GLUTARALDEHYDE FACT SHEET

Introduction

Glutaraldehyde has a variety of uses and is found in many industries and occupations. It is used primarily as a biocide, but also as a fixative and a therapeutic agent. Glutaraldehyde is used as a cold sterilizer to disinfect and clean heat-sensitive equipment such as dialysis instruments, surgical instruments, suction bottles, bronchoscopes, endoscopes, and ear, nose, and throat instruments. This chemical is also used as a tissue fixative in histology and pathology labs and as a hardening agent in the development of x-rays. Glutaraldehyde is a colorless, oily liquid with a pungent odor (odor threshold level of 0.04 ppm). Hospital workers use it most often in a diluted form mixed with water. The strength of glutaraldehyde and water solutions typically ranges from 1% to 50%, but other formulations are available. Trade names include Cidex®, Sonacide®, Sporicidin®, Hospex®, Omnicide®, Metricide®, and Wavicide®.

Exposure Hazards of Glutaraldehyde

Short-Term Effects of Exposure

- Inhalation—Breathing glutaraldehyde can irritate the nose, throat, and respiratory tract, causing coughing and wheezing, nausea, headaches, drowsiness, nosebleeds, and dizziness. Inhalation of vapors can cause asthma-like symptoms. These symptoms are generally temporary and should subside when the employee leaves the area of the glutaraldehyde exposure.
- Skin contact—may cause minor irritation with itching and slight local redness; in high concentrations can cause severe burns. Prolonged contact causes mild to moderate local redness and swelling. In concentrations less than 10%, it is not known to be absorbed through the skin in harmful amounts. Glutaraldehyde can be a skin sensitizer in a small percentage of exposed individuals.

- Eye contact—can severely irritate the eyes and cause severe burns. In concentrations less than 5% it is considered irritating to eyes, although higher concentrations can present a risk of serious damage to the eyes.
- Nose and throat irritation and general tightness of the chest have been reported by workers exposed to glutaraldehyde vapors, even at concentrations below 0.2 ppm.
- Ingestion—Poisonous by ingestion.

Long-Term Effects of Exposure

- Glutaraldehyde is a suspected carcinogen.
- Prolonged exposure can cause a skin allergy and chronic eczema, and afterwards, exposure to small amounts produces severe itching and skin rashes. Workers may get sudden asthma attacks with difficult breathing, wheezing, coughing, and tightness in the chest.
- It has been implicated as a possible cause of occupational asthma.

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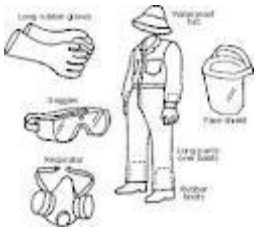
Legal Limits for Exposure
The Federal Occupational Safety and Health Administration (OSHA) does not have a Permissible Exposure Limit for glutaraldehyde. The National Institute for Occupational Safety and Health (NIOSH) established a Recommended Exposure Limit (REL) of 0.2 ppm in 1989. Other organizations that have occupational exposure limits include the American Conference of Governmental Industrial Hygienists (ACGIH), which currently recommends a Threshold Limit Value (TLV) of 0.05 ppm in air, measured as a ceiling concentration, and the United Kingdom Health and Safety Executive which also has established a 0.05 ppm Workplace Exposure Limit (WEL) averaged over both 8 hours and 15 minutes. An immediately dangerous to life and health (IDLH) concentration has not been determined. All employees who may be exposed to above the ceiling threshold limit value (TLV) of 0.05 ppm, should use appropriate respirators for glutaraldehyde vapor during routine or emergency work.

Controlling Exposures

Engineering Controls
All work practice procedures should aim to prevent contact with glutaraldehyde and reduce exposure to vapor to the lowest reasonably obtainable level. Solutions should be poured from the container to the disinfection basin by a method that will prevent employee contact with the solution and reduce exposure to glutaraldehyde vapors. Glutaraldehyde solutions should be stored in tightly closed containers in a cool, secure area and properly labeled. Use local exhaust ventilation (capture velocity of at least 100 feet per minute) and at least 10 room air exchanges per hour. Keep glutaraldehyde baths under a fume hood where possible. Use only enough glutaraldehyde to perform the required disinfecting procedure. Avoid skin contact; use appropriate Personal Protective Equipment when handling glutaraldehyde—refer to *Protective Clothing and Equipment.*

Protective Clothing and Equipment



- Skin protection—gloves must be worn whenever glutaraldehyde is handled. Latex gloves, polyvinyl chloride (PVC), and neoprene gloves are not recommended. *Butyl rubber*, *nitrile* and *Viton* ® are the most impervious to 50% glutaraldehyde solutions and have been shown to provide full shift protection against glutaraldehyde permeation.
- Eyewear—Splash proof goggles or safety glasses with full face shields must be worn wherever there is potential for glutaraldehyde solution to contact the eyes.
- Respirator—Use NIOSH-approved organic vapor respirator in high concentrations.

Other Issues

Material Safety Data Sheets (MSDS)—Glutaraldehyde users must know what MSDSs are, their relevance to health and safety and how to readily access them.

Flammability—Glutaraldehyde is not a significant fire risk.

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Transportation and Storage—Protect containers against physical damage. Store with tight-fitting lids in a secure refrigerated area. Transport glutaraldehyde solutions in closed containers with tight-fitting lids to minimize the potential for spills.

First Aid

Eye Contact: Immediately flush the eyes with large amounts of water for at least 15 minutes. Seek medical attention immediately.

Skin Contact: Immediately flush the contaminated skin with soap and water for at least 15 minutes. If glutaraldehyde penetrates clothing, immediately remove the clothing and flush the skin with soap and water for at least 15 minutes. Promptly seek medical attention if symptoms are present after washing.

Inhalation: Move the exposed person to fresh air at once. Give oxygen if available. Get medical attention if symptoms persist.

Ingestion: Drink large quantities of water. DO NOT induce vomiting. Get medical attention immediately.

Spills, Leaks, and Disposal

All spills should be cleaned up immediately, regardless of size. Absorb spill with absorbent sand. A reusable or disposable sponge, towel, or mop may be used to clean up small spills. After the glutaraldehyde solution is removed, the spill area and the cleanup supplies should be rinsed thoroughly with large amounts of cold water. Glutaraldehyde waste should be disposed of by the medical center safety office.