



Procedure No            400.22  
 Subject:                Indoor Air Quality  
 Reference:             ASHRAE 55&62 & OSHA General Duty Clause                    Implementation Date: May 2011  
 Distribution            All Employees    Review Date:

Purpose:	The purpose of this program is to inform the University community about indoor air quality (IAQ).
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**1. Scope**

This policy is intended to insure that ETSU Facilities are being maintained in a manner that provides building occupants with an indoor environment that is safe, comfortable and free from contaminants or conditions that may adversely impact health outcomes.

**2. Background**

Indoor air quality (IAQ) is a real but highly complex issue that often involves a multitude of factors and building systems. IAQ problems may cover a wide range of issues from ventilation system deficiencies, overcrowding, microbial contamination, outside air pollutants, off-gassing from materials in the office or mechanical equipment.

Symptoms arising from poor indoor air quality are often similar to the common cold or allergies. These symptoms may include upper respiratory irritation, sinus congestion, headaches, fatigue, and itchy or watery eyes.

**3. Factors and Sources Affecting Indoor Air Quality and Comfort**

**Temperature:** Temperature ranges vary from the summer and winter months, however ASHRAE’s guidelines are intended to achieve thermal conditions in a given environment that at least 80% of occupants will find acceptable or comfortable.

**Relative Humidity:** Relative humidity levels that are higher than normal ranges can affect the potential growth of microbial organisms. Humidity levels can directly affect worker comfort.

**Carbon Dioxide:** Carbon dioxide (CO<sub>2</sub>) is a major product of human respiration and is used as an indicator to evaluate the performance of ventilation systems. Outside air usually contain 300-500 parts per million (ppm) and ASHRAE recommends that CO<sub>2</sub> levels be maintained below 1,000 ppm. Increased levels of carbon monoxide can cause headaches and fatigue.

**Carbon Monoxide:** Carbon monoxide is an odorless and tasteless gas that can have adverse health effects if not detected early. Carbon monoxide usually comes from automobile exhaust, power tool exhaust, and tobacco smoke. One way CO can be introduced into a building, is by the source being in proximity to the building's fresh air intakes. Early symptoms include a mild headache, nausea, fatigue and dizziness. OSHA's permissible exposure limit (PEL) is 50ppm during an 8 hour period.

**Volatile Organic Compounds (VOC's):** VOC's are emitted as gases from certain solids and liquids, which may have some adverse health effects. Potential sources of VOC's are solvents, adhesives, carpet, paints, lacquers, caulking, perfumes and hairsprays.

**Microbial Contamination or Mold Growth:** This type of problem is usually associated with water leaks, water intrusion, elevated indoor humidity, humidifiers, and insufficient pipe insulation. Individual sensitivities will cause each person to react differently.

4. **Responsibilities:** Environmental Health & Safety will investigate indoor air quality complaints within 48 hours of the initial complaint.

5. **Procedures:**

- Contact Facilities Management 9-7900 or EH&S 9-6028 for emergency IAQ issues or place a Work Order through the TMA system <http://tma.etsu.edu/> for all non-emergency IAQ issues.
- EH&S will investigate first by interviewing the affected occupant(s). A walk-through of the area will occur to identify potential sources. EH&S will use a variety of industrial hygiene equipment (to measure temperature, humidity, carbon dioxide, carbon monoxide, VOC's and gases). If the source of contamination is not identified, additional expertise from Facilities Management will be brought in to help in identifying the source. Usually the source is identified and more extensive testing is unnecessary.
- If a definitive cause for the complaint cannot be determined, then more extensive monitoring and sampling may be necessary.