Ventilation Requirements for Confined Spaces

For more information on this topic, see CONFINED SPACES: Take 5 Steps to Comply with the Ventilation Requirements.

KNOW THE LAWS: Ventilation Requirements for Confined Spaces Here are the ventilation requirements for confined spaces in each jurisdiction's OHS laws:	
FED	*OHS Regs*.: 1. Where ventilation equipment is used to maintain the concentration of a chemical agent or combination of chemical agents in a confined space at or below the concentration referred to in Sec. 11.4(1)(a)(i), or to maintain the percentage of oxygen in the air of a confined space within the limits referred to in Sec. 11.4(1)(a)(iii), the employer must not grant access to the confined space to any person unless: a. the ventilation equipment is: i. equipped with an alarm that will, if the equipment fails, be activated automatically and be audible or visible to every person in the confined space; or ii. monitored by an employee who's in constant attendance at the equipment and who's in communication with the person or persons in the confined space; and b. in the event of failure of the ventilation equipment, sufficient time will be available for the person to escape from the confined space before: i. the concentration of the chemical agent or combination of chemical agents in the confined space exceeds the concentrations referred to in Sec. 11.4(1)(a)(i); or ii. the percentage of oxygen in the air ceases to remain within the limits referred to in Sec. 11.4(1)(a)(iii) [Sec. 11.10(1)]. 2. If the ventilation equipment fails to operate properly, the employee referred to above must immediately inform the person or persons in the confined space of the failure of the equipment [Sec. 11.10(2)].

AB	*OHS Code 2009*: 1. If the atmospheric testing under Sec. 52 identifies that a hazardous atmosphere exists or is likely to exist in a confined space, an employer must ensure that the confined space is ventilated, purged or both before a worker enters the confined space [Sec. 53(1)]. 2. If ventilating or purging a confined space is impractical or ineffective in eliminating a hazardous atmosphere, the employer must ensure that a worker who enters the confined space uses PPE appropriate for the conditions within the confined space [Sec. 53(2)]. 3. If mechanical ventilation is needed to maintain a safe atmosphere in a confined space during the work process, an employer must ensure it's provided and operated as needed [Sec. 53(3)]. 4. If mechanical ventilation is required to maintain a safe atmosphere in the confined space, the employer must ensure that: a. the ventilation system incorporates a method of alerting workers to a failure of the system so that workers have sufficient time to safely leave the confined space; and b. all workers within the confined space have received training in the evacuation procedures to be used in the event of a ventilation system failure [Sec. 53(4)]. 5. All workers must evacuate a confined space or use an alternative means of protection if a ventilation system fails [Sec. 53(5)].

BC	*OHS Reg.*: 1. If a confined space is known, or shown by pre-entry testing to contain other than clean respirable air, the hazard must be controlled by cleaning, purging or venting the space and the atmosphere must be retested before a worker enters the space [Sec. 9.27(2)]. 2. The dead-ends of a line that has been isolated must be cleaned, purged or vented to remove any harmful substance that could present a hazard to a worker entering the confined space [Sec. 9.27(3)]. 3. Every confined space must be ventilated continuously while a workers inside the space, except in: a. an atmosphere intentionally inerted in accordance with Sec. 9.29; b. a low hazard atmosphere controlled in accordance with Sec. 9.31(2); or c. an emergency rescue, if ventilation isn't practicable [Sec. 9.30]. 4. Continuous ventilation isn't required in a confined space that has a low hazard atmosphere if: a. the atmosphere is continuously monitored and shown to contain clean respirable air; and b. the space has an internal volume greater than 1.8 m^3 (64 cu ft) per occupant, is occupied for less than 15 minutes, and the work inside the space generates no contaminants other than exhaled air [Sec. 9.31(2)]. 5. A ventilation system for the control of airborne contaminants in a confined space must be designed, installed and maintained in accordance with established engineering principles and must be specified in the written procedures [Sec. 9.32(1)]. 6. Ventilation equipment must be located and arranged so as to adequately ventilate every occupied area inside the confined space [Sec. 9.32(2)]. 7. If a contaminant is produced in a confined space, it must be controlled at the source by a local exhaust ventilation system if practicable, by general (dilution) ventilation or by a combination of both [Sec. 9.32(3)]. 8. If practicable, a mechanical ventilation system for a confined space must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits [Sec. 9.32(4)]. 9. If natural ventilation is relied upon for the control of airborne contaminants in a confined space, the rate of airflow through the space must be monitored and must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits [Sec. 9.33(1)]. 10. Natural ventilation must not be used: a. to ventilate a confined space that has a high hazard atmosphere, or b. if such ventilation could draw air other than clean respirable air into the confined space [Sec. 9.33(2)].

MB	*Workplace Safety and Health Reg.*: 1. In the following circumstances, an employer must ensure that a confined space is purged, ventilated or both before a worker is required or permitted to enter it: a. where there's or may be a concentration of a flammable or explosive substance present at more than 10% of its lower explosive limit, the space must be purged, ventilated or both so that the concentration is reduced to less than 10%; b. where there's or may be an oxygen deficiency (oxygen content less than 19.5% by volume) or oxygen enrichment (oxygen content greater than 23% by volume) the space must be purged, ventilated or both so that the oxygen content is at least 19.5% but not more than 23%; c. subject to Sec. 15.10(2), where there is or may be a chemical or biological substance that creates a risk to the safety or health of the worker, the space must be purged, ventilated or both to the extent possible to eliminate or reduce the risk associated with the substance [Sec. 15.10(1)]. 2. When a worker occupies a confined space that has an atmosphere that may create a risk to the safety or health of a worker, the employer must ensure that: a. the space is continuously ventilated to maintain a safe atmosphere; and b. the atmosphere is continuously monitored by a competent person [Sec. 15.10(2)]. 3. When purging, ventilating or both can't bring the atmosphere within a confined space into compliance with Sec. 15.10(1), an employer must ensure that additional control measures are undertaken to protect the safety and health of the worker entering the space, including providing to a worker PPE appropriate for the conditions in the confined space [Sec. 15.11].
NB	*OHS Reg.*: 1. Where the tests referred to in Sec. 263(1) indicate that paragraphs Secs. 263(1)(a) to (d) can't be complied with, an employer must, where practicable, purge the confined space to eliminate the hazards referred to in Secs. 263(1)(a) to (d) and have the competent person re-conduct the tests required under Sec. 263(1) [Sec. 264(1)]. 2. An employer isn't required to purge a confined space more than once [Sec. 264(2)].

NL	*OHS Regs. 2012*: 1. Where a test made under Sec. 512(11) indicates an unsafe condition, the confined space must be ventilated or cleaned or both and periodically retested to ensure that: a. the oxygen content is between 20% and 22%; b. the concentration of flammable substances is maintained below 10% of the lower explosive limit (LEL) of that substance or substances; and c. a worker's exposure to harmful substances is maintained at acceptable levels in accordance the TLVs established by ACGIH [Sec. 512(12)]. 2. A confined space must be entered only where measures have been taken to ensure that, where appropriate, the confined space is continuously ventilated [Sec. 514(d)].
NS	*Occupational Safety General Regs.* 1. When assessing whether a space is or may become hazardous to a person entering it because of its atmosphere under Sec. 129(1)(c), a person must not take into account the protection afforded to a person through the use of PPE or ventilation [Sec. 129(1a)]. 2. Where at least one confined space has been identified, an employer must establish a written confined space entry procedure that includes provision for a means of ventilating the confined space to ensure the removal or dilution of all airborne hazardous substances from the confined space [Sec. 130(3)(i)]. 3. Where the tests required in Secs. 130(8)(a) to (c) indicate that the concentration level or percentage referred to in those clauses can't be complied with, an employer must: a. ensure that, where reasonably practicable, the confined space is purged until concentrations are below the hazards referred to in Secs. 130(8)(a) to (d); and b. after the purging, ensure that the tests required under Sec. 130(8) are conducted again [Sec. 132].

NT	*OHS Regs*. (in effect as of June 1, 2015): 1. If a confined space is identified as not being a hazardous confined space, an employer must ensure that the ventilation in the confined space is adequate to maintain safe atmospheric conditions [Sec. 278(d)]. 2. In addition to the requirements of Sec. 403 and subject to Sec. 281, if a concentration of a toxic, flammable or explosive substance is present or an oxygen enrichment or deficiency exists in a hazardous confined space, an employer must ensure that the hazardous confined space is: a. purged and ventilated before a worker is required or permitted to enter the space, so that: i. any hazard associated with a toxic, flammable or explosive substance is reduced to the extent that's possible or eliminated; and ii. an oxygen content of between 19.5% and 23% is assured; and b. continuously ventilated while the worker occupies the hazardous confined space to maintain a safe atmosphere [Sec. 280(1)]. 3. If ventilation is used to reduce or eliminate a hazard under Sec. 280(1), an employer must ensure that a competent individual tests the atmosphere to determine that the confined space is safe for entry by workers: a. before workers enter the confined space; b. if all workers have vacated the confined space, before any worker re-enters the confined space; c. on the request of a worker who's required or permitted to enter the confined space; and d. continuously if a condition in the confined space could change and put the workers' health or safety at risk [Sec. 280(2)]. 4. If a hazardous confined space can't be purged and ventilated to provide a safe atmosphere or a safe atmosphere can't be maintained under Sec. 280, an employer must ensure that work isn't carried out in the confined space unless it's carried out in accordance with the requirements of this section and Sec. 403 [Sec. 281(1)].

NU	*General Safety Regs.*: 1. Subject to the other provisions of this section, before a worker enters a confined space, the employer must ensure that the confined space is ventilated sufficiently to maintain an oxygen content of at least 18% by volume under normal atmospheric pressure and to prevent the accumulation of contaminants [Sec. 36(1)(a)]. 2. Subject to Sec. 36(6), where it isn't reasonably practicable for an employer to ventilate in accordance with the above, the employer must ensure that air quality tests are carried out by a competent person: a. before a worker enters a confined space; and b. while a worker is in the confined space, to ensure that the confined space is ventilated sufficiently to maintain an oxygen content of at least 18% by volume under normal atmospheric pressure and to prevent the accumulation of contaminants [Sec. 36(2)]. ***Note**: The above reflects the current law at the time of publication. The new OHS regulations that took effect in NWT on June 1, 2015 are expected to take effect later in 2015 in NU.

ON	*Confined Spaces Reg.*: 1. This section applies only in respect of atmospheric hazards described in clause (b) or (c) of the definition of "atmospheric hazards" in Sec. 1 (the oxygen content of the atmosphere is at least 19.5% but not more than 23% by volume or, in the case of a workplace that's not a project, the exposure to atmospheric contaminants doesn't exceed any applicable limit set out in Regulation 833 (Control of Exposure to Biological or Chemical Agents) or Regulation 490/09 (Designated Substances) made under the Act)[Sec. 20(1)]. 2. If atmospheric hazards exist or are likely to exist in a confined space, the confined space must be purged, ventilated or both, before any worker enters it to ensure that acceptable atmospheric levels are maintained in the confined space while any worker is inside [Sec. 20(2)]. 3. If mechanical ventilation is required to maintain acceptable atmospheric levels, an adequate warning system and exit procedure must also be provided to ensure that workers have adequate warning of ventilation failure and are able to exit the confined space safely [Sec. 20(3)]. 4. If compliance with the above isn't practical in the circumstances for technical reasons: a. compliance with Sec. 20(3) isn't required; and b. a worker entering the confined space must use: i. adequate respiratory protective equipment; ii. adequate equipment to allow persons outside the confined space to locate and rescue the worker if necessary; and iii. such other equipment as is necessary to ensure the worker's safety [Sec. 20(4)]. 5. The equipment mentioned in Sec. 20(4)(b)(i), (ii) and (iii) must be inspected by a person with adequate knowledge, training and experience, appointed by the employer, and must be in good working order before the worker enters the confined space [Sec. 20(5)]. 6. The employer must ensure that the section on explosive and flammable substances is complied with by ventilation, purging, rendering the atmosphere inert or other adequate means, in accordance with the relevant plan [Sec. 19(2)].
PE	*OHS Regs.*: 1. The employer must ensure that a confined space in which there exists or is likely to exist: a. a hazardous accumulation of gas, vapour, dust, mist, smoke or fumes; orb. an oxygen content of less than 19.5% or more than 23% at atmospheric pressureis entered only when the space is purged and ventilated to provide a safe atmosphere, and provisions for continuous or periodic monitoring have been established to ensure that the hazardous condition doesn't recur [Secs. 13.3(d) and (e)].

QC	*Reg. on Occupational Health and Safety*: 1. Before any work or task is carried out in an enclosed area, information on the specific dangers associated with the enclosed area and that concern the fact that the natural or mechanical ventilation is insufficient must be available, in writing, on the work premises [Sec. 300(1)(b)]. 2. Except in cases where the safety of workers is ensured in compliance with Sec. 303(3), no worker may enter or be present in an enclosed area unless the latter is ventilated either by natural or mechanical means such that the following atmospheric conditions are maintained: a. the concentration of oxygen shall be greater than or equal to 19.5% and less than or equal to 23%; b. the concentration of inflammable gases or vapours shall be less than or equal to 10% of the lower explosion limit; and c. the concentration of one or more contaminants referred to under Sec. 300(1) shall not exceed the standards provided in Schedule I for these contaminants. 3. If it proves impossible by ventilating the enclosed area to maintain an internal atmosphere in compliance with the standards provided under a. and c. above, a worker may only enter or be present in this area if he wears the respiratory protective equipment specified in Sec. 45 and if the internal atmosphere of this enclosed area complies with b. above [Sec. 302].

SK	*OHS Regs.*: 1. Where a confined space isn't identified as a hazardous confined space, an employer must ensure that the ventilation in the confined space is adequate to maintain safe atmospheric conditions [Sec. 271(d)]. 2. In addition to the requirements of Sec. 369, where a concentration of a toxic, flammable or explosive substance is present or an oxygen enrichment or deficiency exists in a hazardous confined space, an employer must ensure that the hazardous confined space is: a. purged and ventilated before a worker is allowed to enter the space, so that: i. any hazard associated with a toxic, flammable or explosive substance is reduced to the extent that is possible or eliminated; and ii. an oxygen content of not less than 19.5% and not more than 23% is ensured; and b. continuously ventilated at all times during which the worker occupies the hazardous confined space to maintain a safe atmosphere [Sec. 273(1)]. 3. Where ventilation is used to reduce or eliminate a hazard pursuant to the above, an employer must ensure that a competent person tests the atmosphere to determine that the confined space is safe for entry by a worker: a. before a worker enters the confined space; b. where all workers have vacated the confined space, before any worker re-enters the confined space; c. on the request of a worker who is required or permitted to enter the confined space; and d. continuously where any condition in the confined space may change and put the worker's health or safety at risk [Sec. 273(2)]. 4. Where a hazardous confined space can't be purged and ventilated to provide a safe atmosphere or a safe atmosphere can't be maintained pursuant to Sec. 273, an employer must ensure that no work is carried on in the confined space except in accordance with the requirements of this section and Sec. 369 [Sec. 274(1)].

YT	*OHS Reg.*: 1. Each confined space must be ventilated continuously while a worker is inside the space, except in: a. an atmosphere intentionally inerted in accordance with Sec. 2.23; b. a low hazard atmosphere controlled in accordance with Sec 2.25; or c. an emergency rescue, where ventilation isn't practicable [Sec. 2.24]. 2. Concentrations of airborne contaminants in a confined space must be controlled and maintained below the applicable exposure limits by mechanical ventilation systems [Sec. 2.26(1)]. 3. Mechanical ventilation systems must be designed, installed and maintained in accordance with established engineering principles and as specified in the written procedures [Sec. 2.26(2)]. 4. Ventilation equipment must be located and arranged to ensure adequate ventilation inside the confined space [Sec. 2.26(3)]. 5. Where a contaminant is produced in a confined space, it must be controlled at the source by a local exhaust ventilation system if practicable, by general (dilution) ventilation, or by a combination of both [Sec. 2.26(4)]. 6. Where practicable, mechanical ventilation systems must maintain concentrations of airborne contaminants below the applicable exposure limits [Sec. 2.26(5)]. 7. Concentrations of airborne contaminants in a confined space may be controlled by natural ventilation systems [Sec. 2.27(1)]. 8. Where natural ventilation is used in a confined space, the rate of airflow through the space must be monitored to ensure that it's sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits [Sec. 2.27(2)]. 9. Natural ventilation may not be used: a. to ventilate a confined space that has a high hazard atmosphere; or b. where such ventilation could draw air other than clean respirable air into the confined space [Sec. 2.27(3)].