Scavenger Systems

Overview

- System for removing waste gases from OR
- Fresh Gas flow needs to be vented to not allow barotrauma
- Flow to Scavenger is same as fresh gas flow

Types of Systems

- Active
- Passive

Components

- Gas Collection Assembly-from APL and Vent (and gas monitor)
- Transfer Tubing
- Scavenger Interface
- Gas Disposal Tubing
- Gas Disposal Assembly

Active System

- Relies on active suction to evacuate system
- Attached to wall suction

Passive System

- Relies on fresh gas flow
- Passive flow out of system
- No risk of negative pressure problem
- Needs a positive pressure relief system
- Connects to Ventilation System

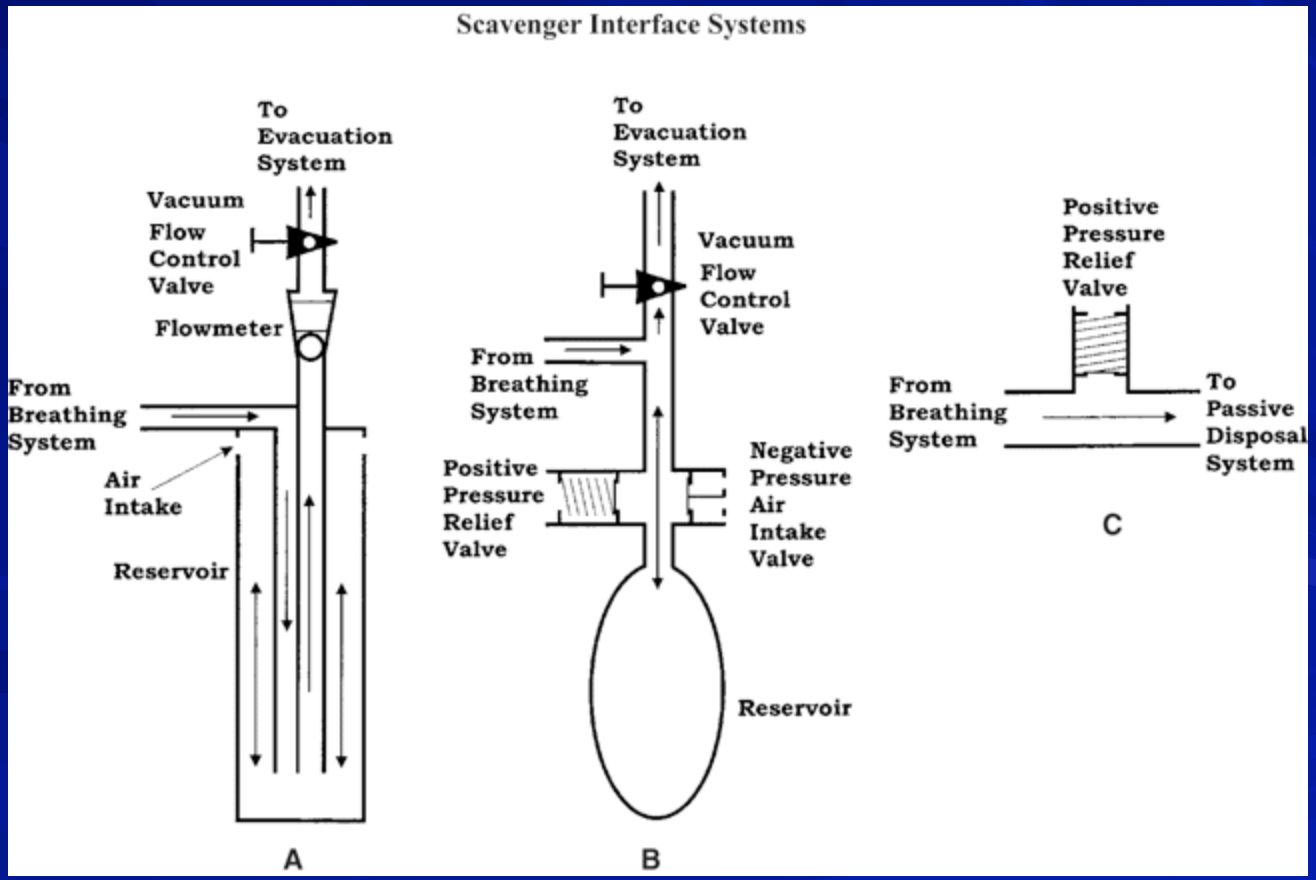
Types of Interfaces

- Open
- Closed

Open Interface

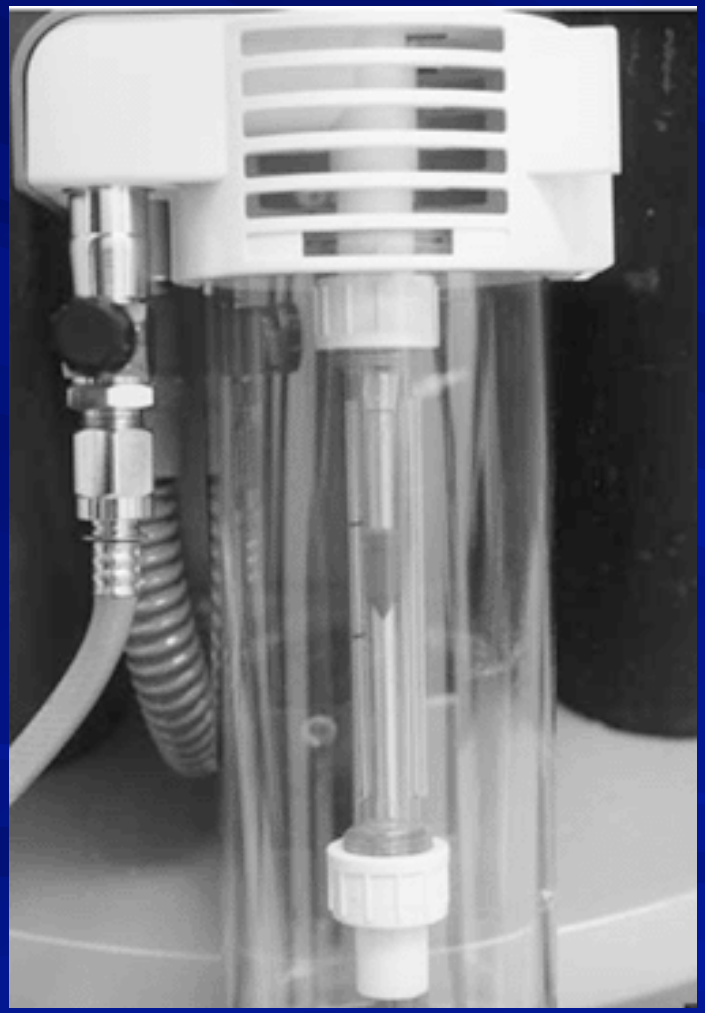
- Open to atmosphere
- Allows for protection against positive and negative pressure
- Always active suction, never passive
- Keep flowmeter bobbin between the lines
- Safer –excess positive pressure vents into room, and excess negative pressure allows entrainment of room air

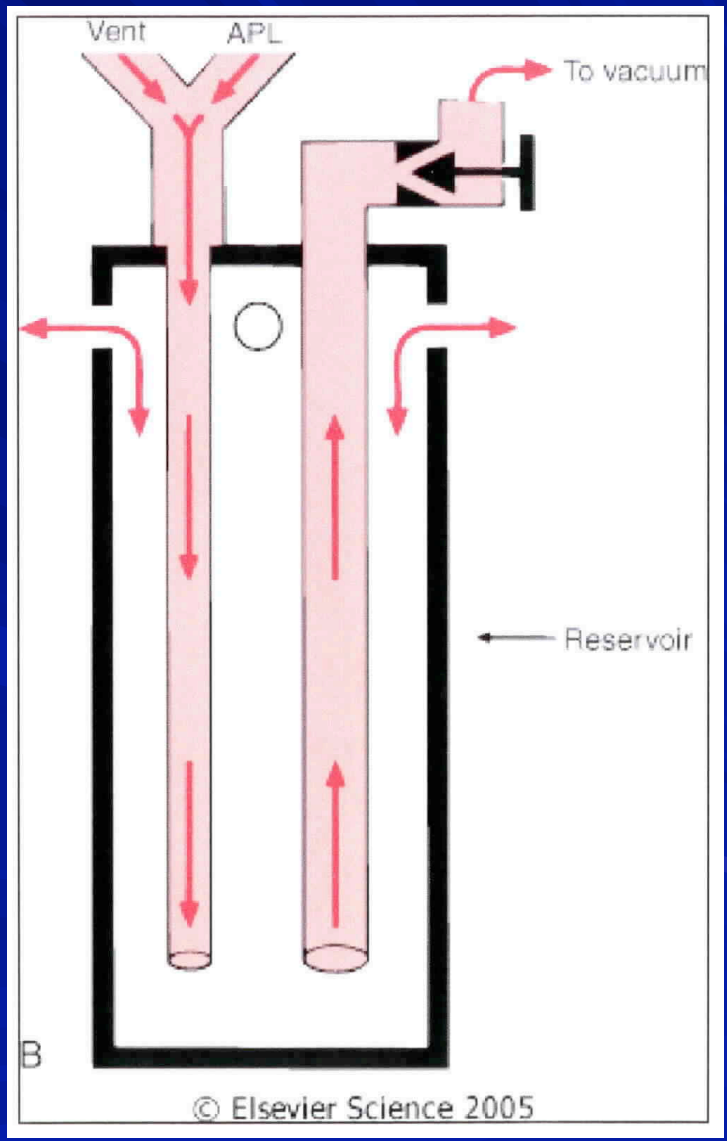
- A- Open Interface, Active Suction
- B-Closed Inteface, Active Suction
- C-Closed Interface, Passive Suction



From Dorsch & Dorsch

Open Interface

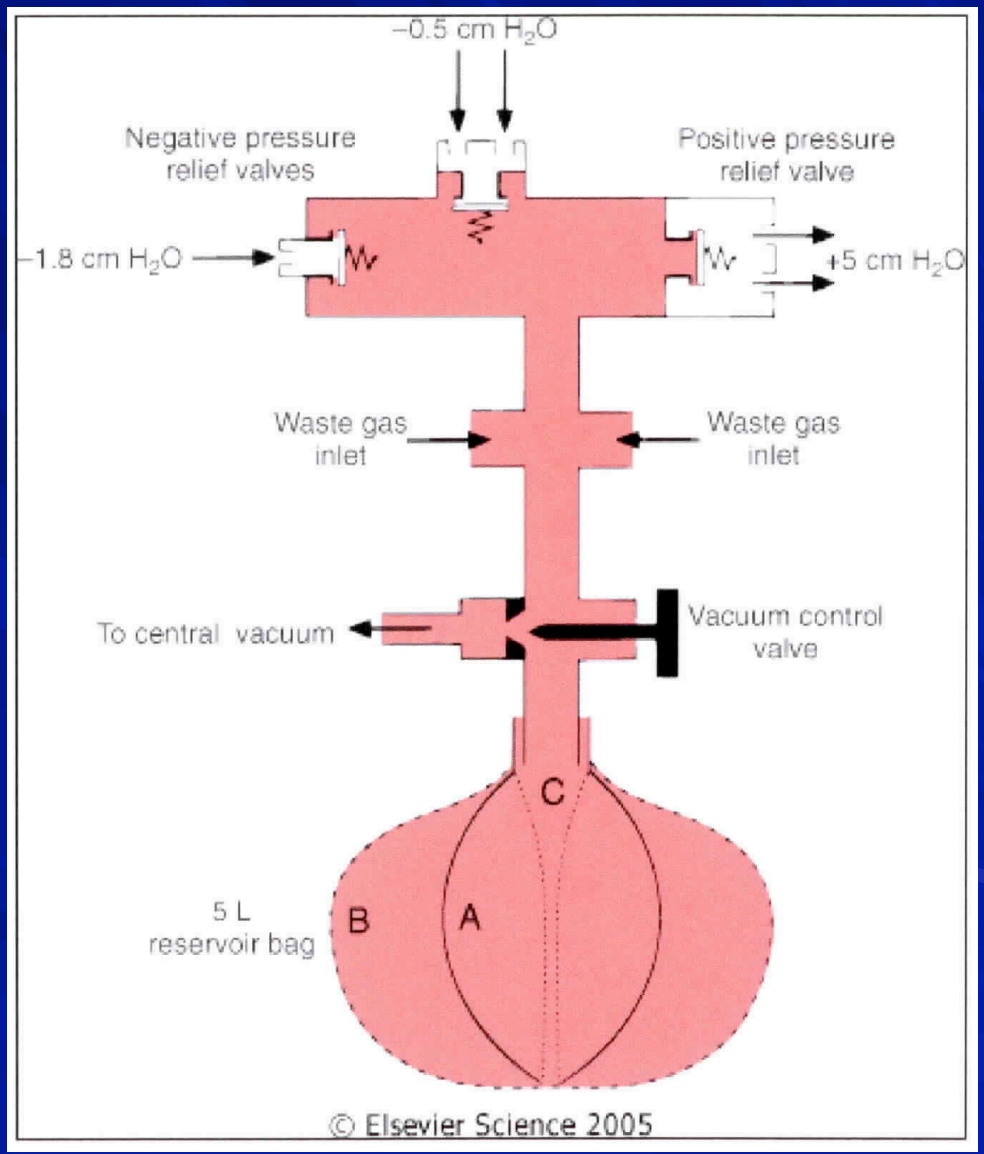




Closed Interface

- More common type
- Communicates to atmosphere only through valves
- Needs positive pressure relief valve
- Needs negative pressure relief valve
- Dependent on proper function of valves to not cause barotrauma
- Can be active or passive

Closed Interface



Pressure Relief Valves

- For Negative pressure, opens at 0.5 cm H2O
- Often will have backup valve opening at 1.8 cm H2O
- For Positive pressure, 5 cm H2O will open valve to relief pressure

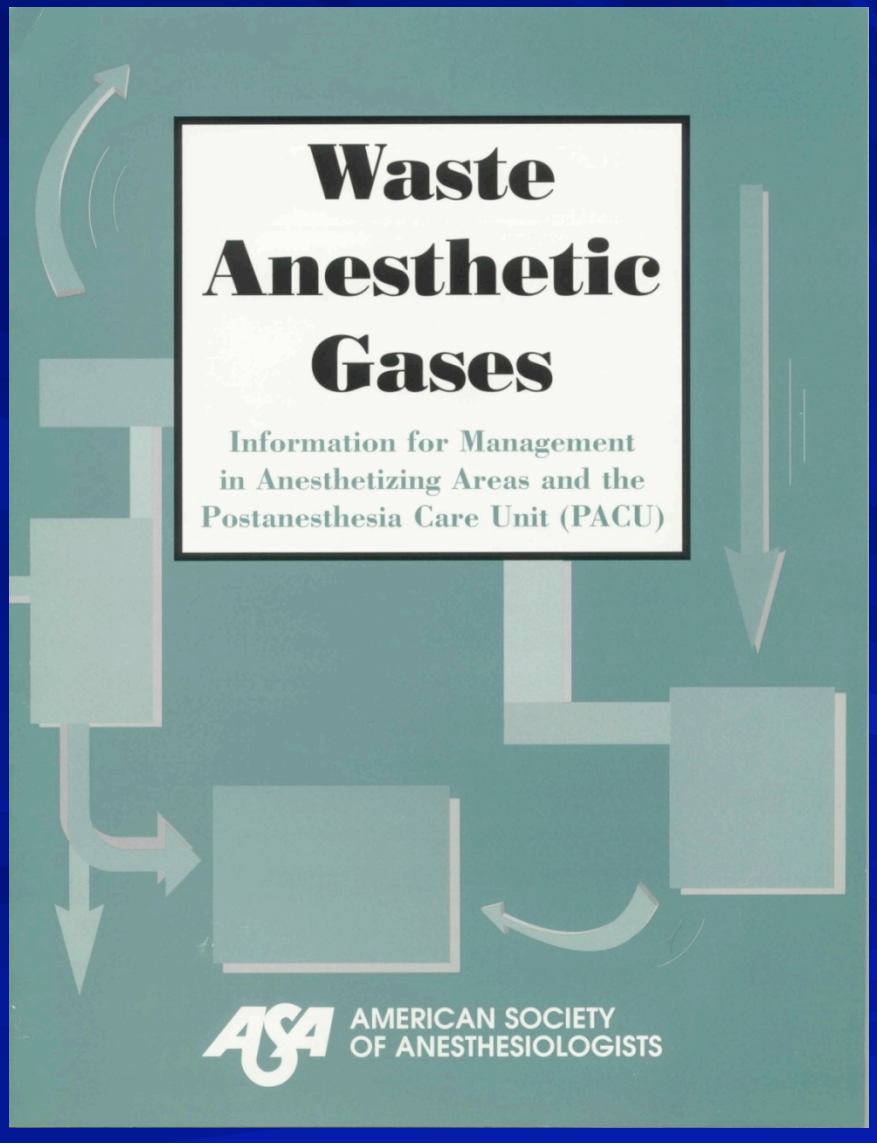
Hazards of Scavengers

- Misassembled Components
- Loose Connections
- Obstruction –distal to interface, can cause high pressure
- Failure of Pressure Relief Valves (Barotrauma)
- Failure to work- Occupational exposure

Occupational Exposure

- “Studies have not shown an association between levels of waste anesthetic gases found in scavenged locations and adverse health effects to personnel.”

ASA Publication



Summary

RISKS

Studies have not shown an association between trace levels of waste anesthetic gases found in scavenged anesthetizing locations and adverse health effects to personnel.

RECOMMENDATIONS OF ASA TASK FORCE ON WASTE ANESTHETIC GASES

- Waste anesthetic gases should be scavenged.
- Appropriate work practices should be used to minimize exposure to waste anesthetic gases.
- Personnel working in areas where waste anesthetic gases may be present should be educated regarding current studies on health effects of exposure to waste anesthetic gases, appropriate work practices to minimize exposure, and machine checkout and maintenance procedures.
- There is insufficient evidence to recommend routine monitoring of trace levels of waste anesthetic gases in the O.R. and PACU.
- There is insufficient evidence to recommend routine medical surveillance of personnel exposed to trace concentrations of waste anesthetic gases, although each institution should have a mechanism for employees to report suspected work-related health problems.

OSHA Guidelines

- Halogenated Agents- 2PPM
- Nitrous Oxide-25 PPM
- Combination- 0.5 PPM of halogenated agent

www.asahq.org/publications/pc-138-7-waste-anesthetic-gases-information-for-management-in-anesthetiz...

References

- Dorsch JA, Dorsch SE: Understanding Anesthesia Equipment. Lippincott, Williams & Wilkins Edition 5, 2007
- Miller RD, et al: Miller's Anesthesia, Edition: 6; Elsevier Churchill Livingstone, 2005