Part 1. General

This section describes exhaust and ventilation requirements for Ethylene Oxide (EtO) Sterilization systems. Refer to Design Guideline Element D3041, Air Handling Distribution, for design criteria related to ductwork and ductwork accessories.

Part 2. Design Criteria

1. The EtO sterilization equipment room shall be provided with 20 minimum air changes per hour per and be maintained at a 0.02 inches (minimum) negative pressure with respect to surrounding areas. A pressure monitor with alarm and visible status indicator shall be installed to continuously indicate pressure differential.

2. The EtO exhaust system shall have a dedicated exhaust fan and be identified as EtO Equipment Exhaust. The ductwork shall also be labeled as “Caution EtO Exhaust” at 25 foot intervals.

3. The discharge point of the stainless steel exhaust stack shall be at the highest elevation of the building or adjacent building, and a minimum of 25 feet (7620 mm) above any outside intake, operable window or personnel passageway located on the roof of the building.

4. EtO is exhausted at a constant controlled rate through welded stainless steel ductwork.

5. Local exhaust air intake shall be located directly above the top of the access door to each EtO sterilizer.

6. When the drain is not located in the EtO sterilizer equipment room, ventilation is required to be provided locally by a capture box over the drain.

7. When the ethylene oxide gas cylinder is not located in the EtO sterilizer equipment room or recess room, a local exhaust shall be positioned no more than one (1) foot above or behind the point where the change of the cylinder takes place or the cylinder must be enclosed in a specialty gas cabinet.
8. Ventilation of the sterilizer relief valve is required through a pipe connected to the outlet of the relief valve exhausted directly to the outdoors, located at a point high enough to be away from personnel, public, and any air-conditioning or ventilation air intakes.

9. Equipment-function sensors are to be used to directly monitor the operation of the sterilizer and exhaust ventilation system fan and components. Sensors are to be used to indicate the presence of air flow in the ventilation exhaust ducts, and warning lights are to be used indicate that the sterilizer is in a purge cycle. Sensors should be connected to an audible alarm and a warning light to alert the operator of an equipment malfunction. Air flow sensors must be alarmed and be interlocked to prevent sterilizer operation upon loss of dedicated exhaust air flow.

10. Exhaust ventilation shall be designed where the majority of net flow of air is from the supply air entering loading room and passing through wall registers to the mechanical access room.

11. In the mechanical access room, air should enter all openings in the upper portion of the enclosure with a face velocity of 50 fpm to 100 fpm. This velocity should be measured when all equipment in the enclosure is at operating temperature.

12. The ventilation rate in the mechanical access room should be sufficient to keep the temperature below a maximum of 100°F in the area where the EtO cylinders are located. To take advantage of heat generated within the room since air in the equipment will rise, the exhaust should be located near the ceiling and the EtO supply can be located near the floor.

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**Part 3. Special Contract Document Requirements**

1. The A/E shall include a schematic of the general exhaust and pressure relief systems in the Contract Documents.

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**Part 4. Products**

1. Refer to Master Construction Specifications.
## Document Revision History

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