Submission on the Western Australia Department of Water and Environmental Regulation draft *Guideline: Dust emissions*

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Thank you for the opportunity to comment on the Western Australia Department of Water and Environmental Regulation (the Department) draft *Guidelines: Dust emissions (the Guidelines)*.

About the Centre for Air pollution, energy and health Research (CAR)

CAR is a Centre of Research Excellence (CRE) funded by the National Health and Medical Research Council (NHMRC). The CRE brings together more than 30 researchers at the forefront of their fields, based across seven of Australia's leading universities. CAR is the only national group of its kind to bring together researchers focusing on health impacts of air pollution, and new/evolving versus traditional forms of energy. The CRE supports teams of researchers in the fields of epidemiology, exposure assessment, toxicology, chemistry, biostatistics and clinical respiratory medicine to undertake collaborative projects and to develop current and future capacity in this field. CAR's vision for a healthier community is the driving force behind our research.

CAR is facilitating and translating research on moving to alternative, renewable forms of energy that have the most beneficial (or least detrimental) impacts on health, the environment and the economy, accounting for the life cycle impacts of technological advancement. CAR researchers and affiliates have published world-leading research examining the health impacts of air pollution in Australia. For example, this year CAR researchers published an assessment of the health-related impacts of long-term exposure to anthropogenic (human-made) particulate matter, and estimated impacts cost the Australian economy AUD$6.2 billion annually (Hanigan et al 2021).

General comments

We commend the Department for the development of guidance for the assessment of fugitive dust emissions. We support the Government of Western Australia's commitment to the precautionary principle, the polluter pays principle, and the principles of intergenerational equity, conservation of biological diversity and ecological integrity, and waste minimisation, as outlined in the draft guidelines (p.2).

We also note that Part V, Division 1, section 49 of the *Environmental Protection Act 1986* (EP Act) recognises that "a person who causes pollution or allows pollution to be caused commits an offence" (p.2).

As noted in the draft guidelines on p.4, the human health impacts of airborne particulates resulting from dust emissions can be substantial. The health impacts can place pressure on health systems and can even lead to death. For example, Merrifield and colleagues (2013) investigated the impact of a 2009 dust event in Sydney found a 23% increase in emergency department visits due to the dust event. Further, CAR researcher Johnston and colleagues (2011) found that major dust events were associated with a 15% increase in death.

In relation to air pollution, the risks to human health from exposure to airborne emissions can occur at very low levels. For example, recent research conducted by CAR researchers (Hanigan et al 2019) supports evidence that adverse health effects from long term exposure to fine particulate matter with a diameter of 2.5 micrometres or less ($PM_{2.5}$) – a common emission from many industrial sites – can occur at concentrations well below the current Australian National Environmental Protection Measure (NEPM) maximum concentration standards of 8µg/m^3* (annual) and 25µg/m^3 (1-day).

Health impacts from exposure to air pollutants can include exacerbation of existing conditions, such as cardiovascular, respiratory, metabolic and neurological diseases, and even death (Landrigan et al 2018). Our position is that **there is no 'safe' level of air pollution (Zosky et al 2021)**. The World Health Organization's (WHO) global air quality guidelines, released in September 2021, reaffirm that exposure to air pollution concentrations at low levels is harmful to human health (WHO 2021).

The 2021 WHO air quality guidelines recommend substantially lower targets for concentrations of emissions, such as particulate matter, than are recommended in Australia's National Environmental Protection (Ambient Air Quality) Measures (AAQ NEPM). CAR recommends a continual reduction approach to fugitive dust emission standards over time, and this approach should be supported by the regular revision and reduction of permitted emission levels.

Specific comments

Context and dust criteria

We strongly urge the use of consistent concentration standards for dust and associated pollutants across Western Australia, with no exceptions and no exceedances permitted.

We are concerned by the Guideline's determination that where established approaches exist and there is overlap, established approaches will supersede the guidelines. The specific example used in the draft Guidelines is the *Port Hedland Dust Taskforce Report* recommendations (WA Department of State Development 2016). In particular, we are concerned that the Western Australian government supports the Taskforce recommendation of a 24-hour particulate matter with a diameter of 10 micrometres or less (PM_{10}) guideline of

* µg/m^3 = (micrograms per cubic metre)

70 µg/m^3 and accepted "that there would be minimal additional health benefits from adopting the National Environmental Protection Measure (NEPM) standard of 50 µg/m^3 for particulates (PM_{10}) measure at the existing population level" (WA Department of Health 2017).

We refute the conclusion that there would be minimal additional health benefits associated with adopting a more stringent standard than 70µg/m^3 for 24-hour PM_{10} concentrations. Based on a comprehensive review of the most recent scientific evidence, the 2021 WHO air quality guidelines recommend a 24-hour PM_{10} guideline of 45 µg/m^3 (WHO 2021), which is substantially lower than the standard recommended by the *Port Hedland Dust Taskforce Report*.

Accordingly, in relation to the criteria used by the Department for assessing health impacts of dust (p.5), we urge the department to prioritise the WHO 2021 air quality guidelines in place of criteria outlined in the 2016 National Environmental Protection Council (NEPC) *National Environment Protection (Ambient Air Quality) Measure (NEPM)* (as outlined in Table 1 on p.5) and the prioritisation of WHO guidance over Australian state and territory guidance in the reference hierarchy tabulated on p.6 (see Table 2).

Screening analysis

We strongly recommend against the Department reserving the right to provide an exemption to applicants that do not meet the separation distance requirements where the applicant considers the dust risk to be low (as articulated on p.11 under section 9.2 Screening dust emissions).

We are concerned by the Guideline's reference to potential exemptions where dust risk is deemed low, despite separation distance requirements not being met. Following the precautionary principle, all applications that do not meet the separation distance requirements should proceed to detailed analysis and should require *at a minimum* the four priority tools referenced in the Guidelines: an operational dust analysis, location review, analysis of existing dust levels, and analysis of dust characteristics.

References

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For more information

This submission has been produced by the Centre for Air pollution, energy and health Research (CAR).

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