

# Exploring whether contamination in mining towns was always there

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A Macquarie University study has pursued multiple lines of evidence to bust the 'miner's myth' that exists in Broken Hill and other mining towns, which implies that alternative, non-mining related sources of lead are the

cause for high environmental lead contamination levels within the community.

"Industrial operators are known to concoct 'myths', stories or other arguments to distract the public and environmental regulators away from understanding and determining the true source and cause of [environmental contamination](#)," author Professor Mark Taylor explained.

"We decided to look into the science behind these 'myths' at Broken Hill in New South Wales to see if there was any evidence to support them."

Professor Taylor says the variety of myths include blaming environmental contamination levels on alternative causes such as natural weathering of the ore body that leads to contaminant dispersal, other sources of [lead](#) such as paint and petrol, and also whether the lead exists in a form that can be absorbed by biological organisms, termed 'bioavailability'.

Other arguments that have been used are that the 'wind blows the other way', suggesting that even if emissions are toxic they are not deposited across the local town due to favourable wind patterns.

"As we went through how contamination would actually have occurred in each of these scenarios, we found that there was little to no evidence for the environmental lead contamination observed around Broken Hill to have occurred in these ways," Professor Taylor said.

"First, our study showed that environmental contamination post-dates mining activities because historic soil samples from the late 19th century showed significantly less contamination than contemporary soils.

"Second, weathering of the ore body would only result in a limited increase of contamination close to the mined region, and cannot explain

high levels of lead and other metals in surface soils across the wider Broken Hill city area.

"Third, leaded paint or petrol is also highly improbable as a significant source of environmental lead, because contamination was evident away from residential areas where petrol was used in only small quantities. This means that suggesting old leaded paint or petrol are the primary sources of contamination is highly misleading."

The fourth reason, Professor Taylor says, is that lead isotope analysis clearly showed that environment accumulation of lead must have occurred relatively recently because only the surface soils could be 'fingerprinted' to match the source ore body. The deeper soils that would have formed since the formation of the ore body showed different results to the surface soils, which gave the researchers "further reason to discount the natural weathering argument."

Finally, other studies have already shown that the lead in the soils and dust in and around Broken Hill is readily absorbed by the human body, meaning that it can definitely be deemed bioavailable.

"The creation of these myths has acted as a considerable barrier to proper strategies and restorative actions in mining towns across the planet. Knowing the truth behind these myths will help mining communities move forward in addressing exposures in a positive and effective manner," Professor Taylor concluded.

**More information:** Louise Jane Kristensen et al. Unravelling a 'miner's myth' that environmental contamination in mining towns is naturally occurring, *Environmental Geochemistry and Health* (2016). [DOI: 10.1007/s10653-016-9804-6](https://doi.org/10.1007/s10653-016-9804-6)

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