

# D

## BIOSAFETY TIP OF THE MONTH: DECONTAMINATION

*Decontamination of your work area protects you and the environment, and even your experiments!*

*Do you know how to pick the right method for your work?*



**Sterilization:** chemical or physical process by which all microorganisms are killed, including bacterial endospores

**Disinfection:** chemical or physical process by which nearly all microorganisms, but not all forms (spores), are killed on inanimate objects

**Antisepsis:** process by which nearly all microorganisms, but not all forms (spores), are killed on skin or living tissue

**Sanitation:** process by which contaminating microorganisms on inanimate objects are reduced to a safe level

**Germicide:** chemical agent capable of killing microorganisms, but not all forms (spores)

**Sporicide:** a germicide capable of killing bacterial spores



## Decontamination in the lab is achieved by:

### Sterilization (decon of equipment, biohazardous waste):

- ✓ Chemical Agents
- ✓ Steam autoclave
- ✓ Dry heat
- ✓ Vapors/gases
- ✓ Radiation

### Disinfection (decon of work surfaces):

- ✓ Chemical Agents
  - Aldehydes
  - Halogen-based
  - Phenolics
  - Acids/Alkalis
  - Alcohols
  - Iodophores
  - Quaternary Ammonium Compounds



**Remember chemical safety when handling disinfectants!**

Lab decontamination is required for ALL biohazards, including rDNA

Amount of organic matter present will affect disinfectant activity

Contact time is critical to the effectiveness of the disinfectants

Make sure your disinfectant is registered with the EPA (read label)

Check expirations! They count!



## Common Chemicals used for Decontamination:

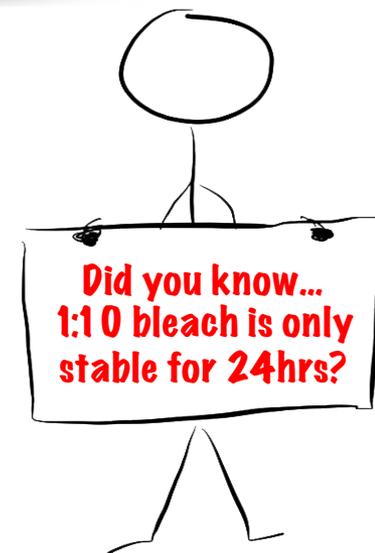
Procedure/Product	Aqueous Concentration	Activity Level
<b>Sterilization:</b>		
glutaraldehyde	variable	
hydrogen peroxide	6-30%	
chlorine dioxide	variable	
<b>Disinfection:</b>		
glutaraldehyde	2%	High to intermediate
hydrogen peroxide	3-6%	High to intermediate
chlorine dioxide	variable	high
sodium hypochlorite	5,000-20,000ppm Chlorine	intermediate
alcohols (ethyl, isopropyl)	70%	intermediate
iodophors (wescodyne)	0.1-0.2%	Intermediate to low
quaternary ammonium compounds		low

Preferred for vacuum traps

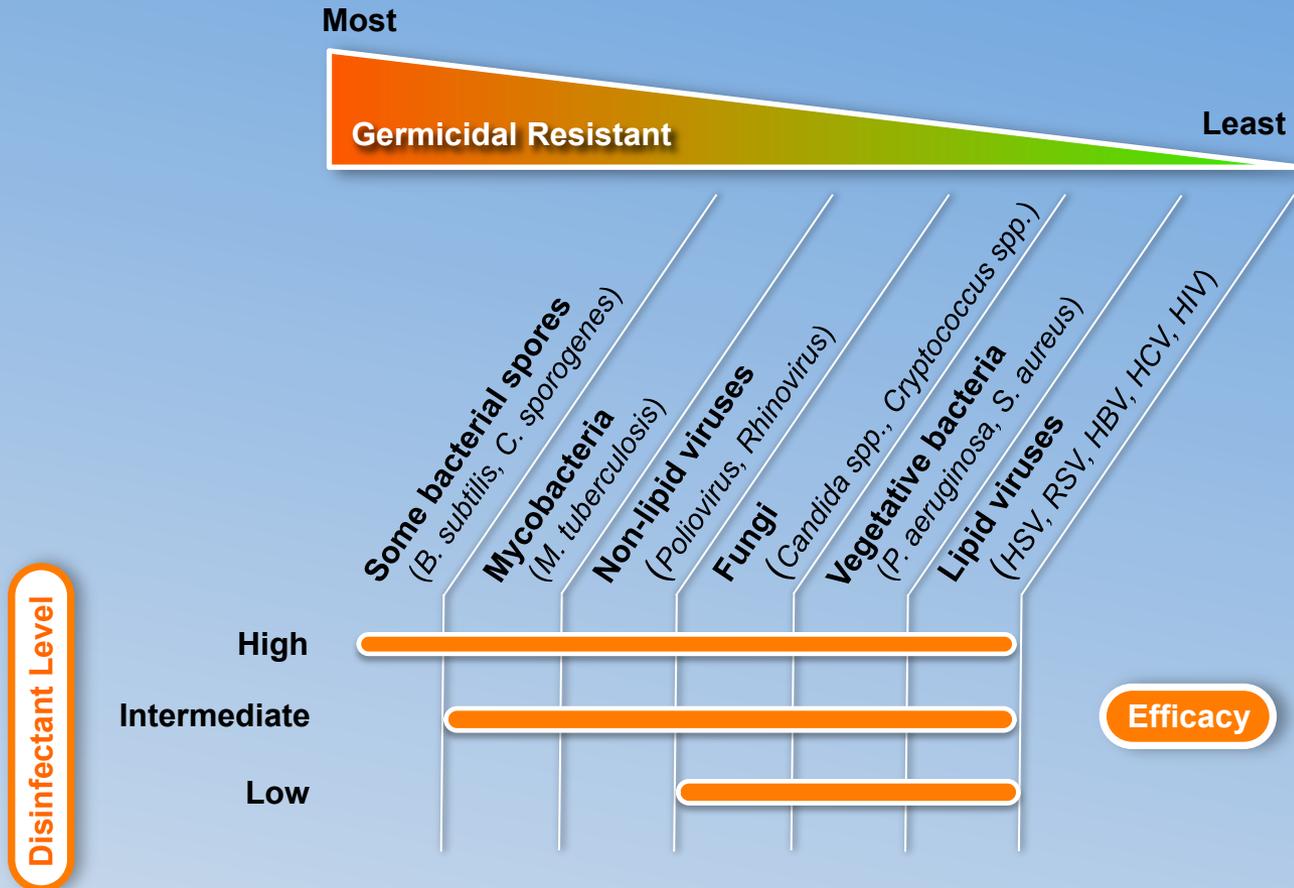
### Bleach Fast Facts:

Household bleach is 5.25% sodium hypochlorite; therefore:

1:2.5 dilution = 2.1% = 21,000ppm Cl<sup>-</sup>  
 1:5.0 dilution = 1.05% = 10,500ppm Cl<sup>-</sup>  
 1:10 dilution = 0.525% = 5,250ppm Cl<sup>-</sup>



# Classification and Effectiveness of Disinfectants



**Thanks for reading!**

**HAVE QUESTIONS?  
OTHER BIOSAFETY TIP  
IDEAS?**

Please contact Brenda Petrella, PhD  
Biosafety Officer  
(603) 646-9790  
[petrella@dartmouth.edu](mailto:petrella@dartmouth.edu)

