Chemical Fact Sheet

Formaldehyde Chemical Safety Fact Sheet

At room temperature, formaldehyde is a colorless, flammable gas that has a distinct, pungent smell. Aqueous formaldehyde solutions commonly referred to as formalin are widely used in hospital pathology and research laboratories as a tissue preservative. Over time, formaldehyde has the potential to cause cancer in humans. Repeated and prolonged exposure increases this risk. Various animal experiments have conclusively shown formaldehyde to be a carcinogen in rats. In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages.

Training

Only individuals who have received proper training may use formaldehyde at the Harvard Institutes of Medicine (HIM) and New Research Building (NRB). The training shall include reading this data sheet, understanding the formaldehyde material safety data sheet (MSDS), and receiving appropriate instruction from the supervisor or principal investigator on laboratory procedures.

Exposure Risks from Formaldehyde include:

- Formaldehyde is highly irritating to the upper respiratory tract and eyes.
- Eye exposures may result in discomfort to severe, permanent corneal clouding and loss of vision.
- Formalin, which contains 37% formaldehyde by weight, is a severe skin irritant and a sensitizer. Contact with formalin causes white discoloration, drying, cracking, and scaling.

The Following Practices Must Be Followed Within Laboratories Using Formaldehyde

- **The U.S. Occupational Safety and Health Administration (OSHA) requires employees receive formaldehyde safety training at the time of initial assignment and annually thereafter.**
- Do not eat, drink, smoke, chew gum, apply cosmetics or lip balm within laboratory areas, ever.
- Wear appropriate personal protective equipment (PPE) (laboratory coat, gloves, safety glasses). Nitrile gloves provide good resistance to formaldehyde. All exposed skin must be protected against splashes from formaldehyde solutions.
- Formaldehyde solutions must be disposed of as a toxic hazardous waste, and are prohibited from being disposed of in laboratory sink drains.
- Call 617-432-1901 if there has been a formaldehyde spill. The HIM/NRB Environmental Health & Safety (EH&S) Office has specific supplies to neutralize formaldehyde.
- Always use a chemical fume hood or other means of ventilation when handling formaldehyde solutions or fixed tissues. Close and properly seal formaldehyde solution containers when not in use.
- Contact the HIM/NRB EH&S Office for information on formaldehyde air monitoring. A report on formaldehyde monitoring is available in the HIM/NRB EH&S Office. Laboratories that are using formaldehyde should review the report to confirm their exposure has been monitored.
- Any new processes or exposures should be reviewed with and/or re-monitored by the HIM/NRB EH&S Office.

Occupational Exposure Limits

OSHA has an 8-hour permissible exposure limit of 0.75 parts per million (ppm) of formaldehyde as a time weighted average. OSHA also has a 15-minute short-term exposure limit of 2.0 ppm. Finally, OSHA has established an action limit (AL) of 0.5 ppm. Exposures above the AL require increased employee exposure surveillance. Employee exposures can be reduced by using fume hoods or other ventilated appliances and by exercising safe work practices including the use of PPE. In rare circumstances, a respirator may be necessary. Before a respirator can be worn, a medical evaluation is necessary and a respirator “fit test” must be performed by the HIM/NRB EH&S office.

Also See:

- Full formaldehyde standard operating procedure available from the HIM/NRB EH&S Office
- Formaldehyde MSDS
- HIM-NRB Chemical Hygiene Plan available on the HIM/NRB EH&S Webpage: http://www.himnrbehs.com/himnrbehs/chemicalSafety.asp

For more information contact the HIM/NRB EH&S Office, 617-432-2762