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Babies exposed to Hazelwood coal mine fire smoke were not at increased risk of having developed allergies when they reached school age

Researchers from the Hazelwood Health Study's Latrobe Early Life Follow-up (ELF) Stream, focusing on babies whose mothers were pregnant with them during the Hazelwood coal mine fire in 2014 and those aged 24 months or less at that time, have released new findings.

In collaboration with the CSIRO, the Hazelwood Health Study measured the levels of very tiny airborne particles in the mine fire smoke which had a diameter of 2.5 micrometres or less, which is about 1/30th of the width of a human hair. Termed $PM_{2.5}$, these particles are so tiny that they can pass through a person's lungs into the bloodstream. In pregnant women, the smoke particles can cross the placental barrier and enter the foetal circulation. This means that the babies of women who were pregnant during the mine fire may have been exposed to mine fire smoke before they were born.

The Study's ELF Stream conducted clinical assessments in the autumn and winter of 2021, seven years after the fire, to study various health outcomes in the children who were exposed, directly or indirectly during pregnancy, to the event. Allergic testing was part of the investigations.

Professor Fay Johnston, the ELF Study Lead from the Menzies Institute for Medical Research said.

"We found that the babies of mothers who were exposed to higher levels of mine fire smoke during pregnancy or those who directly breathed the smoke in their first two years of life, were not at higher risk of a positive blood test indicating possible allergy to dust, cats, grass or fungi seven years after the fire."

"They did not seem to have increased overall levels of Immunoglobulin E, antibodies that are a central component of allergic reactions, either."

The ELF Study's PhD student, Myriam Ziou, who has led the analysis of these data, notes that the findings need to be treated with some caution.

"The number of children for whom we were able to conduct allergy testing was limited, so it is not impossible that we missed a difference between the exposed and unexposed children, if that difference was on the smaller side. Also, an interesting, related observation from the study was that higher levels of long-term day-to-day $PM_{2.5}$, generated by common sources of combustion such as power plants and traffic all year round, and wood heaters in the winter, was linked to higher rates of possible allergy to dust."

The ELF Study includes a cohort of 500 families with smoke exposed children who were recruited in 2016 to participate in 3 rounds of clinical investigations of their lung and heart health. Two rounds of testing have been completed in 2017 and 2021, and the 3rd round is scheduled for 2023. All findings will be shared with the community, the relevant organisations, and the scientific community so that they can inform services for the future health of the Latrobe Valley.

For more information about the Hazelwood Health Study, visit www.hazelwoodhealthstudy.org.au
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To access all Hazelwood Health Study findings: https://hazelwoodhealthstudy.org.au/study-findings

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