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Diesel Engine Exhaust Classified as a Known Carcinogen by IARC

June 13, 2012 – The International Agency for Research on Cancer (IARC), part of the World Health Organization (WHO), has classified diesel engine exhaust as a Group 1 carcinogen based on new evidence that exposure is associated with an increased risk of lung cancer. **An IARC Group 1 classification means there is sufficient evidence that a substance causes cancer in humans.**

Diesel engine exhaust was previously classified as a Group 2A carcinogen, which means it was probably carcinogenic to humans. However, new large-scale epidemiological studies on occupational exposures to diesel exhaust show sufficient evidence for an increased risk of lung cancer; therefore, the IARC has changed the carcinogenic classification from Group 2A to Group 1.

Diesel exhaust is a complex mixture of both gaseous and particulate substances, including carbon monoxide, oxides of sulfur and nitrogen and hydrocarbons. Diesel exhaust particulates are respirable, or small enough to be easily inhaled and deposit in the lungs and lower respiratory system. This small size also allows diesel particulates to remain suspended in the air for long periods of time. **Fire fighters are at high risk of exposure to diesel exhaust, particularly inside fire stations where diesel fire apparatus release diesel exhaust that disperses to areas where fire fighters eat, work and sleep.**

The IAFF has long been involved in protecting its members from diesel exhaust exposure. Since the 1980s, the IAFF has led research efforts in collaboration with numerous academic and government institutions to measure fire fighters' exposure to diesel exhaust, evaluate engineering controls to minimize this exposure and investigate the relationship between exposure and occupational disease.

In 1987, the IAFF, in conjunction with the University of California Los Angeles (UCLA) School of Public Health, published the first study that measures fire fighters' diesel exhaust exposure in fire stations throughout New York, Boston and Los Angeles. **The study, funded by the IAFF John P. Redmond Foundation and the National Institutes of Health (NIH), found a strong correlation between an increased number of runs and higher levels of diesel exhaust exposure, and that exposure occurs even after the apparatus returns to the station and is shut down.**

More recent studies have found significant increases of lung cancer in populations occupationally exposed to diesel exhaust levels that are much lower than what the IAFF and UCLA measured in the 1987 study. This indicates a clear increased risk of lung cancer for fire fighters exposed to diesel exhaust. Exposure to diesel fumes can also lead to other cancers, including bladder cancer, as well as cardiovascular disease and chronic obstructive pulmonary diseases.

As a result of the mounting evidence demonstrating the link between fire fighting and occupational cancers, the IAFF has been working with affiliates throughout the United States and Canada for the inclusion of IARC-classified carcinogens to fire fighter presumptive disability legislation. **There are currently 33 states and nine provinces with presumptive laws that cover occupational cancers for fire fighters, and 17 of these states and seven of these provinces specifically cover lung cancer or a cancer as a result of a demonstrated exposure to an IARC Group 1 carcinogen, which now includes diesel exhaust.**

Since the publishing of the diesel study, the IAFF has led the effort for proper engineering controls, including the development of source capture equipment. The IAFF has strongly advocated, in concert with NIOSH, that diesel exhaust emissions must be controlled to the lowest feasible level. To be consistent with this recommendation, source capture systems are the best choice to reduce fire fighter exposures to diesel exhaust and must be installed and used in all fire stations.