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**Testimony for AB 451**

Mr. Chairman and members of the Assembly Commerce and Labor Committee;

On behalf of the Professional Firefighters of Nevada we urge your support of AB451. We bring this bill before you today in an attempt to get some help and clarification of existing statute regarding cancer protections currently in place for firefighters. In 1987 the legislature passed legislation to provide firefighters some protections for cancer due to the increased risks of repeated exposures to known toxic carcinogens. This legislation was put in law and currently exists in NRS 617.453.

Let me briefly review that language with you if I could. Currently under 617.453 the following needs to be established for a cancer claim for industrial insurance for firefighters.

1.) First you must have been a full time salaried firefighter for 5 years or more.

2.) You have to demonstrate that you were exposed, while in the course of your employment, to a known carcinogen as defined by the International Agency for Research on Cancer or the National Toxicology Program.

3.) And the carcinogen that you have been exposed to needs to be reasonably associated with the disabling cancer.

If you meet these requirements you may file your cancer claim. The reason that we bring this bill before you today is because there are several insurers out there that will not accept these claims even though we meet the requirements set forth in the statute. Denial is a common practice amongst some insurers. I believe this will be more clearly exposed during later testimony. Please don't misunderstand; there are some insurers that accept these claims. We have had claims accepted for some cancers, mostly because the physician stated that the specific cancer was absolutely caused by firefighting. There are those insurers out there though that will claim that we cannot show a correlation between the carcinogens we've been exposed to and the type of cancer we have. Even if we produce research and physician testimony that there is a correlation between the cancer and the carcinogen.

An example of this is one recent claim that has been denied for a firefighter with thyroid cancer. He has been on the job for over 10 years. This firefighter was repeatedly exposed to soot, a known human carcinogen, during and in the course of his employment. This carcinogen has been shown to increase vulnerability to cancers in the esophageal areas and cause thyroid cancer. His claim has been denied and is still pending in the system. Fortunately this firefighter has gotten the appropriate treatment through his health insurance trust and is back on the job protecting the public.

This bill is meant to provide your clarification to insurers that certain types of cancers are associated with specific types of carcinogens. There have been many studies done that show there is a greater incidence of certain types of cancer in humans after exposure to certain types of carcinogens. We have copies of these studies but they are lengthy and I didn't want to burden you with extra paper. I can provide copies of those studies if anyone desires one. I did provide for you though an overview of an extensive study on cancer done on firefighters both in Florida and Toronto, Canada. Also I've provided a breakdown of some of the carcinogens recognized by the International Agency for Research on Cancer and their association with firefighters. This will show the increased risks to humans and firefighters specifically. These carcinogens are produced in many of the environments that firefighters face every day during the course of their employment whether it's on a house fire, a vehicle fire, or a simple dumpster fire.

What we have attempted to do with this bill is reaffirm the connection between certain types of cancer and certain types of carcinogens that firefighters are routinely exposed to. The connection that was established by this body in 1987. I believe that the opponents of this bill will say that this will increase their costs drastically. We don't believe that to be the case. This bill doesn't change the number of cancer claims that are going to be filed by firefighters. It doesn't increase the amount of compensation that would be awarded. It doesn't make this a conclusive presumption, it's still rebuttable. It doesn't change or extend the sunset clause attached to the law. It doesn't change the definition of carcinogen or the specific agencies lists of recognized carcinogens. As a matter of fact it outlines specific types of cancer, which narrows the scope. It doesn't cover all cancers and will provide insurers with the ability to rebut more easily those cancers not shown to be of higher prevalence in firefighters.

What it does do is clarify that there are some cancers that have been shown to be of a higher incidence in firefighters after exposures to specific carcinogens. We believe that this will not increase the costs as much as it will compel some insurers to start accepting claims that they should have been accepting and paying all along. We believe that this bill will help to clarify the intent of this existing statute.

Mr. Chairman and committee members, I urge your support of this bill. I will conclude for now and turn over the testimony to others that have come to speak on this bill. Thank you and I would be happy to answer any questions you may have.

**Proposed Amendment to AB 451**
**By the Professional Firefighters of Nevada**
**Rusty McAllister**
**( 702 ) 493 – 2796**

The following amendments are proposed by the Professional Firefighters of Nevada.

Amend Section 1, subsection 2. on page 2, by adding the following:

Notwithstanding any other provision of this chapter, if a person specified in paragraph ( a ) of subsection 1. *( I )* demonstrates that he has contracted:

On page 3 delete lines 5 through 11.






## Firefighters and Cancer

**Robin Rowland, CBC News Online**

### Brain cancer

Studies have shown that firefighters are at an increased risk for brain cancer, compared to the usual control group – police officers, who are often under comparable stress.

Of 14 studies on the mortality of firefighters, 11 found excess risk for brain cancer.

One study of 5,414 Toronto firefighters found 14 deaths from brain or nervous system cancers among the 777 firefighters who died during the period of the study. The study referred to this as a statistically significant finding. (In 1994, brain cancer was the cause of death in 2.6 per cent of those Canadian males who died).

Earlier studies of firefighter mortality that did not identify brain cancer as a cause of death were done before the widespread introduction of plastics in the 1950s.

There are two types of brain tumours. Gliomas are primary tumours that arise in the brain. Secondary tumours are cancers that travel from another part of the body.

General causes for primary brain cancer can include a prior head injury, infections, exposure to chemical toxins such as insecticides and fungicides and exposure to radiation such as microwave or radio frequencies.

Possible causative agents for brain cancer in firefighters include vinyl chloride, acrylonitrile and formaldehyde.

### Lymphatic and haemotopoietic cancer

Studies show an elevated (but so far not statistically significant) risk of lymphatic and haemotopoietic cancers for

most firefighters. There is, however, a statistically significant risk for firefighters with more than 30 years of service.

Lymphatic and haemotopoietic cancers are cancers of the various types of "blood-borne" cells. They include cancers of white blood cells, and those found in the spleen, liver, lymph nodes and bone marrow. The best known of these cancers is leukemia, which creates "abnormal populations" of white blood cells.

Possible causative agents for those cancers in firefighters include benzene, soots, PAH, vinyl chloride and acrylontrile.

**Colon cancer**

There are mixed results on studies of colon cancer and firefighters. Three studies showed a link between firefighters and colon cancer. Five showed a possible link. Four found the increase in risk was not statistically significant and seven found no increase or even fewer deaths than the general population. The Ontario firefighters report concludes that there is a probable connection between firefighting and colon cancer

If there is a link, possible causes are diesel exhaust and asbestos.

**Bladder cancer**

There are also mixed results of studies linking bladder cancer and firefighting. Three studies found an increased risk. One found a possible link and five found that the increase in risk was not statistically significant. The Ontario report found a probable connection between firefighting and bladder cancer.

If there is a link, possible causes are diesel exhaust and formaldehyde.

**Kidney cancer**

Studies of the link between kidney cancer and firefighting also show mixed results. Two studies found a risk, and three found links that were not statistically significant. Two found a possible link and four found no increase or a decreased risk. The Ontario report found a probable link between firefighting and cancer even though the evidence was inconsistent.

If there is a link, possible causes are polycyclic aromatic hydrocarbons.

**CANCER IN KITCHENER**

**David McLauchlin CBC Radio News**

Firefighters in Kitchener Ontario say they are sick and dying from work-related cancers yet they can't get workers' compensation.

For more than a year now, Ontario firefighters have been routinely awarded workers' compensation if they get brain cancer and leukemia under certain conditions. Studies show cancer is an occupational risk for firefighters, particularly those who've done the job for a long time.

The Catch-22 for the firefighters in Kitchener is that they were diagnosed too soon after the fire.

Peter McGough is in his 28th year with the Kitchener fire department.

About 10 years ago he began to realize the men on his shift were dying. And they were dying from the same cause.

"Dave died within 20 days of his last day at work. He went off sick and he died shortly after that. He was 32. Ed Steely, he lasted a year. He was in his early 50s. Myself and John Devault, he was president of our association, we started looking into this. John developed cancer and died a year and a half after that. We were all on the same shift," McGough says.

McGough checked the records. The men dying of cancer had one thing in common. They all fought the same fire: a huge blaze in 1987 at a chemical factory called Horticultrual Technologies Incorporated. The chemical fire raged all night and took several days to clean up.

As of February 6, 2001, 23 claims have been filed: 21 for cancer and two for birth defects. The Ontario Workplace Safety Insurance Board, what used to be Workmen's Compensation, paid one and turned down six others. The rest are still pending more than a year after being filed.

Retired firefighter Ron Christie explains that his claim was rejected because of the short latency period between the exposure at the chemical fire and the date the cancer was diagnosed.

If a firefighter gets some forms of cancer after 20 or 30 years on the Job, the Workers Safety and Insurance Board automatically approves the claim for compensation. The assumption is the cancer was caused by exposure to toxic fumes and smoke over those long years of service.

The Kitchener claims were rejected because the cancer came too soon after the fire.

Christie has taken on the job of appealing those rejections. He believes, along with the Kitchener firefighters, that new evidence shows that cancer can begin very soon after exposure to toxic fumes. And they hope that will convince the Workers Compensation Board to pay their claims.

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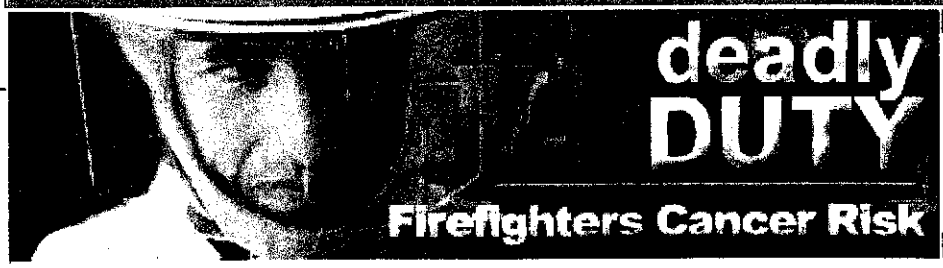








**Links:**
## Chemical Dangers A-Z
**Robin Rowland, CBC News Online**

General link: International Agency for Research on Cancer

### Acrolein

Acrolein is a white or yellow liquid that burns easily. It is used to make pesticides and in the manufacture of plastics, perfumes and methyl chloride refrigerants. It is found in some livestock feeds and pesticides. Acrolein can also be created by the combustion of wood, cotton, carpeting and upholstery.

The U.S. Environmental Protection Agency says Acrolein causes severe eye irritation, and respiratory congestion and irritation. It is fatal if taken orally. The Environmental Protection Agency classifies Acrolein as a possible human carcinogen, based on limited data. The International Agency for Research on Cancer says evidence of cancer is inadequate to make a determination.

EPA profile of acrolein

### Acrylonitrile

Acrylonitrile is a flammable substance used in the manufacture of acrylic fibres and some rubber products. Firefighters can be exposed to Acrylonitrile vapours if a product using the chemical is heated or on fire. The EPA says workers exposed to Acrylonitrile have shown low-grade anemia, cyanosis, leukocytosis, kidney irritation, mild jaundice, and irregular breathing, with symptoms that include mucous membrane irritation, headaches, dizziness, nausea, feelings of apprehension and nervous irritability, muscle weakness, and convulsions.

The EPA has classified acrylonitrile as a probable human carcinogen with medium carcinogenic hazard. Some researchers believe that acrylonitrile can cause lung and prostate cancer. It is also possibly connected to stomach,

colon, brain, lymphatic and blood cancers. International Agency for Research on Cancer (IARC) also classifies Acrylonitrile as probably carcinogenic.

EPA profile of acrylonitrile

**Asbestos**

Asbestos is still found in buildings built or renovated before the substance was banned and asbestos fibres are present at many fires. A study of New York firefighters with 20 years or more on the job showed that 49 per cent had some exposure to asbestos. Asbestos is the cause of asbestosis. Asbestosis is characterized by shortness of breath and coughing and may lead to severe impairment of respiratory function and ultimately to death. Asbestos has been linked to lung cancer in humans and is classified by the EPA as a human carcinogen.

EPA profile of asbestos

**Benzene**

Benzene is found at fire sites where items made with the product are burning. These can include medicinal chemicals, dyes, artificial leather, linoleum, oilcloth, varnishes and lacquers. Benzene is also used as a solvent in waxes, resins and oils. According to the EPA, exposure to benzene can cause drowsiness, dizziness, headaches, and unconsciousness. Death may result from exposure to high levels of benzene.

The Ontario report says that benzene is the most common constituent of smoke after carbon monoxide and is usually found in high concentrations at a fire.

The EPA says benzene is a known human carcinogen of medium carcinogenic hazard. People exposed to benzene are at risk for leukemia (cancer of the tissues that form white blood cells).

EPA profile of benzene
EPA document "Carcinogenic effects of Benzene"

**Chloroform**

Chloroform is found in solvents and is also created by the decomposition of organic materials in fires but it is usually found in low quantities at a fire site.

Chloroform irritates the skin and eyes, depresses the central nervous system and can cause liver and kidney damage. It may cause liver and kidney cancer. The EPA classifies chloroform as a probable human carcinogen of low carcinogenic hazard. IARC reports that chloroform can cause liver and kidney cancer in lab animals as well as genetic damage.

EPA profile of chloroform target=_new

**Diesel exhaust**

Diesel exhaust is a mixture of a number of dangerous chemicals, including benzene, formaldehyde and polycyclic aromatic hydrocarbons (PAH).

The Ontario report says firefighters in the province are often exposed to exhaust from fire trucks in stations. The amount of exposure depends on exhaust controls on the fire truck, ventilation and structural barriers in the fire station. Diesel exhaust can build up and firefighters exposed if trucks are frequently started inside the station, or if one truck leaves a multi-unit station while other firefighters remain in the building.

IARC says diesel exhaust is probably carcinogenic and a possible cause of lung and bladder cancer.

EPA profile of diesel exhaust

**Formaldehyde**

Formaldehyde is used in the manufacture of resins, embalming fluid, fungicide, air freshener, plastics, glue, wood products, insulation, paint, leather and rubber. That means formaldehyde fumes may be present at a fire site.

Studies have shown the presence of formaldehyde fumes at "content fires" and building fires. So far studies have not shown the presence of formaldehyde at car fires.

Formaldehyde can cause acute reactions including irritation of the mucous membranes of the eyes, nose and respiratory systems. It can cause headaches, coughs, difficulty sleeping, diarrhea, nausea, weakness, vomiting, dizziness, wheezing, chest pain, breathlessness, rashes, bronchitis and pneumonia. The U.S. EPA says formaldehyde is also connected to menstrual disorders and pregnancy problems in women workers exposed to it.

Formaldehyde (as urea formaldehyde foam) was extensively used as an insulating material until it was banned.

IARC lists formaldehyde as probably carcinogenic with a possible connection to Hodgkin's disease, leukemia, and cancers of the pharynx, lung, nose, prostate, bladder, brain, colon, skin and kidney. The EPA lists formaldehyde as a probable human carcinogen of medium carcinogenic hazard.

EPA profile of formaldehyde

**Halons**

Halons were used as fire extinguishers and suppressants for

many years.

Halon gases are not a lung irritant, but can affect the central nervous and cardiovascular systems. High exposure of the central nervous system to Halons causes alternations in perception, increase in reaction time, and a reduced ability to concentrate. Halon appears to react with adrenalin (especially when a firefighter is under stress) to cause stress on the cardiovascular system.

Use of new Halon fire suppression systems were banned in Canada and the United States to help protect the ozone layer but in many cases existing systems are permitted to continue in use.

EPA profile of halons

Environment Canada on halons.

**Hydrogen chloride**

Hydrogen chloride is used in the manufacture of pharmaceuticals, chlorine, and vinyl chloride and in the chlorination of rubber.

The Ontario report notes that "Hydrogen chloride is one of 75 identifiable potentially toxic compounds produced by the combustion of polyvinyl chloride" which is used in home construction, furniture, electric and telephone cable or wiring, and office equipment. So hydrogen chloride is probably present at most fires.

Hydrogen chloride can irritate the eyes, skin and throat.

**Hydrogen cyanide**

Hydrogen cyanide is a potent and fast acting poison that prevents oxygen getting to the cells of the body. It is used in the manufacture of resins and pesticides. Hydrogen cyanide is also released during the incomplete combustion of natural fibres such as wool and silk as well as synthetic polymers such as polyurethane and nylon.

Studies show that hydrogen cyanide is present at between 15 per cent and 47 per cent of fires.

The danger for firefighters and others is the fact that hydrogen cyanide and carbon monoxide can combine to act together on the brain, creating a more deadly effect then either substance alone.

EPA profile of cyanide

**Nitrogen dioxide**

Nitrogen dioxide is a common gas created in fires. It also can

be found in fires in areas where nitrogen dioxide is used in manufacturing of nitric acid, sulphuric acid and explosives.

Nitrogen dioxide can irritate the lungs and in severe cases cause pulmonary edema, a build-up of fluid in the lungs.

Some reports list nitrogen dioxide as a suspected carcinogen,

**Organic solvents**

Organic solvents are widely used in manufacturing. Substances include benzene, chloroform, and toluene. All organic solvents can suppress the central nervous system, working as depressants or anesthetics.

**Polycyclic aromatic hydrocarbons (PAH)**

Polycyclic aromatic hydrocarbons are "multi-ring aromatic compounds found widely dispersed in nature" and can be formed in the combustion of diesel fuel. They are also found in tobacco smoke, and some grilled, smoked and fried foods. PAHs are also used in the high temperature processing of crude oil, coal and coke.

Refinery employees who work with PAHs are at increased risk for lung, colon, pancreatic, stomach, pharynx and bladder cancer. So are workers exposed to coke, coal tar, pitch and asphalt.

Tar and pitch are associated with benign and malignant skin tumours. There are reports that there is a link between PAH exposure and leukemia, and bladder, kidney and urinary cancer.

**Soot**

Fires create soot and the content of the soot depends on what is burning. Soot often contains PAH. IARC says soot is carcinogenic with links to scrotal, skin and lung cancer. Chimney sweeps who are chronically exposed to soot are vulnerable to esophageal, and liver cancer as well as leukemia.

**Vinyl chloride**

Vinyl chloride is used in the manufacture of plastics used in building materials, packaging materials such as film, sheets, bags and bottles, automobile upholstery, toys and consumer goods. When heated or burned those products can release vinyl chloride.

Short-term exposure to vinyl chloride brings on dizziness, euphoria, respiratory irritation, headaches, nausea, irritability and poor memory.

IARC says vinyl chloride is carcinogenic and causes liver, brain, lung and blood cancers in humans. There are also reports vinyl

chloride is linked to melanoma, gastroinsteninal cancer and brain tumours. The EPA lists vinyl chloride as a human carcinogen of medium carcinogenic hazard.

EPA profile of vinyl chloride

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## 4062.0: Tuesday, November 12, 2002 - Board 2

## Abstract #49446

# Cancer Mortality Among Florida Firefighters

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Firefighters are exposed to a number of potential carcinogens in the course of their work. Prior studies have indicated possible increased occupational risks of brain, lymphopoietic, bladder, kidney, and possibly lung cancers among firefighters. To examine the cancer risks associated with firefighting in Florida, a proportional mortality study (PMR) was conducted among 35,777 males certified between 1972 to 1999 in Florida to work as firefighters. A total of 1,411 firefighter deaths were identified through Florida Vital Statistics linkage through 1999, with 364 deaths due to malignant neoplasms. The overall risk of cancer among firefighters was significantly higher when compared to the general Florida population (PMR=113; 95% CI=102-125). Significant excess mortality was observed for respiratory cancer (PMR=123; 95% CI=103-144) and skin cancer (PMR=235; 95% CI=134-364). Firefighters had significantly lower risk for prostate cancer (PMR=53; 95% CI=33-79). Elevated mortality risks for brain tumor, cancers of lymphopoietic, bladder and kidney, and soft tissue sarcoma were observed, but were not statistically significant. Additional analyses examined comparison with a group of 29,218 male volunteer Florida firefighters, and subpopulations by gender and Hispanic ethnicity. Results indicate that despite the increasing use of protective equipment (e.g., self-contained breathing apparatus) and procedures designed to reduce carcinogen exposures, firefighters may remain at significantly elevated risk of mortality due to selected cancers.

This work was funded in part by a grant from the National Institute of Occupational Safety and Health (NIOSH).

Learning Objectives: 1. Obtain information on current issues in occupational health and safety reserach. 2. Communicate with other researchers about firefighter health promotion. 3. Exchange ideas in occupational mortality study methodology.

Keywords: Occupational Exposure, Occupational Injury and Death

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I do not have any significant financial interest/arrangement or affiliation with any organization/institution whose products or services are being discussed in this session.

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