

	Cornell University Environmental Health and Safety	Indoor Air Quality Assessments	HS13_IAQ_SOP
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1. Purpose and Requirements

Symptoms arising from poor indoor air quality often mimic those symptoms commonly associated with a cold, flu or allergies. These symptoms may include upper respiratory irritation, congestion, headaches, nausea, fatigue and itchy or watery eyes. Through occupant interviews, building inspection and air quality testing, Environmental Health and Safety(EHS) and Facilities and Campus Services(FCS) staff are often able to determine the cause of indoor air quality problems.

The objectives of this standard procedure include the following:

- To maintain indoor air quality within acceptable levels according to ASHRAE and OSHA guidelines.
- To respond to indoor quality concerns effectively and to make recommendations for improvement

2. Scope

The University recognizes the impact that indoor air quality has in the workplace. In an effort to provide the University Community with the optimum level of indoor air quality, EHS has developed an indoor air quality standard procedure for responding to indoor air quality concerns on the Ithaca, Geneva campus's and remote facilities. The Weill Medical College is excluded from this SOP.

3. Responsibilities

3.1 University Administration

University Administrators provide senior management support for implementing the Indoor Air Quality Standard Procedure and ensures that resources are allocated for implementing these procedures.

3.2 Environmental Health & Safety

The Department of Environmental Health and Safety develops and oversees the implementation of the Indoor Air Quality Standard Procedure by:

- 3.2.1 Providing oversight, leadership and technical expertise to investigate health concerns.
- 3.2.2 Communicating the procedure for documenting and responding to IAQ concerns. Providing a written report to affected parties outlining recommendations and corrective actions.
- 3.2.3 Including the University Occupational Medical Group to assist in a review when needed.
- 3.2.4 Communicating with affected individuals regarding IAQ concerns.
- 3.2.5 Utilizing industry accepted sampling protocols.
- 3.2.6 Maintaining IAQ records. IAQ records include: IAQ concerns and resolutions; and documentation of maintenance and repairs needed to resolve IAQ concerns.
- 3.2.7 Maintaining all equipment and instrumentation that is used in indoor air quality reviews.

3.3 Facility Coordinators and Facilities and Campus Services

Facility Coordinators and Facilities and Campus Services are responsible for:

- 3.3.1 Responding to IAQ concerns as necessary and collaborate with EHS on recommendations regarding IAQ assessments.
- 3.3.2 Coordinating facilities services activities in support of IAQ concerns.
- 3.3.3 Maintaining building systems that may affect indoor air quality to manufacturer's recommendations, preventative maintenance schedules and other system support, repairs and modifications.

3.4 Employee

All Cornell Employees that have an Indoor Air Quality concern are responsible for:

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- 3.4.1 Initially bringing the concern to their supervisor, building coordinator or department safety representative. If the concern is an emergency or deemed extremely dangerous EHS should be notified immediately by calling 911 or 5-1111.
- 3.4.2 Completing and sending the IAQ questionnaire form back to EHS.
- 3.4.3 Working with EHS, Facilities and other University Representatives during the review.
- 3.4.4 Following EHS recommendations as outlined in the EHS report.

3.5 Supervisors

Cornell University Supervisors support the Indoor Air Quality assessments by:

- 3.5.1 Identifying, with the assistance of EH&S, areas of indoor air quality concern and assisting in all facets of the review as needed.
- 3.5.2 Ensuring that all employees who have an indoor air quality concern are supported.
- 3.5.3 Working with all parties and ensuring EHS recommendations are followed.

4. Procedures

All University Buildings are designed, built and maintained to provide a comfortable and safe work environment free from environmental and other contamination that may result in diminished indoor air quality. Indoor air quality concerns shall be reported and reviewed following these procedures:

IAQ concerns that pose an immediate threat to personal health or safety shall be reported by calling 911 or 255-1111.

4.1 All IAQ concerns shall first be communicated to the facility coordinator to initiate review.

4.2 The facility coordinator shall contact Facilities Services (255-5322) to investigate concerns relating to;

- Temperature or humidity problems
- Air movement/drafts from diffusers
- Stale air
- Particulates or dirt coming from your air handling system
- Visible mold growth less than 10 ft²

4.2.1 Facilities and Campus Services staff may contact EHS for support as necessary.

4.3 The facility coordinator shall contact EHS (255-8200) to investigate concerns relating to;

- Chemical, gas, exhaust or unusual odors or
- Sickness associated with building occupancy which may include, headaches, nausea, dizziness, upper respiratory irritation, fever, chills and fatigue
- Areas of mold contamination greater than 10 square feet, or mold contamination on any component of an air handling system

4.3.1 EHS may request the completion of the IAQ Questionnaire Form- <http://www.ehs.cornell.edu/iaq.cfm>. If requested, please complete the form and email the completed document to EHS immediately.

4.3.2 Phase I -Data Collection and Inspection - Phase I assessments include interviewing occupants using an **employee questionnaire and occupant diary (see appendix)** and performing a walk-through inspection (if necessary) of the building or area of concern. The questionnaire is used to obtain information about the nature of the employee complaints and symptoms and also to determine the magnitude of the problem.

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During the walk-through, building ventilation systems may be evaluated and potential sources of contamination are identified. If the immediate cause or source cannot be found, a Phase II assessment is required.

- 4.3.3 Phase II Assessment- Testing and Evaluation - During a Phase II assessment, common indoor air quality parameters including temperature, relative humidity, and carbon dioxide levels are measured. Additional testing may occur including other environmental contamination assessments.

The most commonly cited quantitative measurements of indoor air quality are provided by *ASHRAE, American Society of Heating and Air Conditioning Engineers*, as presented in standard 62.1-2013. ASHRAE standards are general recommendations that are used in determining indoor air quality. All factors and equipment that are responsible for air quality and or the impact are assessed and reviewed.

- 4.3.4 Phase III Recommendations/Report - All sampling results and data are reviewed and analyzed. All recommendations are brought forward and any additional reviews and improvements are discussed.

EHS will issue an IAQ report to affected parties and ensure that recommended corrective actions have been implemented.

5. Definitions

Odors and Indoor Air Quality in Buildings Definitions:

Building Material Contamination: Building components treated with a variety of chemicals and preservatives are common sources of indoor air quality problems. Glues and adhesives from new carpeting and formaldehyde from new particleboard and upholstery may off gas and become sources of contamination.

Carbon Dioxide: Carbon dioxide (CO₂), a major product of human respiration, is used as an indicator to evaluate the performance of ventilation systems. Ordinary outside air in urban areas normally contain about 350 to 500 parts per million (ppm). ASHRAE standard 62.1-2013 (Ventilation for Acceptable Indoor Air Quality) recommends that CO₂ levels be maintained below 1,000 ppm.

Contamination From Inside the Building: Contaminants commonly found inside the building include:

- Ozone from copiers
- Cleaning agents
- New furniture and carpets
- Sewer gas from dry traps
- Appliances not properly maintained
- Pesticides (from indoor pest treatments)
- Cosmetics
- Humidification devices
- Smoke

Contamination From Outside the Building: Contamination commonly found outside of buildings includes:

- Exhaust from motor vehicles
- Fumes from construction or renovation activities
- Odors from landscaping materials

Inadequate Ventilation: Inadequate ventilation occurs when an insufficient amount of fresh outside air is supplied to the interior environment.

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Microbial Contamination: Microbial Contamination occurs in buildings that are susceptible to water leaks and other sources of moisture. Contaminants can also be introduced into buildings from stagnant water in HVAC distribution systems and cooling towers. Prevention of microbiological contamination is accomplished by eliminating standing water and other sources of moisture.

Relative Humidity: Relative humidity levels can affect the release rate of many indoor contaminants, their concentrations in the air, and the potential growth of microbial organisms. Humidity can also have a direct effect on worker comfort. In ASHRAE 55-1981, a “comfort chart” shows an acceptable range of humidity to be from 20 to 60%.

Temperature: Temperature ranges of 73 degrees F to 79 degrees F during the summer months, and 69 to 75 during the winter months are recommended by ASHRAE. These guidelines are intended to achieve thermal conditions in a given environment that at least 80% of persons who occupy that environment will find it acceptable or “comfortable”.

6. Related Documents:

Other EHS and University related Assessments and procedures.

- Smoking Policy
- Small Mold Projects
- Managing IAQ during construction/renovation projects

7. References:

- ASHRAE, American Society of Heating and Air Conditioning Engineers, as presented in standard 62.1-2013.
- General Duty Clause of the OSH Act of 1970, section No. 5
- <http://www.epa.gov/iaq/>
- Cornell University Policy 2.3, Smoking

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Environmental
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