

Role of incineration in the waste hierarchy - review: call for evidence

I am responding to this Call for Evidence as an individual, albeit one who has extensive experience and knowledge of waste incineration as an environmental activist.

The questions that frame this consultation reveal that the review is clearly geared to those who are in business - most particularly the waste disposal industry and those businesses who depend on this sector to `dispose` of the waste they create. It has been publicised as a review of waste incineration, but cannot be unless it actively includes the views, experience and knowledge of the public - the people whose health will be affected by the incineration of waste. I have neither the time nor the inclination to attempt to answer these questions, so I have put together a short response with a multitude of weblinks to documentation on effects of incineration on the environment and human health.

It is not a good starting point for consideration of policy affecting human health that the consultation for the review of waste incineration seems determined to ignore or downplay these effects, as can be seen from this statement:-

`Q17 Do you have evidence or experience of the community impacts (positive and negative) of different residual waste treatment options, landfilling compared to incineration, that you could share?

In terms of health, for modern incineration facilities, the evidence suggests that any potential adverse effects on health are likely to be very small.`

Very small for whom?

We don't live in a laboratory, therefore human health effects are extremely difficult to pin down but, nonetheless, some can be:- endocrine disorders, cancers, respiratory and cardiovascular disease, birth defects, neurological disorders can all be caused by environmental toxins and air pollution.

The dose is not necessarily the poison - the developmental stage at which a child or young person is subjected to pollutants is every bit as important. Children are not mini-adults.

The full synergistic and cumulative effects of chemical compounds emitted from incinerators are unknown, but quite a lot is, and these effects are life-changing and life-shortening.

It is acknowledged that, since World War II, from which time the numbers of chemicals in use has risen exponentially, there has also been an annual rise of between 1 and 1.5% in cancers of children and young people (those up to the age of 24). Increases in cancers are often explained away by the increase in lifespan. This ongoing increase in childhood cancers gives the lie to this claim.

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Dirty industries have always chosen to deny that their products or by-products have adverse effects on human health. They have lobbied governments to back them – very successfully, as it happens. They would hardly stay in business if they admitted causing harm to health. Indeed a former chief executive of a now defunct waste disposal company admitted that “So far, there has not been a situation where liability has been established”. Their concern is not about the harm caused – it is that they should not be found liable for any harm.

Incineration – whether dressed up as gasification or pyrolysis – offers a liability free method of waste disposal, because some of its by-products are still unknown; some are present already because of other polluters (and incinerators are often located in areas that have other dirty industries); incinerators are often located in poor areas, so blame for poor health can be shifted onto the `lifestyles` of local people; health statistics and data are not designed to obtain sufficiently detailed information about polluters and pollutants; and weather patterns make assessing risks even more complex.

The point was well made by people campaigning against the proposed incinerator for Killoch, in East Ayrshire, that 70% of Scotland’s dairy farms are within a 90 mile radius of this location. Most exposure to environmental toxins is through diet and some environmental toxins, such as PCBs, are fat soluble.

Because `modern` incinerators possess better pollution control devices, such as filters, research focus has now shifted to the very small particulates produced by incineration that are known to be able to evade the body’s defence systems. In combination with the extremely toxic compounds known to be emitted from incinerators, such as dioxins, these pose substantial risks to human health. However, that still leaves the same toxic compounds in the bottom ash and in the filters, which then both have to be landfilled. In essence, waste incineration still takes mixed wastes, the most combustible of which are plastics, and turns it into a smaller volume of more toxic compounds which are then dispersed by air and by landfill to our environment. These toxic compounds do not exist in nature, therefore if they exist in `ambient air`, it is because another dirty industry put them there.

Newer incinerators are always `more modern`, and are always claimed to be so good that they destroy (which is a physical impossibility) or capture environmental toxins. They don’t, and their track record never really improves.

If the review is conducted in terms outlined in the consultation document, incineration is inevitable, as is the continued growth in use of plastics. Plastics are based on carbon, and burning them creates carbon dioxide, plus a whole range of environmental toxins as well. Any chlorinated waste burnt in the

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presence of carbon will create dioxins. PVC is a very common plastic which will create these most toxic compounds if incinerated.

Communities do not have the means to provide `evidence` of harm – government and its agencies do have. The question is – what have they been doing over the past several decades? They have certainly not been open or transparent about their own activities, as these FOIs show:-

One health activist's attempts to access health data for a study that exonerated the Baldovie incinerator:-

https://www.whatdotheyknow.com/request/what_data_persuaded_you_that_bal

https://www.whatdotheyknow.com/request/matters_relating_to_the_incinera

https://www.whatdotheyknow.com/similar/request/matters_relating_to_the_incinera

Monitoring of incinerators is largely done through a paper trail, with only pre-announced annual inspections. However, at least one government Reporter in the past considered that `people living and working nearby will not be slow to draw attention to things going obviously wrong` (John H. Henderson, Reporter of the Nontox Public Enquiry, Reporter's Letter of 26th April 1991). Quite how they would be able to draw attention to things going wrong if they were not quite as obvious as a 4 foot stack with flames shooting out of it, he did not specify. Indeed, even such an occurrence simply resulted in a phone call from the local Environmental Health department and a temporary respite for local people. Where the public is not expected to be a part of the monitoring process, they will most certainly be paying for it, whether it works or not. When it comes to enforcement of any kind, even where an incinerator is operating illegally – because it has a waste disposal licence but no planning permission – there is no equality of arms. Communities do not have deep enough pockets to take legal action. In the case of Nontox, two and a half years of illegal operation counted for nothing – the company was granted retrospective planning permission by the Scottish Office. Public information campaigns that seek to change public behaviour would be better directed back at the governments that are too often swayed by the demands of industry.

There is a lot of `big money`, including private equity companies, behind the current crop of incinerators in Scotland. They will be looking for their `pound of flesh`, so to speak. Public money, through the Scottish version of PFI, will pay for the construction and operation of these incinerators. Contracts between the companies who will run these incinerators and local authorities will be very difficult to get out of, irrespective of harms to health or the terms of these contracts, which demand a minimum amount of waste to justify the huge capital costs of these plants. We will be paying many times over, in both financial and environmental terms, for harm to our own health and the health of our environment, including vastly increasing carbon dioxide emissions at a time when we must drastically decrease these. The consultation document says that EfW incinerators have expected lifespans of 40 years, but

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demonstrates profound ignorance about the potential effects on human lifespans.

Some communities are facing repeated planning applications stretching back over decades, draining their energy and resources. The Scottish Government should be standing up for all of these communities, not washing their hands of responsibility for the health of the population, nor expecting members of the public to provide `evidence` of harm to health.

Fiona Sinclair, February 2022

REFERENCES

THE `REGULATORY FRAMEWORK`

The Impact on Health of Emissions to Air from Municipal Waste Incinerators
September 2009

The Health Protection Agency

`Since any possible health effects are likely to be very small, if detectable, studies of public health around modern, well managed municipal waste incinerators are not recommended.

The Agency's role is to provide expert advice on public health matters to Government, stakeholders and the public. The regulation of municipal waste incinerators is the responsibility of the Environment Agency.`

see also:-

https://eipie.eu/wp-content/uploads/2021/07/REF00022-SEPA-2009-incineration_of_waste_and_reported_human_health_effects.pdf

The current consultation is based on `official` documents like those above, which are based on biased and out of date science and which, funnily enough, see no need for public health studies around `modern, well-managed` incinerators! The documents below give an idea why this kind of circular thinking is so disastrous.

<https://ehp.niehs.nih.gov/doi/10.1289/EHP10550>

- Off to a Rough Start: Environmental Exposures May Alter Germ Cell Development

Florencia Pascual

Published:17 January 2022CID: 014001<https://doi.org/10.1289/EHP10550>

- recommended reading for governments who believe that incineration plays a small role in ill health

REGULATION IN THE REAL WORLD:-

<https://ehp.niehs.nih.gov/doi/full/10.1289/EHP9649>

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- [Vol. 130, No. 2](#) CommentaryOpen Access

Charting a Path Forward: Assessing the Science of Chemical Risk Evaluations under the Toxic Substances Control Act in the Context of Recent National Academies Recommendations

Jennifer McPartland, Rachel M. Shaffer, Mary A. Fox, Keeve E. Nachman, Thomas A. Burke, and Richard A. Denison

Published:23 February 2022CID: 025003<https://doi.org/10.1289/EHP9649>
<https://ehp.niehs.nih.gov/doi/pdf/10.1289/EHP9649>

Abstract

Background:

In 2016, Congress enacted the Frank R. Lautenberg Chemical Safety for the 21st Century Act (“the Lautenberg Act”), which made major revisions to the main U.S. chemical safety law, the 1976 Toxic Substances Control Act (TSCA). Among other reforms, the Lautenberg Act mandates that the U.S. Environmental Protection Agency (U.S. EPA) conduct comprehensive risk evaluations of chemicals in commerce. The U.S. EPA recently finalized the first set of such chemical risk evaluations.

Objectives:

We examine **the first 10 TSCA risk evaluations** in relation to risk science recommendations from the National Academies to determine consistency with these recommendations and to identify opportunities to improve future TSCA risk evaluations by further implementing these key approaches and methods.

Discussion:

Our review of the first set of TSCA risk evaluations identified substantial deviations from best practices in risk assessment, including overly narrow problem formulations and scopes; insufficient characterization of uncertainty in the evidence; inadequate consideration of population variability; lack of consideration of background exposures, combined exposures, and cumulative risk; divergent approaches to dose–response assessment for carcinogens and noncarcinogens; and a flawed approach to systematic review. **We believe these deviations result in underestimation of population exposures and health risks.** We are hopeful that the agency can use these insights and have provided suggestions to produce chemical risk evaluations aligned with the intent and requirements of the Lautenberg Act and the best available science to better protect health and the environment—including the health of those most vulnerable to chemical exposures.

HEALTH REFERENCES

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- Childhood cancer: trends in incidence and survival

[*Nature Clinical Practice Oncology* volume 2, page 62 \(2005\)](#)

Attempts to quantify and apportion causes of ill health are still ongoing – with over 100,000 chemical compounds in use (and growing), that gets harder every year.

Kurt OK, Zhang J, Pinkerton KE. 2016. Pulmonary health effects of air pollution. **Curr Opin Pulm Med** 22(2):138–143, PMID: , . [Crossref](#), [Medline](#), [Google Scholar](#)

Brook RD, Rajagopalan S, Pope CA, Brook JR, Bhatnagar A, Diez-Roux AV, et al.2010. Particulate matter air pollution and cardiovascular disease: an update to the scientific statement from the American Heart Association. **Circulation** 121(21):2331–2378, PMID: . [Crossref](#), [Medline](#), [Google Scholar](#)

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<https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1&isAllowed=y>

- Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide

WHO Global Air Quality Guidelines

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Professor Vyvyan Howard

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- see video with Professor Vyvyan Howard

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- 1,896 views • 29 May 2020 • Dr Paul Connett, Actor & Environmentalist Jeremy Irons and Prof Vyvyan Howard outline why burning our waste is a bad idea that needs to be abandoned. We've been fighting the same fight in Cork Harbour for over 19 years now and as yet another Government talks about formation we appeal to our politicians to make sure that this burning issue is given a place in current discussions. Burning our waste is a bad deal for communities and the environment everywhere.

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- `In 1969, Jernelöv published a scientific paper in the journal Nature, which Akagi, fresh out of pharmaceutical school and newly hired at the Ministry of Health and Welfare, read with interest. Strangely, Swedish pike had been measured with high levels of methylmercury, even though nearby factories were releasing only other forms of mercury. Jernelöv and his coauthor hypothesised that mercury could be methylated inside living organisms, setting in motion the discovery that, for evolutionary reasons that remain fuzzy even today, bacteria can convert other kinds of mercury into methylmercury under the right conditions.`

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Comparative Assessment of Particulate Air Pollution Exposure from Municipal Solid Waste Incinerator Emissions

Abstract

Conclusion. To provide the most appropriate estimate of ambient exposure from MSWIs, it is essential that incinerator characteristics, magnitude of emissions, and surrounding meteorological and topographical conditions are considered. Reducing exposure misclassification is particularly important in environmental epidemiology to aid detection of low-level risks.

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- `Gasification, pyrolysis, and plasma incinerators are even less efficient at generating electricity than mass burn incinerators, and often supplement waste with coal and other fossil fuels in order to produce energy.`

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- good descriptions of the processes of gasification, pyrolysis and plasma

<https://www.no-burn.org/plastics-and-health/>

- ` Even the most “state of the art” incinerators in Europe have been shown to have serious problems. [Long-term testing of the youngest of Dutch incinerators revealed the plant emits dioxin, furans and toxic pollutants far beyond the limits set by EU laws.](#) In 2013, a study by ToxicoWatch found high concentration of dioxins and furans in eggs of backyard chickens located near the incinerator.

<https://zerowasteurope.eu/press-release/hidden-emissions-from-waste-incineration-new-case-study-reveals-dangerous-breaches/>

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Even if these toxic pollutants are captured, they have to go somewhere. The resulting ash may end up in many places: landfills, mixed with cement, dumped on open lands, agricultural lands, and on islands and wetlands, where they migrate into the water supply.

In addition to so-called ‘waste-to-energy,’ other forms of incineration that are less well-known or maligned by the public have started to surface in response to the growing outcry over plastic pollution. Treatments like gasification and pyrolysis or plastic-to-fuel have been increasingly presented as a “solution” to plastic waste, differentiating themselves from conventional incinerators.

However these kinds of approaches bring with them a variety of concerns. Firstly, gasification of waste produces highly toxic carbon monoxide and toxic hydrocarbons in concentrations far above the fatal dosage. These unavoidable by-products of gasification can escape to the air in the case of pressure build-up. [Additionally, plastic-derived fuel produces higher exhaust emissions compared to diesel, and is next to impossible to monitor once it is sold to industries with less stringent air pollution control standards.](#)

The trash incineration industry claims it will grow by 5% each year. [The plastic industry plans to increase production by 40% in the next decade alone.](#) If all this comes to pass, the incineration industry will double in size by 2025 and burn over 6 million tons of waste per day`

THE WASTE TRADE

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INEQUALITY OF ARMS – FOR COMMUNITIES AND INDIVIDUALS

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- `The police have claimed that commercial firms have had more spies embedded in political groups than there were undercover police officers. `

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