

# UNIVERSITY OF TOLEDO

SUBJECT: STERILANT / DISINFECTANT SAFE WORK PRACTICES Procedure No: HM-08-017

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## PROCEDURE STATEMENT

To establish recommended procedures for biological equipment decontamination including the safe handling and use of chemicals involved with equipment decontamination.

## PURPOSE OF PROCEDURE

To provide guidance for Department Managers in the development of department specific procedures for the decontamination of biologically contaminated equipment, to provide a safe working environment for all employees, and to ensure compliance with the OSHA Permissible Exposure Limits for decontamination chemicals and processes.

## PROCEDURE

### CIDEX ORTHO-PHTHALALDEHYDE (CIDEX OPA)

#### Hazards and Physical Properties

Cidex OPA Solution is a high level disinfectant for reprocessing heat sensitive reusable semi-critical medical devices, for which sterilization is not feasible. Cidex OPA Solution is intended for use in manual (bucket and tray) systems made from polypropylene, acrylonitrile-butadiene-styrene (ABS), polyethylene, glass-filled polypropylene and/or polycarbonate plastics. CIDEX OPA Solution may also be used in automated endoscope reprocessors according to the manufacturer's instructions. Cidex OPA may cause eye, skin, respiratory irritation, and may elicit an allergic reaction via sensitization.

#### Recommended Work Practice Controls for Cidex OPA

- Employees should review and be familiar with the product's Safety Data Sheets.
- Store solutions in fully covered containers to minimize the release of vapors to the ambient atmosphere.
- Keep disinfection trays tightly covered, or in specialized units specifically designed for containment.
- Use Cidex OPA only in areas where adequate ventilation is provided.
- During mixing and pouring of Cidex OPA solutions, safety goggles and/or a face shield should be worn.
- Provide access to eye wash stations (activate and check eyewash weekly).
- When disinfecting devices, use gloves of appropriate type and length, eye protection and fluid-resistant gowns.
- Consider pre-placement medical screening of personnel for a history of asthma or allergic dermatitis or patch testing for the determination of skin sensitization.
- Perform activities under a local exhaust hood if available.
- Substitute less hazardous products when available and practical.

### GLUTARALDEHYDE

#### Hazards and Physical Properties

Glutaraldehyde is a broad-spectrum antimicrobial substance used as a disinfectant when heat sterilization is unavailable or potentially damaging to instrumentation. Solutions of Glutaraldehyde in water are mildly corrosive and have a negligible and low antimicrobial activity. Glutaraldehyde, in solution, may be required to be "activated" by the addition of sodium bicarbonate. 2% Glutaraldehyde is the active ingredient in products such as Cidex, Sporicidin, Sanocide, Metracide, Acusol, Procide and others. Glutaraldehyde is an irritant of the skin and mucous membranes. It causes eye, throat, and respiratory tract irritation. It has been implicated as a cause of contact dermatitis, asthma,

sensitization, and rhinitis in endoscopy unit personnel and other healthcare workers. The American Conference of Government Industrial Hygienists (ACGIH) has a recommended ceiling Threshold Limit Value (TLV) of 0.05 ppm (parts per million). A ceiling limit is an exposure which should not be exceeded for any period of time.

#### Recommended Work Practice Controls for Glutaraldehyde

- Employees should review and be familiar with the product's Safety Data Sheets.
- Store activated solutions in fully covered containers to minimize the release of vapors to the ambient atmosphere.
- Keep disinfection trays tightly covered, or in specialized units specifically designed for containment.
- Use Glutaraldehyde only in areas where adequate ventilation is provided.
- During mixing and pouring of Glutaraldehyde solutions, safety goggles and/or a face shield should be worn.
- Inform employees who handle Glutaraldehyde that wearing contact lenses can cause eye irritation as a result of the adsorption of the vapor onto the lens material. Employees who choose to wear contact lenses should wear vapor tight protective goggles.
- Provide access to eye wash stations (activate and check eyewash weekly).
- Provide neoprene or nitrile gloves which extend to mid-forearm. Latex or vinyl surgical gloves do not afford adequate protection and may serve to hold cold sterilants close to the skin exacerbating the potential for skin irritation.
- Consider pre-placement medical screening of personnel for a history of asthma or allergic dermatitis or patch testing for the determination of skin sensitization.
- Perform activities under a local exhaust hood if available.
- Substitute less hazardous products when available and practical.

### FORMALDEHYDE

#### Hazards and Physical Properties

Formaldehyde gas is corrosive and will kill most bacteria and fungi (including spores) when properly applied. Formaldehyde is generally heated to a gaseous state in small, enclosed areas, where it mixes with ambient water vapor to provide biological disinfection. Once the disinfection process is complete, Sodium Bicarbonate (1:1.1 ratio) is used to neutralize the area. The Occupational Safety and Health Administration has established a Permissible Exposure Limit (PEL) of 0.75 ppm TWA, an action limit of 0.5 ppm, and a short term exposure limit (STEL) of 2.0 ppm. Formaldehyde is a known carcinogen requiring monitoring, special training, and medical surveillance and shall only be used as a disinfectant with Environmental Health and Radiation Safety's approval.

#### Recommended Work Practice Controls for Formaldehyde

- Contact the Environmental Health and Radiation Safety department for more information on using formaldehyde as a disinfectant.

### PERACETIC ACID (PAA)

PAA is a broad-spectrum antimicrobial agent which kills microorganisms by oxidation and subsequent disruption of their cell membrane and is used for the sterilization of some medical equipment. Peracetic acid is a strong oxidizing agent and a primary irritant. Exposure to peracetic acid can cause irritation to the skin, eyes and respiratory system and higher or long-term exposure can cause permanent lung damage. In addition, there have been cases of occupational asthma caused by peracetic acid

### Recommended Work Practice Controls for Peracetic Acid

- Employees should review and be familiar with the product's Safety Data Sheets.
- Store PAA solutions in fully covered containers to minimize the release of vapors to the ambient atmosphere.
- Keep disinfection trays tightly covered, or in specialized units specifically designed for containment.
- Use PAA only in areas where adequate ventilation is provided.
- During pouring of PAA solutions, safety goggles and/or a face shield should be worn.
- Provide access to eye wash stations (activate and check eyewash weekly).
- Provide neoprene or nitrile gloves which extend to mid-forearm. Latex or vinyl surgical gloves do not provide adequate protection and may serve to hold cold sterilants close to the skin exacerbating the potential for skin irritation. If nitrile gloves are chosen, gloves should be changed out immediately after contact with PAA due to short-duration penetration and permeation.
- Perform activities under a local exhaust hood if available.
- Substitute less hazardous products when available and practical.

### VAPORIZED HYDROGEN PEROXIDE (VHP)

#### Hazards and Physical Properties

Hydrogen peroxide is a common household and industrial sanitizer in its common liquid form. When vaporized, it is used as an antimicrobial pesticide, disinfectant, and sterilant killing nearly all forms of microbial life in the inanimate environment, including all forms of vegetative bacteria, bacterial spores, fungi, fungal spores, and viruses.

#### Recommended Work Practice Controls for Formaldehyde

- Currently VHP is utilized on a limited basis on campus. Please contact the Environmental Health and Radiation Safety Department for more information on using VHP as a disinfectant.

Source: Safety & Health Committee

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