

PREVENTING LATEX ALLERGY IN HEALTH CARE FACILITIES

The Cost of Switching to Non-Latex Gloves

Recent studies show that 8-12% of health care workers regularly exposed to rubber gloves are allergic to latex¹⁻⁵. Clinical symptoms include urticaria, rhinitis, asthma and anaphylactic shock. Air levels of latex allergen have been reported as high as 1000 ng/m³, particularly with the use of powdered latex gloves⁶. A recent study found that the air level would need to be below 0.6 ng/m³ to prevent sensitization⁶. The Occupational Safety and Health Administration (OSHA) does not have an enforceable workplace air standard for latex allergen. Approaches to reducing exposure to latex allergen and the prevalence of allergies from latex have included switching to powder free latex gloves, and latex gloves with lower latex allergen content⁷. The Mayo Clinic instituted a policy of only purchasing low latex allergen gloves and continues to monitor lots of latex gloves with an assay they developed⁷. They have found that the latex allergen content of brands of gloves may vary over time.

Another approach to prevent latex allergy is to eliminate the use of latex gloves.

A recent article in the *American Journal of Public Health* (Phillips VL et al Health Care Worker Disability Due to Latex Allergy and Asthma: A Cost Analysis 1999; 89:1024-1028) reported a cost-benefit analysis of switching to non-latex gloves. The study was conducted at a tertiary care hospital,

a community hospital and an outpatient internal medicine clinic in Georgia. Based on the literature the researchers assumed that 8% of employees who routinely use latex gloves would develop latex allergy, and a third of the individuals who become allergic would develop asthma. Most gloves (96-99%) used in medical care facilities are non-sterile. For non-sterile gloves, powdered vinyl and unpowdered vinyl cost less than comparable powdered or unpowdered latex (see Table 1). Nitrile gloves are 2-3 times more expensive (see Table 1). For the cost analysis, Phillips and colleagues used a weighted average for non-sterile vinyl and nitrile gloves and the average price per pair for sterile non-latex gloves.

Costs saved by switching to non-latex gloves that were included in the analysis were the diagnostic costs for identifying allergic employees, and the permanent total disability costs for workers who became sensitized. They did not include other costs such as: increased sick leave; increased employee turnover; decreased on-the-job productivity for employees with mild allergies; medical care costs to treat disabled employees; or diagnostic tests for employees suspected to have latex allergy but who turned out not to be allergic to latex. Despite the exclusion of the above costs associated with latex use it was less expensive to use the more costly non-latex gloves if more than 1.07% of the tertiary care hospital employees became fully disabled or if more than 1.88% became partially disabled; if more than .45% of the community based hospital employees

became fully disabled or if more than .78% became partially disabled; or if more than .02% of the outpatient clinic employees became fully disabled or if .04% became partially disabled.

The researchers argued that switching to non-latex gloves was a more economical approach than switching to powder free gloves. Although switching to powder free gloves would reduce exposure to latex allergen and reduce latex sensitization among employees it would increase glove acquisition costs without fully eliminating the problem of latex sensitization.

Despite the recognition of latex sensitization and the availability of low latex allergen gloves and non-latex gloves, latex allergy remains an ongoing health problem for health care workers. Implementation of control policies are needed both at larger health care facilities as well as smaller outpatient practices.

We remain interested in receiving reports on individuals with any of the clinical conditions associated with occupationally-related latex allergies, 1-800-446-7805.

References

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Table 1. Glove Price Range, In Dollars, in 3 Health Care Settings

	<u>Tertiary-Care Hospital</u>	<u>Community-Based Hospital</u>	<u>Outpatient Clinic</u>
Nonsterile (100 count box)			
Powdered latex	3.99	4.01	5.95
Unpowdered latex	5.43	6.86	8.39
Powdered vinyl	3.65	...	5.95
Unpowdered vinyl	...	4.27	...
Nitrile	11.25	11.25	...
Sterile surgical (pair)			
Powdered latex	0.30-1.58	0.32-1.14	0.50
Unpowdered latex	1.73-2.59	1.27-3.33	...
Powdered nonlatex	2.50-3.00	2.50-3.00	3.95

Note: Data provided by each facility's purchasing department for gloves currently in use. Costs of non-latex substitutes not currently in use by a facility were obtained from manufacturers, distributors, and the Internet. "..." = not available. (Source: *Amer J Pub Health* 1999; 89:1024-1028)

Atopy and Asthma

A personal or family history of atopy has been a very weak predictor of who is at risk of developing work-related asthma. The amount of allergen an individual is exposed to at work (i.e. how poor the exposure controls) has remained the best predictor of who will become sensitized. The following abstract describes a study where a genetic marker was associated with sensitization to platinum salts. The strength of the association with the genetic marker increased among those workers with the lower exposures.

Newman Taylor AJ, Cullinan P, et al. Interaction of HLA Phenotype and Exposure Intensity in Sensitization to Complex Platinum Salts. *Am J Respir Crit Care Med* 1999; 160: 435-438.

Full Abstract: The development of sensitization to inhaled allergens is determined by the interaction of multiple genetic and environmental influences. Occupational sensitization to low-molecular-weight chemicals allows a specific immunological response

to an inhaled hapten to be studied in a well-defined population with characterized exposure. We investigated the workforce of a large platinum refinery exposed to ammonium hexachloroplatinate (ACP) to test the hypothesis that the development of IgE-associated sensitization to ACP was influenced by human leukocyte-associated antigen (HLA) phenotype, especially in those with lower ACP exposure. We performed HLA typing in 44 cases with a positive skin prick test to ACP, and 57 nonsensitized referents matched on age, race, duration of employment, and category of ACP exposure. An HLA-DR3 phenotype was more common among cases (odds ratio [OR] 2.3), and more so in those with low (OR infinite) than with high exposure (OR 1.6); HLA-DR6 was less common among the cases (OR 0.4), an association also stronger in the low-exposure group (OR 0.1 versus 0.5). These results provide evidence that HLA phenotype is a significant determinant of sensitization to complex platinum salts and for the first time show that the strength of this association varies with intensity of exposure to the sensitizing agent. They imply that as exposure-control measures are taken to prevent occupational sensitization and, by analogy, sensitization to allergens outside the workplace, disease incidence will increasingly be determined by genetic susceptibility.

Occupational Health Web Sites

Listed below are several web sites that provide useful information on occupational and environmental health.

Duke University maintains a web site that includes links to other occupational and environmental health web sites: <http://occ-env-med.mc.duke.edu/oem/>

NIOSH has a web site that provides information on occupational health concerns such as lead poisoning, latex allergies, noise, EMF and agricultural health: <http://www.cdc.gov/niosh/toplst.html>

The **National Toxicology Program** web site of the Department of Health and Human Services provides information such as Material Safety Data Sheets for chemicals and carcinogen reports: <http://ntp-server.niehs.nih.gov>

OSHA Metalworking Fluid Standards Advisory Committee Recommends New Standard to Protect Workers

The OSHA Metalworking Fluid Standards Advisory Committee completed its work on July 9, 1999. The Committee voted 11-4 to recommend that the Occupational Safety and Health Administration (OSHA) immediately begin work on setting a standard for exposure to metalworking fluids. This standard should include a permissible exposure limit (PEL), systems management, medical surveillance and training. Ten committee members supported the UAW and NIOSH recommended exposure limit of 0.5 mg/m³, which is one-tenth of the current exposure limit.

The most authoritative and up to date reference on health and safety of metalworking fluids is the **NIOSH Criteria Document** issued in 1998. It can be found at: <http://www.cdc.gov/niosh/98-102.html>.

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Michigan Law Requires the Reporting of Known or Suspected Occupational Diseases

Reporting can be done by:

***FAX** (517) 432-3606

***Telephone** 1-800-446-7805

***E-Mail**

Rosenman@pilot.msu.edu

***Mail** Michigan Department of
Consumer and Industry Services
Division of Occupational Health
P.O. Box 30649
Lansing, MI 48909-8149

Reporting forms can be obtained
by calling (517) 322-5208
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S Remember to report all cases of occupational disease!*

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