Hazelwood HEALTH STUDY

Research Summary

Allergies in children seven years after the mine fire

June 2023

Background

The fire in the Morwell open cut brown coal mine adjacent to the Hazelwood Power Station blanketed the town of Morwell and the surrounding area in smoke and ash for six weeks in February and March 2014. The smoke event was recognised as one of the most significant air quality incidents in Victoria's history. It caused considerable community concern within Morwell and the broader community. In response to these concerns, and following extensive community consultation, the Hazelwood Health Study (HHS) was established to examine the impacts of the mine fire. The HHS involves multiple research streams targeting different health outcomes and different vulnerable groups.

The **Latrobe Early Life Follow up (ELF) Study** is the part of the Hazelwood Health Study that follows the health and growth of children who were younger than two years old when the fire occurred. This includes children whose mothers were pregnant with them at the time.

Analysis aims

We aimed to find out if exposure to smoke from the mine fire, either during pregnancy or during the first two years of childhood, was associated with increased likelihood of possible allergies seven years after the fire.

What we did

We invited children from the Early Life Follow-up Study who were exposed to mine fire smoke during pregnancy or the first two years of life, and children who were not exposed ('unexposed') to attend clinical testing. We collected blood samples in 103 children and tested them for specific allergic sensitisation to dust, fungi, cats, and grass pollen, as well as for an overall measure of allergy called total Immunoglobulin E (IgE). Allergic sensitisation occurs when the body's immune system mistakenly identifies an otherwise harmless substance as a threat and produces IgE antibodies in reaction.

We used air pollution data provided by CSIRO and movements of the pregnant mother and/or the child during the fire period to estimate how much mine fire smoke they were exposed to. We looked to see if higher amounts of mine fire smoke exposure were associated with a higher chance of having IgE antibodies (being overall allergic) or being allergic to dust, fungi, cats or grass pollen. In our analysis we considered other factors that could affect health of children, such as the child's age, social factors and usual background levels of air pollution, to distinguish the specific influence of the smoke from the mine fire.

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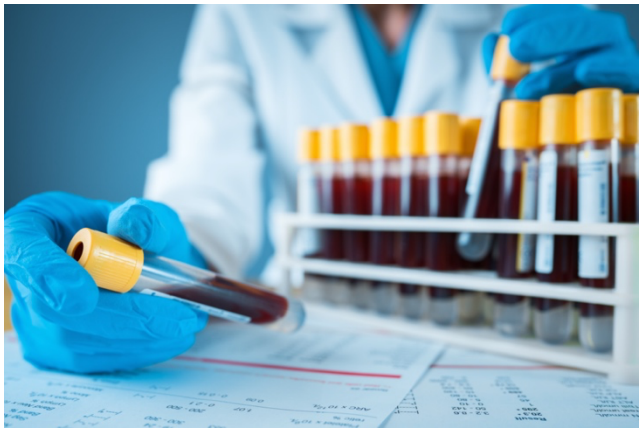
What we found

Compared to babies with low mine fire smoke exposure, 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 at no higher risk of a positive blood test indicating overall allergy or specific allergies to dust, cats, fungi, or grass pollen seven years after the fire.

A detailed paper describing the findings from this analysis can be requested from the study team by emailing contact@hazelwoodhealthstudy.org.au



Where to from here?

These findings will be shared with relevant organisations and the scientific community to ensure they are used to shape services for the future health of the Latrobe Valley. Additionally, findings will help guide responses to severe smoke events in the future.

Considerations

Although we did not find a link at this stage between exposure to the fire and the risk of common allergies, this risk generally continues to increase until children reach adolescence, so there is a possibility that these results could change in the next few years. Additionally, having a positive result to an allergy test does not mean that the child will necessarily have clinical symptoms. It is also important to mention that the number of participants in our study was small, and that may have limited our ability to detect a subtle difference between exposed and unexposed children if it was present. Finally, this study did not test for a range of possible allergies (e.g., food, dogs, tree pollen), thus our results cannot tell us anything about if there was a link between the smoke and those allergies.

Meet the team

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The Latrobe ELF Study is led by the Menzies Institute for Medical Research at the University of Tasmania with collaborations from Melbourne University and the Telethon Kids Institute.

The HHS is led by Monash University in collaboration with Menzies Institute for Medical Research, Federation University, The University of Adelaide, and CSIRO.

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