Safety Matters @Work
Workers Compensation Board of PEI

Developing a Respirator Program

Last updated: June 2022

Cover Photo by Arūnas Naujokas

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PURPOSE OF THIS GUIDE

Respirators are complicated, and call for specialized skill and knowledge. When respirators are used in a workplace, a *respirator program* is required, and must be developed by a competent person. This guide will offer direction in developing such a program. Legislation regulating respirator use in PEI workplaces, and the related Canadian Standards Association (CSA) Standard Z94.4-18, "Selection, care, and use of respirators," referred to from here on as "the Standard," will be outlined in this guide, as well as the steps to follow when setting up a program.

This guide provides information in a summarized format, and assumes that readers already have a good understanding of respirators, and how they work to provide protection from breathing hazards. Employers, and those with defined roles and responsibilities in a respirator program, should refer to the Standard in order to ensure they understand their responsibilities for the health and safety of their workers, as outlined in the *Occupational Health and Safety Act.* (Figure 1)

When respirators are part of a hazard control plan, a respirator program, developed by a competent person, is required.

Figure 1

12. Duties of employers
(1) An employer shall ensure
(a) that every reasonable precaution is taken to protect the occupational health and safety of persons at or near the workplace;
(b) that any item, device, material, equipment or machinery provided for the use of workers at a workplace is properly maintained, and is properly equipped with the safety features or devices, as recommended by the manufacturer or required by the regulations;
(c) that such information, instruction, training, supervision and facilities are provided as are necessary to ensure the occupational health and safety of the workers;
(d) that workers and supervisors are familiar with occupational health or safety hazards at the workplace;
(e) that workers are made familiar with the proper use of all safety features or devices, equipment and clothing required for their protection; and
(f) that the employer's undertaking is conducted so that workers are not exposed to occupational health or safety hazards as a result of the undertaking.

Refer to CSA Standard Z94.4-18, "Selection, care, and use of respirators."

See Appendix A: How to Access CSA Standards, for instructions.

WHEN IS A RESPIRATOR NEEDED?

Welders, concrete workers, auto body painters, and healthcare professionals are a few of the many workers at risk of exposure to breathing hazards. Properly selected respirators can give such workers the breathing protection they need. Before considering the use of respirators, however, employers must take every reasonable means to prevent or eliminate exposure to harmful air contaminants or oxygen deficient atmosphere.

As illustrated in the *Hierarchy of Control* (Figure 2), the most effective way to control any workplace hazard, no matter the type, is to eliminate it. Personal Protective Equipment (PPE) is considered to be the least effective control method. As such, employers should use respirators only when:

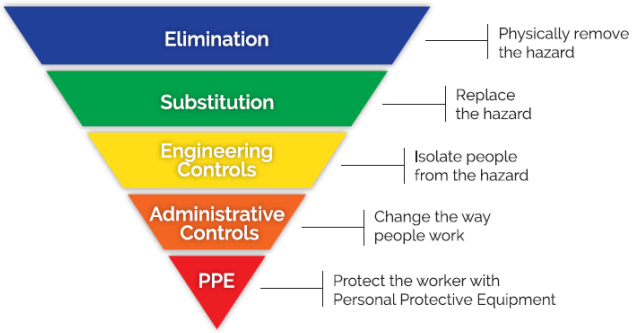
- Elimination, substitution, engineering or administrative controls are not possible.
- Additional protection is needed because the control measure being used offers some control but not enough to adequately reduce the hazard.
- Engineering controls are being installed, maintained, or repaired.
- Emergencies arise.

Occupational Health and Safety Act General Regulations

Part 45.17 (1) Every employer shall ensure that when workers are or may be exposed to an oxygen deficient atmosphere or harmful concentrations of air contaminants, mechanical means of engineering design shall be utilized to prevent or to eliminate such hazardous conditions of exposure.

Part 45.17 (2) Every employer shall ensure that where the prevention or elimination of such hazardous conditions is not reasonably practicable, or where the exposure results from temporary or emergency conditions only, every worker exposed shall wear approved protective respiratory equipment.

Figure 2



Employers must take every reasonable means to prevent or eliminate exposure to harmful air contaminants or oxygen deficient atmosphere

RESPIRATOR PROGRAM

Employer Responsibilities

Employer responsibilities regarding respirator use in the workplace are clearly laid out in the Standard, as follows: “The employer shall be responsible for preparing and implementing, in consultation with users, a written respiratory protection program.”

Furthermore, the Standard requires that:

- All program roles are assigned to competent persons.
- Each individual assigned to one or more roles shall demonstrate and maintain a level of competency in their role(s).

Occupational Health and Safety Act General Regulations of PEI

Part 45.18 (1) The employer shall ensure that the selection, use and care of respirators meet the applicable standards and specifications set out and referred to in the CSA Standard Z94.4-18, “Selection, use, and care of respirators.”

Part 45.18 (2) The employer shall ensure that where air is provided for the purpose of any respiratory protective equipment, the air meets the applicable standards and specifications set out and referred to in CSA Standard Z180.1-19, “Compressed Breathing Air and Systems.”

The Standard also outlines the roles which must be included in a respirator program (See *Roles to be Included in a Respirator Program*), as well as the essential components of a program (See *Components of a Respirator Program*).

When respirators are used in a workplace, a written respirator program must be developed, implemented, and followed by all those who have a role to play in their safe and effective use.

Roles to Be Included in a Respirator Program

There are several roles which must be filled to implement a respirator program. The effectiveness of the program will depend on the skill of a variety of qualified persons. Depending on the size of the workplace, and the scope of the program, the same person may be able to fill more than one of the required roles.

Similarly, it may take more than one person to fill one single role. The Standard requires that all program roles are assigned to individuals who can demonstrate a level of competency for their area of responsibility.

A respirator program shall include the following roles:

- Program Administrator
- Respirator User
- Supervisor
- Person Selecting the Respirator(s)
- Fit Tester
- Issuer of Respirator
- Maintenance Personnel
- Healthcare Professional

Occupational Health and Safety Act General Regulations

Competent person means a person who

(i) is qualified because of that person's knowledge, training and experience to do the assigned work in a manner that will ensure the health and safety of persons in the workplace, and

(ii) is knowledgeable about the provisions of the Act and the regulations that apply to the assigned work, and about potential or actual danger to health or safety associated with the assigned work.

Components of a Respirator Program

Where respirators provide the only practicable means of hazard control, the employer is responsible for developing and implementing a written respirator program. The Standard outlines, and explains in detail each of the components which must be included in such a program. The required components are as follows:

- Roles and responsibilities
- Hazard assessment
- Respirator selection
- Training
- Respirator fit testing
- Use of respirators
- Cleaning, inspection, maintenance and storage of respirators
- Health surveillance
- Program evaluation
- Recordkeeping

Respirator fit testing is the use of a qualitative or quantitative method to evaluate the specific make, model, and size of respirator on an individual.

Roles and Responsibilities

It is important that the roles and responsibilities of administering the respirator program are defined and outlined, and understood by all involved. Clear understanding of responsibilities, as well as clear channels of communication among all parties, is important for the program to run effectively. The Standard outlines the following roles and responsibilities:

- *Program Administrator -* is responsible for the administration of all aspects of the program.
- *Respirators Users -* are responsible for the use and care of respirators in accordance with written instructions and training.
- *Supervisors* - monitor respirator use in relation to workplace conditions to ensure that respirator program requirements are being met.
- *Person Selecting Respirators* - reviews the identified respiratory hazards, and selects respirators suitable for protection against those hazards.
- *Fit Tester* - conducts fit tests to verify the user's ability to obtain an acceptable fit, and effective seal, and to ensure competency in putting on and removing the respirator.
- *Issuer of Respirators* - acts as a gatekeeper, issuing respirators only to those who are qualified.
- *Maintenance Personnel*- is responsible for inspecting, maintaining, repairing, and testing the respirators, and keeping records of such.
- *Healthcare Professional* - assesses the suitability of the user for the selected respirator, and fulfills the related reporting duties.

Clear understanding of responsibilities is important for the program to run effectively.

Hazard Assessment

A hazard assessment must be performed by a competent person to determine what respiratory hazards are present (Hazard Identification), to what extent workers are at risk from these hazards (Risk Assessment), and how the health and safety of workers will be protected (Hazard Control).

Hazard Identification

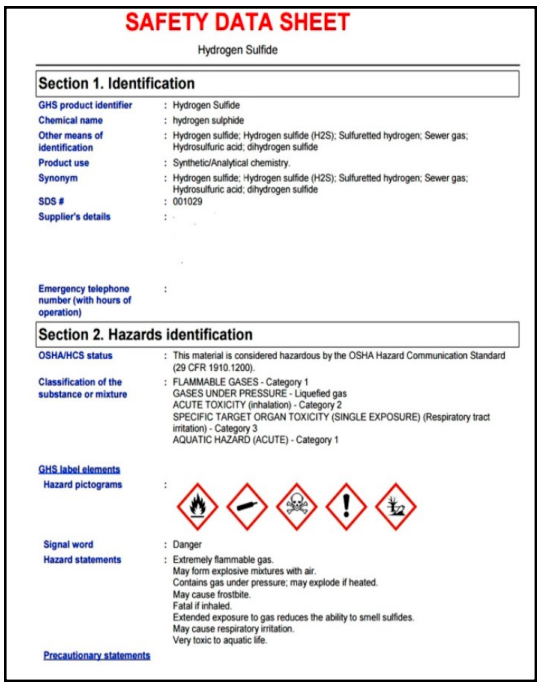
Although there are several categories of workplace hazards, (Biological, Chemical, Ergonomic, Physical, Safety, and Psychological), and all categories must be considered when performing a thorough hazard assessment, the focus of a respiratory hazard assessment is primarily chemical hazards. Identifying the respiratory hazards present should include the following steps:

- Collect and review information around tasks which may involve breathing hazards.
- Determine what potential hazards are present.
- Identify contaminants, and determine their physical state.
- In case of oxygen deficiency, measure the oxygen concentration levels and determine occupational exposure levels, based on an estimate of toxicity for each contaminant.

Hazard Control

A comprehensive and reliable source of information about products being used in the workplace is the *Safety Data Sheet* (SDS). SDSs, an integral part of the Workplace Hazardous Materials Information System (WHMIS), are summary documents on the hazards of the product, safe use of the product, what could happen if recommendations are not followed, and how to recognize symptoms of exposure.

Usually written by the manufacturer or supplier of the product, SDSs may also be prepared by an employer if the product is produced in that particular workplace. SDSs provide information additional to that on the labels, and are an important resource for employers in accurate hazard identification.



SAFETY DATA SHEET

Hydrogen Sulfide

Section 1. Identification

GHS product identifier	: Hydrogen Sulfide
Chemical name	: hydrogen sulphide
Other means of identification	: Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide
Product use	: Synthetic/Analytical chemistry.
Synonym	: Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide
SDS #	: 001029
Supplier's details	:
Emergency telephone number (with hours of operation)	:

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas ACUTE TOXICITY (inhalation) - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 AQUATIC HAZARD (ACUTE) - Category 1
GHS label elements	
Hazard pictograms	:
Signal word	: Danger
Hazard statements	: Extremely flammable gas. May form explosive mixtures with air. Contains gas under pressure; may explode if heated. May cause frostbite. Fatal if inhaled. Extended exposure to gas reduces the ability to smell sulfides. May cause respiratory irritation. Very toxic to aquatic life.
Precautionary statements	

Risk Assessment

Risk assessment is the process of determining the probability and severity of a worker being exposed to injury or illness. In terms of respiratory illness, the level of risk is based on *how often* a task involving a potential exposure is carried out, how *likely* an exposure is, and how *serious* an associated health hazard could be. A risk matrix is a helpful tool to determine the level of risk. For help creating a risk matrix, refer to our *Guide to Performing a Hazard Assessment*. Assessing the risks of respiratory hazards present in the workplace should include the following steps:

- Determine existence of an immediately dangerous to life or health (IDLH) atmosphere. An IDLH atmosphere shall be assumed in any of the following situations:
  - Structural firefighting
  - An untested confined space
  - An area where a known hazardous contaminant is present at or above published IDLH concentrations
  - An area where a known hazardous contaminant is present at an unknown concentration
  - An area where the oxygen concentration is confirmed to be below 19.5%
  - An area where, in the opinion of a competent person, the condition presents a potential IDLH atmosphere
- Determine if there exists an applicable health regulation or substance-specific standard.
- Check for the presence of oil.
- Consider what possible injury or illness might result from absorption of the contaminant through skin or eyes.
- Re-assess on a regular basis, or as conditions change.

Hazard Control

Once the hazard identification and risk assessment have been completed, and it has been determined that a respirator is required, the selection process begins. The Standard states, "The program administrator shall establish procedures to ensure that only qualified persons are tasked with respirator selection."
Respirators may be grouped into the following categories:

- Atmosphere-supplying respirators
- Air-purifying respirators, powered and non-powered
- Combined respirators
- Escape-only respirators

For a good basic outline of each of the respirator types, see WorksafeBC's *Breathe Safer: How to Use Respirators Safely and Start a Respirator Program*. The Standard provides more information, as well as a respirator selection flow chart, and the detailed instructions on how to follow such a process.

Occupational Health and Safety Act General Regulations

Part 45.20 (3) The employer shall ensure that where a worker is wearing an approved air-line or approved air-hose type respirator in an atmosphere immediately harmful to the worker
(a) the air supply source shall be attended by another worker who shall be equipped to effect rescue or render assistance if the worker is rendered unconscious or otherwise incapacitated; and
(b) the worker shall be provided with and carry an auxiliary supply of compressed respirable air of sufficient capacity to enable the worker to escape from the area in an emergency or until rescue is effected.

Training

The training component of a respirator program is all about the various kinds of training and competencies required in a workplace where respirators are in use. It is possible that the various training responsibilities are fulfilled by different people, and when that is the case, clear definition of roles and responsibilities will be needed, as well as effective communication among all involved.

Training must be provided by a competent person or persons, and those responsible for training workers on respirator care and use, must themselves be capable of demonstrating the care and practical use of the elements they are teaching. Specialized training will be required for several of the roles in a respirator program, including those who:

- Select respirators
- Medically assess respirator users
- Conduct fit testing
- Instruct workers on respirator care and use
- Monitor respirator limitations
- Instruct workers on respirator repair and maintenance
- Maintain records

Specialized training will be required for several of the roles in a respirator program.

Fit Testing

Once an appropriate respirator has been selected for use, fit testing must be carried out to ensure the worker is able to wear the tight-fitting device comfortably while maintaining an effective seal. Because no single make, model, or size of respirator can be expected to fit all users, a fit test is done to verify that a specific make, model, and size is appropriate for a specific worker. The Standard stipulates that no worker shall use or be assigned to use a tight-fitting respirator until a satisfactory fit has been confirmed through a qualitative fit test and quantitative fit test. The fit test process includes a user seal check, a qualitative respirator fit test (a test that relies subjectively on the user's taste and smell to detect leakage), and a quantitative respirator fit test (a test that is able to objectively determine a respirator's effectiveness through the use of a tool or machine that measures the amount of leakage).

To ensure the results of a fit test are valid, the worker must be free from interference of facial hair where the respirator seals to the skin of the face or neck. The worker should present themselves in the same manner in which they would be doing the task (the PPE they would be required to wear, the way they would wear their hair, the presence of eyeglasses, dentures, etc.) Fit tests must be done on workers at least every two years, and when changes to a user's physical condition (e.g., significant weight loss or changes to facial or dental features) could affect the respirator fit.

Occupational Health and Safety Act General Regulations

45.19 Shaving

Every employer shall ensure that workers required to use a respirator shall be clean shaven where the respirator seals with the face.

Fit test must be done on workers at least every two years, and when changes to a user's physical condition could affect the respirator fit.

Respirator Use

Conditions around respirator use must be clearly outlined in written procedures, and must include instructions for the following:

- The required health screening and fit testing of the respirator user
- The circumstances (routine use, escape) under which the respirator is to be used
- Communication strategies among workers while doing a task, while wearing respirators
- Procedures to follow in case of breakthrough detection
- The need for a user seal check each time the respirator is put on
- The requirements for an effective skin seal
- Change-out procedures, schedules, and service time
- IDLH procedures

Occupational Health and Safety Act General Regulations

45.20 Signs

(1) Every employer shall ensure that access routes to work areas where workers may be exposed to oxygen deficient atmosphere or harmful concentrations of air contaminants shall be posted with signs and specifying

(a) the required personal protective equipment; and

(b) the areas and hazards involved.

Rescue team

(2) The employer shall ensure that sufficient workers who are trained in rescue procedures are immediately available whenever workers are working in areas where an oxygen deficient atmosphere or harmful concentrations of air contaminants exists or is likely to develop. The rescue workers shall have immediate access to appropriate breathing apparatus or other aids necessary to effect a rescue.

Inspection, Maintenance, Cleaning, and Storage

Careful maintenance of respirators is important on a day-to-day basis to ensure the respirators retain their effectiveness throughout all the while they are used in the workplace. Details to guide all aspects of respirator maintenance may be found in the Standard. Respirator care shall adhere to the manufacturer's instructions, and maintenance programs should include the following tasks:

- Cleaning and sanitizing (those not designed for cleaning shall be disposed of after each use)
- Inspection before and after each use, and according to a schedule for emergency-use respirators
- Repair and test, by a competent person or authorized service agents
- Storage, in such a way as to protect them from elements that could erode their condition
- Proper storage of cylinders that are in long-term storage
- Rotation of cylinders in current use

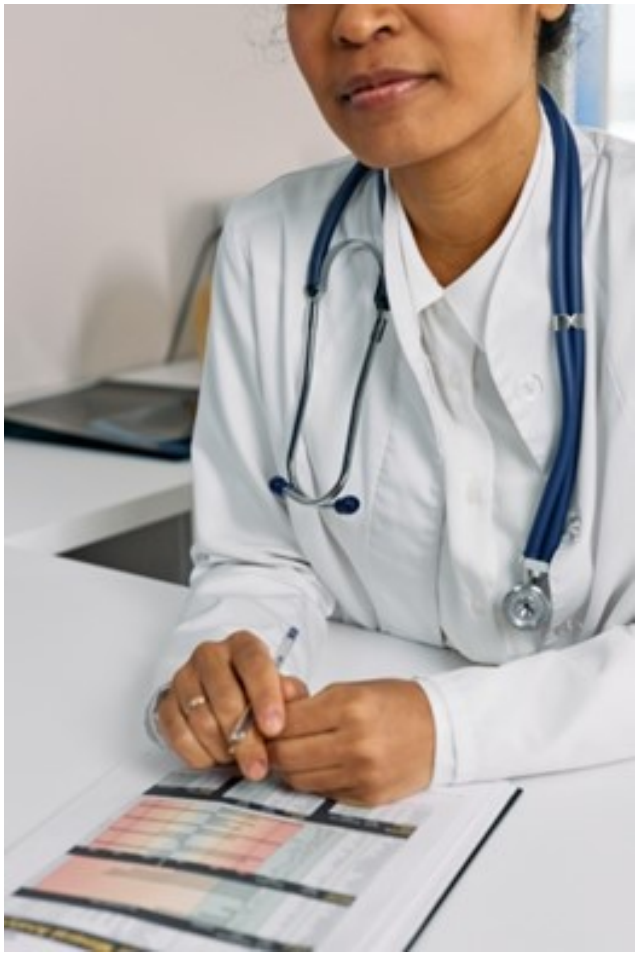
Details to guide all aspects of respirator inspection, maintenance, cleaning, and storage may be found in the Standard.

Health Surveillance of Respirator Users

Health surveillance of respirator users must be carried out to ensure they have no medical conditions (physical or psychological) which might prevent them from using a respirator safely.

A screening form can be used by a program administrator to determine if further evaluation by a health care professional is needed. The program administrator must establish written procedures for the following:

- Initial screening
- Consulting a health care professional
- Providing work and respirator details to health care professional
- Determining if, and what accommodations might be needed, in the case of limitations (replacing a non powered APR, for example, with a powered one)
- Keeping all collection of health information confidential



Health surveillance of respirator users must be carried out to ensure they have no medical conditions which might prevent them from using a respirator safely.

Program Evaluation

A necessary part of any workplace program is ongoing evaluation; mechanisms must be in place to routinely review a program's effectiveness, and to determine what corrective actions may be needed. This is especially true of a respirator program in order to ensure that respirator users are completely protected while carrying out their duties. A respirator program review should include consideration of the following:

- Is the program still in compliance with PEI OHS regulations?
- Are roles and responsibilities of all parties clearly defined and followed?
- Are all documented procedures still valid and effective, particularly those around respirator selection, use, and maintenance?
- Do workplace practices comply with program requirements?
- Have all performance issues been addressed and resolved?
- Has proper training been carried out, and is this reflected in worker competency?

Routinely reviewing a respirator program's effectiveness is important in order to ensure that respirator users are completely protected while carrying out their duties.

Record Keeping

The final item in the list of required components of a respirator program is keeping accurate records of all activities related to the program. Careful documentation is an important part of managing the ongoing program. The program should state who is responsible for the varied record-keeping tasks, and include procedures for completing each. Records must be maintained for the following aspects of respirator use:

- Roles and responsibilities
- Hazard assessment, and periodic monitoring of workplace atmosphere
- Respirator selection and inventory
- Training (including all training necessary for the various aspects of a respirator program)
- Fit test results
- Cleaning, maintenance, and storage of respirators (including filters and cartridges)
- Health surveillance records
- Program evaluation

Careful documentation is an important part of managing an ongoing respirator program

SUMMARY

Overseeing a workplace respirator program is no easy task. With acquired skill and knowledge, committed team members, and care and attention to the details laid out in the Standard, however, it can be made manageable and straightforward for all involved. In summary:

- When breathing hazards are present in Prince Edward Island workplaces, and when engineering or administrative control measures are inadequate in reducing these hazards, or when these control measures must be shut down for any reason, workers must use approved respirators to protect their health and safety.
- When respirators are used in the workplace, a written respirator program which meets the requirements of CSA Standard Z94.4-18, “Selection, care, and use of respirators,” must be developed and implemented.
- A respirator program shall address roles and responsibilities; hazard assessment; respirator selection; training; respirator fit testing; use of respirators; cleaning, inspection, maintenance and storage of respirators; health surveillance; program evaluation; and recordkeeping.
- All respirator program roles must be assigned to competent persons.

WHERE TO LEARN MORE ABOUT RESPIRATORY PROTECTION

For more information on respirators, please visit the WCB website for access to the following:

- Occupational Health and Safety Act
- General Regulations
- WHMIS Regulations
- OHS Service Providers

The Canadian Centre for Occupational Health and Safety (CCOHS) is an excellent source of OHS-related information, including that pertaining to respirators in the workplace

Access to CSA Standard Z94.4-18 - *Selection, use, and care of respirators* may be obtained through this link: CSA Group's online Communities of Interest (COI)

A WorksafeBC publication provides a downloadable guide to the safe use of respirators in the workplace, *Breathe Safer: How to Use Respirators Safely and Start a Respirator Program*

Additional reliable sources include:

- Safety Data Sheets of all hazardous products used in the workplace
- Manufacturer's written instructions
- Manufacturer's technical experts

Appendix A – Viewing and Accessing the CSA Standards

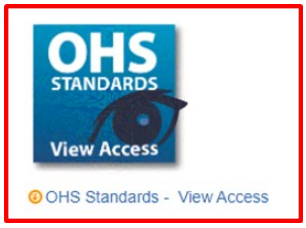
Many regulations made under PEI's *Occupational Health and Safety Act* require compliance with standards published by the CSA Group. These standards define requirements for reducing the risk of workplace injuries.

CSA allows free (viewable only) access to standards referenced in the regulations. Registration with "CSA Communities" is required to view the standards; however, you are under no obligation to purchase anything. CSA allows free (viewable only) access to standards referenced in the regulations. Although registration with "CSA Communities" is required to view the standards, you are under no obligation to purchase anything. Users can register for a username through CSA Group's online Communities of Interest (COI) platform. Follow the directions to create an account.

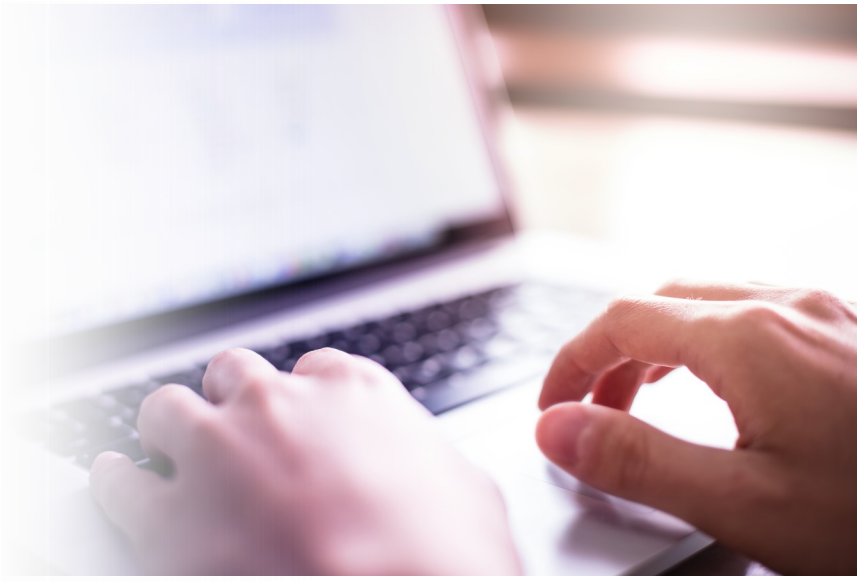
Once the account is created, enter the site to start navigating through the CSA Standards by selecting the orange "View Standards" icon.

Figure 2

Scroll down and select "OHS Standards – View Access"



Select "Prince Edward Island" from the list of jurisdictions, scroll through the list of standards to Z94.4-18, and select "View" from the Current Edition column. Select "Continuous" from the drop-down menu, to begin reading the standard.



Although the "view" option is convenient for a brief overview of the standard, employers are encouraged to purchase their own hard copy of the standard so they, and those they hire for defined roles and responsibilities in the respirator program, have full and ready access to the information contained there.

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