

Research on cancer, five years after the mine fire 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 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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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 a diagnosis of cancer during the five years following the event, compared with people who were less exposed or not exposed.



What we did

We searched the Victorian Cancer Registry (VCR) for any records matching 2208 Morwell residents who were exposed to the Hazelwood mine fire smoke, and 646 Sale residents who were much less exposed or not exposed, who had previously participated in the Hazelwood Health Study Adult Survey and agreed to VCR linkage. Each participant had 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 particles in the smoke of less than 2.5 thousandths of a mm in diameter (PM_{2.5}). For this analysis we looked at new cancers diagnosed between 9 August 2014 and 31 December 2019. Cancers usually take a long time to develop. For this reason, cancers diagnosed within 6 months after the mine fire were not included as these were extremely unlikely to have been caused by the smoke.

A detailed paper describing the findings from this analysis can be requested from the Hazelwood Health Study researchers by email contact@hazelwoodhealthstudy.org.au or phone 1800 985 899

What we found

We found that overall cancer incidence was higher in Morwell than in Sale during the 5 years after the mine fire. However, within exposed Morwell participants, we did not observe a difference in cancer incidence between highly exposed and less exposed participants. That is, we observed a difference in overall cancer incidence between the two towns, but no strong evidence that cancer incidence was associated with smoke exposure. This suggests the possibility that the difference in cancer incidence between the two towns *may* not have been caused by the mine fire. When we looked at specific cancer sites such as lung, colorectal and urinary cancers, numbers were too small to show any definite evidence of a difference between the two towns or between higher and lesser PM_{2.5} exposed participants.



Considerations

The analysis used a number of statistical methods to account for other factors that might have influenced cancer incidence, such as age, sex, education, smoking history and employment in jobs that involved exposure to dust, fumes, smoke, mist or gas. We did not find that these factors explained the difference in cancer between the two towns. However, there remains the possibility that factors other than the mine fire smoke influenced the difference in cancer between Morwell and Sale, such as differences in job types or diet. Further, because proportions of adults from Morwell and Sale did not participate in the Adult Survey, it is possible that the findings do not truly reflect those communities. Finally, a five year follow up period may be too brief to detect some cancers which can be very slow to develop.

Where to from here

These findings which used cancer registry data will be looked at alongside other findings which used ambulance, hospital, Medicare, pharmaceutical 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. A further linkage with the VCR is planned for 2023 in order to obtain approximately 9 years of cancer data.

The Hazelwood Health Study 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.