



INDOOR AIR QUALITY POLICY

Davidson College 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 levels and in which a substantial majority of people exposed do not express dissatisfaction.

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, it is not always possible 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, there are 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) which address control of airborne pollutants, adequate make-up air and maintenance of suitable temperature and relative humidity.

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 an investigation, an area of concern for indoor air quality problems and possible remediation 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 initiate a work order as soon as possible after plumbing, roof and foundation leaks or HVAC malfunctions. .

INDOOR AIR QUALITY INVESTIGATION

Students & Dormitory Rooms

Students experiencing symptoms that might be related to air quality should contact Residence Life Office (RLO) and complete an Indoor Air Quality Survey (Appendix A)

Employees & Office Areas

Evaluation of building related complaints requires the cooperative effort of the complainant and the Environmental Health & Safety Manager (EHS). Following the initial complaint, the EHS Manager will interview the complainant to determine if his or her symptoms are potentially related to IAQ problems. When such a potential exists, the EHS Manager will contact appropriate Physical Plant 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 B) and forwarded it to the EHS Manager

for review. The EHS Manager will review the form and interview the complainant to determine what further action is needed.

Complaints received by the Physical Plant Work Order Desk, involving specific symptoms, should be forwarded directly to the EHS Manager for review

Initial On-Site IAQ 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
- Signs of water intrusion including plumbing, roof and foundation leaks

The EHS Manager 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's HVAC system.

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
- Detailed HVAC evaluations
- Medical examinations and/or testing

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.

IAQ INVESTIGATION REPORT AND REMEDIAL MEASURES

The EHS Manager will prepare a written report of investigation results, including conclusions regarding possible causes of the IAQ problems. Copies of the IAQ investigation report can be obtained from the EHS Manager.

Remedial Measure Decision making

When indicated, the EHS Manager will recommend remedial measures. When visual observation finds significant mold in water-damaged environments, controlling and eliminating mold growth will be recommended. The EHS Manager 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 occupants 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 Physical Plant staff.

Implementation of Occupant-Responsible Remedial Measures

Remedial action that needs to be implemented by the occupant 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, Physical Plant or the Resident Life Office (RLO) personnel, as appropriate, will work with the EHS Manager and building occupant to implement them.

AFTER ACTION EHS REVIEW

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

BUILDING OCCUPANTS WITH CONTINUING IAQ COMPLAINTS

Students with Continuing IAQ Complaints

Students who experience symptoms after the remedial measures have been implemented should go to the Student Health Center for a medical evaluation. The Student Health Center will work with RLO and, when appropriate, the EHS Manager 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 contact HR to set up an appointment with a medical professional for an evaluation. If an employee receives medical documentation from his or her personal physician, this documentation should be provided to the medical professional appointed by the college.

Appendix A

Investigation Number: _____

RLO (Student) INDOOR AIR QUALITY SURVEY

Dorm: _____ Occupant Name: _____

Room: _____ Phone #: _____ Date: _____

What kind of symptoms or discomfort are you experiencing?

- Cough, congestion,
- chest tightness, shortness of breath,
- Itchy eyes
- Strange odors
- fever, chills
- Swelling, itching, skin rash
- Stuffiness

Have you been to The Student Health Center? yes no

Are you aware of other people with similar symptoms or concerns? yes no

- If **yes** what are their names and locations? _____

NOTE: If more than 20% of residents in an area are experiencing symptoms, Contact the Environmental, Health and Safety Manager (x2929) to initiate an Indoor Air Quality investigation

Remediation / recommendations:

- If there appear to be problems with temperature, humidity, a feeling of stuffiness or not enough fresh air, contact the work order desk (x2595) to have the Physical Plant verify room conditions.
- If there is evidence of water or moisture intrusion, contact the work order desk (x2595) immediately for corrective action.
- Verify that the affected resident does not have any health problems that may make them particularly susceptible to environmental influences?
 - contact lenses chronic cardiovascular disease allergies
 - chronic respiratory disease suppressed immune system
 - other _____
- Insure that housekeeping practices are in place.
- Have the resident check all appliances to be sure there is no standing water, refrigerant leaks, rotting food or other allergen present.

If you have questions on Indoor Air Quality please contact Davidson College Environmental, Health and Safety Manager at ext. 2929

Corrective Action:	Originator:	Date Initiated:	Date Resolved
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Appendix B
REQUEST FOR INDOOR AIR QUALITY INVESTIGATION (Faculty & Staff)

Building: _____ Occupant Name: _____

Room: _____ Phone #: _____ Date: _____

SYMPTOM PATTERNS

What kind of symptoms or discomfort are you experiencing?

Are you aware of other people with similar symptoms or concerns? yes no

If so what are their names and locations? _____

Do you have any health problems that may make you particularly susceptible to environmental problems?

- | | | |
|---|---|--|
| <input type="checkbox"/> contact lenses | <input type="checkbox"/> chronic cardiovascular disease | <input type="checkbox"/> undergoing chemotherapy or radiation therapy |
| <input type="checkbox"/> allergies | <input type="checkbox"/> chronic respiratory disease | <input type="checkbox"/> immune system suppressed by disease or other causes |
| | <input type="checkbox"/> chronic neurological disease | |

TIMING PATTERNS

When did your symptoms start?

When are they generally worst?

Do they go away? If so, when?

Have you noticed any other events (such as weather events, temperature or humidity changes, or activities in the building) that tend to occur around the same time as your symptoms?

SPACIAL PATTERNS

Where are you when you experience symptoms or discomfort?

Where do you spend most of your time in the building?

ADDITIONAL INFORMATION

Do you have any observations about building conditions that might need attention or might help explain your symptoms (e.g., temperature, humidity, drafts, stagnant air, odors, recent painting, new carpet or furnishings)?

Has there been recent remodeling or changes in your home environment (e.g., painting, new carpet and/or furniture)? Please explain.

Have you sought medical attention for your symptoms?

What machines or instrumentation are routinely operated in the area?

What is the chemical inventory?

Do you have other comments?

PLEASE FORWARD A COPY OF THIS COMPLETED FORM TO THE EHS MANAGER

Temperature: _____ Humidity: _____ CO2: _____

Observation: _____

Corrective Action:	Originator:	Date Initiated:	Date Resolved
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____