

Food Gloves and Consumer Health

To protect the health of consumers, the U.S. Food and Drug Administration prohibits food workers from touching ready-to-eat food with their bare hands and calls instead for the use of "suitable utensils" including single-use gloves. The goal is to shield consumers from infectious organisms or other contaminants on wounded or inadequately washed hands.

The gloves most commonly used for this purpose, and in other aspects of food preparation, are made of natural rubber latex vinyl or polyethylene. Latex and vinyl are used most often, with polyethylene a distant third.

But even though latex and vinyl hold comparable shares of the food glove market, their properties and the protections they provide differ in many ways that can have a significant effect on consumers.

Protection – Latex Gloves are Stronger

The most effective protection against the spread of infection or other contaminants is provided by latex gloves, well known for their strength, elasticity, and high resistance to tearing. Vinyl and polyethylene gloves cannot make this claim.

Numerous studies testing gloves in health care settings have shown the superior performance of latex.¹

Danger from Toxic Chemicals in Synthetics

Studies on Comparative Barrier Performance of Gloves			
Author	Failure Rates (%)		
	Latex	Vinyl	Polyethylene
Korniewicz 1990 ²	7	63	
Korniewicz 2002 ³	2.2	8.2	
Klein 1990 ⁴	<1 ^a	22 ^b	40 ^a
	<1 ^a	56 ^b	94 ^a
Olsen 1993 ⁵	4.2-7.9 ^c	43	
Douglas 1997 ⁶	1.1 ^c	25-32 ^d	
Rego 1999 ⁷	0-4	12-61 ^e	

Key: ^aNo alcohol content; ^bPretreatment with 70% alcohol; ^cLatex powder-free; ^dStandard vinyl

VINYL CONTAINS PHTHALATES

Disposable vinyl gloves can pose health hazards for consumers because many of them are made with highly toxic phthalates such as di(2-ethylhexyl) phthalate (DEHP). DEHP makes up between 22 and 41 percent of the glove by weight.⁸ It is used to make vinyl gloves more flexible.

Of particular concern in food-contact applications is the fact that DEHP can leach out of vinyl products, such as disposable gloves, food containers or wrappers. DE HP

is particularly soluble in fluids and oil-based products. It can easily contaminate liquids such as drinking water and milk or foods such as cooking oils, cheese, meat and fish.⁹

Latex gloves, on the other hand, are natural products, derived from the sap of the Hevea Brasiliensis tree. Because of the inherent superior tensile properties of latex, such as its high elasticity and suppleness, phthalates do not have to be used in these gloves to provide flexibility.

HEALTH RISKS OF DEHP

The dangers of DEHP are well documented in animal studies, which show it can cause testicular damage¹⁰, suppress or delay ovulation¹¹, reduce kidney¹² and liver function¹³, and cause respiratory distress¹⁴ and adverse effects on the heart¹⁵. Infants, children and pregnant women are much more sensitive than others to such adverse effects, the studies show. In July 2002, the FDA warned that "precautions should be taken to limit the exposure of the developing male to DEHP.

MOVES AGAINST DEHP IN KITCHENS

Spurred by concerns about the health hazards posed by food handlers wearing vinyl gloves, Japan has taken decisive action. In 2000, Japan's Department of Food Sanitation, acting on a recommendation by the country's Ministry of Health, Labour and Welfare, issued a directive against the use of vinyl gloves with DEHP in food service kitchens¹⁷.

The Ministry cited research by the Japan National Institute of Health Sciences demonstrating that "The DEHP in foods packed ... using vinyl gloves was found to increase drastically when compared with that of the foods before packing;" and "the use of PVC

[polyvinyl chloride] gloves with DEHP caused a sharp increase in the level of this chemical in foods."¹⁸

The danger of phthalates such as DEHP also has led to several initiatives to curb their use in children's toys by the U.S. Consumer Product Safety Commission and the European Commission.¹⁹

Addressing Concerns about Latex Allergy

A small portion of the general population, about 1 percent²⁰, is sensitive to the proteins in latex. Allergic reactions can range from mild symptoms, such as hives, hay fever and itchy eyes, to asthma, and, in very rare cases, anaphylaxis. However, not all who are sensitive are necessarily allergic.

These problems first arose in health care settings, attributable to the use of an older generation of latex gloves where there was no control over protein levels. Glove manufacturers in Malaysia have adopted improved manufacturing technologies to significantly reduce the proteins in latex gloves and the amount of powder, which is added to make the gloves easier to don.

A number of studies show that switching from the older generation of high-protein, high-powder latex gloves to the low-protein, low-powder or powder-free gloves has resulted in a significant decrease in the incidence of latex allergies. More importantly, latex allergic individuals wearing synthetic gloves have been shown to be able to work safely alongside co-workers who wear the improved latex gloves.²¹

In the area of food handling, there is little evidence to suggest that the transfer of proteins to food by food workers wearing latex gloves causes allergic reactions. The Additives and Ingredients Subcommittee of the Food Advisory Committee to the FDA's Center for Food Safety and Applied Nutrition supplied the following information at a public hearing on August 26-27, 2003, in Washington, D.C. "The evidence is suggestive of a weak positive relationship between the use of natural rubber latex gloves and food-mediated latex allergic reactions. The data linking the presence of these [latex] proteins in foods to allergic reactions is based primarily on anecdotal evidence, and is very weak."²²

Environmental Consequences

While latex gloves come from a renewable resource and are biodegradable, synthetic gloves often are not. Recycling vinyl is expensive and impractical. Disposing of it causes the release of large amounts of dioxin, considered a probable carcinogen, and other toxic substances into the air, water, and soil. Incinerating vinyl emits dioxin, vinyl chlorides and hydrogen chloride into the air, and, if buried, dioxin persists for years in landfills, where toxic chemicals leach out, poisoning the soil and groundwater.

Latex gloves, on the other hand, are environmentally friendly, and rubber trees contribute to environmental protection. They are grown on some 10 million hectares worldwide and annually can remove 363,000 tons of carbon dioxide, replacing it with 264,000 tons of oxygen. This helps to combat the greenhouse effect and global warming, which are of great concern to the world's ecologists.

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