

Chemical Hazard Assessment

Assessor: Nicholas Helps
Designation: MRC/DSTT H&S Coordinator
Approver: H&S Working Group
Date Approved: 5/8/2008
Info Sources: VWR Data Sheets

Serial Number: 1170 **Version:** 5
Created: 28/8/2000, ,
Modified: 1/12/2008, 19:50:19, lgrayson

Chemical Name: Phenol, liquified

Synonyms: phenol

Important Hazard Info:

Toxic by inhalation, in contact with skin and if swallowed. (R23/24/25)
Causes burns. (R34)
Also harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. (R48/20/21/22c)
Possible risks of irreversible effects. (R68) **Category 3 mutagen**

Hazard Rating: 1 2 3

Category of Danger: Xn O T F E
 Xi C T+ F+ N

Carcinogen: 1 2 3 U

Mutagen: 1 2 3 U

Reprotoxin: 1 2 3 U

First Aid:

Due to phenol being rapidly absorbed via skin contact it is vital to obtain medical attention as quickly as possible before the onset of any systemic effects.

Rapid skin decontamination is critical. Skin contact, even with dilute solutions, can be life threatening. The victim may not be aware of initial skin contact because of local anaesthetic effect of phenol.

Special measures for skin contact (**updated 23/04/08**): Remove contaminated clothing, avoiding contamination of unaffected areas, and thoroughly flush area with copious amounts of water for at least 10 minutes. Then swab affected area with polyethylene glycol 300* (PEG 300) until the casualty receives treatment at A&E. **Do not use PEG 300 on eyes - use water only.**

*Alternatives to PEG 300: 70 parts PEG 300/30 parts ethanol, 70 parts PEG 300/30 parts methylated spirits, glycerol.

Fire Hazards & Fire Fighting Measures:

As per the CLS Fire Procedure.
Use Foam, dry powder or carbon dioxide extinguisher.
Combustible. Emits toxic fumes under fire conditions.

Accidental Release Procedure:

As per the CLS Spill Procedure.
Absorb onto inert material and hold for disposal in sealed container.
Wash spill site with water and detergent (not Virkon - this is a disinfectant).

PPE:

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Labcoat | <input type="checkbox"/> Full-face visor | <input type="checkbox"/> Over-shoes |
| <input type="checkbox"/> Disposable labcoat | <input checked="" type="checkbox"/> Safety glasses | <input type="checkbox"/> Safety shoes |
| <input type="checkbox"/> Chemical apron | <input type="checkbox"/> Goggles | <input type="checkbox"/> Perspex shield |
| <input type="checkbox"/> Disposable apron | <input type="checkbox"/> Standard disposable gloves | <input type="checkbox"/> Other PPE (specify below) |
| <input type="checkbox"/> Dust mask | <input checked="" type="checkbox"/> Other gloves (specify below) | |

Engineering Controls (e.g. fume hood):

Fume hood required when working with larger volumes (e.g. stock bottles) to contain vapour and spills. Smaller amounts may be handled on the open bench.

Other Exposure Control Info & Handling Precautions:

Apply Good Laboratory Practice.
Full-face visor preferred.
Gloves: Merck recommend butyl rubber, Neoprene (polychloroprene), Viton™ or PE/EVAL. If using latex, double glove and change gloves immediately if contamination is suspected. Nitrile is not recommended.

Exposure Limits:

WEL - Phenol: Long-term: 2 ppm

Storage Conditions:

Double containment. Keep containers tightly sealed when not in use.

Stability, reactivity, incompatibilities, decomposition, other properties:

Hygroscopic. Sensitive to air. Unsuitable working materials: various metals, rubber.
Substances to be avoided: aluminium, aldehydes, halogens, nitrites, nitrates, hydrogen peroxide, iron(III) compounds, salts of oxyhalogenic acids, peroxy compounds.

Possible Health Effects & Toxicological Info:

- After inhalation: Irritation of the mucous membranes, coughing, and dyspnoea.
- After skin contact: Rapid absorption, burns.
- After eye contact: Burns. Risk of blindness!
- After ingestion: Burns of: mouth, pharynx, oesophagus, gastrointestinal tract.
- Systemic effect: CNS disorders, cardiovascular disorders, changes in the blood picture.

Damage to: liver, kidneys.
Sensitization possible in predisposed persons.
Further hazardous properties cannot be excluded. This substance should be handled with particular care.
LD50 317 mg/kg oral, r a t .
Has been found to cause cancer in laboratory animals. May cause adverse mutagenic or teratogenic effects.

Ecological Info:

Toxic for aquatic organisms Toxic effect on fish and plankton. Forms toxic mixtures in water.
Biological degradability: good.
Bioaccumulation potential: low.

Waste Disposal Routes:

As per the CLS Waste Disposal Procedures.
Store waste in tightly sealed containers.

Transport Precautions (on site):

Double containment.

Additional Info:

Odour threshold = 0.04 ppm (added 13/8/08)

Solubility in water : Soluble

First Aid update on 23/4/08; approved by Head of Safety Services on 25/4/08

Procedure is based on current: Health Protection Agency Guidance; HSE Medical Unit guidance given on the Bristol University site; Inchem data; and University of Manchester guidance.

Data from INCHEM Web Site

Occupational - Fatal Dermal Exposure

A 17-year-old male had 30% phenol (as industrial waste) splashed on his face, neck and right trunk. He was washed with water, but 30 minutes later he had a seizure and died. His blood phenol level was 2.7 mg/dL. An autopsy showed red areas to 15% of his skin area, and pulmonary oedema. (WHO, 1994)

The lowest reported fatal dose in humans was 4.8 g by ingestion; death occurred within 19 min.

Updated on 5/8/08 and then 25/8/08 by LG in light of changes to VWR MSDS and additional information from the HPA, OSHA and HHMI.