

City of Belleville Fire Department

Number: 3025

POLICY:

It is the policy of the Belleville Fire Department that standard procedures be utilized for monitoring the atmosphere at all fire related incidences for the detection of Hydrogen Cyanide.

Date S.O.G. Comes Into Effect: April 11, 2019

Date S.O.G. Revised: April 11, 2019

Date Committee Approved S.O.G.: April 24, 2018

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GUIDELINE

1:00 **Purpose:**

1:01 To establish a guideline to protect all personnel by monitoring Hydrogen Cyanide at all incidents involving fire.

2:00 **Background**

2:01 Hydrogen Cyanide (HCN) is a deadly gas and bi-product of combustion present at nearly every structure fire. It is produced when materials such as insulation or synthetic materials are burned or heated. The symptoms of hydrogen cyanide closely mirror those of carbon monoxide and are 24 times more dangerous, therefore personnel must be aware of its presence.

Symptoms of HCN poisoning is similar to that of CO poisoning which include headache, nausea, fatigue and dizzy spells at low concentrations and respiratory problems, unconsciousness and cardiac arrest at high levels. If exposure is suspected, transport to a hospital should not be delayed.

THIS GUIDELINE IS NOT EXPECTED TO SUBSTITUTE FOR GOOD JUDGEMENT AND EXPERIENCE UNDER UNUSUAL CONDITIONS.

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2:02 **Monitoring:**

- All fires are to be monitored utilizing the Hydrogen Cyanide (HCN) detector.
- If a station does not have an HCN detector, the Incident Commander (IC) shall request the device from the other station.
- SCBA's are to be worn in all Hot Zone locations during operations.
- Exterior air monitoring will be conducted by the Incident Safety Officer (ISO) or designate.
- Interior air monitoring will be conducted by any interior team as directed by the IC.
- The following conditions require atmosphere air quality monitoring;
 - When SCBA's have been used during any fire, ventilation is complete and before removal of the SCBA.
 - Before entry without an SCBA into a contaminated area.
 - When firefighters are operating on the exterior of a fire without SCBA
 - Neighboring properties where smoke plumes may be travelling into other structures.
 - Open air vehicle fires.
 - Prior to releasing the scene to the owner.
 - Whenever deemed necessary by the IC or the ISO.

2:03 **Personal Protective Equipment and SCBA**

- SCBA shall be worn for all interior structure and content fires.
- SCBA shall be worn for all exterior firefighting where firefighters are working in a smoke filled environment.
- SCBA shall be worn for all vehicle fires.
- SCBA shall not be removed for any of the above fires until air monitoring has taken place and the IC confirms HCN readings.
- PPE protects firefighters from absorbing Hydrogen Cyanide, smoke and other bi-products of combustion. Through the skin.
- Full PPE shall be worn at all structure and vehicle fires.
- PPE that has been exposed to byproducts of combustion shall be cleaned as per SOP #200-319.
- Heavily soiled PPE should be removed as soon as possible and gross decontamination on-scene may be necessary by following SOG#3026

2:04 **Ventilation**

- Positive pressure may be utilized to aid in ventilating a structure.

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2:05 **Salvage and Overhaul**

- SCBA is not to be removed during salvage and overhaul.
- HCN levels shall be checked prior to and periodically throughout the salvage and overhaul phase.

2:06 **Investigations**

- Investigators and other service personnel are to utilize the HCN monitor and multi gas detectors prior to entering a structure to investigate.
- If the HCN detector goes into alarm then SCBA's shall be worn.
- Continuous monitoring shall take place as debris is removed and/or overturned.

2:07 **Action Levels**

- The action level allowed for operating without an SCBA in an environment is 5ppm (4.7ppm).
- The Immediately Dangerous to Life and Health (IDLH) for HCN is 50ppm.
- If the HCN monitor goes into alarm then an SCBA shall be utilized for operations.

2:08 **Detector Start-up**

- When using the detector at a scene, it shall be turned on in clean air. The detector will go through a 5 minute warm up phase for the sensors. The warm up phase is complete when the exclamation mark (!) disappears off the display.

2:09 **Calibration of Detector**

- HCN detectors will be bump tested every Monday during vehicle checks. Follow instructions posted at the bump station.
- If the detector is exposed to high concentrations of HCN or has been dropped causing shock to the detector, it must be calibrated.

3:00 **Scope:**

3:01 It shall be the responsibility of the Captain/ Officer in charge of each shift to ensure that this guideline is explained and followed.

3:02 It shall be the responsibility of **all employees** to understand and adhere to this guideline.

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