

# 9/11 responders may face higher odds for dementia

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After helping America through one of its worst tragedies, some responders to the events of 9/11 may now face another foe: Heightened

risks for [dementia](#).

A new study looks at the health of thousands of firemen, [construction workers](#) and others who worked at the World Trade Center (WTC) site for almost a year after the attacks. Many were exposed to high levels of toxic dust. The new [findings](#) were published June 12 in the journal *JAMA Network Open*.

The study found that the worst-exposed workers face a much higher odds for dementia before the age of 65, compared to folks who worked onsite but either weren't exposed to dust and/or wore effective personal protective equipment (PPE).

"This study builds on prior work suggesting that dust and debris from the WTC collapse contained neurotoxins," said a team led by epidemiologist researcher Sean Clouston, of Stony Brook University in Stony Brook, N.Y.

"These results imply that these exposures were dangerous and support the view that the use of PPE might have prevented the onset of dementia before age 65 years among exposed responders," Clouston and colleagues wrote.

He is a professor of family, population and preventive medicine at Stony Brook.

As the researchers noted, during the days and months of rescue and cleanup at the WTC site, "workers reported heavy exposure to dust and particulate matter that caused acute gastrointestinal and respiratory discomfort and decreased pulmonary functioning."

"The dust that was expelled from the collapse of the Twin Towers was composed of a wide variety of hazardous materials, including pulverized

glass, lead, [polycyclic aromatic hydrocarbons](#), polychlorinated biphenyls and dioxins, and may differ from other sources of air pollution," they explained.

Besides causing a myriad of respiratory, heart and other [health problems](#), "long-term exposure to inhaled air pollutants, including [particulate matter](#), has been identified as a potential risk factor for the earlier onset of dementia," according to the Stony Brook team.

## **Could that be true for 9/11 responders and workers?**

To find out, they examined levels of toxin exposures and rates of early onset dementia (before the age of 65) among 5,010 people who worked at or near the WTC site.

People were considered responders if they worked "for at least four hours in the period from September 11 through September 14, 2001, for 24 hours at any other time in September, or for at least 80 hours across the entire response period from September 11, 2001, through July 31, 2002."

Clouston's group divided the cohort based on estimated levels of exposure to toxins.

Workers in the lowest category of risk were deemed to be those who had no such exposures, or were protected from exposure by the consistent use of PPE.

The average age of responders when the study was conducted was 53; most (91.3%) were men.

By 2022, among the more than 5,000 workers studied, 228 cases of dementia before the age of 65 were identified.

The odds that a former 9/11 responder had early onset dementia rose alongside the amount of toxic dust they had been exposed to, the team found.

Compared to the lowest-risk group, those in the "mild" exposure group were more than 12 times more likely to receive a dementia diagnosis; those in the "high" exposure group faced 30 times the risk; and those with "severe" exposures faced more than 42 times the risk, the research showed.

After adjusting for various other risk factors, each step up in exposure levels meant a 42% higher odds for early-onset dementia, compared to workers at the lowest level of exposures to toxins.

"This cohort study found increased risk of dementia associated with working in dusty locations and performing relatively dangerous activities for 15 or more weeks on or adjacent to the pile of debris or pit at Ground Zero," the Stony Brook team concluded.

They believe important lessons can be learned from these findings -- namely, that consistent PPE use can spare workers in similar situations from future illness and early death.

"There is a critical need to protect persons who help in rescue and recovery operations after an unexpected industrial accident," the researchers said.

"Disasters often require an emergent response in dangerous conditions, but reliable use of PPE might help prevent the onset of [dementia](#) before age 65 years among individuals exposed to an uncontrolled building collapse."

**More information:** Find out more about the downstream health

effects of the 9/11 attacks at the [U.S. Centers for Disease Control and Prevention](#).

Sean A. P. Clouston et al, Incidence of Dementia Before Age 65 Years Among World Trade Center Attack Responders, *JAMA Network Open* (2024). [DOI: 10.1001/jamanetworkopen.2024.16504](https://doi.org/10.1001/jamanetworkopen.2024.16504)

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