

For elastomeric and disposable respirators

Fit testing is a process to identify the correct make, model and size of respiratory protection for workers. It includes information to ensure workers understand the proper application, maintenance and pre-use testing for respiratory protection, and includes a practical demonstration that a worker can competently put on (don) and remove (doff) the respirator.

A respirator is different than a surgical/procedural mask. A respirator:

- is almost twice as effective than a mask in protecting workers from air borne events
- requires proper fitting process to ensure a tight seal to the face.

Legislation

Under Saskatchewan's *Occupational Health and Safety (OH&S) Regulations, 2020* an employer must identify the existing and potential risks to the health or safety of workers.

OH&S Regulations pertaining to respiratory protection programs include, but are not limited to:

3-11(1) ...occupational health and safety program must include:

(b) The identification of existing and potential risks to the health or safety of workers...

7-1(1) If it is not reasonably practicable to protect the health... by design of the plant and work process, suitable work practices or administrative controls, an employer... shall ensure that every worker wears or uses suitable and adequate personal protective equipment.

7-3(1) If a worker is likely to be exposed to dust, fumes, gas, mist, aerosol or vapour or any airborne contaminant that may be present in any amounts that are harmful or offensive to the worker, an employer or contractor shall:

- (a) provide an approved respiratory protective device*
- (b) ensure... regularly cleaned and maintained...*

7-3(2) If a respiratory protective device as required by subsection (1) is provided to a worker, the employer or contractor shall ensure that the worker:

- (a) has been trained by a competent person in the proper testing, maintenance, use and cleaning of the respiratory protective device and its limitations.*

21-8 If it is not reasonably practicable to reduce a worker's personal exposure to a chemical substance or biological substance to the contamination limit... an employer shall provide an approved respiratory protective device...

Respirator Fit Test Orientation

Worker Rights

The occupational health and safety legislation grants three important rights to workers:

1. The right to know.
2. The right to participate.
3. The right to refuse.

1. Right to Know

Every worker has the right to be:

- informed about hazards at work;
- trained to recognize those hazards; and,
- trained to protect him or herself

Workers have the right to know about any hazards (potential or actual) to which they may be exposed, before they are confronted with the hazards in the workplace. This means workers have the right to be trained and to have information on any factors that would in any way compromise their safety or their health (example: clients/patients/residents, machinery, equipment, working conditions).

2. Right to Participate

In workplaces having 10 or more workers, the OHC is the principal vehicle for worker participation in the workplace. It is the forum for cooperative involvement of both labour and management. The committee brings together workers' in-depth, practical knowledge of specific jobs and management's larger overview of job interrelationships, general company policies and procedures.

In workplaces not requiring an OHC, the OH&S representative is the key vehicle for worker participation. The representative is the liaison between the employer and co-workers, bringing worker concerns to the attention of the employer.

Worker participation assists in developing a strong safety culture. Workers participate by:

- being knowledgeable regarding their rights and responsibilities under the legislation;
- asking for information from the supervisor;
- reporting health and safety concerns;
- discussing health and safety concerns at meetings;
- working safely;
- attending training;
- assisting in inspections and investigations; and,
- participating in safety - workers assist in cultivating a culture of safety.

3. Right to Refuse

A worker has the right to refuse work that the worker has *reasonable grounds to believe is unusually dangerous* to their health or safety, or to the health and safety of others in the workplace. This right is set out in Division 5 of the *Saskatchewan Employment Act*, section 3-31.

First the worker must have reasonable grounds to believe. It is not what the individual worker believes but what a reasonable prudent worker would believe if he or she were in the same circumstances as the refusing worker. A reasonable prudent worker could be someone else doing the same act or series of acts.

Next the worker must consider if the act or series of acts is unusually dangerous.

Respirator Fit Test Orientation

We may encounter varying degrees of danger in our jobs; however, the Right to Refuse is about an UNUSUAL danger that could include:

- a danger that is not normal for the job; and/or
- a danger that would normally stop work; and/or
- a situation for which the worker isn't properly trained, equipped or experienced.

The right to refuse is the right of an individual and not the right of a group.

The National Standards of Canada (*CSA Z94.4-18 Selection, use and care of respirators*) sets the standards for workplace respiratory and fit testing programs. This Standard outlines the topics that should be in place as part of a Respiratory Protection Program:

- roles and responsibilities (e.g., program administrator, supervisor, worker)
- hazard assessment
- selection of the appropriate respirator
- respirator fit testing
- cleaning, inspection, maintenance and storage of respirators
- health surveillance of respirator users
- program evaluation, and
- recordkeeping.

Roles and Responsibilities in a Respiratory Protection Program

Everyone is accountable for safety. The following provides a brief overview of three of the roles and responsibilities set out in the Standard.

Employer - has required legislated duties. Ensures qualified supervisors are in place.

Program Administrator - ensures qualified personnel are assigned roles; assessments for respiratory hazards are conducted; a list of respirators is maintained for each respiratory hazard; control measures evaluated; procedures established; training process completed; use of respirators is monitored; program is reviewed; monitoring system and performance measures in place ; written instructions/records are maintained; procedures for emergency and rescue operations are developed.

Supervisor - ensures training and testing are complete; users demonstrate competency in use of the respirator; procedures are followed for cleaning, inspection, maintenance, repair, storage, sanitization, decontamination procedures; respirator is used in accordance with instructions, training received and safe operating procedures established; respirator users maintain required interference-free respirator seal. A supervisor is also the worker's resource person, works with the program administrator and occupational health committee regarding concerns, changes, etc.

Fit tester - the fit tester shall follow the protocols identified in the respiratory protection program and will:

- apply program requirements regarding interference concerns;
- verify that the you are appropriately trained and competent in respirator inspection, donning, performing user seal checks, and doffing;
- conduct fit tests to verify your ability to obtain an acceptable fit and an effective respirator seal;
- document your competency and corresponding fit test results;
- ensure the proper cleaning and sanitizing of fit testing equipment and respirators used for fit testing;
- ensure and document the maintenance, calibration, and repair of fit test equipment; and,
- notify the program administrator of respirator users' concerns.

Respirator Fit Test Orientation

Respirator users, respirator selector, respirator maintenance personnel, issuer of respirators and health care professional's roles and responsibilities are also key positions in a respiratory protection program.

This orientation will focus on your role and responsibilities for fit testing.

Prior to being fit tested, you must complete this orientation as well as a *Respirator User Screening Form* to ensure you can safely use the respiratory protection identified for your area. You will be provided with the form prior to the testing. **You will not be fit tested until orientation and the screening form have been completed.**

Once you have received the respiratory fit test training, you are responsible to:

- follow all written procedures regarding the program including use, inspection, maintenance and storage of your respirator
- follow all requirements for respirator use such as being clean shaven to ensure a good face-respirator seal.
- participate in refresher training and demonstrate ongoing competent use of your respiratory protective equipment.
- protect your own health and safety as well as that of fellow employees by following safe work procedures as they apply to respiratory hazards in your area.
- inform your supervisor if concerns arise with equipment, process, procedures, health etc., which will affect the safe and efficient use of respiratory equipment
- remove any respirator from service that you determine is defective and report it to your supervisor
- perform user seal checks after donning a tight-fitting respirator.

Two Main Classes of Respiratory Hazards

Types of respiratory hazards on site vary from area to area. The two main classes are oxygen deficient and air borne contaminants.

1. **Oxygen deficient:** Where the potential for an oxygen-deficient atmosphere exists, the oxygen concentration is to be measured. Where oxygen concentration is confirmed to be below 19.5% (CSA Standard Z94.4-18), the cause of the deficiency shall be determined and
 - a) ongoing monitoring shall be performed; or
 - b) the atmosphere shall be assumed to be IDLH [immediately dangerous to life or health].

NOTE: None of the respirators you will be fit tested for provide protection in oxygen depleted atmospheres. Air-supplying units are not part of this training and employees need specialized training to use air-supplying respirators. Employees should never be allowed to enter suspect or confirmed oxygen depleted environments unless specifically trained - check with your supervisor before entering these environments.

2. **Air borne Contaminants:** the work area has levels of contamination which exceed workplace guidelines.

Air contaminants include:

- Biological: viruses, bacteria, molds etc., found in a variety of areas in the health care setting.
- Dust: particles released during operations such as grinding, sawing, housekeeping.
- Mists: Particulate or liquid droplets released during painting, insecticide spraying, patient care, housekeeping.
- Vapours: gaseous forms of liquid released during painting, patient care.
- Fumes: vapourized condensed metals released during welding operations.
- Fibers: particulate matter which is longer than it is wide. Asbestos.
- Gases: gases released usually due to leaks in a system but can be found naturally forming (i.e. underground vaults, sewer systems, etc.). Gases can displace oxygen in an atmosphere causing oxygen deficiencies.

Respirator Fit Test Orientation

Based on the hazard assessment completed at your facility, the type of respirator you will be testing with has been chosen in advance. You will be tested on disposable or elastomeric, or both.

Disposable: these respirators tend to be fairly inexpensive; they likely have packaging marked as “single use”.

- They are often made of cloth-like fibers.
- They cannot be washed and reused.
- N95 and N100 fall in this category.

Elastomeric: these can include non-powered and powered respirators.

- This style is reusable and must be cleaned and maintained in order to work properly.
- They are usually made of rubberized compounds.
- Individual parts can be washed.
- There are different types of cartridges so the type of hazard group must be considered when making decisions as to what type of cartridge should be used.
- The cartridges are replaceable and logs should be kept.
- This type will mainly be found in the maintenance department and possibly some in lab and housekeeping.

OH&S Regulation 7-2 specifically (1)(f) *If an employer...is required by these regulations...to provide personal protective equipment...inform the workers of the reasons why the personal protective equipment is required to be used and of the limitations of its protection.*

The OH&S Regulations clearly state that employees have to know the hazards associated with their task, how to protect themselves, and signs and symptoms that might present themselves in cases of overexposure. Your employer is legislated to developing policies and programs that address area specific hazards. To understand the policies, hazards and other guidelines for when your respiratory protection should be used you should talk to your supervisor.

You must also have access and be knowledgeable in other policies and safe work procedures that may have to be used in conjunction with respiratory protection. For example: TB and SARS infection control procedures, hot work, confined space entry and pesticide use.

Respiratory Fit Testing

- All employees to be fit tested must have completed this orientation package, along with a screening form.
- During the fit testing process, you may have to try a number of respirator sizes to ensure you have the closest fit.
- The fit tester will explain the method of testing and the tasks you will do when the respirator is on.
- If you feel any leaks or taste the test agent let the tester know immediately.
- Once the fit testing is completed, ensure you know the size and make of respirator you passed the test with and use it every time you have a need for respiratory protection.

How often is testing completed?

The Standard states that at least every two (2) years fit testing shall be carried out, unless:

- there is a change in **YOUR** physical condition (significant weight gain or loss, changes to facial or dental features that could affect the respirator fit)
- there is a change in respirator (e.g., make, model, size)
- if you experience discomfort during use or difficulty in completing a successful user seal check
- when a change in personal protective equipment (PPE) use that could affect the respirator

Respirator Fit Test Orientation

You must be aware of several personal care items that may impact your face/respirator seal.

- You must be clean shaven as facial hair can decrease the seal. Even moustaches and side burns can affect the seal.
- Severe scarring and severe acne may be exacerbated by the use of respirator or can impede the seal.
- Facial piercings and heavy sweating may also impede seal.

NEGATIVE AND POSITIVE USER SEAL CHECKS

Each time you use a respirator you must do what is called “Negative/Positive user seal check” before entering the hazard area. What follows is a written description of those checks and your fit tester will give you a hands on demonstration during your fit testing.

Negative Check:

A negative-pressure user seal check can be conducted on air-purifying respirators and disposable respirators equipped with tight-fitting face pieces. This check may be difficult to conduct on respirators incorporating air-purifying elements (size or shape) that do not allow the inhalation inlets to be temporarily sealed.

Procedure

The procedure for conducting the negative-pressure user seal shall be conducted as follows:

- (a) The user seal check consists of closing off the inlet opening(s) of the respirator air-purifying elements so that upon inhalation, passage of air into the face piece will not occur. In the case of air-supplied respirators, the user seal check consists of closing off the air supply hose.
- (b) To avoid possible disruption of the facial seal, a non-permeable, flexible plastic wrap may be used to seal the air inlet(s) instead of attempting to maintain a seal with the hands.
- (c) The user shall inhale gently and hold his/her breath for at least 5 seconds. The face piece will collapse slightly on the face and shall remain collapsed while the breath is held.
- (d) During this period, the face piece shall not be disturbed by the user attempting to maintain a seal on the inlet opening of the air-purifying elements.
- (e) If the face piece remains collapsed while a breath is being held, the user seal check is successful.
- (f) If the face piece does not remain collapsed while a breath is being held, the user shall verify that nothing obstructs the sealing surface, adjust the face piece and harness, and repeat the user seal check.
- (g) If the face piece still does not remain collapsed while a breath is being held, the user shall remove the respirator, inspect the components for the cause of the leakage, correct any problems discovered, or obtain a replacement respirator and repeat the user seal check.
- (h) Users shall not use a respirator for which a user seal check cannot be completed successfully.

Respirator Fit Test Orientation

Positive Check:

A positive-pressure user seal check can be conducted on respirators equipped with tight-fitting face pieces that contain both inhalation and exhalation valves.

Procedure:

Note: *For some respirators, the positive-pressure user seal check requires that the exhalation valve cover be removed, then replaced following completion of the user seal check.*

- (a) The user shall don the respirator face piece, closing off the exhalation valve or breathing tube or both, and exhale gently.
- (b) During this period, the face piece shall not be disturbed by the user attempting to maintain a seal on the exhalation valve.
- (c) If a slight positive pressure can be maintained inside the face piece without detection of any outward leakage of air, the user seal check is successful.
- (d) If a slight positive pressure cannot be maintained inside the face piece for 5 seconds, the user shall verify that nothing obstructs the sealing surface, adjust the face piece and harness, and repeat the user seal check.
- (e) If a slight positive pressure still cannot be maintained inside the face piece, the user shall remove the respirator, inspect the components for the cause of the leakage, correct any problems discovered, or obtain a replacement respirator and repeat the user seal check.
- (f) The user shall not use a respirator for which a user seal check cannot be completed successfully.

Cleaning, Inspection, Maintenance and Storage

In order to be effective, respiratory equipment needs to be maintained according to manufacturer's specifications. CSA Z94.4-18 states programs meeting the Standard must include cleaning and sanitization, inspection, testing, repair, storage and recordkeeping. This section does not include procedures to be followed for Self-contained Breathing Apparatus or Special Use Units.

The following information should be considered when an employer develops its' individual maintenance and use protocols and procedures regarding respiratory programming. Additional information may have to be added to the User Instruction Manual in order to meet individual facility requirements.

Disposable respirators:

In the case of disposable respirators we will consider two areas of use: known contamination/high risk areas and routine prevention.

Known Contamination/High Risk: In areas where staff are treating known infectious or high risk cases it is recommended that respirators are disposed of after patient treatment. The respirator should not be worn outside of the containment area and that infection control procedures should be followed.

Elastomeric respirators:

Remembering that this type of respirator is not frequently used for patient care, instead it is most often used in maintenance, laboratory and housekeeping departments to prevent chemical contamination. The user guidelines for cleaning and maintenance of elastomeric respirators are different.

Respirator Fit Test Orientation

Cleaning elastomeric respirators:

1. Must be done after each use by the person who used it.
2. Remove cartridges and pre-filters before washing.
3. Disassemble respirator and wash in warm soapy water using a soft sponge. Detergents used for cleaning should contain a disinfecting agent.
4. Rinse well with clean water.
5. Let air dry.
6. Change pre-filters and cartridges if necessary and reassemble.
7. Store in corresponding plastic bag.
8. Allow room during storage so respiratory is not disfigured.
9. Enter cleaning, use time and atmosphere exposure in logbook.
10. In case of Hantavirus exposure additional cleaning guidelines must be followed.

**All equipment should be rinsed well
as left over detergents can cause skin irritation.**

Equipment inspections:

1. All parts should be inspected for tears, fraying etc., by the user before and after each use.
2. In the case of canisters, cartridges and filters usage logs should be consulted to ensure change out occurs at recommended intervals.
3. All defects should be dealt with before using the respirator.

Maintenance:

1. Respirators of this type should be examined before each use for tears, cracks etc. If parts are damaged the respirator should be taken out of service until it is mended.
2. All maintenance should be noted in logbook.
3. Some maintenance departments may be responsible for monthly checks of all facility respirators of this kind.

Storage:

1. All respiratory equipment should be stored in a clean, dry location with adequate room to prevent curling or distortion of the respirator.
2. Respirators should be stored in a bag, box or other storage unit to keep them clean.
3. Cartridges, filters and canisters should be stored in a sealed plastic bag as these items will still continue to remove substances from the air around them.
4. Respirators should be stored clean.

Cautions/Limitations:

Know the cautions/limitations of the respirator fitted for you. This can be found on the packaging or on the instruction sheet from the manufacturer.

Record Keeping:

Your completion of orientation, respiratory user screening form (and if needed the medical assessment) along with the results of your fit testing will be kept on file by your employer. Any medical information is considered confidential and will be kept in a secure place.

Respirator Fit Test Orientation

Prior to Attending Fit Testing

- ensure you **do not** eat, drink (except plain water), smoke, eat candy or chew gum for at least 15 minutes before the test is conducted
- be clean shaven - facial hair will interfere with an effective respirator seal
- present yourself in the same personal condition you would expect to be in when using the respirator:
 - wear your eye glasses/contact lenses/dentures that you would normally wear
 - have your hair in the manner you do when at work (e.g., hair bun)
 - include any personal protective equipment (such as eye protection/face shield)
 - personal accessories, such as head coverings, garments, facial jewellery or other items shall not come between the skin and the sealing surface of the respirator
 - make-up, creams and lotions can also interfere with effective respirator function.

Ensure you are on time for your fit testing. It is an investment in your safety.

Summary:

If you have any concerns regarding your equipment or the hazards found in your area contact your supervisor. Your supervisor will answer your questions or refer you to the appropriate person who can assist you.

Never enter a suspected oxygen deficient area as the respirator you have been trained on is not adequate to meet the dangers associated with that hazard. Check with your supervisor before entering these environments. If you have any concerns regarding oxygen levels in a confined space, air quality testing must be done by an appropriately trained person.