Long-lasting sensory loss in WTC workers

EurekAlert

PHILADELPHIA (May 18, 2010) -- New research from the Monell Center and collaborating institutions reports that workers exposed to the complex mixture of toxic airborne chemicals following the 9/11 disaster had a decreased ability to detect odors and irritants two years after the exposure.

"The nose performs many sensory functions that are critical for human health and safety," said lead author Pamela Dalton, PhD, MPH, an environmental psychologist at Monell. "The sensory system that detects irritants is the first line of defense to protect the lungs against airborne toxic chemicals. The loss of the ability of the nose to respond to a strong irritant means that the reflexes that protect the lungs from toxic exposures will not be triggered."

Individuals involved in rescue, recovery, demolition and clean-up at the World Trade Center (WTC) were exposed to a complex mixture of smoke, dust, fumes, and gases. In the study, reported online in the journal *Environmental Health Perspectives*, Dalton and collaborators studied 102 individuals who worked or volunteered at the WTC site on 9/11 and during the days and weeks afterward to determine whether this exposure affected their ability to detect odors and irritants.

Forty-four percent of the workers reported being in lower Manhattan on 9/11 and 97 percent worked on the site during the week after the buildings' collapse.

Two years after the exposure, the WTC workers had decreased sensitivity to odors and irritants as compared to similar workers with no WTC exposure. Twenty-two percent of the WTC workers had a diminished ability to detect odors and nearly 75 percent had an impaired ability to detect irritants.

Workers exposed to the dust cloud immediately after the buildings' collapse had the most extreme loss of sensitivity to irritants, with an almost complete inability to detect the nasal irritant used in the study.

Almost none of the individuals tested recognized that their ability to detect odors and irritants was compromised.

Health screenings of WTC workers had documented the effects of inhaled exposure on the lungs and respiratory function, but little was known about the impact on sensory systems of the nose. These sensory systems include the olfactory system, which detects odors, and the somatosensory system, responsible for detecting irritants, chemicals that cause pain, tingling, burning, stinging, or prickling.

The inability to detect irritants and odors is a critical safety concern, especially since the workers were not aware of their impairment.

"Odors also serve a protective function, such as the ability to identify smoke from a fire, leaking gas, or spoiled food," said Dalton.

The authors suggest that the ability to smell and detect irritants should be evaluated regularly in WTC responders and other workers having pollutant exposures.

Future studies will attempt to follow the workers to assess recovery and identify factors associated with more complete recovery.

SOURCE [1]

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