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AIR QUALITY THRESHOLDS DO NOT ADEQUATELY PROTECT AUSTRALIANS

The current mechanism for setting air quality thresholds in Australia does not adequately protect community health, according to the authors of a Perspective published by the Medical Journal of Australia.

Professor Graeme Zosky, Deputy Director of the Menzies Institute for Medical Research at the University of Tasmania, and colleagues wrote that the current guidelines for setting air quality standards uses "a method that balances risk assessment (health effects based on the exposure–response relationship) with the costs of abatement strategies to achieve the required targets".

"This puts regulators in a position of balancing the costs of expanding infrastructure against the benefits to human health." they wrote.

"The current approach to regulation of air pollution implies a causal model that is inconsistent with the available evidence.

"It provides no incentive for reducing exposure and allows increases in exposure to harmful pollutants, as long as the levels remain below the thresholds.

"This provides only partial health protection and adversely impacts community perceptions by implying that the current standards represent a 'safe' level of exposure."

A case in point is particulate matter (PM).

"PM_{10} ($PM \leq 10\mu m$ in aerodynamic diameter) is small enough to bypass the upper airways and lodge in the conducting airways, but is usually too large to reach the alveoli," wrote Zosky and colleagues.

"Acute exposure to PM_{10} is associated with hospitalisations and mortality for cardiorespiratory conditions, while long term exposure is linked to chronic cardiorespiratory conditions and metabolic disorders.

"No safe threshold for PM_{10} exposure has been identified.

"$PM_{2.5}$ ($PM \leq 2.5\mu m$ in aerodynamic diameter) can penetrate deeper into the lungs and is one of the leading causes of global mortality and morbidity.

"$PM_{2.5}$ has been linked to cardiovascular disease, respiratory disease, pre-term birth, metabolic disorders and neurological health problems.

"Like PM_{10}, there is no evidence for a safe threshold for $PM_{2.5}$ exposure," Zosky and colleagues wrote.

Despite this, the ambient air quality National Environmental Protection Measure sets reportable limits for key criteria air pollutants, which include PM, nitrogen dioxide, carbon monoxide, ozone, sulfur dioxide and lead.

"Collectively, there is sufficient evidence to conclude that there is no safe threshold for exposure to PM_{10}, $PM_{2.5}$ or lead," Zosky and colleagues wrote.

"For nitrogen dioxide, there is a threshold, but the current NEPM standard is well above this level.

"On this basis, the current standards are not sufficient to adequately protect the health of the Australian community."

Zosky and colleagues said they were reassured by the most recent impact statement prepared for the National Environment Protection Council for the revision of the standards for gaseous pollutants, which recommends

changing the NEPM to make reference to minimising the health effects of exposures and "incorporation of exposure–reduction targets".

"We endorse this approach," they wrote.

"However, the recommended measures for gaseous pollutants still seem to rely on specifying a standard in the future, albeit a lower one, rather than proposing goals for continual reduction.

"In the absence of a mechanism to promote continual improvement and best practice by regulators and industry, we are failing to adequately protect the Australian community from the health impacts of air pollution," they concluded.

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