Hazelwood HEALTH STUDY

Further results from the Adult Survey. The relationship between Hazelwood mine fire smoke exposure, housing materials and self-reported respiratory health.

Research Summary

July 2019

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 concern within Morwell and the broader community. In response to these concerns, and following extensive community consultation, the Hazelwood Health Study was established to examine the impacts of the mine fire. The Hazelwood Health Study involves multiple research streams targeting different health outcomes and different vulnerable groups.

Analysis aims

To assess whether there was an association between mine fire smoke exposure, housing and roofing materials, and respiratory health in adults residing in the Latrobe Valley.

Meet the Team

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What we did

We surveyed 3,096 adults from Morwell approximately 2.5 years after the mine fire event. Participants answered questions about their locations during the mine fire (e.g., home, work or leave). Based on those locations, air pollution data modelled by CSIRO was used to estimate each participant's level of exposure during the fire to fine particles less than 2.5 thousandths of a mm in diameter ($PM^{2.5}$). Participants also answered questions about their home's main building materials and type of roof. We then looked to see if increasing level of $PM^{2.5}$ exposure was associated with increasing likelihood of self-reported respiratory symptoms 2.5 years after the mine fire, and whether building or roofing type made any difference. This analysis took into consideration other factors that could influence health, such as participant's jobs that involved exposure to dusts or fumes, their education level and cigarette smoking.

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What we found

In adults who lived in Morwell during the mine fire, we found evidence of an association between higher mine fire smoke exposure and increased likelihood of cough, wheeze and phlegm 2.5 years later. The link was stronger in those adults whose houses were built from weatherboard with tin or metal roofs. In contrast, brick or cement houses with tiled roofs showed a lower risk. The link between increasing air pollution and respiratory symptoms was also stronger in men, and in all adults of working age. One explanation for this could be that these groups spent more time outdoors during the mine fire, whereas some women and adults of retirement age could have spent more time indoors.

A detailed paper describing these findings can be found at www.hazelwoodhealthstudy.org.au/publications

Considerations

Only 34% of Morwell adults participated. Whilst this is comparable to participation rates in other Australian research studies, there is the possibility that participants were not completely representative of their town. The researchers used a number of statistical methods to correct for known differences between participants and non-participants, however there remains the possibility that factors other than the mine fire air pollution were responsible for some of the differences in health reported by highly exposed and less exposed participants. Also, housing material and roofing type were only collected for each participant's primary residence, but the proportion of time spent at that home would have varied between participants.

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.

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