

Waste Incineration

Policy Position Statement

Key messages:

Waste incinerators are associated with health harms. Most harm occurs to workers, but more people in the surrounding are also affected. Since most toxins are ingested (via food), adverse effects are not necessarily geographically co-located with incinerators.

Most of the evidence for harm comes from research on older types of incinerators. Industry claims newer incinerators are better designed and safer. However, most have not been in operation long enough for evidence for or against their safety to emerge. Therefore, a precautionary approach is warranted.

Existing research is of varying quality and subject to multiple confounders making comparison of incinerators and effects incomplete.

Key policy positions:

1. Local residents' concerns about incinerators need to be taken seriously and addressed proactively.
2. Strict regulation and monitoring of incinerators and their emissions is required, and needs to be incorporated in licencing agreements.
3. Future research should adhere to a standardised methodology that assesses factors, such as waste (including content and volume), incinerator technical characteristics (such as stack height, type of combustion chamber, stack cleaning mechanisms and maintenance schedules), and the types and quantities of emissions.
4. Where possible, analyse or control for three exposure pathways: ingestion, inhalation and dermal exposure. The possible lack of correlation between distance from the incinerator and the intensity of all three of the pathways should guide study design and interpretation of results.

Audience:

Federal, State and Territory Governments, policymakers and program managers, PHAA members, media.

Responsibility:

PHAA Ecology and Environment Special Interest Group

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Waste Incineration Policy

Policy position statement

This position statement should be read in conjunction with *The health impacts of waste incineration: a systematic review*⁽¹⁾ and the *Characterising Australia's waste profile: the impact on planetary health and adequacies of existing policies* background paper and appendix,⁽²⁾ which provides further supporting arguments, evidence and data.

PHAA affirms the following principles:

1. An approach to waste management that features all steps in the **reduce, re-design, refuse, reuse, repair, repurpose, recycle** sequence that emphasises reduction as the primary step.
2. A systemic approach where the political economic drivers of waste and action on waste are addressed not just the individual and household level actions.
3. Local community groups have a basis for legitimate concern regarding the health impacts of waste incineration facilities. The site survey of incineration facilities needs to take these concerns into account. Early transparent consultation with communities about these facilities is essential.

PHAA notes the following evidence:

4. In 2016-17, the Australian economy generated or imported 68.9 megatonnes of waste, of which the largest contributors were:
 - i) Construction (20.4 megatonnes, 29.6%)
 - ii) Households (13.8 megatonnes, 20.0%)
 - iii) Electricity, gas, water and waste services (12.7 megatonnes, 18.4%)
 - iv) Manufacturing (10.8 megatonnes, 15.6%).⁽³⁾
5. Governments are increasingly looking to incineration and waste to energy as a method for managing waste streams.^(4,5)
6. The evidence indicates that older incinerators and their emissions are associated with adverse health effects, including significant associations with some neoplasia, congenital anomalies, infant deaths and miscarriage, however this is not clear for other diseases.⁽¹⁾
7. Occupational exposure has been shown in primary studies to most likely cause adverse effects. However, workers are a smaller population than all residents in the vicinity of incinerators and may be considered a sentinel population for adverse effects. However, incinerator workers are probably also local residents, so are subject to exposures outside the workplace as well.⁽¹⁾
8. Despite ingestion being considered the primary exposure route for the public, according to the literature specifically examining this variable, most studies only consider inhalation and dermal exposure to pollutants in their study design. Food as an exposure vector is also complicated because food is often transported away from the area of exposure.⁽¹⁾
9. Industry claims that newer incinerator technologies may reduce exposure, however, since many health effects require cumulative exposure and may take many years to manifest, it will be difficult to measure any improved safety from modern incinerator designs for decades, so it is premature to conclude that these newer technologies improve safety.⁽¹⁾

10. Definitive studies on the link between waste incineration and health are difficult to conduct due to the diversity of pollutants emitted, and the complex nature of disease aetiology and pathophysiology. This problem is exacerbated by multiple exposure routes, experimental design limitations, unpredictable and indeterminable weather patterns, confluent and unmeasured alternative sources of pollution, unspecified incinerator design elements and cleaning systems used, unknown maintenance schedules and unrecorded content of waste streams. Proximity of incinerators to the local populace, number of years lived near incinerator, water and food sources and consumption patterns introduce a third set of uncontrolled confounders.⁽¹⁾

PHAA seeks the following actions:

11. Adoption of these suggestions for design and methods that will make future studies more robust and their results better comparable.
12. Future studies should:
 - a. Include information on the waste, including content and volume, technical characteristics about the incinerator, such as stack height, type of combustion chamber, stack cleaning mechanisms and maintenance schedules, and the types and quantities of emissions.
 - b. Where possible, analyse or control for three exposure pathways: ingestion, inhalation and dermal exposure. The possible lack of correlation between distance from the incinerator and the intensity of all three of the pathways should guide study design and interpretation of results.
 - c. Report a range of variables that are potentially related to health effects.
 - d. Control for, or account for, the absence of control over likely confounders.
 - e. Determine whether those living downwind of incinerators are at risk.
13. Further research is needed to compare different incinerator designs, and incineration with other methods of waste management. This will allow more rigorous and meaningful comparisons between waste disposal options.
14. Policy and regulation
 - a. Since there has been insufficient time for health effects of newer technology to emerge, a precautionary approach to licensing and monitoring incinerators must continue.
 - b. As a condition of applying for a licence to build waste incinerators, independent, third-party conducted, baseline population studies and long-term surveillance cohort studies must be mandated to measure the longitudinal and emerging effects of the incinerator's presence on the local community and the environment.
 - c. Health and safety standards for workers should be enshrined in law and should include regular health checks and exposure monitoring.
 - d. In countries which have ratified the Stockholm Convention, incinerators should be designed to meet the Convention guidelines.
 - e. Facility upgrades and regular maintenance schedules for incinerators must be adhered to.
 - f. New incinerators should be located away from areas of food production.
 - g. Food grown near an incinerator should be avoided.

PHAA resolves to:

15. Advocate for the above steps to be taken based on the principles in this position statement.
16. Respond to community concerns by using the content of the policy and background paper to offer unbiased information to community groups.

(Adopted 2024)

References

1. Tait PW, Brew J, Che A, Costanzo A, Danyluk A, Davis M, et al. The health impacts of waste incineration: a systematic review. *Aust N Z J Public Health* [Internet]. 2020 Feb [cited 2024 Jul 30];44(1):40–8. Available from: <https://doi.org/10.1111/1753-6405.12939>
2. Howe Tan C, Williams S, Mahesh R, Evans M, Tait P. ANU Medicine Population Health. 2019 [cited 2024 Jul 30]. Characterising Australia’s waste profile: the impact on planetary health and adequacies of existing policies. Available from: <https://medicine-psychology.anu.edu.au/news-events/news/prevention-evaluation-and-policy-projects>
3. Australian Bureau of Statistics. ABS. 2019 [cited 2024 Jul 30]. Waste Account, Australia, Experimental Estimates, 2016-2017 . Available from: <https://www.abs.gov.au/statistics/environment/environmental-management/waste-account-australia-experimental-estimates/2016-17#:~:text=Largest%20waste%20categories-,In%202016%2D17%2C%20the%20Australian%20economy%20generated%20or%20imported%2068.9,from%20coal%2Dfired%20power%20stations>
4. Australian Government. 2018 National Waste Policy: less waste more resources [Internet]. Canberra; 2018 [cited 2024 Jul 30]. Available from: <https://www.agriculture.gov.au/sites/default/files/documents/national-waste-policy-2018.pdf>
5. Department of Climate Change E the E and W. National Food Waste Strategy Feasibility Study. 2023 [cited 2024 May 9]. Reducing Australia’s food waste. Available from: <https://www.dcceew.gov.au/environment/protection/waste/food-waste>