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Re – EMRC Resource Recovery Facility Public Environmental Review

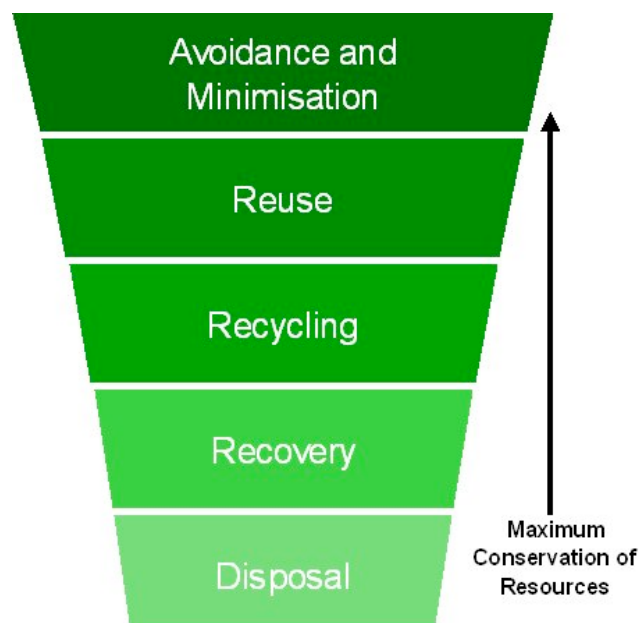
Foreword

The Alliance for a Clean Environment have been an independent voice and advocate for environmental health protection, environmental justice and community right to know in WA for the last 20 years.

In this time we have witnessed the systemic erosion of environmental health protection in WA. Our youngest and most vulnerable sections of society are not being protected from the harmful impacts of pollution, in particular from the liberation of hazardous and toxic particulates such as those that are emitted from thermal waste technologies including gasification as is proposed in this Public Environmental Review for the EMRC RRRF.

Waste Management is a critical environmental issue requiring a whole of government approach with the engagement of civil society at a local, state and national level. The choices of technology proposed by any regional local government must meet the State and National Waste Management Policies and honour the waste hierarchy which has been adopted by Australian states and territories.

The Waste Hierarchy



The technologies proposed by the EMRC for inclusion in a Resource Recovery Facility are generally considered recovery and disposal technologies and do not provide an emphasis on avoidance, reuse or recycling which are the preferred waste management strategies for a zero waste model.

Indeed both technologies potentially risk undermining the effective reuse, recycling and recovery of MSW especially as it relates to safe and clean composting potential. This is because both technologies contain a 'Mechanical Separation' component that is known to be less effective than source separation techniques that utilise human hands and require dedicated separate bin systems. Contamination of the waste stream is a significant impediment to the production of clean and marketable compost.

'Source Separation' of our MSW stream is the most important aspect determining the success of producing clean compost and recycling. There is considerable room for improvement in the EMRC based upon two studies commissioned by the EMRC to examine the regions waste streams¹

These studies showed that a considerable amount (up to 27%) of the residual waste fraction could be further separated for composting and recycling and that the contamination of paper and cardboard as well as the breakages of glass during collection was a significant contributing factor affecting the rates of recycling. Improvement in source separation at the household level could considerably increase recycling rates and reduce residual wastes. Improvements in these areas would dramatically improve waste management outcomes in the East Metro Region and reduce the need for end of pipe technologies to dispose of this residual waste fraction. This would be a far more cost effective and environmentally and socially sustainable way to manage the regions waste and is supported by the community.

There has also been a great deal of concern and disquiet with the approach that the EMRC has taken with its community engagement process. After more than 10 years of consultation which our members participated in nearly every opportunity provided, we can confidently state that the community has consistently rejected thermal waste management options. Yet the EMRC has failed to acknowledge the community's view and has promoted thermal technologies regardless.

This is worth stating in terms of the attitude held by the EMRC towards the affected community and in relation to the responsibility of all levels of government to commit to principles of participatory democracy, transparency and accountability. The failure of the EMRC to provide a PER document that details the specific technology so that the public has access to the necessary information needed to make an informed submission and most importantly for the EPA to make a rigorous assessment, undermines the integrity of the whole process and therefore the outcome.

Without information on the specific technology and operating company, the public cannot determine if the technology operates reliably overseas, has met their environmental obligations and delivered their claimed benefits.

At a recent public meeting the EMRC's Mr Fitzpatrick stated that the gasification assessment used in the PER is based on Energos Pty Ltd but that the final technology would be determined by the EMRC through their tender process and not the EIA process. A simple search has shown that Energos has failed to meet their environmental protection standards for Dioxin and Mercury. See...

¹ Nolan – ITU Pty Ltd 2003 and APRINCE CONSULTING PTY. LTD. 2004

<http://www.greenlaneecodump.org/?p=743>
<http://www.greenlaneecodump.org/?tag=>
<http://www.letsrecycle.com/news/latest-news/waste-management/energus-isle-of-wight-plant-fails-further-emissions-tests>

The failure of the EMRC to provide this information in their PER document is a serious matter and it is expected that the EPA will investigate this companies performance as a priority in the EIA process. It would be unacceptable to the community in terms of public health and environmental protection but also too in terms of the financial viability of this technology and the economic risks member councils will face through any contract with such a company, for this information to be disregarded.

While it is disappointing that the EMRC has not provided its member councils or constituents any option for Aerobic digestion within its proposed RRRF, despite requests from the community, it is worth stating from the outset that a real zero waste strategy is what the public wants and needs. ACE understands that it is not the purpose of this EIA process to examine a model that has not been proposed in this PER document but it is worth stating on the public and government's record that there is a more environmentally, socially and economically sustainable waste management option for the EMRC than what is being afforded in this PER, for future reference and consideration.

In place of the two technology options currently offered we should develop a resource recovery facility that includes

- Aerobic composting of green and other compostable wastes to produce clean and marketable compost. (Mixed MSW compost is **not** acceptable)
- Commercial scale worm farm
- Increased separation of reusable and recyclable components of the MSW to maximise the recycling rate in WA and increase green jobs. (ie more dedicated bins and better collection)
- A Recycle Tip Shop/facility
- A salvage yard for reusable building materials (C&D waste)
- A Community Science based research centre to investigate solutions for residual wastes.
- Temporary sealed containment cell for 'treated' residual wastes.

These are the components of a sustainable zero waste strategy that will protect the environment, human health, provide for greater carbon capture and storage, create clean compost, provide for green jobs and other social investments and assist towards reducing consumerism and our ecological footprint both locally and globally. In the eastern region where the Darling Scarp's forests and water catchments provide for Perth's life support systems, the outcome of this PER process will affect the whole of Perth now and for future generations.

Comments on the EMRC RRRF PER.

Process

As stated the failure of the EMRC to identify the exact technology and company that will operate the technologies denies the public the opportunity to investigate the company's success and compliance with public health and environmental protection standards. This is particularly important in relation to Gasification technologies and the generation of Dioxin and Mercury for which Australia is signatory to International conventions such as the Stockholm Convention and for the new Minamata Treaty for Mercury, Cadmium and Lead.² If these companies cannot meet emissions standards in other jurisdictions then this must be considered an early warning and an opportunity to prevent such harm being caused in WA. To ignore such information would be considered negligent, yet without such information the EPA and the public are in the dark.

The failure of the EMRC to provide a detailed PER describing the exact technology that will operate, represents a major procedural injustice for the public. It is well known that technologies and how they operate, differ between jurisdictions around the world.

The fact that this process has occurred previously in WA is no excuse and only highlights the failure of regional governments to implement good governance processes in a transparent and equitable way. The community and therefore the assessors and regulators, simply do not know what they do not know and this style of assessment process was never the intention of the EIA process as described under our EP Act in Western Australia. On these grounds alone the EMRC should be required to resubmit their PER document when a specific technology operator has been decided.

The potential for the EMRC to become the states residual waste disposal site further makes this inadequate EIA process compelling and requires urgent consideration given the contradictory and misleading information about the EMRC's waste stream.

Waste Stream figures.

The EMRC EOI 2009/10 states that the final tender will be required to treat 100 000 tonnes of MSW.

MBT – 60,000 expandable to 150,000 tonnes per annum; and **EfW** – 90,000 expandable to 200,000 tonnes per annum.

Yet two waste stream audit reports (referred at 1) commissioned by the EMRC, state that after the removal of compostable and recyclable wastes the residual fraction amounts to between 5 – 20% of the MSW. The same report also states that a further

² <http://chm.pops.int/Convention/tabid/54/Default.aspx> and <http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=659&ArticleID=6890&l=en>

27% of this residual fraction could be composted and recycled therefore reducing this figure even further.

Therefore the EMRC have failed to show where the full 100 000 – 200 000 MSW will come from to provide the Gasification technology with the required waste stream needed to be viable.

This is of significant concern given the absence of a hazardous waste policy in WA.

If it is the intention of the EMRC to take waste from other jurisdictions then this must be stated and included in this PER assessment. Should the EMRC take waste from other areas of Perth to dispose of in either an AD or gasification plant, then those local governments contributing their waste must be included in any consultation and further, that if this is the intent of the EMRC then it is a state wide issue requiring a much broader community engagement remit than is currently being afforded.

It could be perceived that this ad hoc approach to assessing the disposal options for the states residual wastes is being conducted by stealth, through the manipulation of statutory processes.

Air Quality Impacts

The reliability and effectiveness of either technology to adhere to public health protective air quality standards relies on a robust industrial regulatory framework. WA does not currently have a robust industrial regulatory framework as identified in numerous government reports and parliamentary inquiries.³

Air quality standards are a contentious issue in Australia with the NEPC in 2010 advising that the current NEPM standards are not protective of public health.⁴ There are only a limited set of criteria pollutants and do not represent the full range of expected pollutants that will be emitted. For example –

Dioxin

There is no safe level of exposure to Dioxin and this substance is the subject of the International Stockholm Convention created to reduce and eliminate all sources of Dioxin generation, recognising that incineration is the largest source of global dioxin contributions. Incinerators in the northern hemisphere, particularly in northern European countries are causing the excessive levels of dioxin found in Inuit communities and arctic ecosystems. This substance poses a significant issue in terms of climate change as the polar ice caps melt and these Persistent Organic Pollutants (POPs) are rereleased into the environment and into the food chain once again. Australia is signatory to this convention and therefore should not be approving technologies that emit this dangerous substance. In doing so, WA will be contravening this international convention.

Nano-particles

Australia currently has no regulatory framework for nano-materials and therefore cannot control the types or amounts entering our waste streams. There have been significant public health concerns related to the effects of nano-materials in the human

³ **Economics and Industry Standing Committee BELLEVUE HAZARDOUS WASTE FIRE INQUIRY** VOLUME ONE Report No. 1 2001 and Public and Environment Affairs Alcoa Alumina Refinery at Wagerup 2004 and **EDUCATION AND HEALTH STANDING COMMITTEE INQUIRY INTO THE CAUSE AND EXTENT OF LEAD POLLUTION IN THE ESPERANCE AREA** Report No. 8 in the 37th Parliament 2007.

⁴ NEPC 2010

body.⁵ As these particles bypass the normal defence mechanisms of the body and enter the blood stream and organs directly the failure to control nano-pollution should be a fundamental flaw of any incineration technology. A lack of evidence is not evidence of no harm and this assumption has no place in the EIA process. The use of the precautionary principle has not been applied but rather the issue has been ignored by all state authorities, particularly the Department of Health.

Ultrafine particles

The failure of the NEPM to account for ultrafine particulates continues to undermine public health policy in Australia. There is overwhelming evidence of the harm to human health caused by ultrafine particulates which are known to be emitted in high amounts from all forms of incinerator technologies.⁶

The failure of the PER to adequately address the significant public health impacts that these pollutants cause is considered a fatal flaw in this PER.

Heavy Metals

There are no statutory limits on heavy metals emissions to air except Lead. It is well known that thermal waste technologies release a range of heavy metals including mercury, cadmium and chromium which are known to cause public health impacts.

Incinerator Air Quality monitoring – polychlorinateddibenzodioxins and furans (PCDD/F)

There are serious questions over the ability of Western Australian regulators to manage the monitoring and compliance auditing of polychlorinateddibenzodioxins and furans (PCDD/F) otherwise known as dioxins and furan emissions from existing and proposed prescribed premises in Western Australia. Some of the issues affecting the ability of the DEC are as a result of internal inadequacies while others relate to the ongoing international controversy over monitoring techniques.

The gasification process proposed by the EMRC has been classified as *incineration* following detailed technical assessment by the European Commission scientific community⁷. (as are pyrolysis, plasma arc and combustion technologies). Despite proponent claims, gasification is not a new technology and it is not a separate technology to incineration. They are the same thermal industrial waste disposal methods with technical variations.

⁵ [Biochem Soc Trans](#). 2007 Jun;35(Pt 3):527-31, Health effects of nanomaterials. [Tetley TD](#). Source, National Heart and Lung Institute, Imperial College London, London SW3 6LY, UK. t.tetley@imperial.ac.uk

⁶ The Health Effects of Waste Incinerators 4th Report of the British Society for Ecological Medicine 2008

⁷ Article 3(4). Implementation of European Council Directive 2000/76/EC on the Incineration of Waste

Public Health Impacts

The EMRC states that ... “As the RRF will comply with these standards there should not be any impacts on human health. This conclusion has been supported by two international studies into the possible human health impacts on the proposed RRF technologies which have been examined as part of the assessment of this proposal. These studies, from the Department for Environment, Food and Rural Affairs (DEFRA) in the UK (DEFRA 2004) and for the Montgomery County Waste Resource Recovery facility in Maryland, USA (AECOM 2007) confirmed the results from this study that human health from gaseous emissions is not at significant risk for either technology proposed.”

We challenge this statement on the grounds that, as previously stated, WA does not have a robust industrial framework where compliance monitoring is assured. Three parliamentary inquiries have demonstrated this. Furthermore quarterly monitoring reports do not ensure compliance with licence conditions as these reports are submitted after the monitoring period has ended and well after any breach of licence condition has occurred, meaning that any public health impact would have already occurred. Therefore it would be some time (up to at least 3 months) before a breach would be identified and actions taken to remedy the problem. This is unacceptable in terms of public health protection.

Furthermore we challenge the reports that are referred to by the EMRC on the grounds that the first international study relied on is unacceptable because all of the data resulted from a single test on a pilot or demonstration plant in the United Kingdom that wasn't even using municipal waste. (Department for Environment, Food and Rural Affairs (DEFRA), 2004, Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes, p 57)

The second international study - AECOM, 2009, Fourth Operational Phase (June 2007) Non-Air media Monitoring for the Montgomery County Solid Waste Resources Recovery facility Near Dickerson, Maryland, only relates to "non-air" monitoring. A study on air sampling at the same facility (AECOM, 2008, Report on the Third Operational Phase Air Media Sampling Program – Winter 2008 Final Report) should have been referred to.

Table 4-6 of the Air Sampling study shows Polychlorinated dibenzodioxin concentrations downwind of the facility in 2008 at levels 4 times greater than background levels. Tables 4-7 and 4-8 show dioxin emissions exceeding background levels during the first and second operational phases of the facility.

Table 5-1 of this report showed that Arsenic emissions were over 3 times higher than the Regional Screening Levels developed by the US EPA. Chromium also exceeded the RSL.

These reports do not conclusively demonstrate that the proposed Gasification technology will not cause adverse health impacts to surrounding communities. They are based on poor science and are directly challenged by independent reports.⁸

⁸ Waste to Energy. **Dirtying Maryland's Air by Seeking a Quick Fix on Renewable Energy?**
Environmental Integrity Project Oct 2011

It is very concerning that the EMRC and the Waste Authority have on three occasions funded 2 visits and a teleconference with the now former Executive Director of the Maryland Resource Recovery Facility who clearly has a direct interest in promoting the success of her responsibilities related to that facility and who consistently failed to reveal the impacts that the facility was causing to the surrounding community.

Furthermore the exact technology that the EMRC have based their gasification assessment upon is a technology that is known to have failed to meet air quality standards in other jurisdictions.⁹

In fact the Energos technology was closed down on the Isle of White as a result of failing to meet dioxin, mercury and nitrogen oxide emissions limits. This should be a significant warning to the EPA that this technology is not a proven or commercially viable technology and will pose a significant risk to the health of the community.

It is well documented that waste to energy technologies pose significant public health impacts¹⁰

The impacts of toxic dusts liberated by the transport and management of the ash residues fail to be adequately addressed in this PER. Standard dust suppression techniques already employed at Red Hill will be insufficient to protect workers, public health and the environment from the liberation to toxic ash containing nano-particles. Current methods to control dust at the Red Hill Landfill shows that dust is not adequately suppressed and this warrants a critical assessment of exactly how Red Hill will manage highly toxic residual ashes. The PER fails to provide adequate information on this issue.

⁹ <http://www.letsrecycle.com/news/latest-news/waste-management/energos-isle-of-wight-plant-fails-further-emissions-tests/>

¹⁰ The Health Effects of Waste Incinerators 4th Report of the British Society for Ecological Medicine 2008

Health Impacts of Incinerator Pollutants

Toxic Agent

Health Impacts

Particulate Matter

Increased respiratory symptoms, decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease

Carbon Monoxide

Chest pain, cardiovascular effects, vision problems, reduced ability to work or learn, reduced manual dexterity, difficulty performing complex tasks, and respiratory problems

Nitrogen Dioxide

Irritation of eyes, nose, throat, and lungs, nausea, shortness of breath, respiratory problems, reduced oxygenation of body tissues, and a buildup of fluid in the lungs

HCl

Throat irritation, rapid breathing, blue coloring of the skin, accumulation of fluid in the lungs, swelling of the throat, reactive airways dysfunction syndrome, skin burns, respiratory problems, eye and skin irritation, and discoloration of teeth

Cadmium

Severe lung damage, kidney disease, stomach irritation, increased bone fragility, and increased risk of lung cancer

Lead

Adverse effects on nervous system, kidney function, immune system, reproductive and developmental systems, and cardiovascular system, and neurological effects (especially in children)

Mercury

Brain, kidney, and developing fetus damage, lung damage, nausea, vomiting, increased blood pressure, and ocular and dermal irritation

Chromium

Irritation of respiratory lining, runny nose, breathing problems (cough shortness of breath, wheezing), skin rashes, reproductive damage, increased lung cancer, and increased stomach tumors

Arsenic

Sore throat, irritated lungs, nausea, vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, darkening of skin, skin irritation, and increased risk of skin, liver, bladder, and lung cancer

Beryllium

Lung damage, acute beryllium disease, chronic beryllium disease, and increased risk of lung cancer

Dioxins and Furans

Chloracne, increased risk of cancer, increased risk of heart disease, and increased risk of diabetes

Polychlorinated Biphenyls (PCBs)

Increased risk of cancer, specifically rare liver cancers and malignant melanoma, immune system damage, reproductive system damage, nervous system damage, endocrine system damage, dermal and ocular effects, and elevated blood pressure, serum triglyceride, and serum cholesterol

Polycyclic Aromatic Hydrocarbons (PAHs)

Increased risk of cancer

Children's Environmental Health protection

The PER fails to address the specific vulnerability of children's exposure to air emissions, dusts and water pollution and how this will be managed. Children are far more vulnerable to air pollution than adults and the topography of the region contributes to air quality risks especially when the wind direction is from the east, north east and south east. The strong easterly winds have the potential to carry pollutants towards the flatlands at the base of the Darling Scarp where pollution traps already exist. The air shed in the flatlands of Midland, Midvale, Bellevue and Caversham are already at capacity with Brickworks pollutants often exceeding public health protection standards. The increased burden of pollutants in this region cannot be justified, especially on children.

Environmental Impacts

The proposed RRRF is located adjacent to WA's iconic John Forest National Park. This is an inappropriate location for a high risk industry such as a Gasification plant.

It is already known that the Red Hill Landfill is leaking into the National Park and that the EMRC has expanded the facility to include Class 5 wastes. This is a potential and unacceptable risk to the surface and groundwater sources feeding into the National Park.

Protected species will be potentially impacted by contaminated dusts, emissions and leachate, particularly from the large quantities of toxic bottom and fly ash that will require landfilling at the current location. Dioxin and heavy metal emissions will potentially deposit into the National Park risking the health and integrity of flora and fauna as well as the public who will utilise the National Park also.

Renewable Energy claims

Waste to energy technologies are the most costly and carbon intensive energy corporations¹¹

We challenge the claim made by the EMRC that Greenhouse gases will be reduced and that gasification technologies produce renewable energy.

Disposal of our MSW through Gasification technologies destroys the embedded energy in the waste stream once and for all. This means that new products will need to be created to meet consumer demand requiring extraction of the raw materials (ie more fossil fuels, chemicals, energy, water) - manufacturing (more chemicals, water and energy) - transport (more energy and pollution) - packaging (more raw materials, chemicals, energy and water) and more disposal of those same products. It is a cycle that can only be reduced through sustainable front end solutions not end of pipe solutions. The carbon sequestration benefits of composting provide a more stable and reliable disposal option than thermal treatments which release the carbon components of our waste stream to the atmosphere contributing to climate change.

¹¹ Burning Public Money for Dirty Energy GAIA Nov 2011

The reduced energy use throughout the materials supply -chain from extraction to waste makes recycling and reuse of our MSW are far more economically and environmentally sustainable option producing less pollution and fossil fuel energy.

Waste to Energy technologies emit more carbon dioxide per (CO₂) unit of energy (2988 lbs/MWh) than coal-fired power plants (2249 lbs/MWh).¹²

As can be seen from the table below Landfill Gas Capture and Waste to Energy provide the least amount of net energy generation compared to fossil fuels and sustainable energy sources such as wind and solar.¹³

Table 2 Federal Subsidies for Electricity Production, 2007

ENERGY TYPE:	FY 2007 Net Generation (billion KWh)	Total Federal Subsidies (million \$)	Subsidy per unit of Energy (\$/mWh)
Coal	1,946	854	0.44
Natural Gas	919	227	0.25
Nuclear	794	1,267	1.59
Biomass	40	40	0.89
Wind	31	724	23.37
Solar	1	14	24.34
Landfill Gas Capture	6	8	1.37
"Waste-to-Energy"	9	1	0.13

The arguments claiming that Waste to Energy technologies provide clean renewable energy are not founded on solid science and should not be used to justify the EMRC's proposal for a Gasification technology.

Financial viability

There are serious concerns about the risks associated with Waste to Energy Gasification technologies as evidence exists around the world that they pose a significant financial burden on the host communities and their local governments.

Indeed the County of Harrisburg, Pennsylvania went bankrupt over their MSW waste to energy facility.¹⁴ Detroit also narrowly missed this fate and Ireland changed their EP Act at the last minute to avoid the same fate¹⁵.

This is because these technologies require government subsidies to remain financially viable. Where these technologies are operating in other jurisdiction, the local governments classify the technology as a renewable energy source. This is however misleading and incorrect as the disposal of waste through thermal destruction can never be renewable.

¹² U.S. EPA, <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>

¹³ Burning Public Money for Dirty Energy, GAIA, Nov 2011

¹⁴ The Economist, Money Up In Smoke, Oct. 29, 2011. <http://www.economist.com/node/21534811>

¹⁵ http://www.ecocenter.org/sites/default/files/campaigns/recycling/docs/detroit_sw-crisis_nomap.pdf

Compliance of existing incinerators in Western Australia

In Western Australia an existing hazardous waste incinerator (Oil Energy Corporation) in Port Hedland burns chlorinated and carbonaceous materials at temperatures that are known to evolve high levels of dioxins and furans in the flue gas. The approval of this facility is an aberration. It would never be accepted as an adequate facility in Europe due to its incredibly poor flue gas scrubbing equipment. Despite its obviously crude design and operation the DEC continues to licence the facility to burn hazardous industrial waste including drilling mud from the petroleum and mining industry that often contain elevated levels of radioactive material and hydrocarbons. Despite the obvious potential to release dioxin at levels that would be harmful to the environment and human health – no condition of OEC's prescribed premises license required dioxin monitoring. Instead they were issues with throughput limits for chlorinated wastes that would supposedly limit dioxin emissions.



Oil Energy Corporation incinerator – Port Hedland.

Our organisation has repeatedly raised the issue with state and Federal regulators in 2006 and 2008 yet the OEC licence has not been amended to incorporate sound scientific methods for dioxin emission auditing. While the Federal regulators are not in a position to require the state regulators to act it is suffice to say they were shocked and appalled by the situation.

This approach is without scientific merit and underscores the fact that the WA DEC are not competent to manage dioxin emissions from thermal waste disposal technologies. The latest prescribed premises licence for OEC (L6789/1994/13) still does not include the word 'dioxin' or any scientific or chemical nomenclature that could reasonably be interpreted as meaning dioxin or furans.

In addition the company uses dangerously polluting practices such as re-feeding bottom and fly ash into the incinerator as a bulking agent for liquid hazardous wastes. This allows a dangerous build up of heavy metal and dioxin concentrations within the waste feeds that will be liberated to air through the poorly scrubbed flue gases.

The environmental history of OEC is inglorious. There have been a number of major fires on the site and a history of pollution complaints from neighbours including the 700 person mining camp directly across the road (downwind). The DEC issued an Environmental Protection Notice for *pollution* against the company in November 2010. No specific details are available as to the outcome of this notice and the company continues to operate without any dioxin monitoring or limits within its

licence. This is unheard of in a developed, modern industrialised country and is frankly a scandal.

In addition the Medi- Collect (formerly Stephenson and Ward) medical waste incinerator in Welshpool has a long history of emission problems including serious PCB contamination of the incinerator site (now partially remediated). Contamination of the surrounding environment, which included PCB residues on surrounding vegetation, was also identified by La Trobe University on behalf of the City of Canning in 1984.

In 1996 a Unilabs stack monitoring report recorded dioxin emissions of I-TEQ 2.8 ng/min (nearly 3 times the accepted international limit for dioxin emissions from a medical waste incinerator. The emissions record also showed mercury emissions of around 72kg per annum.

The DEC is currently investigating reports of purple smoke from the incinerator that have been attributed to incinerating potentially radioactive iodine.



**The Medi-Collect medical waste incinerator
(formerly known as the Stephenson and Ward Incinerator)**

Controversy over dioxin monitoring accuracy

While existing examples of incinerator regulation in Western Australia show considerable ignorance of the serious nature of dioxin emissions, there are growing questions about the efficacy of existing monitoring techniques. Two European scientists sparked international concern when they demonstrated that the existing standard for dioxin monitoring, USEPA method EN 1948, was underestimating dioxin emissions from MSW incinerators by between 30-50 fold. The USEPA method EN 1948 is currently used as the standard in Australia for stack testing of dioxin emissions.

In 1998, De Fre and Wevers¹⁶ published an article that demonstrated the current methods of assessing dioxin emissions heavily under reported dioxin emissions from

¹⁶ De Fre R., and Wevers M., (1998) Underestimation in dioxin emission inventories. *Organohalogen Compounds* Vol 36 1998

incinerators. The scientists could not understand why the dioxin concentrations they found in soil around the incinerators did not match the mass balance calculations derived from an air emissions of dioxin from the incinerators reported using the USEPA method EN 1948.

Having identified the profile of dioxin and furan congeners arising from deposition to soil as matching the incinerator dioxin emission congener profile they were then able to go on and recalculate the true dioxin emissions of these incinerators. The field calibration provided by the soil testing allowed the air emissions to be correctly calculated for a number of incinerators. When this was completed it demonstrated that the MSW incinerators were actually releasing dioxins at a rate that exceeded the internationally accepted dioxin emission limit of I-TEQ 0.1ng/m³ by between 30 and 50 times. Yet we continue to test (some) incinerators in Australia using the method that dramatically underestimates dioxin. This throws serious doubt on any incinerator operator who maintains they have 'safe' dioxin emissions.

De Fre and Wevers went on to develop the Arnesa method of dioxin monitoring for stacks which provides back to back (continuous) impinger sampling of stack gas of around fifteen hours as opposed to the (3 monthly) 6 hour impinger sampling of stack gas provided by the USEPA method EN 1948. The clearly more representative Arnesa method should be adopted by Australian regulators. The reason this method is more accurate is that it picks up the heavier dioxin emissions during start up and shut down periods for the incinerator as it can cover longer periods of operational time – not just optimum operating conditions.

Given these advances in science Australian regulators cannot give any confident assurances to the public that dioxin emissions from incinerators are being maintained at safe levels for public health and the environment.

Conclusion

The Alliance for a Clean Environment rejects the EMRC's proposal for a Gasification technology option for the Red Hill RRRF based on the information provided above.

The claims of reduced greenhouse gases, clean renewable energy and net environmental benefits are not proven and the evidence and reports the EMRC have based this PER document on are found to be lacking in integrity and sound science. The EMRC has failed to convince the public of the merits of waste to energy technologies and have manipulated community engagement processes to pursue an incinerator agenda against the best interests of their own constituents.

ACE thanks the EPA for the opportunity to make this important submission for the benefit of East Metro region but also for the future consideration of waste management in WA.

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Further References

Nanomaterials and health

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