

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

- Adhesive
- Bleach
- Cigarettes/ cigars
- Cleaning agents
- Cooling-agents
- Crease-resistant clothing
- Cosmetics (e.g. hair colour, nail polish, perfume)
- Metal working fluid
- Embalming fluid
- Fabric softener
- Fertilizer
- Fumigants
- Hair straightener
- Leather product (i.e. animal hides and skins)
- Medication (e.g. anesthetic, gelatin capsules)
- Oil-containing products
- Paint
- Personal hygiene products (e.g. shampoo, lotion, deodorant)
- Processed food
- Silage additive
- Wine
- Wood cleaner

KEY COMPOUNDS

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

- Acid (e.g. acetic, benzoic, citric, dichlorobenzyl, formic, glycolic, lactic, phosphonic, phytic, propionic, sorbic, sulfuric)
 - Strong inorganic acid mists such as sulfuric acid, are classified by the International Agency for Research on Cancer (IARC) as Group 1 carcinogens
- Aldehydes (e.g. formaldehyde, glutaraldehyde)
 - Formaldehyde is classified as an IARC Group 1 carcinogen
- Antioxidants [e.g. butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT)]
 - BHA is classified as an IARC Group 2B carcinogen
- Benzoates (e.g. calcium, potassium, propyl, sodium)
 - Bronopol
 - Calcium chloride
 - Calcium propionate
 - Carbamate [e.g. iodopropynyl butylcarbamate (IPBC)]
 - Chlorobutanol
 - Chlorphenesin
 - Dimethyl dicarbonate (DMDC)
 - Ethylenediaminetetraacetate (EDTA)

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KEY COMPOUNDS (CONTINUED)

- Formaldehyde releasers [e.g. diazolidinyl urea (DIAZ), dimethyloldimethyl (DMDM) hydantoin, imidazolidinyl urea, quaternium 15 (Q-15)]
- Guaiac gum
- Isothiazolinones [e.g. benzisothiazolinone (BIT), methylchloroisothiazolinone (MCI), methylisothiazolinone (MI)]
- Magnesium chloride
- Methylidibromo glutaronitrile (MDBGN)
- Monoglycerol citrate
- Natamycin
- Parabens
- Paraffin wax
- Polysorbate
- Potassium carbonate
- Potassium sorbate
- Potassium nitrate
- Quaternary ammonium compounds (e.g. benzethonium chloride)
- Sodium nitrite
- Sulfites (e.g. potassium bisulfite, potassium metabisulfite, sulfur dioxide, sodium bisulfite)
- Tert-Butylhydroquinone

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.

OTHER CONSIDERATIONS

- Some preservatives have workplace exposure limits.
- Many agricultural and nail salon workers are immigrants and may be at an increased risk of harm from preservatives as a result of their unique vulnerabilities (e.g. language barriers, precarious employment situations and inadequate access to healthcare)

SECTORS

Agriculture, industrial manufacturing, service.

JOBS

Agriculture

Abattoir worker, baler, beekeeper, crop worker, entomologist, farmers, farm worker, florist, gardener, grain handler, greenhouse worker, grounds keeper, landscaper, non-row crop worker, nursery worker, pesticide applicator, rancher, yard cleaner

Industrial Manufacturing

Assembler/fabricator (e.g. aircraft, automotive, electronic), food/beverage production worker, foundry worker, jeweler/precious stone worker, metal worker/machinist (e.g. cutters, die caster, drill, grinder, solderer, welder, plater), pesticide formulator, pharmaceutical production worker, plastic product worker, tannery worker, textile worker (e.g. dyer), tobacco processing worker, upholsterer, woodworker (e.g. furniture manufacturer)

Service

Aesthetician, animal groomer, artist, automobile mechanic, baker, barber, bartender, brewer, butcher, carpet cleaner, caterer, cleaner/custodian, cook, cosmetologist, dishwasher, drycleaner, embalmer, fishmonger, fitness centre worker (e.g. aquafitness instructor, personal trainer), floor polisher, garage worker, grocer, hairdresser, homemaker, hotel housekeeper, kitchen porter, launderer, lifeguard, massage therapist, nail salon technician, painter, pet groomer, pool cleaner/service technician, plumber, swimming instructor, watersports instructor

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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)
- Opt for heat straightening instead of chemical hair straightening

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)

SOURCES

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