

Problems Related to EtO Sterilization of Infant Oxygen Hoods

User Experience Network™ [Health Devices Mar 1994;23(3):99]

Hospital

Does sterilizing infant oxygen hoods with ethylene oxide (EtO) between uses present any problems?

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EtO sterilization of infant oxygen hoods (plastic, dome-like devices placed around an infant's head; also called oxygen hoods or, colloquially, infant head shields) presents two problems:

- *Skin burns from outgassing EtO.* Many materials absorb and adsorb EtO during sterilization, which is why an aeration period is typically part of the sterilization cycle. If the aeration time allowed is too short, EtO will be retained and will outgas from the sterilized object for some time thereafter. Skin that comes in contact with the outgassing material can be chemically burned. Therefore, preventing EtO skin burns depends on adequate aeration of the sterilized device.
- *Damage to the plastic from the EtO.* Many plastics can be structurally damaged through swelling or chemical attack by the EtO/Freon mixture typically used in the sterilization process. (EtO, flammable when pure, is typically mixed with Freon to make a nonflammable mixture for sterilizers.) For example, polycarbonate, used in such devices as infant oxygen hoods, is chemically attacked by Freon and becomes crazed and easily broken, and polyvinylchloride (PVC), a widely used plastic, is softened and easily deformed by EtO exposure.

These problems, in turn, raise two questions: Why are infant oxygen hoods sterilized with EtO, and why should they not simply be sterilized or disinfected according to the manufacturer's instructions and precautions?

Based on the guidelines of the Association for Practitioners in Infection Control (APIC), an infant oxygen hood is considered a semicritical device (i.e., one that may contact mucous membranes or broken skin). Semicritical devices should be disinfected (e.g., by germicidal detergent washing, by cleaning methods recommended by the manufacturer); however, sterilization between uses is generally not needed. If the oxygen hood needs to be sterilized, methods other than EtO should be used (e.g., glutaraldehyde soak) to avoid damage.

For further information, refer to our Hazard Report "EtO Sterilization of Medical Devices," *Health Devices* 8(5-6), March-April 1979, and our Evaluation "Ethylene Oxide Sterilizers," *Health Devices* 11(11), September 1982.

UMDNS Term

Hoods, Oxygen [12-027]

Cause of Device-Related Incident

Device factor: Device interaction

Mechanism of Injury or Death

Burn (chemical)

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