



Respiratory Protection Standard

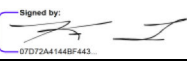
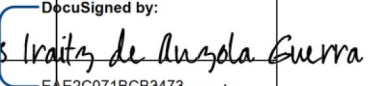
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3	2025/08/11	Transposed to new template. Added content from Breathing Air Guideline that was required by regulations and transferred to the Respiratory Protection Standard.

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About this Standard

Purpose The purpose of this standard is to outline safe work requirements related to Respiratory Protective Equipment.

1. Respiratory Protection Program

1.1 Respiratory Protection Program Requirements

Personnel in the Program Personnel in the program have job duties that require them to wear a respirator. Examples include:

- Emergency response activities
- Production and maintenance
- Brownfield construction
- Well drilling/completions/servicing

Personnel Excluded from the Program Workers conducting greenfield construction, visitors escorted in areas absent of atmospheric hazards, or personnel not under CPC operational control are excluded from the program. Examples include:

- Regulators
- Auditors
- Office, delivery, and camp/catering personnel
- Security



NOTE: Exceptions may be required based on hazard assessment or local operating conditions.

Clean Shaven Requirements Personnel included in the respiratory protection program and may be required to don RPE are required to be clean shaven.



NOTE: Personnel who are excluded from the program will not have to be clean shaven unless a local hazard assessment indicates otherwise.

Fit Testing Fit testing is quantitative or qualitative following CSA Standard Z94.4-02 and is carried out by trained and certified personnel.

Fit testing is required prior to using respiratory protection, and repeated:

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Province	Frequency
Alberta	Every 2 years
British Columbia	Annually



NOTE: Re-testing is required if a new respirator is assigned or if there is a significant change that could affect the seal or fit.

Medical Assessment Required

A medical assessment is required for workers in the respiratory protection program and includes:

- pre-use and periodic assessments by the occupational health team,
- completion of a medical self-assessment form,
- approval regarding use of respiratory protection equipment and
- further medical evaluation when required.

Training

Workers must be fit-tested and trained in the use and care of respiratory protective equipment.

CPC employees are to be trained in respiratory protective equipment as per the CPC HSE Training and Competency Program (ALL-A0A-00-HPR-00006).

1.2 Selection of Respiratory Protection Equipment

Types of Respiratory Protection Equipment

The following types of respiratory protection are available to personnel:

- Self-Contained Breathing Apparatus (SCBA), positive pressure
- Supplied Air Breathing Apparatus (SABA) with 5-minute escape bottle, positive pressure
- Air purifying cartridge respirator with organic vapour, particulate, or combination cartridge (e.g., OV and P100), available in:
 - Full face
 - Half face



NOTE: SCBA and SABA are the only equipment approved for use in H₂S environments.

SCBA and SABA

When using SCBA and SABA consider the following:

- Use SCBAs and SABAs in pressure demand mode or SABAs in continuous flow mode.

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- Cease work and leave the area upon low-pressure alarm.
- Use a buddy system with a communication plan.
- The buddy is onsite, equipped, and capable of rescue.

Air Purifying Respirators

When using air purifying respirators ensure the following:

- Respirators are assigned for individual use.
- Individuals clean and maintain respirators.
- The right cartridge is used for the hazard (i.e., organic vapours, ammonia/amines, dusts, mists, or fumes).



NOTE: Only NIOSH approved masks are permitted.



NOTE: Install new cartridges per local hazard assessment, if breathing resistance increases, or if odor is detected in face piece.

Respirator Selection

Proper respirator selection is based on an assessment of the atmospheric hazards and recommended defenses. Examples are:

Atmospheric Hazard	Concentration	Required PPE
O ₂	< 19.5%	SCBA or SABA with escape bottle
LEL	> 10%—< 20%	SCBA or SABA with escape bottle
H ₂ S	> 10 ppm	SCBA or SABA with escape bottle
Benzene	> 0.25 ppm	Refer to Benzene Code of Practice
Dust, mist, aerosols, fumes, ammonia, amines, etc.		Follow SDS



NOTE: In BC, the use of SCBA or SABA must not be used as the primary control for flammable atmospheres (e.g., elevated LEL levels) unless a variance has been granted by WorkSafeBC. These respirators are intended for protection against toxic or oxygen-deficient atmospheres, not for controlling explosion or fire hazards.

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CAUTION: Follow the manufacturer's instructions for breathing air use in low temperatures.



NOTE: In an emergency, a competent and properly equipped worker may enter atmospheres with >20% LEL.

Face Seal Check

A face seal check is required before starting a task using a respirator. The two types of seal checks are:

- Positive pressure test
- Negative pressure test

The procedure for a positive pressure test is:

Step	Action
1.	Block exhalation valve with palm of hand.
2.	Exhale slightly and note positive pressure in the face piece.
3.	Adjust and retest if leakage occurs around seal.

The procedure for a negative pressure test is:

Step	Action
1.	Block breathing tube, cartridge faces or remove cartridges.
2.	Block apertures connecting to the face piece.
3.	Inhale slightly to create a negative pressure inside the face piece—hold breath for 10 seconds.
4.	Adjust and retest if leakage occurs around seal.



NOTE: If a seal cannot be achieved, remove the respirator from service and use alternative RPE.

1.3 RPE Care and Maintenance

Cleaning, Maintenance, and Storage

Follow the manufacturer's instructions for cleaning, maintenance, and storage requirements and ensure:

- repairs are completed by a manufacturer authorized technician,
- headbands, nose cups, filters, and cylinders are routinely replaced,
- inhalation and exhalation valves on air purifying respirators are changed as required,
- cross-connection of breathing air with other airlines is prevented, and
- breathing air couplers are colour-coded, tagged, have alignment marks, and a pre-use inspection.

Inspection, Calibration, and Function Checks of SCBA and SABA

SCBA and SABA must be inspected at least monthly.

Alarms and sensors must be calibrated and function checked in accordance with the manufacturer's instructions.

Breathing Air System Requirements

Breathing air systems must be designed, constructed, installed, commissioned, operated, and maintained, in accordance with the manufacturer's specifications. The system must:

- deliver breathing air to each user in the quantity, quality, and rated pressure required during normal and emergency conditions,
- not use pure oxygen or oxygen-enriched air as a substitute for breathing air,
- not use plant instrument or utility air as a source of breathing air,
- include couplings that are incompatible with those used for other gas, air, or utility systems to prevent cross-connection, and
- use clearly identified and labeled airlines.

Breathing Air Cylinder Safety and Storage

Breathing air cylinder safety and storage requirements are as follows:

- Store upright in breathing air racks with valve caps on.
- Label "Breathing Air" with inspection/verification tags.
- Transport in a vertical position with valve caps in place.
- Tag as "Do Not Use" and remove from service if expired or damaged.
- Store cylinders that are full, empty, or expired/damaged in separate designated areas.
- Ensure instruction manuals are readily accessible to users.

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- Maintain documented alarm calibration logs.

Breathing Air Cylinder Testing

Compressed breathing air cylinders must be:

- hydrostatically tested per CSA Z94.4 (In BC, CSA B339-96 Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods), Transport Canada, and manufacturer instructions
 - Composite cylinders every 3 years
 - Steel or aluminum cylinders every 5 years,
- bled down and recharged if unused for 12 months, and
- tested when recharging.

1.4 Breathing Air Quality

Breathing Air Testing and Reports

Breathing air must be tested:

- by an accredited lab,
- every 6 months, whenever usage exceeds 50 hours, or during variable conditions,
- after any maintenance, servicing, or system modification that could affect air quality, and
- the air quality must meet the requirements of CSA Standard Z180.1-00 (R2005).

Breathing air analysis reports must be retained in accordance with CPC requirements and readily accessible to users and posted near the breathing air system.

Breathing Air Quality

Breathing air quality must have an atmospheric dew point <65 degrees C and meet CSA Standard Z180.1-00, as follows:

Component/Contaminant	Allowable Ranges or Maximum Allowable Concentrations (by volume at 21°C and 101 kPa)
Oxygen	20-22%
Nitrogen and other inert gases	78-80%
Carbon monoxide	5 ppm
Carbon dioxide	500 ppm
Methane	10 ppm
Volatile non-methane hydrocarbons	5 ppm (as methane equivalents)
Volatile halogenated hydrocarbons	5 ppm
Oil, particulates and condensates	1 mg/m ³

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Water (compressed air systems at pressures of 15 to 2216 psig)	Pressure dew point must be at least 5°C below the lowest ambient temperature to which the equipment will be exposed at any time of the year.
Water (compressed air systems at pressures at or above 2216 psig)	Pressure dew point must be at least 5°C below the lowest ambient temperature to which the equipment will be exposed at any time of the year, and atmospheric dew point must not be above -53°C.
Odors	No pronounced odor.

References

Document Name	Document ID
Alberta Occupational Health and Safety Code, Part 18, Sections 162, 244-255	
BC Occupational Health and Safety Regulations, Part 8, Sections 8.32-8.45	
CSA Standard Z180.1-00 (R2005) Compressed Breathing Air Systems	
CSA Standard Z94.4-02 Selection, Use, and Care of Respirators	
Breathing Air Quality Requirements of Compressed Breathing Air Systems	

NOTE: CSA Standard Z94.4-02 is referenced in the Alberta Occupational Health and Safety (OHS) Code, and CSA Standard Z94.4-93 is referenced in BC OHS Regulations. Although both versions have been withdrawn by CSA, they remain the legal references in their respective jurisdictions. This document complies with the requirements of those versions to meet regulatory obligations. Where applicable, it also aligns with the latest edition, CSA Z94.4-18 (R2023), to reflect current best practices in fit testing, respirator program management, and compressed breathing air requirements.

Definitions

Term	Definition
Air Purifying Respirator	A respirator which absorbs or filters contaminants from the workplace atmosphere.
Continuous Flow Positive Pressure Regulator	A positive air pressure is maintained inside the respirator face piece at all times during use by a continuous flow of air to the face piece. This type of delivery system is used for hoods (e.g., abrasive blasting hood).
Emergency	A present or imminent event outside the scope of normal operations that requires prompt coordination of resources to protect the health, safety and welfare of people, and to limit damage to property and the environment.
Escape Bottle	An auxiliary cylinder of compressed breathing air used in conjunction with an airline respirator. It can be used for emergency egress should the airline become cut or otherwise rendered ineffective. The minimum use duration approved for ConocoPhillips operations is 5 minutes.

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Full Face Piece	A face piece which covers the mouth, nose, chin, and eyes.														
Half Face Piece	A face piece which covers the mouth, nose, and chin.														
Fit Test Qualitative	A test of the seal between the person's face and the respirator face piece in which the person wearing a respirator is exposed to an irritant smoke, odorous vapor, or other suitable test agent. The respirator wearer uses his/her senses to detect leakage of the test agent into the face piece as a means of assessing the effectiveness of the seal to the face.														
Fit Test Quantitative	Instrumentation is used to measure the concentrations of a test agent inside and outside the face piece (or pressure differential across the face piece), as a means of assessing the effectiveness of the facial seal.														
Hazard Ratio	Only applies to atmospheres which are not oxygen deficient. The concentration of the airborne contaminant present is divided by its occupational exposure limit. For example, if the concentration of benzene is 2.5 ppm, and the OEL is 0.5 ppm, the hazard ratio is 5. In order to use a type of RPE, its protection factor must be greater than the hazard ratio.														
Immediately Dangerous to Life or Health (IDLH)	Any atmosphere where the concentration of oxygen, flammable or toxic air contaminants would cause a person without RPE to be fatally injured, cause irreversible and incapacitating effects to that person's health, or prevent escape from such an environment.														
Maximum Use Concentration	The maximum use concentration (MUC) is the highest contaminant concentration in air for which the respirator can be used. It depends on the protection factor (PF) and the exposure limit for the contaminant: $MUC = PF \times \text{Exposure Limit}$.														
Inert Atmosphere	Addition of nitrogen, carbon dioxide, or similar gas into a confined space (tank or vessel) which contains an explosive atmosphere in order to make the atmosphere non-explosive by depleting the oxygen concentration.														
NIOSH Approval	Tested according to a standard developed by the National Institute for Occupational Safety and Health (NIOSH) in the United States for use under the conditions stated. An approval number (e.g., TC-19C-, TC-21C- or TC-23C-) is printed on all NIOSH approved equipment. Older equipment may bear joint approval by NIOSH and the Mine Safety and Health Administration (MSHA) or the Mining Enforcement and Safety Administration (MESA). NIOSH/MSHA and NIOSH/MESA approvals are equivalent to NIOSH approval.														
Oxygen Deficiency	An oxygen content in the air of less than 19.5% volume/volume.														
Pressure Demand (positive pressure)	A respirator where the pressure in the face piece or hood remains positive with respect to the ambient pressure during both inhalation and exhalation.														
Protection Factor	The minimum anticipated protection provided by a properly functioning respirator or class of respirators to a given percentage of properly fitted and trained users. <table> <tr> <th>Respirator Type (NIOSH Approved)</th><th>Protection Factor from CSA Standard Z94.4-11</th></tr> <tr> <td>SCBA (full face piece) – positive pressure</td><td>10000</td></tr> <tr> <td>SABA (full face piece) – positive pressure</td><td>1000</td></tr> <tr> <td>Air purifying cartridge respirator</td><td></td></tr> <tr> <td>- full face piece</td><td>50</td></tr> <tr> <td>- half face piece</td><td>10</td></tr> <tr> <td>- filtering face piece (dust) mask</td><td>10</td></tr> </table>	Respirator Type (NIOSH Approved)	Protection Factor from CSA Standard Z94.4-11	SCBA (full face piece) – positive pressure	10000	SABA (full face piece) – positive pressure	1000	Air purifying cartridge respirator		- full face piece	50	- half face piece	10	- filtering face piece (dust) mask	10
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Quick Connect Locking Couplings	Quick disconnect fittings used to quickly connect air lines without losing air pressure.
Respirator (Respiratory Protection, Respiratory Protective Equipment)	A device designed to protect the wearer from inhalation of hazardous atmospheres.
Seal Check	A field check of the respirator facial seal using positive and negative pressure tests.
Self-Contained Breathing Apparatus (SCBA)	A respirator providing its own independent supply of breathing air from a cylinder carried by the user, usually on the back.
Supplied Air Breathing Apparatus (SABA)	A respirator providing its own independent supply of breathing air from a compressor or remote cylinder via an airline.