Firefighting and the exposure to cancerous byproducts

Hoppe-Jones C., Griffin S.C., Gulotta J.J., Wallentine D.D., Moore P.K., Beitel S.C., Flahr L.M., Zhaj J., Zhou J.J., Littau S.R., Darmon-Moore D., Jung A.M., Garavite F., Snyder S.A., Burgess J.L., "Evaluation of fireground exposures using urinary PAH metabolites." *Journal of Exposure Science and Environmental Epidemiology.* 12 February 2021. Summary by Devin Ritter.

Firefighters face danger every day in their career, but exposure to toxic chemicals is one of the most life-threatening. These chemicals are benzene, formaldehyde, and hydrocarbons. The risk of getting cancer, as well as the mortality rate, is much higher in firefighters than in the rest of the population. To help reduce cancer risk in firefighters, it is important to prevent exposure to these dangerous chemicals.

In this study, researchers examined firefighters reactions to a specific type of hydrocarbon known as a polycyclic aromatic hydrocarbon (PAH). PAHs are chemicals produced when materials like oil, gas, or wood are burned. Researchers can test how much PAHs people have been exposed to by testing their urine.

This study, completed by the University of Arizona and the Tucson Fire Department, aimed to study varying exposures to PAHs when fighting structural fires. When at a live fire, all people nearby or involved in putting the fire out are at risk of exposure to PAHs. Engineers or paramedics working onsite or near the fire, may be unaware of their exposure to PAHs.

Why are PAHs dangerous?

PAHs, or Polycyclic Aromatic Hydrocarbons, are known to cause a variety of unpleasant long-term health problems. These include, cataracts, kidney damage, and liver damage. Long-term exposure to PAHs can cause cancer of the skin, lungs, bladder, and gastrointestinal system.

Results of the study showed that all people working near a live fire - including firefighters, captains, engineers, and paramedics - showed increased levels of PAHs in their urine.

It is important to determine what types of toxic chemicals are present in firegrounds. This information can then be used to figure out how varying levels of exposure to PAHs at live fires can impact the health of all the people that work in the area. Because people working in careers like firefighting are risking their own health to protect others, it is important to do what we can to improve their working conditions.

Link to full article: https://doi.org/10.1038/s41370-021-00311-x

Support provided by SWEHSC (P30-ES006694).

