

# Elevated brain aluminium and early onset Alzheimer's disease in worker exposed to aluminium

February 13 2014

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(Medical Xpress)—Research at Keele University in Staffordshire has shown for the first time that an individual who was exposed to aluminium at work and died of Alzheimer's disease had high levels of aluminium in the brain.

While [aluminium](#) is a known neurotoxin and occupational exposure to aluminium has been implicated in neurological disease, including Alzheimer's disease, this finding is believed to be the first record of a direct link between Alzheimer's disease and elevated brain aluminium following occupational exposure to the metal.

In 2003 a 58-year-old Caucasian male with no previous medical history of note was diagnosed with Alzheimer's disease. Ten years previous to this the man, from the north-east of England, began to work with the preparation of a novel material (DARMATT KM1) used as insulation in the nuclear fuel and space industries. This work exposed him to aluminium sulphate 'dust' on a daily basis over 8 years. An 'ordinary' dust mask was supplied to protect against inhalation of the materials. Within a short time of starting this work the man complained of headaches, tiredness and mouth ulcers. By 1999 he started to show problems in relation to memory and suffered depression.

Following his death, aged 66, in 2011, a neuropathological examination confirmed advance stage Alzheimer's disease. There then followed the

most comprehensive investigation ever of the aluminium content of the frontal lobe of a single individual with 49 different tissue samples being measured for aluminium.

Professor Chris Exley, of The Birchall Centre, at Keele University, said: "The results showed unequivocally that the [frontal lobe](#) contained an average aluminium content which was at least four times higher than might be expected for an age-matched control brain.

"The observation that air-borne aluminium dust was most likely responsible for the elevated levels of aluminium in the brain must then heavily implicate the nose and possibly the lungs as the main routes of entry of aluminium into the body and the brain.

"Overall, these results suggest very strongly that [occupational exposure](#) to aluminium contributed significantly to the untimely death of this individual with Alzheimer's disease."

**More information:** "Elevated brain aluminium and early onset Alzheimer's disease in an individual occupationally exposed to aluminium: a case report." Christopher Exley and Thomas Vickers. *Journal of Medical Case Reports*, 2014, 8:41 [DOI: 10.1186/1752-1947-8-41](#)

Provided by Keele University

Citation: Elevated brain aluminium and early onset Alzheimer's disease in worker exposed to aluminium (2014, February 13) retrieved 24 April 2024 from <https://medicalxpress.com/news/2014-02-elevated-brain-aluminium-early-onset.html>

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