Health and Safety Standard

RESPIRATORY PROTECTION

1 PURPOSE

This standard supports the Hazard/Aspect and Risk Assessment Policy and establishes the requirements for a respiratory protection plan and the use of respiratory protection that is worn to protect SaskPower workers from known or potential respiratory hazards.

2 SCOPE

This standard outlines the minimum requirements for the management, selection, use and care of respirators and applies to any worker or contractor who may be exposed to an oxygen deficient atmosphere or air contaminants during the course of their work.

This standard does not address bioaerosols or the selection of supplied-air suits.

This standard outlines the minimum requirements that shall be met or exceeded by SaskPower workers and contractors. Failure to comply may result in injuries, damage to equipment and property, performance management or any combination thereof.

The use of the word “shall” within this standard denotes a mandatory action, whereas the use of the word “should” or “may” denotes a recommended action.

3 DEFINITIONS

The following definitions apply to this standard:

Aerosols – liquid droplets or solid particles of fine enough particle size to remain dispersed in air for prolonged period of time.

Airborne Contaminants – a material in gas, vapour, liquid or solid physical state (particulate), foreign to normal workplace air, or customarily found in normal air of lower atmosphere, has known toxic properties or other potential health effects.

Air-Purifying Respirator – an air-purifying respirator has an air-purifying filter, cartridge or canister that removes specific air contaminants by passing ambient air through a filtering or chemical absorption/reactive media.

Approved Respirator – an approved respirator is a respirator that is US Centers for Disease Control and Prevention (CDC) National Institute for Occupational Safety and Health (NIOSH) tested and certified. Certified respirators and filters/chemical cartridges are listed in the NIOSH Certified Equipment List (CEL) found at https://www.cdc.gov/niosh/npptl/topics/respirators/cel/

Assigned Protection Factor (APF) – assigned Protection Factor is the anticipated level of respiratory protection that would be provided by a properly functioning respirator to properly fitted and trained users. The higher the number, the better the protection.

Atmosphere-Supplying Respirators – an atmosphere-supplying respirator supplies the respirator user with compressed breathing air or an oxygen and nitrogen gas mixture from a source independent of the ambient atmosphere. The compressed air shall meet the criteria specified in Table 1 of CAN/CSA Z180.1 00 (R2010) Compressed breathing air and systems.

Cartridges – a cartridge is a component of a respirator that removes vapours and/or gases from the air that is inhaled by the person wearing the respirator.

Competent person – a competent person possesses knowledge, experience and training to perform a specific duty.

Dust – solid particles and/or fibers generated by handling, crushing, grinding, rapid impact, detonation, and breakdown of organic or inorganic materials such as insulation, rock, ore, metal, coal, wood, and grain.

End-of-Service-Life Indicator – a system on a cartridge or canister that warns the respirator user that the sorbent is approaching saturation or is no longer effective.

Fit Testing – is the use of a qualitative or a quantitative method by a competent person to evaluate the fit of a specific make, model, and size of respirator on an individual.

Fume – solid particles generated by condensation from the gaseous state, generally after volatilization from melted substances (e.g., welding) and often accompanied by a chemical reaction, such as oxidation.

Gases – formless fluids, at room temperature and atmospheric pressure, that expand to occupy the space in which they are confined.

Hazardous Atmosphere – any atmosphere that is oxygen deficient, exceeds occupational exposure limits, presents a fire or explosion hazard, or contains an airborne toxic or disease-producing contaminant in concentrations deemed to be hazardous.

Immediately Dangerous to Life or Health (IDLH) Atmosphere – a hazardous atmosphere that poses an immediate threat to life, can cause irreversible adverse health effects, or can impair a person's ability to escape.

Maximum Use Concentration (MUC) – the maximum concentration of an airborne contaminant from which a worker is expected to be protected when wearing a respirator, determined by the APF of the respirator or class of respirators and the occupational exposure limit for that contaminant. *MUC is usually determined by multiplying the APF for the specified respirator by the occupational exposure limit.*

Medical Clearance – is obtained in writing, from a health care professional indicating the worker is fit to wear a respirator and has no medical conditions that can interfere with their ability to use a respirator.

Mist – suspended liquid droplets generated by condensation of liquids from the vapour back to the liquid state or by breaking up a liquid into a dispersed state such as splashing or atomizing.

Oxygen Deficiency – a condition based on oxygen concentration or partial pressure below which a person can be adversely affected.

Particulates – airborne contaminants other than gas and vapour, but including dusts, fumes, mists, fibres, fog, pollen, smoke, and spores.

Particulate Filters – are components of a respirator that filter dust, fumes, smoke, aerosols and other particulates from air being inhaled by the person wearing the respirator. Some respirators masks are designed to be particulate filtering while others use replaceable particulate filter cartridges.

Smoke – consists of carbon or soot particles and results from the incomplete combustion of carbonaceous materials such as coal or oil.

Vapour – the gaseous state of a substance that is solid or liquid at room temperature and standard pressure.

4 REQUIREMENTS

4.1 IDENTIFICATION OF HAZARDS AND CONTROL MEASURES

4.1.1 HAZARD ASSESSMENT

A documented Hazard/Aspect and Risk Assessment (HARA) shall be completed where workers may be exposed to air contaminants or oxygen deficient atmospheres to determine:

- what contaminants may be present;
- the physical state (gas, vapour or particulate) of the contaminants;
- the concentration of contaminants by measuring or estimating exposure;
- if the atmosphere is or may become oxygen deficient;
- an appropriate occupational exposure limit for each airborne contaminant;
- if an IDLH atmosphere is present;
- for the potential of a particulate hazard if oils are present; and
- if the contaminant can be absorbed through or is irritating to the skin or eyes.

4.1.2 CONTAMINANT FACTORS

The following factors should be considered when assessing air contaminate exposure:

- Operation or work process characteristics where there is the potential for the release of air contaminants through routine, non-routine and maintenance procedures, malfunctioning equipment, spills, or releases;
- The period of time a respirator is required to be used and the physical demands made on the worker;
- The work area layout, escape routes, activities/tasks, temperature, relative humidity, and atmospheric pressure;
- The types of materials used, produced, or stored including raw materials, end-products, by-products, chemical reactivity, and wastes; and
- Emergency repair, shutdown, escape, and rescue operations.

4.1.3 CONTROL MEASURES

Control measures shall be used to reduce the risk of exposure to workers. Where practicable, respiratory hazards shall be removed and when substitution, engineering or administrative controls are not practicable nor adequate, personal protective equipment (PPE) shall be used to protect the worker from inhaling a hazardous atmosphere.

Appropriate warnings shall be posted in areas or locations where respiratory hazards exist or respiratory protection is required.

Approved **respiratory protection shall be worn**:

- when a worker is or may be exposed to a respiratory hazard where concentrations of an air contaminant or oxygen deficient atmosphere exceed exposure limits;
- when a worker is at risk of an accidental exposure due to a process upset (i.e., chemical spill or release); or
- as defined by established local procedures.

4.2 RESPIRATOR SELECTION

Respirator selection for the protection against workplace contaminants shall meet the applicable standards set by the Canadian Standards Association or by the National Institute for Occupational Health & Safety, be made in consultation with competent persons and is based on a systematic review of the hazards present, regulatory criteria and manufacturers' information on the types of respirators, their functional capabilities and performance limitations.

4.3 FIT TESTING

Where a worker may be exposed to airborne contaminants, an oxygen deficient atmosphere or where there is potential for significant harm to the worker from a hazardous atmosphere, workers shall be **fit tested prior to use** of the respirator.

The fit test shall be **completed by a competent person utilizing an approved method** in accordance with CAN/CSA-Z94.4 (R2018) - Selection, Use, and Care of Respirators and be used to verify the selection of the specific make, model, and size of a tight fitting respiratory for individual users.

In addition to the fit of the respirator, the person wearing the respirator shall also be able to demonstrate the correct method for:

- Donning and doffing the respirator;
- Inspecting the respirator;
- Performing a user seal check; and
- Adjusting the respirator.

The fit tester shall not perform a fit test on a worker where facial or neck hair will interfere with the seal.

No worker shall use or be assigned to use a tight-fitting respirator until the completion of **user screening** and a **satisfactory fit test** has been verified by a qualitative or quantitative fit test.

4.3.1 FIT TESTING FREQUENCY

Subsequent fit testing shall occur **at least every two years** and shall be administered by a competent person via an approved method.

Fit testing **frequency may vary** based on the following and shall be carried out when:

- a hazard/aspect and risk assessment(s) identifies the need for a different type of respirator;
- there is a change in respirator (e.g., make/brand, model, size);
- there is a change to a user's physical condition (e.g., change to the facial shape through rapid change in weight, injury or facial or dental surgery) that could affect the fit of the respirator;
- a user's seal check fails;
- the user experiences discomfort during use or difficulty in completing a user seal check; and
- where a change in PPE use could affect the use of the respirator.

4.3.2 RESPIRATOR INTERFERENCES

4.3.2.1 GENERAL

Workers who are unwilling or unable to comply with the interference-free requirements or unable to obtain an acceptable fit, shall not use a tight-fitting respirator nor conduct work that requires one.

4.3.2.2 FACIAL HAIR

Workers required to use a respirator shall be free from interference of hair in the areas where the specific respirator must seal to the skin of the face and neck.

4.3.2.3 PERSONAL CONDITIONS, ACCESSORIES AND EQUIPMENT

Workers are to present themselves for fit testing in the same personal condition, with the required personal accessories and PPE that will be worn during respirator use to confirm the respirator seal will not be comprised. This includes but is not limited to:

- Hairstyles, dentures, eyeglasses/contacts;
- Head coverings, garments, facial jewellery; and/or
- Eye, face, head, or hearing protection.

4.3.3 FIT TEST RECORDS

Fit test records shall be completed by the user and fit tester and retained for all respirator users.

When a quantitative fit test using an instrument has printing capability, the printed record shall be attached to the fit test record.

4.4 USE OF RESPIRATORS

4.4.1 GENERAL

Before a worker is to carry out any task(s) that require the use of a tight-fitting respirator, the worker shall meet all the health screening, fit testing, and training requirements.

When a worker cannot maintain an effective seal to the face or neck as required by the selected tight-fitting respirator, work shall not commence or be halted until one can be maintained.

Assigned protection factors shall not be exceeded when using specific respirators.

Air purifying respirators shall not be used in Immediately Dangerous to Life and Health (IDLH) environments.

4.4.2 USER SEAL CHECK

All workers requiring the use of tight-fitting respirators shall be trained in performing seal checks.

Seal checks shall be performed by the worker after every time a respirator is donned following approved positive and negative pressure procedures or as recommended by the manufacturer.

4.4.3 IDLH ATMOSPHERES

If work is required to be conducted in an IDLH atmosphere, a risk assessment and applicable written work procedures are to be completed by a competent person.

If a worker is required to enter an atmosphere that is immediately dangerous to the life and health of a worker, the worker shall be supplied with, trained and is to use an approved atmosphere-supplying respirator.

The compressed air in an atmosphere-supplying respirator shall meet the purity requirements set out in Table 2 of the CAN/CSA Z180.1-M85 (R2019) Compressed Breathing Air and Systems.

4.4.4 CARTRIDGE, CANISTER, AND FILTER SERVICE LIFE

Respirator components shall be replaced when they become damaged, ineffective in providing the required assigned protection factor and exceed the maximum use concentration.

4.4.4.1 BREAKTHROUGH DETECTION

Whenever a worker detects an odour of a contaminant or experience any irritation symptoms, they shall exit the contaminated work area immediately to assess the respirator for replacement or changeout.

4.4.4.2 GAS/VAPOR REMOVING CARTRIDGES OR CANISTERS REPLACEMENT

Cartridges or canisters shall be replaced when the End of Service Life Indicator dictates and where one is not equipped with an indicator, they shall be replaced by an established procedure or schedule as directed by the manufacturer.

4.4.4.3 PARTICULATE FILTER REPLACEMENT

Particulate filters shall be replaced based on the manufacturer's change out schedule or when they become unhygienic or increased breathing resistance is experienced.

4.5 INSPECTION AND MAINTENANCE

Workers required to wear respiratory protective equipment shall inspect, clean/sanitize, maintain, and store their equipment in accordance with manufacturer's instructions, local procedures and the training provided.

4.5.1 CLEANING AND SANITIZING

Respirators shall be cleaned and sanitized or disposed of in accordance with the manufacturer's instructions or by approved procedures.

Contaminated disposable respirators or disposable respirator components shall be discarded as hazardous waste when required.

4.5.2 INSPECTION AND REPAIR

All respirators shall be inspected before and after each use and after repair.

In addition, respirators used for **emergency response** shall be inspected by a competent person **at least once per month**. The date of inspections or maintenance and the name of the inspector are to be recorded and displayed at the location where the respiratory protective devices are stored.

Inspection shall include where applicable:

- The condition of the respirator components (e.g., face-pieces, filters, cartridges, canisters, cylinders, valves, connections, tubes);
- End-of-service-life Indicator and shelf-life dates; and
- All air supplied respirator components such as harnesses, hoses, compressed air tanks, pressure regulators. These are not to be modified, serviced, or maintained except by manufacturer's certified respirator technicians.

Changing empty SCBA compressed air tanks for full tanks is not considered to be a service or maintenance activity requiring the assistance of manufacturer trained personnel.

Defective or non-functioning respirators shall be tagged as out of service and are to be replaced or removed from service until repaired.

4.5.3 STORAGE

Respirators shall be stored in a manner where they can remain clean and protected against extreme conditions (*e.g.,* moisture, heat, cold) dirt, and chemicals. They are to be stored in a secure manner to prevent deformation and are made readily accessible to workers.

4.6 HEALTH SURVEILLANCE

Health surveillance of respirator users shall occur **every two years** or when a worker reports health concerns with wearing a respirator.

The SaskPower Respirator Fit Test Documentation or similar shall be completed and retained to confirm that the identified respirator users are free from any physiological or psychosocial conditions that could preclude them from being fit tested or using the selected respirator.

Health Surveillance will follow the requirements set out in Section 4.6.1 Respirator Screening Evaluation and in Section 4.6.2 Medical Clearance.

4.6.1 RESPIRATOR SCREENING EVALUATION

Prior to fit testing and respirator use, the fit tester/program administrator shall ensure that identified respirator users participate in a respirator screening process.

A Screening Evaluation Form for respirator users shall be completed and retained.

Where a worker has indicated during the screening that they do not have any conditions that can be affected by the use of a respirator, the fit testing process can continue.

Where the program administrator or respirator user is concerned that a condition exists that impedes the use of a respirator, the worker will be required to obtain **medical clearance** from their health care provider before being permitted to perform work that requires the use of a respirator.

4.6.2 MEDICAL CLEARANCE

All requests for medical clearance for SaskPower workers are to be managed in conjunction with Health & Wellness Services.

Where applicable, the program administrator and/or Health & Wellness Services shall notify the worker's supervisor that the worker cannot be fit tested due to a limitation that will prevent them from performing the applicable work until medical clearance is obtained.

Where a medical reason prevents the use of a respiratory, the supervisor shall be provided with a notification that the worker has a limitation that prevents them from performing work requiring the use of a respirator at the time of the current fit testing.

No fit tests shall be completed on workers until a medical clearance has been obtained and any identified worker restriction or limitation have been accommodated.

The worker shall be provided with a cover letter and the respirator screening results for review and medical clearance by their health care provider.

Medical clearance will be provided directly to the Health & Wellness Department and where restrictions have been identified for respiratory wear, the process shall be facilitated by the Health & Wellness Department.

Costs incurred for medical clearance for SaskPower employees shall be paid for by SaskPower.

4.7 RECORD KEEPING

SaskPower shall retain the following records as long as the worker is employed in accordance with SaskPower's Records and Information Management Policy, SaskPower's Personal Information Privacy Policy and *The Health Information Protection Act:*

- Respirator fit testing records;
- Emergency response respirator inspection records;
- Respirator training records; and
- Health surveillance records.

All references to record keeping, forms and costs for Medical Clearance for this standard applies to SaskPower employees only.

4.8 TRAINING

Workers shall be trained in the care, use, maintenance, cleaning and limitations of air purifying respirators used in the workplace. Training shall also include practical experience in an uncontaminated environment.

Where respiratory PPE is used only for emergency response, **semi-annual refresher training** in safe use is required.

4.9 PROVISIONING

Respirators shall be supplied through SaskPower Central Stores or through the Division's purchasing process.

No SaskPower worker shall bring into the workplace or use in the workplace any respirator that has not been provided by the employer.

Air-purifying respirators will be assigned to an individual worker and not shared.

5 IMPLEMENTATION

The requirements of this version of the standard are to be met within six months of the approval date at which time the previous version will be superseded.

6 RESOURCES

6.1 INTERNAL RESOURCES

Related Policies:	Hazard/Aspect and Risk Assessment Policy Personal Information Privacy Policy Records and Information Management Policy
References:	Respirator Fit Test Documentation
Related Standards:	Confined Space Standard
Additional Information:	Respiratory Care and Practical Use Guidelines Safety and Environment Rulebook

6.2 EXTERNAL RESOURCES

Related Legislation:	*The Occupational Health and Safety Regulations, 2020, Part 7 – 3,4,5* *Health Information Protection Act, 1999*
Related Standards:	CAN/CSA-Z94.4 (R2018) Selection, Use and Care of Respirators CAN/CSA Z180.1 (R2019) Compressed breathing air and systems.
Additional Information:	American Conference of Governmental Hygienists (ACGIH®) TLVs® and BEIs® Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices.

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