

CAUSATIVE AGENT: CLEANING AGENTS

LUNG IRRITANT, LUNG SENSITIZER, SKIN IRRITANT, SKIN ALLERGEN

DEFINITION

Chemicals used for cleaning, degreasing and disinfection; workers may be exposed by inhalation or skin absorption; exposure may lead to lung irritation or sensitization (i.e. allergy) as well as skin irritation or 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
- Other health effects (e.g. dizziness, headaches, nosebleeds)

EXAMPLES

- Degreasers (i.e. used to remove grease and dirt from parts, equipment, tools, surfaces and materials)
- Detergent
- Wax
- All-purpose cleaner
- Disinfectant
- Antiseptic
- Bathroom cleaner
- Air freshener
- Sanitizer

KEY COMPOUNDS

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

- Acids (e.g. acetic, citric, hydrochloric, phosphoric, 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. acetaldehyde, formaldehyde, glutaraldehyde)
 - Acetaldehyde is classified as an IARC Group 2B carcinogen
 - Formaldehyde is classified as an IARC Group 1 carcinogen
- Alkaline agents (e.g. ammonium hydroxide, carbonates, ethanolamine compounds, monoethylamine, sodium hydroxide, silicates)
 - Diethanolamine is classified as an IARC Group 2B carcinogen
- Bleach (e.g. sodium hypochlorite)
- Chlorine-releasing compounds (e.g. chloramine)
- Complexing agents [e.g. ethylene diamine triethylene tetramine (EDTA), nitrilotriacetic acid (NTA)]
 - Nitrilotriacetic acid and its salts are classified as IARC Group 2B carcinogens
- Fragrance
- Glycol ethers (e.g. triethylene glycol diglycidyl ether)
- Quaternary ammonium compounds (e.g. benzalkonium chloride)
- Toluene

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SECTORS

Construction, transportation, electrical and utilities.

JOB

Construction

Boilermaker, bricklayer, cleaner/custodian, derrick operator, elevator and escalator trade, equipment operator, hardwood floor installer/finisher, industrial mechanic, insulator, ironworker, general labourer, mason, millwright, painter, plumber, refrigeration/air conditioning worker, rod worker, roofer, sheet metal worker, sprinkler fitter, steam fitter, structural steel worker, tile setter, welder, window cleaner

Electrical

Cleaner/custodian, electrician, electrical technician

Transportation

Mechanic, cleaner/ custodian, engineer

OTHER CONSIDERATIONS

Even workers with little or no exposure to irritants can develop hand dermatitis as a result of prolonged friction associated with manual work.

HOW COMMON ARE THE HEALTH EFFECTS?

The prevalence of hand dermatitis among cleaning workers was 28% compared to 18% in the control group.

KEY PREVENTION STRATEGIES

Substitution

- Use products with fewer sensitizers and irritants such as certified “green cleaners” (i.e. products that are nontoxic in their undiluted form, non-corrosive, non-carcinogenic, and do not contain heavy metals or ingredients that can cause lung or skin effects)
- Use products that can be poured and wiped, rather than sprayed

Engineering Controls

- Increase ventilation (i.e. open windows and/or doors after cleaning products have been used for approx. 1 hour; improve local or general ventilation systems)
- Use tools to prevent direct contact with cleaning agents or surfaces that have been treated

Administrative Controls

- Follow manufacturers’ directions (i.e. dilution ratio of cleaning solution to water)
- Avoid mixing products
- Use the lowest needed concentration or amount
- Clean work areas when they are least occupied (i.e. after regular working hours)
- Train employees on good housekeeping practices (i.e. wet sweeping or vacuuming)

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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