Hazelwood HEALTH STUDY

Hazelwood mine fire smoke exposure and hospital emergency department presentations in the following years **Research Summary**

February 2022

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 presented to a hospital emergency department in the years following the event, compared with people who were less exposed or not exposed.

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.

Meet the team

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What we did

Approximately 2.5 years after the Hazelwood mine fire, 4,056 residents from Morwell (exposed to the mine fire smoke) and Sale (unexposed) 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 2,725 of the Adult Survey participants for the researchers to access their hospital emergency department (ED) presentations data held by the Department of Health. For this analysis we looked at ED presentations from January 2009 to February 2019.

A detailed paper describing the findings from this analysis can be found at https://hazelwoodhealthstudy.org.au/study-findings/publications

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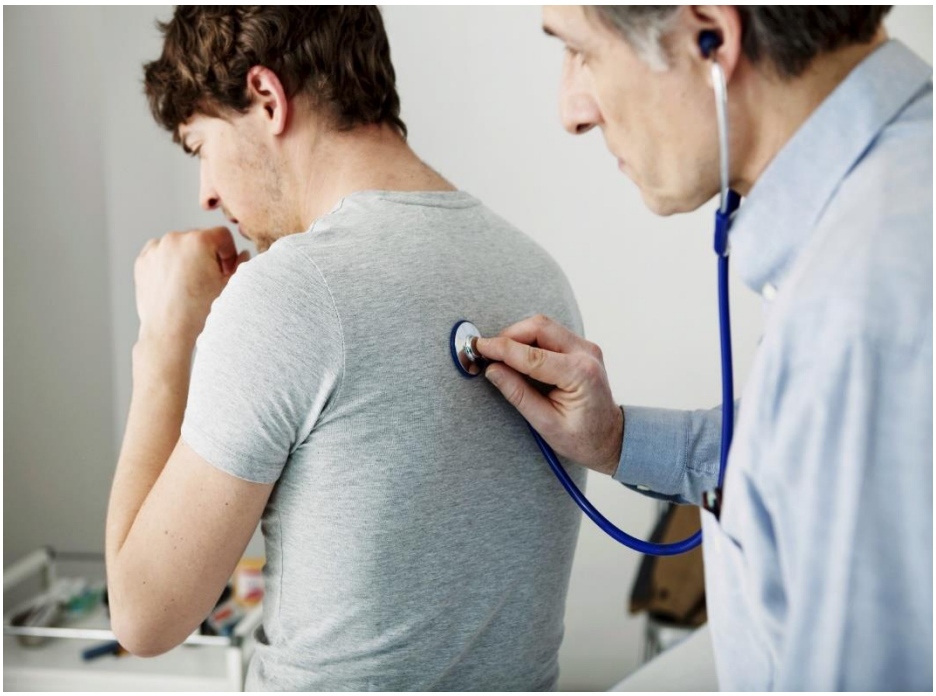
Considerations

The analysis used a number of statistical methods to account for other factors that might have influenced ED presentations, 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 ED presentations. 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.



What we found

We found that as the levels of exposure to smoke-related $PM_{2.5}$ increased, the likelihood of presenting to the ED with a respiratory-related (lung) condition increased during the following 5 years. The likelihood of presenting to the ED with a cardiovascular-related (heart) condition also increased during the first 2.5 years after the mine fire, particularly for ischaemic heart disease and atherothrombotic disease.

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.

Where to from here

These findings which used ED presentations data, will be looked at along side other findings which used hospital admission, ambulance, Medicare, pharmaceutical, cancer and death records, self-reported symptoms and clinical examinations of participants, to obtain 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, the University of Newcastle and CSIRO.

The research was funded by the Department of Health.