RT 249: Healthcare Emerging Issues
Alternatives to Glutaraldehyde in Healthcare

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This Could be You
Objectives

- Understand the toxicity of glutaraldehyde and ortho-phthalaldehyde
- Understand the factors that balance health / safety, environment with operational impacts and costs
- Understand evidence emerging of health effects of newer chemicals
The Perfect High Level Disinfectant

- Non-irritating to workers
- Kills bacteria and viruses quickly
- Compatible with medical devices
- Not harmful to the environment
- Cheap
Glutaraldehyde

- Irritant
- Contact Dermatitis
- Asthmagen
- Respiratory Sensitizer
- No fed OSHA PEL
- Cal/OSHA 0.05 ppm (C)
- ACGIH TLV® 0.05 ppm (C) Skin Notation
- NIOSH REL 0.2 ppm (C)
Ortho-phthalaldehyde (OPA)

- Low vapor pressure
- Less miscible in water
- No human toxicity data
- Little animal toxicity data
- NTP list for investigation
- Skin sensitizer?
- Respiratory sensitizer?
- No recommended exposure level
OPA's Environmental Legacy

- $LC_{50}(96\text{-hr}) < 500 \text{ mg/L}$
  $\rightarrow$ Glycine neutralization
Cost Benefit

- Glutaraldehyde ~ $4 / bottle
- OPA ~ $20 / bottle
- Glutaraldehyde ~ 20 cycles / 14 days
- OPA ~ 40 cycles / 14 days

- Glutaraldehyde soak
  - 45 minutes @ room temperature, manual;
  - 20 minutes @ 25 °C, automated

- OPA soak
  - 12 minutes @ room temperature, manual
  - 5 minutes @ 25 °C, automated
To Be or Not To Be

Who might Switch:
- Facilities outside California
- Poorly ventilated areas
- High volume users
Precautionary Principle

- Isolate reprocessing operations
- Work process layout
- Negative pressure
- Non-recirculating exhaust
- 10 air changes / hour
- Local exhaust ventilation
- Emergency eyewash and shower
- Spill materials