

**TOWN OF WATERTOWN FIRE DEPARTMENT
STANDARD OPERATING GUIDELINES**

**SECTION: Personnel Policies
SUBJECT: Post Fire Gross Decontamination
REVISED: 03/2019**

POLICY:

This standard operating guideline shall apply to all Emergency Operations personnel.

PURPOSE:

The purpose of this SOG is to establish a safe and effective practice for removing toxic substances and particulate from personnel, equipment and the fire protective ensemble after exposure to products of combustion. These procedures will aid in reducing possible carcinogenic exposures and subsequently have potentially both short and long term positive health impacts.

REFERENCE:

NFPA 1851, 1971, 1972, 1973, and 1974

OSHA 29 CFR 1910.156(e)

PROCEDURE:

All members of the Town of Watertown Fire Department shall protect themselves and their co-workers' health and safety by adhering to the following procedures.

CONTAMINATION:

1. Contamination is the exposure to chemicals (to include carcinogens), radioactive or biological material on personnel or physical material (equipment, structures, vehicles, etc...)
2. Contamination occurs when a foreign substance gets on, or in, clothing, equipment or the body (via absorption, ingestion, inhalation, etc...). Contamination implies these substances should be avoided because of their potential negative health effects.
3. When personnel are exposed to environments that can potentially contaminate their clothing, equipment or selves (skin, lungs, etc...) the presumption should be that they have been contaminated. Some examples of hazardous environments or considerations are:

Interior operations in environments where any amount of smoke is present. This includes ANY duration of time. The smell of products of combustion indicates an exposure.

Personnel should be cognizant that an exposure to products of combustion does not require visible smoke, inhalation and absorption of low doses, in the part per million (ppm) range or microscopic amounts, have a potential carcinogenic effect.

Exposure can, and are likely to, occur during exterior operations when in proximity to products of combustion such as:

1. Vehicle fires
2. Brush fires (trash, tires, fertilizers, pesticides, insecticides and unknowns)
3. Trash/Dumpster fires
4. Driver/Pump operator performing pumping operations
5. Incident Commanders / Safety Officers performing Incident Command functions
6. Un-deployed Rapid Intervention Crews
7. Crews assigned to an exterior exposure line
8. Unintentional exposure of any personnel due to significant wind shift, scene dynamics or complications

I. Gross Decontamination Post Fire On Scene

A. Overview:

The definition of Decontamination is the "removal of hazardous substances (bacteria, chemicals, radioactive materials) from employees' bodies, clothing, equipment, tools, and/or sites to the extent necessary to prevent the occurrences of adverse health and/or environmental effects."

"to make safe by eliminating or reducing poisonous or otherwise harmful substances, such as noxious chemicals or radioactive materials."

Decontamination (Decon) may be necessary for exposed or contaminated civilians and/or emergency responders. There are two types of Decon:

1. Emergency/Gross Decon
2. Technical/Secondary Decon

The Decon process described in this SOG strictly refers to an immediate Gross Decon following exposure to products of combustion. This procedure shall be systematic and orderly.

The Gross Decon process shall be utilized for all fires where PPE are worn or exposed to products of combustion. This shall include, but not limited to, brush fires, vehicle fires, training fires and/or any other emergency or non-emergency incidents where the combustion process occurs.

The marking of formal isolation or control zones may not occur at every fire incident. All personnel should be aware that isolation or control zones still exist. Research has shown modern day fires produce harmful toxins (which may include Polycyclic Aromatic Hydrocarbons (PAH), Volatile Organic Compounds (VOC), Carbon Monoxide (CO), Hydrogen Cyanide (HCN), and numerous other gases, chemicals and toxins. It is important to remember that many of these toxins are colorless and/or odorless gasses and will not be visible. To limit the amount of exposure and the subsequent required Decon, consider

apparatus placement and approach during any fire attack. Personnel can greatly reduce the amount of exposure by performing a fire attack from the upwind position, when possible, and utilizing the reach of the hose stream.

The following zones shall be defined on all type incidents:

Hot Zone

Any area with high risk.

Any area within the immediate perimeter of any fire or products of combustion (which include smoke and soot).

The area between the hot and cold zone.

The area not in immediate vicinity of any fire or products of combustion.

Gross Decon and cleaning of the body shall be located in the warm zone.

Cold Zone

Any area without risk.

Any area outside of the hot and warm zone, ideally uphill and upwind.

Rehabilitation (Rehab) shall be located in the cold zone.

B. Preparation:

Personnel shall be ready at all times to implement these protective procedures. Personnel may find it beneficial to assemble and maintain a personal bag with clean clothing that can be accessed after any incident where they've been exposed to harmful substances. Recommended items would include: shirt, pants, socks, clean footwear, hat, towel, etc.

The Driver/Operator shall ensure that the apparatus tank water or any water used in the Decon process is from a clean municipal water source and is not from a stagnant or potentially contaminated water source.

C. Gross Decon Setup:

Generally, Gross Decon should be set up by the first arriving suppression apparatus closest to the incident where products of combustion exist. It shall be the Diver/Operator's responsibility to establish and oversee the Gross Decon area and process. Where resources are sufficient, it is beneficial to assign an additional crew to oversee the Decon Process. The Gross Decon area shall be designated by deploying an approved Decon hose line and marking the nozzle location with a traffic cone.

Decon Line Set Up:

The Decon hose line(s) can be 1 1/4." The Driver/Operator will ensure that the pressure on this line is as low as possible. Hydrant pressure is usually sufficient. With this setup, it is important to be mindful of water flow direction as random or haphazard direction can potentially saturate interface areas and lead to the interior of the gear getting overly wet. To facilitate Gross Decon of multiple personnel, additional Decon hose lines from other nearby suppression apparatus can be used.

D. Gross Decon Process:

All fire personnel that were exposed to products of combustion shall perform Gross Decon prior to entering Rehab or leaving the incident scene. After exiting the Hot Zone, it is recommended that crews remain on air, when possible, and report directly to the designated Decon hose line(s).

NOTE: These members with the lowest air supply should be decontaminated first and as a rule, personnel are to remain on air until Gross Decon is complete, again when possible. Maintaining crew integrity, they shall assist each other in rinsing off debris and products of combustion in a systematic and thorough manner from the collar line down; being mindful of higher potential collection points such as the armpit and groin areas. Personnel shall be careful to not saturate the inner lining of the PPE. The goal is to keep the PPE operationally dry on the interior, but rinsed as clean as possible on the exterior. Soft bristle scrub brushes and department approved soap/cleaner may be used to facilitate the cleaning process. Follow NFPA 1851 and the manufacturers' recommendations when cleaning PPE.

After rinsing the exterior portion of the PPE, personnel may go off air and begin to doff their PPE. Depending on the extent and length of the fire, all PPE, other than bunker pants and fire boots, shall be left in a prepared Drop Zone. If a formal rehab area is not established due to a quicker knock down and/or demobilization, a Drop Zone would not necessarily be needed.

The Drop Zone shall be located in the warm zone. The Drop Zone shall be remote and downwind of Rehab due to off gassing PPE. Placement of tarps or salvage covers is suggested to designate this area. Next, personnel shall use department approved wipes for a gross cleaning of their head, neck, face, hands and any other exposed areas as deemed necessary. The use of department approved soap/cleaner with running water, if available, is the preferred method for on scene cleaning of these areas.

Personnel must resist the urge to consume food or hydrate until the Gross Decon process is completed and they have entered a clean rehab area (The Cold Zone).

E. Reporting to Rehab:

Personnel that report to Rehab shall first go through the Gross Decon process. Once in Rehab, personnel shall lower their bunker pants to allow for rapid cooling and increase the distance between off gassing contaminated gear and their groin and respiratory system.

F. Reporting for Re-Assignment:

When crews are called from Rehab back into operations, they shall report ready for assignment as requested. If any new assignment involves further exposure to products of combustion (i.e. Overhaul, Secondary search, retrieving hose lines, etc.), the crew shall then go back through the Gross Decon process as stated above.

G. Release from the Scene:

To keep the cab of the apparatus as clean as possible and to avoid transferring toxins and harmful products back to the fire station, it is extremely important to perform Gross Decon prior to leaving the scene.

Once released by command and prior to leaving the scene, it is recommended that all PPE be bagged at the scene using department approved bags that are at least 6mil thick. The bag opening will be twisted and taped closed, then folded over itself. This procedure will greatly minimize any off gassing.

Helmets: Decontamination of the helmet will follow the same objective as all PPE for Gross Decon, when cleaning the helmet; it's acceptable to carefully wash the exterior to remove any heavy particulate. However, when cleaning the interior do not saturate any fabric, including the liners with water. Any interior cloth pieces should be wiped down with department approved wipes.

All other equipment (SCBA packs and cylinders, tools, radio straps, etc.) will be thoroughly cleaned using water and any available department approved cleaner (unless specified below). Soft bristle scrub brushes should be used. Radios shall be cleaned using appropriate techniques, refer to equipment's manufactures guidelines. Once the gear is cleaned, it may then be loaded into the apparatus cab. Ideally, no potentially contaminated equipment will be stored in the apparatus. Contaminated equipment will be stored in a separate compartment away from the crew cab.

II. Post Fire Decon at the Fire Station

A. Overview:

It is highly recommended that all personnel exposed to the products of combustion, or any potentially harmful chemical (or biological)toxins, complete a full Personal Decon as soon as possible after the exposure.

"Shower within the Hour" shall be a priority. Personnel that are deemed exposed by the Incident Commander shall be placed out of service until their Personal Decon is complete. The Incident Commander should certainly consider exposed personnel as those that performed interior Fire Attack, Primary Search, Overhaul, Roof or Ventilation Operations etc... with any smoke conditions. Further consideration for placing personnel out of service should be given to others on the scene. The Incident Commander should also evaluate other

personnel working outside the IDLH environment as they may have been exposed due to wind shift, close proximity, etc. Showering shall be accomplished with the department approved soap, if available, with the goal to reduce the absorption rate of toxins into the body. It is extremely important to use, when available, the department approved wipes and soap for Personal Decon post fire.

These steps including, but not limited to the following, shall be taken immediately upon arrival at the fire station:

Perform a more thorough decontamination of equipment (radio, tools, fire hose, etc...) following NFPA 1851 and manufacturers' recommendations.

Perform a more thorough decontamination of PPE (helmet, bunker gear, SCBA, etc...) following NFPA 1851 and manufacturers' recommendations.

Perform a thorough decontamination of the apparatus cab.

Return apparatus to a state of readiness.

Take a "shower within an hour" of being exposed to any products of combustion.

Change into clean clothing.

B. Ability to Respond:

Upon return to the station, all gear that was bagged at the scene shall be removed from the bag. The exterior shell shall be further deconned if needed, remembering to keep the inner liners dry. The PPE should be hung to dry. Racks with hangers and fans can facilitate and speed up this drying process.

The current method for cleaning contaminated PPE shall be to use the available washers at both station #1 and #3. Cleaning should be performed per NFPA 1851 and the manufacturer's recommendations.

PPE ensembles should be cleaned as outlined in NFPA 1851 Routine Cleaning and according to manufacture recommendations. The PPE should then be hung on a rack to improve drying times and allow for the continued off gassing of the interior components. Fans should be used to facilitate this process. Since a proper routine cleaning also involves cleaning the interior liners of the gear, this gear shall be considered OOS until fully cleaned and dried.

All personnel shall ensure their assigned unit has a clean apparatus cab. The potential for secondary exposures during routine apparatus use is high and must be limited. To aid in reducing secondary exposures, apparatus cabs shall be cleaned and decontaminated at a minimum on a monthly basis, more often may be necessary due to call load.