

VENTILATION

1. Task

To provide adequate breathable air to work environments.

2. Hazards

Accumulation of hazardous gas, vapor, fume, particulate, or bio-hazardous material, oxygen deficient or enriched atmospheres, explosive atmosphere.

3. Controls

Pre-Job Safety Assessment (PSA). Regulatory Requirements, Best Personnel Safety Policy, Written Site-Specific Safe Work Procedures, WHMIS 2015, CSA/ANSI approved equipment and PPE, Confined Space Procedures, Worker Training, i.e. Propane Handling for Construction, Competent Supervision.

- ❖ Establish presence of atmosphere compromising agents or conditions, i.e. hazardous gas, vapor, fume, particulate or bio-hazardous material, oxygen deficiency, or oxygen enrichment.
- ❖ No internal combustion engine shall be operated in an excavation, building or other enclosed structure unless there is adequate supply of air for combustion and the exhaust gases and fumes from the engine are adequately discharged directly outside the excavation, building or other enclosed structure to a point sufficiently remote to prevent the return of the gases or fumes or there is adequate natural or mechanical ventilation to ensure that exhaust gases and fumes from the engine will not accumulate in the excavation, building or other enclosed structure. NOTE – this does not apply to internal combustion engines operated in a tunnel.
- ❖ An excavation, building or other enclosed structure in which an internal combustion engine is being operated shall be tested for airborne concentrations of carbon monoxide to ensure that the concentrations do not exceed the applicable limits in accordance with applicable legislated requirements.
- ❖ Use CSA/ANSI approved testing apparatus that has been calibrated to manufacturer's specifications in accordance with applicable legislated requirements.
- ❖ Consult Regulation respecting Control of Exposure to Biological or Chemical Agents R.R.O. 1990 Reg.833 and amendments (Ontario), or ACGIH Threshold Limit Values for chemical Substances and Physical Agents and Biological Exposure Indices, and applicable Regulations Respecting Designated Substances, i.e. Asbestos, to establish acceptable exposure limits (Alberta - refer to Schedule 1 OH&S Code).
- ❖ Establish if local, i.e. 'smoke eater' or general (dilution) ventilation, i.e. complete air exchange, would be best suited for situation.
- ❖ Local exhausts work well with chemical hazards and welding fumes.
- ❖ General or dilution type systems work well with solvents and other explosive gases or vapors.
- ❖ General exhaust systems should remove contaminated air and replace with fresh air supply in sufficient quantities to maintain acceptable exposure values.
- ❖ Consult Guidelines for the use of Propane in Construction, (for every 1000 BTUs one square inch of ventilation i.e. open to outside fresh air must be provided).
- ❖ If suspect atmosphere is within explosive range use explosion proof equipment to ventilate.
- ❖ Ventilation equipment may have to be equipped with Hepa filters before exhausting into atmosphere.
- ❖ Do not exhaust near existing air intake ducts.
- ❖ Do not exhaust into occupied space or work areas.
- ❖ Remember to consider natural ventilation characteristics, i.e. warm air rises and cooler air settles at lower levels, when designing ventilation.
- ❖ Consult MSDS sheets for all materials that might compromise the breathable air in the work place.
- ❖ Be aware of the density of vapors and gases. Do they settle in low lying areas such as trenches and basements or do they rise to collect at ceiling height or in roof spaces and the top of shafts?



Best Personnel Safe Work Practices & Procedures Manual

- ❖ If on a project where potential hazardous gases can accumulate, it may be recommended to test low lying areas on a project at the start of the work day and as necessary throughout the project to ensure that controls implemented are effective and respiratory protection is adequate.
- ❖ Establish and implement written Site-Specific Work Procedures for workers to follow, control or eliminate hazards affecting quality of atmosphere within workspace.