



# STAFF REPORT

To: Board of Trustees  
SUBMITTED BY: Acting Fire Chief Arjuna George  
DATE: Oct 24<sup>th</sup> 2016

**Recommendations:** It is my recommendation that the Salt Spring Island Fire Protection District accept the donation of two (2) decontamination saunas to be installed at Fire Hall #3.

**Background:** Salt Spring Island Fire Rescue takes cancer prevention very seriously. We have already initiated strict personal protective equipment cleaning and maintenance procedures, gross decontamination on the fire scenes, installed a diesel exhaust extraction system, enforced proper use of SCBA, exposure reporting, and removing dirty protective equipment (PPE) from living areas, and in apparatus.

To further complement our department's Cancer Prevention and Awareness Program Management is recommending some further advancements to protect our current and future firefighters.

## Firefighters and Cancer

Cancer is the most dangerous and insidious threat to the health and safety of our firefighters.

Firefighters have been proven to develop cancers at a much higher rate than the general population. Recent studies from LeMasters Meta-Analysis (University of Cincinnati 2006) and National Institute for Occupational Health and Safety (NIOSH) have identified ten (10) cancers that firefighters have a greater chance of developing than that of the general population including:

- Testicular cancer (2.2 times greater risk)
- Multiple myeloma (1.52 times great risk)
- Non-Hodgkin's lymphoma (1.51 times great risk)
- Skin cancer (1.39 times greater risk)
- Prostate cancer (1.28 times greater risk)
- Malignant melanoma (1.31 times greater risk)
- Brain cancer (1.31 times greater risk)
- Colon cancer (1.21 times greater risk)
- Leukemia (1.14 times greater risk)

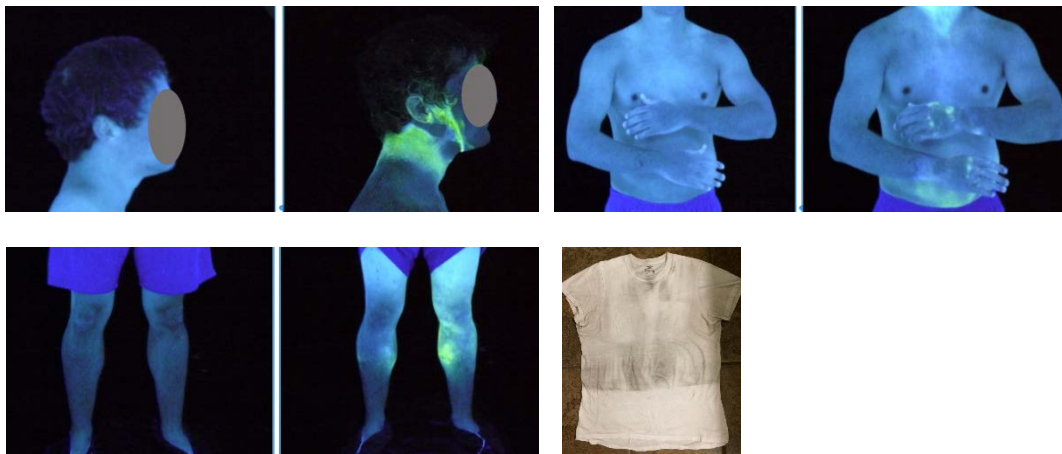
The National Institute for Occupational Safety and Health (NIOSH) study also found that firefighters have a 14 percent increased risk of dying from cancer compared to the general population. In Canada 45% of men and 41% of women will battle cancer in their lifetime. If you are firefighter, your chances are 9% higher.

Today's residential fires have more in common with hazmat events than an old-fashioned house fires due to the materials now common in homes such as plastics and synthetics. Many researches believe that cancer rates among firefighters would be even higher if it was not for the "healthy worker effect." Firefighters are expected to have a lower rate of cancer than the general population because the job of firefighting tends to attract people who are healthy and in good shape

With all the advancements in PPE and SCBA, toxic absorption is still occurring. Following the lungs, the skin is the body's second largest organ in area and it is highly absorptive. Some areas of the skin are more permeable than others, specifically the face, the angle of the jaw, the neck and throat and the groin. The skin's permeability increases with temperature and for every 5 degrees increase in skin temperature, absorption increases 400%.



Even with our current decontamination process and personal protective equipment, cancer causing smoke still permeates our gear.



(These images show vulnerable areas of the body after a fire, even when fully protected with correct PPE)

We have identified some areas that would help our Salt Spring Island firefighters to protect themselves from developing cancers from firefighting.

It is not acceptable to return from a medical call with blood and vomitus on our clothing and then sit down to work or return to the dinner table at home. The same concern should be exercised after returning from a fire. Gear must be cleaned, clothing must be washed, and showers must be taken – before returning to work or family activities to reduce carcinogen exposure.

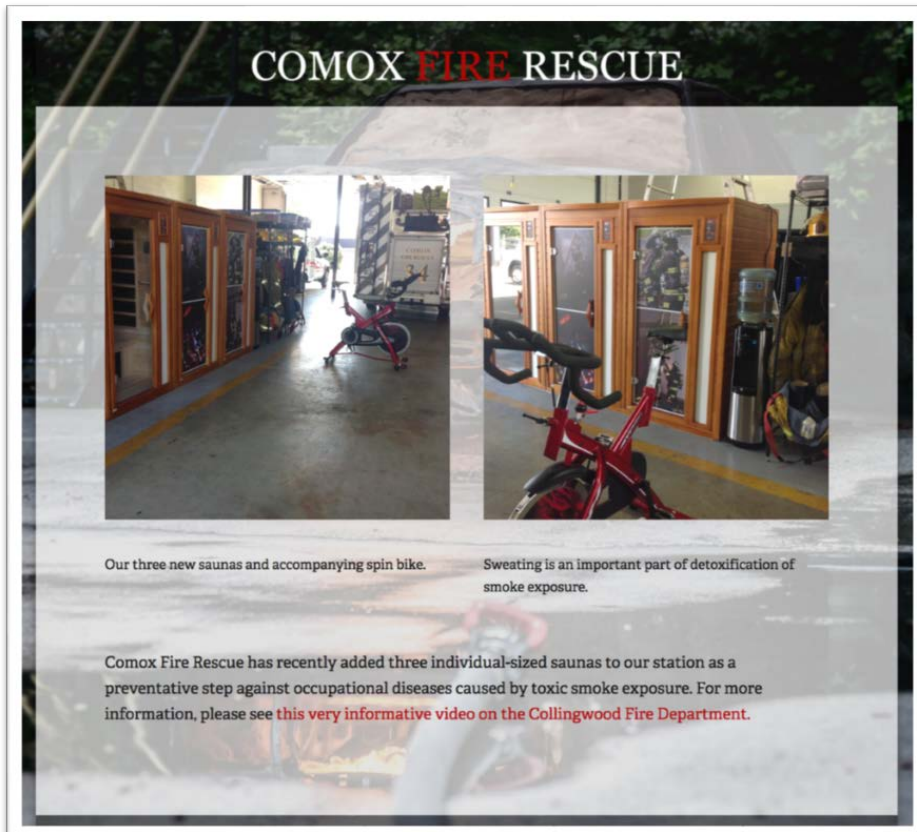
The Firefighters' Occupational Disease Regulation lists the following nine cancers as prescribed occupational diseases that are causally related to the occupation of firefighting:

1. Primary leukemia
2. Primary non-Hodgkin's lymphoma
3. Primary bladder cancer
4. Primary site brain cancer
5. Primary colorectal cancer
6. Primary kidney cancer
7. Primary lung cancer
8. Primary testicular cancer
9. Primary ureter cancer

**Sources:**

- WorkSafe BC Part 31
- Taking Action against Cancer in the Fire Service. Report published by the Firefighters Cancer Support Network (2013)
- Canadian Cancer Society (2015)
- University of the Fraser Valley Study on Firefighters and Cancer (2015)
- Fire Chiefs Association of British Columbia Cancer Screening Letter (2014)
- NFPA 1851 Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.

*Example from Comox Fire Department (SEE PHOTO)*



## Decontamination Saunas

The introduction of decontamination saunas complements our fire departments Health and Wellness program.

### **Proposed Costs:**

Electrical upgrade and installation \$1200.00

2 Infrared Decontaminations Saunas (\$2,200.00 Each) \$4,400 Plus taxes

Total \$5,600.00 plus taxes shipping.

Sauna hydro usage calculations demonstrate that the units are very energy efficient at only 1.44 kwh. Current BC Hydro rates show only 11.5 cents per hour with a maximum of 17.25 cents per hour at peak rate.

**0.0797 KWH 1<sup>st</sup> Tier = \$0.1148**

**0.1197 KWH 2<sup>nd</sup> Tier = \$0.1724**

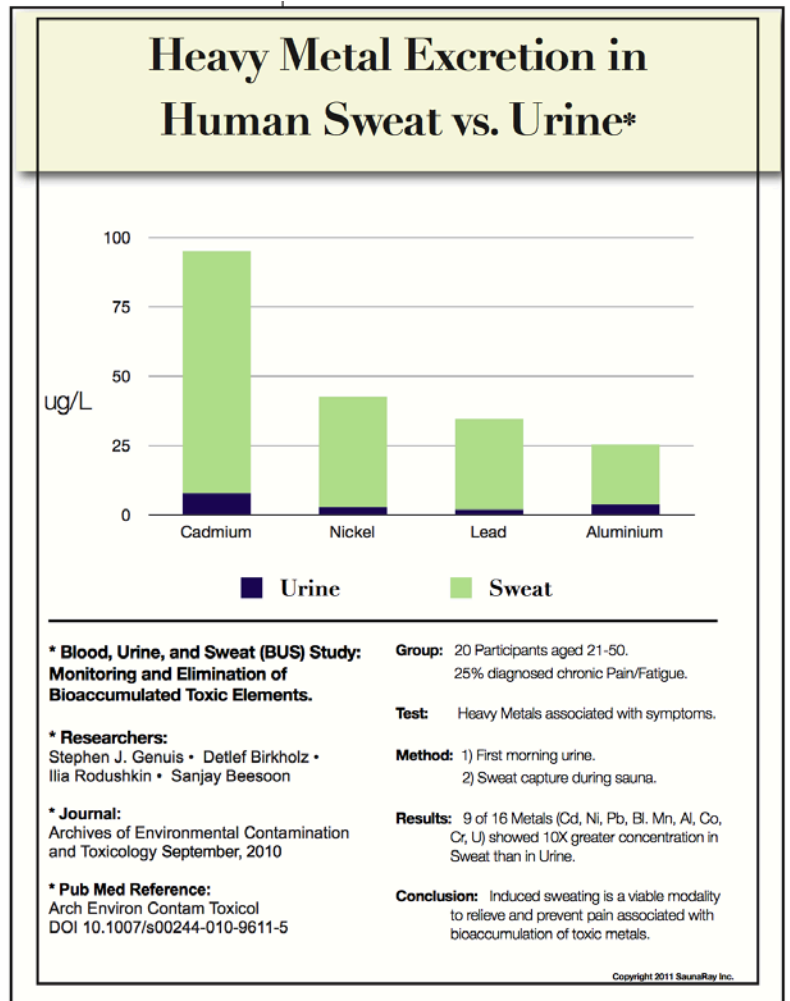
The units only require a dedicated 15 amp 120-volt outlet, so no special wiring requirements needed.

Saunas are proven to induce an intense sweat to help detoxify firefighters after a fire incident. To ensure proper steps are taken, a draft Operational Guideline has been crafted. (See Draft OG).

For general health; saunas eliminate chemicals and toxins, while improving blood circulation and recovery from fatigue. Infrared saunas receive all the health benefits but avoid the harmful and extremely hot air of traditional steam saunas. Toxins are excreted onto the skin via sweat particles and do not re-circulate into the blood stream. There are virtually no side effects. Fire fighters are in and out in 10–15 minutes and remain call-ready the whole time.

In 2010 medical researchers at the University of Alberta determined that Heavy Metal toxin associated with many cancers affecting firefighters, can be removed in sweat ten times more efficiently than any other method.

The decontamination chambers will be installed at Fire Hall #3 in the office space that is currently not being utilized. The unit will be positioned against the wall side by side.



The proposed unit's dimensions are 42" in depth, 77" in height, and 48" in width. The unit's weight around 340 Lbs each.

For regular cleaning, a simple disinfectant spray and wipe is sufficient. There is very minimal maintenance on these units.

- **Operational Guideline (See attached)**
- **Doctors Letter (See attached)**

Video Resources:

[https://www.youtube.com/watch?v=weY\\_Rq4w7Kk](https://www.youtube.com/watch?v=weY_Rq4w7Kk)

<https://www.youtube.com/watch?v=9Fxyq80EL4E&nohtml5=False>

*Mayo Clinic Doctor Brent A Bauer states that "No adverse effects have been reported with infrared saunas". He also states that there are no dangerous Electromagnetic Field (EMF) concerns found in any home grade saunas. All infrared sauna companies utilizing the newest low-EMF flexible carbon heating panels are operating with non-ionizing EMF radiation levels of 1 G or less at 4cm from heating source and .5 Hz at 3 feet from the power source at a flux density of .001mT or less. That is 1/1000 of the recommended safety of 10 G or 10,000 mG and 1/1000 of the 50 Hz electromagnetic field it takes to increase DNA fragmentation. The Centre for Disease Control also states that "there is no conclusive evidence that EMF causes disease or increases disease risk factors."*

Arjuna George



Acting Fire Chief  
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