Standard Operating Guideline

**Cancer Risk Reduction Measures at Structure Fires**

**Effective: Draft Issued by:**

**Purpose:** To establish a guide for cancer risk reduction measures at structure fires.

**Scope**: This guideline applies to all fire ground personnel.

**Guidelines**: Fire smoke and its many bi-products of combustion present a serious health risk to responders. Hydrogen Cyanide (HCN) and Carbon Monoxide (CO) are just a few of the deadly gases that when exposed to can pose immediate and long-term health effects. HCN is produced when materials such as insulation or synthetic materials are burned or heated. The symptoms closely mirror those of carbon monoxide exposure; therefore, personnel must be cognizant of its presence.

 Vehicle fires and trash fires also generate high levels of HCN and CO, but because they normally occur in an open environment the products of combustion dissipate quickly into the atmosphere. However, when smoke is present the need for SCBA is vital for responder protection due to IDLH atmospheres can be up to 30 feet from the structure or container involved.

**Safety**

1. Safety of responders is the **first priority**, therefore SCBA are required until a safe atmosphere can be determined atmospheric monitoring.
2. HCN exposure may be difficult to determine. Symptoms are similar to that of CO exposure, which may include headache, nausea, fatigue and dizzy spells at low levels and respiratory problems, unconsciousness, and cardiac arrest for high levels. If exposure is suspected transport to a health care facility should not be delayed.

**Personal Protective Equipment**

1. Turnout Gear

1. Turnout gear helps protect personnel from absorbing smoke, including HCN and CO through the skin, which is a secondary route of exposure.

2. Personnel are to decontaminate turnout gear on scene by hosing off as much contaminate as possible.

3. Contaminated gear should be placed in a plastic bag and transported back to the station. The gear shall not be transported in the cab which would contaminate the cab area.

4. Personnel are to wash turnout gear following structure fires that soil and saturate gear with products of combustion.

5. If a second set of turnout gear is available, personnel should switch gear and wash the contaminated gear. If a second set of gear is not available, the contaminated gear should be washed at the end of the shift.

 B. Self-Contained Breathing Apparatus (SCBA)

1. SCBA is the best preventative measure for smoke exposure, as inhalation is the primary route of entry for exposure.

2. SCBA is required on all structure, vehicle and trash fires until the fire is extinguished, and atmospheric monitoring deems the area safe.

 C. Flash Hood Exchange

 1. Clean tie-dyed flash hoods are stored on Westview Engine 32.

2. Prior to leaving the scene, the OIC will collect all contaminated flash hoods and will issue the clean tie-dyed flash hoods.

3. The OIC will place the contaminated flash hoods in a trash bag for transport outside of the cab. The OIC will ensure the contaminated flash hoods are decontaminated, returned to the personnel and the tie-dyed flash hoods are collected and decontaminated if necessary.

**Atmospheric Monitoring**

1. All structure, vehicle and dumpster fires are to have atmospheric monitoring as soon as possible assessing CO and HCN levels.
2. The CO/HCN meter will be located on Westview Engine 32.
3. SCBAs are not to be removed until the atmospheric monitoring is completed and deemed safe.

**Action Levels**

1. The action level in order to operate without SCBA in an environment where HCN is present will be 5 PPM which is the Short Term Exposure Limit (STEL)for HCN as recommended by NIOSH. IDLH for HCN 50 PPM.
2. The action level for CO will be 35 PPM.
3. The atmosphere must meet the action level for both CO and HCN for personnel to operate without a SCBA.

**Meter Calibration**

1. Calibration will be completed by the Spartanburg County Assistant Fire Marshall.
2. The CO & HCN meter will be calibrated every 90 days according to manufacturer’s recommendation (Rae Systems).

**Rehab Procedures**

1. When contaminated personnel are sent to rehab, all PPE should be doffed and placed up wind of the rehab area or placed where a fan is blowing away from the rehab area.
2. Personnel shall use wipes to clean all exposed skin and hair.
3. Personnel shall not drink or eat until their face and hands have been decontaminated.
4. Wipes should be disposed of at the scene in a trash bag provided on scene.

**Decontamination**

1. Personnel should practice good hygiene by washing hands prior to drinking or eating on scene or at the station.
2. Turnout gear should be washed as soon as possible in an approved gear extractor and detergent per NFPA 1851.
3. Gloves should be washed by hand and air dried. Do not wring the excess water from the gloves.
4. If a gear extractor is unavailable, a brush and hose can be used. Allow the gear to air dry out of direct sunlight.
5. Personnel shall shower and change uniforms at the first available opportunity after returning to quarters.
6. Contaminated uniforms and other clothing shall be laundered at the station.