

Endoscopy Suite Architectural Design

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Special

This guidance sheet is intended to provide best practice advice. It is designed to help employers (including the self-employed and small businesses) address hazardous conditions in the workplace. The recommendations are intended to provide information for identifying hazardous substances or work activities and simple precautions for minimizing risks to workers. This guidance was developed by the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention (NIOSH/CDC) through research in various work environments and industry sectors in partnership with stakeholders representing industry, labor groups, academia, and other government agencies.

MSDS

Obtain (material) safety data sheets (MSDSs) from your product supplier. Use the information on these sheets to identify the hazards associated with specific chemicals and to explore the possibility of using safer substitutes. If several products are equally efficacious, try to use the least hazardous product(s).

Surveillance

All workers exposed or liable to be exposed to a substance that may cause adverse health effects during "normal" use should be under suitable medical surveillance. The extent and detail of the medical surveillance should be related to the degree of risk identified during an assessment. An occupational health professional should be consulted to determine the degree of risk and level of surveillance. Medical surveillance should include the maintenance of a medical record in a suitable form for each exposed worker. This guidance sheet can be used as part of the approach to control potentially adverse health effects from inhalation of airborne contaminants.

Controls

This guidance sheet recommends the use of local ventilation along with appropriate protective equipment.

See COSHH Essential Control Guidance Sheets 400 (www.coshh-essentials.org.uk/assets/live/G400.pdf) and 402 (www.coshh-essentials.org.uk/assets/live/G402.pdf).

This guidance sheet is currently in DRAFT form awaiting review and approval. Please do not quote, cite, or distribute.

The Dow Chemical Company, Kaiser Permanente, MediSHARE Environmental Health and Safety Services, Society of Gastroenterology Nurses and Associates (SGNA), NIOSH, and Health and Safety Executive (HSE), United Kingdom.

Endoscopy Suite—(See Diagram on Next Page.)

- ☑ The endoscopy suite should be divided into procedure room(s), instrument processing room(s), and patient holding room(s) and meet the appropriate guidelines—for example, the American Institute of Architects (AIA) *Guidelines for Design and Construction of Hospital and Health Care Facilities* and the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) *HVAC Design Manual for Hospitals and Clinics*.

Instrument Processing (Scope Wash) Room(s)

- ☑ Provide dedicated processing room(s) for cleaning and disinfecting instrumentation. One cleaning room may serve multiple procedure rooms. The size of the cleaning room(s) is dictated by the number of endoscopes to be processed.
- ☑ Make sure that cleaning rooms permit the flow of instrumentation from the contaminated area to the clean area and finally to storage. Clean equipment rooms and storage should protect instrumentation from contamination.
- ☑ Install a paddle-actuated switch, latch, or swinging door with view panel on the entrance door to the dirty side of the process so that workers can avoid using soiled hands to open the door.
- ☑ Provide automated endoscope reprocessors for cleaning, disinfecting, and drying endoscopes.
- ☑ Install a freestanding hand-washing station, preferably near the exit.
- ☑ Install emergency eye washing and deluge shower stations close to the automated endoscope reprocessors.
- ☑ Use sheet flooring with welded seams and 6-inch coving to contain spills.
- ☑ Provide level work space(s).
- ☑ Install emergency kill switches at the entrance door for closing an auxiliary solenoid valve on the inlet water supply line immediately after the bacterial filters.
- ☑ Make sure that the ventilation system provides negative pressure and a minimum of 12 air changes per hour. Use slot ventilation and movable snorkel exhaust or fume control hoods near automated endoscope processors.
- ☑ Have compressed air available for drying endoscopes after terminal disinfection.

Heating, Ventilating, and Air-Conditioning (HVAC) Systems

- ☑ Make sure that all rooms and areas in the facility used for patient care have provisions for ventilation.
- ☑ Design the mechanical system for overall efficiency and life-cycle costing.
- ☑ Mount mechanical equipment, ductwork, and piping on vibration isolators as required to prevent unacceptable structure-borne vibration.
- ☑ Locate fans serving exhaust systems at the discharge end and make sure they are readily serviceable.
- ☑ Make sure the design of the ventilation system provides air movement from clean to less clean areas.

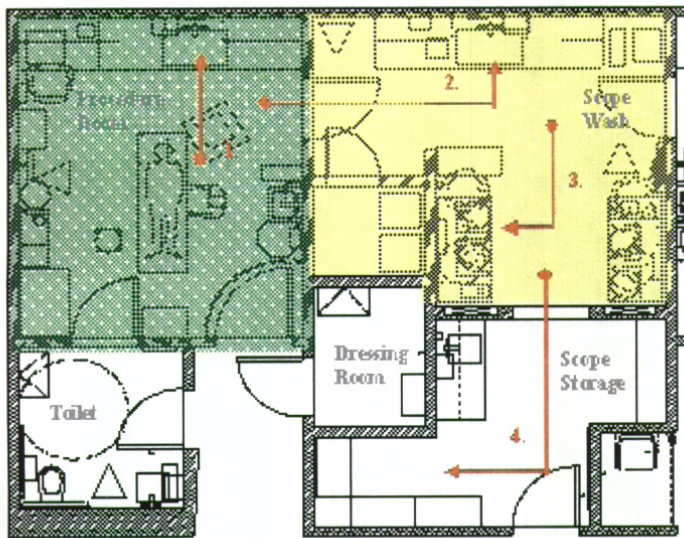
Heating, Ventilation, and Air-Conditioning, Systems (continued)

- ☑ Locate fresh air intakes at least 25 feet from exhaust outlets of ventilation systems, combustion equipment stacks, medical-surgical vacuum systems, plumbing vents, or areas that may collect vehicular exhaust or other noxious fumes. (Prevailing winds or proximity to other structures may require greater clearances.)

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- ☑ Locate plumbing and vacuum vents that terminate above the top of the air intake at least 10 feet apart.
- ☑ For rooms where minimum total air change rates are required, make sure that air change rates meet ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality, ASHRAE Handbook-HVAC Applications, ASHRAE HVAC Design Manual for Hospitals and Clinics Table 4-1, and AIA Table 7.2 Ventilation Requirements for Areas Affecting Patient Care in Hospitals and Outpatient Facilities. These sources do not preclude the use of higher, more appropriate ventilation rates as may be required by national occupational authorities such as OSHA or NIOSH.
- ☑ For design of the local exhaust ventilation system, follow the American Conference of Governmental Industrial Hygienists (ACGIH) *Industrial Ventilation Manual and the Handbook of Ventilation for Contaminant Control*.
- ☑ Make sure the system is capable of maintaining temperature in the rooms at any point within the range of 68 °–73 °F (20 °–23 °C) and 30%–60% relative humidity.
- ☑ Maintain differential pressure at a minimum of 0.01" water gauge (2.5 Pa). If alarms are installed, make allowances to prevent nuisance alarms of monitoring devices.
- ☑ If any form of variable air volume or load-shedding system is used, do not permit it to compromise the corridor-to-room pressure balancing relationship or the minimum air changes required. (For example, see AIA Table 7.2.)
- ☑ Verify airflow direction by a simple visual method such as a smoke trail, ball-in-tube, or flutter strip. These devices require a minimum differential air pressure to indicate airflow direction.



Model Endoscopy Suite Architectural Design

Further information

Consult the supplier's (material) safety data sheet for further information or contact phone numbers for emergency information. Obtain additional information from the NIOSH toll-free number 1-800-CDC-INFO (1-800-232-4636) within the United States or 513-533-8328 outside the United States), or access the Web site at www.cdc.gov/niosh/cntc_ni1.html.

To receive NIOSH documents or more information about occupational safety and health topics, contact NIOSH at

Telephone: 1-800-CDC-INFO (1-800-232-4636)
TTY: 1-888-232-6348 ■ E-mail: cdcinfo@cdc.gov

or visit the NIOSH Web site at
www.cdc.gov/niosh.

For a monthly update on news at NIOSH, subscribe to *NIOSH eNews* by visiting www.cdc.gov/niosh/eNews.

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Worker Checklist

- ☐ Check that the Endoscopy suite is not being used to perform invasive procedures on persons who are known or suspected of having infectious disease. These procedures must be performed in a room meeting airborne infection isolation ventilation requirements or in a space using local exhaust ventilation. If the procedures must be performed in the suite, see, for example, the *CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health Care Facilities*.
- ☐ When possible, locate any flexible local exhaust hoods near endoscope washers close to the endoscope cleaning area.
- ☐ Routinely check to ensure that ventilation systems are operating properly and that preventive maintenance measures are followed.

Other Resources

Many organizations have additional regulations, codes, or requirements that may not be included in this document. Such organizations may include the following:

- ◆ National Fire Protection Association (NFPA)
- ◆ Joint Commission on Accreditation of Health Care Organizations (JCAHO)
- ◆ Centers for Disease Control and Prevention (CDC)
- ◆ American Institute of Architects (AIA)
- ◆ American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- ◆ Accessibility Guidelines of the Americans with Disabilities Act (ADA)
- ◆ Illumination Engineering Society of North America (IES)
- ◆ National Standard Plumbing Code
- ◆ State and local authorities having jurisdiction
- ◆ American Conference of Governmental Industrial Hygienists
- ◆ Others? (non-U.S.)

NIOSH