

INDOOR AIR QUALITY POLICY

The University of North Carolina at Chapel Hill is committed to providing a work environment that is free of recognized hazards and to investigate complaints that may be related to poor indoor air quality (IAQ). Acceptable indoor air quality is air in which there are no known contaminants at harmful concentrations as determined by the Department of Environment, Health and Safety (EHS) and with which a substantial majority of people exposed do not express dissatisfaction.

On campus, cases of Sick Building Syndrome or Building-Related Illnesses are very rare, but we do occasionally receive IAQ complaints by sensitive building occupants. Most IAQ complaints are related to mucous membrane and/or respiratory irritation, headache, or fatigue. Office workers may report irritation of mucous membranes of the eye, nose, and throat. In such cases, eye symptoms include itching, redness, and irritation. Respiratory symptoms include nasal congestion, itching, coughing, and runny nose. Throat symptoms include feelings of dryness and irritation. However, these symptoms are not unique to IAQ issues. In most cases there are no definitive signs or laboratory tests are available to differentiate building air quality related symptoms from other causes.

Poor indoor air quality may be caused by vapors, dust generated in the work environment, materials infiltrating from outside sources (such as pollen or engine exhaust), contaminants associated with fungal growth or deficiencies in the ventilation system. Unfortunately, due to scientific limitations and variations in individual sensitivity, EHS is not always able to identify an indoor air quality problem when complaints or symptoms are reported.

Although specific regulations have not been developed for IAQ in the work place, EHS considers recommendations from the American Conference of Governmental Industrial Hygienists (ACGIH), American Industrial Hygiene Association (AIHA), and the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).

IMPORTANT TERMS AND DEFINITIONS

Probable Source of Suspected Contaminant

In some cases, the contaminant can be identified with reasonable certainty, such as when high carbon monoxide levels are found in area where the occupants have corresponding symptoms. In other cases, a contaminant will be suspected but cannot be confirmed. For example, because respiratory problems can have many causes, mildew or other molds—even if present—may or may not be the cause of an occupant's symptoms. The wide variation in individual sensitivity to mold creates an additional uncertainty.

Mildew and other molds are often identified by visual observation. When not readily observed, probable mold sources include dirty ventilation ducts, old air conditioner filters, fabrics in humid environments, and—where water intrusion has occurred—affected carpets, walls, ceiling and office furnishings.

Another consideration is the magnitude of the probable source of the suspected contaminant. A small area of old carpeting is less likely to be a problematic mold source than a larger area where flooding had occurred.

Area of Concern

During its investigation, EHS will delineate an area of concern for indoor air quality problems and possible remediation. The area of concern will be delineated according to the locations of complainants, the probable source of the suspected contaminant, the design of the HVAC system and physical barriers.

Remedial Measures

Remedial measures may be confined and temporary, or as extensive as renovation of a building's heating, ventilation and air conditioning (HVAC) system. Less extensive remedial measures include opening windows, better housekeeping, replacing furniture, cleaning mildew off of pipes, installing portable dehumidifiers or air cleaners, cleaning window air conditioners and replacing carpet with tile.

Sick Building Syndrome

When the symptoms of respiratory tract and eye irritation, headaches and fatigue are experienced by a sizable percentage of building occupants (usually more than 20 percent), the situation has become known as Sick Building Syndrome (SBS). Specific causes of SBS remain unknown. Insufficient fresh air (outdoor air) being brought inside is sometimes associated with buildings with SBS. A single cause for SBS is unlikely. Many hypotheses must be considered in determining the cause of complaints in any particular building, including ventilation rates, ventilation system maintenance and type, and a multitude of irritants from occupant activities, microbial contamination, and off-gassing from building furnishings.

Building-Related Illness (BRI)

Building-related illness is very rare, but often more serious than symptoms reported in SBS, and may affect only a small number of building occupants. BRI is characterized by a distinguishable set of common occupant symptoms, often accompanied by physical signs and clinical abnormalities. BRI is confirmed by a physician's diagnosis and may include infections such as legionellosis, toxic syndromes associated with exposure to chemical or physical agents, and hypersensitivity diseases, including hypersensitivity pneumonitis, "humidifier fever," asthma and allergic rhinitis.

PREVENTION OF INDOOR AIR QUALITY PROBLEMS

Many IAQ issues can be avoided with timely maintenance and repair building HVAC systems and rapid response to water intrusion into a building. Water damaged areas must be dried in 24 hours to prevent the initiation of fungal growth. Building occupants should notify Facility Services as soon as possible of plumbing, roof and foundation leaks or HVAC malfunctions. Facility Services and EHS respond quickly to these problems.

EHS INDOOR AIR QUALITY INVESTIGATION

Evaluation of building related complaints requires the cooperative effort of the complainant, the Facilities Services and Department of Environment, Health and Safety. Following the initial

complaint, the EHS will interview the complainant to determine if his or her symptoms are potentially related to IAQ problems. When such a potential exists, EHS will conduct an IAQ investigation with appropriate Facilities Services staff according to the following procedures. The investigation may lead to plans for remediation.

Identification of IAQ Problems

Building occupants who experience irritations that may be related indoor air quality should complete a Request for Indoor Air Quality Investigation (Appendix A) and forwarded it to EHS for review. An EHS Industrial Hygienist will review the form and interview the complainant to determine what further action is needed.

Complaints received by Facilities Services, involving specific symptoms, should be forwarded directly to EHS for review. Facility engineers and campus maintenance workers who identify IAQ problems or risks (e.g., odors, significant mold growth, faulty building humidification systems) should contact EHS directly.

Initial On-Site IAQ Investigation

When notified and if warranted, an EHS Industrial Hygienist will conduct an initial on-site investigation. The following conditions will typically be evaluated:

- Percentage of outside air being supplied to building
- Location of outside air intake(s)
- Immediate outside environment
- Ventilation rate
- Operation and maintenance of HVAC system
- Relative humidity
- Temperature
- Carbon dioxide level
- Signs of water intrusion including plumbing, roof and foundation leaks

EHS will also evaluate the work area and building for probable sources of contaminants, such as chemical use and storage; general housekeeping; recent renovations and/or new furnishings, activities in work area, and the building HVAC system. Some investigations will require the assistance of Facilities Services.

Phase II IAQ Investigation

In some cases, the initial investigation indicates the need for a Phase II IAQ investigation to provide more detailed information regarding the nature of the problem. This phase of the investigation may include the following:

- Monitoring for chemical contaminants
- Bioaerosol monitoring
- Detailed HVAC evaluations
- Medical examinations and/or testing at the University Employee Occupational Health Clinic (for employees) or Student Health Service (for students).

Limitations of IAQ Investigations

Sampling methodologies and acceptable limits have been established for many contaminants. However, occupants may continue to experience discomfort at contaminant levels below standards for occupational exposure. Also, individual sensitivities vary.

Sampling and measuring indoor mold contamination on surfaces is of limited value because mold is found in virtually all environments, and because no consensus or regulatory standards have been established. One of the problems with establishing standards is that individual sensitivity to mold varies greatly

Because of the small number of occupants and uncontrolled conditions, epidemiological studies are of no or very limited value.

EHS IAQ INVESTIGATION REPORT AND REMEDIAL MEASURES

EHS will prepare a written report of investigation results, including conclusions regarding possible causes of the IAQ problems. Copies of the IAQ investigation report will be forwarded to the complainant and his or her supervisor, and other associated units.

Remedial Measure Decisionmaking

When indicated, EHS will recommend remedial measures. These will be reviewed by the University Employee Occupational Health Clinic (UEOHC), the complainant's supervisor, and/or Facilities Services as needed. When visual observation finds significant mold in water-damaged environments, controlling and eliminating mold growth will be recommended. EHS will determine if other IAQ risks are actionable by evaluating four variables:

- Probable source of a suspected contaminant, and its extent or magnitude
- Number of occupants with symptoms appropriate for the suspected contaminant, and the severity of their symptoms
- The availability of reasonable and effective measures to mitigate the suspected contaminant
- Time of exposure of the symptomatic employees to the suspected contaminant

When the source of an indoor air quality problem and appropriate remedial measures are difficult to discern, recommendations will rely on the judgment of Facilities Services engineers and EHS staff.

Implementation of Occupant-Responsible Remedial Measures

Remedial action that needs to be implemented by the supervisor should be completed within a reasonable time. This type of action could include general housekeeping, the purchase of a non-fabric chair, or the relocation of printers or paper storage.

Implementation of Other Remedial Measures

If the remedial measures require building maintenance or repair, Facilities Services or the Department of Housing and Residential Education (as appropriate) will work with the EHS and building occupant to implement them.

Except for very small projects, areas found to have an indoor air quality problem are prioritized for remediation and categorized as “Class A-High Priority,” “Class B-Further Evaluation Needed,” and “Class C-IAQ Improvements Already Funded.” This list is reviewed annually by the University Safety and Security Committee, which facilitates the completion of Class A projects as funds become available.

During extensive remediation, the affected department should work with Human Resources Administration to arrange a suitable alternative working arrangements for employees.

AFTER ACTION EHS REVIEW

The complainant’s department and/or Facilities Services will notify EHS when remedial actions have been completed. EHS will inspect the work area after remedial measures have been completed to ensure that recommendations have been implemented and to evaluate their effectiveness. The building occupant and his or her department will be responsible for reporting any further problems to EHS after this follow-up.

BUIDING OCCUPANTS WITH CONTINUING IAQ COMPLAINTS

Students with Continuing IAQ Complaints

Students who experience symptoms after the remedial measures have been implemented should to the Student Health Service (966-2281) for a medical evaluation. The Student Health Service will work with EHS and, when appropriate, the Department of Housing and Residential Education to make recommendations for any additional follow-up.

Employees with Continuing IAQ Complaints

Employees who experience symptoms after the remedial measures have been implemented should report to their supervisor and call the UEOHC (6-9119) for a medical evaluation. If an employee presents medical documentation to his or her supervisor from the employee’s personal physician, the supervisor should forward the note to the UEOHC. The UEOHC will send the employee’s personal physician an “Evaluation of Illness Believed Related to Indoor Air Quality At Work” (Appendix B) to complete. This evaluation will assist in specifying the cause of the discomfort for the employee and will assist the University in taking remedial action.

After review of all reports the UEOHC will make its recommendations to the employee, his or her supervisor, and EHS for any additional follow-up. The affected department should not implement any permanent accommodations that the employee’s physician has requested until UEOHC completes an occupational medical assessment and reviews EHS IAQ investigation reports.

If UEOHC deems that the medical accommodation for the employee’s position is necessary, the employee’s supervisor should contact the University’s ADA Officer. The ADA Officer will work with the employee’s department in determining what accommodations are reasonable under the current essential job functions for that employee.

FOR FURTHER ASSISTANCE

The Office of Human Resources can assist departments in determining the essential functions of a position and can help explore various working arrangements to help meet the employee's and department's needs.

The Office of University Counsel can answer questions from supervisors and managers about the requirements of the ADA and the North Carolina Persons with Disabilities Protection Act, and can provide additional interpretive advice on employer obligations under these laws.

Approved by the University Safety and Security Committee, 26 June 2002

Approved by Chancellor James Moeser, July 2002