

## INDOOR AIR QUALITY

### A. Introduction:

1. The Indoor Air Quality (IAQ) program at UNE was created to make certain that all occupants of all buildings on both campuses are able to breathe clean, healthy air that is not harmful to their health or safety in an acute or chronic way. Good IAQ should include comfortable temperature and humidity, adequate supply of fresh outdoor air, and control of pollutants from inside and outside of the building. This program was developed to respond to any indoor air quality concerns that building occupants report to EHS and put a process and procedure in place for reporting, investigation, and air monitoring that may be necessary.

The right ventilation and building care can prevent and fix IAQ problems. Although OSHA does not have IAQ standards, it does have standards about ventilation and standards on some of the air contaminants that can be involved in IAQ problems. OSHA responds to questions about standar

requires them to provide workers with a safe workplace that does not have any known hazards that cause or are likely to ca

- d. Work with the Facilities and HVAC staff to effectively manage the IAQ problem.
- e. Report all results to Management in an organized fashion and involve management in all major planning and decision making processes.

## 2. Facilities Department:

- a. Assist EHS and outside contractors with IAQ investigations and resolutions when needed.

HVAC systems.

- c. Report any air quality issues to the EHS department.
- d. Assure all building systems are operating as intended. This includes ventilation, plumbing, and electrical systems, as well as the building envelope.
- e. Carefully select products and processes used on jobs. This includes selecting products with low VOC's, alternative products with less hazardous chemicals, and products without added fragrance when possible.
- f. Use products and chemicals only as intended and follow directions on the label. When products having volatile chemicals or strong odors are used, provide as much ventilation as feasible and schedule work when the building is minimally occupied. Notify building occupants when odor-creating work will occur.

## 3. Employees/Staff/Faculty/Students:

- a. Report any indoor air quality issues that are encountered to the EHS department.
- b. Provide detailed information on the IAQ issue such as dates, times, odors, symptoms, etc., when interviewed.
- c. Employees, Staff, Faculty, and students should make themselves accessible for questions and interactions throughout the air quality investigation.
- d. Clean work areas regularly. Remove excess papers, food crumbs and dust. If food or drink is spilled, clean it up immediately.
- e. Rotting food frequently causes foul odors so check desk drawers and old brown paper bags. Clean any cups, plates or other utensils used to prepare or consume food daily. Clean out microwaves and refrigerators (including the drip pan) at least once a month.

- f. Keep all ventilation grills and ducts clear. Don't place furniture, boxes, posters, or other items in locations where they will block airflow.
- g. Keep all exhaust ports and air inlets to electrical equipment clear. Overheating electronic equipment can produce irritating odors.
- h. Assure plants are well maintained and not overwatered. Overwatering can promote the growth of mold in the soil and on the plant or container (and drown the plant). Remove dead foliage regularly. Carefully follow directions on labels for fertilizers.
- i. Use all cleaning and office products only as recommended on the label. Be aware that products with a citrus odor can be irritating to some people, so avoid their use if possible. Whenever possible use cleaning products without added fragrances.
- j. Use perfumes, colognes, and scented lotions sparingly.
- k. If you notice an odor, check with occupants in adjacent rooms and floors to determine if the problem is throughout the building or specific to your workspace. Ask if they are conducting any activities or know of any activities that might create a similar odor.

### C. Possible Causes of Indoor Air Quality Issues.

There are several factors or causes that can produce Indoor Air Quality issues that include but are not limited to:

1. Sources Outside the Building: These sources include contaminated outdoor air, pollen, dust, fungal spores, industrial pollutants, general vehicle exhaust, emissions from nearby sources, exhaust from vehicles on nearby roads or in parking lots, or garages loading docks, odors from dumpsters, re-entrained (drawn back into the building) exhaust from the building itself or from neighboring buildings, unsanitary debris near the outdoor air intake, soil gas radon leakage from underground fuel tanks, contaminants from previous uses of the site (e.g., landfills), pesticides, moisture or standing water promoting excess microbial growth, rooftops after rainfall, and crawlspaces.
2. Equipment: HVAC system dust or dirt in ductwork or other components microbiological growth in drip pans, humidifiers, ductwork, coils, improper use of biocides, sealants, and/or cleaning compounds, improper venting of combustion products refrigerant leakage, emissions from office equipment (volatile organic compounds, ozone), supplies (solvents, toners, ammonia) emissions from shops, labs, cleaning processes, elevator motors and other mechanical systems.
3. Human Activities: Smoking, cooking, body odor, cosmetic odors.

4. Housekeeping Activities: Cleaning materials and procedures, emissions from stored supplies or trash, use of deodorizers and fragrances, airborne dust or dirt (e.g., circulated by sweeping and vacuuming).

5. Maintenance activities: Microorganisms in mist from improperly maintained cooling towers, airborne dust or dirt, volatile organic compounds from use of paint, caulk, adhesives, and other products, pesticides from pest control activities, emissions from stored supplies.

6. Unsanitary conditions: Water damage that causes: microbiological growth on or in soiled or water-damaged furnishings, microbiological growth in areas of surface condensation, standing water from clogged or poorly designed drains, dry traps that allow the passage of sewer gas.

7. Chemicals released from building components or furnishings: Volatile organic compounds or inorganic compounds.

8. Accidental events: Spills of water or other liquids, microbiological growth due to flooding, leaks from piping, and fire damage (soot, PCBs from electrical equipment, odors).

9. Special use areas and mixed use -3(D46.MCID 54BDC q0.00000912 0 612 - refunds)-2(om11(g)10( )

ergonomic stressors, job-related psychosocial stressors such as overcrowding and labor-management problems, or unknown factors.

2. Building-related illness (BRI) is a term referring to illness brought on by exposure to the building air, where symptoms of diagnosable illness are identified (certain allergies or infections) and can be directly attributed to environmental agents in the ai

iii. Staff report that water from a roof leak has flooded a portion of the carpeting.

iv. The building occupant feels the threat is dangerous to life or health (evacuation will be necessary in this circumstance).

c. Once you have reported the issue, an investigation will begin through EHS or Security, whoever is notified. If there is no immediate danger, an investigation may take several days or weeks depending on how many parties will need to be involved and what action may need to be taken. All complaints will be investigated in a prompt manner and the EHS department will update the person reporting the problem as information becomes available. The following are considered high priority investigations, but not emergencies:

i. Inspection of the humidification system reveals an accumulation of mold.

ii. A group of occupants has discovered that they share common symptoms of headaches, eye irritation, and respiratory complaints and decided that their problems are due to conditions in the building.

iii. Immediately after delivery of new furnishings (furniture or carpeting), occupants complain of odors and discomfort.

iv. Immediately after heavy cleaning has been done in the occupants work area.

v. Local news articles suggest that some buildings in the area have high indoor radon levels.

vi. There is a suspicion of asbestos exposure.

vii. Renovations are causing irritant dusts of concern to occupants.

d. Indoor Air Quality Investigations: After an IAQ is reported to the appropriate party, an Indoor Air Quality investigation will begin immediately to ensure there is no immediate danger to life or health. Investigations include but are not limited to:

i. Surveying the area reported by looking for strange odors or causes of ventilation issues.

ii. Looking at equipment and processes used in the area.

- iii. Interviewing occupants of the area to obtain more specific information.
- iv. Communicating with building users and Facilities/HVAC staff on possible issues.
- v. Conducting air monitoring using several different methods and devices.
- vi. Calling in contractors if necessary to do more in depth air sampling or survey the ventilation systems.
- vii. Creating a report with detailed information on testing results.
- viii. Notification to all building occupants involved and all affected parties with the results of the testing.

e. Post-Investigation Procedures: Once the problem has been identified, action will be taken by the appropriate parties to remediate the issue by correcting the problem. This could include but is not limited to:

- i. Correcting ventilation system issues
- ii. Installing new equipment (ex- dehumidifiers, fume hoods, etc.)
- iii. Improving/revising policies and procedures in the area to include more

b. Ensure up-to-date manufacturers' operating instructions and maintenance records for HVAC system components have been reviewed and filed.

2. Make sure up-to-date schedules and procedures for facility operations and maintenance have been reviewed and filed.

3.  
configuration and filed.

4. Drawings of tenant build-out and interior building renovations should be updated and information on major space use changes (e.g., office space to kitchen or laboratory, significant increases or decreases in occupant density) have been updated and filed.

5.



h. Unusual noises from light fixtures or equipment

i. Poorly-maintained filters

- i. Outside air intakes (inspected for nearby sources of contaminants)
- ii. Air distribution dampers (cleared of obstruction and operating properly)
- iii. Air filters (pressure drops monitored, replacement or cleaning performed)
- iv. Drain pans (inspected and cleaned to ensure proper drainage)

v. Proper trash disposal.

15. Procedures for unscheduled maintenance events (e.g., equipment failure) have been written and communicated to building staff. They include:

17. Pest Control: Integrated Pest Management procedures are used to the extent possible:

- a. The pest control products being used in the building are known.
- b. Either by written procedures or contract language, it is ensured that all people who use pest control products read and follow all label directions for proper use, mixing, storage and disposal.
- c. Non-chemical pest control strategies are used where possible.
- d. The safest available pest control products that meet the building's needs are reviewed with pest control contractor.

18. Shipping or Receiving: Vehicle exhaust has been prevented from entering the building (including through air intakes and building openings) by installing barriers to airflow from loading dock areas (e.g., doors, curtains, etc.) and using pressurization.

19. Smoking: A. Smoking is prohibited in all campus buildings, including tenant occupied space. Smoking areas with disposal buckets are available around the campus. Tenants or occupants are routinely informed about building conditions and policies that may impact IAQ (e.g., smoking policy clarifications).

## G. Mold

Dampness results from water incursion either from internal sources such as leaking pipes or external sources such as rainwater. Dampness becomes a problem when various materials in buildings like rugs, walls and ceiling tile become wet for extended periods of time. Excessive moisture in the air, such as high relative humidity that is not properly controlled with air conditioning, can also lead to excessive dampness. Dampness provides the moisture that supports the growth of bacteria, fungi, mold, and insects. In the presence of damp building materials, the source of water incursion is often obvious when there is physical evidence of leaks in the roof or windows or a pipe that has burst. Dampness problems can also be less obvious when the affected materials and water source are hidden from view such as wet insulation within a ceiling or wall. Excess moisture is generally the cause of indoor mold growth. Molds reproduce by releasing tiny spores that float through the air until landing in other locations. When they settle on wet or moist surfaces, the spores can form new mold colonies. Moderate temperatures and available nutrient sources make most office buildings ideal for mold growth.

1. Testing for Mold: The CDC does not recommend routine sampling for molds. Generally, it is not necessary to identify the species of mold growing in a building. Measurements of mold in air are not reliable or representative. If mold is observed or smelled, there is a potential health risk; therefore, no matter what type of mold is present, you should arrange for its removal. Furthermore, sampling for mold can be expensive, and standards for judging

what is or what is not an acceptable or tolerable quantity of mold is have not been established.

2. Possible medical issues with mold:

a. Allergies: Allergic responses like those to pollen or animal dander are the most common types of health problems related to mold. Typical symptoms include sneezing; irritation of the nose, mouth, or throat; nasal stuffiness and runny nose; and red, itchy or watery eyes. Inhaling or touching mold or mold spores can cause a person who was not previously allergic to mold to become allergic to mold. For people with known allergies, molds can trigger asthma symptoms such as shortness of breath, wheezing, or cough. Irritation can also occur in non-allergenic (non-sensitized) people.

b. Hypersensitivity pneumonitis: (HP) is a kind of lung inflammation that occurs in persons who develop immune system sensitization (similar to an allergy) to inhaled organic dust. It can be mistaken for pneumonia, but it does not get better with antibiotics for infection. Symptoms of HP can vary. Some persons

- c. Ask your doctor whether you should be medically restricted from the affected environment.
  
- a. Evaluate the work area for evidence of mold and dampness.
- b. Repair leaks and remediate water damaged materials.
- c. Communicate with workers about areas of the building with evidence of mold or moisture damage and provide the status of remediation plans.
- d. Arrange for relocation of workers whose doctors restrict them from the implicated work environments.
- e. Advise all employees with mold sensitivities or health issues to seek a medical evaluation.

#### 5. Preventing Mold:

The UNE Facilities department will try to locate any mold issues as soon as possible, but the building occupants will usually be the first ones to identify the problem since they inhabit the building daily. UNE employees and building occupants should notify Facilities and EHS immediately if they have dampness, moisture, leaks, or

g. Perform regular building/HVAC inspections and maintenance as scheduled.

h. Clean and dry wet or damp spots within 48 hours.

the foundation.

#### 6. Mold Remediation:

UNE will contact an outside contractor for all mold remediation activities so that no employee will be subjected to the mold exposure after it is reported. The following will be completed by the contractor before occupants can return to the space:

a. Fix the water or humidity problem. Complete and carry out repair plan if appropriate.

b. Revise and/or carry out maintenance plan if necessary.

c. Revise remediation plan, as necessary, if more