


Payson Fire Department Standard Operating Procedures

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| Section: Safety Subject: Cancer Prevention | SOP 2.5.11 Date: 2/18 Revision Hx:  |
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PURPOSE

Cancer is the most dangerous, unrecognized and perhaps unmanaged threat to the health and safety of our nation's firefighters. The purpose of this policy is to provide guidelines for the Payson Fire Department in efforts to minimize exposure risks of carcinogens to its members, specifically from the broad spectrum of chemicals released during fire knock-down, salvage and overhaul, associated with contaminated air, equipment and PPE, but also from tobacco products, diesel fumes and risks from sun exposure.

POLICY

On Scene

1. Firefighters in the Hot Zone will remain in full PPE with SCBA - on air, from initial knockdown through overhaul, or until multi-gas meter readings permit breathing ambient air. The Hot Zone is defined as the area of active fire involvement and overhaul.
2. Upon exiting the Hot Zone and before doffing mask and other PPE, firefighters will remove gross particulate contamination on PPE, SCBA and tools via a brush or water spray. Body wipes will then be used to clean the skin on the head, face, neck, hands, and armpits. Firefighters will exchange Nomex® hoods if available and before returning to the Hot Zone. This is to be accomplished at a designated Decontamination Zone, preferably near the initial attack engine and upwind of the incident.
3. At the conclusion of the incident, PPE and hose used in the Hot Zone, or otherwise contaminated, will be transported outside the passenger cab of the engines back to the stations for mandatory laundering. A support vehicle (pickup truck) can be used to assist in this effort. In the event that a support vehicle is unavailable, soiled PPE and hose are to be placed in plastic bags when transported in the cabs of engines.
4. Engineers on scene that are exposed to the products of combustion should be in full PPE and on air.

At Station

1. At no time shall turnout gear be taken into the office or living areas of the stations.
2. Launder PPE exposed to the Hot Zone prior to the following tour and generally as soon as possible.
3. Firefighters that were in the Hot Zone require an immediate shower and change of clothes upon returning to quarters.
4. Contaminated hose, SCBAs and tools will be cleaned and dried before being placed back in service.

5. Decontaminate the interior of the engine cab ASAP.

General

1. Payson Fire Department will annually (at minimum) inspect and clean structural PPE.
2. All exposures to the Hot Zone or suspected exposures will be entered into an ongoing database in Target Solutions.
3. The apparatus/engine bay exhaust system will be used as designed.
4. Sunscreen will be made available in each engine and station.
5. Educational materials will be made available pertaining to the risks of cancer causing agents firefighters are exposed to, specifically tobacco.

PROCEDURE

Implementation On Scene

1. Science has demonstrated that there is little correlation between CO detection and levels of the multitude of toxic gases, vapors, and particulates found in the atmosphere during overhaul. There is also a definite relationship between the time post fire extinguishment and the amount of toxic substances in the air at an incident. In one study, after 45 minutes, the majority (99%) of chemical readings (PPM) had dissipated. Therefore it is imperative that firefighters and investigators continue to be on air throughout overhaul if performing overhaul directly following fire extinguishment. Vent fans have demonstrated effective dissipation of toxic substances during overhaul. Another option is to wait 45-60 minutes post extinguishment and verify toxic substance levels with a multi-gas monitor before initiating overhaul without SCBA. Be aware that current PFD gas meters do not detect common toxins such as mercury, ozone, nitrogen dioxide, acrolein, aldehydes, and particulates. Personnel entering the fire ground post-overhaul should wear N95 masks and gloves. It has been demonstrated that soot carries carcinogens and is easily made airborne by foot traffic and wind.
2. *Gross decontamination* refers to actions taken at the fire scene to remove as much soil, soot, and other particulates as possible without taking the clothing apart and cleaning with a machine. The purpose of gross decontamination is to remove contaminants as soon as possible following exposure to limit further firefighter contact with contamination and avoiding secondary exposure of contaminants to equipment or apparatus later to come in contact with firefighters without PPE. There are no standards on PPE gross decontamination. By establishing a decontamination zone near the initial attacking engine, firefighters can utilize a systematic routine to perform gross decontamination. While still on air and in full PPE, firefighters brush or spray one another off using a hand brush and a garden hose fitted to the pump. After removing their helmet, hood, mask, turnout coat and gloves, using body wipes, firefighters will clean their head, face, neck, armpits, and hands before returning to the Hot Zone, rehabilitation or the station. Structural firefighting PPE leads to body heat retention and increased perspiration with the wearer, resulting in dilated skin pores, and thus, increased dermal absorption. Every 5° F increase in skin temperature is associated with a 400% increase in absorption rate. These areas of the body, including the groin, also absorb at rates far greater than the rest of the body. Initial gross decontamination of PPE and these parts of the body may significantly reduce exposure and the length of exposure to carcinogens.

3. Due to the risk of secondary exposure and contaminating the apparatus with toxic turnouts and hose, firefighters that performed duties in the Hot Zone should avoid placing turnouts and soiled hose in the passenger cab of the engine. If this is not feasible, these items should be placed in plastic bags before transporting them in the cab. An alternative method to avoid secondary contamination will be to place soiled turnouts and hose into the bed of a support vehicle that would deliver those items to the stations for decontamination.
4. Engineers operating their apparatus that are in close proximity to the Hot Zone, are downwind, or are otherwise exposed to the products of combustion should be wearing full PPE with SCBA.

Implementation At Station

1. Turnouts will remain outside of the living and office areas of the stations to reduce secondary exposure of carcinogens.
2. PPE from the Hot Zone will be laundered in the extractor as soon as possible and prior to the firefighter's following tour. PPE soiled with hydrocarbons tend to absorb rather than reflect heat. Cleaning PPE minimizes station and secondary contamination due to off-gassing and contact with equipment and personnel. Oncoming crews will help off going crews with this effort. If unable to launder PPE in this timeframe, a spare set of turnouts should be obtained from Station 11. Soiled PPE should not be returned to service until decontaminated in the extractor. The contents of PPE (flashlights, tools, webbing, work gloves, etc.) need to be decontaminated also.
3. Upon returning to the station, and if manpower allows, firefighters that worked in the Hot Zone will shower immediately. This may require other engines to assist in getting an engine back in service while this occurs. Showers initially should be cold to rinse particulates off before being absorbed in skin pores, then hot to open pores and thoroughly rinse skin.
4. Contaminated hose, SCBAs and tools will be thoroughly cleaned at the station. Hose and tools will be washed with soap and water, and dried before being placed back in service. Personnel involved in cleaning and decontaminating gear and equipment should wear appropriate protection to guard against inhalation, ingestion and absorption of particulate matter. The lowest level of protection being EMS gloves, N95 masks and eye protection.
5. Wipe down the interior of the passenger cab to remove particulate matter residue as soon as possible to minimize secondary contamination.

General

1. Annual inspection and advanced cleaning of structural PPE is recommended per NFPA 1851. Ideally this can be accomplished in house with trained personnel, barring extreme contamination necessitating PPE being sent to a specialized cleaning facility.
2. In an ongoing database, firefighter and fire investigator activity will be logged relative to duration, frequency, proximity to Hot Zone and fuel types at fire incidents.
3. Each station's apparatus/engine bay exhaust system will be utilized as designed. Diesel fumes are associated with chemicals known to be carcinogens. The exhaust system will be used while both entering and leaving the bay.
4. One in five Americans will develop skin cancer. Studies point to UV exposure in general and sunburns, in particular, when relating to risk of melanoma caused by sun exposure. Prophylactic application of sunblock before exposure reduces the risk of skin cancer enormously. Sunblock will be distributed to each station and engine for firefighters to apply as recommended by the

manufacturer.

5. Voluntary actions such as refraining from using tobacco products may reduce risks of certain types of cancers. To raise awareness, educational materials will be distributed to personnel and posted in the fire stations.