



Expanding Encyclopedia Of Mortuary Practices

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**LATEX DANGERS IN EMBALMING:
A Report for Funeral Service Practitioners
Part 1
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ABSTRACT: The dangers and unsuitability of latex gloves and other latex products for embalming is discussed and explained. The history of latex and its usage in health care and allied fields is surveyed. The allergic potential of latex products and current health problems with latex are discussed in detail. The lack of adequate protection during embalming is noted and appropriate alternatives to latex in embalming is delineated. Recommendations for proper usage of latex and alternatives in embalming is outlined.

INTRODUCTION: The health hazards involved in the use of latex gloves and other latex products in health care and allied fields is now at the forefront of scientific investigation. The usage of latex gloves and other latex products has skyrocketed since the late 1980's, with over 15 billion latex gloves alone imported in the U.S. last year. This is a massive increase in the use of latex and numerous health dangers due to the use of latex are now surfacing.

Latex was actually first used sporadically in 1890 as a superior alternative to protective gloves and the preference for latex in surgery and other medical fields soon materialized. It was, however, not until the CDC and other governmental agencies advocated the use of latex as barrier protection, that latex popularity and usage exploded.

Health care workers are experiencing health problems and latex sensitization at such an alarming rate that warning labels are now required on latex products for use in health care fields. It is estimated that upwards of 17% of health care workers are sensitized to or have an adverse reaction to latex during their employment. Some estimates are even higher — stating that 10 - 30% of health care workers are affected. In addition, 10% of rubber industry workers report health problems associated with latex exposure on the job. In the general population, however, only 1 - 5% of individuals are sensitized to or allergic to latex products (a still sizable percentage of the population).

Latex usage (particularly gloves) is ubiquitous in embalming and funeral service in general. Embalmers are at a definite risk from constant and repeated usage of latex gloves during all phases of embalming and body preparation. Latex has become an accepted, yet misunderstood, form of skin protection during the embalming process. Latex, unfortunately, despite its acceptable body fluid barrier protective role, has never been an acceptable product in the majority of embalming situations. Latex has characteristically exhibited poor to dismal protection from standard embalming chemicals during embalming operations and has offered little or no protection during its use. This fact, in conjunction with the now evident health problems associated with latex in general, demands that the embalming profession take a serious look at the use of latex in embalming and search for superior alternatives that provide both body fluid barrier protection and chemical imperviousness during the embalming operation. Fortunately, superior alternatives exist, and that is the focus of this report.

LATEX IN GENERAL: Latex is a milky exudate of the lactiferous cells of the rubber tree (*Hevea brasiliensis*) and is predominantly a benign polymer identified as cis-1, 4-polyisoprene in combination with various sugars, lipids, nucleic acids, and unfortunately, allergenic proteins. Latex is technically not derived from the sap of the rubber tree, but is harvested by tapping into the latex ducts that run just superficial to the cambium, while the sap runs much deeper in the tree.

Despite its scientific name, manufacture of natural rubber and latex is predominantly in Malaysia, Thailand and Indonesia, not Brazil or South America. Rubber trees were originally found in Brazil but were exported and imported by the British to various locations. Eventually they arrived in Ceylon and Singapore where they flourished and the industry was born.

Latex is collected from trees by careful cutting and catching of the milky liquid in cups that is then treated with ammonia to prevent hardening. If natural rubber is desired, no ammonia is used and the substance allowed to harden and is then processed. Latex is never heated during its manufacture and this is the predominant cause of the allergenicity of the substance. Failure to heat the latex allows the allergenic proteins to remain in the final product, instead of being broken down as in natural rubber products. Consequently, the allergic potential of latex is very high compared to natural rubber, having as much as 2 - 3% total allergenic protein content. The primary allergenic protein appears to be rubber elongation factor, a protein naturally occurring in latex.

GLOVE MANUFACTURE: Numerous steps are required in the manufacture of a latex glove from raw latex product. A veritable mix of chemicals is used during the complex manufacturing process. These include antioxidants and accelerators such as thiurams, carbamates and mercaptobenzothiazoles during the vulcanization process (disulfide cross linking to enhance the rubber like properties). The manufacture then encompasses shaping, forming, dipping, heating, leaching and final washing. In addition, the gloves may be dry lubricated with cornstarch powder or occasionally with talc powder. They are then boxed and packaged for sale and shipment. This process leaves many chemicals in addition to the latex proteins in the gloves and from this fact stems many of the allergic properties of latex gloves and other latex products. The cornstarch powder that is commonly added to ease donning of the gloves also causes its own problems by contributing to allergenicity by enhancing the transfer of residual chemicals and allergenic latex proteins to the skin surfaces and allowing airborne contamination during donning and removal.

ALLERGY IN GENERAL: Allergy is an not uncommon health problem in the U.S. with approximately 20 - 25% of the population suffering from some type of allergic reaction to common items and chemicals found in the environment. These allergens can range from pollens, animal danders, foods, insects (and their excretions), venoms from various organisms, medications, and environmental chemicals (such as latex). Upper respiratory problems (such as exhibited in hay fever) including sneezing and nasal congestion affect 15% of the U.S. population. Lower respiratory problems (such as is manifested in asthmatic conditions) cause wheezing and bronchoconstriction of a more severe nature is manifested by 10 - 15% of the general population. Localized allergic reactions are very common and cause contact dermatitis and can evolve into more serious hypersensitivities. The most serious allergic reaction, anaphylaxis, occurs when the allergen becomes systemic in the circulatory system (via lymph or blood) and causes a body wide shock reaction that can lead to death if medical intervention is not immediate.

Allergic reactions essentially start as a sensitization to the allergen from initial contact in the environment. This could be oral, inhalation, skin contact or inoculation. Macrophages at the site of insult process the allergen and submit it to T-cells that cause B-cells to respond by manufacturing antibodies in the form of IgE (immunoglobulins) to eradicate the foreign body. In a later encounter, binding of the allergen with IgE triggers mast cell activation to release histamines and prostaglandins to aid in the attack against the allergenic invader and manifests itself as the classic allergy attack. If prolonged immune activation occurs, due to repeated encounters with the allergen, other chemical messengers are secreted by mast cells that trigger migration by basophils and eosinophils to the attack site. This causes an enhanced allergic reaction with increased congestion and inflammation and exacerbated allergic symptoms. Anaphylaxis can easily result from these repeated exposures and can cause a rapid, explosive allergic reaction that culminates in systemic shock and death.

CONTINUED: Latex Dangers in Embalming: A Report for Funeral Service Practitioners.
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