# Just the Facts...

## *Bloodborne Pathogens – Chemical Disinfectants*

**Chlorine compounds**
*Characteristics:*

- Universally active against all microorganisms.

- A 1:100 dilution [500 parts per million(ppm)] of household bleach (approximately 1/4 cup of bleach to 1 gallon of tap water) effectively disinfects blood spills containing human immunodeficiency virus (HIV) or hepatitis B virus(HBV).

*Application*: A 1:100 dilution of household bleach and tap water can be used to disinfect equipment and work surfaces.

*Concentration*: 3% concentration of active ingredients.

*Shelf-life*: Less than 1 week.

*Health hazards*: Toxic and corrosive at 10,000 ppm.

*Personal protection:* Splash-proof safety goggles and vinyl or latex gloves for repeated or prolonged use.

*Examples*: Clorox[1], Purex[2], and Chloros.

**Iodophor compounds (iodine)**
*Applications:*

- General disinfectant when mixed with other substances.

- Commonly used as a skin disinfectant.

*Concentration*: 2% concentration of active ingredients.

*Shelflife:* Greater than 1 week.

*Personal protection*: None required.

*Example*: Wescodyne.[3]

**Alcohols**
*Application*: General surface disinfectant.

*Concentration*:

- 70% concentration of active ingredients for ethyl alcohol

- 85% concentration of active ingredients for isopropyl alcohol

*Shelf-life:* Greater than 1 week for both ethyl and isopropyl alcohol.

*Health hazards*: lsopropyI alcohol and ethyl alcohol are eye and mucous membrane irritants.

*Personal protection*: Splash-proof safety goggles, face shields, and nitrile rubber gloves. NOTE: Neoprene or teflon gloves may also be used for isopropyl alcohol, and butyl rubber or neoprene gloves may be used for ethyl alcohol.

**Phenolic compounds**
*Characteristics*:

- Effective against a wide range of bacteria including mycobacterium tuberculosis.

- Not readily neutralized by organic materials.

- Stable at dilutions used for disinfection.

- Relatively inexpensive.

*Application*: Disinfection of equipment and work surfaces.

*Concentration:* 1-2% concentration of active ingredients.

*Shelf-life:* Greater than 1 week.

*Health Hazards:* Toxic and somewhat corrosive.

*Personal Protection:* Splash-proof safety goggles and butyl rubber or neoprene gloves. NOTE: Butyl rubber gloves are preferred.

***Industrial Hygiene Medical Safety Management***
***DSN 584-2439 or Commercial 410-436-2439***
***U.S. Army Center for Health Promotiion and Preventive Medicine***
***Aberdeen Proving Ground, MD 21010-5403***

**Quaternary ammonium compounds**

*Characteristics:*

- Relatively nontoxic.
- Antibacterial compounds with detergent properties.

*Applications:* Commonly used for general housekeeping and disinfecting environmental surfaces.

*Contraindication:* NOT to be used for disinfecting instruments.

*Concentration:* 2% concentration of active ingredients.

*Shelf-life:* Greater than 1 week.

*Health hazards:* Nasal irritant and can promote contact dermatitis.

*Personal protection*: Polyvinyl chloride (PVC) gloves.

Examples: A-33, Benzalkonium chloride, and Roccal.[4]

**Aldehydes**

*Application:* Generally used in cold sterilization of instruments.

*Concentration:*

- 6-8% concentration of active ingredients for formaldehyde.
- 2% concentration of active ingredients for glutarlaldehyde.

*Shelf-life:* Greater than 1 week for both formaldehyde and glutaraldehyde.

*Health hazards:*

- Formaldehyde is a respiratory tract irritant and suspected carcinogen.
- Glutaraldehyde is a skin and mucous membrane irritant and can cause allergic contact dermatitis.

*Personal Protection:* Splash-proof goggles, face shields, and butyl rubber gloves.

*Example:* Cidex.[5]

[1] Clorox is a trademark of Clorox Co., 1221 Broadway, Oakland, California.

[2] Purex is a trademark of Armour-Dial, Inc., Greyhound Tower, Phoenix, Arizona.

[3] Wescodyne is a trademark of West Chemical Products. Inc., Long Island City, New York.

[4] Roccal is a trademark of Winthrop Laboratories Div., Sterling Drug Co.. New York, New York.

[5] Cidex is a trademark of Surgikos, Inc., Arlington, Texas.