Firefighting and Your Health
Exposure to Toxic Chemicals on the Job

We already know that firefighting is dangerous work. Firefighters are more likely to get sick or be killed on the job than other Americans.¹ Firefighters are far more likely to contract heart disease, lung disease and cancer than other workers. Stress, smoke, and dangerous work all contribute to high rates of disease. But what about exposure to toxic chemicals?

Some hazards such as carbon monoxide, methylene chloride, hydrogen sulfide and particulate matter are well known, but firefighters may be exposed to many other toxic chemicals in the line of duty. Some of these chemicals are linked to certain diseases that are common among firefighters.

What we know about health risks:

Firefighters are more likely to develop several forms of cancer. According to a large review of studies, the four most commonly found cancers were multiple myeloma, non-Hodgkin’s lymphoma, prostate and testicular cancer. Firefighters are twice as likely to develop testicular cancer.² Some studies suggest both male and female firefighters are at higher risk for breast cancer.³ Cancer is not the only disease that is linked to the hazards of firefighting. Respiratory diseases are also common.⁴ A study of first responders to the World Trade Center disaster found a significant increase in certain lung diseases, with the highest rates among firefighters.⁵ Other health effects associated with firefighting activities include reproductive problems and cardiovascular disease.⁶ Some studies found that neurological illnesses such as Parkinson’s syndromes are associated with toxic exposures in the line of duty.⁷⁸

Some cancers and diseases are covered under presumptive disease laws in certain states, meaning that if a firefighter develops a certain disease, it is presumed to be because of toxic exposures on the job. These diseases should be covered by workers compensation. Unfortunately, these laws change from state to state, and receiving compensation is difficult and can take years in court. So while firefighters should be legally protected, often it is the firefighter’s responsibility to ensure a safe working environment and deal with the effects of toxic exposure.

Toxic exposures:

Often there is no way of knowing what a fire will release when a call comes in. Whether in a residence or a chemical plant, firefighters

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Cancers covered by Presumptive Disease Laws

Primary brain cancer
Malignant melanoma
Leukemia
Non-Hodgkins Lymphoma
Bladder Cancer
Ureter Cancer
Kidney cancer
Prostate cancer
Multiple myeloma
Testicular cancer

For a full list of presumptive disease laws visit IAFF.org
have to deal with unknown exposures during every fire. Toxic chemicals in products and building materials put firefighters at greater risk. Some chemicals, such as cancer-causing polycyclic aromatic hydrocarbons (PAHs), are present in almost all smoke. Overall, manmade materials such as plastics, foams and electronics release far more toxic gases than natural substances such as wood, glass or stone. Plastic and electrical components produce dioxins and furans when burned. These notorious chemicals are toxic to the immune system and reproductive system. They are associated with cancer and disruption of natural hormone levels. Elevated concentrations of dioxins and furans have been found at the sites of residential fires. When burned, vinyl flooring, fabrics and adhesives can produce benzene and formaldehyde, both of which are carcinogens. Asbestos and other dangerous building materials may be present in smoke and soot as well.

Halogenated flame retardants, often found in furniture foam, plastics and electronics, release dioxins and furans when burned. Material treated with halogenated flame retardants also creates more carbon monoxide and smoke, while providing very little increase in fire resistance.

One of the most troublesome aspects of toxic exposure is that some chemicals build up in our bodies over time. For example, dioxins, PAHs and certain PFCs are known to build up in our fat and stay in our bodies for years after exposure.

**What can be done?**

The key to protecting firefighters is preventing exposure. Great strides have been made in reducing exposure through protective equipment, but the technology isn’t perfect. Firefighters can’t always tell when toxic gases are being produced, so self-contained breathing systems may not be used for the whole call. Also, firefighters often remove their headgear when doing the final walk through of still-smoldering buildings. Firefighting could be made much safer if products found in all ordinary households didn’t contain toxic chemicals that become even more toxic when they are burned.

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