



# Creston Fire Department

Interim Measures Report

Mitigation Measures

# What this is not...

- This is not intended to take away from the important work of the committee
- It is not an effort to force the committee into a course of action
  - Every option except the status quo remains on the table
- It is not a recommendation on any specific long term solution to address the facility needs of the fire department
- It does not address any operational shortfalls of the current facility beyond those identified health and safety issues

# What it is...

- A risk managed approach to dealing with identified issues pertaining to health and safety in the Creston Fire Department fire station
- Based on a combination of experience, standards, legislation and observations of the current situation in the Creston Fire Station
- It is a document that, if adopted, will provide a reasonable interim methodology to achieve an acceptable level of safety for persons required to utilize the Creston Fire Department station
- Confirmation that cancer and other occupational health risks for firefighters exist and are something all employers must manage

# Application of Requirements

- Size of community and frequency of events have no bearing on the application of WorkSafe BC Regulations, other regulatory requirements, and the application of safe work practices
- Once a community, through their elected officials, make a decision on the services their fire department is going to provide, it **MUST** at all time comply with all applicable regulatory requirements
- WorkSafeBC also requires immediate action to establish a process to address identified health and safety issues affecting the work place

# Direction

- There is a need to act immediately to resolve systemic and functional requirements of the fire department and its personnel in relation to identified health and safety risks
- The Town has been well led in terms of its understanding of and response to the identified risks facing its staff
- The issues raised by the fire department have been verified by various experts
- While fire fighters sign up accepting certain employment risks, no one signs up to accept potentially catastrophic health risks that can be prevented and/or managed

# The Station

- Recommissioned Overwaitea Foods store in 1982
- Renovated to the design standards then
- Minor upgrades since then
- No vehicle exhaust management systems
- No functional hygiene areas for female staff
- No separations between sectors of the building
- Limited space for hygiene areas
- No professionally designed air handling
- Limited and non-segregated storage



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# Recommendations

- 19 Recommendations in 4 categories:
  - Risk Assessment Practices
  - Procedural Documentation
  - Facilities, and
  - Equipment
- Some are temporary measures
- Some should be considered as permanent changes to operations or administration no matter the long term direction of Council and the Committee
- The recommendations are based on legislation, standards and industry accepted practice
- Exhibits and references are included as part of the report to provide detailed support for recommendations

# Examples of reference and exhibit materials




## CLEANING

This guide is a summary of the primary requirements in NFPA 1851.

### ROUTINE CLEANING

A light cleaning of ensemble and ensemble elements performed by the end user that does not require taking the elements out of service and shall be performed after each use. Start routine cleaning at emergency scene, if possible.

**Basic Cleaning Precautions**

1. Isolate contaminated ensemble elements at incident and rely on trained personnel or other qualified source to make a determination if elements can be cleaned and decontaminated.
2. Isolate, tag, and bag ensemble elements contaminated with blood or body fluids at emergency scene for assessment by qualified personnel for cleaning.
3. Do not bring soiled or contaminated clothing into home, wash in home laundries, or wash in public laundries unless facility has dedicated business for handling protective ensembles and elements.
4. Don't use commercial dry cleaning as a means of cleaning or decontaminating ensembles unless approved by element manufacturer.
5. Only use an Independent Service Provider (ISP) if they have demonstrated that their process will not compromise the performance properties of the elements.

**Minimum Steps for Routine Cleaning**

- Examine manufacturer's label/instructions.
- Isolate elements to avoid cross-contamination.
- Brush off debris.
- Rinse with water.
- Lightly scrub item with soft bristle brush.
- Spot clean, if needed.
- If warranted, clean in a utility sink as indicated below (use advanced cleaning if necessary).
- Inspect element.
- Clean again as necessary.

**Provisions for routine cleaning of garments**  
Isolate garment layers to avoid cross-contamination; apply advanced cleaning if full garment must be cleaned.

**Provisions for routine cleaning of helmets**  
If helmet immersion is necessary, remove impact cap; separately wash and dry each element component; do not use mechanical drying. Provisions for routine cleaning of gloves and footwear  
Do not machine dry.

### SPECIALIZED CLEANING

Elements that are contaminated with hazardous materials or biological agents need to receive specialized cleaning as necessary to remove the specific contaminant(s). Only use qualified organizations for this purpose.

### ADVANCED CLEANING

A thorough cleaning of ensembles and ensemble elements accomplished by washing the elements with cleaning agents.

- Advanced cleaning is carried out by the manufacturer, a manufacturer-trained organization, verified organization, or verified ISP.
- Advanced cleaning is conducted when elements are soiled and at time of advanced inspection (every 12 months).
- Advanced cleaning involves use of washing machine for elements except as prohibited.

**Procedures for machine washing**

1. Do not overload the machine.
2. Pre-treat heavily soiled or spotted areas if necessary.
3. DO NOT USE chlorine bleach, chlorinated solvents, active-ingredient cleaning agents, or solvents without element manufacturer approval.
4. Fasten all closures, including pocket closures, hook and loop, snap zippers, hooks and dees.
5. Wash temperature not to exceed 105°F.
6. Use mild detergent with a pH range of not less than 6.0 and not greater than 10.5 (as indicated on the container or the Material Safety Data Sheet (MSDS)).
7. Ensure that washing machine drum speed (rpm) does not create g-force greater than 100 g.
8. Follow washing machine manufacturer's instructions for proper set or program selection specified to type of element being washed.
9. Dry the elements (see below).
10. If the machine is to be used for other than protective ensemble elements, rinse out machine by running while empty through a complete cycle with 120°F to 135°F water and detergent.

**Additional Advanced Procedures for Garments**

- Remove drag rescue device (DRD) prior to laundering, wash and dry DRD in separate mesh bag.
- Where shells and liners are separable, clean and decontaminate the items with like items, i.e. shells with shells and liners with liners.
- Turn separable liners inside out so that moisture barrier is inside for washing and drying.

**Additional Advanced Procedures for Hoods**  
Wash and dry hoods in machine with garment liners.

**Additional Advanced Procedures for Helmets**

- Remove detachable items from helmet for separate washing and dry.
- Do not machine wash or dry helmets with equipment that produces tumbling or agitation.

**Additional Advanced Procedures for Gloves and Footwear**  
Do not machine wash or dry gloves and footwear with equipment that produces tumbling or agitation.

**Air Drying Procedure**

1. Place elements in an area with good ventilation.
2. Do not dry in direct sunlight.

**Machine Drying Procedure**

1. Do not overload the machine.
2. Fasten all closures.
3. Use no-heat or air-dry setting if available.
4. If heat must be used, ensure that the basket does not exceed 105°F.
5. If heat is used, remove garments before they are completely dry.

Operational Directives of the Pasadena Fire Department



## ENGINE EXHAUST FUMES

Section:	3000
File:	3037
Rev. Date:	May 1, 1999
Date:	
Approved:	James Mitchell Jr., Fire Chief

- I. POLICY
  - A. This directive establishes guidelines to help reduce the exposure of personnel and visitors to diesel or gasoline emissions. The following procedures shall be observed by personnel assigned to fire stations.
- II. APPARATUS USE
  - A. All doors that separate the apparatus floor from living and working areas shall remain closed when the apparatus is moved in or out of the station.
  - B. Maintain engine at low R.P.M. when pulling out of fire stations to minimize output of exhaust fumes.
  - C. Once vehicle is started, pull outside of the fire station as soon as possible in a safe manner. Engine oil pressure shall be in the operating range before moving apparatus.
  - D. Whenever possible, apparatus room doors shall remain open until fumes have dissipated.
  - E. Personnel assigned to fire stations with mechanical exhaust ventilation systems shall utilize and operate these systems when leaving or returning to the station.
  - F. If exhaust fumes accumulate in living or work areas, personnel shall avoid working in these areas until properly vented.
  - G. Personnel shall use pre-heater cords on appropriate apparatus when the vehicle is parked inside the fire station.
- III. MECHANICAL MAINTENANCE
  - A. Whenever possible, remove apparatus from the station to an outside area.
  - B. If apparatus cannot be moved from the station, ensure that all apparatus room doors and windows are open and that all doors separating the apparatus room from working and living areas are closed.
  - C. If equipped with a mechanical exhaust ventilating system, this system shall remain connected to the vehicle and be put into operation.

Operational Directive 3037

# Recommendations

Risk Assessment Practices

# Recommendation 1

- A hygiene evaluation of the Creston fire station, equipment, and personal protective equipment should be conducted by a qualified third party to determine the levels of contamination that currently exist, effectiveness of current decontamination efforts and to identify specific issues. Results of the analysis should be used as the basis for development of the required exposure management plan. Ongoing monitoring should continue through the implementation of hazard control processes to ensure compliance with requirements and to evaluate the effectiveness of controls.

# Recommendation 2

- The addition of hazardous materials exposure risk should be included in risk management planning for all operations. Many of the exposure risks can be identified in an effective scene size up with appropriate strategies to manage potential contamination implemented at the scene and carried on back to the station. Application of defined processes in NFPA Standards and manufacturers guidelines should be implemented.

# Recommendation 3

- It is impossible to eliminate completely the potential exposure of fire fighters to work related carcinogens and toxins. Therefore, an aggressive detection and health monitoring program should be considered for all fire fighters. A guide for fire fighters physicians should be developed that details the considerations a physician need to be evaluating when performing a regular medical checkup for a firefighter. The Town should consider implementing a **mandatory** requirement for all firefighting personnel to obtain a physical at least once every 24 months and preferably annually. All firefighters coming into the Creston Fire Department should have a baseline examination using the same criteria prior to being placed on active duty.

# Recommendation 4

- The Fire Department workplace health and safety committee should be linked to the Town's Joint Health and Safety Committee. Regular meetings should be scheduled, and the Town, Fire Department Management and Fire Fighters should commit to meeting as scheduled to meet the directives of the Town of Creston Occupational Health and Safety Policy.

# Recommendations

Procedural Documentation

# Recommendation 5

- Specific decontamination, infection and exposure control standard operating guidelines (SOG's) should be developed and implemented. These SOG's should be anchored to recognized fire protection and infection control standards (i.e. NFPA) or other demonstrated leading practices and need to include WorkSafeBC exposure registry protocols.

# Recommendation 6

- A decontamination procedure should be developed following recommended practices identified in NFPA 1500 and manufacturer's specifications for all PPE and personnel. This should include prohibitions on bringing contaminated gear into enclosed spaces, including apparatus, cleaning and maintenance procedures and storage solutions that minimize secondary contamination risks from apparatus and exhaust.

# Recommendation 7

- A procedure for the cleaning and decontamination of fire department vehicles should be developed. This procedure should also consider proactive processes including a prohibition on the transport of grossly contaminated PPE inside passenger areas of apparatus.

# Recommendation 8

- Safe work practices around working in elevated places, low overhead spaces and alternative procedures where the work cannot be safely completed should be considered. The process for development of the work practices should include appropriate personal protective equipment beyond that issued for firefighting and rescue operations.

# Recommendation 9

- A safe movement policy on the movement of vehicles into and out of the fire station should be developed and implemented. The SOG should include reference to acceptable bystander behaviours, and instructions to spotters and drivers on how to identify and manage safe and unsafe practices. The SOG should include restrictions on activities in proximity of vehicles when moving vehicles and a two-spotter rule.

# Recommendation 10

- Operating procedures related to fire suppression should be developed that are based on a transitional fire attack methodology focused on cooling the fire prior to firefighter entry. A focus on reducing the exposure risk to firefighters should be a foundational planning principle for all operational Standard Operating Guidelines (SOG's).

# Recommendations

Facilities

# Recommendation 11

- Consideration should be given to making the current fire station an “operations only” facility. This would include:
  - To minimize the negative health impacts of sustained exposures of career staff to potential contamination in the fire station, all fire department administrative personnel, including the Fire Chief should be relocated out of the fire station and into other facilities.
  - The spaces currently occupied for administration should then be repurposed for “clean” functions including breathing apparatus maintenance and clean equipment storage.
  - Classroom and other meeting spaces could, as an interim measure, be accommodated in the fire department training ground and other Town owned facilities.
  - Current work and servicing spaces should be evaluated for the development of temporary shower and hygiene facilities in a gender respectful manner.

# Recommendation 12

- The development of an interim vehicle exhaust mitigation strategy to ensure that maximum exposure threshold limits for diesel exhaust is not exceeded for staff operating in the fire station. This should include operational directives on starting and operating vehicles, rules on door openings and duration of engine operations inside the station.

# Recommendation 13

- The current exhaust and makeup air fans installed in the fire station apparatus bays do not appear to be providing an acceptable level of air exchange. An engineer should be considered to evaluate these fans and make recommendations on improvements to ensure effective air exchange on all areas of the floor spaces. An acceptable solution will depend on decisions made on how operations will be amended as per Recommendation 11.

# Recommendation 14

- Professional cleaning services should be considered for all areas of the fire station, except the fire apparatus bays. These services should include periodic cleaning of the office carpets and all wall surfaces and the application and maintenance of floor finishes to assist in improving overall facility hygiene. Fire department personnel should be able to provide daily cleaning between scheduled cleaning services.

# Recommendations

Equipment

# Recommendation 15

- All breathing apparatus masks should be stored in manufacturers supplied storage bags to ensure that they remain clean and sanitary between uses and cleaning.

# Recommendation 16

- Soiled and contaminated personal protective gear should be cleaned in accordance with manufacturer's recommendations and in accordance with the requirements of NFPA 1500 and NFPA 1851.

# Recommendation 17

- The use of gear bags and protective covers for firefighting ensemble that can protect cleaned gear from accidental contamination by vehicle exhaust or other contaminants should be evaluated.

# Recommendation 18

- Spare gear in front line condition in a range of sizes appropriate to the department should be provided to ensure that contaminated gear can be taken immediately out of service and cleaned appropriately.
  - Spare equipment including gloves and hoods should be issued to all fire fighters to ensure that they have a spare so that these items can be laundered immediately after every use. Policies including a prohibition on carrying the spares in their pockets should be developed.
  - Firefighter bunker gear should be available in a range of sizes to accommodate fire fighters. There is no requirement to issue every fire fighter a dedicated set of spare gear.

# Recommendation 19

- All fire fighters should be required to maintain a set of clothing, including under garments, in which to change into prior to departure from the fire station. Mandatory decontamination procedures should apply to any firefighter who may have been exposed to the products of combustion or biological hazards.

# Conclusion

- There is ample evidence to support action to manage the avoidable risks to the Town's firefighters
- There are a number of options available for longer term solutions to these issues
- It is our hope that this information plays a positive role in assisting the Committee and Council in the important decisions that are required

QUESTIONS?