


CONCEPT: OTHER TYPES OF LIQUID CHEMICALS

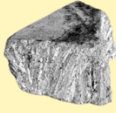
Heavy Metal Compounds

- **Heavy metals:** metals with relatively _____ densities, atomic numbers, or atomic weights.
 - *Silver, arsenic, zinc, & copper* can be used as disinfectants at very _____ concentrations.
 - *High* concentrations are extremely _____ to humans & can pollute natural waters (lakes & oceans).
 - Metals _____ proteins by interacting with their *sulfhydryl* groups (-SH) groups.
 - Silver-containing antiseptics are used to prevent infections on the _____.


_____ Metals




29
Cu
Copper



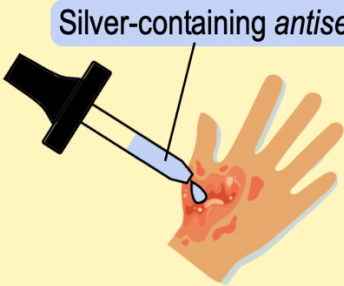
30
Zn
Zinc



33
As
Arsenic



47
Ag



Silver-containing *antiseptic*

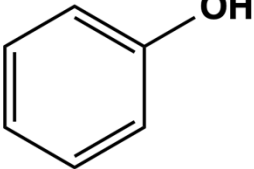
PRACTICE: Heavy metals are no longer used to prevent microbial growth in cooling water primarily because:


- Antibiotics are cheaper.
- Other chemicals were shown to be much more effective.
- Microbes developed resistance to these metals.
- Their use contributes to serious pollution of natural waters.


Phenolic Compounds


- **Phenolics:** class of chemicals derived from a _____ molecule (benzene ring bound to a -OH).
 - *Joseph Lister* first employed phenol as an antiseptic/disinfectant; *Listerine* was named after him.
 - Phenolics are the active ingredient in the common household disinfectant “_____.”
 - *Disrupts* cytoplasmic membranes & _____ proteins.

Phenolic Compounds




Joseph Lister





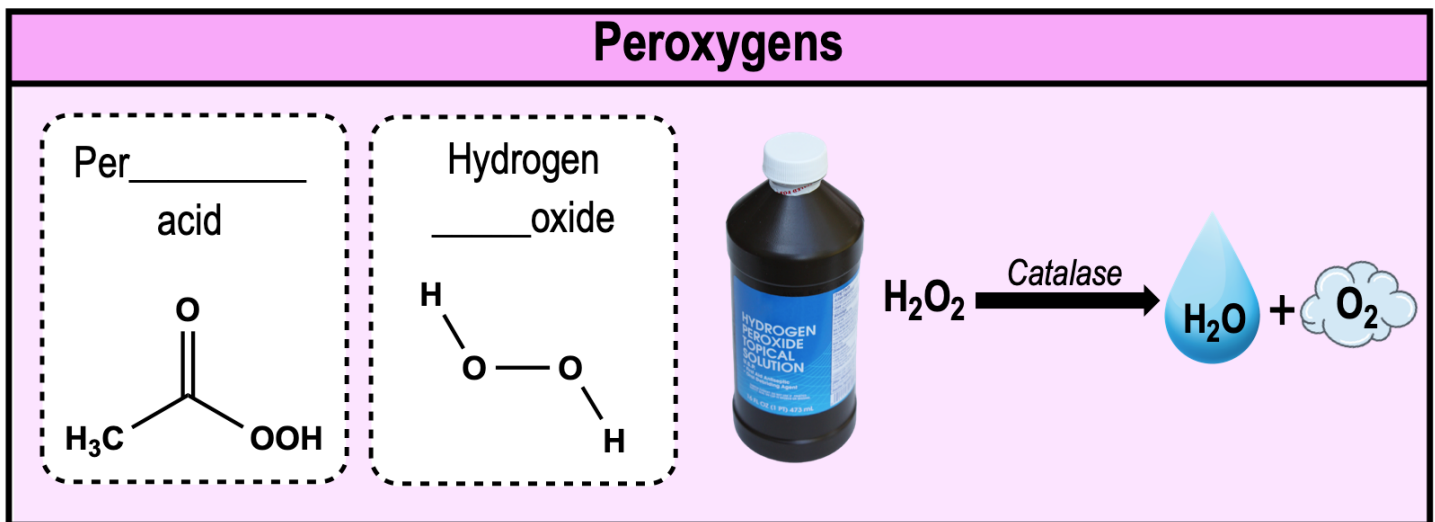
CONCEPT: OTHER TYPES OF LIQUID CHEMICALS

PRACTICE: Which chemical are all phenolic chemicals a derivative of?

- a) Hydroxyl.
- b) Ethanol.
- c) Aldehyde.
- d) Phenol.
- e) Benzene.

Peroxygens

- **Peroxygens:** strong _____ agents that are used as sterilant & can be toxic to humans at *high* concentrations.
 - Common examples include *Peracetic Acid* ($C_2H_4O_3$) & *Hydrogen* _____ (H_2O_2).
 - *Peracetic acid* is _____ potent than H_2O_2 but is more irritating to the skin & eyes.
 - *Hydrogen peroxide* is used at *low* concentrations on the _____ to prevent infection.
 - _____ cytoplasmic membranes & denatures proteins.
- **Recall:** some microbes have the enzyme *catalase* which converts H_2O_2 to water and Oxygen.
 - H_2O_2 is a _____ effective disinfectant because some microbes can survive in *low* concentrations.



PRACTICE: Which of the following is not considered a peroxygen.

- a) Hydrogen peroxide.
- b) Phenol.
- c) Peracetic acid.
- d) All are peroxygens.