

Operating Guideline # 223

Respiratory Protection During Fire Investigations

September 29, 2019



**PURPOSE:**

The purpose of this Operating Guideline (OG) is to establish the respiratory protection practices to be followed by any staff that are engaged in post-incident fire cause determination efforts.

**ISSUE/RATIONALE:**

All fire departments have an obligation to attempt to determine the cause any fire that they attend. Simple fire cause determination efforts can be easily accomplished by most incident commanders, while more complex efforts often require the response of personnel more thoroughly trained or experienced in investigative techniques.

Since all fires create hazardous atmospheres – especially in enclosed area’s such as inside a structure - it’s important for all persons operating at an incident to understand the importance of respiratory protection in preventing exposure to harmful gases, products of combustion and airborne particulate matter. Incomplete combustion (present at every fire incident) can also create a hazardous atmosphere both during and for quite some time following the incident. Even in seemingly “clean” (smoke free or well ventilated) atmospheres, there is the potential for exposure to toxic fire by-products. It is also important to understand that the risk from exposure to particulate matter such as dust and other fine airborne debris increases when fire debris is moved or disturbed during fire scene examinations.

This OG is to be used as a guide for staff in selecting the most appropriate respiratory protection equipment to be worn in order to minimize the risks and prevent unwanted exposure to hazardous atmospheres such as can be expected at a fire scene.

**GUIDELINE:**

1. Members of the Muskoka Lakes Fire Department who conduct post-incident fire cause determination efforts shall always consider the need for respiratory protection before initiating an investigation and conducting an examination of a scene.
2. Whenever possible, those persons involved in fire investigations should delay the start of any investigative efforts which might place them in a hazardous atmosphere until the completion of fire extinguishment efforts and the area to be entered is effectively and adequately ventilated.
3. Where assigned to conduct a post-incident fire cause determination investigation, all staff who are about to embark on an investigation which will take them into a structure that has been damaged by fire shall undertake a risk assessment which will be utilized to make a determination as to the level of Personal Protective Equipment (PPE) required and in particular, the need for respiratory protection equipment.

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4. Prior to entering an enclosed area where a fire has occurred, staff assigned to post fire cause determination shall ensure that the area is checked with atmospheric monitoring equipment by staff wearing pull PPE including SCBA to ensure that it is free from harmful gases (i.e. - carbon monoxide, combustible/explosive atmospheres) and that oxygen levels are such that entry can be made safely. Periodic re-evaluation of the environmental conditions inside an enclosed area shall be undertaken as necessary (generally every 15 minutes for the first hour, and thereafter as circumstances warrant.)

5. Regardless of the level of protection that is deemed to be appropriate in the circumstances, staff must always follow the manufacturer's instructions on the proper care, use and maintenance of the respiratory equipment selected and worn and shall be trained and competent in the use of the selected equipment.

**Use of Self-Contained Breathing Apparatus**

6. Oxygen deficient atmospheres or atmospheres that are contaminated require that staff use full Self-Contained Breathing Apparatus (SCBA) – the use of “filtering” type protection is NOT APPROPRIATE IN THESE CIRCUMSTANCES.

7. Staff members utilizing SCBA must make arrangements for the appropriate support while working in fire damaged structures as may be appropriate in the circumstances (i.e. – spare cylinders, back-up personnel etc.).

**Use of Powered Air Purifying Respirator (PAPR)**

8. Where respiratory protection is warranted and the risk of a contaminated or oxygen deficient atmosphere is NOT present, but there remains a risk of exposure to significant particulate matter such as dust or airborne matter, staff conducting a post-incident fire cause determination investigation shall consider the use of a PAPR with full face mask as the next level of respiratory protection.

9. Filters (CBRN or P100) worn with PAPR's are regarded as “single use only” and while they can be utilized on multiple occasions over several hours, they shall be discarded at the completion of each investigation in accordance with the manufacturers recommendations.

**Use of Filter Cartridges**

10. Where there is minimal risk of exposure to particulate matter (very limited disturbance of debris expected) and the risk of an oxygen deficient atmosphere is NOT present, staff shall consider the use of a full face mask equipped with a filter cartridge (P100).

11. Any filter cartridge that is contaminated as a result of use shall be discarded in accordance with the manufacturer's recommendations.

**Use of N95 Type Mask**

12. The use of a N95 type mask shall be limited to those circumstances where fire damage is minimal; the investigator does not expect to disturb any debris that might be present; the atmosphere has been determined to be clean/clear, and the risk of an oxygen deficient atmosphere is NOT present. This should be regarded as the minimum level of respiratory protection to be worn by those conducting a post-incident fire cause determination investigation.

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**RESPONSIBILITY:**

It is the responsibility of all staff to be familiar with the content of this Operating Guideline and adhere to its provisions.

**REFERENCES:**

- Section 21 Committee Guidance Note GN-4-09, Respiratory Protection
- Section 21 Committee Guidance Note GN-4-13, Personal Protection During Fire Investigation Operations
- Muskoka Lakes Fire Department OG 203, Use of Breathing Apparatus
- Muskoka Lakes Fire Department OG 810, Operational Level Fire Investigations
- Muskoka Lakes Fire Department OG 1807, Essential and Enhanced Level Fire Investigations
- NFPA 921, Guide for Fire and Explosion Investigations, 2014 Edition
- IFSTA, Fire Investigator, Second Edition