and approximately 2% of adults are allergic to various foods, such as peanuts, tree nuts, fish and shellfish (Food Allergy. Immunopathogenesis and Clinical Disorders Journal of Allergy & Clinical Immunology May, 1993) While the prevalence of food allergies is similar to that of latex allergies, the severity of allergic reaction is far greater with food allergies Food allergy is the leading cause of anaphylaxis outside the hospital setting, accounting for 30,000 Emergency Room visits each year, and as many as 125 deaths. (Peanut-Induced Anaphylactic Reactions International Archives of Allergy Immunology. July 1999) Peanuts are one of the most common foods to cause allergic reactions, and are the most common cause of fatal food allergic reactions (Michael Goldman, M.D.: Peanut Allergy. How Much Peanut Is Too Much? Asthma & Allergy Foundation of America, April/May 1998 Newsletter) Again, the Federal Government has not taken action to protect the public from peanuts, tree nuts, fish and shellfish and other known food allergens.

There are many other substances which pose much higher risks of allergic reaction than Natural Rubber Latex A 7-year study conducted by the Massachusetts General Hospital Contact Dermatitis Clinic patch-tested 688 patients to determine sensitization to 24 different allergens The most common sensitizers were found to be nickel sulfate (17.1%), fragrance mix (13 3%), potassium dichromate (9.4%) and cobalt chloride (9 4%) Rubber was one of the least sensitizing substances, causing a positive reaction in only .8% of the patients (Albert, Gonzalez and Gonzalez Patch Testing Reactions to a Standard Series in 608 Patients Tested from 1990-1997 at Massachusetts General Hospital. American Journal of Contact Dermatitis August 1998) These rates of sensitization are comparable with those reported by the North American Contact Dermatitis Group in 1995 (Marks, Belsito, Deleo, et al· North American Contact Dermatitis Group Standard Tray Patch Test Results. American Journal of Contact Dermatitis 1995)

Section III

FHSA Labeling Requirements Should Not Apply to Natural Rubber Latex (NRL). Natural Rubber Latex, the product distributed by the companies represented herein, should not fall under the jurisdiction of FHSA since it is not sold directly to the consumer [1500 3(b)(12) and (14), 1500.3 (c)(10)(i)]

1. The term "label" means a display of written, printed or graphic matter upon the immediate container of any substance or . article which is . intended or suitable for delivery to the ultimate consumer. 15 USCA Section 1261 (n)

2. The term "misbranded hazardous substance" means a hazardous substance . intended, or packaged in a form suitable, for use in the household or by children . . (p)

   Regulations expound on the statutory language:

3. "Hazardous substances intended or packaged in a form suitable, for use in the household means any hazardous substance, whether or not packaged, that under any customary or reasonably foreseeable condition of purchase, storage, or use may be brought into or around a house, apartment, or other place where people dwell . . . 16 CFR Section 1500.3(i)

FHSA Labeling Requirements Should Not Apply to Products Regulated by Food & Drug Administration under the Federal Food, Drug, and Cosmetic Act. 15 USCA Section 1261(2). Substances subject to the Federal Food, Drug, and Cosmetic Act are exempted by section 2(f)(2) of the Act. Thus, latex-containing medical devices which are currently regulated by FDA should not be impacted by any prospective labeling requirements under FHSA Further, latex gloves which are sold for both medical use and household use, are a) labeled as containing latex, and b) often carry a warning that latex may cause allergic reactions

Benefits of Latex Barrier Protection Acknowledged by CDC, OSHA. Bloodborne pathogens standard requires use of barrier protection, etc Nursing 2000 acknowledges need for surgical team members to wear sterile gloves (Nursing 2000, Volume 30, Number 6) Granting petition would create alarm among general public, could impact public safety by increasing spread of HIV and sexually transmitted diseases Most of population is not latex-sensitive, and may unnecessarily avoid latex products (such as gloves or condoms) which can protect users from serious diseases.

Response to Comments Received Thus Far. Many comments are from former health-care workers who have become sensitized to latex through workplace use While empathizing with their physical condition, we do not believe that designation of latex as a "strong sensitizer" is justified by the available science As for Dr. Hamilton's support for labeling of latex-containing consumer products as "containing natural rubber latex," we emphasize that the Petition goes far beyond the mere ingredient labeling Dr Hamilton supports We reiterate that we do not believe that designation of latex as a "strong sensitizer" is justified by the available science

In response to Dr. Edlick's comments in support of the Petition, we wish to point out to the Commission that the documentation he supplies focuses almost exclusively on the use of cornstarch on latex gloves. Whether or not cornstarch should be banned from use on latex gloves is an issue outside the scope of the Petition, and outside the scope of the FHSA.

Section IV

Conclusion We empathize with the plight of individuals who are latex-sensitive However, we do not believe that Natural Rubber Latex meets the criteria set forth in FHSA for designation as a "strong sensitizer." Thus, we urge the Commission to deny Petition CP 00-2

Submitted by

Kathryn L. Beaubien
Lindsay, Hart, Neil & Weigler, LLP
1275 Pennsylvania Avenue, N.W
Ninth Floor
Washington, D C 20004
tel 202-662-6771
fax 202-467-8381

On behalf of:
Centrotrade Rubber USA, Inc.
Guthrie Latex, Inc.
Lewis & Peat Rubber LP

June 21, 2000

Attachment

Latex Protein Allergy: Some Questions

Kevin P. Jones[1]

There appears to be a marked variance between the assertions made about the incidence of latex protein allergy and the overall incidence of allergic conditions within the general population. Most medical texts consider that as far as can be ascertained the overall incidence of persons susceptible to allergies is about 1% of the population That is all classes of individual, and all types of allergy. Some materials are known to cause allergies: nickel is one of the commonest. On the other hand, some individuals may be allergic to almost anything, including most fabrics, most foods (nuts are amongst the most potent), and many substances which the vast majority find innocuous. A very small, unfortunate minority is allergic to a wide range of substances: this group is known as atopic individuals. Some substances, notably the venoms produced by insects and plants, whilst unpleasant or occasionally dangerous to most human beings, are especially threatening to some individuals Thus most people can tolerate a single wasp sting, but a small minority experience life-threatening reactions from such a sting.

It should be noted that about 125 individuals die from eating peanuts in the USA each year[1], that is over the twice the number who die from insect stings Despite these fatalities, some of whom are relatively high profile such as a young Scottish athlete who died from ingesting some peanuts within a chicken sandwich, few measures appear to being taken to protect such individuals Some European airlines have banned the distribution of peanuts in flight, however, due to the obvious risks involved On the other hand some alleged American centres of medical excellence are working towards a total ban on latex gloves One would hope that these same centres will show equal vigilance towards peanuts and other hazardous food and drugs.

For a time, it appeared that some American medical researchers were attempting to assert that the prevalence of latex protein allergy within the general population is high, but a recent paper by Liss and Sussman[2] appears to accept that this is not the case and that the overall prevalence of latex sensitization in unexposed groups is "quite low", that is less than 1% are at risk. Thus, Liss and co-workers[3], who have asserted that prevalence of latex sensitization in American health care workers is high (in excess of 10% in some groups) accept that this sensitization is at variance with what is normal in the population as a whole.

Latex protein allergy must be set against this background, and it is surprising that a high proportion of the medical literature fails to make this connection In particular, there seem to be few who are prepared to challenge some of the claims being made for very high levels of allergic responses (one source on the Internet quotes that 18 million Americans are susceptible to latex protein allergy) within specialist populations to a material which was successfully used without any suggestion of danger for much of the twentieth century. Some of the accelerators employed, notably alpha naphthylamines, were subsequently found to be carcinogenic. Apart from a few individuals who reacted to accelerator residues there was little to suggest that latex as such was anything other than a benign material Perhaps the greatest evidence of this has been the regular use of latex as an adhesive in a wide variety of applications, including its use by school children. A very recent paper[4] which reports on experience in a Turkish glove plant appears to reinforce this view. The incidence was 3 2%: five subjects out of a total worker population of 155 This study supports studies into the incidence of allergy amongst Malaysian rubber glove workers[5], where the incidence rate is around 2%. It should be noted that in both cases the workers would have been liable to experience much higher protein levels than heath care workers in the USA

Nevertheless, American quasi-official documents, such as a recent paper[6] from NIOSH continue to suggest that "Allergy to natural rubber latex (NRL) has become a significant health risk among healthcare workers and other persons using latex gloves in the course of their work [NIOSH 1997, Turjanmaa et al 1996, Watts et al 1998] A number of studies indicate that levels of latex sensitization in healthcare workers ranges from 5-12% [Liss and Sussman 1999] One study indicated that the prevalence of latex sensitivity among 1,351 healthcare workers was 12.1%; and of that same 1,351 workers, 60% reported work-related symptoms [Liss et al 1997] Despite the numerous studies performed in this population, little is known about the non-healthcare worker occupations Occupational asthma and symptoms of latex allergy have been reported in select groups including hairdressers, workers at a latex glove manufacturing plant, and workers at a latex doll manufacturing plant Prevalence rates up to 11% have been reported in these studies (11% and 9%, respectively, in the latter two studies) [Orfan et al 1994, Tarlo et al 1990, van der Walle and Brunsveld 1995) Although the prevalence rate for other non-healthcare worker populations is unknown, these studies indicate that workers exposed to latex gloves or products containing latex may also be at risk for latex allergy "

Not all the references cited above are recorded below, although particular attention will be paid to that[3] by Liss et al 1997 as it quotes some questionable data relating to protein concentrations within gloves The paper also typifies the elective nature of many of the studies that is there is a tendency to base such studies upon those who consider themselves to have experienced some form of allergic response to latex gloves. Furthermore, there is sometimes a glib use of statistics: "60% reported work-related symptoms" that is 60% of the 1,351 individuals who had elected to join the study as they considered themselves to being experiencing some form of skin reaction Such studies lead to extrapolations, such as "more than 18 million Americans sensitized to latex", the basis for which are also questionable It is important to note that in general elective behaviour[7] only 10% of those who consider to be allergic to specific foods are actually allergic when rigorous medical tests are performed Thus, much of the published literature on latex protein allergy would appear to be at variance with the general literature on allergic responses

The apparent cause of the latex allergy "epidemic" may be traced to the great increase in the uptake of medical gloves in the United States following the true epidemic of AIDS and the fear

which this induced both in medical staff and their patients This fear was manifest in all countries it is particularly acute in the USA where the accidental transmission of such a disease would be extremely expensive given the highly litigious society therein This market growth for gloves was accompanied by a short term decline in manufacturing standards as entrepreneurs entered the market to meet a sudden increase in demand There was also a shift in manufacture to natural rubber producing countries, it is possible that the fresher latex used in such countries may contain higher protein concentrations It is certain that some of the new entrants to the industry were unaware of good factory practice, both at the concentration and dipping phases. Failure to ensure adequate plant cleanliness and water quality for leaching led to gloves being produced with unacceptably high protein concentrations Sufficient gloves were marketed to cause some potentially allergic (atopic) individuals to acquire an additional allergy Unfortunately, a few highly susceptible spina bifida patients appear to have died following contact with highly unsatisfactory latex products (enema tips) The industry has reacted to this problem by introducing quality control measures, as typified by the Standard Malaysian Glove In theory, the number of new cases of latex protein allergy should now decline as the primary cause has been removed from the market.

Another factor which has been underplayed is that at about the same time talc, a potentially hazardous material, was replaced by the apparently more benign cornstarch powder as a dusting agent Cornstarch is a potential allergen[8] and is relatively similar to wheat flour which is a frequent cause of allergic reactions. Nevertheless, there is a large literature on "latex protein allergy" which fails to recognise that the cornstarch may have a role to play in the problem, especially where it is liable to be inhaled as in the low humidities prevalent in many hospitals in the USA. For a time it would seem that the FDA and other regulatory bodies in the United States were uneasy in condemning a potentially home-produced product, as compared with their response to latex. The FDA now appears to recognise the potential dangers of dusting powders and is regulating their use on gloves made from all polymers. Subsequently, casein (a minor component of some gloves) has been recognized[9] as being a contributory factor: some individuals are allergic to milk products. The measures proposed (additional labelling) would appear to be unrealistic.

Atopic behaviour has been mentioned. There is a considerable literature on cross reactions between those who have been diagnosed as being "latex sensitive" with their response to other allergens, especially foodstuffs, such as banana and avocado There is an implicit assumption within such literature that the latex contact has "induced" responses to these other common substances, whereas the response to latex proteins could have followed reactions to bananas, or a vast variety of other common foods. Once again it is noteworthy that the response of regulatory bodies within the USA to the ingestion of peanuts in public places is much less severe than that regarding the use of latex gloves. It should be noted that even in Europe deaths from eating peanuts are relatively widespread (for instance in one year there were six fatalities in the United Kingdom alone)[10], whereas most of the "deaths" associated with the use of latex gloves are far more questionable (the patients may have died from other causes).

Nevertheless, it now appears to be accepted that the prevalence of latex sensitivity amongst healthcare workers in the USA is at variance with the norm Thus either latex protein allergens must be peculiarly severe (to those routinely exposed to them within a medical environment), or the population which opts for health care work must be peculiarly prone to allergic reactions Furthermore, if the allergen is so severe, then one must consider whether the control of such an allergen is on a par with other comparably dangerous, or significantly more serious allergens, such as peanuts. Peanuts are solely a fairly trivial source of food, whereas latex films form a highly effective barrier against pathogens, including HIV, or the AIDS virus

Whilst it would be difficult to deny that there has been some increase in the incidence of allergic responses to the proteins within natural rubber latex, it is highly questionable whether this has been sufficient to justify some of the measures being proposed in some supposed centres of medical excellence in the USA. Some such institutions envisage the virtual total elimination of latex gloves without any consideration of the alternative materials being proposed In many cases the alternatives are poorer, or even utterly ineffectual barriers Vinyl films are so imperfect[11] that there would appear to be little point in donning them Disposal of them by combustion is banned in many European countries due the risk of the dioxin release Some of the other favoured materials may contain traces of carcinogens, or are known to cause allergic reactions.

It might appear to be unwise to criticise the literature of a discipline of which one is a not a member. Nevertheless, it must be remembered that (1) the implications of such a literature may extend far beyond the boundaries of that discipline, and (2) the medical profession has not been averse to performing tests upon gloves, and publishing the results, with scant regard to whether such tests are legitimate The medical literature abounds in tests on gloves where the sample sizes are unrealistically small, where no attempt has been made to verify or to apply controls to the samples selected, where no attempt has been made to relate the "studies" to other work, especially that outside the medical literature, and where there is an apparent lack of awareness of the irregularities of the testing processes, some of which were peculiar to the studies. It would not be an exaggeration to state that some papers have been published where the unverified tests for protein concentrations have been performed on open boxes of gloves which were at hand. It is not beyond the bounds of possibility that such boxes may have become "polluted" by other gloves, or even by other materials. Such tests frequently present the data in a form that implies the tests are highly accurate whereas tests for protein concentrations are unreliable[12]. For instance, one paper carefully observes with excessive precision that their sample of surgical gloves contained higher levels (324 g/g) of protein than their sample of examination gloves (198·g/g) without observing that this result[3] is inherently anomalous typical surgical gloves have lower protein levels as they are manufactured to higher standards. This paper has been widely cited as it suggests that in excess of 10% of health care workers in their elective study may be susceptible to latex allergy.

In many instances, the literature appears to be setting out to advance a particular position (to assert that many health care professionals are afflicted) rather than to establish the true situation. In part this might reflect a caring attitude for those few co-professionals who have been affected and are seeking some form of redress, but it may also reflect the quest to create

a new industry. Worker compensation is a lucrative business for many within the American legal profession, much of which is financed by successful cases Within such an environment it would not be difficult to envisage some attempting to present unobjective data to influence such litigation.

Haydn Williams[13] closed a contribution on the value of latex gloves by noting that "The casual reader or web surfer on the subject of latex allergy could easily form the impression that there is a crisis of epidemic proportions. This is not so While in no way denying the very real suffering of some individuals due to allergy, it must be remembered that such individuals are in a small minority. Billions of gloves are used annually in protecting healthcare workers from the very real threat of infection by deadly viruses and antimicrobial resistant micro-organisms. Natural rubber latex, furthermore, is universally agreed to be the best barrier to such organisms. These are essential uses that have very real positive consequences for those at risk of infection. The enormous amount of independent research and international collaboration on understanding the issues involved in latex allergy is bearing fruit Standards to control allergen levels are and will be developed, and processes are in place to bring about product improvements Continued efforts in this direction coupled with education of end users will lead to a continued reduction in risk of sensitisation and result in a situation where the vast majority of NR glove users can continue to do so with confidence that they have the best and safest barrier to infection on their hands".

In conclusion, it is difficult to accept that certain sections of the medical profession in the USA and some of the quasi-official regulatory bodies have been fully objective in their approach to what it is agreed has been a genuine problem which the glove manufacturing industry has addressed with considerable vigour. This brief survey covers similar ground to a paper presented at an International Rubber Research and Development Board (IRRDB) Workshop held on Hainan Island, China in October 1999, which it is hoped is about to be published more extensively elsewhere It is hoped that it may be possible to perform a more rigorous examination of some of the claims being made on the basis of extremely small and elective sample sizes later.

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[1] *International Rubber Research and Development Board.*

Environmental Issues and Challenges in the European Latex Industry

A. Gonlag[1]

In Europe the outlet for Natural Rubber (NR) latex is mainly into a few traditional uses such as molded foam, rubberized hair and adhesives. Only small quantities of NR based gloves and condoms, and some baby teats and toy balloons are still made in Europe. The producers must take care of minimizing residual protein and accelerator levels to minimize the risk of allergy problems. Baby teats must meet the limits set for nitrosamines as described in EU Directive 93/11/EEC. Only Germany has regulated nitrosamines for other consumer goods as described in the BgVV Recommendation XXI (Special Category). Literature describes a number of possibilities for meeting these limits. This paper focuses on the application of the 'nitrosamine safe' zinc dibenzyldithiocarbamate (ZBEC). The potential of ZBEC in post- and pre-vulcanization processes is summarized

Just like as with NR glove manufacture, production of thin synthetic rubber gloves is concentrated largely at plants in the Far East and US [2] There are no dipping plants making thin Synthetic Rubber latex gloves in Europe industrial gloves are still made in Europe. The biggest consumers of synthetic latex are producers of carpet backings (XSBR and SBR) and molded foam (SBR). Approximately 60% of high solids SBR are used in the carpet industry, 30% in mattresses and molded foam and 10% in miscellaneous uses (e g adhesives and bitumen modification).[3] The manufacturers of foamed goods are challenged to handle a variety of environmental issues and challenges o a dust, volatile organic compounds, smell, recycling, packaging, zinc and nitrosamines[20].

In general, the high standard in processing, production and product quality are safeguarded and further improved, by

- working in accordance to quality management systems like ISO 9000's and MDD (Medical Devices Directive of European Community).
- following the recommendations in ISO 14000 (Environmental Management, for the prevention of pollution), combining with Eco Management and Audit Scheme (EMAS) to cope with new Environmental Rules in the European Union [4]

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LINDSAY, HART, NEIL & WEIGLER, LLP
ATTORNEYS AT LAW

Peter Friedmann
Of Counsel

1275 Pennsylvania Avenue, N W
9th Floor
Washington, D C 20004
Tel (202) 467-8383
Fax (202) 467-8381
OurManInDC@aol com

Portland Office
(503) 226-7677

June 21, 2000

Ms. Sadye E. Dunn
Office of the Secretary, Rm 502
Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

Re: Petition HP 00-2 - Petition on Natural Rubber Latex

Dear Ms. Dunn:

Enclosed please find the comments of Microflex Corporation in response to the above-referenced petition.

Sincerely,

Peter Friedmann

Peter Friedmann, Esq

Enclosure

LINDSAY, HART, NEIL & WEIGLER, LLP
ATTORNEYS AT LAW

Peter Friedmann
Of Counsel

1275 Pennsylvania Avenue, N W
9th Floor
Washington, D C 20004
Tel (202) 467-8383
Fax (202) 467-8381
OurManInDC@aol com

Portland Office
(503) 226-7677

PETITION HP 00-2
PETITION ON NATURAL RUBBER LATEX

Comments By
MICROFLEX CORPORATION

* * * * *

Statement of Interest. Microflex Corporation is a leading supplier of latex gloves for the laboratory, dental, emergency medical service, healthcare and industrial industries The latex gloves which Microflex supplies to the medical industry are currently subject to Food & Drug Administration regulation. We presume that such FDA regulation of latex gloves for medical use will continue, and that the Consumer Product Safety Commission (CPSC or "Commission") would limit any regulation of latex products to those marketed to non-medical consumers. Thus, even if granted, we do not believe that Petition HP 00-2 would impact the Microflex health care product line. However, as Microflex is also a supplier of latex gloves for non-medical industrial use, the Company would be directly impacted if the Commission were to grant the above-referenced Petition, designate Natural Rubber Latex (hereinafter "NRL" or "latex") as a "strong sensitizer," and require labeling of household products which contain latex.

Position of Microflex. Petitioner has asked CPSC to a) designate Natural Rubber Latex (NRL) as a "strong sensitizer" under authority of Federal Hazardous Substance Act (FHSA); and b) require cautionary labeling as allowed under the FHSA. Microflex opposes these actions for the following reasons:

1. There is no clear statutory standard by which CPSC shall designate a product as a "strong sensitizer;"
2. Scientific study and analysis does not support Petitioner's claim that Natural Rubber Latex qualifies as a "strong sensitizer" under FHSA; and

3. Regulation of latex gloves for medical use should be left to the Food & Drug Administration (FDA).

No Clear Statutory Standard. The Federal Hazardous Substances Act (FHSA or "the Act") was enacted in 1960. Enforcement authority for the FHSA was granted to the Department of Health, Education and Welfare (HEW). When HEW promulgated regulations to implement the Act the following year, it listed five substances as "strong sensitizers" (see list below). HEW never designated any additional substances as "strong sensitizers." In 1973, the HEW ceased to exist, with its functions reorganized among several Federal agencies, including the Department of Health and Human Services, Department of Education, and the Consumer Product Safety Commission. Administrative and enforcement authority for FHSA transferred to CPSC

Since that time, CPSC has promulgated regulations which expound upon the statutory definition of "strong sensitizer," but established no clear standard by which a substance shall be measured in this regard Recently, CPSC legal staff have advised that the Commission does not have in its possession any records of the standard used by HEW in designating the original 5 substances as "strong sensitizers." Further, HEW's primary successor, the Department of Health and Human Services (HHS), claims to have no record of such proceedings or standard either.

Latex Does Not Meet Criteria Established in FHSA [15USCA Section 1261(k)] or in FHSA Regulations [16 CFR Part 1500.3(c)(5)]. Although a clear standard for "strong sensitizer" does not exist, current FHSA regulations provide some guidance. They state that in order to meet the criteria for designation as "Strong Sensitizer," the substance "will induce an allergic response, including allergic photosensitivity. This allergic reaction will become evident upon reexposure to the same substance." The regulations do not say that an allergic response "may" be induced, or will be induced "in some people". Thus, in the absence of some qualifying language, a substance should at a minimum induce an allergic response with some degree of consistent regularity. Yet the Food & Drug Administration has estimated that

only 1% of the population is likely to suffer an allergic reaction to Natural Rubber Latex.

CPSC Has Never Designated Any Substance as a "Strong Sensitizer" under the FHSA. As noted above, all five designated "strong sensitizers" currently listed in the FHSA regulations were designated by the former Department of Health, Education and Welfare (HEW) nearly forty years ago. The CPSC itself never approved a petition to designate a substance as a "strong sensitizer." Since no standard for designation of "strong sensitizer" presently exists, the Commission must undertake to develop and promulgate such a standard (applicable to all potential "strong sensitizers") before it attempts to apply it to any specific substance.

CPSC has, however, rejected a proposal to designate permanent press clothing as a "strong sensitizer " The Commission's 1973 Advisory Opinion is instructive and directly applicable to the current Petition relating to Natural Rubber Latex. The Commission held that "A strong sensitizer must be a substance which affects a significant portion of the population and which may cause a strong or severe reaction " (emphasis added) (CPSC Advisory Opinion No 12, 1973) Further, the Commission noted that "some portion of the population is sensitive in one way or another to almost every article that enters the household," (emphasis added) (ibid) but held that it was not the intent of Congress to require labeling of substances "where the hazard is minor comparing the risk or chance of injury against the degree of injury probable or possible." (Senate Report 1158, 86th Congress) NRL does not meet the criteria established by the Commission in that Advisory Opinion.

In contrast, studies have shown as little as 2% of the general population is capable of producing IgE antibodies specific to NRL. This is an extremely low rate of sensitization. But even this low rate, is much greater than those who will ever manifest a reaction to latex. Further, studies confirm that not all subjects who test positive for sensitization to latex allergens will ever manifest clinical symptoms. In fact, most will not (NHANES III) While FDA estimates less than 1% of the population will suffer an allergic reaction to latex, even if higher estimates of general latex sensitivity (such as

the Occupational Safety and Health Administration's estimate of 1-6% of general population) are accepted, such estimates cannot be construed in any way as a "significant portion of the population."

These low rates of latex sensitization and even lower rates of allergic reaction suggest that NRL does not meet the Commission's own Advisory Opinion requiring a strong sensitizer to be a "substance which affects a significant portion of the population."

NRL Not As Hazardous as "Strong Sensitizers" currently listed in FHSA. In the absence of any clear statutory standard CPSC must be guided by the list of "strong sensitizers" originally designated by HEW immediately following enactment of the FHSA:

- Paraphenylenediamine and products containing it,
- Powdered orris root and products containing it;
- Epoxy resins systems containing in any concentration ethylenediamine, diethylenetriamine, and diglycidyl ethers of molecular weight of less than 2000
- Formaldehyde and products containing 1 percent or more of formaldehyde
- Oil of bergamot and products containing 2 percent or more of oil of bergamot

Natural Rubber Latex is not comparable to any of these substances. Paraphenylenediamine, formaldehyde and the specified epoxy resins are toxic chemicals. Latex is not. Oil of Bergamot is a photosensitizer, not an allergen. The only allergen, powdered orris root, is clearly distinguishable from latex due to a) its extreme allergenicity; and b) its toxicity. In comparison, according to FDA, the vast majority of the population (99%) will never suffer an allergic reaction to latex.

Most Adverse Reactions to Natural Rubber-containing Products Are Not Allergic Reactions to the Natural Rubber Itself, but Rather to Other Irritants or Chemicals Added to the Natural Rubber During Manufacturing. As the Occupational Safety and Health Administration reports, by far the majority of reactions to gloves of all types, including NRL gloves, are classified as irritant contact dermatitis. This non-allergic reaction occurs when glove powders, soaps, detergents or other products irritate the skin, causing rashes and dried, cracked skin. [*Potential for Allergy to Natural Rubber Latex Gloves and Other Natural Rubber Latex Products*, **OSHA Technical Bulletin**, April 12, 1999.]

The second most common reaction is Delayed-Type (Type IV) Contact Dermatitis, which begins with redness and inflammation over the exposed sites and is often followed by blister formation. It is an allergic reaction directed at chemicals present in natural rubber latex products, added during the manufacturing process. [*Latex Allergy: Prevention and Treatment*, **Anesthesiology Review**, Vol XXI, No. 5, Sept./Oct , 1994]

The least common reaction to natural rubber latex products is the Immediate Hypersensitivity (Type I) reaction, upon which Debi Atkins' petition is based. [*Latex Allergy in Hospital Employees*, **Annals of Allergy**, Vol. 72, March 1994.] This comparatively uncommon reaction is the only true allergic, IgE-mediated response to natural rubber latex proteins. Symptoms can range from contact dermatitis (rash) and rhinoconjunctivitis (runny nose and watery eyes) to, in rare cases, anaphylactic shock. [*NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace*, DHHS (NIOSH) Publication No. 97-135, June 1997.] However, many people who have demonstrated IgE antibodies to latex through a RAST inhibition test (a type of blood test) do not have physical symptoms of Type I latex allergy, and may never exhibit such symptoms. [*Glove-Related Skin Symptoms Among Operating Theatre and Dental Care Unit Personnel*, **Contact Dermatitis**, 1994, Vol. 30, p. 139.]

NRL Does Not Have "Significant Potential for Causing Hypersensitivity." In order to designate Natural Rubber Latex as a "strong sensitizer," the CPSC must "find that the substance has a significant potential for causing hypersensitivity." To make this finding, CPSC must consider a) the frequency of occurrence and b) severity of the reaction.

A. Frequency of Occurrence. The Food & Drug Administration has estimated that the general public's risk of an allergic reaction to latex is less than 1 percent. Other studies showing that as little as 2 percent of the general population will test positive for *sensitization* to latex allergens. As the majority of those who are sensitized will likely never have an allergic reaction to latex, these studies are in line with the FDA's estimate. Clearly allergic reactions to Natural Rubber Latex are not a common problem with the general population.

B. Severity of the Reaction. There are relatively few cases of serious allergic reactions resulting from skin contact with NRL. (Warshaw, *Continuing Medical Education - Latex Allergy*, **Journal of the American Academy of Dermatology**, 1998) According to Charles E. Reed, M.D., former Chief of the Division of Allergy and Internal Medicine at the Mayo Clinic, "The *most common* symptom of latex allergy is hives on the area in contact with the latex. The *second most common* is upper respiratory allergy and asthma from the airborne allergen in the air This respiratory allergy is fundamentally no different than an allergy to cats or to pollens or any other sort of hay fever or asthma." (Testimony of before House Subcommittee on Oversight and Investigations of the Committee on Education and the Workforce, U S. House of Representatives, March 25, 1999) Severe reaction, or anaphylaxis, occurs primarily in patients during surgery or medical examinations. (Ibid) In fact, studies suggest that exposure to NRL via mucous membranes is a prerequisite for the antibody which can cause anaphylaxis, to develop. (Turjanmaa et al, *Natural Rubber Latex Allergy - The European Experience*, **Latex Allergy**, 1995) These reactions are rare, and almost exclusively occur in the medical environment, which is already being regulated by the Food and Drug Administration. As stated above, we do not believe latex-containing

medical devices should fall within the scope of this Petition.

Bee Stings and Food affect a More Significant Portion of the Population Than Latex. The Commission's use of subjective terms in its Advisory Opinion ("significant portion of the population" and "strong or severe reaction") suggests that the Commission must compare the level of reaction to latex with the levels of reaction to other commonly occurring substances. A 1996 study of volunteer blood donors found that the prevalence of detectable anti-latex IgE antibodies was far less (nearly one-third) the prevalence of detectable anti-honeybee IgE antibodies in the same population (Cobain, et al Bee Venom Hypersensitivity in Busselton [Letter]. Lancet 1982) Similar studies have shown higher prevalence of detectable anti-yellow jacket venoms (Golden, et al. *Epidemiology of Insect Venom Sensitivity*, **Journal of American Medical Association**, 1989)

While CPSC does not regulate food or insects, it is helpful for the Commission to consider the level of sensitivity of the general population to common foods and contact with insects as it seeks to apply the standard it set forth in its 1973 Advisory Opinion

According to the Jaffe Food Allergy Institute in New York, up to 8% of children less than 3 years of age, and approximately 2% of adults are allergic to various foods, such as peanuts, tee nuts, fish and shellfish. *(Food Allergy. Immunopathogenesis and Clinical Disorders*, **Journal of Allergy & Clinical Immunology**. May, 1993) While the prevalence of food allergies is similar to that of latex allergies, the severity of allergic reaction is far greater with food allergies. Food allergy is the leading cause of anaphylaxis outside the hospital setting, accounting for 30,000 Emergency Room visits each year, and as many as 125 deaths. (*Peanut-Induced Anaphylactic Reactions*, **International Archives of Allergy Immunology**. July 1999) Peanuts are one of the most common foods to cause allergic reactions, and are the most common cause of fatal food allergic reactions. (Michael Goldman, M.D., *Peanut Allergy: How Much Peanut Is Too Much?* **Asthma & Allergy Foundation of America Newsletter**,

April/May 1998) Yet peanuts, tree nuts, fish and shellfish have not been designated by CPSC as "strong sensitizers."

Thus, it is clear that NRL allergic reaction is neither "substantial" (in terms of percentage of population impact) nor "strong or severe" when compared to many unregulated substances with which the general population comes into daily contact

FHSA Labeling Requirements Should Not Apply to Products Regulated by Food & Drug Administration under the Federal Food, Drug, and Cosmetic Act. 15 USCA Section 1261(2). Substances subject to the Federal Food, Drug, and Cosmetic Act are exempted by section 2(f)(2) of the Federal Hazardous Substances Act, except where a food, drug, or cosmetic offers a substantial risk of injury or illness from any handling or use that is customary or usual . . ." (16 CFR Section 1500 81) We do not believe the threat posed by household use of latex medical devices meets this criteria Further, most medical devices which are sold for non-medical use -- including the latex gloves which Microflex sells -- are a) labeled as containing latex; and b) often carry a warning that latex may cause allergic reactions.

Benefits of Latex Barrier Protection Acknowledged by CDC, OSHA. Contamination control for medical personnel has long been recognized as the first line of defense against the spread of infection disease for both patient and health care provider. With occupational exposure to hepatitis and HIV, there has been a re-emphasis on the importance of hand protection. In 1987, the Centers for Disease Control and Prevention (CDC) recommended universal precautions, the concept that blood and certain body fluids from all individuals should be approached as if potentially infectious The use of barrier protection was subsequently required by the Occupational Safety & Health Administration's (OSHA) bloodborne pathogens standard. Latex gloves provide the most effective protection against disease. As would be expected, the increased glove usage has resulted in an increase in frequency of irritant and allergic contact dermatitis. (Truscott. *The Industry Perspective on Latex.* **Latex Allergy**, 1995)

Granting Petition Would Create Alarm among General Public, Could Impact Public Safety by Increasing Spread of HIV and Sexually Transmitted Diseases
Latex is crucial in protecting against the spread of deadly infectious diseases such as AIDS, HIV and Hepatitis. Most of the population is not latex-sensitive, and may unnecessarily avoid latex products (such as gloves or condoms) which can protect users from these serious diseases.

Response to Comments Received Thus Far. Most comments are from former health-care workers and others who have become sensitized to latex through workplace use. While empathizing with their physical condition, we do not believe that designation of latex as a "strong sensitizer" is justified by the available science. Further, what latex-sensitive respondents seek is far less than designation of NRL as a "strong sensitizer" under the Act Rather, they seek to require content labeling of products containing latex This is only part of that which is requested by the Petitioner The Petitioner appears to be using the FHSA as a means to require content labeling of latex products. However laudable this ultimate objective may be, it cannot override the statutory criteria which must be met for a product to be designated a "strong sensitizer" We do not believe that NRL meets these criteria.

As for Dr. Hamilton's strong support for labeling of natural rubber latex containing consumer products as "containing natural rubber latex," we emphasize that the Petition goes far beyond the mere ingredient labeling Dr. Hamilton supports. We reiterate that we do not believe that designation of latex as a "strong sensitizer" is justified by the available science.

In response to Dr. Edlick's comments in support of the Petition, we wish to point out to the Commission that the documentation he supplies focuses almost exclusively on the use of cornstarch on latex gloves. Whether or not cornstarch should be banned from use on latex gloves is an issue outside the scope of the Petition, and outside the scope of the FHSA.

Conclusion. We empathize with the plight of individuals who are latex-sensitive and acknowledge their need to know which consumer products do contain latex. To this end, Microflex presently labels all of its products to indicate latex content regardless of whether the product is destined for medical use. Notwithstanding this fact, we do not believe that Natural Rubber Latex meets the criteria set forth in FHSA for designation as a "strong sensitizer." Thus, we urge the Commission to deny Petition CP 00-2.

Respectfully Submitted,

Peter Friedmann

Peter Friedmann, Esq.

On Behalf of Microflex Corporation

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RUBBER
manufacturers
association

1400 K Street, NW • Washington, DC 20005 • tel (202) 682-4800 • fax (202) 682-4809 • www rma org

June 21, 2000

Office of the Secretary
Consumer Product Safety Commission
Washington, DC 20207

Subject: Petition HP 00-2, Petition on Natural Rubber Latex (65 Fed Reg. 15133, March 21, 2000; 65 Fed.Reg. 33525, May 24, 2000)

The Rubber Manufacturers Association (RMA) appreciates the opportunity to provide comments to the Consumer Product Safety Commission (CPSC) regarding the petition by Debi Adkins requesting that the CPSC classify natural rubber latex (NRL) as a "strong sensitizer." RMA also thanks the Commission for extending the comment period.

The RMA is the national trade association for the rubber products industry, and represents a $80 billion domestic manufacturing sector. The more than 120 RMA member companies manufacture tires, hoses, belts, seals, molded goods, and other finished rubber products. These companies and their suppliers operate in at least 46 states and employ nearly 650,000 workers. RMA members manufacture a wide variety of products that contain dry natural rubber (as opposed to dipped natural rubber), including tires, conveyor belts, v-belts, hoses, air springs, rubber tracks, motor mounts, impeller shafts, engine mounts (both solid rubber and hydraulic), transmission mounts, strut mounts, body mounts, differential mounts, bladders, bumpers, bushings, dampers, vibration isolation devices, and other molded rubber goods.[1]

Review of the Scientific Literature

To assist the Commission, RMA retained Exponent, a consulting firm specializing in toxicology and human health, to survey the scientific literature and summarize their findings. The attached report from Exponent provides the results of that effort (Report). RMA submits this Report for consideration by the Commission in making a decision on the petition.

[1] Some of these products are not "hazardous substances intended, or packaged in a form suitable, for use in the household" and would not fall under the jurisdiction of the Federal Hazardous Substances Act. However, since dry natural rubber is not a "strong sensitizer," we need not address these jurisdictional issues.

The Report concludes that, based on the weight of the scientific evidence, NRL is not a "strong sensitizer" as defined in the CPSC regulations because:

- The exposures to latex allergens from dipped natural rubber in the health-care industry do not demonstrate that dipped natural rubber is a "strong sensitizer" within the meaning of the statute.

- A small percentage of the population is latex sensitive, and an even smaller percentage has clinically observable allergic reactions to NRL proteins.

- There is no difference in the prevalence of sensitization to NRL proteins between health-care workers and the general population, according to the most reliable epidemiology surveys, which indicates that exposure to NRL proteins in the health-care setting does not contribute to sensitization. However, greater exposure to NRL proteins in the health-care setting does lead to greater elicitation of an allergic response than in the general population.

- Natural cross-reacting allergens (e.g. foods and pollens) and genetic predisposition play significant roles in the sensitization process;

- Dry natural rubber products have much lower levels of bioavailable NRL proteins as compared to dipped natural rubber products;

- The level of exposure to latex allergens from consumer products containing dipped natural rubber is orders of magnitude lower than from dipped natural rubber medical gloves;

- The level of exposure to latex allergens from consumer products containing dry natural rubber is many orders of magnitude lower than from dipped natural rubber medical gloves;

- The overwhelming majority of consumer products containing NRL materials are made via the dry rubber process; and

- Dry natural rubber products have not been associated with allergic reactions among the general population or those exposed in the health-care setting.

CPSC Should Review the FDA Labeling Rule as Guidance in Reviewing Petition

As the Report describes, two types of NRL materials are used in the manufacture of consumer products – dry natural rubber (tires, hoses, belts, balls, etc.) and dipped natural rubber (gloves, condoms, balloons, etc). Dry natural rubber products contain much

fewer bioavailable latex proteins than dipped natural rubber and should be analyzed separately, as the Food and Drug Administration correctly determined in its rulemaking to require labeling of medical devices containing NRL materials (62 Fed.Reg. 51021 et seq, September 30, 1997). Following the FDA's lead, the CPSC should make a distinction between dry and dipped natural rubber products when reviewing this petition to list NRL as a strong sensitizer.

In addition, the distinction between the situation being addressed by the FDA and the CPSC must be kept in mind. Of necessity, health care facilities have high levels of exposure to latex allergens, since gloves and other products containing dipped natural rubber are commonly used to prevent exposure to bacteria and diseases. Allergy elicitation levels are exceeded in some common exposure scenarios in the healthcare industry. Thus, some type of warning labels in the healthcare setting is prudent. In the common household situation, however, the normal levels of latex proteins are low, and there are no scientifically confirmed cases where an allergic reaction was elicited by a dry rubber product. Thus, the level of latex allergens in each exposure scenario and the nature of the NRL materials (contained in dry or dipped rubber) provide a very different setting. As a result, the need for a remedy dramatically differs between the healthcare industry and consumer products.

The Petition is not Supported by the Scientific Literature or Public Policy

The petition assumes that labeling is necessary to protect the community with allergies to NRL proteins from being unknowingly exposed to latex allergens at levels that would cause sensitization. However, each of these assumptions is invalid or unsupported. Therefore, no listing should be issued.

First, the weight of scientific evidence does not support a finding that exposure to dipped natural rubber in the healthcare setting causes sensitization to NRL proteins. Since there is no difference in the prevalence of sensitization between healthcare workers, the scientific literature also does not support such a finding for exposure to dry natural rubber contained in consumer products. However, the difference between the healthcare setting and consumer products is one of exposure – since exposure is higher in the healthcare setting, sensitized individuals more frequently elicit an allergic response to NRL proteins. Thus, listing NRL as a strong sensitizer under the Federal Hazardous Substances Act is not necessary to protect consumers from exposure to NRL proteins.

Second, labeling all products containing NRL materials as "strong sensitizers" would inaccurately portray the risk associated with exposure to NRL proteins, especially exposure to dry natural rubber products. Such an action would be overly broad, scientifically unjustified, and ultimately ineffective. A decision to require the labeling of NRL and products containing NRL materials as "strong sensitizers" would be inconsistent with the prior decisions to list substances as "strong sensitizers" and could

potentially undermine the overall credibility of the Commission's efforts to ensure proper labeling of hazardous substances generally.

Third, labeling of consumer products containing NRL materials is burdensome. For example, in most situations, it would be impracticable to place a label on the product. Also, a person other than the person who purchases the product may be exposed to NRL proteins. Thus, warning labels on packages and inserts may not be effective.

Fourth, the marginal benefit of labeling must also be weighed against the fact that the use of products containing NRL materials imparts a necessary attribute to the products in which it is used and, in most cases, there are no readily available, safer alternatives. Products containing NRL materials are used everyday by millions of consumers to enhance automobile safety, prevent the spread of disease, and provide comfortable clothing and useful products to consumers, among scores of other uses. NRL materials provide unique product attributes that usually cannot be duplicated through substitutes.

Fifth, such labeling is unnecessary, because those individuals who experience allergic reactions when exposed to high levels of NRL proteins are well aware of their allergy. Dipped natural rubber products can be identified by the treating physician and generally are readily identifiable Thus, there is no need for labeling of NRL as a strong sensitizer.

Finally, there are also several practical factors (such as usefulness, availability of substitutes, and economic impact) that the CPSC has considered in assessing whether a substance should be considered a strong sensitizer (e.g., see Memorandum from S. Feinman, CPSC, to Sandra Eberic, CPSC, re: Sensitivity to Rubber Chemicals (December 29, 1985).

Each of these factors also argue against listing NRL as a strong sensitizer. Dry natural rubber is an extremely useful substance that often makes the products in which it is used safer and more durable. It is used in a wide range of products, including, but not limited to, door stops, nonskid surfaces, shoes, dish mats, shower mats, and tires. There are no substitutes for many of these uses and the cost of replacements would be significant, if there are replacements.

Conclusion

Accordingly, RMA requests that the Commission ***not*** undertake a rulemaking to consider listing NRL as a strong sensitizer under the Federal Hazardous Substances Act. Based on a review of the scientific literature and applicable public policy criteria, NRL does not meet the requirements for listing as a strong sensitizer. If, however, the Commission does decide to undertake a rulemaking, it is imperative that the Commission recognizes the vast differences in exposure and bioavailability between dry natural rubber and dipped natural rubber products. If a rulemaking is initiated, RMA requests that the

Commission conduct a thorough review of the current scientific literature, treating dry natural rubber and dipped natural rubber separately for purposes of analysis and consideration in the rulemaking process. It will be evident through such a review that dry natural rubber products pose no sensitization risk, regardless of conclusions drawn with regard to dipped natural rubber, and dry natural rubber should not be listed as a strong sensitizer under the Federal Hazardous Substances Act.

RMA hopes the information in this letter and accompanying Report assist the Commission in reaching its decision concerning whether to initiate an investigation. If there are any questions, please feel free to call me at (202) 682-4839.

Sincerely,

Tracey J. Norberg
Director
Environmental Affairs

Enclosure: *Report on Petition to List Natural Rubber Latex as a "Strong Sensitizer,"* Exponent (June 2000)

Report on Petition to List Natural Rubber Latex as a "Strong Sensitizer"

Prepared for

Rubber Manufacturers Association
1400 K Street NW
Washington, DC 20005

Prepared by

Sean Hays
Brent Finley, Ph.D
Exponent
4940 Pearl East Circle, Suite 300
Boulder, Colorado 80301

June 2000

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Contents

Introduction

This report addresses the question of whether natural rubber latex ("NRL"), particularly dry rubber, in consumer products should be listed by the Consumer Product Safety Commission (Commission or CPSC) as a "strong sensitizer," as defined by its Federal Hazardous Substances Act regulations.

Our review of the literature on NRL and the nature of consumer exposure to NRL indicates that NRL in consumer products, particularly dry rubber, will not result in exposure to consumers that has a significant potential to cause hypersensitization, nor will it cause allergic reactions. Thus, no labeling of NRL or consumer products containing NRL (particularly dry rubber) is necessary. Clearly, NRL is significantly different from the handful of other chemicals that are listed as "strong sensitizers."

In summary, the findings of our research on NRL allergies, summarized in the remaining portions of this report are as follows:

- The allergy process is a two step process. First, a person is sensitized to an allergen through exposure above the sensitization threshold. Second, once sensitized, allergic symptoms may be elicited after exposure to the allergen at a level above the elicitation level.
- The overwhelming majority of the population is allergic to one or more substances.
- A small percentage of the population is latex sensitive, and latex sensitization is less common than other common allergens (Table 2).
- A much smaller percentage of the population has clinically observable allergic reactions to NRL.
- Products made from NRL involve two different manufacturing processes that result in either dry rubber or dipped rubber products.
- Dry rubber products contain lower levels of latex allergens, and the latex allergens are less bioavailable than the latex allergens in dipped rubber products. This finding was explicitly recognized by the FDA in their labeling requirements for NRL medical products.
- Exposures to latex allergens are much higher in health-care settings than in a household. It is expected that the level of latex allergens are higher in hospitals because of the frequent use of dipped rubber products, such as latex medical gloves, and the transport of the latex allergens in the powder used in medical gloves.

- Most of the severe allergic reactions to NRL have involved subcutaneous exposure to dipped rubber medical devices.
- The case reports that have been filed do not indicate that dry rubber consumer products cause an allergic reaction or allergic sensitization.
- Most consumer products are made using the dry rubber process or materials.
- The type and nature of the allergic reactions due to exposure to dry rubber is not of the magnitude of the substances that the CPSC has previously designated as "strong sensitizers."
- Therefore, NRL, especially dry rubber, in consumer products should not be labeled as "strong sensitizers."

Specific Issues

A Strong Sensitizer Must Present a Significant Potential to Cause Sensitization

A "strong sensitizer" is a substance "which will cause on normal living tissue through an allergic ... process a hypersensitivity which becomes evident on reapplication" [15 U.S.C. 1261(k)]. In order to meet this definition, a substance "must be capable of causing 'substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use'" (50 Fed. Reg. 46,300 [November 7, 1985]). This determination requires "the nature and level of the exposure to the chemicals from the use or reasonably foreseeable misuse of the product" to be "taken into consideration during a proceeding to determine whether a particular substance is a strong sensitizer." (Id.) Similarly, a "significant potential to cause hypersensitivity" is based on a chemical-specific "consideration of the frequency of occurrence and severity of the reaction." (Id.) The Commission also considers data on the potency and bioavailability of the substance (e.g., CPSC, *Hazardous Substances; Supplementary Definition of Strong Sensitizer*, 51 Fed. Reg. 29,094 [August 14, 1986]).

According to the CPSC guidance, there is a "need to consider bioavailability in estimating risk from use of a product" containing a substance of concern "when a difference is anticipated between the absorption characteristics for the substance to which there is human exposure and those characteristics for the substance when it is tested" (CPSC, *Labeling Requirements for Art Materials and Other Products Subject to FHSA Pretesting Chronic Hazards; Guidelines for Determining Chronic Toxicity; Supplemental Definition of "Toxic,"* 56 Fed. 15,672 [April 17, 1991]). Since the amount of bioavailable latex allergens differ between dipped rubber products and dry rubber products, this factor must be taken into account.

Latex Allergens are Not Bioavailable in Dry Rubber Products

The proteins from the sap of the rubber tree (*Hevea brasiliensis*) are responsible for the Type I hypersensitivity allergic reactions associated with NRL products. NRL products are produced from one of two basic types of NRL materials—dry rubber or dipped latex rubber. **The different processes involved in producing dry rubber or dipped latex rubber products result in dry rubber products having very low levels of bioavailable NRL proteins compared to most dipped latex products.**

Sap collected from the rubber tree is processed to produce either stable liquid latex concentrate or dry rubber (Subramaniam 1995). The liquid latex process involves the addition of anti-fungal agents and anti-coagulants to stabilize the latex so that it can be shipped to the user. Conversely, dry rubber is produced via several processes that coagulate the latex rubber and remove excess water. The resulting rubber solids are milled into sheets or pressed into bales of dry rubber (Subramaniam 1995).

Products made from liquid latex are usually very thin, pliant, and elastic. Examples of these types of products include gloves, condoms, and balloons. These products are made by dipping glass or porcelain molds into the liquid latex and allowing the latex to dry on the mold. The dipping process is repeated a defined number of times to achieve the desired thickness (Subramaniam 1995). It has been demonstrated that dipped latex products contain extractable NRL allergens that may become bioavailable under certain conditions (Alenius et al. 1994; Yip et al. 1994; Yunginger et al. 1994; Lu et al. 1995; Yunginger 1995).

Products made from dry rubber are thicker, less pliant, and sometimes very rigid. Examples of dry rubber products include tires, hoses, belts, sports equipment, balls, and some baby pacifiers and bottle nipples. Dry rubber products are produced via a process that includes extremes of heat and pH, extensive processing, and the addition of a large proportion of fillers (Subramaniam 1995). NRL proteins in dry rubber products are largely denatured, diluted, and immobilized to a far greater extent than in products formed from liquid latex (Yip et al. 1994; Yunginger et al. 1994; Yunginger 1995). In fact, most dry rubber products that have been tested have had no detectable levels of latex allergens (Yip et al. 1994; Yunginger et al. 1994; Yunginger 1995; Thomsen and Burke 2000) and did NOT elicit strong allergic reactions in sensitized patients when challenged with a skin prick test with an extract from the various dry rubber products and dry rubber compound mixtures (Yip et al. 1994). As noted below, the difference in the level of potential exposure to bioavailable NRL between dipped latex products in the health-care setting and dry rubber products in consumer products is magnified even more by the differences in the exposure scenarios.

A Small Percentage of the Population is Latex Sensitive

The initial question in determining whether NRL meets the definition of "strong sensitizer" is whether the existing scientific evidence, taken as a whole, demonstrates that exposure to dipped rubber presents a significant potential to cause hypersensitivity. If it is found that significant exposure to dipped latex products (since they are the highest in bioavailable allergen content) does not pose a significant threat for sensitization, then it must be concluded that NRL is not a "strong sensitizer."

Virtually all substances may be allergens for certain segments of the population (CPSC, Final Report of the Toxicological Advisory Board, 48 Fed. Reg. 57,585 [December 30, 1983]). Generally, the allergy process involves two steps. First, the person must be sensitized to the allergen through exposure to the allergen at a level above the sensitization threshold. Second, once sensitized, the person may elicit an allergic reaction after exposure to the allergen above the elicitation threshold.. Thus, the elicitation of an allergic response is distinct and different from the process of sensitizing an individual to an allergen. As a result, all allergens cannot be considered strong sensitizers. Latex sensitization rates appear not to be substantially different and may even by lower than the sensitization rates

of many other common allergens (Table 2). Exposure to dry rubber products have not caused sensitization to latex allergens.

The issue of allergic sensitization to NRL has been recognized since the late 1920s (Grimm and Reichenhall 1927; Stern 1927). However, it has been only in the past 15 years that the issue has gained wider awareness among the allergy and immunology community.

The most popular theory to explain the recent increase in awareness is that manufacturing changes were implemented around 1987 to accommodate dramatic increases in medical glove usage. This increased demand was the result of the Universal Precautions measure mandated by the Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC). However, none of the research conducted to date has provided any evidence that manufacturing changes resulted in gloves that contain higher amounts of allergens.

While the *awareness* of latex allergies has certainly increased over the past 15 years, recent studies increasingly demonstrate that the *prevalence* of latex sensitization among individuals with high exposure is no different than among the general population. Further, dry rubber products contain significantly lower quantities of latex allergens than dipped rubber and, therefore, is even less likely to cause sensitization.

Very few quality epidemiology studies have been conducted on NRL exposure. Most studies have consisted of "surveys" of selected populations of health-care workers, in which significant bias existed in the recruitment of participants (a high percentage of the participants were symptomatic for allergic sensitization to NRL). The few studies that have been conducted in which there was not a significant component of bias seem to indicate that there is no difference in the prevalence of NRL protein sensitization among health-care workers (who are exposed regularly and sometimes continuously to NRL gloves) and the general population (Williams et al. 2000; Saxon et al. 2000).

The studies on the prevalence of latex sensitivity (particularly the older studies) are complicated by the differences in methodologies used. The methods most commonly used to diagnose NRL protein sensitization are history, skin prick test, IgE immunoassay, and challenges (either glove wearing or inhalation challenges), and the estimates of prevalence vary among the methods used (see Table 1). Thus, when making comparisons of prevalence across exposure groups and between allergens, it is important to use similar methods of diagnosis as the basis for comparison. Recent studies indicate that many of the higher sensitization rates found in early studies were the result of the methodologies used (Saxon et al. 2000).

The most definitive treatment of this subject comes from a recent study conducted by the National Institute of Occupational Safety and Health (NIOSH) (Page and Esswein 1999). In a survey of the staff in a Denver, Colorado, hospital, NIOSH's study featured very high participation from both the control group (hospital administrative staff) and the exposed group (nurses, physicians, etc.). They found that the sensitization rate for workers who were highly exposed to latex was 6.1%, compared to 6.3% for workers who

had no exposure to latex gloves. Both estimates of prevalence were made using an *in vitro* assay (IgE sero-positive). These are consistent with findings from the general population (Ownby *et al.* 1996; Merrett *et al.* 1995; Lebenbom-Mansour *et al.* 1997; Porri *et al.* 1997; Saxon *et al.* 2000) and among health-care workers (Grzybowski *et al.* 1996) in which the AlaSTAT IgE immunoassay was used for diagnosing NRL protein sensitization.

Another fact that has been highlighted among the studies on latex allergies is that the rate of sensitization (defined as being diagnosed as having IgE antibodies to NRL) is much higher than the rate of clinically observable reactions to NRL (Liebke et al. 1996; Porri et al. 1997). Thus, while up to 7% of the population may have IgE antibodies to NRL, a small minority of these patients actually exhibit clinically observable symptoms associated with their sensitization.

The symptoms associated with allergic sensitization to NRL vary. They include nonspecific skin irritation, contact dermatitis, and allergic problems such as rhinitis, urticaria, asthma, and even anaphylaxis in rare cases (Ownby 1995).

It has become clear that the population of individuals with the highest prevalence of NRL protein sensitization is children with Spina Bifida (SB) (Slater et al. 1991). The evidence seems to indicate that this is a function of subcutaneous exposure to latex allergens during multiple surgeries, especially at a young age (Porri et al. 1997). The route of exposure to NRL (primarily via subcutaneous contact with NRL during surgery) and the number of surgeries clearly distinguish this exposure scenario from exposure to the general public.

It has also become clear that, among adults, atopy (the genetic predisposition to develop allergic sensitization) is the primary risk factor for developing an allergic sensitization to NRL (Porri et al. 1995). The prevalence of sensitization for NRL among atopics (5.6% diagnosed via skin prick test) has been estimated to be at least four times higher than among non-atopics (1.2% diagnosed via skin prick test) (Porri et al. 1995). Therefore, genetic predisposition plays a significant role in sensitization to NRL.

Evidence points to natural allergens in the environment and the diet as a major contributor to the development of allergic sensitization to NRL (Blanco et al. 1999). Many fruits and pollens contain proteins that are similar to the allergenic proteins in NRL (Brehler et al. 1997; Blanco et al. 1999). It has become clear that many people who are sensitized to NRL are also allergic to many of the fruits and pollens that cross-react with NRL . However, no careful studies have been conducted to date that clearly identify whether most patients first become sensitized to NRL or to the cross-reacting allergen.

The estimates of NRL protein sensitization diagnosed using the skin prick test can be used to compare the prevalence of sensitization to other common allergens and the prevalence of sensitization to the other currently labeled "strong sensitizers" (see Table

2).[1] It can be seen from this comparison that the prevalence of NRL protein sensitization is low compared to other common allergens and compared to the other "strong sensitizers." Therefore, in absolute and relative terms, there is not a large percentage of the population that is sensitized to NRL. Thus, NRL does not meet the requirement for a "*strong sensitizer*" based on the "*frequency of occurrence*" test (16 CFR1500.3 (b) (9)).

Estimates of the prevalence of NRL protein sensitization in the general population range from much less than 1% to approximately 18% (see Table 1). The highest estimate (approximately 18%, by the Centers for Disease Control as part of the National Health and Nutrition Survey; NHANES III, 1996) has been hypothesized to be high because of the influence from the immunological assay used (Saxon et al. 2000) and because of quality control issues and lack of reproducibility (CDC; http://www.cdc.gov/nchs/about/major/nhanes/nhanes3/latex.htm). Most estimates of the prevalence of NRL protein sensitization among the general population range between 6%and 7% when using an *in vitro* immunoassay (or IgE test) (Saxon et al. 2000). Estimates of prevalence are lower when using the more definitive skin prick test (SPT) (Saxon et al. 2000) Prevalence rates for NRL protein sensitization are highest among children with Spina Bifida, but their exposure is unusual in nature and level. Furthermore, the measured IgE and SPT rates of sensitization are much higher than the prevalence of patients who exhibit clinically relevant and observable allergic reactions to NRL, and most of these reactions are minor (Saxon et al. 2000). The more severe allergic reactions to NRL are rare and are mostly associated with subcutaneous or trans-rectal exposures, neither of which is associated with consumer products (Ownby 1995).

Exposure to NRL Consumer Products is Very Different From Exposure in the Health-Care Setting

Since the implementation of Universal Precautions by the CDC, workers in the health-care setting have been wearing NRL gloves, sometimes continuously for their entire work day, day in and day out. In addition to dermal contact, medical gloves commonly use powder to facilitate the donning and removing of the gloves. As a result, it has been reported that latex allergens can be detected in the hospital air (Swanson et al. 1994).

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[1] Because the currently identified "strong sensitizers" are type IV contact allergens, the method of detecting sensitization is via the patch test. As noted earlier, different methods of diagnosing allergic sensitization yield different estimates of prevalence. To compare the prevalence of NRL sensitization to the prevalence of sensitization to other allergens, it is important to compare the estimates based on diagnostic techniques that are as similar as possible. The estimates of prevalence for NRL sensitization in Table 2 are based on prevalence estimates using the skin prick test, which is the most comparable to the patch test in the method of measuring sensitization. We used the estimates from Turjanmaa et al. (1995) and Bernardini et al. (1998), because these two studies are the only ones found that utilized the skin prick test. We averaged the results from the two studies to provide a single sensitization prevalence value to use for comparison purposes.

The route of exposure that is associated with the highest rates of NRL protein sensitization, and the most severe reactions, involves subcutaneous exposures associated with surgeries and rectal examinations. Case reports of allergic reactions associated with NRL are almost exclusively associated with dipped latex products such as catheter tips, condoms, balloons, and gloves. In contrast, a review of the literature does provide reports of allergic reactions to a dry rubber product in latex-sensitive patients, but only cases in which the patients received injections by syringes with NRL plungers (Lear and English 1995; Towse et al. 1995). Subsequent studies have been unable to confirm the presence of latex allergens in solutions that are stored and dispensed from vials with NRL stoppers (Thomsen and Burke 2000).

In spite of the large numbers of occupational disability claims made for Type I latex allergy by health-care workers exposed to dipped latex products, there is a dearth of such claims by workers exposed to dry rubber. In fact, in a study of the prevalence of NRL protein sensitization among automobile tire mechanics and workers in a tire retread facility, there were no workers who were sensitized to NRL (Vermeulen et al. 2000).

While there have been numerous complaints filed with the FDA in regard to allergic reactions associated with medical devices containing NRL, there is a paucity of case reports associated with consumer products. Even among the complaints attached to the petition concerning NRL, all related to dipped rubber, and none involved dry rubber products.

The only consumer product made from NRL that has been commonly recognized as containing bioavailable latex allergens is toy balloons (Yunginger et al. 1994), which is produced from a dipped rubber material.

The majority of consumer products are made from the dry rubber process, which has very low to nondetectable levels of bioavailable latex allergens. There have been very few case reports of allergic reactions associated with dry rubber products, and these reports have been limited to case reports associated with the alleged administration of NRL allergens subcutaneously. The dermal route of exposure predominates for most consumer products, and the types of allergic reactions associated with dermal contact to NRL are not severe. To our knowledge, there are no inhalation exposures associated with dry rubber consumer products. Therefore, there is no need to label NRL consumer products as "strong sensitizers."

Listing of NRL as a Strong Sensitizer Would Be Contrary to the FDA's Recognition of the Difference in the Bioavailability of Dry Rubber Products and Dipped Rubber Products

The differences between dipped latex and dry rubber products were recognized by the Food and Drug Administration (FDA) when they mandated the labeling of medical devices (21CFR Part 801; 51021-51030). The FDA recognized that "there are lower levels of natural latex proteins in products produced by the dry natural rubber process." The labeling requirements for dipped latex products include a statement concerning the

allergenicity of the product: "Caution: This Product Contains Natural Rubber Latex Which May Cause Allergic Reactions." However, the FDA-required label for dry rubber products simply indicates the contents: "This Product Contains Dry Natural Rubber." No association with allergic reactions is indicated. The FDA considered not requiring any label for dry rubber products. However, because a few cases had been reported of NRL-allergic patients experiencing allergic reactions following an intravenous ("i.v.") injection of a drug that was contained in and dispensed from a vial with a rubber stopper, the label requirement was instituted.

The labeling requirements issued by the FDA make a clear distinction between latex products (produced via the dipped latex process) and dry rubber products (21CFR Part 801; 51021-51030). This distinction by the FDA clearly indicates that the allergenic potential resulting from exposure to dry rubber products is much less than from exposure to dipped latex products (Yip et al. 1994; Yunginger et al. 1994; Yunginger 1995).

The distinction between the situation being addressed by the FDA and the CPSC must be kept in mind. Of necessity, health care facilities have higher levels of exposure to latex allergens. Allergy elicitation levels are exceeded in some common exposure scenarios. Thus, some type of warning labels are prudent. In the common household situation, the normal levels of latex allergens is low and there are no scientifically confirmed cases where an allergic reaction was elicited by a dry rubber product. Thus, the level of latex allergens in each exposure scenario and the nature of the NRL (contained in dry or dipped rubber) provide a dramatically different setting. As a result, the need for a remedy dramatically differs.

Dry Rubber Consumer Products are Not Strong Sensitizers Within the Meaning of the Regulations

The definition of strong sensitizers requires that the substance cause sensitization, and the weight of the evidence suggests that exposure to higher levels of NRL from dipped rubber products in the health-care industry has not increased the rate of sensitization. Further, by definition, the sensitization must be strong. Only a small percentage of the population is latex sensitive, and only a small fraction of that small subpopulation presents any symptoms of allergy. The evidence on the bioavailability of latex allergens demonstrates that such allergens are not released from dry rubber products, or are released at such low levels as not to be biologically meaningful. Clearly, the nature and level of exposure to latex allergens in the health-care setting is many orders of magnitude higher than can reasonably be expected from consumer products.

Furthermore, the listing of NRL as a strong sensitizer would be inconsistent with the prior decisions on "strong sensitizers." No substance has been listed since 1961. The "main type of sensitization reaction caused by the five substances designated as 'strong sensitizers' is allergic contact dermatitis" CPSC, *Strong Sensitizers,* 48 Fed. Reg. 56,602 (December 22, 1983, proposed revocation), which is a Type IV delayed, cell-mediated allergic reaction. The allergic reactions of concern with NRL are Type I immediate, antibody-mediated allergic reactions. Thus, NRL antigens fall within a different category of allergens than the currently identified "strong sensitizers." In addition, based on the

"frequency of occurrence" test, the prevalence of NRL protein sensitization is an order of magnitude less than the prevalence of sensitization to several of the currently recognized "strong sensitizers" (Table 2 and footnote 1 and accompanying text).

Conclusion

Based on the weight of the scientific evidence, NRL is not a "strong sensitizer" as defined in the CPSC regulations, because:

- The exposures to latex allergens from dipped rubber in the health-care industry do not demonstrate that dipped rubber is a "strong sensitizer" within the meaning of the statute, primarily because the most reliable epidemiology surveys have indicated that there is no difference in the prevalence of sensitization to NRL between health-care workers and the general population.
- Most of the severe allergic reactions to NRL allergens have been associated with subcutaneous exposures to dipped rubber medical devices.
- The overwhelming majority of NRL consumer products are made via the dry rubber process.
- Dry rubber products have much lower levels of bioavailable NRL allergens than do dipped latex products.
- The level of exposure to latex allergens from consumer products containing dry rubber is many orders of magnitude lower than from dipped rubber medical gloves.
- Consumer products (particularly dry rubber products) have not been associated with allergic sensitization among the general population nor allergic reactions among people who have been previously sensitized to NRL.

Therefore, the CPSC should not label NRL (particularly dry rubber) consumer products as "strong sensitizers".

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Tables

Table 1. Estimates of background NRL allergy incidence in the general population

Author	Population Tested	Diagnostic Technique	Reported Incidence
Turjanmaa et al (1995)	804 pre-op patients	SPT	0 12%
Lebenbom-Mansour et al. (1997)	996 pre-op patients	IgE	6 7%
Ownby et al (1996)	1,000 blood donors	IgE	6 4%
Reinheimer and Ownby (1994)	200 allergy patients	IgE	12%
Shield and Blaiss (1992)	44 atopic children	SPT	6 8%
Bernardini et al (1998)	1175 schoolchildren	SPT	0 68%
Porri et al (1997)	258 adults	SPT	6 6%
Merrett et al (1995)	1436 blood donors in UK	IgE	7.9%
Porri et al (1995)	195 atopic patients in France	SPT/IgE	5 6/5 8%
Porri et al. (1995)	170 non-atopic patients in France	SPT/IgE	1 2/1 6%
NHANES III (1996)	5,378 volunteers	IgE	18 50%

SPT - skin prick test
IgE - Immunoglobulin E immunoassay

Table 2. Prevalence of sensitization to NRL, common allergens, and "strong sensitizers" as determined via skin prick test

Allergen	Prevalence	Diagnostic Technique	Source
Type I, IgE-mediated allergens			
NRL	0 4%	SPT	Average from Turjanmaa et al (1995) and Bernardini et al (1998) (see Table 1, footnote 1 and accompanying text
Common Allergens			
Alternaria	10 9%	SPT	NHANES III (1996)
Bermuda grass	17 5%	SPT	NHANES III (1996)
Cat	15 8%	SPT	NHANES III (1996)
Cockroach	21 7%	SPT	NHANES III (1996)
House mite	25 4%	SPT	NHANES III (1996)
Oak	12.1%	SPT	NHANES III (1996)
Peanut	7 1%	SPT	NHANES III (1996)
Ragweed	24 0%	SPT	NHANES III (1996)
Russian thistle	15 0%	SPT	NHANES III (1996)
Rye grass	23 4%	SPT	NHANES III (1996)
Type IV, cell-mediated allergens			
Nickel sulfate	9 7%	patch test	
Cinnamic aldehyde	5 9%	patch test	
"Strong Sensitizers"			
Paraphenylenediamine	6 9%	patch test	Storrs et al (1989)
Ethylenediamine	5 9%	patch test	Storrs et al (1989)
Formaldehyde	6 1%	patch test	Storrs et al (1989)

The prevalence of sensitization to NRL and the other "common allergens" was based on the skin prick test because this test of sensitization is the most closely related to the patch test.

Stevenson, Todd A.

From: Tracey Norberg [TRACEY@rma.org]
Sent: Wednesday, June 21, 2000 7.51 PM
To: Cpsc-os@cpsc.gov
Subject: Comments to Petition HP 00-2, Petition on Natural Rubber Latex

RMA Cover Letter 1 doc

Exponent Report.DOC

Please find attached the comments of the Rubber Manufacturers Association on the above-referenced notice. A hard copy of the comments is also being FedExed to your office this evening for delivery tomorrow, June 22. Please call me at 202-682-4839 should you have any questions about this submittal.

Sincerely,

Tracey J. Norberg
Director
Environmental Affairs
Rubber Manufacturers Association

NAM National Association of Manufacturers

Jan Amundson

Vice President and General Counsel

Law Department

June 21, 2000

Sadye Dunn, Secretary
Office of the Secretary
Consumer Product Safety Commission
Room 502
4330 East-West Highway
Bethesda, Maryland 20814

Re: Petition HP 00-2, Petition on Natural Rubber Latex

Dear Secretary Dunn:

The National Association of Manufacturers submits these letter comments regarding the pending Petition on Natural Rubber Latex. The NAM — "18 million people who make things in America" — is the nation's largest and oldest multi-industry trade association. The NAM represents 14,000 members (including 10,000 small and mid-sized companies) and 350 member associations serving manufacturers and employees in every industrial sector and all 50 states. Our members and affiliated associations represent thousands of manufacturers of consumer products regulated by the Consumer Product Safety Commission.

The comments of the NAM are not focused on any scientific data regarding the properties or results of physical contact with natural latex. Our comments are concerned with the potential problems that granting such an encompassing petition would have, particularly since it would be based on the limited material included in the petition itself. If granted, this petition would require manufacturers to label products that contain natural rubber latex.

The petition to designate natural rubber latex as a "strong sensitizer" pursuant to the authority of the Federal Hazardous Substances Act would require the commission to determine that latex products have a "significant potential for causing hypersensitivity" [15 USCA 1261(k)]. The current petition and record would not support such a finding at this juncture. Without the proper foundation for action, the commission could not support a probable legal challenge based upon failure to meet the standard as set forth in the Act.

The impact of granting this request cannot be understated. Latex has many applications that could be covered if this designation is granted. However, it is possible and probable that many uses of latex would not result in exposure of the latex via use of the product. For instance, latex is used in many adhesives. The number of products that use adhesives is huge. Thus, this action could affect many consumer products that would not result in any exposure but because of

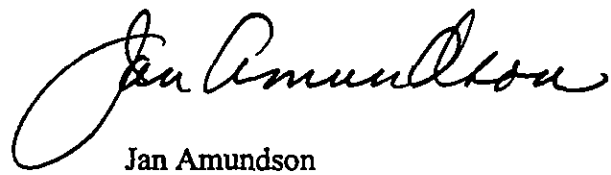
the latex content would thereby necessitate a manufacturer labeling the product. This is but one example of the consequences of granting the petition without following required procedures.

Our membership includes 10,000 small and medium manufacturers. We do not believe that they should be forced to comply with yet another federal mandate without there being a sufficient record that would support such an action. Granting the petition and requiring manufacturers to label products that contain latex would have a cost impact. To place another burden on small business, without the requisite justification, is premature and unnecessary.

The record is devoid of documentation on the criteria that the commission must use to establish whether a substance is a "strong sensitizer" [16 CFR 1500.3(c)(5)(ii)]. Without the commission meeting the regulatory requisites, it would be imprudent to take any action on this petition without the evidence to support this action.

We request that the commission not grant the petition to designate latex as a "strong sensitizer." Thank you for your consideration of our comments.

Sincerely,



Jan Amundson

Latex 69

FIRST IN THE FIGHT
AGAINST AIDS
GMHC

Ronald Johnson
Associate Executive Director

212-367 1250
Fax 212 367 1247
ronaldj@gmhc org

June 21, 2000

Sadye Dunn
Secretary
Office of the Secretary
Consumer Product Safety Commission
Washington, D.C. 20207

Re: Petition HP 00-2, Petition on Natural Rubber Latex

Dear Ms. Dunn:

This letter serves to express the comments of Gay Men's Health Crisis (GMHC) in opposition to the Petition requesting that the Consumer Product Safety Commission issue a ruling declaring that *natural rubber latex is a strong sensitizer under the Federal Hazardous Substance Act*

GMHC is the oldest and largest AIDS service organization in the United States Since its inception in 1982, GMHC has been dedicated to stopping the spread of AIDS. Upon discovery of the human immunodeficiency virus (HIV) and its causative role n AIDS, GMHC's prevention efforts have focused on stopping the spread of HIV, particularly among gay and bisexual men. Many of the HIV prevention program models in use today were developed by GMHC, most notably programs and educational materials that promote safer sex. The sustained use of condoms during sex is central to our prevention messages and the messages of nearly every organization that addresses HIV prevention.

GMHC is opposed to the petition. We feel that declaring natural rubber latex a strong sensitizer under The Federal Hazardous Substances Act and requiring additional label warnings on products that contain latex, which includes condoms, may serve to deter condom usage In the context of the continued growth of HIV transmission here in the United States and globally, such deterrence to the use of condoms would have a negative public health impact.

Since the mid-1980's, progress has been made in achieving the sustained use of condoms among sexually active people HIV infection rates among white gay men have dropped dramatically, largely due to the increased practice of safer sex. In a recent sexual health survey conducted by GMHC in cooperation with the New York City Department of Health, it was found that in 1998, 78% of men reported condom use during their first anal intercourse compared to 34% of men in 1985. Despite this progress, much education and prevention work needs to be done to sustain and increase the usage of condoms. Such efforts are especially critical for gay and bisexual men of color here in the United States and heterosexual men around the world.