

RE: Objection to the Record of Decision for PPC Hercules Secondary Materials Co-Processing Programme (Reference Gaut 002/05-06/1596)

Please find below various reasons to support our objection to the Record of Decision for PPC Hercules Secondary Materials Co-Processing Programme (Reference Gaut 002/05-06/1596)

1. Background and motivation

It is a commonly accepted by the DEAT and the consolidated cement industry that government has failed to adequately regulate, monitor and enforce the cement industry effectively. Presently, all of the cement industry permits include only dust emission standards, despite the fact that some of the kilns are already burning hazardous wastes such as sewage sludge and spent pot liners from the aluminium industry. The permission granted to the industry for burning this hazardous waste stream was done without public and local government consultation.

In order to get the emission permits for the cement industry, groundWork was forced to make a PAIA application to the DEAT. This application was initially ignored and we had to lodge an appeal. This too was ignored and it was only when we began court proceedings that we were eventually furnished with what purported to be the permits. Many of these appeared to be out of date or incomplete, but despite numerous requests for the correct information we have never received any meaningful feedback.

The DEAT assure us that the incineration of waste in cement kilns will be undertaken in compliance with the strictest European Commission emission standards. It is groundWork's position, however, that these standards should be first applied to the kilns, and be proven to be maintained, before any consideration should be given to the kilns burning wastes. It would appear, however, that the cement industry is unwilling to change their present polluting practices unless they are first granted permission to burn hazardous waste, and that the DEAT is in collusion with this attitude.

2. The National Environmental Waste Management Bill

In November 2007 various community organisation were afforded an opportunity to give evidence to the **PORTFOLIO COMMITTEE ON ENVIRONMENTAL AFFAIRS AND TOURISM** regarding their concerns on the Waste Management Bill (the Bill).

During the public hearing the community people and the NGO representatives who attended felt positive that the information in our presentations would be critically considered by the Committee in their deliberations on the Waste Bill. We felt especially comforted and assured by the manner in which the Portfolio Committee responded to our concerns, especially on the following serious issues:

- That incineration of waste will have negative consequences to peoples' health
- That incineration of waste will undermine good waste management practices like recycling, composting and the spirit of zero waste.
- Special mention focused on health care waste incineration which is currently in a crisis state in South Africa
- The burning of hazardous waste in cement kilns is a serious concern as the cement industry are ill equipped to do so safely
- The reality that life cycle analysis is not more firmly mentioned in the Bill and the concept of Zero Waste is absent;

The Portfolio Committee Chair on Environmental Affairs and Tourism concluded the public participation process on The National Environmental Waste Management Bill by reassuring community and NGO representatives that no decision on incineration on waste in South Africa shall be undertaken without a prior review and approval by The Portfolio Committee Chair on Environmental Affairs and Tourism. Furthermore, the political intention is there that regulation on incineration needs to be considered in a manner that allows not only bureaucratic oversight but considering the heightened debate on incineration in South Africa, that there needs to be political oversight as per the following:

The Portfolio Committee Amendments to the National Environmental Management: Waste Bill [B 39—2007]; CLAUSE 69; stipulates the following criteria:

“(6)Any regulation which pertains to the treatment of waste by means of incineration must be submitted to the National Assembly 30 days prior to publication.”

While the Waste Bill is has yet to be assented to by the President of South Africa, the intention is clear and this ROD should not be considered until this process is dealt with.

3. The Department of Environmental Affairs and Tourism’s (DEAT) National Policy Development Process for High Temperature Waste Incineration and AFR Co-Processing in Cement Production.

The consultative process to develop a National Policy Development Process for High Temperature Waste Incineration and AFR Co-Processing in Cement Production has just recently been concluded.

Community consultations, technical, regulatory and other issues related to this policy have been investigated and considered to the point where DEAT can recommend an informed policy position to the Minister of Environmental Affairs. This includes a detailed Comments and Response Report, and written communication from the DEAT to other authorities and industry regarding certain matters arising from the consultation programme.

In light of the above groundWork take the position that the GDACE cannot unilaterally take a decision to give PPC Hercules a positive ROD before the full consultative and review of this policy has been completed for the following reasons:

1. Once the draft has been reviewed by The Minister he may take the position that High Temperature Waste Incineration and AFR Co-Processing in Cement Production shall be categorically prohibited.
2. If the Minister approves this policy he may attach stricter operational conditions than those outlined in the current positive ROD and indeed the current draft of the policy thus invalidating the current version of this ROD

3. Finally, once the draft has been reviewed and *if* approved by the Minister, an opportunity for stakeholder comment will be presented when the draft policy is published in the Government Gazette for comment for a period of 30 days.

4. The use of waste as a fuel

groundWork is fundamentally opposed to the use of waste as a fuel in cement kilns. There are a number of cogent reasons for this:

4.1 Waste should not be viewed as a sustainable or renewable resource. PPC is proposing that by burning waste they are saving on the use of coal, a non-renewable source of energy. While this might be so, they will need an on-going supply of waste in order to fuel their kilns. We believe that to view waste as a renewable source of energy is improper, as we strongly endorse the concept of Reduce, Reuse, Recycle and believe that the sources of waste as fuel should be steadily reducing. Should waste become recognised as a standard source of fuel it is clear that there will be little incentive to move towards a meaningful long term waste reduction scenario and therefore will instead continue consumption of natural resources.

4.2 Burning waste is a waste of resources. While we accept that through the burning of waste some energy is recovered, we do not believe that the energy recovered is sufficient to make this an acceptable activity. As an example:

Energy required to produce 1kg of rubber:	127 600kJ
Energy recovered when burning 1kg of rubber:	32 500kJ
<i>Energy lost:</i>	<i>95 100kJ</i>
<i>Percentage of resource lost:</i>	<u><i>100%</i></u>
Energy required to create 1kg rubber crumb (for recycling):	2 320kJ
Energy “lost”:	2 320kJ
Percentage of resource lost:	<u><1%</u>

It is quite clear from this example that burning tyres as a fuel is simply a wasteful activity.

4.3 Burning waste result in emissions that are harmful to the health of people and the environment.

Dioxins and Furans are inadvertently created through combustion and industrial activities and are considered to be persistent, bio-accumulative toxic compounds. Some are carcinogenic and are suspected to be neurological, developmental and reproductive toxicants or endocrine disruptors. They may be produced when exhaust gases cool, and cooling these gases quickly through the critical temperature range of 450 to 200°C has been demonstrated to reduce dioxin and furan formation in cement kilns [Commission for Environmental Co-operation, p. 60]¹.

In 1995, at an EPA workshop, it was indicated that the cement industry was responsible for 17% of all dioxin emissions in the United States, and that those kilns burning hazardous waste were responsible for 99% of the cement industry's dioxin emissions, and in 1998, in their report "The inventory of Sources of Dioxin the United States", they say that kilns that burn hazardous waste have 80 times higher dioxin emissions in the stack gases than those which use only conventional fuels [USEPA, p. 5]^{2,3}. In addition, USEPA also reports that dioxins are found in the Cement Kiln Dust (CKD) of both kilns which burn conventional fuel and those that burn hazardous waste, but that concentrations of dioxins in the CKD of those burning hazardous waste are almost 100 times greater than those not doing so.

Mercury is classified as a persistent, bio-accumulative toxic (PBT) chemical. It can cause neurological and developmental problems, particularly in children.

¹ Commission for Environmental Cooperation. 2006. *Taking Stock: 2003 North American Pollutant Releases and Transfers*. Canada: Communications Department of the Secretariat of the CEC

² EPA NCEA - *The Inventory of Sources of Dioxin in the United States (External Review Draft 1998)*, <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=12379> (29 May 2007)

³ Physicians for social responsibility. 2006. Letter to EPA Administrator Stephen L. Johnson, 21 February 2006.

In a letter to the United States Environmental Protection Agency, protesting the fact that the EPA had elected not to place limits on the mercury emissions of cement kilns, the group Physicians for Social Responsibility explain the effects of mercury pollution as follows:

“Mercury is a serious threat to public health. The health effects of exposure to mercury pollution are well documented. Methylmercury, an organic form of mercury that bioaccumulates in a number of fish and marine mammal species commonly eaten by humans, is known to be highly toxic and can adversely affect several organ systems, including the cardiovascular system, and especially the brain and central nervous system.

The nervous systems of children, infants, and above all the developing fetus are the most sensitive to mercury exposures. Methylmercury easily passes via the placenta from mother to fetus, where it readily penetrates the fetal brain. Neurological and development impairment can occur from both high dose and low dose exposures during fetal development. High dose exposures have been demonstrated to result in low birth weight, severe mental retardation, small head circumference, cerebral palsy, deafness, blindness, and seizures. Low dose exposures can result in lowered IQ, decreased performance on tests of attention, fine motor function, and language, and developmental delays, such as delayed walking. Such effects can take place even at exposure levels where the mother remains healthy or suffers only minor symptoms due to mercury exposure.

Mercury pollution is ubiquitous. In its assessment of the toxicological effects of methylmercury, the National Research Council concluded that mercury is both widespread and persistent in the environment. According to the US National Listing of Fish Advisories (NLFA), 2,436 mercury advisories were issued by 44 states, 1 territory, and 2 tribes and a total of 13,183,748 lake acres and 765,299 river miles were under advisory for mercury in 2004. Additionally, Oklahoma, one of the six states not listed on the 2004 NLFA (along with Alaska, Iowa, Kansas, Utah, and Wyoming) issued a state wide mercury advisory after the time of data release, bringing the total number of states under mercury advisory in 2004 to 45. Also, in 2005, the State Departments of Health and Environmental Quality, the

Division of Wildlife Resources, and the U.S. Fish and Wildlife Service (FWS) in Utah jointly issued a no-consumption advisory for two duck species found to have toxic levels of mercury in their flesh.

This pervasiveness of mercury contamination in the environment presents a serious health risk to those who eat contaminated fish, marine mammal, and wildfowl species. In January 2003, the Centre for Disease Control and Prevention (CDC) found that nearly eight percent of women of child bearing ages (16 to 49) are exposed to levels of mercury that exceed the EPA reference dose (RfD) considered safe for a fetus—0.1 micrograms per kilogram ($\mu\text{g}/\text{kg}$) of body weight per day and 5.8 micrograms per liter ($\mu\text{g}/\text{L}$) of blood. A more recent analysis by EPA scientists raised that estimate to more than 15% of women, based on peer-reviewed studies showing that cord blood concentrates mercury at significantly higher levels than maternal blood. Using 2000 census data to extrapolate across the entire U.S. population, this could mean that as many as 630,000 newborns each year are at risk of serious congenital neurological and development impairment.”

In Northern America in 2003, cement kilns, which represent less than one percent of industries reporting, reported about nine percent of the total mercury released in air emissions [Commission for Environmental Co-operation, p.56]⁴ in North America. This equates to approximately 5.75 tons of mercury and mercury compounds, about 5.23 tons of which were emitted to the air.

In view of the high and unregulated emissions, Physicians for Social Responsibility⁵ calls on the EPA to more stringently monitor cement kiln stacks. The letter also suggests that the reporting methods used by the cement kilns are flawed, and that the actual emissions from these kilns may be significantly higher.

⁴ Commission for Environmental Cooperation. 2006. *Taking Stock: 2003 North American Pollutant Releases and Transfers*. Canada: Communications Department of the Secretariat of the CEC

⁵ Physicians for social responsibility. 2006. Letter to EPA Administrator Stephen L. Johnson, 21 February 2006.

Controlling mercury emissions from cement kilns is particularly troublesome as the high temperature of the kilns makes it impossible to use the bag houses used in other industries. A bag house traps dust from the boiler and an activated carbon injection system is used to extract the mercury. The bags would melt in a cement kiln environment, and carbon injection is not effective where there is a lot of dust. Luc Robitaille of Holcim cement says that there is no technology that exists in the cement industry to control mercury emissions [Dan Shapley, 16 July 2006]⁶.

4.4 The perceived benefits of burning waste in cement kilns are falsely premised.

PPC's arguments regarding reduction in overall emissions are premised on the idea that, one way or another, the waste will be burned. They argue that, this being the case, it makes more sense to use the waste to fuel their kilns and that in so doing savings are made because conventional incinerators are not needed and energy is recovered rather than simply going up the stack. This holds true only if it is a given that incineration of the waste would take place. As we believe that in a sustainable world the volumes and types of waste currently available should be reduced dramatically, we dispute the premise.

4.5 Cement kilns are not designed to burn waste.

It is well documented around the world that cement kilns are subject to frequent upsets during which time emissions can far exceed the limits imposed upon the kiln. These are bad enough when traditional fuels are used, but an upset while waste is being burned can result in completely unknown organic compounds being released, depending on what exactly is being burned, and in what combination it is being burned. Given that no-one can know or reliably predict the exact combination of wastes likely to be burned it is not possible to know what will be coming out of the stack under less than perfect operating conditions.

4.6 Inadequate Pollution control equipment to protect public health

The current Hercules Cement kilns were designed and built three decades ago, to make cement, not to burn waste solvents. Their design is unable to guarantee the same level of complete combustion that would be achieved in a purpose built

⁶ <http://www.iconocast.com/00004/M4/News5.htm>

incinerator. There is evidence that high temperatures cannot be maintained throughout a cement kiln, that turbulence in the kiln may give rise to pockets of incomplete combustion, and that the level of excess oxygen is inadequate.

In fact the need to have sufficient oxygen for efficient combustion is at odds with the atmospheric requirements for good quality cement.⁷ Significantly, the new EU Directive (see section 11) which will affect the burning of hazardous wastes in kilns exempts kilns burning wastes at 40% or less contribution to heat value from the need to have a minimum 6% oxygen atmosphere. This seems to recognise that low oxygen and thus poor combustion is a feature of cement kilns.⁸ The absence of systems in cement kilns for rapid quenching of emissions also provides an environment that encourages formation of dioxins. Section K of this ROD states that *“the kilns to be used for AFR co-processing and hazardous waste treatment must be designed, built and operated in such a way... seconds“*. **Unless it can be proven that this cement kiln was designed and built in such with the intention of co-processing and treatment of hazardous waste one cannot authorise its use for this purpose.**

Kilns are regularly prone to “upsets” or “trips” as carbon monoxide builds up and the precipitator particulate traps, which in any case do not capture all of the particulates, open automatically to prevent an explosion in the kiln. This releases large amounts of particulates and other pollutants. Dr Michael Richard, Professor of Environmental Health at Colorado State University, states: “Simply cement kilns do not have the necessary reliability and safeguards to ensure 100% destruction of hazardous wastes.”

⁷ David B Kopel, *Environmental Law Reporter*, 4, 1993. 2. EW Kleppinger, *Folly or Redemption? Can cement kilns really do the job?*, Air & Waste Management Association, Clearwater, Florida 2.3.1993; *Letter to Director of EPA from coalition of US citizen groups* 16.1.1995; *Citizens Briefing Book on Cement Kiln Incineration of Hazardous Wastes in Texas; prepared for Texas Air Control Board Policy Task Force*, 20.11.1992. ; Paul Connett, *Professor of Chemistry, St Lawrence University New York*, *Air Watch public meeting, Clitheroe, March 23 1997*

⁸ *EU Hazardous Waste Incineration Directive 94/67, Article 3, Article 6.2.*

4.7 Cement operations should not be waste operations.

Frequent media coverage from around the world indicates that even operations that are expressly set up for and whose core business is the provision of waste management services are often unable to handle the waste in a safe and proper manner. Because it is their core business, cement producers know a lot about producing cement and no doubt do this with a degree of efficiency. Waste management is not their core function and, indeed, is being introduced into the function only because there is a profit incentive, and it is unlikely that the waste will, at all times and through all aspects of the chain, be properly handled. The opportunities for harm to people and the environment are many.

5. Why tyres should always be excluded as a fuel resource

Should the GDACE still decide that waste may be used in the PPC kiln, we strongly recommend that tyres be excluded as a fuel resource. Our reasons for this recommendation are:

5.1 Studies show an increase in dangerous emissions when tyres are burned in cement

kilns. A Friends of the Earth report, *Gone to Blazes*⁹, reports that tests of tyre burning at four California kilns showed the following emission increases when compared to coal:

Emission	% Increase	Number of tests
Dioxins	53% - 100%	4 / 4
PAHs	296% - 2230%	3 / 4
Lead	59% - 475%	3 / 4
Chromium	727%	1 / 3

PCDD/PCDF emissions to air increased have consistently been shown when tires were fed to the main burner (Conesa at al., 2008),¹⁰ and PCDD/PCDF levels in cement were found to increase during co-combustion of tires (Hsu and Ling 2000).¹¹

⁹ <http://www.foe.co.uk/pubsinfo/briefings/html/19971215145335.html>

¹⁰ Conesa, J., Galvez, A., Mateos, F., Martin-Gullon, I., Font, R., 2008. Organic and inorganic pollutants from cement kiln stack feeding alternative fuels. *Journal of Hazardous Materials* 158: 585-592.

Furthermore a significant increase of zinc and lead input to the kiln, and between a two to five times increase in dioxin emissions, were found in a German study of a Belgian kiln burning tyres¹²

Carrasco et al (2002) investigated the environmental impact (by comparing emissions of several pollutants) that resulted from using scrap tyres in combination with coal compared with only normally used coal as an 'alternative fuel' at a cement works that manufactures 1 million tones of cement dust per annum. Using a USEPA Gaussian model of atmospheric dispersion to predict average pollution concentrations at ground level they found the following results: a 37% increase in the rate of emissions of CO, 24% increase for SO₂, 48% increase for HCl and a 11% decrease in the rate of emission of NO_x. The rate of emissions for metals generally increased with a 61% increase for Fe, 33% for Al, 487% for Zn, 127% for Pb, 339% for Cr, 100% for Mn, and 74% for Cu¹³.

Sierra Legal Defence Fund, a Canadian environmental NGO, recently examined the most recent data available from Environment Canada's National Pollutant Release Inventory. This data is self-collected and reported by industry in Canada to the federal government and a cyclical basis. During the period 2000-2004 Lafarge's cement facility in Saint-Constant, Quebec reported data showed huge increases in the emissions of various chemicals including: cadmium (3,064%), chromium (609%), copper (3,441%), lead (141%), manganese (1,915%), nickel (1,028%) and zinc (1,139%), sulphur dioxide (145%) and particulate matter PM_{2.5} (122%) since they began burning scrap tyres in their kilns. Compared to the '**modelled**' data that PPC Hercules/Marsh Vikela Environmental presented, these data are based on

¹¹ Hsu, M., Ling, Y., 2000. Experimental evaluation of PCDD/DFs in cement samples from kilns using waste tyres. *Organohalogen Compounds* 46:366-368.

¹² L Lhose, Critique on the Environmental Assessment on the Lische Dry Cement Kiln, Wallony, Belgium, Oekopol Institute, Hamburg, 1996.

¹³ F. Carrasco, N. Bredin, and M. Heitz (2002). Atmospheric Pollutants and Trace Gases - Gaseous Contaminant Emissions as Affected by Burning Scrap Tires in Cement Manufacturing. *J. Environ. Qual.* 31:1484-1490.

measured emissions from the stacks of these cement plants measuring the levels of contaminants in the air that we breathe. Furthermore, these emissions will settle somewhere on the land surrounding the incineration facility¹⁴.

As the Hercules plant is situated in a densely populated area it seems both improper and irresponsible to impose the health risks associated with such emissions on the general population.

5.2 There are better alternatives for the use of waste tyres.

While it is accepted that the disposal of waste tyres poses a real challenge all around the world, the burning of waste tyres is a wasteful and unsustainable activity. There are many better ways of using waste tyres than for energy recovery and we believe that the financial resources that might be sunk into retrofitting cement kilns in order to dispose of waste tyres could be better utilised in creating crumbing plants at strategic locations. The crumb produced could be incorporated into road making projects. The use of rubber crumb in roads has been proven to result in longer lasting road surfaces, reduced road maintenance, cost effectiveness over the long term, lower road noise, and shorter breaking distances. Due to the flexibility and strength of rubberized asphalt, only half the material is required when compared to regular asphalt concrete. We are of the opinion that a concerted effort towards creating labour-intensive road-building projects would result in a considerable number of jobs, in higher quality roads, substantial cost savings and great savings in otherwise wasted resources.

5.3 There are insufficient waste tyres in South Africa to properly feed all the cement kilns that are seeking to burn waste tyres.

While there are undoubtedly sufficient waste tyres in Gauteng to feed kiln 5 at the Hercules Plant, this plant cannot be seen in isolation. There are eight other plants seeking permission to burn tyres and other wastes in their kilns. There will be a great short-fall in the number of tyres available to feed all these kilns which

¹⁴ Sierra Legal Defence Fund, Toronto Environmental Alliance, review of Lafarge Data. <http://www.minesandcommunities.org/Action/press1068.htm>

results in the risk of tyres being imported into the country for this purpose. Such imports would be deeply problematic to the country and its people.

6. The Greenhouse Gas Saving (by burning waste) Fallacy

PPC's Secondary Materials Manager consistently maintains that burning waste in cement kilns will lead to reduced overall greenhouse gas emissions. The reductions in CO₂ emissions suggested by PPC are only valid if we assume that waste would otherwise be incinerated in an alternative facility. If waste were not to be incinerated, but recycled in some manner, these reductions would not occur.

As a matter of interest, according to the cement industry itself, it is responsible for about 3% of the world's total greenhouse gas emissions and for 5% of CO₂ emissions. This equates to about 1.4 Gt (1 Gt = 1 gigatonne = 10⁹ metric tonnes = 100 000 000 tonnes). These emissions come from the burning of fossil fuels in kilns (40%), transport of raw materials (5%), fossil fuels required for electricity (5%) and the conversion of limestone (CaCO₃) to calcium oxide (CaO) (50%). As is apparent, any CO₂ savings through the burning of alternative wastes is going to have only a minor impact on the total i.e. potentially only 25% of the 40% of emissions from burning coal in Kiln 5 i.e. only a 10% saving on CO₂ emissions from Kiln 5 and an even lower CO₂ saving for PPC Hercules overall!

In light of Section 1 to 6 above and in consideration of NEMA Section 2(4) (a) (vii) and (viii) this proposed process is clearly in contradiction of these NEMA principles i.e.

(4) (a) Sustainable development requires the consideration of all relevant factors including the following:

- (vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
- (viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

7. Emissions monitoring

The ROD is restricted to kiln five and the emissions limits for this kiln are significantly different from the emissions limits for the other kilns on the site. The other kilns on the site are currently governed by very poor APPA permits that speak only about dust emissions. As dust is one of the Hercules' community's major concerns, it would appear unlikely that even these standards are being adhered to. Even if the GDACE were to apply the strictest of emissions regimes to Kiln 5, it seems unlikely that they would ever be able to ensure compliance because of the poor limits placed on the other kilns. It is our contention that should there be emission problems from Kiln 5, these will be "lost" in the emissions from the other kilns.

8. No existing controlling and monitoring mechanisms for toxic heavy metals

Currently, the cement industry has no controls in place to mitigate the emissions of toxic heavy metals such as mercury, lead and cadmium from their stacks around the country and, in fact, there have never ever been emissions controls to mitigate these toxic heavy metals from their stacks.

Furthermore, when PPC Hercules was queried at their EIA public meeting as to whether they had ever meaningfully monitored for mercury, lead, and other toxic heavy metals emissions (being currently emitted at levels that can cause health effects) at the Hercules facility they vaguely referred to a past monitoring exercise without providing any data to back this up.

If PPC Hercules have never ever installed emissions controls or monitored heavy metals at Hercules or any of their other installations knowing full well that they were emitting toxic heavy metals from their stacks, why should the public ever believe that they will burn hazardous waste in their cement kilns responsibly?

The U.S. Environmental Protection Agency announced in a recent court document¹⁵ plans to regulate mercury pollution from over 100 cement kilns across the country by September 2009.

¹⁵ http://www.earthjustice.org/library/legal_docs/20_epa_motion-to-govern-2.pdf

9. The current PPC Hercules APPA Permit and the limitations thereof

Firstly this current APPA permit has expired. The question that now exists is whether PPC Hercules has a valid and current section 39 APPA permit which will allow them to burn waste.

The ROD says they have to apply for one if they don't have one. The current APPA permit was only valid until 8th June 2008 and previously allowed PPC Hercules to burn tyres and sewage sludge as a raw material steadily and accurately once fired up on coal. The only limitation of this APPA permit is black smoke which is not very useful to protect public health.

We would also like to know whether or not PPC Hercules are engaged in an APPA permit review process for their cement kilns, and whether these permits are being actively reviewed in the context of AQA. Furthermore is there community involvement in this process, and, if so, what standards are being applied?

10. Air modelling and health assessment justification

The justification that PPC Hercules/Marsh Vikela provide to underpin their application to burn waste in cement kilns is that if allowed to undertake this activity the emissions arising from these installations will meet the EC maximum allowable emission limits set for the cement industry as outlined in the table below.

MAXIMUM ALLOWABLE EMISSION LIMITS	
POLLUTANT	LIMIT
Total dust	As per APPA permit
HCl	10 mg/Nm³
HF	1 mg/Nm³
NO_x	1350 mg/Nm³
S₀₂	50 mg/Nm³
TOC	10 mg/Nm³
Cd +Tl	0.05 mg/Nm³
Hg	0.05 mg/Nm³
Sb,As,Pb,Cr,Co,Cu,Mn,Ni + V	0.5 mg/Nm³
Dioxins toxic equivalence	0.1 ng/Nm³

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¹⁶ Marsh Environmental Services (MES): Specialist studies presentation made by James Brice 11th June 2007 in Pretoria (TUT Campus).

Relying on the performance of plants in Europe, Marsh/Vikela just state that they can comply with these performance standards without showing proof of how they propose to do this. These statements are made without qualification and are misleading to the public.

The European data that Marsh Environmental presented predict that emissions from the Hercules cement kilns (which are 35 years old) are not expected to exceed European emissions standards and will not add significantly to background levels of environmental contaminants. These predictions are, however, based on statistical models using European data, using a fuel source that will be very different from the fuel source that PPC might eventually use at Hercules, and these are modelled under normal operating conditions. The outputs of these models are entirely dependant on the input parameters. Furthermore, these assessments do not normally take into account the effect of upset conditions which occur on a daily basis at cement kilns (as indicated by the PPC De Hoek general manager), unauthorised releases, or the effect of increased traffic locally, or the contribution of non stack emissions (from delivery and movement of materials around the site to cement dust and particulate releases.

One cannot possibly predict in advance that PPC Hercules will meet any standards (including EU standards) because one cannot predict in advance what the fuel source and eventual operating conditions will be at the Hercules plant. Furthermore, the situation at Hercules is compounded by all the other industry and vehicle movements that occur in this area, which situation is even further complicated by a very specific meteorology and localised climatology as accepted and discussed in detail during the public meeting. The local conditions indicate that, as the site currently exists, many exceedances for emissions arising from Hercules exist for particulates and irritant gases. In light of this it is nonsensical that PPC Hercules has been allowed to proceed as far as they have in the EIA process.

The Padeswood Kiln in the United Kingdom is a new kiln purpose built to burn wastes. The site <http://www.emission-watch.com/index.php> contains data for the three years that the kiln has been operating and from this data it is quite apparent that even a modern, purpose built kiln operating in a first world country cannot keep to its

emission standards. This gives us little hope that the kiln at Hercules would be operating as cleanly as is made out.

11. Community Health Risk Assessment relating to the Proposed Alternative Fuels Project at PPC Hercules, Report No 031-2006 Rev 3.0 prepared by INFOTOX.

INFOTOX used an emissions inventory and simulated air concentration data provided by Marsh Vikela (Pty) Ltd. From the text “*INFOTOX (Pty) Ltd was commissioned by EBS to conduct a human health risk assessment on the basis of the simulated air concentration data. The scope of the investigation was limited to generic exposure scenarios, not taking specific characteristics of the population into account*”.¹⁷

There is no indication from this report that these emissions data were derived from actual measurements arising from the PPC Hercules plant over a representative period using internationally accepted BAT sampling or whether these data are hypothetically derived. Unless INFOTOX can be absolutely certain that these data are a true representation of the PPC Hercules facility then they cannot be certain of their findings.

However, we are led to believe that the data that Marsh Vikela (Pty) Ltd provided INFOTOX for simulated air concentrations of emissions arising from burning hazardous waste are based on the presumption (and subsequently used in air models) that the potential future emissions arising from the PPC Hercules facility will meet the European emissions standards for the cement industry. This is an unqualified assumption and at the very least is falsely premised as there is no validated operational emissions data from PPC Hercules available to test this assumption that Marsh Vikela (Pty) have made on behalf of their client.

Additionally, any data that might arise and be used from a Northern setting, where the feedstock i.e. the hazardous waste types, flow rates, technology used (specification, quality and age of kilns) will not reflect what exists at PPC Hercules and unless

¹⁷ Community Health Risk Assessment relating to the Proposed Alternative Fuels Project at PPC Hercules, Report No 031-2006 Rev 3.0 prepared by INFOTOX.

Marsh Vikela (Pty) Ltd can prove that the conditions at PPC Hercules are the same, the data is unusable and incomparable.

These models are based on hypothetical scenarios and the outputs of these models are entirely dependant on the input parameters. European emissions levels from cement kilns are entirely comprised of data from burning hazardous waste used in Europe that will be entirely different from burning hazardous waste in South Africa. One cannot predict in advance that PPC Hercules will meet any guidelines or standards (including EU standards) because one cannot predict in advance what the fuel source and eventual operating conditions will be at PPC Hercules.

12. Waste streams

During the PPC Hercules open day presentations there was also no meaningful explanation or breakdown of exactly what the waste stream will be comprised of. Proposed waste streams were broadly described as 5 waste categories with a general explanation of how the quality of the waste stream will be ensured. The U.S. EPA requires that operators of cement kilns burning hazardous waste, as part of its meeting the requirement for monitoring of emissions, comply with strict requirements for the monitoring of feed-rates¹⁸. In South Africa we have no equivalent regulations to ensure the consistency and quality of the feedstock nor the regulatory capacity to ensure the protection of public health. All of these factors i.e. quality and consistency of waste, as well as flow rate, will predict what the emissions will be. In Northern settings, where some cement kilns burn hazardous waste, the waste streams they burn are not exactly the same as the waste streams that PPC Hercules/Marsh/Vikela proposes to burn and for this reason PPC Hercules/Marsh/Vikela cannot use these European plants as examples of what the emissions will be.

13. Existing community concerns

These comments also serve to highlight all the **existing** community concerns with the current PPC operation at Hercules. PPC Hercules has over the last 10 years had a very

¹⁸ US EPA 40 CFR § 63.1209

http://a257.g.akamaitech.net/7/257/2422/12feb20041500/edocket.access.gpo.gov/cfr_2004/julqtr/pdf/40cfr63.1209.pdf

poor relationship with the residents who reside in close proximity to this plant. They have consistently complained of high levels of dust and poor ambient air quality which they believe has affected their health. Ward Councillor Mr. Piet Fourie has previously indicated that absenteeism and asthma prevalence at schools in this community are very high, reaching as many as 60-70 episodes per day.

They also believe that the management of PPC Hercules have never meaningfully tried to address their concerns and that they cannot in fact be trusted. Attached is a letter from the Chairman of the Community Committee dated the 26th June 2007 highlighting these concerns following a public meeting during the EIA process to support these assertions. At this public meeting the PPC representative assured the community members present that PPC would not burn hazardous waste in their cement kilns at Hercules if the community did not want this and he consistently urged the community members to trust him in this regard.

14. Flawed public participation process

The Scoping Report does not properly reflect the depth and extent of public opposition to the burning of waste in the Hercules cement kiln. Minutes were not taken of the public meetings at Hercules, and the sanitised lists of concerns that have been produced by the EAP do not fairly or truly represent the manner or vehemence of the opposition which took place at the meetings. The Hercules community have been in opposition to the PPC Hercules plant as it stands, and were quite clear in expressing their disapprobation of the kilns being allowed to burn wastes that might significantly impact on their health.

We should like to stress that in this regard we consider that points 2(f) *The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured* and 2(g) *Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge* of NEMA have been violated.

15. Conclusion

We wish to categorically state that we in no way endorse the incineration of waste or hazardous material in cement kilns and that any discussion of mitigating techniques brought up in this appeal are purely for technical clarity and do not suggest that groundWork would find incineration of any substance acceptable under any circumstances. Furthermore, we should like to stress that this ROD cannot be considered in isolation of other processes relating to this site that are currently ongoing.

In light of serious outstanding environmental and community public health concerns, we urge the GDACE to urgently reconsider allowing PPC Hercules to proceed with their proposed secondary fuels program until all these issues have been sufficiently resolved.

From the scenarios discussed above we can only draw the conclusion that the belief that burning hazardous waste in cement kilns is the answer to our hazardous waste problem is a false belief. Furthermore, the cement industry as it currently exists is not without very real problems regarding air pollution and regulation especially relating to heavy metals, metalloids and particulates. The industry is historically very poorly regulated and poorly monitored and would generally better place itself by cleaning up its current operations (especially in the context of mercury and heavy metals emissions which constitute a very real and current public health risk) before it even considers the very complicated business of hazardous waste management, handling and disposal.

Sincerely

A handwritten signature in black ink, appearing to read "Bobby Peek".

Bobby Peek
Director