Monitoring Air Quality on All Job Sites: Protecting Worker Health Indoors and Outdoors



Air quality is often overlooked until workers begin experiencing symptoms such as coughing, headaches, eye irritation, fatigue, or respiratory discomfort. Yet poor air quality can have a significant impact on worker health, productivity, and safety. During the summer months, air quality challenges can become even more pronounced as higher temperatures, wildfire smoke, dust, airborne contaminants, increased ventilation demands, and crowded indoor environments create new risks across a variety of workplaces.

For OHS managers and worksite directors, monitoring air quality is an important component of a comprehensive occupational health and safety program. Whether employees work outdoors in construction, agriculture, landscaping, utilities, transportation, and public works, or indoors in manufacturing facilities, warehouses, offices, healthcare environments, and commercial buildings, maintaining healthy air quality helps reduce exposure to both short-term irritants and long-term health hazards.

Understanding Air Quality Hazards

Air quality concerns can vary significantly depending on the work environment. Outdoor worksites are often exposed to naturally occurring and work-generated contaminants. Dust

generated by excavation, grading, harvesting, vehicle traffic, demolition, and material handling can contribute to respiratory irritation and reduced visibility. Fine particulate matter may penetrate deep into the lungs, particularly when workers are exposed for extended periods.

Summer also brings increased risks from wildfire smoke, which has become a growing concern across many regions of North America. Smoke can travel hundreds of kilometres from its source, creating hazardous air conditions even in areas far from active fires. Workers exposed to smoke may experience coughing, throat irritation, shortness of breath, headaches, and reduced physical performance.

In industrial environments, airborne contaminants may include welding fumes, silica dust, diesel exhaust, chemical vapours, solvents, and other hazardous substances generated during work processes. Without proper controls, these exposures can contribute to chronic respiratory conditions, cardiovascular issues, and occupational illnesses.

Indoor workplaces face a different but equally important set of air quality challenges. Poorly maintained HVAC systems, clogged filters, inadequate ventilation, excess humidity, mould growth, dust accumulation, and overcrowded spaces can all affect indoor air quality. During the summer, air conditioning systems work harder to maintain comfortable temperatures, and equipment failures or neglected maintenance can quickly lead to poor air circulation and increased contaminant levels.

Indoor air quality also plays an important role in limiting the spread of infectious illnesses. Respiratory viruses can spread more easily in poorly ventilated spaces where fresh air exchange is inadequate. Maintaining healthy indoor air quality helps reduce the concentration of airborne particles that may contribute to disease transmission.

The Importance of Monitoring

Effective air quality management begins with monitoring. OHS professionals cannot control hazards they cannot identify. Air monitoring provides valuable information about workplace conditions and allows employers to make informed decisions regarding controls, ventilation, work scheduling, and personal protective equipment.

For outdoor worksites, monitoring may include tracking local air quality indexes, weather conditions, temperature, humidity, wind direction, and particulate levels. During periods of elevated wildfire smoke or dust generation, managers can use air quality data to determine whether additional protective measures are necessary.

Indoor monitoring may focus on carbon dioxide levels, particulate concentrations, temperature, humidity, ventilation performance, and the presence of airborne contaminants associated with specific work activities. Monitoring can help identify ventilation deficiencies before workers begin reporting symptoms.

Best Practices for Managing Air Quality

A successful air quality program combines monitoring with proactive prevention measures. Regular maintenance of ventilation systems, air conditioners, and filtration equipment is essential for indoor environments. Filters should be replaced according to manufacturer recommendations, air intakes should remain unobstructed, and ventilation systems should be inspected routinely to ensure they are functioning properly.

For outdoor operations, dust suppression methods such as water application, vegetation management, proper material storage,

and traffic control can help reduce airborne particles. During periods of poor air quality, employers may need to adjust work schedules, relocate tasks, increase rest periods, or limit strenuous outdoor activities.

Employers should also ensure workers understand the signs and symptoms of air quality-related health issues. Training programs can help employees recognize respiratory distress, heat-related complications, and exposure concerns while encouraging prompt reporting of symptoms.

Personal protective equipment may also play a role when engineering and administrative controls cannot adequately reduce exposure. Respirators and other respiratory protection should be selected based on identified hazards and used within a comprehensive respiratory protection program.

Creating Healthier Work Environments

Air quality is not solely an environmental issue—it is a workplace health and safety issue. Poor air quality can affect worker well-being, increase absenteeism, reduce productivity, and contribute to both acute and chronic health conditions. As summer temperatures rise and environmental conditions become more challenging, OHS managers and worksite directors have an opportunity to strengthen air quality programs across both indoor and outdoor worksites.

By investing in monitoring, maintaining ventilation systems, controlling airborne contaminants, and responding proactively to changing conditions, employers can create healthier work environments and better protect workers from one of the most widespread yet often invisible workplace hazards.