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INQUIRY INTO 'ENERGY FROM WASTE' TECHNOLOGY

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1. Releases toxic air pollutants

Waste incinerators produce large amounts of toxic air pollution that impact on the environment and human health. These emissions include highly toxic and carcinogenic persistent organic pollutants such as dioxins and furans (PCDD and PCDF), hexachlorobenzene (HCB), PCBs and brominated persistent organic pollutants.[2]

Incinerators also emit nanoparticles, toxic heavy metals such as lead, mercury and arsenic and acid gases that have serious impacts on human health.[3] Many of these pollutants are carried on the wind impacting communities and ecosystems long distances from the point of origin.[4]

Australia is a signatory to the Stockholm Convention, which obliges us to reduce, and where feasible, eliminate sources of dioxins and furans. Permitting incinerators to establish in Australia contravenes the intent of this obligation. In addition many chemicals of concern from emissions are not monitored or regulated in Australia even though they are unavoidably released from incinerators.

2. Produces toxic ash

Waste incinerators all generate ash that is contaminated with toxic heavy metals and persistent organic pollutants (POPs) such as dioxins and furans.[5] The levels of contamination vary according to the waste burned, the process used and configuration of the pollution controls on the smoke stack but all solid and air emissions contain contaminants, many of which can be at a level that can impact on human health and the environment depending on the disposal method and exposure.

According to the incinerator industry most incinerators generate 1 tonne of contaminated ash for every 4 tonne of waste burned.[6] This includes smaller volumes of highly toxic 'fly ash' and larger volumes of less toxic 'bottom ash'. There is no market for incinerator ash and it must be disposed of to landfill.

Some incinerators using pyrolysis and gasification may refer to their ash as 'char' or 'biochar' and promote its use for agriculture or as an industrial fuel.[7] However, there is currently no commercial market for biochar in Australia.

3. Dirtiest form of energy production

Waste incinerators have re-branded themselves as 'green' energy suppliers. The reality is that burning waste is the dirtiest form of energy generation both in toxic emissions and climate change gases.

Waste burning facilities produce far more carbon dioxide per unit of energy generated than coal, oil or gas fired power stations[8]. In addition to producing larger quantities of greenhouse gas per energy unit than coal, incinerators also destroy the

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[2] USEPA (2005) The Inventory of Sources and Environmental Releases of Dioxin-Like compounds in the United States: The Year 2000 Update. March 2005 External Review Draft.

[3] British Society for Ecological Medicine (2008) *The Health Effects of Waste Incinerators*. 4th Report of the British Society for Ecological Medicine.

[4] For example see Stockholm Convention on Persistent Organic Pollutants 2001, www.pops.int

[5] British Society for Ecological Medicine (2008) *The Health Effects of Waste Incinerators*. 4th Report of the British Society for Ecological Medicine.

[6] Vehlow, J., (2002) *Bottom ash and APC residue management*. Proceedings of the Expert Meeting on Power Production and Waste and Biomass – IV, Espoo, Finland.

[7] Dr Rye Senjen, Friends of the Earth Australia. Industrial charcoal (biochar): just as dangerous technofix? A short primer

[8] U.S. EPA eGRID 2012 Database. Analysis by Energy Justice Network. www.EnergyJustice.net

'resources' in waste that could be recovered if the discarded material in waste were recycled or reused.

Much of the waste material burned in incinerators is based on petrochemicals. These include plastic bottles, bags, packaging and even electronic waste. Petrochemicals are fossil fuels and burning plastics derived from fossil fuels does not create 'green' energy – it is simply burning fossil fuels in another form.

4. Destroys embedded energy

Waste incinerators destroy the resources entrained in waste including the embedded energy. The embedded energy in any given product includes the energy expended in extracting resources, refining, manufacturing and transporting the product to the point of sale.

This energy is lost when a discarded product is burned in an incinerator and the whole cycle must begin again. Most of this energy is retained when the discarded product is recycled or reused. The only energy 'recovered' from burning a product in an incinerator is the 'calorific' energy of that item – in other words - the small amount of heat energy it contains. For example burning a PET plastic water bottle yields 3.22 gigajoule per tonne whereas recycling it *saves* 85.16 gigajoule per tonne. That means recycling a PET plastic bottle saves 26.4 times the energy that burning yields demonstrating that incinerating waste is an enormous waste of energy.[9]

5. Undermines recycling efforts

Waste incinerators seek the highest calorific value fuels available to burn as this increases the efficiency of their energy. Unfortunately those high calorific value wastes are also highly valued for recycling. These include plastics, paper, wood-waste and cardboard. By competing for the same materials as recycling operations incinerators undermine the recycling sector and destroy valuable resources and their embedded energy.

6. Destroys resources

When a discarded product is burned it is converted to energy, toxic emissions and contaminated ash. The discard is destroyed forever and the energy intensive process of material extraction, refining, manufacture and transport must be repeated to replace that product. The alternative of recycling and re-use of such materials retains most of that embedded energy and reduces the inputs to the production and consumption cycle[10].

For organic materials, such as food waste, soiled paper, cardboard and timber derivatives, composting retains the valuable resource and converts it into much needed agricultural fertilisers and soil conditioners that increase productivity and save water.

Anaerobic digestion of organics prior to composting also gives the added benefit of generating energy through biogas production, a 'cool' WtE technology. Incineration of organic materials denies the potential for these further beneficial uses.

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[9] Energy Comparison. Recycling versus Incineration (ICF Consulting, 2005)

[10] Morris, J. (2008) Recycling and Composting Saves Money, Energy & Pollution Compared to Disposal Via Waste-to-Energy (WTE) Conversion. Montreal Video Conference – October 21, 2008.

7. Stifles Innovation

Waste incinerators require waste supply contracts that last for 25-30 years to become financially viable and to ensure their fuel supply.[11] This means that local governments must supply the incinerators with a steady flow of waste at an agreed volume for that period of time. If the waste stream is locked for decades, alternative waste treatment technologies including recycling, re-use, composting and anaerobic digestion are effectively stymied. This is a significant barrier to achieving sustainability as new developments in environmentally friendly technology are prevented from accessing the resources.

8. Waste Incineration costs jobs

Independent studies[12] have reported that waste management systems that use recycling, re-use, composting and anaerobic digestion generate many more jobs and far outstrip the few positions required to run an incinerator.

In general terms waste incinerators are expensive, computer controlled, largely automated technology that only require a small workforce to operate. Conversely waste management systems based around recycling, re-use and 'cool technologies' have a high employment generation potential and flow-on effects throughout the community and economy. Installing a waste incinerator means that communities forego employment opportunities while squandering valuable resources.

9. Waste Incineration undermines real renewable energy

Waste incinerators are expensive to build, operate and upgrade and require public subsidies to become financially viable. By claiming to produce 'green' energy incinerator operators can obtain public subsidies, credits, tax breaks and transferable benefits that should be spent on assisting real 'green' energy projects to establish such as wind, wave and solar power.

The incineration industry claim that because a fraction of waste they burn is 'biogenic' in origin (such as paper and other organics) they should be classed as 'renewable' energy generators and given access to taxpayer subsidies for green energy projects.[13] This undermines real renewable energy and diverts funds away from genuine green energy projects. Millions of taxpayer dollars have already been directed to incinerator projects that are still in the 'proposal phase' in Australia.[14]

10. Entrenches a linear economy

Waste incineration entrenches a linear economy in our society that relies on the extraction of virgin materials and rewards consumptive and wasteful lifestyle choices. Our society needs to transition as soon as possible to a circular economy where resources are not destroyed through landfills or incineration but rather are conserved through reuse, recycling and composting schemes generally known as **Zero Waste Solutions.**

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[11] Sora, J., (2013) Incineration overcapacity and waste shipping in Europe: the end of the proximity principle? Fundacio Ent January 7th, 2013

[12] More Jobs, Less Pollution: Growing the Recycling Economy in the U.S. Prepared by: Tellus Institute with Sound Resource Management 2011; More jobs, less waste. Potential for job creation through higher rates of recycling in the UK and EU. Friends of the Earth UK, September 2010

[13] Global Anti Incineration Alliance, Burning Public Money for Dirty Energy. Misdirected Subsidies for "Waste-to-Energy" Incinerators April 2011

[14] Clean Energy Finance Corporation Media Release http://www.cleanenergyfinancecorp.com.au/media/releases-and-announcements-files/cefc-to-finance-waste-to-energy-project-using-world-leading-australian-technology.aspx