McMaster University
Department of Biology
Standard Operating Procedures for BUFFERED PHENOL

Revised: January 28, 2008
Reviewed by EOHSS May 2008
Effective: Immediately

Applicable Legislation:

Occupational Health and Safety Act (OHSA), R.S.O. 1990, Sections 27 (2) (a), 27 (2) (c).

Intent: To outline safe handling procedures of buffered phenol, including any equipment that is used in conjunction with buffered phenol, and to outline potential hazards and first aid measures should incidences occur.

Definitions:

Buffered Phenol: Phenol is widely used for the extraction and isolation of nucleic acids. Phenol is usually used in solution with chloroform/isoamyl alcohol to remove protein contaminants from nucleic acids. It is buffered with either Tris-HCL or Citrate solution to attain a pH value complimentary to the separation of nucleic acids from other cellular components.

Qualified person: A person who, in respect of a specific duty, is qualified by knowledge, training and experienced to perform the duty safely and properly.

Requirements of OHSA, Section 27 (2) a, c and Section 28(1) a, b, c

27. (2) (a) A supervisor shall advise a worker of the existence of any potential or actual danger to the health or safety of the worker of which the supervisor is aware.

27. (2) (c) Take every precaution reasonable in the circumstances for the protection of a worker.

Duties of workers

28. (1) A worker shall,

(a) work in compliance with the provisions of this Act and the regulations;

(b) use or wear the equipment, protective devices or clothing that the worker's employer requires to be used or worn;

(c) report to his or her employer or supervisor the absence of or defect in any equipment or protective device of which the worker is aware and which may endanger himself, herself or another worker

Potential Hazards

Phenol is toxic and corrosive. Readily absorbed through skin; toxic by inhalation and in contact with skin and if swallowed. Phenol causes burns and serious damage to health by prolonged exposure through inhalation, in contact with skin, and if swallowed, possible risk of irreversible effects.

Phenol is a vesicant: a substance that causes tissue blistering. Vesicants are highly reactive chemicals that combine with proteins and DNA and other cellular components to result in cellular changes immediately after exposure.

ORAL EXPOSURE: If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

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INHALATION EXPOSURE: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
DERMAL EXPOSURE: In case of contact, immediately wash skin with soap and copious amounts of water.
Eye Exposure: Assure adequate flushing of the eyes by separating the eyelids with fingers.

Description of Procedures

1. All persons shall read the Material Safety Data Sheet and SOP on buffered phenol before use and follow ALL recommendations
2. All users will have WHMIS, Fire Safety, Chemical handling and Spills training.
3. All persons shall know Life Sciences Building Emergency Procedures including the location of Fire pull stations, eye wash stations and safety showers.
4. Strict use in Fume Hoods ONLY with adequate ventilation.
5. Appropriate personal protective equipment (PPE) is required; gloves, lab coat, chemical splash goggles and closed-toed shoes.
6. Gloves must be removed after use with phenol.
7. All containers containing phenol solutions will be labeled as to contents and concentration.
8. All phenol-contaminated material will be disposed and processed as hazardous chemical waste. All liquid material will be disposed of in appropriate liquid waste container in fume hood.
9. Chemical spill pillows/pads will be available for large volume liquid spills. Check with your supervisor as to where these devices are stored.
10. Wear appropriate PPEs for spill clean-up
11. All spill pillows/pads and towels used to clean up the spill will be double bagged as solid waste and left in the fume hood
12. **The lab supervisor MUST be notified of any spills large enough to have required the use of a spill pillow for containment. Contact EOHSS department and fill out incident report. In case of emergency dial 88.**

Waste Management and Environmental Responsibility Waste disposal procedures

SPECIFIC HAZARD(S): Emits toxic fumes under fire conditions.

1. All solid phenol contaminated waste shall be disposed of into waste bins specifically designated for phenol waste. Examples of solid phenol waste material include gloves, pipette tips, paper towels, and microfuge tubes.
2. All liquid phenol waste is to be stored in the waste bottle specifically labeled phenol.
3. Once the waste bin/bottle is full, the workplace supervisor is to dispose of the phenol contaminated waste via the McMaster University Hazardous waste disposal system.

Decontamination of Equipment

Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal.

Handling and Storage Requirements (Refer to MSDS)

Keep tightly closed. Keep away from heat and open flame. Store at 2-8°C

Use with adequate ventilation.

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Avoid contact with eyes and skin, where proper PPE; gloves, lab coat etc.
After handling phenol wash hands thoroughly.

Contingency Plan and Reporting

All accidents and spills will require persons involved to fill out an "incident report" after the situation has been contained.

In the event of chemical exposure emergency, **dial Ext. 88** to reach Security Services

Accident response

For first aid measures for specific accidents involving buffered phenol, consult the Material Safety Data Sheet.

In the event of chemical exposure emergency, **dial Ext. 88** to reach Security Service.

Spill clean up

Wear required PPE
Cover with dry lime or soda ash, pick up, keep in a closed container, and dispose via the university waste disposal system.

References:

Material Safety Data Sheets: Sigma Aldrich
Risk Management Manual (RMM) McMaster University
Occupational Health and Safety Act (OHSA)
Cameron Lab Protocols (2008)