Submission No 223

INQUIRY INTO PROPOSED ENERGY FROM WASTE FACILITIES

Organisation: Environmental Risk Sciences Pty Ltd (enRiskS)

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Environmental Risk Sciences Pty Ltd
P.O. Box 2537
Carlingford Court, NSW 2118

Phone:
www.enrisks.com.au

Parliament of New South Wales
Select Committee on Proposed Energy from Waste Facilities

Public Submission from Environmental Risk Sciences Pty Ltd (enRiskS)

Dear Sir/Madam,

Environmental Risk Sciences Pty Ltd (enRiskS) is pleased to provide the **attached** public submission in response to the Terms of Reference for the Select Committee on Proposed Energy from Waste Facilities.

From an overall perspective, we think it is important to acknowledge that the fundamental building blocks for the entire planet are chemicals. The building blocks of all matter are the chemical elements like carbon or hydrogen or copper or gold. These elements combine to form chemical compounds. Whether it is the water we drink, the air we breathe, the food we eat, the ground we walk on, the houses we live in, the things we have inside our houses or workplaces or what we ourselves are made of, everything is made of chemicals. Some chemical substances like water, oxygen and nutrients are essential to keeping us alive or to let plants or other animals live. Other chemical substances are naturally occurring, but they can harm us – like spider and snake venoms or well-known poisons like arsenic or mercury.

The same applies to the chemical substances we manufacture – some substances are quite benign, and some are quite toxic. A range of chemical substances are used to manufacture things we use every day like food, clothes, computers, kitchen appliances, cars, houses, roads, trains, planes, hair dyes, beauty products, toothpaste, shampoo, flea rinse for our pets and many other things.

Given that everything in the world is made from chemicals, the presence or detection of a chemical does not equal a risk to people or the environment. Human health and ecological risk assessment is used to determine if the amount of a chemical present in the environment could pose a risk to people or the environment. Assessing risk requires detailed consideration of how much of a chemical can reach a place where people or ecosystems can be exposed. This includes consideration of where and how a chemical is used along with whether it is released into the environment and what happens to the chemical if this occurs. In doing this, it is important to consider is the properties of a chemical e.g. whether it bioaccumulates, binds to soil, is taken up over human skin etc. Such assessments are also conservative (precautionary) i.e. designed to overestimate risks.

In Australia, we have well established Government guidance on how to undertake a human health and ecological risk assessment. This guidance is not chemical specific or industry specific, hence, is valid for all chemicals and is relevant to apply to all industrial emissions. In addition, the NSW Government provides specific guidance which must be followed when undertaking air quality assessments for these types of facilities.

Specific responses to the terms of reference are in the attachment below.

Thank you for the opportunity to provide this submission.

We would be happy to make an in-person presentation to the Inquiry upon request.

If you require any additional information, please do not hesitate to contact Dr Jackie Wright on

Yours sincerely,

Dr Jackie Wright (Fellow ACTRA)
Director
Environmental Risk Sciences Pty Ltd

Therese Manning (Fellow ACTRA)
Environmental Risk Sciences Pty Ltd

Attached: Public Submission

1 Responses to Terms of Reference

(a) the performance of the technologies proposed for the Tarago and Parkes Energy Recovery Facilities as compared to leading thermal technologies employed in "state of the art" facilities internationally, noting such technologies as proposed are not employed anywhere else on the Eastern seaboard

Technologies proposed for use at Tarago and Parkes are/will be those in line with meeting EU BREF requirements. These requirements are considered to be “state of the art”.

It is also noted that choosing these technologies is based partially on financial considerations which limits changes to the “state of the art” type plant. The “state of the art” type plant includes the technologies that are readily available from suppliers of such facilities. They are aware of EU BREF requirements and are comfortable producing equipment that will confidently comply.

Choosing different types of equipment will cost more and will likely result in no supplier being willing to provide such a plant as that is not what they do all day every day. In addition, they may not be as confident that the plant would be compliant with limits.

(b) the spread of the emissions predicted and the quality of emissions to be generated

The NSW Government (as do other state governments) provide detailed guidance on how the prediction of the spread and quality of emissions from any industrial facility are to be undertaken (For NSW this is provided in “Approved methods for the modelling and assessment of air pollutants” – available at https://www.epa.nsw.gov.au/Your-environment/Air/industrial-emissions/Approved-methods-for-the-modelling-and-assessment-of-air-pollutants).

Proponents of any industrial facility must ensure their air quality consultants undertake the assessment of air quality for a project in line with NSW guidance. In addition, the NSW EPA and NSW Planning also check (or engage independent consultants to check) that such assessments are in line with the guidance.

The guidance from NSW EPA requires use of excellent, validated models (including those from USEPA and CSIRO) that are based on detailed understanding of the basic physics of the atmosphere, meteorological conditions and how air is emitted from such facilities (temperature, velocity, etc). The guidance requires a focus on those times during the year (or day) when the atmospheric and meteorological conditions are going to result in the least amount of mixing so that these assessments are based on worst case conditions.

This guidance is required for any industrial facility, not just EfW facilities. If there are no concerns about the use of this when assessing other types of industrial facility (which seems to be the case from our experience), it seems strange that there are concerns about how the guidance is used for EfW facilities.

If there are particular concerns with how such assessments are undertaken, discussions with the NSW EPA should be undertaken to update the guidance rather than targeting particular types of facilities.

(c) health impacts from currently operating older technology waste incinerators as compared to the proposed newer technology

enRiskS does not have data or information relating to the operation of older technology waste incinerators in Australia. It is our understanding that these older technology facilities were closed a long time ago and no longer operate in Australia.

Some reference to information in published studies that is derived from older technology waste incineration is provided in our response to (d) and (e) below.

Data from the European Environment Agency in relation to dioxin emissions from many types of sources including EfW are summarised in the following graph[1]. The graph shows the significant reduction in dioxin emissions since 1990. The red part of the bar includes EfW emissions – these now acount for less than 0.2% of total industrial dioxin emissions per year for the year 2019 (i.e. the red part of the column is hardly visible). The blue part of the bar represents emissions of dioxins from households and commercial activities – these emission do not appear to have changed at all between 1990 and 2019 (i.e. the blue section is the same size throughout).

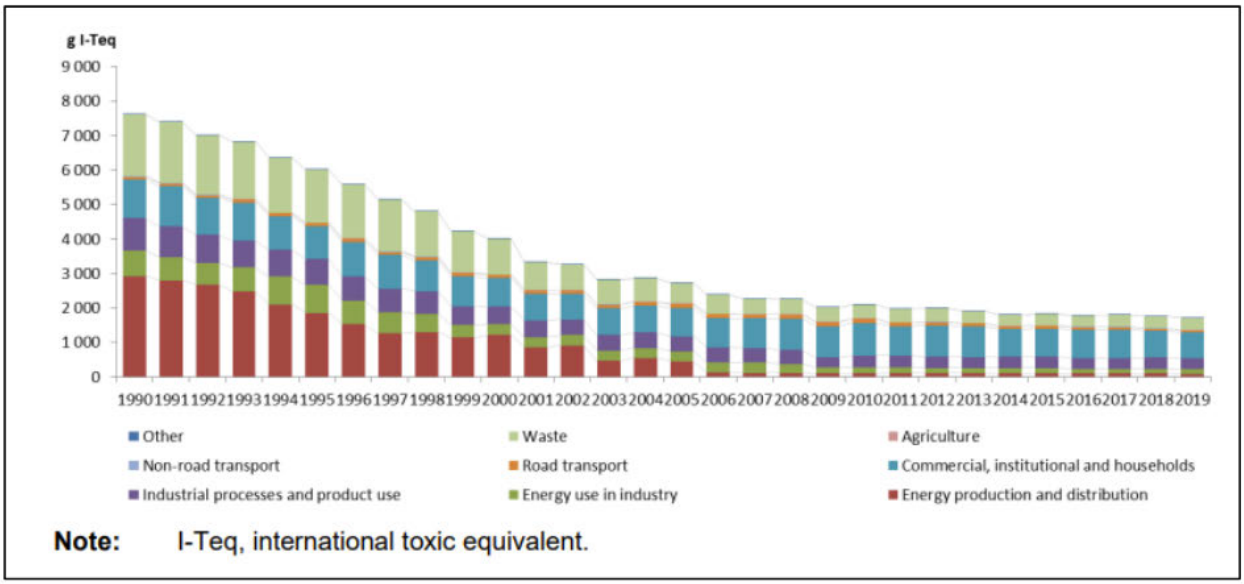


Figure 2: PCDD/F emissions in the EU: sectoral trends in emissions between 1990 and 2019. Waste-to-Energy is included in the 'Energy production and distribution' category. Source: EEA, 2021

(d) impacts on human health including on regional town drinking water, rainwater harvesting and soil contamination

(e) the impact on agriculture locally and across the wider region

The following response covers both these aspects.

How we assess human health impacts

[1] https://www.cewep.eu/wp-content/uploads/2022/03/CEWEP-Report-Dioxins-and-WtE-plants-State-of-the-Art.pdf

As with any other industrial facility proposed to be constructed in NSW, and Australia, risks to community health are required to be assessed using Australian guidance as detailed by enHealth (enHealth 2012). This includes EfW facilities. The NSW Chief Scientist advice (NSW Chief Scientist & Engineer 2020) also references that risks to human health are required to be assessed in accordance with enHealth guidance.

Any such assessment is required to evaluate all the ways that the community could be exposed to emissions from the operation of a facility. For EfW, the key emissions assessed relate to air emissions.

Assessing health risks is specific to each individual facility and requires:

- an understanding of the technology proposed for destroying waste.
- an understanding of the pollution control equipment proposed for the facility to be used to treat discharges prior to being released to air from a stack.
- emissions to air following the above are based on either:
    - data from operational facilities consistent with the proposed facility (technology, pollution control and size) or
    - regulations which require concentrations in the stack to be less that a particular limit.
- emissions to air consist of chemicals that are present as gases or attached to particles
    - gases comprise combustion gases
    - particles are assessed based on their size as well as composition – i.e. where chemicals like metals and persistent organic pollutants (POPs) may be attached to the particles.
- air modelling that is based on the above (i.e. concentrations in the stack plus whether a chemical is present as a gas or attached to a particle) as well as the location of the stack and the height of the stack, emission rate of the air through the stack (i.e. velocity), temperature of air leaving the stack and the emission rate for pollutants that may remain in the air after pollution control steps.
- the air modelling then considers where people may live, work or play in all areas surrounding the facility – this includes residential, rural/agricultural areas, workplaces, childcare and schools, aged care and recreational areas – to ensure that concentrations at ground level (i.e. where people are present) are predicted appropriately.

Once the air quality modelling has predicted ground level concentrations in appropriate locations, the assessment of risks to human health then looks at all the ways in which the community may be exposed to the pollutants released to air from EfW.

It is important to note that all the pollutants assessed in the emissions from such a facility are already present in air in the community from other combustion sources (vehicles, barbeques, gas cooking, woodfired heaters and bushfires), soil (metals that make up the earth), building materials (that also influence what is in rainwater tanks), food products and consumer products.

Any assessment of risks to human health is about whether the change in exposure as a result of the EfW facility has the potential to result in a measurable increase in exposure and if that exposure is then high enough to pose a risk to health.

The health risk assessment considers all the ways people can be exposed, which includes:

- inhalation of gases and dust/particles (particle size as well as composition – i.e. with metals and POPs)
- deposition of dust/particles to the ground from dust deposition or washing out in rainfall, where pollutants that persist in the environment (metals and POPs) can accumulate in:
    - soil and dust inside a house, where:

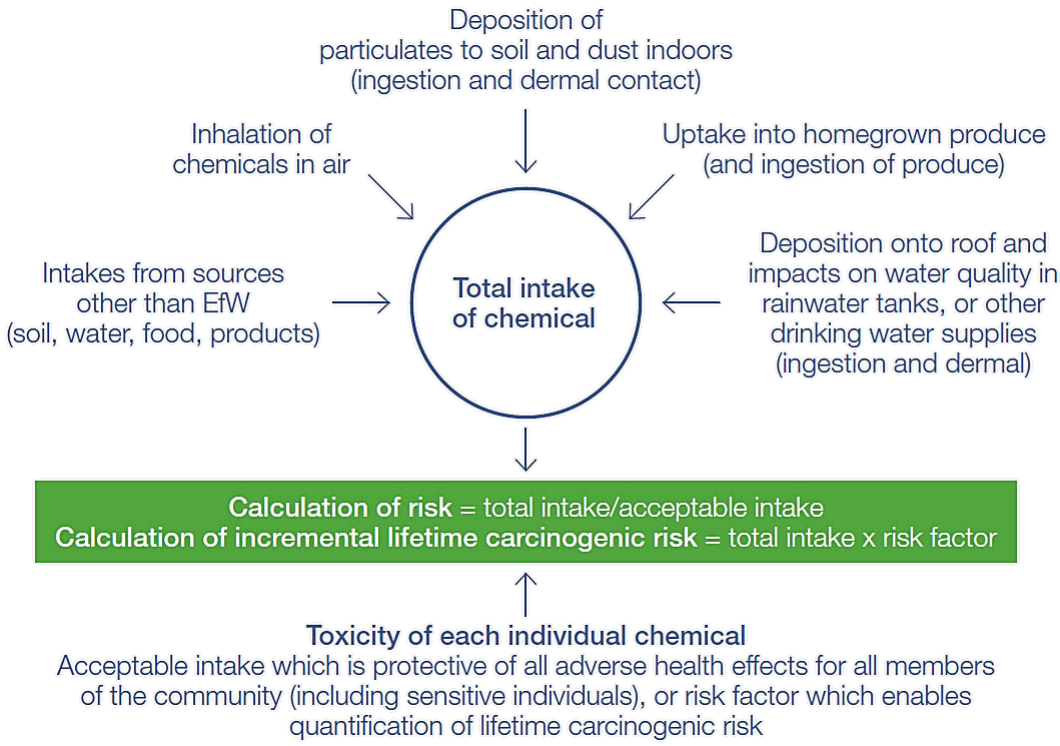
- people can ingest small amounts of soil and dust from hand to mouth behaviour and not washing hands before eating (for example)
- when the soil is on the skin, chemicals from the soil can move though the skin into the body

- once in soil, there is the potential for:
    - uptake of chemicals into home grown fruit and vegetables that may be consumed where the produce is grown in soil where dust/particles have deposited
    - uptake of chemicals into eggs produced on a property that may be consumed where the chickens have access to soil where dust/particles have deposited
    - uptake into meat and milk from livestock, that may be consumed on a property where the livestock have access to soil where dust/particles have deposited.
- water, where:
    - people can ingest water from rainwater tanks where dust/particles may deposit on a roof and then get washed into such a tank. Such water may also be used for irrigation and livestock watering.
    - people can ingest water from the reticulated water supply where that supply comes from larger water bodies used for recreational water or drinking water supplies (depending on the location).

The above provides information on all the ways the community can be exposed to chemicals derived from the operation of the EfW facility. This provides a measure of community exposure or intake.

This information is combined with toxicity values. These values are available from government organisations and indicate what intake of an individual chemical will be protective of all adverse health effects for all members of the community including sensitive populations. The toxicity value includes a range of safety factors to ensure they are adequately health protective.

The estimated exposure and acceptable intake are combined to provide an assessment of potential risk to human health – as also shown in the following diagram.



Acceptable levels of risk (including carcinogenic risk) are determined based on guidance from enHealth, NEPC and Health authorities (i.e. by government authorities) – i.e. it is not up to the proponents of individual projects.

We have a number of different guidelines for chemicals in our environment based on acceptable levels of risk, including drinking water (NHMRC 2011 updated 2025) and contaminated land (NEPC 1999 amended 2013).

A human health assessment also considers agricultural produce and compliance with regulatory requirements, specifically maximum limits (MLs) in the Food Standards Code (FSANZ 2017) and where relevant international limits established by the EU are also addressed. This means that impacts on agricultural produce and livelihoods can be assessed and it is routine to do that for EfW assessments.

What we have found from conducting health risk assessments from EfW

enRiskS has conducted health risk assessments for at least 15 proposed EfW facilities in Australia and New Zealand.

All assessments of risks to human health that enRiskS has undertaken for proposed EfW facilities following the enHealth guidance (detailed above):

- have not identified any risks to human health in any community that would be considered to be unacceptable (in accordance with government guidance on defining acceptable risks)
- have not identified impacts from the long-term operation of an EfW facility that would result in any measurable change to soil quality, water quality – including rainwater tanks, or produce that may be grown and consumed
- have not identified impacts from the long-term operation of an EfW facility that would change the quality of produce, or compliance with any residue limit for produce sold to the market
- have not identified impacts from the long-term operation of an EfW facility that would result in the tainting (taste) of produce such as wine.

Examples of publicly available detailed assessments of risks to human health can be found at the following:

- Woodlawn Advanced Energy Recovery Centre (ARC) (noting the planning process has not yet completed): https://www.planningportal.nsw.gov.au/major-projects/projects/woodlawn-advanced-energy-recovery-centre
- Melbourne Energy and Resource Centre: https://www.planning.vic.gov.au/__data/assets/pdf_file/0017/641132/Attachment-13_HHRA.pdf
- Dandenong South, GSWT EfW (refer to Section 22 notice & response): https://engage.vic.gov.au/project/epa-development-licences/page/GSWT

What other evidence is available on impacts onf EfW on health and agricultural produce?

The direct assessment of risks to human health for a proposed facility, as described above, using approved or agreed methodology (used to assess any proposed industrial facility) is the most appropriate and site-specific way to assess health impacts from any EfW facility – i.e. air quality

modelling to predict relevant environmental concentrations based on the plant design, location and other relevant information followed by standard health risk assessment practices.

The scientific literature also provides a number of other studies, specifically epidemiological studies, that have focused on emissions to air from waste to energy facilities and potential health effects within communities surrounding a particular facility.

Many of these published studies relate to older facilities – i.e. facilities that do not comply with more recent EU directives (IED emission limits (2010) and BREF limits (2019)). Only studies that relate to more recent facilities complying with these emissions standards and guidance (or equivalent such as the NSW EfW Policy) are relevant for any comparison with the newly proposed facilities for NSW as it is required that such new facilities comply with the modern best practice guidance from Europe. There are studies of energy from waste facilities evaluated in the epidemiological studies based on facilities combusting domestic waste or MSW (along with other non-putrescible waste) but there are also studies on such facilities where they combust industrial and/or hazardous waste.

It is important to emphasise that reviewing any published epidemiological study requires care. Specifically the studies must be relevant to EfW facilities that comply with EU BREF and relate to MSW combustion. In addition they must be reliable studies that meet an appropriate quality of evidence standard determined using an international assessment tool such as GRADE (used by NHMRC for assessing the quality of studies[2]) and not be confounded by other sources. It is very easy for epidemiological studies on small populations or on facilities that combust industrial and/or hazardous waste to provide unhelpful information as they are not sufficiently robust.

Reports or studies that have reviewed published information and studies on EfW facilities designed to meet EU IED or equivalent emissions limits (and which focus on facilities combusting MSW only), have not identified evidence of adverse impacts on community health. Most studies also acknowledge that the number of available studies is limited in relation to these newer facilities, however, in the available studies relevant to modern facilities that meet these standards, no adverse health effects have been identified.

These studies include:

- Literature review undertaken for EPA Victoria (EPA Victoria 2018) and by other Australian researchers (Cole-Hunter et al. 2020; Morgan et al. 2019; Tait et al. 2020) as well as the review completed by the NSW Chief Scientist (NSW Chief Scientist & Engineer 2020)
- Review of research into health effects of EfW facilities focusing on facilities operating in the UK (Broomfield 2012; Marner, Richardson & Laxen 2020), with a series of more recent epidemiological studies (Freni-Sterrantino et al. 2019; Ghosh et al. 2019; Parkes et al. 2019) specifically addressing foetal growth, stillbirth, congenital abnormalities, infant mortality and sex ratio and other birth outcomes finding no evidence of adverse effects in the community. These studies also indicate that the results should be generalisable to other facilities operating to similar standards.

[2] https://www.nhmrc.gov.au/guidelinesforguidelines/develop/assessing-certainty-evidence

It should be noted that studies related to older facilities in Europe[3] and the US, where emissions did not or do not meet the EU IED or equivalent emission limits, have shown measurable impacts and links with adverse health effects (Tait et al. 2020). Further, the former operation of these older waste incinerators has resulted in the accumulation of dioxin-like compounds in soil and produce (specifically eggs and vegetables) in areas surrounding the facilities (for example a facility operating in France from 1974 to 2002 and another facility operating from 1958 to 1982 in Lausanne Switzerland[4] (Petrlik et al. 2022; Pirard et al. 2004)). Investigations conducted in the 1990s, in relation to these older facilities, identified the need to reduce emissions from waste incineration facilities and the need for ongoing technology reviews. These findings have resulted in significant improvements in the engineering of these plants back up by measured improvements in emissions. For example, emissions of dioxin-like compounds from waste incineration in France and Japan have reduced more than 99% from the 1990's to around 2010 (Coudon et al. 2019; Li et al. 2019; Nzihou et al. 2012). This means impacts on air quality from modern EfW facilities are significantly smaller now than they were for older facilities which did not comply with the current regulatory limits (e.g. EU BREF 2019).

Studies related to these older facilities are, therefore, not relevant to the assessment of potential health impacts from EfW facilities that do comply with the more stringent emissions limits from the EU IED and BREF limits.

There are few studies available that measure concentrations of pollutants in soil and produce in rural areas surrounding operational modern energy from waste facilities (that meet IED emission limits or equivalent).

The study by van Dijk et al (van Dijk, van Doorn & van Alfen 2015) involved testing for levels of cadmium, mercury and PAHs in crops (spinach and kale) and dioxin-like compounds (i.e. dioxins, furans and dioxin-like PCBs) in milk from dairy farms and fluoride in pasture grass around three waste incinerators (combusting municipal solid waste) operating in the Netherlands between 2004 and 2013. The facilities were operating using best available technology applicable at the time of operation (i.e. prior to EU IED (2010) and prior to EU BREF (2019)). The study showed that emissions from these facilities did not affect the quality of crops and milk in the surrounding areas. Concentrations reported were similar to background levels and did not exceed maximum allowable standards applicable to food products in the Netherlands.

[3] Older facilities are those that were constructed and operated prior to the introduction and enforcement of emission limits in the European Union Waste Incineration Directive (EU-WID) (2000/76/EC), which was incorporated into and further revised in the EU Industrial Emissions Directive (IED) (2010/75/EU) where emission limits for some pollutants were reduced. IED 2010/75/EU is incorporated into the Best Available Technologies (BAT) Reference Document for Waste Incineration (BREF)(2019) where the emission limits for some pollutants were further reduced, and emission limits were recommended for ammonia and total volatile organic compounds (TVOCs) which were not included in the IED.

[4] https://www.euronews.com/green/2021/10/17/lausanne-discovers-soil-has-been-polluted-with-dangerous-chemicals-for-more-than-years ; https://www.vd.ch/themes/environnement/sols/pollution-des-sols-aux-dioxines/

Monitoring of dioxins and furans has also been undertaken in areas surrounding other EfW facilities in Europe (CEWEP 2022) where the following is noted in relation to soil and produce:

- dioxins and furans were measured in vegetation surrounding an Austrian EfW facility – no significant difference was seen between areas close to the facility and distant from the facility
- dioxins and furans were measured in blood of people living near and distant from an EfW facility in Turin over a period of 3 years – there was no increase in dioxin levels in blood [i.e. no evidence of bioaccumulation] and no difference in levels between those close to the facility and those distant from the facility (background)
- dioxins and furans were measured in cow milk in areas surrounding a Dutch EfW facility between 2009 and 2020 – levels in milk near the plant were no different to background
- dioxins and furans were measured in soil samples collected in the area surrounding an EfW facility in Mallorca (Spain) from 1997 to 2020 – the levels reported were variable as expected in soil (with no clear trend of accumulation), with all samples well below the maximum limit value relevant for soil.

Sampling of dioxins and furans was also undertaken in the area of Harlingen (Netherlands). Levels in grass and eggs were reported to be higher within 2 km of a waste incinerator (noting the area also includes a range of other industries) and some concentrations in eggs exceeded the EU guidelines (Arkenbout 2014; Arkenbout & Esbensen 2017). However, it is important to note that this facility is an industrial waste incinerator not a municipal waste incinerator. The facility was commissioned in 2011 and has a low emissions limit for dioxins and furans. Hence the facility is not similar to or comparable with the EfW technology relevant to MSW, in terms of waste treated/combusted or emissions. One paper (Arkenbout & Esbensen 2017) notes that this industrial waste incinerator has had a number of failures, shutdowns and startups that resulted in elevated dioxin and furan emissions at times (including levels that exceeded their emissions limit). No specific information is provided on the failures that occurred. These elevated emissions may be reflected in the egg data reported for 2014/2015 (Arkenbout & Esbensen 2017). It should also be noted that more than one source of dioxin-like compounds was identified for this area, not just emissions to air from the industrial waste incinerator (Arkenbout 2014).

Another study also reported elevated levels of dioxins and furans in chicken eggs in other industrial areas, impacted by emissions from other industrial sources but not energy from waste facilities in Europe. These findings were found to be related to keeping chickens in industrial areas or areas affected by backyard burning of waste in general, with no link to modern energy from waste facilities (Hoogenboom et al. 2016).

Consistent with the approach outlined by the NSW Chief Scientist (NSW Chief Scientist & Engineer 2020), the potential for accumulation of persistent and bioaccumulative chemicals into produce, including chicken eggs, meat, milk and other produce has been evaluated in assessments of these types of facility in Australia using robust risk assessment methods. These methods are well established in Australia and internationally and provide a robust approach for assessing multi-pathway exposures from a wide range of sources.

(f) alterations to the Parkes Special Activation Precinct specifically in relation to the proposed Energy Recovery Facility in that region

This is not in our area of expertise.

(g) impacts of waste-dumping over a number of decades in the Tarago region

This term could be interpreted to imply that a legally operated landfill under licence from the NSW Government constitutes “waste dumping”. This seems unusual.

(h) the methodology of emission monitoring employed by leading large scale waste-to-energy facilities in Australia and across the world

European guidance provides best practice information about how EfW facilities need to be managed and monitored.

In addition, NSW law requires such facilities to have environment protection licences which would also list management and monitoring requirements which, if not complied with, would result in prosecution and potentially jail under NSW law.

The guidance from the EU provides appropriate information about what types of emission monitoring are most appropriate.

The same types of monitoring are used at most large industrial facilities (where appropriate) not just EfW both here and in Europe.

There are sensors available that can measure a wide range of parameters in such facilities on a continuous basis. These types of sensor target parameters that make sure combustion conditions are optimised and are in compliance with licence requirements as well as targeting the main air quality parameters like nitrogen oxides, sulfur oxides, particles.

If all of these parameters (combustion ones and criteria pollutant ones) are in line with licence requirements, then other parameters that cannot be measured on a continuous basis (because the technology does not exist anywhere) will also be within licence requirements. This is because the physics and chemistry of incineration and the pollution control equipment are well understood and process engineers are well aware of the conditions that would result in the generation of chemicals like dioxins.

To further demonstrate that this is the case, however, NSW requirements include proof of performance trials when a plant is being started up for the first time. These trials include extensive monitoring of these types of chemicals to show that everything is working as expected. In addition, all the relevant chemicals for which continuous monitoring is not possible are required to be measured on an ongoing basis at a regular frequency (monthly, quarterly, six monthly or yearly – depending on the licence requirements) to show that the facility is continuing to operate as expected.

This is also the case for all heavy industry which have emissions to air. This is not new for EfW.

(i) alternative solutions to reduce and manage residual waste produced by Greater Sydney, and

In Europe, the use of EfW is an essential component of their management of waste including residual waste. The objectives there are to expand recycling/reuse to the maximum extent practicable and to use EfW to deal with whatever remains. They do not want to keep developing landfills as the solution for residual waste. They prefer EfW over landfills.

Residual waste is, by definition, the waste for which there are no other possible management actions other than landfill disposal or EfW.

One way to reduce the amount of residual waste is to improve options for resource recovery.

In NSW (and the other states), there are many legislative hurdles that make it extremely difficult to reuse or recycle wastes.

In regard to legislative hurdles:

- Definition of waste vs product – when material that was a waste is reprocessed into a product that can be sold (especially one where the product is a replacement for products from virgin materials), strictly speaking it must still be called and managed as a waste. This is a disincentive to those who are trying to be innovative/sustainable as customers don't want to buy "waste".
- This also means there are very few options for reuse that are approved or can comply with requirements.
- Many of the resource recovery orders/exemptions are difficult to comply with, expensive to comply with or not in line with the way things work in the commercial world.
- Innovative solutions for resource recovery are discouraged in NSW due to the difficulty in getting innovative technologies through the planning system. We are aware of novel processes developed at NSW universities which have been taken to other states for scaling to commercial facilities. It is assumed that this is, in part at least, because it was expected that such technology would not be approved in NSW.

Additional hurdles are currently being added due to potential issues with the ways contaminant limits are being applied or determined. While it is acknowledged that contaminant limits are critical to ensuring appropriate reuse or recycling of wastes, there are issues with the ways such limits are being determined that mean some wastes where reuse has been in place for decades, will potentially no longer be acceptable for reuse (e.g. biosolids).

Such issues include:

- Errors in the calculation of national guidelines for PFAS in the PFAS National Environment Management Plan Version 3. These national guidelines are being used as the basis of contaminant limits for this group of chemicals in wastes proposed for reuse in NSW.
- Confused advice from Commonwealth agencies about the correct values to use as the basis of future national guidelines.
- The introduction of IChEMS has added additional limits on some contaminants which may be more stringent than those in NSW guidance which will further reduce what materials can be reused/recycled.

With all wastes, consideration must be given to the risks involved in reusing/recycling material versus the risks of just dumping materials in landfill. For example, reuse of biosolids as per the

current guidance versus taking all biosolids from across NSW to landfill because of changes in state guidance.

If biosolids are not reused, then there will be a vast amount of material that will need to go to landfill. However, landfill space will run out in the next 5 years without adding biosolids so adding this material into the mix is just not viable. However, leaving biosolids stored in stockpiles with few controls is a much worse outcome than well managed reuse.

(j) any other related matters.

None.

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