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Indoor Air Pollution A Silent Threat to Public Health and Risk Factor for Developing Alzheimer Disease

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Chronic exposure to indoor air pollution has been associated with cognitive decline and an increased risk of Alzheimer's disease (AD). This is especially true when an individual is chronically exposed to particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2), and carbon monoxide (CO), volatile organic compounds (VOCs). These pollutants can cause inflammation, oxidative stress, and damage to brain cells. Research has indicated that exposure to these pollutants may raise the risk of cognitive impairment and cause problems with memory, attention, and executive function. Moreover, pre-existing conditions such as arterial hypertension, diabetes, cerebrovascular illness, and renal disease modulate the effects of air pollution on AD risk, larger indirect effects are noted in some subpopulations.[1]

Furthermore, there is evidence linking air pollution to neurodegenerative changes in the brain, oxidative stress, and neuroinflammation. These conditions all have a role in the onset and advancement of Alzheimer's disease. According to previous research results highlight the significance of maintaining adequate indoor air quality in order to possibly lower the risk of cognitive decline and AD. Reducing the use of goods that release dangerous chemicals, installing air filtration systems, and providing enough ventilation are all significant ways to decrease exposure to indoor air pollutants. Indeed, studies have shown that some indoor air pollutants, such volatile organic compounds (VOCs) present in furniture and cleaning supplies, might have a particularly negative long-term effect on cognitive function and brain health. Furthermore, a growing body of research has demonstrated the association between indoor air pollution and a higher risk of developing mood disorders such anxiety and depression. These results highlight the significance of preserving a high standard of indoor air quality in order to possibly lower the incidence of AD and cognitive impairment.[2]

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