



CASE STUDY

ENVIRONMENTAL HEALTH AND SAFETY

Airborne Particulate Testing During Construction at an Aircraft Hangar

OVERVIEW

CM3 was engaged by a construction management firm to address air quality concerns during construction activities at a fully operational aircraft hangar. Building occupants voiced concerns about exposure to airborne particulates from tasks such as cutting, grinding, and material handling. The primary objective was to monitor air quality, ensure compliance with occupational exposure limits, and validate the effectiveness of dust control measures in place.



KEY CHALLENGES

The assessment was carried out during active construction, which included heavy equipment operations, material transportation, and mechanical processes that could generate significant particulate matter.

CM3 deployed calibrated direct-read instrumentation to measure concentrations of total particulate matter (PM), PM10, and respirable dust. Measurements were conducted in multiple zones:

- Within the construction area
- Adjacent spaces near the construction zone
- Outdoor spaces for baseline comparisons



OUR APPROACH

Based on CM3's extensive air quality analysis, the results demonstrated that the particulate levels fell within permissible exposure limits established by Ontario Regulation 833 for total and respirable dust. Dust control measures such as high-efficiency particulate air (HEPA) filtration units, water-based dust suppressants, and temporary enclosures successfully maintained acceptable air quality.

CM3 identified a couple areas for improvement including the positive pressure differentials between construction areas and adjacent spaces posed a risk of dust migration and the open hangar doors influenced pressure dynamics, which could potentially exacerbate particulate dispersion.

RECOMMENDATIONS

Though the implemented controls were largely effective, CM3 proposed additional strategies to further enhance air quality and containment during construction:

Improved Containment

Increase negative pressure in construction zones using additional HEPA-filtered air movers. Implement real-time monitoring of pressure differentials to prevent dust migration.

Administrative Controls

Develop and enforce standard operating procedures (SOPs) to minimize the frequency and duration of open hangar doors, thereby limiting air pressure fluctuations.

Targeted Sampling for Crystalline Silica

During high-dust activities like concrete cutting or grinding, CM3 recommended collecting silica-specific air samples to assess exposure to crystalline silica, recognized as a human carcinogen.

By employing detailed air quality monitoring and recommending strategic enhancements, CM3 ensured compliance with regulatory standards, safeguarded worker and occupant health, and proactively minimized occupational hazards.

Choose CM3 to improve on-site Air Quality.

CM3 is committed to delivering results tailored to the unique challenges faced by construction managers. By focusing on air quality compliance, worker safety, and operational efficiency, CM3 provided data-driven solutions to complex environmental challenges.

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