

Indoor Air Quality & Industrial Hygiene Monitoring Plan – Appendix C: Detection of IAQ Contaminants

Detection - Humans have the ability to detect and/or measure the presence of certain indoor air quality contaminants in several ways. These include:

- Sensory detection – This type of detection is subjective and qualitative at best.
 - Vision – People can see the deposition and buildup of excessive dusts, spills, chemical products, water stains, discolorations, etc.
 - Touch – The human body can sense temperature and moisture fluctuations as well as air movement. Air may sometimes feel hot, moist, stagnant or flowing.
 - Hearing – Often the sound of dripping may indicate the presence of water intrusion into a space. Airflow can often be heard in the form of hissing when air moves from areas of high pressure to one of low pressure.
 - Smell – Airborne chemicals can often be detected in air at low concentrations through olfaction, the body's ability to smell. Some chemicals such as hydrogen sulfide (H₂S) can be detected at very low concentrations while higher concentrations of H₂S can paralyze the olfactory nerve resulting in an inability to smell the gas. Some airborne contaminants such as carbon dioxide (CO₂) and carbon monoxide (CO) are undetectable via olfaction at any concentration.
- Analytical detection - In order to quantitatively detect and evaluate some contaminants, specialized instrumentation and meters must be used and specified laboratory analyses must be performed. Instrumentation and meters include:
 - FMS building feedback systems – Building Automation System (BAS), thermometers, hygrometers.
 - FMS HVAC equipment/meters – velometers, anemometers, moisture meters, infrared meters
 - Industrial hygiene equipment and testing – Operated by EH&S' contractors and consultants.
 - Direct read instruments that provide the user with immediate results about the presence and/or concentration of a contaminant. Examples include: combustible gas meters, carbon monoxide/dioxide meters, photoionization detectors.
 - Grab sampling media and laboratory analyses involve the collection of samples and subsequent laboratory analyses to determine the presentation and/or concentration of contaminants. Examples include air sampling, tape pull samples, and bulk hazardous building material (HBM) samples.

Some indoor air quality contaminants may be classified as nuisances while others are specifically regulated by OR OSHA with established permissible exposure limits or PELs. PELs are established regulatory limits (concentrations) that serve to protect workers from adverse health effects associated with exposure to the contaminant at higher concentrations. Quantitative sampling is required to determine whether or not a PEL has been exceeded. Not all chemicals or indoor air contaminants have associated PELs.