

Ministry of Labour, Training and Skills Development

# **Firefighter's cancer prevention checklist**

Use this self-audit tool for fire services to learn how to protect fire personnel from exposure to contaminants that may cause cancer or other occupational illnesses.

## Overview

Employers, supervisors and workers all play a role in taking responsibility for health and safety in the workplace. Understanding your duties, responsibilities and rights under Ontario's Occupational Health and Safety Act (OHSA) is integral to ensuring all workers stay safe and healthy at work. The goal is to prevent workplace injuries, illnesses and deaths.

## Purpose

The purpose of this checklist is to help Ontario's fire service employers and workers increase their knowledge about measures to prevent exposure to contaminants, including those that cause cancers and other occupational illnesses. Fire services must take steps to minimize or prevent exposures, to keep their workplaces healthy and safe.

## How to use this checklist

We encourage employers and workers of fire services to work through this checklist together. Using this self-audit tool, employers can identify opportunities to prevent or reduce exposure to cancer-causing contaminants and take steps to improve health and safety in the workplace.

Checklist items are numbered to make it easy for workplaces to discuss and reference items as they work through the checklist

You can read the [Firefighter guidance notes](#) for more information and materials.

## Background

### Routes of entry

The two major routes of entry for contaminants affecting firefighters are inhalation and skin absorption.

#### Inhalation

Inhalation exposure may occur by:

- not wearing a respiratory protection device during fire suppression, salvage, overhaul or investigations
- handling or cleaning soiled personal protection equipment (PPE) and other equipment without a respirator
- respirator leakage
  - o facepiece problems including distortion, valves and deterioration
  - o facepiece seal if the user is not clean shaven where the facepiece meets the skin
  - o fit testing not conducted
- overbreathing while wearing a respirator during high workload

#### Skin absorption

Skin absorption exposure may occur by:

- unprotected skin due to improperly wearing PPE
- permeation through bunker gear, balaclava and gloves, resulting in contamination of neck, face, wrists, hands or groin
- handling or cleaning soiled PPE or other equipment without rubber gloves
- wearing contaminated PPE and clothing (wash them thoroughly and replace as needed)
- insufficient personal hygiene (not thoroughly washing or showering after fire)

As you work through the checklist, consider the measures and procedures that the fire service can implement to prevent the inhalation and skin absorption of contaminants.

## Decontamination

Contaminants from fire suppression activities can be inhaled and absorbed through the skin. Soiled or contaminated ensembles and ensemble elements are a hazard to firefighters since soils and contaminants can be flammable, toxic, or carcinogenic. Additionally, soiled or contaminated ensemble elements can have reduced protective performance.

Firefighter bunker gear is designed for protection against heat at the fire scene. However, contaminants can penetrate through the bunker gear. The balaclava and gloves are of different construction than the bunker gear, potentially resulting in skin contamination at the face, neck, hands, and wrist. Contaminants detected in the groin area can come through the bunker pants zipper or waistline.

Routine cleaning of soiled equipment, apparatus and PPE items is important to reduce the risk of exposure.

Respirators must also be properly cleaned and sanitized. Filtering facepiece respirators (such as the N95 disposable mask) are not to be washed and must be disposed of after use.

After use, the following should be decontaminated to remove any residual contaminants:

- areas where PPE is washed
- equipment used for decontamination (such as extractors)
- shower facilities for workers

## Checklist

### Part A: programs

#### Respiratory protection program

A respiratory protection program protects workers from airborne contaminants.

Refer to [Regulation 833 – Control of Exposure to Biological or Chemical Agents](#) for the relevant occupational exposure limits, and requirements for the employer to develop written measures and procedures regarding the selection, care and use of respirators.

Refer to [CAN/CSA-Z94.4-19, Selection, use, and care of respirators](#) for guidance on the administration of an effective respiratory protection program in the workplace.

The table below contains recommended elements to be included in a respiratory protection program.

Number	Respiratory protection program element	Is this element included in your program?
1	Program administration - the program is administered by a competent person	Yes/No Comments:
2	Roles and responsibilities - the roles and responsibilities of the workplace parties are established	Yes/No Comments:
3	Hazard situations - situations where respirators are required to be worn are identified	Yes/No Comments:

Number	Respiratory protection program element	Is this element included in your program?
4	Hazard assessment - potential airborne contaminants have been identified	Yes/No Comments:
5	Respirator selection - appropriate respirators have been chosen based on the hazard assessment and requirements of <u>Reg. 833</u>	Yes/No Comments:
6	Fit testing - worker fit testing occurs at least every 2 years	Yes/No Comments:
7	Training - workers are trained on the use, care, storage, inspection, maintenance, cleaning, proper fitting, and limitations of the respirator, before first use	Yes/No Comments:



Number	Respiratory protection program element	Is this element included in your program?
8	Use, maintenance, storage - procedures are in place for the proper use, maintenance and storage of the respirators	Yes/No Comments:
9	User screening – workers are screened to determine whether they are medically eligible to use a respirator	Yes/No Comments:
10	Records and program evaluation - records are retained and the program is regularly evaluated to ensure it remains effective	Yes/No Comments:

### Air management program

An air management program ensures workers using self-contained breathing apparatus (SCBA) are provided with an adequate volume of safe air to breathe from safe cylinders and that the cylinders are stored and transported safely.

Refer to [CSA Z180.1-19 Compressed breathing air and systems](#) for guidance on the design, construction, commissioning, calibration, testing, operation and maintenance of components for compressed breathing air systems.

The table below contains recommended elements to be included in an air management program.

Number	Air management program element (CSA Z180.1-19)	Is this element included in your program?
11	Monitoring of air levels during SCBA use – procedures are in place to ensure workers regularly monitor their air levels while using SCBA to prevent an out-of-air situation	Yes/No Comments:
12	Filling of cylinders - procedures are in place to fill cylinders safely with clean air that meets the purity requirements in CSA Z180.1-19	Yes/No Comments:
13	Cylinder replacement - procedures are in place to ensure cylinders are replaced as recommended by the manufacturer	Yes/No Comments:



Number	Air management program element (CSA Z180.1-19)	Is this element included in your program?
14	Secure transportation of cylinders - when transported in vehicles, cylinders are secured against tipping, falling or damage	Yes/No Comments:
15	Secure storage of cylinders – cylinders are stored securely to prevent tipping, falling or damage	Yes/No Comments:
16	Hydrostatic testing of cylinders - procedures are in place to ensure cylinders receive hydrostatic testing every 5 years	Yes/No Comments:

## Part B: work practices – scene/fire training ground

On the fireground or fire training ground, PPE protects firefighters from contaminants. In order to be effective, PPE must be worn properly and at all times when exposure can occur.

Some best practices for using and decontaminating PPE at the scene are listed below. The goal is to decrease worker exposure to contaminants by:

- using appropriate PPE
- limiting the spread of contaminants through a combination of personal hygiene practices
- cleaning gear on the fire ground (gross decontamination)
- isolation of contaminated PPE

One example of gross decontamination would be using water from a hose to remove visible contaminants from bunker gear and other equipment.

Bagging soiled gear at the scene is a good practice to reduce exposure to firefighters during transportation from the fire scene to the assigned fire hall for cleaning. Bagging soiled bunker gear at the scene will also prevent unnecessary contamination of the interior crew compartment of the apparatus and personal vehicles.

### ALARA

The 'As Low As Reasonably Achievable' (ALARA) principle should apply to all activities. The ALARA principle recognizes that although it may not be possible to reduce exposures to zero, efforts should be made to reduce workplace exposures as much as necessary to limit harm.

The table below contains best practices for work on scene or on the fire training ground.

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
17	Apparatus windows and doors are kept shut	Yes/No Comments:	Yes/No Comments:
18	PPE is properly worn at all times on the fireground or fire training ground	Yes/No Comments:	Yes/No Comments:
19	PPE, including appropriate respiratory protection, is properly worn at all times during salvage and overhaul and during fire investigations	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
20	Hood is exchanged when air cylinder exchanged	Yes/No Comments:	Yes/No Comments:
21	No person enters the hot zone without full PPE	Yes/No Comments:	Yes/No Comments:
22	Pump operators wear PPE, including SCBA, if smoke present	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
23	Gross decontamination of PPE is done before removing face piece – see above for note on ALARA principle	Yes/No Comments:	Yes/No Comments:
24	PPE is removed before entering rehab area, where weather permits	Yes/No Comments:	Yes/No Comments:
25	Air quality is monitored in rehab area	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
26	Hands and face are cleaned before eating	Yes/No Comments:	Yes/No Comments:
27	Post-fire wipes are provided and used for head and neck	Yes/No Comments:	Yes/No Comments:
28	Contaminated crew do not enter truck	Yes/No Comments:	Yes/No Comments:



Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
29	Contaminated gear is allowed to air out for 30 minutes before bagging, if possible	Yes/No Comments:	Yes/No Comments:
30	Contaminated gear is bagged at scene	Yes/No Comments:	Yes/No Comments:
31	Contaminated gear is transported from scene outside crew compartment	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
32	Where weather does not allow gear removal, disposable coveralls are worn over dirty PPE in apparatus to reduce cross-contamination	Yes/No Comments:	Yes/No Comments:
33	Contaminated gear is taken to fire hall for cleaning (not home)	Yes/No Comments:	Yes/No Comments:
34	Where crew compartment seats have integrated SCBA brackets: <ul style="list-style-type: none"> <li>• clean SCBA is placed in seats, or</li> <li>• dirty SCBA has undergone gross decontamination and is bagged before placing in seat</li> </ul>	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
35	Gross decontamination of hose and equipment is done at scene, as much as possible	Yes/No Comments:	Yes/No Comments:
36	Contaminated gear that is carried in personal vehicles is in a closed container	Yes/No Comments:	Yes/No Comments:
37	Crew returns directly to fire hall for further decontamination	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place on scene?	Is there a SOP <sup>1</sup> ?
38	Fire investigators: <ul style="list-style-type: none"> <li>• wear SCBA, or</li> <li>• wear powered air-purifying respirator (PAPR) with air monitoring per NFPA 1500, or</li> <li>• wear respiratory protection as determined by an assessment per CSA Z94.4-19</li> </ul>	Yes/No Comments:	Yes/No Comments:

<sup>1</sup> Standard operating procedure

## Part C: work practices – fire hall

### Laundry rooms and laundry areas

If a ventilated laundry room is available, the laundry room should be kept under slight negative pressure at more than 1 cfm/square foot to prevent the spread of contaminants from soiled gear to the rest of the workplace. If there is no laundry room, the laundry area should be located away from bunker gear air dryers, clean bunker gear storage areas and other occupied areas, so as not to expose workers nearby or contaminate clean gear.

### Laundering and drying bunker gear

To prevent damage to bunker gear, the manufacturer's recommendations should be followed.

Refer to [NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting](#) for guidance on laundering bunker gear.

Wash/dry temperatures should be less than 40 C. Detergent within a pH range between 6 to 10.5 should be used.

Extractors are commonly used for routine cleaning of bunker gear outer shell, bunker gear inner lining, balaclava and gloves. The g-force of extractors should not exceed 100 g for all elements.

Gear air dryers are commonly used for drying clean bunker gear.

### Showering

Taking a shower with soap and water is encouraged as soon as possible after a fire call to remove contaminants on the skin, which can be absorbed into the body. If a shower is not available, washing of any potentially exposed skin (such as the face, neck, wrists and hands) is encouraged after a fire call.

### Clean vs dirty areas

Bunker gear should be kept in restricted areas of the fire hall and should never enter the living areas. A combination of signage and markings on the floor can help separate clean areas from dirty areas.

**Storing clean bunker gear on the apparatus floor**

If the apparatus floor is not equipped with a direct local exhaust system from the tailpipes of vehicles, then exhaust emissions from the apparatus can be captured by general mechanical ventilation at 20,000 cfm (or more) per operating truck and 100 cfm/horsepower for diesel-fuelled vehicles. If the apparatus floor has only natural ventilation, then clean bunker gear should not be stored on the apparatus floor to prevent contamination of clean gear with diesel soot.

The table below contains best practices for work at the fire hall.

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
39	Fire hall has a laundry room (a separate laundry room is recommended)	Yes/No Comments:	N/A
40	Laundry room has ventilation	Yes/No Comments:	N/A



Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
41	Laundry room ventilation is under slight negative pressure	Yes/No Comments:	N/A
42	Laundry room is decontaminated after use	Yes/No Comments:	Yes/No Comments:
43	Fire hall has a laundry area (a reasonable alternative when there is no separate laundry room)	Yes/No Comments:	N/A

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
44	Laundry area is away from other work spaces	Yes/No Comments:	N/A
45	Laundry area is away from unprotected workers	Yes/No Comments:	N/A
46	Laundry area is away from clean PPE storage	Yes/No Comments:	N/A

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
47	Laundry area is away from gear air dryer	Yes/No Comments:	N/A
48	Extractor used for soft gear	Yes/No Comments:	N/A
49	Extractor instructions are posted	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
50	Extractor maintenance program in place	Yes/No Comments:	Yes/No Comments:
51	Correct pH level soap available for extractor	Yes/No Comments:	N/A
52	Extractor is decontaminated after use	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
53	Gear air dryer available	Yes/No Comments:	N/A
54	Clothing worn under bunker gear is washed separately from regular laundry	Yes/No Comments:	Yes/No Comments:
55	Crews have spare clean clothing at the station to wear after showering	Yes/No Comments:	Yes/No Comments:

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
56	Truck bay / apparatus floor ventilation is adequate for storing clean bunker gear on the apparatus floor (see introductory paragraph on "Storing clean bunker gear on the apparatus floor")	Yes/No Comments:	N/A
57	Apparatus is washed inside and out after every fire call	Yes/No Comments:	Yes/No Comments:
58	Apparatus cabin air filter inspected after every fire call and replaced as needed	Yes/No Comments:	Yes/No Comments:



Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
59	Apparatus cabin air filtration system is cleaned quarterly	Yes/No Comments:	Yes/No Comments:
60	A regular apparatus interior cleaning schedule is established and followed.	Yes/No Comments:	Yes/No Comments:
61	Shower facilities with soap and water are available at the fire hall, or where no showers are available, facilities to wash potentially exposed skin (neck, face, wrists, hands) are available	Yes/No Comments:	N/A

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
62	Shower or washing occurs as soon as possible upon return to fire hall	Yes/No Comments:	Yes/No Comments:
63	Dirty areas versus clean areas of the fire hall are indicated	Yes/No Comments:	N/A
64	"No Bunker Gear Beyond This Point" signage posted	Yes/No Comments:	N/A

Number	Work practice	Does this work practice take place at the fire hall?	Is there a SOP <sup>1</sup> ?
65	Dirty areas have surfaces that are easy to clean (not carpet)	Yes/No Comments:	N/A

<sup>1</sup> Standard operating procedure

**Part D: inspection of PPE**

Personal protective equipment (PPE) protects workers from contaminants. PPE needs to be maintained in good condition in order to provide protection. Regular inspection of the various PPE elements should be conducted to ensure they are in good condition. Where PPE is found to require repair or cleaning, it should be removed from service and clearly identified as being out of service.

Refer to CAN/CSA-Z94.4-19, Selection, use, and care of respirators for guidance on respirator inspections.

Refer to NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting for guidance on inspecting these items.

The table below provides details on personal protective equipment inspections.

Number	PPE item	Does routine inspection occur after each use?	Does advanced inspection occur annually?	Is there a SOP <sup>1</sup> on inspection?
66	Respirator – SCBA <sup>2</sup>	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:
67	Respirator – PAPR <sup>3</sup>	Yes/No Comments:	N/A	Yes/No Comments:

Number	PPE item	Does routine inspection occur after each use?	Does advanced inspection occur annually?	Is there a SOP <sup>1</sup> on inspection?
68	Respirator – APR <sup>4</sup>	Yes/No Comments:	N/A	Yes/No Comments:
69	Mask flow test equipment (ie. PosiChek)	N/A	Yes/No Comments:	Yes/No Comments:
70	Helmet	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:

Number	PPE item	Does routine inspection occur after each use?	Does advanced inspection occur annually?	Is there a SOP <sup>1</sup> on inspection?
71	Boots	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:
72	Bunker coats: outer shell	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:
73	Bunker coats: inner lining	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:



Number	PPE item	Does routine inspection occur after each use?	Does advanced inspection occur annually?	Is there a SOP <sup>1</sup> on inspection?
74	Bunker pants: outer shell	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:
75	Bunker pants: inner lining	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:
76	Balaclava/hood	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:

Number	PPE item	Does routine inspection occur after each use?	Does advanced inspection occur annually?	Is there a SOP <sup>1</sup> on inspection?
77	Gloves	Yes/No Comments:	Yes/No Comments:	Yes/No Comments:

<sup>1</sup> Standard operating procedure

<sup>2</sup> Self-contained breathing apparatus

<sup>3</sup> Powered air-purifying respirator

<sup>4</sup> Air-purifying respirator

The table below discusses PPE training.

Number	PPE practice	Is this element included in your program?
78	Workers receive training in use, removal, disposal, cleaning, inspection and limitations of PPE	Yes/No Comments:

## Part E: use of PPE during decontamination activities

Proper PPE should be worn to protect workers from contaminants while they are handling soiled equipment or decontaminating surfaces.

When in the laundry room area, soiled bunker gear must be handled while wearing appropriate PPE such as disposable coveralls, safety glasses, rubber gloves, and N95 masks to prevent exposure via inhalation and skin absorption during laundering activities.

After laundering soiled gear, appropriate PPE should be worn while decontaminating the surfaces of the laundry room/area and extractor.

Some examples of PPE that could be used for various tasks are included in the checklist below – this list is not exhaustive and there may be other tasks in your fire hall that require PPE.

The table below outlines PPE use during decontamination activities.

Number	Activity	During this activity, do workers wear: <ul style="list-style-type: none"><li>• N95 respirator<sup>1</sup></li><li>• safety glasses</li><li>• rubber gloves</li><li>• coveralls?</li></ul>	Is there a SOP <sup>2</sup> ?
79	Handling/ decontamination of soiled soft/hard gear	Yes/No Comments:	Yes/No Comments:

Number	Activity	During this activity, do workers wear: <ul style="list-style-type: none"><li>• N95 respirator<sup>1</sup></li><li>• safety glasses</li><li>• rubber gloves</li><li>• coveralls?</li></ul>	Is there a SOP <sup>2</sup> ?
80	Decontamination of laundry area/room	Yes/No Comments:	Yes/No Comments:
81	Decontamination of shower facilities	Yes/No Comments:	Yes/No Comments:
82	Decontamination of apparatus - crew compartment and exterior	Yes/No Comments:	Yes/No Comments:

Number	Activity	During this activity, do workers wear: • N95 respirator <sup>1</sup> • safety glasses • rubber gloves • coveralls?	Is there a SOP <sup>2</sup> ?
83	Decontamination of hose at station	Yes/No Comments:	Yes/No Comments:

<sup>1</sup> Elastomeric or filtering facepiece

<sup>2</sup> Standard operating procedure

## Further information

### Purchasing equipment

When purchasing new apparatus, hose or other equipment, consider ease of cleaning. For example, non-porous crew compartment seats are easier to clean than fabric.

### Cancer prevention resources

Visit Ontario's Ministry of Health website for more [cancer prevention information and resources](#).

### Related

Read [WSIB Document Number 23-02-01 Cancers in Firefighters and Fire Investigators, effective July 4, 2018](#) to learn about the prescribed cancers and the circumstances under which they will be presumed to be work-related occupational diseases, as set out in [O. Reg. 253/07 Firefighters](#), under the [Workplace Safety and Insurance Act, 1997, S.O. 1997, c. 16, Sched. A](#).

Read [Regulation 833 – Control of Exposure to Biological or Chemical Agents](#) for respiratory protection program requirements and respirator use and selection.

Read [O. Reg. 714/94 – Firefighters - Protective Equipment](#) for structural firefighting protective garment requirements.

Read [CSA Z180.1-19 Compressed breathing air and systems](#) for guidance on the purity of compressed breathing air supplied to service outlets and for breathing air systems required to produce, store and distribute such air.

Read [NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting](#) for guidance on the selection, care, and maintenance of fire fighting protective ensembles to reduce health and safety risks associated with improper maintenance, contamination, or damage.

Read [NFPA 1500 Standard on Fire Department Occupational Safety, Health and Wellness Program](#) for guidance on occupational safety and health programs for fire departments.

Read about how and when to [report an occupational illness](#) to the Ministry of Labour, Training and Skills Development.

Connect with the [Firefighter Cancer Support Network](#).