



AMERICAN COLLEGE OF
OCCUPATIONAL AND
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Ultrafine Particles Could Increase Coronary Risk in Firefighters

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To Reduce Exposure, Firefighters Should Use Respiratory Protection More Consistently

Exposure to high levels of ultrafine particles—invisible particles that can reach the smallest air passages in the lungs—may be an important contributor to the risk of coronary heart disease in firefighters, reports a study in the August Journal of Occupational and Environmental Medicine, official publication of the American College of Occupational and Environmental Medicine (ACOEM).

More consistent use of respiratory protective equipment—especially during the "overhaul" stage of fire suppression—could reduce firefighters' exposure to ultrafine particles, and possibly lower coronary risk.

Led by C. Stuart Baxter, Ph.D., of University of Cincinnati, the researchers measured levels of different sizes of respirable (breathable) particles during test fires, conducted under experimental conditions. In all types of fires, ultrafine particles—measuring less than 0.1 microns (1/10,000 of a millimetre)—accounted for more than 70 percent of all particles.

Levels of ultrafine particles were high throughout all stages of fire suppression—not only the "knockdown" phase, when firefighters work to extinguish the fire or limit its growth; but also during the "overhaul" phase, when the goal is to prevent the fire from reigniting. Exposure may be especially high during the overhaul phase, when firefighters often remove their respiratory protective equipment.

Coronary events are a major health issue in firefighters, causing nearly half of all deaths on duty. Exposure to ultrafine particles could contribute to coronary disease in firefighters—not only as a long-term health risk, but also as a cause of coronary events while responding to fires.

To reduce this exposure, Dr. Baxter and co-authors believe that firefighters should be encouraged to use respiratory protective equipment throughout all phases of fire suppression. They also endorse previous recommendations for medical screening to identify and manage coronary risk factors in firefighters. The authors also emphasize that more research is needed to clarify the link between exposure to ultrafine particles and coronary risk.

About the Author

About ACOEM

ACOEM (www.acoem.org), an international society of 5,000 occupational physicians and other health care professionals, provides leadership to promote optimal health and safety of workers, workplaces, and environments.

About Journal of Occupational and Environmental Medicine

The Journal of Occupational and Environmental Medicine (www.joem.org) is the official journal of the American College of Occupational and Environmental Medicine. Edited to serve as a guide for physicians, nurses, and

researchers, the clinically oriented research articles are an excellent source for new ideas, concepts, techniques, and procedures that can be readily applied in the industrial or commercial employment setting.