

LAC+USC HEALTHCARE NETWORK

GLUTARALDEHYDE

- OVERVIEW:** Glutaraldehyde is used as a disinfectant for cold sterilization of medical devices that cannot be steam sterilized, particularly heat sensitive, lensed instruments that are commonly subjected to high-level disinfection between patient uses.
- HEALTH HAZARDS:** Glutaraldehyde is absorbed into the body by inhalation, skin contact, and ingestion. It is irritating to the skin and mucous membranes at concentrations of about 0.3 ppm. Occasional exposure can cause allergic contact dermatitis. Extensive skin contact may cause allergic eczema and may affect the nervous system. Other health effects include, eye, throat, and lung irritation, coughing, chest tightness, headaches, skin irritation, and asthma-like symptoms.
- EXPOSURE LIMITS:** CAL-OSHA and NIOSH have established exposure limit ceiling of 0.2 ppm (0.8 mg/m³) for glutaraldehyde. Similarly, the American Conference of Governmental Industrial Hygienists (ACGIH) recommends a threshold limit value ceiling (TLV-C) of 0.2 ppm.
- EMPLOYEE MONITORING:** The employer will identify and monitor all employees who may be exposed to glutaraldehyde using personal monitoring badges. Employees will be notified of their personal monitoring results within 15 days of receipt of the results.
- SAFE WORK PRACTICES:** The exposures to glutaraldehyde vapor occur when glutaraldehyde is poured into or out of a container system, when the container system is opened for use, when containers are left uncovered, when the instruments are removed and rinsed, and when accidental spills occur. Therefore, containers of glutaraldehyde should be kept covered whenever possible and tightly closed when not in use.
- PERSONAL PROTECTIVE EQUIPMENT:** To prevent skin contact, supervisor shall provide and employees should use personal protective equipment including goggles and/or face shields, gloves, and other protective clothing as needed. Gloves should be made of a material that is impervious to glutaraldehyde.

ENGINEERING CONTROLS: ANSI/AAMI recommends a minimum air exchange rate of 10 exchanges per hour for areas in which glutaraldehyde is used. When general room ventilation is not adequate, a self-contained, free standing system or a local exhaust hood shall be installed for the containment of glutaraldehyde vapor. The American Industrial Hygiene Association (AIHA) recommends an average face velocity of 80-120 feet per minute.

EMPLOYEE TRAINING: Supervisor shall inform their employees about the potential health hazards of glutaraldehyde, train employees of how to read the Material Safety Data Sheets (MSDS) and the container warning label, proper use of personal protective equipment, and the emergency spill clean up procedures as mandated by CAL-OSHA, Hazard Communication Standard. (Title 8, Section 5194)

USE OF RESPIRATORY EQUIPMENT: When proper engineering controls fail to reduce employee exposure to glutaraldehyde fumes, a Respiratory Protection Program (Title 8, Section 5144) shall be implemented. NIOSH recommends the use of organic vapor cartridges with air-purifying respirators.

STORAGE & DISPOSAL: Unused glutaraldehyde solutions should be stored in tightly closed containers in a cool, secure, and properly marked location. Outdated glutaraldehyde solutions should be disposed of as soon as possible. **DO NOT** pour glutaraldehyde into the sewer system.

Engineering Section collects glutaraldehyde wastes on every Wednesday from various locations throughout the Medical Center. The waste is then transported to the lower bio-hazard storage yard. Glutaraldehyde waste is hauled away once a week by an authorized hazardous waste hauler.

Cluster Facilities follow their internal handling and disposal procedures.

EMERGENCY ACTION PLAN: A small spill (drips and splashes) can be wiped up quickly with a sponge, towel, or mop. The sponge, towel, or mop should be thoroughly rinsed with large amounts of water discarded down the drain. Any large amounts of glutaraldehyde spill should be cleaned up by a trained individual or team equipped with the appropriate respiratory equipment.

DECONTAMINATION PROCEDURES:

If any **skin contact** with glutaraldehyde should inadvertently occur, the skin should be washed thoroughly with soap and water and should be flushed with water for at least 15 minutes.

If glutaraldehyde is splashed or comes in contact with the **eyes**, they should be flushed immediately with water and washing should be continued for at least 15 minutes. The employee should be seen immediately by a physician.

Suitable eyewash units shall be available for immediate emergency use in all glutaraldehyde usage locations. Emergency eyewash units should be located within 10 seconds travel time and/or 100 feet travel distance of the usage locations.

If the **protective clothing** becomes saturated with glutaraldehyde, the employee should immediately remove the protective clothing. The clothing should be laundered before reuse.

RECORD KEEPING:

CAL-OSHA requires that the employer shall maintain employee exposure record for the duration of employment and for at least 30 years thereafter. The law also requires the results of workplace monitoring be posted in an area where it is readily accessible to employees.

Reference: CAL-OSHA, Title 8, Section 5151, Section 5144, Section 5194
ANSI/AAMI: Safe use and handling of glutaraldehyde-based products in health care facilities.