

The impact of coal mine fire smoke on asthma Research Summary

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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 **Respiratory Stream** is the part of the HHS that examines whether exposure to smoke from the mine fire is associated with respiratory symptoms, asthma control and decline in lung function.



Analysis aims

Three and a half years after the mine fire, this research aimed to discover whether adults with asthma who were exposed to the smoke had more severe symptoms, worse lung function or poorer asthma control, compared to adults with asthma who were not exposed.

Meet the Team

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The HHS is led by Monash University with collaborators from Menzies, Federation University, The University of Adelaide, and CSIRO. The research was funded by the Department of Health and Human Services.



What we did

We tested 165 adults with asthma from Morwell who were exposed to the smoke, and 64 adults with asthma from Sale who were not exposed. Participants underwent a number of tests of lung health, including a measure of inflammation in the lungs, how hard and fast participants could blow air out of their lungs and whether that changed after using an asthma puffer containing salbutamol (Ventolin). Participants also answered questions about respiratory symptoms such as cough and wheeze, medication use and their asthma control. We took into consideration other factors that could influence lung health, such as age, height, weight, cigarette smoking and participant's jobs that may have involved exposure to dusts or fumes.



What we found

In adults with asthma from Morwell who were exposed to the smoke, compared to adults with asthma from Sale who were unexposed, we found no differences in asthma-related symptoms or severity, lung function or airway inflammation. However, there was some evidence that adults with asthma from Morwell had poorer asthma control.

A copy of the pre-print version of this article is available at www.hazelwoodhealthstudy.org.au/publications



Considerations

We cannot be certain that the mine fire smoke had a causal role in the reduction of asthma control in Morwell because additional factors could be influential, such as income, access to health services and adherence to medication instructions. Our asthma control measure also relied on self-reported data which could limit interpretation. Further, because a large proportion of adults from Morwell and Sale did not participate in the baseline Adult Survey from which the Respiratory Stream participants were drawn, it is possible that the findings do not truly reflect the two communities.



Where to from here?

Further analysis of the Respiratory Stream data will explore the health effects of the mine fire smoke on the small airways of the lungs, on adults with chronic obstruction pulmonary disease and on adults without asthma. Follow up testing of the Respiratory Stream participants is planned so that longer term health effects of the mine fire smoke can be investigated.