

Hazelwood mine fire smoke exposure and ambulance attendances in the following years

Research Summary

September 2020

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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 **Hazelinks Stream** of the HHS investigates the long-term health of the smoke-exposed communities by using administrative health datasets, such as ambulance, hospital, Medicare, pharmaceutical, cancer and death records.

Analysis aims

This analysis aimed to see whether people who were most exposed to smoke from the Hazelwood mine fire were more likely to have needed an ambulance in the years following the event, compared with people who were less exposed or not exposed.



What we did

Approximately 2.5 years after the Hazelwood mine fire, 3096 Morwell residents participated in the HHS Adult Survey. Each participant filled in a time-location diary to show where they were on each day and night of the mine fire period. This was important because the smoke levels varied quite a bit from day to day. Using the diaries and air pollution modelling conducted by CSIRO, we calculated each participant's level of exposure during the fire, to fine air particles in the smoke of less than 2.5 thousandths of a mm in diameter (PM_{2.5}). Consent was given by 2223 of the Adult Survey participants for the researchers to access their Ambulance Victoria attendance records. For this analysis we looked at ambulance attendances from just after the fire, 1 April 2014 to 31 December 2017.

A detailed report describing the findings from this analysis can be found at
hazelwoodhealthstudy.org.au/study-findings/study-reports

Website: www.hazelwoodhealthstudy.org.au



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What we found

We found that as the levels of exposure to smoke-related $PM_{2.5}$ increased, the likelihood that a participant required an ambulance attendance in the following years also increased. This is evidence for a dose-response relationship. In particular we observed that increases in smoke exposure during the fire, were associated with increases in ambulance attendances for respiratory (lung) conditions and for cardiovascular (heart) conditions in the years after the fire. These findings could mean that the mine fire smoke impacted the lung- and heart-health of people for a prolonged period after the fire was put out.



Considerations

The analysis used a number of statistical methods to account for other factors that might have influenced ambulance attendances, such as previous health, age, gender, marital status, smoking history and employment in jobs that involved exposure to dust, fumes, smoke, mist or gas. However, there remains a possibility that factors other than the mine fire smoke influenced the ambulance attendances. Further, because a proportion of adults from Morwell did not participate in the Adult Survey, it is possible that the findings do not truly reflect that community.

Where to from here

These findings which used ambulance attendance data, will be looked at along-side other findings which used hospital, Medicare, pharmaceutical, cancer and death records, self-reported symptoms and clinical examinations of participants, to get a comprehensive overview of the long-term effects of the Hazelwood coalmine smoke on the health of adults in the Latrobe Valley.

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.

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