

# 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
- Bathroom cleaner
- Bleach
- Optical brightener
- Disinfectant
- Carpet cleaner
- Floor cleaner
- Glass cleaner
- Oven cleaner
- Tile cleaner
- Sanitizer
- Air freshener
- Antiseptic
- Bactericide

## 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, decanoic, hydrochloric, octanoic, oxalic, peracetic, 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)
  - Formaldehyde is classified as an IARC Group 1 carcinogen
- Alkaline agents (e.g. ammonium hydroxide, sodium hydroxide, carbonates, ethanolamine compounds, monoethylamine, silicates)
  - Diethanolamine is classified as an IARC Group 2B carcinogen
- Ammonia
- Amyl acetate
- Bleach (e.g. sodium hypochlorite)
- Chlorine-releasing compounds (e.g. chloramine)
- Diazolidinyl urea
- Complexing agents [e.g. ethylene diamine triethylene tetramine (EDTA), nitrilotriacetic (NTA) acid]
  - Nitrilotriacetic acid and its salts are classified as IARC Group 2B carcinogens
- Fragrance
- Hydrogen peroxide
- Isothiazolinones [e.g. benzisothiazolinone (BIT)]
- Quaternary ammonium compounds (e.g. benzalkonium chloride)
- Toluene
- Trichloroethylene
  - Classified as an IARC Group 1 carcinogen

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## SECTORS

Agriculture, industrial manufacturing, service.

## JOBS

### Agriculture

Abattoir worker, animal handler, barn worker, cleaner/custodian, dairy farmer, greenhouse worker, grounds keeper, nursery worker, poultry farm worker

### Industrial Manufacturing

Cleaner/custodian, cleaning product formulator, food/beverage processor, galvanizer, leather/animal hides and skin processors, metal workers, pesticide production

### Service

aesthetician, animal groomer, artist, automobile mechanic, baker, barber, bartender, butcher, carpet cleaner, caterer, cleaner/custodian, cook, dishwasher, dry cleaner, embalmer, fish monger, fitness centre worker (e.g. personal trainer), floor polisher, garage worker, hairdresser, homemaker, hotel housekeeper, kitchen porter, launderer, massage therapist, nail salon technician, painter, pet groomer, pool cleaner/service technician, swimming instructor, retail associate

## 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?

15% of dermatitis cases reported by food manufacturers in the UK are attributed to detergents and solvents.

Antiseptics and disinfectants account for 26.3% of allergens affecting food processing workers.

## 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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