Clinical Safety
Procedure

Formaldehyde Information and Training

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Stakeholder Name(s): Jeffery Hadley Date: 5/2010 Reviewed ✔ Revised
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Stakeholder Name(s): Date: Reviewed ✔ Revised

List all stakeholder(s) and dates of approval:

Purpose/Policy Statement:
Formaldehyde training program provides information regarding the hazards and regulations associated with formaldehyde. Laboratory staff receives training in formaldehyde at orientation and annual refresher.

Definitions:
- NA

POLICY CONTENT

The program includes:
1. Review of the regulations and the contents of the Formaldehyde Material Safety Data Sheet (MSDS).
2. The purpose and description of the medical surveillance program
3. A description of potential health hazards including the signs and symptoms of exposure
4. The need to immediately report any signs or symptoms of exposure to the employer
5. Description of the work areas where formaldehyde is present and the proper work practices for limiting exposure
6. The purpose, proper usage and limitations of personal protective clothing and equipment
7. Instruction for handling emergencies, including spills and clean-up procedures
8. An explanation of the types of controls used for reducing formaldehyde exposure and any necessary instruction in the use of the controls
9. A review of emergency procedures, including specific duties or assignments of each employee in the event of an emergency

FORMALDEHYDE REGULATIONS

The rules apply to products that contain more than 0.1% formaldehyde and during conditions when airborne exposures exceed 0.5 parts per million (ppm) for 8 hours average or above the short-term limit of 2 ppm. Our Pathology Lab uses 10% formaldehyde. Airborne exposure monitoring in the laboratory while using 10% formaldehyde showed employee exposures to be below the action level of 0.5 ppm and the short term exposure limit of 2 ppm.

Medical Surveillance

Medical surveillance is available to employees (at no cost) who are exposed to concentrations of formaldehyde above 0.5 ppm as an 8-hour average or 2 ppm over any 15-minute work period. Past monitoring has shown that our laboratory exposures are below these levels, thus no routine medical surveillance is needed.

Concern would arise during the cleanup of a significant spill of formalin solutions. Thus, if you were exposed during an accidental release, you may need medical surveillance to determine if your health is being affected by your exposure.
If exposure were to occur, then the surveillance program includes:

1. A medical disease questionnaire
2. Based on the medical questionnaire, a physical examination, if the physician determines this is necessary. After a medical examination, the physician will provide a written opinion that includes any special protective measures recommended and any restrictions on your own exposure.

MATERIAL SAFETY DATA SHEETS (MSDS)

Formaldehyde contained in products used in our workplace is the 10% formalin solution used in our Pathology Lab and in several other laboratory areas. 37% formaldehyde is used in the Histology Lab.

HEALTH EFFECTS AND SIGNS AND SYMPTOMS OF EXPOSURE

The potential ill-health effects from formaldehyde exposure include immediate or acute effects and possible long term, chronic health conditions.

Acute Effects of Exposure:

- **Ingestion:** Liquids containing 10 to 40% formaldehyde cause severe irritation and inflammation of the mouth, throat and stomach. Ingestion of dilute solutions of 0.03 to 0.04% may cause discomfort in the stomach and throat.

- **Inhalation:** Formaldehyde is highly irritating to the upper respiratory tract and eyes. The following effects are commonly reported at the concentrations shown below:
  - Concentrations of 0.5 to 2 ppm may irritate the eyes, nose and throat of some individuals. Concentrations of 3 to 5 ppm also cause tearing of the eyes and are intolerable to some persons. Concentrations of 10 to 20 ppm cause difficulty breathing, burning of nose and throat, cough and heavy tearing of the eyes.
  - Concentrations of 25 to 30 ppm cause severe respiratory tract injury leading to pulmonary edema and pneumonitis.
  - A concentration of 100 ppm is immediately dangerous to life and health (IDLH)

- **Skin:** A 37% solution is severe skin irritant and is seen as a sensitizer by some individuals. Contact with the solution causes white discoloration, smarting, drying, cracking and scaling. Prolonged and repeated contact can cause numbness and a hardening or tanning of the skin. Lower percent solutions can also cause irritation, but not to the degree of a 37% solution.

- **Eye Contact:** Formaldehyde solutions splashed in the eyes can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. The severity of the effect depends on the concentration of formaldehyde in the solution and whether or not the eyes are flushed with water immediately after the accident.

Chronic Effects of Exposure:

- **Cancer Agent:** Formaldehyde has the potential to cause cancer in humans. Repeated and prolonged exposure increases the risk. Various animal experiments have shown formaldehyde to be a cancer agent in rats. In humans, formaldehyde exposure has been associated with cancer of the lungs, nose and throat.

- **Mutagen:** Formaldehyde, in experimental studies, has been shown to change cellular structures.

- **Respiratory Toxicity:** Prolonged or repeated exposure to formaldehyde may result in respiratory impairment. Some persons have developed asthma or bronchitis following exposure to formaldehyde, most often as the result of an accidental spill involving a single exposure to high concentrations of formaldehyde.

Areas of Possible Formaldehyde Exposure and Controls

Formaldehyde exposures are found in the following areas:

1. Histology section of the laboratory
2. Microbiology section of the laboratory (small quantities)
3. Hematology/bone marrow section of the laboratory (small quantities)

The exposures are controlled well within the legal exposure limits by the percentage of Free Formaldehyde, quantities, and analytical procedures and equipment controls of vapors generated.

Personal Protective Equipment (PPE)

PPE – gloves, goggles and plastic aprons are provided

Respirators and PPE are only used by outside contracted service when cleaning a spill.

- Skin and eye protection is required when there is a potential for skin contact with products containing more than 1% formaldehyde. Much of the laboratory work is done in a manner to preclude skin contact.
- Barrier shields placed in the Histology lab provide adequate eye and face protection
• Respirators are used only by outside contracted services. Refer to the Safety Manual, Respirator Plan and Hazardous Materials and Waste Plan
• Gloves and eye protection (goggles) should be worn when processing bone marrow specimens using formalin. Both of these PPE’s are to be kept on the bone marrow cart at all times for ready use.

**Emergencies – Refer to Safety Manual**

This includes procedures for handling spills and other unexpected releases of formaldehyde. Specific procedures are provided on products MSDS under emergency information. Areas with potential exposure hazards have been provided with spill kits and proper PPE.

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N/A

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safety03

**Author Position:**
Operations Manager

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Medical Director, Operations Manager, Safety Officer

**Expert Consultant Position/s (Not Individual Name/s):**
N/A

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Salem Hospital Policy and Procedures – Formaldehyde Information and Training

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