



## Air Monitoring At Structure Fires

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**PURPOSE:** To establish a guideline for monitoring the atmosphere for particulates and fire gases including Carbon Monoxide (CO), Hydrogen Cyanide (HCN) and Aldehydes at structure fires.

**GUIDELINE:** All structure fires are to be monitored for air quality after fire is under control and prior to removal of self-contained breathing apparatus for overhaul. If no air monitoring device is available, the Incident Commander will request one via mutual aid or require all personnel to wear respiratory protection for the duration of the incident.

### **PROCEDURES: I. Safety**

Safety of responders is our number one priority; therefore, SCBA's shall be required until the atmosphere is deemed safe by trained personnel and a calibrated air monitoring device. Additionally, when smoke is present SCBA's shall be worn to provide for responder safety and minimize particulate exposure.

### **II. Monitoring**

- A. All structure fires are to be monitored for HCN, Aldehyde and CO when the appropriate air monitoring equipment is available. Findings are to be provided to the Incident Commander and/or Safety Officer and the data is to be used to determine the appropriate level of respiratory protection required for those operating on an incident.
- B. Threshold levels at or in excess of the following shall require the continued use of SCBA in the identified hazard zone:
  - 1. **≥ 4.7 ppm HCN** – (CalOSHA) Permissible Exposure Limit.
  - 2. **≥ 25ppm CO** – (CalOSHA) Permissible Exposure Limit.
  - 3. **≥ 0.75ppm Aldehydes** – (CalOSHA) Permissible Exposure Limit.

### **III. Decontamination Measures for Structural PPE**

- A. Use of a mechanical fan or a soft bristle brush to remove large particulate material.



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- B. Use of a soft fog pattern to prevent saturation.
- C. PPE should be laundered using Extractors and following agency specific procedures, as soon as possible.

### IV. Exposure of Personnel

- A. Acute HCN symptoms include weakness, headache, confusion, vertigo and/or fatigue. Personnel exhibiting signs of exposure should be medically evaluated as appropriate.
- B. Personnel transported for medical evaluation/treatment should be accompanied by a FD representative (e.g. Safety Officer); in such cases, the following should occur:
  - 1. The employee(s) should receive immediate medical attention that includes blood work (including HCL levels) as soon as possible (Note: the half-life for HCN is one hour).
  - 2. The treating physician should be notified that the firefighter(s) was operating in a known hazardous environment containing Hydrogen Cyanide.
  - 3. If an injury occurs from a toxic gas exposure, the Safety Officer (IC) should document all known values of HCN, CO and Aldehyde in the appropriate Record Management System.
- C. Toxic gas monitoring information collected on-scene should be recorded whenever possible regardless if an injury was sustained or not. Collected Data shall be entered into the appropriate Record Management System for the purpose of recording occupational exposure events.

### V. Releasing Buildings for Reoccupation

All buildings should be evaluated for permissible levels of HCN, CO and Aldehyde prior to their release from fire department control. Permissible levels are to be below the threshold limits identified in Section II of this document. Special care should be taken to check adjacent and downwind occupancies in the immediate area.



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### References:

- OSHA

### Attachments:

- Attachment #1 – Post-Fire Air Monitoring Log

### Review/Revision History:

- Air Monitoring at Structure Fires Created January 2020

The Undersigned Fire Chiefs approve of the content in this document. Dated: November 1, 2021

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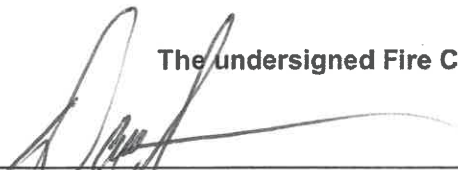


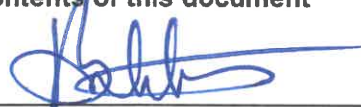
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**AN ORGANIZATION DEDICATED TO THE DELIVERY OF EXCEPTIONAL FIRE AND LIFE SAFETY SERVICES THROUGH COLLABORATION AND TEAMWORK**


### Signature Page

The undersigned Fire Chiefs approve the contents of this document

  
\_\_\_\_\_  
Dave Spencer, Fire Chief  
Auburn Fire Department

  
\_\_\_\_\_  
Brian Estes, Fire Chief  
Placer County Fire Department/CAL FIRE


  
\_\_\_\_\_  
Michael Ridley, Fire Chief  
Foresthill Fire Protection District

  
\_\_\_\_\_  
Ian Gow, Fire Chief  
Placer Hills, Newcastle, and Penryn  
Fire Protection Districts

  
\_\_\_\_\_  
Matt Alves, Public Safety Chief  
Lincoln Fire Department

  
\_\_\_\_\_  
Reginald Williams, Fire Chief  
Rocklin Fire Department

  
\_\_\_\_\_  
Rick Barte, Fire Chief  
Roseville Fire Department

  
\_\_\_\_\_  
Mark Duerr, Fire Chief  
South Placer Fire District



## POST-FIRE AIR MONITORING LOG

<b>Incident Date:</b>		<b>Incident Address:</b>		<b>Incident Commander/Jurisdiction:</b>	
<b>Incident Number:</b>					
<b>Property Type:</b>	<input type="checkbox"/> Single Family <input type="checkbox"/> Multi-Family <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural				

Note the time of each reading and use the following accepted levels to base all subsequent actions. If any of the readings are above the established values, respiratory protection shall be in place unless an alternate plan is developed by the Incident Commander, Safety Officer or HAZMAT Team.

Time	O <sub>2</sub> (19.5% - 23.5%)	LEL (10%)	H <sub>2</sub> S (10 PPM)	HCN (≤ 4.7 PPM)	CO (≤ 25 PPM)	Aldehydes (≤ 0.75 PPM)	Notes

**Other Hazards:**

**Alternate Plan of Action:**

IC Name: \_\_\_\_\_  
 IC Signature: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_  
 Safety Officer Signature: \_\_\_\_\_

HAZMAT Team ID: \_\_\_\_\_  
 HAZMAT BC/FC  
 Signature: \_\_\_\_\_



## POST-FIRE AIR MONITORING LOG (Additional Pages)

Time	O2 (19.5% - 23.5%)	LEL (10%)	H <sub>2</sub> S (10 PPM)	HCN (≤ 4.7 PPM)	CO (≤ 25 PPM)	Aldehydes (≤ 0.75 PPM)	Notes: