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ORAL HEARING INTO PROPOSED DECISION 167-1

CARRANSTOWN WASTE MANAGEMENT FACILITY

PROOF OF EVIDENCE

Ken Russell
No Incineration Alliance

Introduction:

Madam Chairperson, Ladies and Gentlemen, No Incineration Colleagues. My name is Ken Russell. I hold a BSc (hons) in information technology from DCU, Membership of the Irish Computer Society and Affiliate Membership of the Institute of Engineers of Ireland. I represent a group of Engineering Professionals based in the Republic of Ireland who are concerned about the proposed building of Waste Management Incinerators as being basically flawed in dealing with waste management.
Ken Russell BSc InfoTech NCEA Dip Electronics MIEI (afl) MICS
Derek Russell BScEng;DipEng MIEI C.Dip.A.F

Dr. Conchur O'Bradaigh, ex. Dept. of Mechanical Engineering, National University of Ireland, Galway

We believe our concerns are well founded being based on the latest Engineering knowledge. We therefore strongly object to both the concept of building incinerators as proposed by the Governments' Waste Management Plan and specifically with respect to Meath County Council's Plan, The Governments Spatial Strategy, An Bord Pleanála and you, The Environmental Protection Agency, the proposition to licence the proposed incinerator at Carranstown, Duleek, Co. Meath on the following grounds:

1) The inefficency of the plant with respect to Electricity Generation (Thermal treatment energy recovery)

There are no substantive figures produced by the Indaver Engineering Planners to justify the Input Energy costs relative to the subsequently produced output Energy (electricity). There are simply no grounds to grant the EPA or any other licence on the basis of energy recovery from the proposd Plant's operations, and this can be Scientifically proven as follows:

The total costs of the electricity produced include:

1. The buried costs to the North East Regions waste suppliers (Businesses, Households, Local Authorities etc) within the costs of using the Indaver service. Effectively, Indaver are being supplied with free 'raw material' to incinerate, but at a cost to others.
2. Logistics costs of getting raw material from source to Treatment Plant.
3. Cost of fossil fuel to maintain combustion in firing chambers.
4. The latest purpose built power stations which operate on Natural Gas (preferred under International directives eg Kyoto Protocol) and within strict operational guidelines have an efficiency in excess of 60% (being the ratio of fuel input in Kilojoules to Energy output in Kilojoules). The calorific value of the combustible material feeding the incinerator cannot be scientifically measured in advance due to the variability of the raw material. This variability is due a number of factors including constituent makeup, water retentive characteristics, quantity, etc etc.

However, technical knowledge and experience would put this materials efficiency ratio not greater than 20-25% maximum.

5. Transmission Loss Factors TLF – Approximates at 10% eg if the plant outputs 10MegaWatts , it is paid for 9 MegaWatts. The cost of these losses are borne by the users of the facility eg Local Authority etc
6. If the National Grid get overcapacity onto the system, then the plant will be asked to reduce output to the National Grid to a lower level eg 90% of it's Mwatt rating. This means the processor must run at lower temperatures which increases the toxic output from the unit.

In summary, the total costs to a region of producing each KiloWatt of power from the incineration process is vastly higher than from a modern power station. Hence, the economics of this form of power generation are highly questionable, and therefore fully dismissed in the broader sense of the need for the incinerator.

Again, from a pure engineering perspective, Indaver have not justified such enormous resource losses specifically for the Carranstown operation, and have not and cannot produce sound engineering rationale.

2) **That the ESB Dublin / North East regional grid has not the capacity to take the electricity (based on the recent rejection of other "cleaner" ie Gas fired operators proposals).**

http://www.eirgrid.com/EirgridPortal/default.aspx?pageindex=Publications
Implications of additional generation in the Dublin area 01 Aug 2000

P24. "The electricity transmission system has been designed to transport power from generation stations dispersed around the country to load centres. It has not been designed to, and is not able to, transport the power to meet all national demand from generation located in a single area. The requirement to run generation outside Dublin will limit the amount of generation possible in Dublin. "

The Government, through the CER (Commission for Electricity Regulation) recognized this Engineering restriction in its recent Gas capacity allocation process (November 20 00) b y granting c apacity t o o nly two P ower S tations in t he Gr eater Dublin Area. However, E-Power (a Denis O'Brien consortium) and Ireland Power (a US led venture) were not granted access to the National Grid transmission system in the greater Dublin Area (which includes Counties Meath and Louth).

P24. "Adding new generation in Dublin will have the potential for considerable cost increases which must be borne by customers. These costs arise from constraints on generation and increases in average losses. "

Should Indaver now be granted access to the National Grid transmission system in the Greater Dublin Area, this would surely compromise EU directives (specifically the EU Electricity Directive), competition laws, and have implications for the Governments stated directives for power generation in Ireland.

The original planning application has no reference to the required sub-station engineering required for such connection to the national grid, and the incumbent, the Electricity Supply Board has no application for such facilities. The application therefore must be rejected as illegal under both domestic and current European Planning law.

3) **There is a lack of clarity in the National Development Strategy Spatial plan regarding where developers may propose sites with respect to where is in the States interest (ref. the recent Forfas report section 1.3.1 page v)**

In addition, the proposed site at Carranstown , Duleek is geographically inefficient in serving the proposed North East region of Louth, Meath, Cavan and Monaghan, it being proposed in the extreme South East corner of the region (refer to Map 1 attached). In Scientific terms this means that logistically, if the region was represented on a grid, the input material has to be hauled from less than optimal points
(on request, can be proven by simple Linear Programming or basic Management Science techniques).

Add to this the fact that the infrastructure in general is less developed in the North and Western r egions, t hen t he c alculations de em t he m ost e fficient p oint t o s ite AN Y regional centre in respect of any interest to be in the central area of the region.

4) **There are several Process Engineering issues not regarded in any documentation provided by Indavers Proposal.**

4.1 There is inadequate legislation regarding the makeup of output airborne elements. By extension there can be no adequate monitoring for specific elements or compounds e.g. Sulpher Dioxide, Cadmium, heavy metals and Furins etc. Also, the latest transponder technology does not assess the constituent elements of the output exhaust system. Without these legislative and engineering controls and with the proposed plant is running 24 hours 365 days with no Emergency Emission C ontrol m echanism, t he p rocess e ngineering c ycle b eing p roposed is incomplete. Indeed there seems to be overbearing emphasis on the EPA to provide the information for the feedback mechanism.

4.2 By the admission of John Ahern and Desmond Greene, Directors of Indaver Ireland, to 70 parents of pupils at the Mount Hanover National School at a meeting in Carranstown on 8 December 2000, the input process at the start of the cycle is insufficient in its capacity to ensure that all input material is non-hazardous. The waste **is not checked** for its content of heavy metal, acidic or other materials. Specific examples:

- Hospital waste / Radioactive waste – there is no radioactive sensor required at Carranstown, wheras the EPA have stipulated it for the proposed Ringaskiddy Plant

- BSE / bone meal waste
- Asbestos
- Electronics / Batteries (high in heavy metals with greater dioxin/furans)

All (and others) may be inconspicuously inserted with proposeds' non hazardous waste. Subsequent verbal answers to this concern involve the emphasis on the Origin of Lading certificate accompanying the waste. However, as there is no definition of the control process, concerns are summarised as follows:

4.2.1 Undefined validation and assurance processes to ensure non-hazardous waste input

4.2.2 Undefined process to ensure the Certificate of Origin establishes the waste input is actually from the region of the North East ie Cavan, Monaghan, Louth, Meath.

Non assessment of these process implications for the local area leave the plants complete operation open to abuse. Later analysis will lead to possible litigation as the plant CANNOT guarantee to operate within the limitations of any possible non-hazardous licence.

5. That the current Irish National Waste Management infrastructure is immature and too early in development to include incineration.

An Oireachtas Report* in Feburary 2000 established that the OPW found that of 1,800 public buildings (including schools) built about 25 years ago and before, one third have been discovered to contain asbestos.

When Croke Park was redeveloped, the Hogan stand was found to be riddled with asbestos. It was taken away but was located in Ireland pending removal to a European country for permanent disposal. What is happening to the asbestos which has been found to exist in our public / school buildings?

With no insight to procedures for inspecting material received at incoming by Indaver's proposed Incineration facility here at Drogheda (point 4 above), the incinerator route for waste disposal should not be adopted until we have a definitive system to ensure all such material is being handled correctly and as per European guidelines.

* http://www.irlgov.ie/debates-00/s24feb/sect7.htm

6. EPA Licence process:

Former EU Environment Minister Margot Wahlstrom and current EU Minister for the Environment Savros Dimas are interested to hear that former project manager for Indaver Ireland Laura Burke is a new director of the Environmental Protection Agency (EPA). There is an irresolvable conflict of interest when, as a previous promoter of incineration, Ms. Burke meets to discuss licensing for Indaver plants, whilst also effectively denying a possibly more suitable expert a place on the EPA board.

The next stages in the EPA Licence process are therefore open to question as to the ethics of the planning process.

7. The basis of the original and subsequent planning submissions by various bodies in developing this proposed incinerator is inadmissible under current planning guidelines.

The original and subsequent plans submitted to Meath County Council, An Bord Pleanála and the Environmental Protection Agency is inadmissible and so illegal for the following reasons:

7.1 In France, the whole Loire Valley is a World Heritage Site. UNESCO have designated parts of the Boyne Valley a World Heritage Site and this aspect was not considered in the original planning application.

7.2 The original planned incinerator chimney height is engineered too low for proper dispersion of dioxin output for the surrounding area. It is based on a model adopted for flat landscapes. The original planning application has no study of the effects on the local hinterland considered eg no submission for contour impact when prevailing winds subject the higher contours to emission dispersion. The fact that the chimney height has now been increased during the term of the Planning process is illegal.

7.3 The original planning application does not consider the local site geology (as per the recent North Eastern Health Board geology reports). The local karst geology is pervious to bottom and fly ash seepage through normal seepage, and can lead to poisoning of the main local water basin with incinerator output ash.

7.4 The original planning application does not consider the local site hydrology (as per the recent North Eastern Health Board hydrology reports). The local main water basin is directly under the proposed site, and can lead to poisoning of the main local water basin.

7.5 The original Meath County Council planning application and subsequent An Bord Pleanála decision does not consider the local water reservoir at Kiltrough, being in direct line with the prevailing South West wind in Ireland. This water tower is the second largest in Europe and serves the largest town in Ireland, namely Drogheda, and the local East Meath hinterland, one of the quickest growing demographic areas in Ireland. As the original water tower was not planned with hermetic sealing against incinerator emissions, this can lead to poisoning of the main local water supply.

7.6 The original planning application is illegal as the site was/is at the time of the application zoned as agricultural land.

7.7 The original planning process did not take into account health aspects.

7.8 There has been insubstantial consideration of **Carbon emission costs** in either Meath County Councils directive, An Bord Pleanála's directive and Indaver's submissions. This is contrary to both Irish and European law.

Since all these aspects were not accounted for in the original planning submission, we submit that the basis of this Waste Management Review incorporating incineration is flawed, illegal and inadmissible in the public domain

8. The EPA licence is inadmissible under current Water planning guidelines.

8.1 Donal Daly of the Geological Survey of Ireland outlines the risks in his 2004 paper "Groundwater at Risk in Ireland", and this applies to the East Meath / South Louth natural water resource system, the fulcrum of which is the River Boyne adjacent the proposed site. Much of our Irish rainfall flows along the surface of the earth into streams and rivers, ultimately to feed our inland lakes and reservoirs. This is "surface water" and, piped into our homes, it supplies some 70 per cent of our national needs.
Some of the rainfall, however, infiltrates the soil. It percolates downwards into the underlying rocks, and slowly permeates the tiny pores and crevasses, forming in effect a massive, almost countrywide, reservoir of what we call "groundwater".

Looking at groundwater in the context of the environmental challenges facing Ireland at present, Donal Daly will tell of the great progress made in recent years in mapping the "subsurface" of the country – the bedrock, subsoil, soil and groundwater. While all of this information is available to decision makers, as are the means of communicating and making effective use of all the data, the previous bodies involved in the decision to grant the planning permission to Indaver for the proposed Carranstown facility ie Meath County Council and An Bord Pleanála, DID NOT refer to this information regarding the hydrology of the area. The North Eastern Health Board in its submission in the year 2004 did reference the fact that the Boyne Valley area soil, subsoil and bedrock in particular is very porous in its constituent makeup, being limestone karst.

In summary, it is our contention that the area of East Meath / South Louth is particularly unsuited to any proposed incinerator operation due to the openness of the water reserve to contamination through both airborne dioxin particulate matter coming to rest on the area surface waters, and by this dioxin particulate matter also being washed from the ground down through the porous karst matter and into the groundwater. This leaves the local population in the immediate vicinity of the incinerator where the concentrations of particulate matter is greatest open to poisoning through not only the a irborne particulate but also from ingestion of the local water and through ingestion of locally produced foods, both vegetable and animal. THIS MEANS THAT AS THE BASIC PLANNING ENTITIES OF MEATH COUNTY COUNCIL AND AN BORD PLEANÁLA DID NOT TAKE SUCH HYDROGEOLOGICAL INFORMATION INTO ACCOUNT, SO THE EPA LICENCE IS ITSELF BASED ON INVALID PLANNING DIRECTIVES.

8.2 Please refer to the Department of Environment document "Protecting our freshwaters – guidelines for local authorities" ISBN 0-7076-6116-1 Appendix 1 Secton 66(3) of the Waste Management Act, 1996 21(A) Indaver Ltd., An Bord Pleanála are in breach of this clause if the operation goes ahead as there has been no "Nutrient Management Plan" submitted.

9. The EPA licence is inadmissible under local ECONOMIC headings.

The original planning process did not take into account future bio-industry economic aspects. The ability of the area to market itself as a candidate for such industry will be negated in the event of the proposed incinerator becoming operational. The economic consequences of such an action have not been accounted for. Thus the EPA draft licence decision has been based on invalid and non-comprehensive directives.

Should the proposed development go ahead, and should there be, as proven by the past record of Indaver it's Belgian operations, any unlicensed and/or emissions above the levels allowed by law, there is no impact assessment for the local economy if put into shutdown as per the Belgian Government decisions when Indaver breached law in Belgian, and the areas' food processing and farming communities were shut down with massive local economic impacts. In real terms, how can the EPA really allow current local producers such as Glanbia, Boyne Valley Foods, Coca Cola etc as well as the local Dairy and Beef stock farmers be put at economic risk without the slightest impact assessment or back out plans in forming the basis for the EPA licence.

10. CONSITUTIONAL RIGHTS

10.1 The proposed operation, under Department of Environment, Meath County Council and An Bord Pleanála directives, are in breach of the Directive Principles of Social Policy Article 45 section 4, rights under the Constitution of Ireland (ISBN 0-7557-1485-7) as follows:

" The State pledges itself to safeguard with especial care the economic interests of the weaker sections of the community....."

and Article 45 section 4 paragraph 2

" The State shall endeavour to ensure the strength and health of workers, men and women, and the tender age of children shall not be abused....."

10.2 The Kilner Glassworks case in English law of 1871 at Thornhill Leeds found that the Kilner Glass factory smoke was unlawful with the presiding Judge finding that "No man has the right to interfere with another mans air".

10.3 The whole planning process from Meath County Council, through An Bord Pleanála has been referenced to Irish law and has not fully considered transposition into European law. This basis invalidates the EPA decision to grant licence.

A basic Law of Physics states " matter is not created or destroyed, it changes from one form to another." In our view, this simply means the Indaver proposal will put Irelands waste into the air, and so is a scientifically illogical process.

In a new competitive era within the EU, Ireland and specifically the Drogheda region needs to attract the newest Biotechnology industries to remain economically

sustainable. This may not be possible with the proposed plant as World Class Manufacturing facilities like Coca Cola have extremely stringent Quality guidelines and Benchmarks which will be breached with the air quality reduction that follows the proposed plant.

Bord Pleanála Senior Planner, James Carroll, found in favour of the people of Drogheda during the oral hearing in October 2002. The subsequent overruling of this finding by the Board of Bord Pleanála in favour of Indaver Limited, a body voted in by the incumbent Government of the day, the same Government that that is looking to implement the proposed incinerator.

SUMMARY - While I appreciate the democratic right to stand before you today, not only as a scientist, nor as a resident of the Irish cultural epicentre that is the Boyne Valley, not only as a proud citizen of both Ireland and Europe, but rather today as a husband and father to Gráinne, Caoimhe and Aoibhín. I stand as a family representative if you will for the most sacred right enshrined in both our constitutions, that of the right to life.

I resent and totally object as inadequate, and totally incomplete the means by which this process has evolved thus far. It has been symptomatic of a system of Government Agencies, Government Departments and vested interests with absolutely no experience in a new arena , yet insist on rushing through legislation and dismissive of finding out the real facts. Dr. Mary Kelly and the EPA board have received a registered letter of invitation from the NIA to these proceedings and to date, we have no response. Without the participation of the EPA board, in other words those ultimately responsible for the licence, how can this process be said to be complete?

That our society allows political QUANGOS such as An Bord Pleanála overule its own inspector James Carroll; that our society will not allow health issues be discussed at the Bord Pleanála hearing and now at this EPA hearing is incomplete also; this while a World Health Organisation report by S.Batterman in 2004 tabulates the cancer risk from dioxin intake (p43) is a scandal. This WHO report is not anecdotal evidence, it is complete and with context to health risk and incineration: conversely, this process is incomplete as these hearings are viewing a partial aspect of the complete dangers and real context of the proposed incinerator.

Indeed throughout this process, the facts have been clouded so that the interested parties can dictate that we place a pre-industrial revolution technology such as incineration in not only the very centre of our present, downwind of Ireland's largest town Drogheda, but also in the centre of our past, paying no respect to the status of a World Heritage Site.

This process therefore is a reminder of limited mindsets, of a less knowledgeable age, an age before we knew of the mistakes of incineration policy in 1950S USA, 1960'S UK and Europe, and now, incredibly, 21ST Century Ireland. Recently I requested and received the tender documentation from the EPA regarding the outsource of measurement and monitoring of air emissions by licensed facilities in Ireland. There is no contingency in the tender for the monitoring of the types of facility proposed in Cork and Drogheda. Each EPA measurement is pre-announced so that the likes of Indaver may prepare flues and emissions before inspection in order to retain the licence under artificial conditions. All this contravenes the hard lessons learned by the people of Stabroek, Antwerp, Belgium, on August 14 2002, where Indaver's static kiln incinerated liquid hydrocarbons at 183.52 ng teq/nm3. That is 1835 times the allowable 0,1NG teq/nm3 standard of directive 2000/76/EEC. The inspector Mr Bernaert found the most sensitive region up to 3KM from the site.

This is the same Indaver before us here today Ladies and Gentlemen; their circus has the clowns, snakes, the happy faces, the sad faces, the two trick ponies, the cheap distractions, the expensive distractions....but I only see here the hard graft of my colleagues over the last 5 years, and their sheer bloody minded honesty.

To illustrate the incomplete nature of this process, let's analyse briefly just one aspect, the site; according to Batterman (WHO 2004) a report giving Incineration Guidence AFTER Indaver had applied for licence and so not considered, "the location of an incinerator can significantly affect dispersion of the plume from the chimney, which in turn affects ambient concentrations, deposition and exposures to workers and the community. ….best practices siting …can be achieved by

- Minimising ambient air concentrations and deposition of pollutants to soils, Woods and other surfaces …eg valleys, areas near ridges, wooded areas should be avoided as these tend to channel winds and/or plumes tend to impinge on elevated surfaces or downwash under some conditions.
- Minimising the number of people potentially exposed eg. Areas near the incinerator should not be populated …..eg markets or other areas where people congregate…..areas near the incinerators should not be used for agriculture purposes …grasses or grains for animals"

This means that the Boyne Valley itself is a channel for these plumes, 1.5 km upriver to that major tourist attraction that is Bru na Boinne , and downriver to Irelands largest market town, Drogheda. This also has implications for the 300 or so workers in Irish Cement who are less than 0.5 km directly downwind of the site; low cloud and fog will therefore channel the plumes into the very quarry pits presently worked by Irish Cement. The surfaces are then contaminated, and as these quarry pits are below the natural water level, particulate matter is washed through to the natural aquifer under the whole site per my submission, and contrary to John Ahern's assessment on Monday 7TH past. Indeed, if the EIS was comprehensive, why was there no study of impact on two w ater reservoirs both sited within 2km of the proposed P lant. The water tower at Kiltrough supplies water to the whole North East region and was the second largest such facility when built in the late 90's. The Meath water plant at Donore is an open source and very susceptible to the proposed Plant. Batterman (WHO 2004) reasons that ALL elements of conveyance of the plume into the food chain must be considered, not just the obvious water courses, yet the EIS has no study of several of those channels to the food chain. (Please refer to Batterman WHO 2004 Pathways of exposure considered, Figure 3 attached).

So lets examine how this site was chosen? Was it by logistics experts using management science tools to analyse the centre of waste gravity for the Louth Meath Cavan Monaghan region 4 years ago? No.

Was it chosen by the Martin Cullen Department of Environment sub-committee that landed us with the e-voting technology? No.

Was it chosen by an expert, scientific or otherwise? No.

It was chosen by John Ahern, MD of Indaver, using his PC.

Allow me digress Madam Chairperson that the site was chosen for a number of reasons….firstly, that it was not next door to John Ahern's house as he admitted in

Mount Hanover school in 2000, or the constituents of the current Minister of Environment Dick Roche or Michael Mc Domhnaill.

The site was chosen because in the event of an "accident", even a best practice accident eg carried out by a disgruntled employee, perhaps a fire or explosion stemming from input materials or even just a "minor" accident like the recent Indaver Belgium "mishaps"; in all such events the rogue emissions are beautifully mixed with those of Irish Cement, and responsibility and ultimately culpability are diluted in the unrighteous stew emanating from Platin.

Other aspects of the site planning for example take no account of the socio-economics of the area; unlike New Zealand, Ireland, having bypassed the industrial age, has the opportunity to differentiate our food produce and capitalise on our low backgroud dioxin levels. What study has analysed the areas capacity to attract and retain world class food manufacturing such as Coca-Cola, Glanbia, Boyne Valley Foods, and our dairy sector. Could the local economy survive if after an "accident" our food processing elements laid off the local staff? Has an economic impact analysis and contingency plan been completed to counteract the closure of the local milking herd like in Belgium recently?

Again, I resent and object as totally inadequate, and totally incomplete the process by which this prehistoric technology has been allowed thus far without proper scientific analysis and debate in the wider areas not here or indeed anywhere, analysed. AND we need a medical appraisal, perhaps with the EPA and/or Indaver's Medical Expert…who are ? Please refer to Batterman WHO 2004 Framework for Cumulative Risk Assessment (Figure 2 attached). This analysis leads to many questions, such as :
1. In Indavers assessment of Daily Tolerable Intake, were Pregnant Mothers assessed?

In the registered letter to the EPA, I have asked among other things for all procedures and processes for the "worst case scenario". The Indaver EIS as submitted is incomplete without analysis of the effected zones, and numerical analysis of people and dwellings effected under all circumstance eg. What is the emergency action plan if a truck of bottom ash crashes in the square in Duleek on the way to landfill?

Other areas of Indaver process engineering do not explain for example why the Drogheda system for supposed non-hazardous waste is not as expensive as the Cork Hazardous system? Is it because the proposed Cork incinerator been planned with radioactivity sensors while the proposed Drogheda plant has not? It seems it is proposed that Drogheda will get the equivalent of a LADA exhaust instead of a Ferrari F1 Catalytic Converter .

With Ireland's infamous history of cowboy waste managers, it is guaranteed that radioactive waste would head to the proposed Drogheda plant. Other hazardous material such as ACM or Asbestos Containing Material would also be "processed" as there is absolute indolence on behalf of our Governmental initiative to handle this material. This was illustrated when the roof of Croke Park's Hogan Stand miraculously disappeared. And these are only two materials, BSE prions, Electronic PCB's and many other materials demonstrate how this area too is totally incomplete…..Please refer to materials in Batterman WHO 2004 (Figure 1 attached).With the cheap Drogheda monitoring systems, how do Indaver propose to

track and trigger alarms for the various TEQ/NM3 levels of the different materials being plumed out the stack? If there is overheating in the Kiln, how do Indaver propose they release the pressure to bring the heating under control? If the valve releases the pressure, is the subsequent TEQ/NM3 monitoring snapshot at a resolution within a correspondingly adequate timeframe to catch the density of particulate matter released and therefore calculate the new TEQ/NM3 levels? How are these new TEQ/NM3 levels reported outside Indaver?

Essentially, what have Indaver forecast as the statistical deviation from mean for the total weighted toxicological response of these congeners expressed in units of **Toxic Equivalents**, or **(ng/Nm3)** when there is an attempt to control under or over heating of the kiln?

Measurement of both scenarios are the only factual way to keep Indaver honest , but yet we have no idea what the sensitivity of the kiln under various operating conditions. Many many many questions are open when you refer such propensity for uncontrolled emissions to the WHO Batterman TEQ tables and the subsequent cancer Index (refer to figure 4.) THIS TABLE SHOWS THE WORLD HEALTH ORGANISATION LINK INCINERATOR TEQ EMISSION LEVELS WITH CANCER.

Since this process began the WHO have also changed acceptable TEQ levels, as follows: 1.0**ng TEQ/Nm3** for waste incinerators commissioned before 1st Jan 2001. 0.1**ng TEQ/Nm3** for waste incinerators commissioned on or after 1st Jan 2001. Indaver have persisted with an Incinerator design pre 1st Jan 2001 in breach of this regulation. I hereby submit that this Indaver licence be rejected as the proposed systems lag by some years the latest WHO regulations.

Indeed the whole "Integrated Waste Management Strategy" lags behind also; why else would we allow Indaver bypass separation and reduction phases of the waste pyramid ; we have had green bins in place only one year, no recycling park in Drogheda, and yet Indaver want us to believe they are part of some supposed cohesive and integrated waste strategy, coming before the necessary first steps.

I do not apologise if some of my findings seem personal, for I cannot think of anything more distasteful and personal than the prospect of Indaver's furans and dioxins stuck in a loved one's cardio-respiratory system. Therefore, we place our trust in you Madam Chairperson to find that the placement of this site is only about the maximisation of cash, and not about integrated waste management policy. This draft licence must be revoked until all aspects are carefully considered in tune with a waste strategy that encompasses all the latest available environmental protection options and under the aegis of experts from waste management systems where mature scientific analysis has been possible. One way or the other, my colleagues, our current Lord Mayor and I are not lying down, because Madam Chairperson, you and we are the voices of our children.

-Thank you-

References:

1. Batterman WHO Report 2004 -

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http://www.who.int/water_sanitation_health/medicalwaste/en/smincinerators.pdf

Figure 1. Page 22 Table 5 Regulatory limits for pollutant emissions from incinerators
Figure 2. Page 26 Figure 6 Specific conceptual model for the US National Scale Air Toxics Assessment Framework for Cumulative Risk Assessment
Figure 3. Page 39 Table 9 Pathways of exposure considered
Figure 4. Page 41/42 Table 10 Dioxin TEQ intakes and risks for an individual

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2. WHO ng TEQ/Nm3 Levels

1.0**ng TEQ/Nm3** for waste incinerators commissioned before 1st Jan 2001.
0.1**ng TEQ/Nm3** for waste incinerators commissioned on or after 1st Jan 2001..

Figure 1

Table 5 Regulatory limits for pollutant emissions from incinerators.

Pollutant	*Units*	*EPA LIMITS-New Units*			*EPA LIMITS - Existing Units*				*EU Limits*			*AP42*
		Small	*Medium*	*Large*	*Rural*	*Small*	*Medium*	*Large*	*Daily*	*Hourly*	*4 hr*	*Emissions*
Particulate Matter	mg/dscm	69	34	34	197	115	69	34	5	10		223.0
	gr/dscf				0.086	0.05	0.03	0.015				
Carbon Monoxide	ppmv	40	40	40	40	40	40	40	50	100		127.0
Dioxins/Furans	ng/dscm total	125	25	25	800	125	125	125				
	ng/dscm total TEQ	2.3	0.6	0.6	15	2.3	2.3	2.3			0.1	4.1
PCB TEQ	ng/dscm total TEQ											2329.8
Organics	mg/dscm								5 total Cl	10		15.0
Hydrogen Chloride	ppmv	15	15	15	3100	100	100	100	5	10		1106.2
	or % reduction	99%	99%	99%		93%	93%	93%				
Sulfur Dioxide	ppmv	55	55	55	55	55	55	55	25	50		54.6
Nitrogen Oxides	ppmv	250	250	250	250	250	250	250	100	200		93.0
Lead	mg/dscm	1.2	0.07	0.07	10	1.2	1.2	1.2				3.6
	or % reduction	70%	98%	98%		70%	70%	70%				
Chromium	mg/dscm											
Cadmium	mg/dscm	0.16	0.04	0.04	4	0.16	0.16	0.16			0.05	0.3
	or % reduction	65%	90%	90%		65%	65%	65%				
Mercury	mg/dscm	0.55	0.55	0.55	7.5	0.55	0.55	0.55			0.05	5.4
	or % reduction	85%	85%	85%		85%	85%	85%				

Notes for table:

1. US EPA capacities: small = less than or equal to 91 kg/hr (200 lbs/hr); medium = 91 – 227 kg/hr (200 - 500 lbs/hr; large = greater than 227 kg/hr (500 lbs/hr). Also, regulations for monitoring, operator training, opacity and siting not shown.
2. mg = milligrams; dscm = dry standard cubic meter; ppmv = parts per million by volume; ng = nanograms TEQ = toxic equivalent, concentrations at 7% O2.
3. EU standards not shown for thallium, copper, manganese, nickel, arsenic, antimony, cobalt, vanadium, tin, O_2.
4. AP42 emissions (EPA 1996) for incinerators without air pollution control equipment shown for comparison.

Figure 2

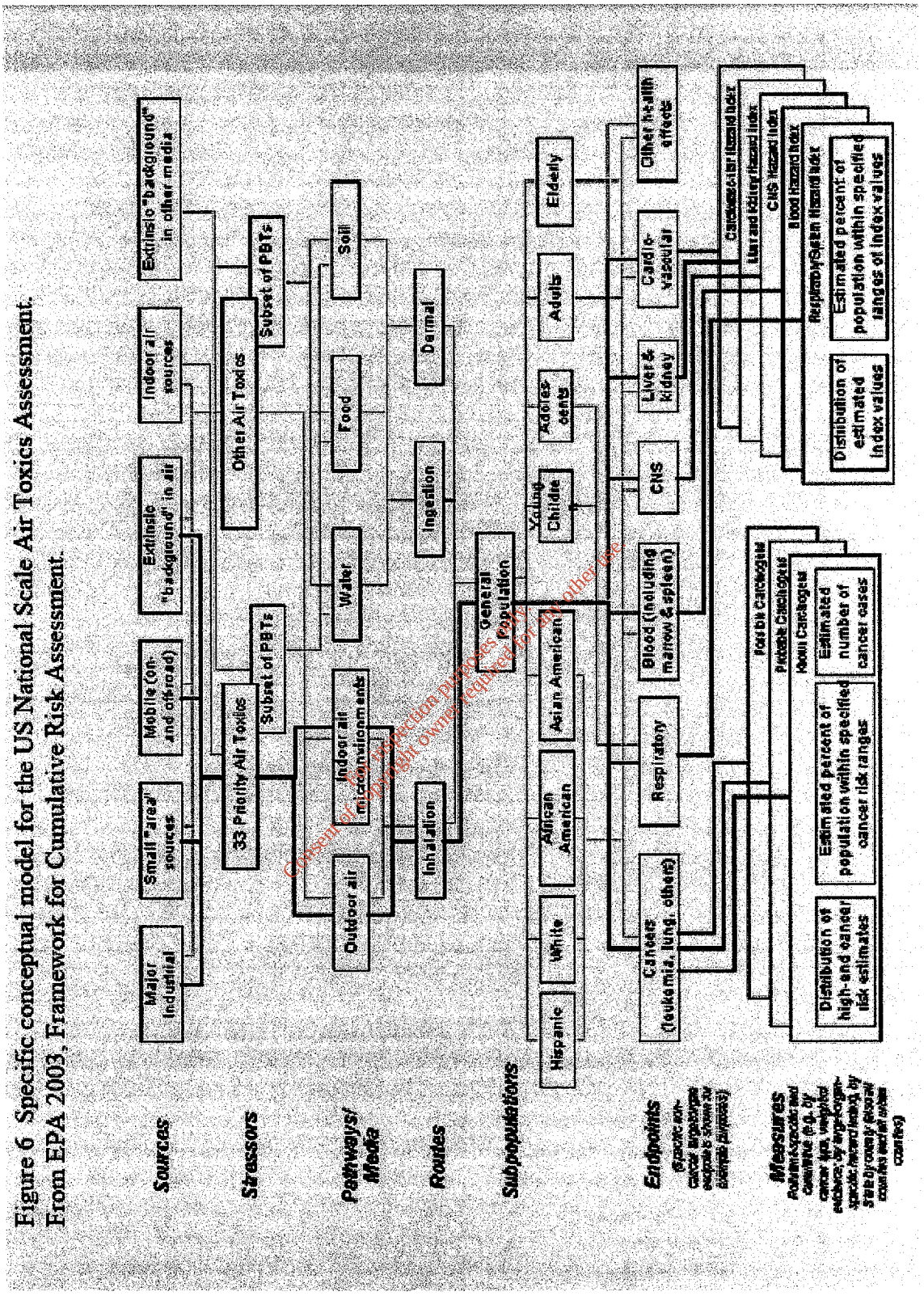

Figure 3

Table 9 Pathways of exposure considered in EPA guidance

1.	**Air**	→	**Human**						
	inhalation								
2.	**Air**	→	**Soil**	→	**Human**				
	deposition		*ingestion*						
3.	**Air**	→	**Above-ground Vegetable**	→	**Human**				
	deposition + uptake of vapor phase				*ingestion*				
4.	**Air**	→	**Soil**	→	**Root Vegetable**	→	**Human**		
	deposition		*uptake of pore water*				*ingestion*		
5.	**Air**	→	**Soil + Above-ground Vegetable**			→	**Beef**	→	**Subsistence Farmer**
	(see above)						*ingestion*		*ingestion*
6.	**Air**	→	**Soil + Above-ground Vegetable**			→	**Milk**	→	**Subsistence Farmer**
	(see above)						*ingestion*		*ingestion*
7.	**Air**	→	**Waterbody**			→	**Fish**	→	**Subsistence Fisher**
	deposition + runoff + erosion						*bioaccumulation*		*ingestion*
8.	**Air**	→	**Soil**	→	**Human**				
	deposition		*dermal contact*						
9.	**Air**	→	**Surface Water**	→	**Human**				
	deposition				*ingestion*				
10.	**Air**	→	**Soil**	→	**Surface Water**	→	**Human**		
	deposition		*overland flow*				*ingestion*		
11.	**Air**	→	**Surface Water**	→	**Human**				
	deposition				*dermal contact*				
12.	**Air**	→	**Soil**	→	**Surface Water**	→	**Human**		
	deposition		*overland flow*				*dermal contact*		
13.	**Air**	→	**Surface Water**	→	**Cattle (Beef + Milk)**	→	**Farmer**		
	deposition				*ingestion*				*ingestion*
14.	**Air**	→	**Soil**	→	**Surface Water**	→	**Cattle (Beef + Milk)**	→	**Farmer**
	deposition		*overland flow*				*ingestion*		
	ingestion								
15.	**Air**	→	**Biological Media**	→	**Human**				
	deposition				*ingestion*				
16.	**Air**	→	**Mother's Breast Milk**	→	**Infant**				
	all inhalation, non-inhalation exposures				*ingestion*				

Figure 4

Table 10 Dioxin (TEQ) intakes and risks for an individual incinerator under three usage scenarios and three emission conditions.

Scen-ario	Burn Frequency (times/yr)	Burn Period (hr/burn)	Stack Waste (kg/year)	Stack TEQ Conc. (ng/m3)	Stack Air flow (m3/kg)	TEQ Emissions (g/yr)	Total Dose Child (ng/yr)	Total Dose Adult (ng/yr)	Ratio to WHO ADI Child (%)	Ratio to WHO ADI Adult (%)	EPA Cancer Risk Child (prob)	EPA Cancer Risk Adult (prob)
Low usage - equivalent to 1 hour of incineration per month												
	12	1	144	10	10	0.00001	0.0003	0.0000	0.002	0.000	4.7E-8	5.9E-10
	12	1	144	500	10	0.00072	0.0130	0.0008	0.125	0.002	2.4E-6	2.9E-8
	12	1	144	4000	10	0.00576	0.1038	0.0060	0.998	0.012	1.9E-5	2.4E-7
Medium usage - equivalent to 2 hours of incineration per week												
	50	2	1200	10	10	0.00012	0.0022	0.0001	0.021	0.000	4.0E-7	4.9E-9
	50	2	1200	500	10	0.00600	0.1082	0.0063	1.040	0.013	2.0E-5	2.4E-7
	50	2	1200	4000	10	0.04800	0.8653	0.0501	8.320	0.103	1.6E-4	2.0E-6
High usage - equivalent to 2 hours of incineration per day												
	350	2	8400	10	10	0.00084	0.0151	0.0009	0.146	0.002	2.8E-6	3.4E-8
	350	2	8400	500	10	0.04200	0.7571	0.0438	7.280	0.090	1.4E-4	1.7E-6
	350	2	8400	4000	10	0.33600	6.0569	0.3505	58.239	0.723	1.1E-3	1.4E-5

Results in Table 10 are interpreted for the three emission conditions:

- Best practice (10 ng TEQ/m^3 emission rate): Incinerator emissions at any usage level represent well below 1% of the WHO provisional intake value for children and adults. Cancer risks do exceed 10^{-6} risk in the case of high usage.
- Expected practice (500 ng TEQ/m^3): Only the low usage scenario keeps the intake to a small fraction of the WHO provisional intake, although again the 10^{-6} risk level is exceeded.
- Worst-case emissions (4000 ng TEQ/m^3): Even under low usage rates, intake and risks may be unacceptable.

[17] An acceptable risk level depends on many factors, e.g., the number of people exposed, the nature and consequence of the exposure, ability to taken defensive actions, etc. As examples, the US Clean Air Amendments specify a risk level of 10^{-6} in regulating air toxics. The US Superfund program uses a 10^{-4} risk to define an imminent hazard requiring cleanup. Other criteria may be considered, e.g., the probability of an adverse event, the number of people at risk, and the nature of harm.

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Headquarters, PO Box 3000
Johnstown Castle Estate
County Wexford, Ireland

Ceanncheathrú, Bosca Poist 3000
Eastát Chaisleán Bhaile Sheáin
Contae Loch Garman, Éire

T: +353 53 60600
F: +353 53 60699
E: info@epa.ie
W: www.epa.ie

LoCall: 1890 33 55 99

Grainne Russell
c/o Aine Walsh
27 Highfield
Drogheda
Co. Louth

4 March 2005

RE: EPA Oral Hearing – Carranstown Incinerator

Dear Ms. Russell,

I refer to your letter, dated 28th February, in relation to the oral hearing to be held into objections to the proposed waste licence in respect of the Indaver Ireland (Branch of Indaver NV) waste incineration facility at Carranstown.

As you are probably aware, the Agency has not made a final decision in relation to this waste licence application and has decided to hold an oral hearing into the objections to the proposed decision. This hearing will provide the objectors with an opportunity to outline their objections in an open, public forum. All parties to the hearing can bring their concerns, information and any evidence that supports their objections to the attention of the chairperson of the hearing, who is required to make a report on the hearing and recommendations to the Board of the Agency. The Board of the Agency will in due course, and following receipt of the report and recommendations, make a final decision. As the licensing of such facilities is a quasi-judicial function of the Agency it would be inappropriate for any member of the Board of the Agency to participate at the hearing. The report and recommendations of the chairperson of the hearing, together with the objections and submissions received from all parties, will ensure that the Board of the Agency is fully informed when making its final decision.

Your letter goes on to request a number of reports, plans, procedures and other documentation. The application file, which includes the Environmental Impact Statement, totals 11 lever arch files of documents. The documentation includes A4 pages plus coloured maps and drawings. It is estimated that the cost of copying these documents would be of the order of €700. If you require a full copy of the application arrangements can be made to have it copied on payment of the costs involved. However, since the files are freely available for inspection at our offices in Wexford during office hours, I recommend that you examine the files there and identify those parts of the application that you require in order to reduce your costs.

Yours sincerely,

Dr. Padraic Larkin
Director, Office of Licensing and Guidance.