

# Sweat It Out

**Smoke & soot are full of nasty toxins. Detoxify from the inside out with modern sauna therapy.**

By Rodney Palmer

**A**ccording to the NFPA, fewer firefighters are dying on the job than ever before. From 2010–2015, the fire service experienced about six deaths per month compared to about 10 per month from 1980–2000.<sup>1,2</sup> Turnout gear is better, and training and safety are now a department’s top priorities. However, it’s what develops after years of exposure to the products of combustion that’s killing firefighters prematurely: cancer.

In 2006, the University of Cincinnati published a study covering 37 years of research that showed firefighters have a much higher incidence of multiple myeloma, prostate and testicular cancers, and non-Hodgkins lymphoma ([click here to view the study](#)). Today, experts have identified more than a dozen cancers that firefighters are more likely to get than the general population. The World Health Organization even ranks firefighting as a “possibly carcinogenic” occupation. Most firefighters would agree that the word “possibly” should have the word “very” in front of it. Firefighters and the organizations promoting their health and safety fully recognize the risk. In 2013, the IAFF promoted a new law to establish a national cancer registry for firefighters, partly to bring awareness to the risk of acquiring cancer on the job.

IAFF President Harold Schaitberger has stated, "Cancer is a looming personal catastrophe for all our members, and we are just beginning to understand the magnitude of the problem."

Today, the majority of states and Canadian provinces have adopted presumptive legislation that recognizes firefighters are more likely to get cancer than other professions ([click here for more information](#)). In most cases, the states require that employers provide compensation to the employee when claims are made for cancer.

The cancer problem is one that will likely worsen as builders continue to use new, more combustible materials. Modern furnishings are equally combustible, releasing dangerous chemicals when exposed to heat and fire. The particles in these materials can actually seep through turnout gear, reaching the skin and the bloodstream.

Once under the skin, these chemicals quickly travel to the organs of the body's detoxification and reproductive systems, where they can start to produce malignant cells. Firefighters are trained to survive running into burning buildings, but the potentially lethal damage is happening at a microscopic level after they are safe at home.

SCBAs keep smoke from entering the lungs, but short of wearing a hermetically sealed space suit, there is no way to avoid blood exposure to the hundreds of carcinogenic chemicals at every fire call. Cancer has become the new normal in firefighting.

**I**f firefighters can't avoid chemical exposure, what can they do? Since cancer can't easily be cured, maybe we can prevent it. In recent years, new SOPs have emerged to treat black, sooty gear as a hazardous material after every fire. Many fire departments require two sets of turnout gear per firefighter so that one can be cleaned after a call, and firefighters never have to put on dirty turnouts. They even wear surgical gloves to handle the soiled gear when placing it in the washer. (That's a long way from the old days of going months never cleaning turnout gear and wearing the dirt as a badge of honor.) It's a novel approach that is still gaining traction in the fire service and is being promoted nationwide by the Firefighter Cancer Support Network. Other preventive measures include simple acts, such as hosing down fire apparatus after a fire. Some fire departments no longer allow food consumption at the scene because carcinogenic chemicals can cling to fingers. Others bring wet-wipes to clean their necks and faces within minutes of leaving a structure fire.

Even though many stations and entire departments are incorporating these new protocols, others still maintain old-school habits and have yet to adopt prevention as standard procedure. For example, some departments outfit new stations with magnetic attachments to their external exhaust-removal system, so the exhaust hose remains attached to the muffler until the truck has left the truck bay, while other stations operate without any exhaust-removal at all, contaminating their indoor air with diesel exhaust at the beginning and end of every call.

### **A Sweaty Solution**

Taking cancer prevention to the next level, some forward-thinking departments are attempting to clean their firefighters from the inside out after every fire. They're using medical-grade infrared heating technology and mild exercise to generate sweat—lots of sweat.



**When exposed to fire, modern furnishings and building materials release a frightening cocktail of toxins known to cause cancer.**

Saunas—specifically low-temperature infrared saunas—have been used in medical clinics to treat chronic illness from environmental exposures such as lead, pesticides and household mold. Their success has made them prominent at colleges of naturopathic medicine; in fact the biggest naturopathic medical colleges in North America train their doctors in the use of infrared sauna therapy as a primary means of treating illness from environmental exposure. Evidence-based schools, including the National University of Natural Medicine in Portland, Ore., the University of Bridgeport in Bridgeport, Conn., and other schools throughout Canada, have ensured that most naturopaths understand the health benefits of infrared saunas.

Studies show infrared saunas can also be used to prevent illness by removing harmful chemicals from the body before they can trigger disease. Example: In 2010, a group of doctors working with infrared sauna technology conducted a study using more than 2,000 lab test samples of blood, urine and sweat. (Click the paperclip, right, to download the study.) The results showed that we sweat out 10 times more toxic heavy metals than we excrete through our urine.

**T**his discovery paved the way for fire stations to promote sweating as an effective means to remove particles that now claim more lives than falling roofs. Today, there are special chambers designed just for fire stations that combine a medical-grade, infrared heating system with an exercise bike. Pairing minor exercise with infrared heat is shown to make people sweat profusely in just 10 minutes without raising their core body temperature.

“We’re trying to make our fire stations cancer-proof if we can,” says Chief Jim Parrish of the New Philadelphia (Ohio) Fire Department. His was the first U.S. station to install a medical-grade infrared sauna with an exercise bike, and the staff reported immediate results. “We used to smell like smoke for three or four days after a fire,” says Chief Parrish. “We don’t anymore.”

This smell, as it turns out, is *aromatic hydrocarbon*. It smells like turnout gear—ashy, sooty, stale smoke. It’s expected on the gear, but it’s a little scary when it’s coming out of your body. It is triggered in the shower because hot water releases the toxins stored in the subcutaneous fat layer, just under the skin. The water heats the chemicals and turns them into vapor. The infrared sauna system removes it more immediately in the sweat.

“We’re dealing with an increased exposure to hydrocarbons, chemicals and carcinogens, and we’re not waiting for the illness to come. We’re moving ahead with a number of safety initiatives and this is an important one,” said Chief Parrish.

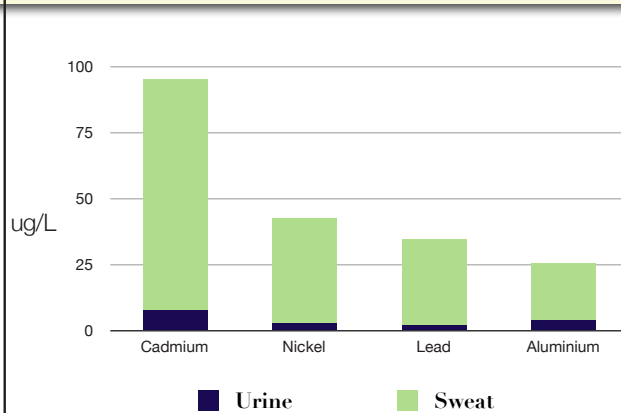
The idea to install sauna systems in fire stations started five years ago in Canada when a small-town chief decided he’d spoken at the funerals of too many friends in the fire service. Today, a handful of American stations have adopted these systems for cancer prevention, and many more are working it into their budgets for this year. The U.S. National Institutes of Health (NIH) has examined many peer-reviewed studies and found infrared saunas are safe for people with both cardiovascular and respiratory problems. They are also safe for those who might not be in the best shape.

“Because infrared heat penetrates more deeply than warmed air, users of far-infrared saunas develop a more vigorous sweat at a lower temperature than users of traditional saunas,” the NIH review noted.

Traditional saunas operate by super heating the air, raising the blood



## Heavy Metal Excretion in Human Sweat vs. Urine\*



\* **Blood, Urine, and Sweat (BUS) Study: Monitoring and Elimination of Bioaccumulated Toxic Elements.**

**Group:** 20 Participants aged 21-50. 25% diagnosed chronic Pain/Fatigue.

**Test:** Heavy Metals associated with symptoms.

\* **Researchers:** Stephen J. Genuis • Detlef Birkholz • Iliia Rodushkin • Sanjay Beesoon

**Method:** 1) First morning urine. 2) Sweat capture during sauna.

\* **Journal:** Archives of Environmental Contamination and Toxicology September, 2010

**Results:** 9 of 16 Metals (Cd, Ni, Pb, Bi, Mn, Al, Co, Cr, U) showed 10X greater concentration in Sweat than in Urine.

\* **Pub Med Reference:** Arch Environ Contam Toxicol DOI 10.1007/s00244-010-9611-5

**Conclusion:** Induced sweating is a viable modality to relieve and prevent pain associated with bioaccumulation of toxic metals.



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**Studies show we sweat out more toxins than we excrete in urine.**

pressure, heart rate and overheating blood temperature. This triggers a good sweat, but also has the side effect of releasing stored toxins into the bloodstream. This is why people can feel suddenly tired after a sauna and take hours to recover. Even though sweating goes back thousands of years as a way to purge disease and ward off illnesses, people have always approached it with caution. In Europe, the public saunas have resting rooms where people can lay down when they get overwhelmed by the heat.

These unique fire-station chambers work a bit differently. Specially designed to operate below core body temperature (-98 F), they do not affect heart rate or blood pressure. Toxins are excreted onto the skin via sweat particles and do not re-circulate into the blood stream. There are virtually no side effects. Firefighters are in and out in 10–15 minutes and remain call-ready the whole time.

When firefighters return from a call in the stations with saunas, they wash their gear, then they shower. After they're clean, they enter the sauna with the heat up to 80 F+ and take a short ride on the bike. They sweat like a marathon runner in a few minutes, wipe it off and take another shower. The next morning, there is no smoke smell. That's because the chemicals were sweated out and wiped away, instead of staying in the body and entering their bloodstream.

This is a simple solution to a very complex problem. The "sweat doctors" who did the research published three peer-reviewed articles in medical journals that also showed humans routinely sweat plastic and its tiny components, such as phthalate and Bisphenol-A ([click the paperclips to download the articles](#)).  

These are known carcinogens that can be detected in sweat when they are virtually undetectable in urine. That means our natural mechanism for removing these complex chemicals is via sweat; they are removed safely, bypassing the kidneys, liver and bloodstream and move directly onto the skin where they are simply wiped away with a towel.

Bob Gilmore was a young firefighter with the Kitchener (Ontario) Fire Department when crews responded to a plastic-factory fire in the 1990s. Years later, some of the firefighters who worked that incident developed premature cancers. Now that's he's the deputy chief, he has chosen to install an infrared sauna system to help his firefighters prevent disease before it starts. He immediately noticed the exact same results as they did in Ohio. "When I was fighting fires every day, my wife used to tell me all the time I smelled like smoke when I came home," Deputy Chief Gilmore says. "Now I know what that smoke was doing to me, and as I move up through the ranks, it's now my responsibility to make sure my staff is protected from it."

Gilmore installed an infrared sauna system at Kitchener's station headquarters more than a year ago and has made its use standard procedure for new recruits. Virtually every firefighter using it reports that they no longer smell like smoke after a fire. That part of being a firefighter is behind them. So too, they hope, is the elevated risk of getting cancer. **BS**

## References

- 1 <http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/fatalities-and-injuries/firefighter-fatalities-in-the-united-states>
- 2 <http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/fatalities-and-injuries/firefighter-deaths>



*Rodney Palmer is president of SaunaRay Inc. and designer of the Detox System for Fire Stations. His company works in conjunction with medical researchers in the field of environmental medicine, detoxification therapy, and occupational health and safety. Learn more at [www.saunaray.com](http://www.saunaray.com).*



**Infrared saunas for fire departments utilize moderate exercise to generate lots of sweat without the side-effects of traditional saunas.**