CAUSATIVE AGENT: CLEANING AGENTS

LUNG IRRITANT, LUNG SENSITIZER, SKIN IRRITANT, SKIN ALLERGEN

DEFINITION

Chemicals used for cleaning, degreasing, disinfection and sanitization; 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

- Hand cleanser
- Antiseptic
- Disinfectant
- Sanitizer
- Sterilizer
- Air freshener
- All-purpose cleaner
- Astringent
- Bathroom cleaner
 - Degreaser
- Deodorant

- Detergent
- Enzymatic cleaner
- Glass cleaner
- Oven cleaner
- Polish
- Wax

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, hydrofluoric, 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. formaldehyde, glutaraldehyde, ortho-phthalaldehyde)
- Aliphatic polyamides
- Alkaline agents (e.g. ammonium hydroxide, carbonates, ethanolamine, monoethylamine, sodium hydroxide, silicates)
- Bleach (e.g. sodium hypochlorite)
- Chlorine-releasing compounds (e.g. chloramine, chloramine T, chlorhexidine, chloroxylenol, hlorophene)

- Complexing agents [e.g. ethylene diamine triethylene tetramine (EDTA), nitrilotriacetic (NTA) acid]
 - NTA is classified as an IARC Group 2B carcinogen
- Ethylene oxide
 - Classified as an IARC Group 1 carcinogen
- Fragrance
- Glycol ethers (e.g. triethylene glycol diglycidyl ether)
- Iodine
- Isopropanol
- Potassium dichromate
- Quaternary ammonium compounds (e.g. benzalkonium chloride, benzethonium chloride, didecyldimethylammonium chloride)
- Subtilisin
- Toluene



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SECTORS

Education, health services, municipal.

JOBS

Health Services

Acupuncturist, cleaner/custodian, dental personnel (e.g. dentist, dental technician, orthodontist, periodontist), firefighter, laboratory technician, nurse, operating room staff, orderly, paramedic, physician, respiratory therapist, surgeon, veterinary workers (e.g. veterinarian, veterinary technician)

Education

Childcare worker (e.g. daycare worker, kindergarten teacher, elementary school teacher), cleaner/custodian, library worker (e.g. librarian, library clerk, archive technician)

Municipal

Cleaner/custodian, community care worker, correctional service officer, library worker (e.g. librarian, library clerk, archive technician), long term care worker, public health nurse, public pool personnel (e.g. lifeguard, swim instructor, pool cleaner), sanitary worker, sewage worker, shelter staff, water treatment plant worker

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

15% of occupational asthma cases in healthcare workers can be attributed to cleaning products

• Antiseptics and disinfectants account for 26.3% of allergens affecting healthcare workers

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 of 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, se low-protein and powder-free styles)



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