

CAUSATIVE AGENT: PRESERVATIVES

SKIN ALLERGEN, SKIN IRRITANT, LUNG SENSITIZER

DEFINITION

Compound added to slow or prevent bacterial growth and/or unwanted changes in chemical property; exposure may lead to skin irritation or allergy as well as lung sensitization (i.e. allergy).

HEALTH EFFECTS

- Allergic contact dermatitis: an allergic reaction of the skin triggered by exposure to a chemical allergen
- Irritant contact dermatitis: a skin rash triggered by over-exposure to water, solvents, friction, or contact with irritating substances (e.g. soaps, detergents)
- Occupational asthma: asthma (i.e. airway obstruction) or the exacerbation of pre-existing asthma resulting from an exposure in the workplace
- Cancer resulting from exposure to carcinogenic compounds

EXAMPLES

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| • Adhesive | • Personal hygiene products (e.g. shampoo, body lotion, mouthwash) | (e.g. fence posts, framing, furring strips, joists, sheathing, sill plates, trusses) |
| • Anesthetic | • Radiograph fixative | • Tissue fixative |
| • Antimicrobial | • Specimens (e.g. urine) | • Toothpastes |
| • Antiseptic | • Sterilant | • Ultrasound gel |
| • Bleaching agent | • Structural lumber | • Vaccines |
| • Embalming fluids | | • X-ray film |
| • Fabric softeners | | |
| • Medicine (e.g. chelation therapy, eye drops, topical medications) | | |

KEY COMPOUNDS

Review cleaning products' Safety Data Sheets to identify the presence of these compounds. Follow the appropriate precautionary measures.

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| • Aldehydes (e.g. acetaldehyde, formaldehyde, glutaraldehyde) | • Bronopol | (IPBC) |
| – Acetaldehyde is classified by the International Agency for Research on Cancer (IARC) as a Group 2B carcinogen | • Chloroxylonol | • Isothiazolinones [e.g. benzisothiazolinone (BIT), methylchloroisothiazolinone (MCI), methylisothiazolinone (MI)] |
| – Formaldehyde is classified as an IARC Group 1 carcinogen | • Ethylenediaminetetraacetic acid (EDTA) | • Methyldibromoglutaronitrile (MDBGN) |
| | • Formaldehyde releasers [e.g. diazolidinyl urea (DIAZ), dimethyloldimethyl (DMDM) hydantoin, imidazolidinyl urea, quaternium 15 (Q-15)] | • Naphthalene |
| | • Hexantriol | – Classified as an IARC Group 2B carcinogen |
| | • Iodopropynyl butylcarbamate | • Parabens |

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KEY COMPOUNDS (CONTINUED)

- Quarternary ammonium compounds (e.g. benzalkonium chloride, benzethonium chloride, didecyldimethylammonium chloride, cetylpyridinium chloride)
- Potassium dichromate
- Potassium metabisulfite
- Sulphites
- Thimerosal
- Toluene
- Tricolsan

SECTORS: Health services, education, municipal.

JOBS

Health Services

Cleaner/custodian, dental personnel (i.e. dentist, dental technician, orthodontist, periodontist), firefighter, home support worker, hospital chef, laboratory technician, laundry workers, medical examiner, medical radiation technologist, morgue attendant/technician, nurse, orderly, pharmacist, pharmacy technician, radiographer, researcher, respiratory therapist, ultrasound technician

Education

Cafeteria worker, cleaner/custodian, grounds/maintenance worker, library worker (e.g. librarian, library clerk, archive technician), teacher (e.g. anatomy, art, biology, woodworking/shop class)

Municipal

Grounds/maintenance worker, library worker (e.g. librarian, library clerk, archive technician), office worker, pest control officer, sanitary worker, sewage worker

OTHER CONSIDERATIONS

- Some preservatives have workplace exposure limits

HOW COMMON ARE THE HEALTH EFFECTS?

Approximately 63,000 workers in Ontario are exposed to formaldehyde.

Approximately 8,600 workers in Canada are exposed to acetaldehyde and 4,300 to pentachlorophenol.

14.2% of patients with occupational contact dermatitis tested positive for preservative contact allergy.

KEY PREVENTION STRATEGIES

Substitution

- Use mild skin care products (i.e. mild soap for cleansing, mild detergent for industrial cleaning, waterless hand cleanser for oil and grease removal)

Engineering Controls

- Use automated cold sterilization machines
- Use tools to prevent direct contact with preservatives or products containing preservatives

Administrative Controls

- Provide training on proper glove use (i.e. use cotton liners with nitrile gloves), skin care (i.e. moisturize after hand-washing and throughout the day) and hand washing (i.e. use lukewarm water; avoid hot)
- Rotate workers throughout the work shift to minimize their exposure to preservatives

Personal Protective Equipment

- Use appropriate respirator and gloves (consult manufacturer)
- Avoid gloves made from natural rubber latex (if necessary, use low-protein and powder-free styles)

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SOURCES

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