TITLE: Respiratory Protection Procedure	Version: 1
	Version Date: 2025-11-24
Signing Authority: Delaine Russo, Director, Environmental Health and Safety Office	

1 Purpose

The purpose of this procedure is to outline how the University of Manitoba complies with the Manitoba Workplace Safety and Health Regulation, specifically Part 6 (Personal Protective Equipment) and Part 36 (Respiratory Protection), as well as applicable CSA standards, including CSA Z94.4-18 (R2023): Selection, Use, and Care of Respirators and CSA Z180.1-13: Compressed Breathing Air and Systems.

This document defines the requirements for selection, use, care, maintenance, and training associated with respiratory protective equipment used to mitigate airborne hazards in the workplace.

2 Scope

This procedure applies to all University of Manitoba workers, students, and visitors who perform tasks that require respiratory protection, including research, operations, maintenance, and emergency response in areas where airborne hazards may be present.

3 Definitions

Air-Purifying Respirator (APR)	A respirator that removes contaminants from ambient air by filtering, absorbing, or chemically reacting with the contaminants.
Assigned Protection Factor (APF)	The expected level of respiratory protection provided by a properly functioning respirator or class of respirators to properly fitted and trained users.
CSA (Canadian Standards Association):	A non-profit organization that publishes standards to promote workplace safety. CSA standards become enforceable when referenced in legislation or adopted by policy.
Exposure Control Plan (ECP)	A written plan that outlines how a workplace will eliminate or minimize worker exposure to hazardous substances such as biological or chemical agents. It includes hazard identification, risk controls, safe work procedures, training, PPE use (including respirators), and exposure response protocols. ECPs are required when work activities present risks exceeding occupational exposure limits or involve designated substances
Fit Test	A procedure used to verify the seal and proper fit of a tight-fitting respirator on the wearer. Fit testing must be quantitative or qualitative.
Immediately Dangerous to Life or Health (IDLH)	An environment that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair the ability to escape.

National Fire Protection Association (NFPA)	A nonprofit organization that develops fire and life safety codes and standards used around the world. NFPA standards, such as the Fire Code and Life Safety Code, are widely adopted to support fire prevention, building safety, and emergency response planning.
National Institute for Occupational Safety and Health (NIOSH)	The United States federal agency responsible for conducting research and making recommendations for the prevention of work-related injury, illness, disability, and death.
Oxygen-deficient atmosphere	An atmosphere containing less than 19.5% oxygen by volume.
Powered Air-Purifying Respirator (PAPR)	A respirator that uses a blower to pass contaminated air through filters before delivering it to the user.
Qualitative Fit Test (QLFT)	A pass/fail method that relies on the user's sensory response to a test agent (e.g., saccharin or Bitrex) to determine if a proper seal is achieved.
Quantitative Fit Test (QNFT)	A fit testing method that uses an instrument to measure the actual amount of leakage into the respirator and provides a numerical fit factor.
Respirator	A personal protective device worn on the face, covering at minimum the nose and mouth, designed to protect the wearer from inhaling hazardous airborne substances.
Self-Contained Breathing Apparatus (SCBA)	A respirator that provides the user with breathing air from a separate compressed air source, typically used in IDLH environments.
User Seal Check	A quick check performed by the wearer to ensure the respirator is properly sealed to the face.
Worker	Any employee, student, or visitor who is performing work that is applicable under this procedure.

4 Responsibilities

It is the responsibility of the **Worker** to:

- Use assigned respiratory protection properly and consistently.
- Conduct pre-use checks and perform a seal check each time the respirator is worn.
- Report any discomfort, damage, or malfunction to their supervisor immediately.
- Participate in fit testing and training as required.

It is the responsibility of the **Supervisor directing work with respirators** to:

- Conduct or ensure hazard assessments are completed to identify the need for respiratory protection.
- Provide respirators suitable for the hazard and ensure CSA Z94.4 compliance.
- Ensure workers receive appropriate training and complete fit testing prior to use.

- Monitor respirator uses in the field or lab and ensure proper maintenance practices are followed.

It is the responsibility of **EHSO** to:

- Develop and maintain the University of Manitoba's Respiratory Protection Program.
- Conduct fit testing for employees of the University of Manitoba.
- Coordinate and maintain records of hazard assessments, fit tests, and training.
- Provide technical support and guidance for respirator selection, use, and care.

5 Training

All employees who are required to wear a respirator must receive training that addresses the proper use, limitations, inspection, maintenance, and storage of respiratory protective equipment. This training is received when respirator fit tests are conducted (see section 6.1.1). Training on the UM Respirator Protection Program is also located online in UM Learn.

6 Procedures

The inappropriate use or absence of respiratory protection can result in inhalation of hazardous airborne substances, leading to both acute and chronic health effects. To prevent occupational illness or injury, respiratory protection must be selected and used in accordance with hazard-specific requirements and in compliance with established safety standards.

Respirators must be chosen based on the nature and severity of the hazard, the work environment, and the physical demands of the task. CSA Standard Z94.4:18 outlines the selection, use, and care of respirators, and the University of Manitoba requires adherence to these guidelines.

Respiratory protection shall only be used when:

- Engineering controls (e.g., ventilation, substitution) are not practical or are insufficient to reduce exposure.
- The work involves short-term or emergency exposure; or
- Required by legislation, procedure, or risk assessment.

The following procedures outline the process for selecting, fitting, using, and maintaining respiratory protective equipment.

6.1 Hazard Assessment and Selection

Respiratory hazards must be identified through a documented risk assessment that considers:

- Type of contaminant (dust, fume, mist, vapour, gas, biological agent)
- Concentration levels compared to Occupational Exposure Limits (OELs)
- Duration and frequency of exposure
- Oxygen levels
- Nature of the task (routine vs. emergency, confined space involvement)

Substitution or engineering controls must be considered first. Respiratory protection must not be used as the sole control unless all other options are not feasible. Only respirators that are NIOSH-approved and meet the requirements of CSA Z94.4 may be used. Selection must be documented and based on the assigned protection factor (APF) for the hazard.

Respiratory protection may be required as part of broader Exposure Control Plans (ECPs), particularly in laboratory environments where biological or chemical hazards are present. While ECPs are commonly referenced in chemical safety regulations, the Canadian Biosafety Standard also requires the implementation of biosafety protocols and biological risk assessments, which serve a similar function in identifying and mitigating airborne exposure risks.

Where engineering controls and safe work practices are insufficient to reduce inhalation risks, departments must ensure respirator use is documented within the applicable Biosafety Protocol or Chemical Hygiene Plan. EHSO can assist with the identification of these situations and support the integration of respiratory protection into hazard-specific control plans.

6.2 Fit Testing Requirements and Frequency

Fit testing is a legal requirement under the Manitoba Workplace Safety and Health Regulation and CSA Z94.4-22 (Selection, Use, and Care of Respirators). It verifies that a secure facial seal is achieved between the respirator and the user's face, which is essential for tight-fitting models such as N95, half-face, or full-face respirators.

Fit testing must be completed:

- Before initial use of a tight-fitting respirator.
- At least every two years, or sooner if:
    - There are significant changes to the user's facial features (e.g., weight change, surgery, injury).
    - A different size, make, or model of respirator is introduced.
    - The user has trouble achieving or maintaining a proper seal.

The fit must not interfere with other personal protective equipment such as eyewear or hearing protection. Only the exact make, model, and size of the respirator used during fit testing may be worn during subsequent work tasks.

On the day of testing, individuals must arrive clean-shaven in the sealing area of the respirator. After the fit test is completed, the employee will be made aware of which respirator is best for their needs. Only the exact make, model, and size of the respirator used during fit testing may be worn during subsequent work tasks requiring respiratory protection. Training on respirator use is also provided at this time (see section 5).

6.3 Respirator User Screening

All individuals undergoing fit testing must first complete a **Respirator User Screening Form** to assess medical suitability for respirator use. This form must be submitted to the Environmental Health and Safety Office (EHSO) prior to scheduling the fit test. If the screening identifies any health concerns, a follow-up evaluation by a licensed healthcare provider may be required to determine fitness to wear a respirator.

Medical screening results will be reviewed only by qualified personnel and maintained confidentially. Workers may not be fit-tested or assigned respirator use until medical clearance is granted.

A copy of the screening form is included in **Appendix A – Respirator User Screening Form**.

7 Types of Respirators

Respirators are available in a variety of designs, configurations, and protection levels to suit different workplace hazards and user needs. Selection depends on the nature of the airborne contaminant, the required level of protection, and the conditions under which the respirator will be used. See Table 1 for a summary of common respirator types, their protection levels, and typical use cases.

Respirators may use filtering media, powered air systems, or supplied breathing air to protect the user. It is important to note that respirators must meet applicable CSA and NIOSH standards to ensure they provide the intended protection.

Certain models are suitable for particulates only, while others are designed for protection against gases, vapors, or oxygen-deficient environments. Proper selection, fit, and training are critical to ensure effectiveness.

Table 1: Summary of Respirator Types and Applications

Respirator Type	Protection Level	Example Uses	Limitations
Filtering Facepiece (e.g., N95)	Low to moderate (APF 10)	Healthcare, low-hazard labs, dust protection	Not reusable, no protection against gases and vapors
Half-Face Elastomeric	Moderate (APF 10)	Chemical handling, lab work, maintenance tasks	No eye protection, tight seal required
Full-Face Elastomeric	High (APF 50)	Solvent use, pesticide spraying, toxic vapors	Can cause heat buildup, may limit vision
PAPR (Loose-Fitting)	Moderate to high (APF 25 to 1000)	High-exposure or long-duration work, facial hair	Battery required, limited in IDLH atmospheres
Supplied Air (SAR)	High to very high (up to APF 1000)	Spray painting, confined space entry	Mobility limited by air line
SCBA	Very high (APF 10,000)	Firefighting, IDLH environments, emergency rescue	Bulky, limited air supply (30 to 60 mins typical)

7.1 Air-Purifying Respirators (APR)

Air-purifying respirators remove contaminants from ambient air using filters, cartridges, or canisters. They do not supply oxygen and must only be used in environments where the air is breathable, and contaminant concentrations are within the filter's rated capacity. APRs are classified into three main types:

- Filtering Facepiece Respirators (e.g., N95): Disposable masks that provide protection against particulate hazards. Commonly used in healthcare or low-hazard laboratory settings.
- Elastomeric Half-Face Respirators: Reusable facepieces that cover the nose and mouth and use replaceable cartridges. They offer a higher level of protection than filtering facepieces and are suitable for a broader range of chemical and particulate exposures.
- Full-Face Respirators: Provide coverage for the entire face, including eye protection, and offer a higher assigned protection factor (APF). These are appropriate for higher-risk environments involving irritating or toxic vapors.

7.2 Powered Air-Purifying Respirators (PAPR)

Powered air-purifying respirators use a battery-powered blower to draw ambient air through filters before delivering it to the user. They provide a higher level of comfort and protection in high-exposure environments or during extended tasks. Loose-fitting PAPR hoods can be used by individuals with facial hair or those unable to achieve a proper seal with tight-fitting models.

PAPRs do not supply oxygen and are not suitable for IDLH or oxygen-deficient atmospheres. Their use must be based on hazard assessment and compatibility with other required personal protective equipment (PPE).

7.3 Supplied-Air Respirators (SAR) and Self-Contained Breathing Apparatus (SCBA)

Supplied-air respirators deliver breathable air from an external source, such as a compressor or compressed air cylinder, through a hose connected to the user's facepiece. SCBAs are a type of supplied-air respirator that include a self-contained air cylinder worn by the user. These systems are required in IDLH environments, oxygen-deficient atmospheres, or emergency response scenarios where air quality is unknown.

SCBA units are commonly used in confined space entry and fire response and must be inspected, maintained, and tested according to NFPA and CSA standards.

7.4 Use During Emergencies

Respiratory protective equipment (RPE) plays a critical role during emergency situations such as chemical spills, fires, confined space rescues, and exposure to unknown airborne hazards. In these situations, standard air-purifying respirators may not provide adequate protection. Emergency responders must use equipment appropriate for the level of risk and atmosphere present.

Self-Contained Breathing Apparatus (SCBA) must be used in Immediately Dangerous to Life or Health (IDLH) environments, oxygen-deficient atmospheres, and during any response involving unknown contaminants. These units must be tested, maintained, and deployed in accordance with

NFPA and CSA Z94.4 standards. No person may enter or remain in an IDLH or oxygen-deficient atmosphere without a properly functioning SCBA and a designated standby rescue team maintaining continuous communication. Entry must comply with CSA Z1006 and the University's Confined Space Entry Program.

Departments with designated emergency response duties must ensure SCBA or other supplied-air systems are readily available, inspected, and that personnel are trained in their proper use. Powered Air-Purifying Respirators (PAPRs) may be used in non-IDLH emergency scenarios where airborne contaminants are known, and oxygen levels are sufficient.

In all cases, respiratory protection used during emergencies must align with the University of Manitoba's emergency response protocols and the hazard-specific procedures established by Environmental Health and Safety Office (EHSO).

8 Care, Maintenance, and Inspection

Proper care and maintenance of respiratory protective equipment (RPE) are critical to ensure effective protection, maximize equipment lifespan, and comply with regulatory and manufacturer requirements. All respirators must be regularly inspected, cleaned, disinfected, and stored according to CSA Z94.4-18(R2023) and manufacturer specifications.

8.1 Inspection

Respirators must be inspected prior to each use. Users must check for visible signs of damage, including cracks, tears, holes, or distortion in the facepiece, head straps, valves, and other components. Special attention must be paid to the face seal area to ensure it is free from cuts or deterioration. Expired or damaged filters, cartridges, and canisters must not be used.

8.2 Cleaning

After each use, respirators must be cleaned using a mild detergent and warm water solution, unless otherwise specified by the manufacturer. All detachable components must be disassembled prior to cleaning to ensure thorough washing. Harsh solvents or alcohol-based cleaners should be avoided unless specifically recommended, as they may degrade rubber or silicone components.

8.3 Disinfection (Shared Respirators)

In cases where respirators are shared between users—such as in teaching labs, emergency kits, or research environments—disinfection must follow the CSA Z94.4-18(R2023) guidelines. An approved disinfectant must be used, and the disinfection process must be documented. Shared units must be stored in a way that clearly indicates they are ready for use and safe to wear.

8.4 Storage

All respirators must be stored in a clean, dry area protected from direct sunlight, extreme temperatures, dust, moisture, and chemical vapors. Storage containers or bags must allow for adequate air circulation and prevent contamination or deformation of the facepiece and straps. Respirators must never be stored while wet, compressed, or left exposed on work surfaces.

8.5 Cartridge and Filter Replacement

Cartridges, filters, and canisters must be replaced in accordance with the manufacturer's recommended service life, expiry dates, or the use of end-of-service-life indicators (ESLIs), if provided. Where no ESLI is present, a change-out schedule must be developed based on workplace exposure conditions and the nature of the contaminant. If a worker detects breakthrough (e.g., taste, odor, or irritation), the respirator must be removed immediately, and filters or cartridges replaced.

8.6 Documentation

Supervisors or designated personnel must ensure that care, maintenance, and inspections are documented for shared or program-issued respirators. Records should include the date of inspection, observed condition, cleaning or disinfection steps taken, and any maintenance actions performed.

9 Procurement

All respiratory protective equipment (RPE) used at the University of Manitoba must be procured through approved vendors listed in the University's procurement system (EPIC) to ensure that all equipment complies with applicable CSA (Z94.4-22) and NIOSH standards. Only certified respirators bearing appropriate CSA or NIOSH approval labels may be purchased and issued.

Departments must not purchase RPE from unverified third-party vendors, surplus outlets, or international suppliers that do not meet Canadian regulatory standards. Prior to ordering, supervisors and departmental administrators should confirm that the selected respirators match the hazard identified through a documented hazard assessment and are appropriate for the work environment.

When specialized respiratory protection is required (e.g., supplied air respirators, powered air purifying respirators (PAPRs), or escape-only units), Environmental Health and Safety Office (EHSO) must be consulted to assist in product selection, compatibility assessment with other PPE, and determination of ancillary needs such as cartridges, filters, and replacement parts.

Departments must also ensure that supporting components are accounted for in the procurement process, including:

- Initial and replacement cartridges or filters (with changeout schedule defined by manufacturer or breakthrough indicators)
- Fit testing services for tight-fitting respirators, including qualitative and quantitative methods
- Inspection kits and manufacturer-approved maintenance supplies
- Replacement straps, valves, batteries, and charger units for reusable respirators and PAPRs
- Storage containers or other arrangements that prevent contamination or degradation of the equipment
- Training materials or documentation that accompany the selected models

Departments are responsible for budgeting and maintaining an adequate inventory of respiratory protective equipment to support continuous, safe operations.

For guidance on selecting compliant respirators, including appropriate classification under CSA Z94.4 and ensuring compatibility with other forms of PPE (e.g., face shields, eyewear, hearing protection), contact EHSO.

10 Disposal

Used or expired respirators that are **not contaminated** with hazardous substances may be disposed of in regular landfill waste bins. This includes filtering facepiece respirators (e.g., N95) or expired cartridges no longer in use.

Respirators or components that have been **contaminated with hazardous chemicals, biological agents, or radioactive materials** must be disposed of in accordance with the appropriate hazardous waste procedures (e.g., chemical, biological, or radiation safety programs).

Departments must not attempt to recycle or repurpose respiratory protective equipment unless explicitly approved by the Environmental Health and Safety Office (EHSO).

For support with disposal planning or to confirm the appropriate disposal stream, contact EHSO before proceeding.

11 References

Manitoba Workplace Safety and Health Regulation:
- Part 6 – Personal Protective Equipment
- Part 36 – Respiratory Protection

CSA Z94.4-18(R2023): Selection, Use, and Care of Respirators
CSA Z180.1-13: Compressed Breathing Air and Systems
CSA Z1006-16: Management of work in confined spaces
Canadian Centre for Occupational Health and Safety (CCOHS):
https://www.ccohs.ca/oshanswers/prevention/ppe/respslct.html
Government of Canada – Canadian Biosafety Standards (as applicable for lab settings)

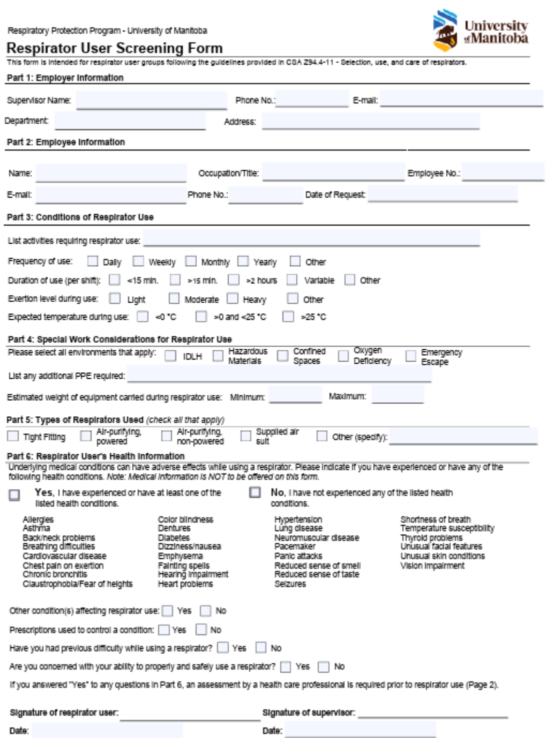
12 Document History

Version Number	Version Date	Description of Change	Author
1	2025-11-24	Initial Release	Bryan Stadnyk

13 Appendix A – Respirator User Screening Form.

The Respirator User Screening Form can be downloaded from the Environmental Health and Safety Office (EHSO) section of the University of Manitoba website at: https://umanitoba.ca/environmental-health-and-safety/occupational-health#respiratory-safety

Users must complete and submit this form to EHSO prior to scheduling a fit test.



Respiratory Protection Program - University of Manitoba

Respirator User Screening Form

This form is intended for respirator user groups following the guidelines provided in CSA Z94.4-11 - Selection, use, and care of respirators.

Part 1: Employer Information

Supervisor Name: ______ Phone No.: ______ E-mail: ______

Department: ______ Address: ______

Part 2: Employee Information

Name: ______ Occupation/Title: ______ Employee No.: ______

E-mail: ______ Phone No.: ______ Date of Request: ______

Part 3: Conditions of Respirator Use

List activities requiring respirator use: ______

Frequency of use: ☐ Daily ☐ Weekly ☐ Monthly ☐ Yearly ☐ Other

Duration of use (per shift): ☐ <15 min. ☐ >15 min. ☐ >2 hours ☐ Variable ☐ Other

Exertion level during use: ☐ Light ☐ Moderate ☐ Heavy ☐ Other

Expected temperature during use: ☐ <0 °C ☐ >0 and <25 °C ☐ >25 °C

Part 4: Special Work Considerations for Respirator Use

Please select all environments that apply: ☐ IDLH ☐ Hazardous Materials ☐ Confined Spaces ☐ Oxygen Deficiency ☐ Emergency Escape

List any additional PPE required: ______

Estimated weight of equipment carried during respirator use: Minimum: ______ Maximum: ______

Part 5: Types of Respirators Used *(check all that apply)*

☐ Tight Fitting ☐ Air-purifying, powered ☐ Air-purifying, non-powered ☐ Supplied air suit ☐ Other (specify): ______

Part 6: Respirator User's Health Information

Underlying medical conditions can have adverse effects while using a respirator. Please indicate if you have experienced or have any of the following health conditions. *Note: Medical information is NOT to be offered on this form.*

☐ **Yes**, I have experienced or have at least one of the listed health conditions. ☐ **No**, I have not experienced any of the listed health conditions.

Allergies	Color blindness	Hypertension	Shortness of breath
Asthma	Dentures	Lung disease	Temperature susceptibility
Back/neck problems	Diabetes	Neuromuscular disease	Thyroid problems
Breathing difficulties	Dizziness/nausea	Pacemaker	Unusual facial features
Cardiovascular disease	Emphysema	Panic attacks	Unusual skin conditions
Chest pain on exertion	Fainting spells	Reduced sense of smell	Vision impairment
Chronic bronchitis	Hearing impairment	Reduced sense of taste	
Claustrophobia/Fear of heights	Heart problems	Seizures	

Other condition(s) affecting respirator use: ☐ Yes ☐ No

Prescriptions used to control a condition: ☐ Yes ☐ No

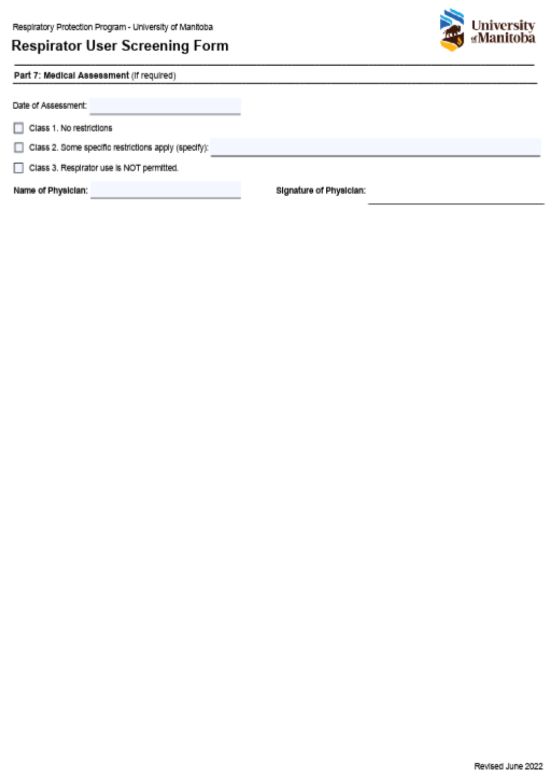
Have you had previous difficulty while using a respirator? ☐ Yes ☐ No

Are you concerned with your ability to properly and safely use a respirator? ☐ Yes ☐ No

If you answered "Yes" to any questions in Part 6, an assessment by a health care professional is required prior to respirator use (Page 2).

Signature of respirator user: ______ **Signature of supervisor:** ______

Date: ______ **Date:** ______



Respiratory Protection Program - University of Manitoba

Respirator User Screening Form

Part 7: Medical Assessment (if required)

Date of Assessment: ______

☐ Class 1. No restrictions

☐ Class 2. Some specific restrictions apply (specify): ______

☐ Class 3. Respirator use is NOT permitted.

Name of Physician: ______ **Signature of Physician:** ______

Revised June 2022