

## INDOOR AIR QUALITY (IAQ)

---

(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

Indoor air quality (IAQ) problems can result from many causes. While mold growth has received considerable attention, it is not the only cause of indoor air quality complaints. This SOP discusses common causes of IAQ complaints, the steps taken in response, and tips for avoiding IAQ problems.

### **Possible Non-Biological Causes**

Building and non-building related problems can sometimes result in IAQ complaints and/or occupant symptoms, such as:

- Dusts and odors (i.e., paint, tar, etc.) from renovation projects
- Pet dander carried on clothing
- Animal or bird droppings or insect parts
- Odors from scented candles and other devices or perfumes/colognes
- Off-gassing from new furnishings, carpets, etc.
- Dry sewage drain traps that allow sewer gasses to escape
- Re-entrainment of vehicle exhaust through building openings
- Migration of odors or fumes from other work locations within the building
- Inadequate temperature control
- Inadequate humidity control
- Inadequate air distribution leading to drafty/stuffy rooms
- Inadequate lighting or glare
- Crowded rooms
- Noise and vibration
- High concentration of office equipment (i.e., copiers, fax machines, printers, etc.) in small or poorly ventilated work areas
- Ergonomic stressors (i.e., improper work station design leading to headaches, muscle aches, etc.)
- Personal factors, such as stress at work or home, allergies, etc.

### **Biological Growth (Molds and Bacteria)**

Molds and their spores are ubiquitous- they are found in all indoor and outdoor environments. They tend to thrive, however, only when there is an available food source and when placed in a warm and moist environment. Mold growth indoors is usually preceded by a water-intrusion event (e.g., broken pipe, infiltration of rain or melting snow, sewer backup, etc.). Porous building surfaces (e.g., carpeting, drywall, ceiling tiles, etc.) and other non-structural material (i.e., paper, books, cardboard, etc.) provide a food source in the form of cellulose.

Fungi in buildings may cause or exacerbate symptoms of allergies, especially in persons who have a history of allergic diseases (such as asthma and rhinitis), immunocompromised individuals, infants, and the elderly. However, the presence of fungi indoors does not necessarily mean that people will be exposed or exhibit health effects. In order for humans to be exposed indoors, fungal spores, fragments, or metabolites must be released into the air and inhaled, physically contacted (dermal exposure), or ingested. Whether symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the amount of exposure, and the susceptibility of exposed persons. Susceptibility varies with genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, state of health, and concurrent exposures. For these reasons, and because measurements of exposure are not standardized and biological markers of exposure to fungi are largely unknown, it is not possible to determine "safe" or "unsafe" levels of exposure for people in general.

### **Reporting Problems**

If you have an IAQ complaint, but do not have related health symptoms, call the Facilities Management (FMP) Service Desk at 472-1550 and report the problem.

If you have an IAQ complaint and suffer related health symptoms, call Environmental Health and Safety (EHS) at 472-4925 and report the problem. You should also complete a First Report of Alleged Occupational Injury/Illness form and submit it to the Benefits Office via fax (472-6803).

Report all water intrusion events IMMEDIATELY to the FMP Service Desk. To the extent known, include information on the source and approximate quantity, affected areas, water-damaged materials, and whether the source has been controlled. Clean water left for more than 24-48 hours can lead to mold growth. Events involving sewage backflows are very serious. Report the problem IMMEDIATELY to FMP and do not attempt to clean or remove affected materials. FMP will manage the response.

**Caution:** Electrical shock hazard may exist during water/sewage releases.

### **IAQ Investigation and Remediation**

In general, investigation and remediation is a joint effort between FMP, EHS, and the person(s) reporting the problem. If the problem is strictly intrusion of clean water with no other complaints, the remediation will usually be limited to quick and thorough drying of the impacted area. If sewage or contaminated water was involved, some removal activities (i.e., removal of wet carpets, drywall, etc.) may also be implemented to prevent later problems with biological growth.

When a health-related complaint is received, EHS and/or FMP will conduct an investigation. A typical IAQ investigation consists of occupant interviews, on-site physical inspection, and non-destructive testing. These steps assist in determining whether the problem is biological or non-biological, building or non-building related, transient or chronic, etc., and in establishing an appropriate remediation strategy.

Most IAQ problems or complaints can be remedied quickly. However, in complex situations (e.g., large areas of fungal growth, multiple causative agents, transient complaints, etc.), it may take more time to reach a resolution. In any case, EHS and FMP will make it a point to keep building occupants informed of progress in addressing the situation.

### **Avoiding IAQ Problems**

You can help to avoid IAQ problems in your work area by observing the following tips:

- Do not block or shut vents or building returns.
- Observe UNL's Tobacco Policy, which prohibits smoking inside of buildings and within 10 feet of any building opening/entrance.
- Do not dispose of food waste or food wrappers in your work area. Dispose of contaminated waste in receptacles that are emptied daily.
- Do not over water plants. Remove dead leaves. Break up dirt around the plant to avoid mold overgrowth in the dirt.
- Clean-up water spills immediately.
- Report water intrusion and sewage problems IMMEDIATELY to the Facilities Management and Planning Service Desk (472-1550).
- Minimize accumulations of paper, cardboard, and other cellulose-based materials.
- Clean your work area routinely. Remember, Custodial Services does not clean horizontal surfaces.
- Avoid concentrating electronic office equipment within offices or other small or unventilated locations.
- When possible, avoid carpeting. Do not use carpeting in high traffic areas such as entryways and hallways. If carpet is present in your work area, have it cleaned regularly.
- Do not burn candles or have other scent-producing materials in the work area.
- Avoid portable humidifiers.
- Send a requisition to the Facilities Management and Planning Service Desk to secure a vendor to remediate insect or rodent infestations.
- Allow new furnishings to off-gas before placing them in your work area. High VOC (volatile organic compound) glues and particleboard furnishings have a tendency to off-gas.