A Union of Professionals

WORK SHOULDN'T HURT

Indoor Air Quality: Becoming a Building Detective

IAQ has been identified by the EPA as one of the top five most urgent environmental risks to public health. Most Americans spend up to 90% of their time indoors and many spend most of their working hours in an office environment. Studies conducted by the U.S. Environmental Protection Agency (EPA) and others show that indoor environments sometimes can have levels of pollutants that are actually higher than levels found outside.

Therefore, the quality of indoor air inside offices, schools, and other workplaces is important not only for workers' comfort but also for their health. Poor indoor air quality (IAQ) has been tied to symptoms like headaches, fatigue, trouble concentrating, and irritation of the eyes, nose, throat and lungs. Also, some specific diseases have been linked to specific air contaminants or indoor environments, like asthma with damp indoor environments.

Many factors affect IAQ. These factors include poor ventilation (lack of outside air), problems controlling temperature, high or low humidity, recent remodeling, and other activities in or near a building that can affect the fresh air coming into the building. Sometimes, specific contaminants like dust from construction or renovation, mold, cleaning supplies, pesticides, or other airborne chemicals (including small amounts of chemicals released as a gas over time) may cause poor IAQ.

Becoming a Building Detective

Finding the solution to an IAQ problem is usually not a simple process. Many IAQ problems are subtle – there is often more than one symptom and more than one cause. However, to initially investigate complaints does NOT require fancy equipment or an expensive consultant. This is especially true because many times consultants won't find any problems because no standards exist for these types of complaints!

That doesn't mean nothing can be done! Here are some steps the Union can take to take on IAQ complaints in your building. As building detectives, you'll need to document:

- **WHAT** is the problem?
- **WHO** is affected?
- **WHERE** are the affected employees located?
- **WHEN** does it happen?
- **WHY** is it happening?

Some of the most common problems associated with poor indoor air quality come from three areas. They are contaminants from inside the building, contaminants that enter from outside the building, and problems associated with the ventilation system, like not enough fresh air.

Starting the Investigation

Step One: Surveying the Building Occupants

- A survey will capture who is affected – are symptoms showing in some people and not others? Do symptoms clear up as soon as they leave the building, or on weekends? Do people have different complaints?

- A survey will identify what concerns members have – are people complaining of temperature issues, odors, moisture and mold, or stale air?
- A survey will identify where the problems are occurring – are they isolated complaints in one area of the building or are people experiencing symptoms all over the building?

- A survey will identify when problems are occurring – every day? Late in the afternoon? After a rainstorm? Seasonally? During certain building activities?

Step Two: Conduct a Walk-around Inside the Building to Identify Possible Pollutant Sources

This is where you will start to identify why people might be experiencing symptoms of poor IAQ. Things to look for during a walk-around include:

- Has anything happened recently that could affect the air quality such as construction or renovation?
- Is there a roof leak or other signs of water/moisture/mold?
- Are pesticides being sprayed or other chemicals used for cleaning?
- Are there are chemistry or career technical shops in the building?
- Are there odors from rest rooms and cafeterias?

A Note About Mold: It's important to know that you don't need an expert to come in to evaluate the kind of mold that's growing … if you see or smell mold or see signs of water damage the most important thing is to identify the source of the water intrusion, FIX IT, and remove/replace all damaged material

Step Three: Conduct a Walk-around Outside the Building to Identify Possible Pollutant Sources

This is a continuation on identifying why people might be experiencing symptoms of poor IAQ. Things to look for include:

- Are plants and plant debris located under windows?
- Are there any bird, animal or insect nests near or in the building?
- Does the building have a flat roof and water puddles?
- Is there a smoking area outside?
- Is there any industrial or construction pollution in the vicinity?
- Does water drain away from or towards the building?
- Are air intakes located close to things like parking decks or lots, busy roads, loading docks or dumpsters?
- Are buses or delivery trucks idling near the building?

A Clue to Understanding Potential Sources of Pollutants: If you open the door to the building does air rush in or does air blow out? If it rushes in – the building is under negative pressure and that means pollutants are "stuck" in the building. If it rushes out – the building is under positive pressure and that means the ventilation system is pushing out pollutants.

Step Four: Find Out What You Can About the Building & Ventilation System

This may be the most difficult part of your investigation but it will help to ask your custodian or building engineer for help! (S)he will most likely know some basic answers to question about the building that might add to your investigation. Start by asking what (s)he thinks the problem might be – they probably know! Consider asking about the kind of housekeeping supplies used and if and when pesticide applications are happening.

Some Advice on Ventilation: Lack of enough outside air in a ventilation system makes people less energetic/causes drowsiness. The ONLY air-sampling test you should ever consider is a test for carbon dioxide (CO_2). Carbon dioxide – or better known as exhaled breath – is known as an indicator gas in IAQ investigations. While it's not dangerous in most situations, if there are high levels (above 1,000 ppm), it means that other contaminants that are in building up as well (Normally, levels outside are around 400 ppm) because not enough outside air is being circulated throughout the building.

Getting Members Involved

Throughout this whole process, there are many ways that members can participate in the investigation - make sure to talk to them when conducting the walk-around!

Other activities they can participate include:

- Tracking temperatures in their work areas with inexpensive instruments;
- Tracking air movement from air supplies with ribbons; and
- Tracking humidity levels by noting when humidity levels are high (condensation on walls/windows; mold and mildew on walls, window frames, books, papers, etc.) or low (shocks when touching metal; itchy skin; nosebleeds, etc.)

Putting it All Together!

Once you've collected the data, it can be helpful to "map out" the building. You can roughly draw a picture of the workplace and map out where people are experiencing symptoms and where potential pollution sources have been identified based on the members' experiences and knowledge. It's a great tool to communicate the problem to members and to the administration. Once "seen" the issues identified are more likely to be addressed and not swept under the rug.

For more information and training opportunities on becoming a building detective, contact the AFT health and safety team at 4healthandsafety@aft.org