



**FAIRFAX COUNTY FIRE & RESCUE DEPARTMENT
STANDING ORDER**

ISSUED BY: Fire Chief Richard Bowers

NUMBER: 2017-003
CFAI PI: 7F.4

APPROVED BY:

DATE: March 10, 2017

Fire Chief Richard Bowers
FIRE AND RESCUE DEPARTMENT

SUBJECT: Respiratory Protection During Overhaul Operations
EFFECTIVE DATE: Immediately

With the growing scientific information linking cancer to firefighting, and in an effort to promote health and wellness of our personnel, the use of respiratory protection during overhaul is mandatory. The mandated use of respiratory protection during overhaul applies to all operational personnel and shall be adhered to regardless of jurisdiction (e.g. mutual aid and automatic aid to neighboring jurisdictions). The department is striving to reduce the incidence of cancer among personnel by mandating the use of appropriate respiratory protection during the entirety of overhaul operations.

Off-gassing of hazardous compounds and known carcinogens continues to occur even after the production of visible smoke has stopped. Firefighter exposures during overhaul have the potential to cause changes in spirometry and lung permeability. One of the routes of greatest concern for entry of carcinogens into the body is through the lungs, when firefighters prematurely remove their Self-Contained Breathing Apparatus (SCBA), especially during overhaul.

Incident scenes requiring overhaul will be divided into three phases.

Phase I – This phase begins with fire suppression activities and continues until the fire is knocked down, ventilation is performed and the Safety Officer (SAFO) confirms an Immediate Danger to Life and Health (IDLH) atmosphere no longer exists. Once no visible fire or smoke is evident, the SAFO will perform atmospheric monitoring utilizing the MultiRAE 5 gas meter.

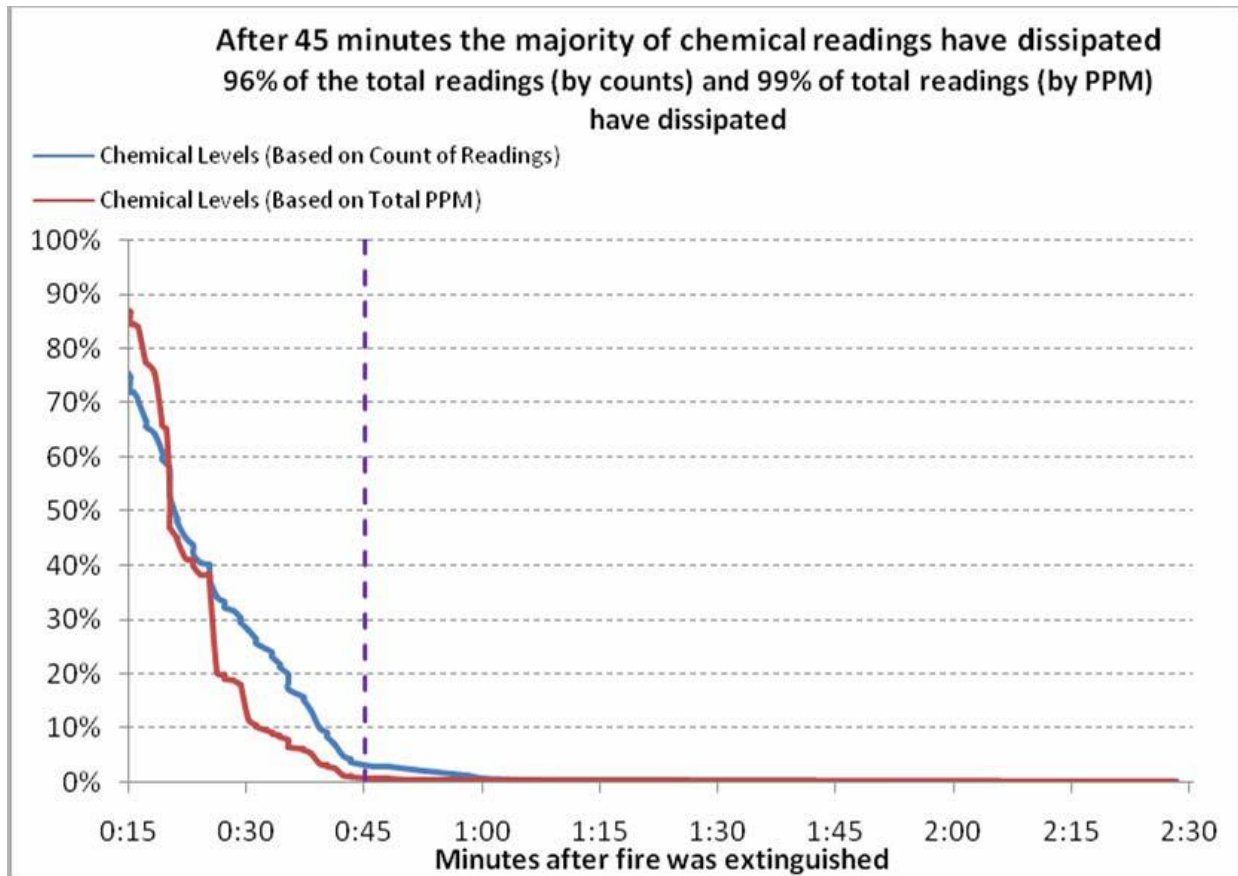
The SAFO currently monitors carbon monoxide (CO), hydrogen cyanide (HCN), hydrogen sulfide (H₂S), oxygen (O₂), all in parts per million and the lower explosive limit (LEL) of methane. The following are acceptable levels for the SAFO's to declare an IDLH no longer exists.

Gas	SAFO Clearance
CO	0 PPM
HCN	0 PPM
H ₂ S	0 PPM
O ₂	20.9%
LEL	0% of LEL

The MultiRAE 5 gas meter is not capable of monitoring for the myriad of chemicals known to be present in the overhaul environment. Any entry into an IDLH atmosphere will require the use of an SCBA. After the SAFO determines the atmosphere meets the identified levels, they shall notify the incident commander (IC) of the results.

The IC shall notify the Department of Public Safety Communications that the building has been cleared and a note will be entered into the incident history. In the absence of the SAFO the IC shall ensure atmospheric monitoring and a structural assessment is performed.

Phase II – This phase begins once the SAFO has performed atmospheric monitoring and the atmosphere meets the defined levels listed above. This phase will continue for the next 90 minutes. During this phase all personnel on the incident scene, including fire investigators, must wear SCBA or a Supplied Air Breathing Apparatus (SABA) when entering the structure for overhaul and/or cause and origin determination.



(STATE OF OREGON GOVERNOR'S FIRE SERVICE POLICY COUNCIL AND TUALATIN VALLEY FIRE & RESCUE)

The graph above is from a study conducted showing that significant readings of chemicals were found up to 45 minutes after a fire was extinguished. To increase the amount of dissipation time, the Fire and Rescue Department has expanded the timeframe to 90 minutes. Natural ventilation and forced air ventilation using a non-carbon monoxide generating fan shall be utilized during overhaul.

Full Personal Protective Equipment (PPE), including Nomex hood, shall be worn during this phase as absorption is a potential route of exposure for carcinogens. The extended use of full PPE may result in greater physical exertion, therefore the incident commander must ensure adequate personnel and resources remain on the scene to rotate through work cycles and allow for appropriate rehabilitation. To ensure adequate air resources are available, a Light and Air unit will be added to the Rapid Intervention Team dispatch algorithm.

Phase III – This phase begins 90 minutes after the atmosphere has been cleared by the SAFO. If further overhaul is deemed necessary, respiratory protection is still required however may be downgraded at the discretion of the IC. Fire investigators may transition to their twin cartridge full facepiece respirator and field operations personnel may continue to wear the SCBA or may transition to an N-95 particulate respirator mask. However, it is strongly recommended that personnel remain in SCBA for the duration of the event.

Listed below are links to studies done by departments across the nation supporting the use of SCBA's during overhaul.

<http://www.oregon.gov/osp/SFM/Documents/AirMonitoringReport.pdf>.

http://www.iaff.org/hs/Resi/lung_disease_in_fire_fighters.htm.

http://tucson.com/news/blogs/health/study-to-address-tucson-firefighters-exposure-to-carcinogens/article_f611db66-d999-5322-a69d-96f98b82aa86.html.

<http://www.ffcancer.org/My%20Docs/2015%20Occupational%20Cancer%20Report.pdf>.

<https://www.cdc.gov/niosh/pgms/worknotify/pdfs/ff-cancer-factsheet-final.pdf>.

<https://firefightercancersupport.org/fcsn-nation/library/>.