Submission No 312

INQUIRY INTO 'ENERGY FROM WASTE' TECHNOLOGY

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Submission – Upper House Inquire into Energy from waste technology

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TERMS OF REFERENCE

That Portfolio Committee No. 6 inquire into and report on matters relating to the waste disposal industry in New South Wales, with particular reference to 'energy from waste' technology, and in particular:

A: The current provision of waste disposal and recycling, the impact of waste levies and the capacity (considering issues of location, scale, technology and environmental health) to address the ongoing disposal needs for commercial, industrial, household and hazardous waste.

Given we have just has a television documentary dedicated to waste shown on the ABC it is clear that Australia's waste issue needs significant action. It is not my belief that incineration of our waste is the solution. In the 1970's we phased out backyard incinerators due to the effects on our air quality, the same is the case now although with better technology the air waste issue will not be visible to the eye just in medical statistics.
We need to focus on product stewardship by industry and use circular economy resource management. This is quite mature in the manufacturing sector but it is my belief the construction industry is lagging behind. The life cost of construction materials needs to be considered, including disposal, and while other industries are moving away from plastic, particularly styrenes, these are being advertised as excellent new products for construction.

Waste management, like health, transport and education is a society wide issue and cannot be left for the industry to self manage. The community expect better than what is being delivered and the current advertising to shame people should be replaced by better systems and management.
I believe the current costs for disposal of waste are too low and we do not charge importers for the cost of disposing of their waste once the import is consumed.
It is also clear the current recycling system at community level is confusing and requires a lot of self education. There should be a clear symbol on any product that effectively says "This item cannot be recycled" so consumers can boycott such products.

Waste management is a significant cost to local government and good stewardship at this level should be funded by levies at the point of consumption. (Eg 5 cents for the use of a disposable coffee cup redistributed to the local government that has to manage the bin and roads where the cup is consumed.) This is a significant ask but the level of detail that will be required to properly manage the waste issue and create a level of conscious product stewardship.

B The role of 'energy from waste' technology in addressing waste disposal needs and the resulting impact on the future of the recycling industry.

Cold temperature 'energy from waste' processes have a place as they effectively transforms the resource for another use. Anaerobic reactors that generate methane from food waste to then be used to create electricity is a good example

Alternately, high temperature 'energy from waste' effectively destroys the resource, is primarily sourced from the burning of plastics and has the by=product of toxic ash and fumes. It should be noted that plastic burning is not recycling to make energy as stated in "The Renewable Energy (Electricity) Act 2000" which specifically excludes electricity production from fossil fuel based materials such as plastics. (https://www.legislation.gov.au/Details/C2016C00624)

Both process though, take the resource and remove it from the recycling industry or the circular economy. For solid objects that do not easily degrade over time or by exposure to oxygen, this does not make sense. Aluminium, cardboard, steel, wood and some plastic are already engaged in a circular economy with the need for energy to offset the slow decay through entropy.

C: Current regulatory standards, guidelines and policy statements oversighting 'energy from waste' technology, including reference to regulations covering:

i The European Union
ii United States of America
iii international best practice

There are numerous documents from around the world and in Australia that detail why incineration of plastic is an inappropriate 'waste to energy' technology. Firstly, as a signatory to the Stockholm Convention, we are obliged to reduce, and where feasible, eliminate sources of dioxins and furans.

http://www.gov.scot/Publications/2002/08/15285/10400

https://www.scientificamerican.com/article/does-burning-garbage-to-produce-energy-make-sense/

"Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector:

Waste Transfer and Materials Recovery" <attached document>

D: Additional factors which need to be taken into account within regulatory and other processes for approval and operation of 'energy from waste' facility

Any significant process will require a large, regular source of fuel for the process.

Two issues I can identify are:

1. To ensure a consistent fuel source there would be a need to stockpile the various incoming waste streams to be able to blend them and ensure the fuel source is then consistent. This stockpile will require space and needs to be well managed (against wind, rain) while waiting for use.
2. Larger processes require very large amounts of waste which will create transport issues and contractual demands for source fuel material. This could create a demand that dries up supply for other uses. Like the issue with natural gas in Australia after the Gladstone LNG trains for gas export were turned on.

E: The responsibility given to state and local government authorities in the environmental monitoring of 'energy from waste' facilities.

It is clear in Eastern Creek that both current biological and the proposed construction waste fuelled incinerator need significant monitoring. The whole community has issues with the stink from the existing processes and transfer stations. I was at the Blacktown Show yesterday (28/5/2017) and was constantly asked what is being done to fix the smell from Eastern Creek. People from Seven Hills, Blacktown and Doonside through to Erskine Park and Colyton complaining – the EPA is understaffed

and disempowered to resolve the existing issue. It is clear, greater resourcing and more significant punitive capacity is required. now

A significant part of why processes become so bad is not managing their input fuel tightly. Penalties for non-compliance need to be big enough that they would have significant effect to the businesses profit in the short term. Multiple non-compliance would result in the business being closed. Non-compliance that resulted in permanent environmental or community damage should result in gaol of the responsible business owners, not the staff, as the owners set the business culture.

F: Opportunities to incorporate future advances in technology into any operating 'energy from waste' facility.

There should be no 'grandfather clause' for exhaust stack emissions. Not just for the 'energy to waste' industry but all industry. The health of our community should be of paramount concern to government and any elected official.

G: The risks of future monopolisation in markets for waste disposal and the potential to enable a 'circular economy' model for the waste disposal industry

As community, monopolisation Is not a concern if the industry is compliant and progressive. This is an issue of economics. At any time, the government can choose to intervene or compete against private enterprise and should.
The circular economy model is the current best practice for resource management and government incentive should be used to prioritise this end result. If this requires levies on existing industry then they should be used to fund the incentive.

TERMS OF REFERENCE - H

Any other related matter

CONCERNS -H

x A lot more energy is saved by reusing materials instead of destroying them. Framing this whole debate as incineration versus landfills, is putting us back 20 years. Twenty years ago, people used to say we need to do more recycling; now we're talking about more burying or burning. The alternative to incineration, biomass could be composted and used for energy recovery.

x In relation to waste to energy incineration the precautionary principle needs to be applied. It was specified in the Intergovernmental Agreement on the environment which was signed on the 1st May 1992 by the Federal, State and Territory governments and the Australian local governments association. The precautionary principle was stated in cl 3.5.1 of the agreement in these terms; Where there are threat of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

x The main objectives of waste to energy incineration are "To offer a viable alternative to the burning of fossil fuels by utilising a green and renewable energy source) These objectives will not be met by burning waste fuels based on petrochemicals (which are fossil fuels) and burning plastics derived from fossil fuels does not create 'green' energy – it is simply burning fossil fuels in another form. This does not comply with "The Renewable Energy (Electricity) Act 2000, which specifically excludes fossil fuel based materials such as plastics.

x The European Union has proven that pollution from incinerators can cause cardiovascular and respiratory diseases as well as cancer. It is the leading environmental cause of premature death in the European Union. Certain substances, such as arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons, are human genotoxic carcinogens (GTX); Meaning most GTX carcinogens are electrophiles that interact directly with DNA through the formation of covalent bonds, resulting in DNA-carcinogen complexes (DNA adducts). These complexes lead to various types of DNA damage, including the formation of cross-links between the two helices, chemical bonds between adjacent bases, removal of DNA bases (hydration) and cleavage of the DNA strands, all of which result in modifications to the information stored within the DNA. Such mutations are typically fixed by DNA repair mechanisms; however, if DNA replication occurs prior to the action of a repair mechanism, mutations can become permanent and mechanism, mutations can become permanent and may eventually cause tumors (Scientific Reports 3, Article number: 2783 (2013) Distinguishing between genotoxic and non-genotoxic hepatocarcinogens by gene expression profiling and bioinformatic pathway analysis) http://www.nature.com/articles/srep02783 There is no identifiable threshold below which they do not pose a risk.

x Waste to Energy incineration has negative impacts on the quality of water - leading to soil and groundwater pollution and damage to the ecosystems through eutrophication (Eutrophication is a leading cause of impairment of many freshwater and coastal marine ecosystems in the world e.g From acid rain and excess nitrogen pollution).

x Australia' existing policy on Ultrafine Particulates only relates to particulates larger than PM2.5. There is no current regulatory legislation for ultrafine or nanoparticles, which are known to be emitted in high amounts in all types of incinerators and can be less than PM0.1. Research on ultrafine and nanoparticles of PM0.1 PM2.5 need to be researched for health (effects associated) and environmental effects (such as effect on rainwater tanks, and home grown produce) and a policy needs to be written before any incinerators are approved. Australia needs to develop their own policies on Thermal Waste Incinerators. The 16 year old European Union policy being followed is outdated and has proven to be a failure in terms of human health and air emissions.

x An operational incinerator would require an addition of 614 vehicles in the area each day (based on proposed Eastern Creek Incinerator EIS) creating additional air pollution in the form of Hydrocarbons & Nitrogen oxides (NOx), which react in the presence of sunlight to form ground level ozone. This gas irritates the respiratory system, causing coughing, choking, and reduced lung capacity. These pollutants cause lung irritation and weaken the body's defenses against respiratory infections such as pneumonia and influenza. Carbon monoxide (CO) CO blocks oxygen from the brain, heart, and other vital organs. Fetuses, newborn children, and people with chronic illnesses are especially susceptible to the effects of CO. The Environmental Protection Agency estimates that the air toxics emitted from cars and trucks — which include Benzene, acetaldehyde, and 1,3butadiene — account for half of all cancers caused by air pollution. A report released Saturday 21st January 2017 by the Committee of Sydney shows Blacktown (the area proposed for Eastern Creek waste to energy incinerator) as an area of high rates of cardiovascular disease and Incinerator emission will only increase these rates further.

x Bottom or fly ash contains toxic Air Pollution Control (APC) residues, which are very fine grained powder, ranging from light grey to dark grey. The main environmental concern with respect to APC residues is leaching of: Easily soluble salts such as Cl and Na. Heavy metals such as Cd, Cr, Cu, Ni, Pb, and Zn. Heavy metals and trace elements can potentially be present in concentrations harmful for humans as well as for ecosystems. As such, leaching of these components has generally been the primary concern. Although dioxins and furans do not easily leach, release of these contaminants is of

major concern because of their toxicity. Across the world APC residues are being landfilled and stored in old salt mines. This is not a long term solution. Solid residues from Waste-to-Energy facilities constitute the primary emission route to the surrounding environment. Bottom ashes are generated in larger quantities, the main pollution potential is found in the air-pollution control (APC) residues originating from cleaning the flue gases before emission to air. While a range of different types of APC residues exists the overall properties and environmental concerns are the same, regardless of the incinerator and country of origin. Currently, no general consensus appears to exist regarding disposal solutions on a worldwide level. In the long run we will run out of places to store APC residue. Metal leaching from residues after final disposal may continue for thousands of years.

x Proponents with extensive environmental breaches should not be considered to operate a waste to energy incinerator.

x The World Health Organization list seven health hazards associated with noise pollution from Incinerators; hearing impairment, sleep disturbances, disturbances in mental health, cardiovascular disturbances, interference with spoken communication, impaired task performance, negative social behavior and annoyance reactions. Families living around the site of an incinerator should not have to put up with noise disturbances 24/7. 24/7. This study was completed to present a review of the major epidemiological studies published from 1987 to 2003 on health effects in populations living in the neighbourhood of waste incinerators. Forty-six papers were considered: 32 concerning health effects on populations residing near incinerators, 11 on occupational exposure, 2 on environment and occupation and 1 was included as its environmental survey was designed to evaluate the relationship between a high cancer death rate and environmental concentration of dioxin analogues near an incinerator in Japan. To enrich evidence on association between some diseases and exposure to compounds emitted by incinerators, papers on occupational exposure were also included in this review. The Conclusion of this study; Chemical emissions of modern incinerators are more limited but toxic substances are still released in the atmosphere as well as in other residues such as fly ash and bottom ash. The study also showed an association with those exposed to incinerators showing significant results for lung cancer, non-Hodgkin lymphoma, soft tissue sarcomas and childhood cancers.
http://www.hia21.eu/dwnld/20131216_Health%20effects%20of%20exposure%20to%20waste%20incinerat or%20emissions.pdf