Appendix 14

Environmental Liabilities Risk Assessment

BORD NA MÓNA

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ENVIRONMENTAL LIABILITIES RISK ASSESSMENT FOR INDAVER IRELAND PROPOSED CARRANSTOWN WASTE MANAGEMENT FACILITY, DULEEK, CO. MEATH

REPORT NO: ECS0162

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DATE: April 2003

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Executive Summary

As part of further information requested by the EPA for Indaver Irelands application for a Waste Management Facility at Carranstown Co. Meath Indaver were required to undertake an Environmental Liabilities Risk Assessment (ELRA) to address liabilities arising from the carrying on of the proposed waste activities. Bord na Móna Environmental Limited was commissioned to carry out this assessment.

The environmental impacts of the proposed facility were examined for the two proposed activities i.e. Materials Recycling Facility and Waste to Energy Plant. As the facility has not received a waste licence from the EPA yet and is still at the planning and design stage, the production of the ELRA has been based on the information contained in the Waste Licence Application document, Environmental Impact Statement (EIS) and Additional Information submitted as part of the EIS. Potential environmental liabilities were assessed for emissions to air, soil and waters under normal, abnormal, emergency and decommissioning phases of operation.

The ELRA concluded that the main environmental liabilities associated with the on-site activities were associated with emissions to atmosphere from the waste to energy plant during an emergency shutdown sequence and the proper classification and disposal/recovery of the solid waste generated as part of the waste to energy process.

Based on the findings of this study, it is considered that Indaver have sufficient insurance (€12,500,000) to cover potential environmental liabilities from on-site operations.

Respectfully submitted,

Mr Damien Holmes
Environmental Consultant

Mr Garrett Leech
Waste/water Section Head

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1.0 INTRODUCTION

Indaver Ireland has applied to the Environmental Protection Agency (EPA) for a Waste Licence for a proposed Waste Management Facility at Carranstown, Duleek Co. Meath. As part of the waste licence application process the EPA have requested additional information in accordance with Article 14(2)(b)(ii) of the Waste Management Licensing Regulations, 2000 (Appendix 1: EPA Letter Ref. 167-1 of 27th March 2003).

Bord na Móna Environmental Limited was commissioned to carry out "A fully costed Environmental Liabilities Risk Assessment" for the proposed development; as per section L3 - Financial Provision of the EPA's letter. As the facility has not been constructed yet, this report is based on a review of all available/relevant information in relation to the proposed development, i.e. Environmental Impact Statement (EIS), EIS Additional Information and the Waste Licence Application.,

During the preparation of this document reference was made to the EU Draft Directive on environmental liability. This proposed directive is based on the polluter pays principle makes the operator of a given activity responsible for preventing and remedying environmental damage.

It is assumed that the facility will be operated in accordance with a waste licence issued by the EPA, based on the information submitted in the waste licence application and EIS, and that emissions will be in compliance with the licence conditions and all EU emission limits i.e. Directive on the Incineration of Waste (2000/76/EC).

The assessment was undertaken in order to determine the environmental liabilities associated with the activities that are planned for the site. The assessment involved:

- Identification of emissions from the proposed activities and their potential impacts on the air, water and soil. Impacts were assessed under normal, abnormal emergency working conditions.

- Identification of existing control/mitigation measures including engineering works, operational procedures, emergency response plans and fire fighting measures.

This report presents the main findings of the environmental liabilities risk assessment with respect to the activities planned for the site and includes the necessary financial provisions associated with same.

The report is structured as follows: Section 2.0 gives a short account of the activities proposed for the site; Section 3.0 details the potential environmental liabilities associated with each of the activities planned for the site; Section 4.0 looks at the insurance cover for potential environmental liabilities and Section 5.0 gives the overall conclusions of the report.

2.0 FACILITY OVERVIEW

2.1 INDAVER IRELAND

Indaver Ireland is a wholly owned subsidiary of a Belgian integrated waste management company, Indaver NV. Indaver Ireland was formed to invest in waste management infrastructure in Ireland. Indaver also operate a newspaper and magazine recycling business in Ireland and own Minchem Environmental Services Ltd. Minchem is a hazardous waste management company with offices in Dublin and Cork.

Indaver are involved in a wide range of waste management activities in Flanders including:

- Sorting of packaging waste
- Destruction and recycling of confidential documents
- Recovery of wood waste
- Composting
- Sorting and recovery of tyres
- Dismantling of transformers
- Non Hazardous waste incineration
- Hazardous waste incineration
- Solvent recycling
- Ash treatment
- Physio-chemical treatment of liquid waste
- Treatment of chlorinated waste
- Sludge treatment
- Landfill
- Total management of medical waste
- Glass recycling

2.2 SITE LOCATION

The proposed location is on a 25 acre green field site located in Carranstown Co. Meath approximately 3km north east of the village of Duleek. The Irish Cement, Platin cement works is located to the north east of the proposed facility. The site is currently in agricultural use. The area of the site that will be developed will be approximately 10 acres. A large area of the site will be used for landscaping to reduce the visual impact of the facility.

2.3 PROCESS DESCRIPTION

The waste management facility at Carranstown will consist of:

- A Materials Recycling Facility (MRF) for non-hazardous waste with an anticipated throughput of 20,000 tonnes per annum
- A Waste to Energy Plant for non-hazardous waste with a nominal capacity of 150,000 tonnes per annum.

2.3.1 MATERIALS RECYCLING FACILITY (MRF)

The MRF will be located in a separate part of the plant to the waste to energy plant. Upon arrival at the facility the dry recycleables will be tipped from the trucks into a storage area. The storage area will be capable of storing up to 2,200m^3 of waste.

The grab operators will segregate initial large bulky items such as large pieces of wood or metal in the storage area. The main volume of waste will then be loaded into a hopper from where it will be fed into a rotating screen, which will grade the waste into size fractions. The size fractions will particles <25mm, particles 25 – 300mm and particles >300. This will make the manual sorting of the waste easier. Manual picking and other mechanical methods will then be used to further sort the waste. The recovered materials will then be either baled or placed in containers and transported to off site licensed operators for recycling. Waste not suitable for recycling will be transferred to the waste bunker for incineration. The total residual material usually represents approximately 20% of the total incoming material, based on Indaver's experience of operating a similar facility.

2.3.2 WASTE TO ENERGY

The incineration process will involve solid waste material being tipped into a bunker prior to being fed into a furnace. In the furnace the waste will be incinerated, producing heat, ash and combustion gases. The flue gases will then be cooled, filtered, passed through scrubbers and reheated prior to discharge via the 40m stack. The waste liquids produced by the scrubbers will be used in the cooling process and a solid waste produced, thereby eliminating any process effluent from the facility. The heat produced by the combustion of the waste will be used to generate steam, which will be used to drive a steam turbine and electrical generator. The plant will

produce approximately 14MW of electricity of which approximately 11MW will be exported to the ESB distribution network. This is equivalent to supplying 16,000 homes with electricity.

The proposed plant will have a nominal capacity of 150,000 tonnes of waste per annum. The facility will have a potential maximum design capacity of 180,000 tonnes/annum.

The incineration process will consist of a number of individual steps as follows:

1. Waste Storage and Handling
2. Furnace
3. Boiler
4. Energy Recovery
5. Flue Gas Cooling
6. Activated Carbon/Lime Mixture Injection and Baghouse Filter
7. Wet Flue Gas Cleaning
8. Tail End Flue Gas Cleaning
9. Plume Abatement and Discharge (Stack)
10. Ash Handling

Each of the above process steps are discussed in detail in Section 4 of Attachment D2 of the waste licence application. It is assumed that all of the process controls outlined in Section 4 of the descriptions of the Unit Operations in Attachment D of the waste licence application will be implemented.

2.4 ANCILLARY SERVICES

Ancillary services on-site will include:

- Water treatment
- Electrical Systems
- Compressed air
- Space heating
- Potable water
- Natural gas supply

Additional details on all of these processes are available in Attachment D2 of the waste licence application. None of these services will give rise to significant environmental emissions in terms of environmental liability.

2.5 MATERIALS STORAGE

A 5,000 litre diesel fuel storage tank will be located in the waste to energy plant building to supply the loaders. This tank will be bunded appropriately. All potentially polluting substances which will be required during the operation of the plant (i.e. ammonia solution, hydrochloric and caustic) will be stored within the building and will be provided with adequate containment and will be handled to eliminate the risk of any spillages. All water collected from floor drains within the building will be recycled to the evaporating spray towers.

Bunding will also be provided for electrical transformers located in the transformer compound.

All waste for the MRF and the waste to energy plant will be stored internally. Internal floor drains will be drained to the 1,500m^3 storage tank and used in the flue gas cooling process.

2.6 Fire Fighting

The entire plant will be designed to provide adequate fire protection and detection systems and will be consistent with the requirements of Meath County Council, building regulations and Indaver's insurance requirements.

The fire fighting system shall include the following:

- Fire wall compartmentation
- Fixed water cannon
- Fixed sprinkler system (where necessary)
- Fire detection and alarm system
- Smoke ventilation
- Hydrants and hose reels
- Dry/wet rising mains
- Portable fire extinguishers
- On site water buffer
- Firewater supply (1,300m^3)

The fire control system including water supply is discussed in Attachment D1.O of the waste licence application.

The main source of fire, and hence firewater on site would be expected to be from the waste stored in the waste bunker. This bunker will be manned 24 hour per day and monitored continuously by a fire detection system. It will be protected by water canons. The bunker will be designed as a water retaining structure and will be capable of retaining any firewater generated. Indaver intend to complete a firewater retention study prior to the construction of the facility to ensure that the proposed firewater retention measures are satisfactory. This would eliminate the potential for environmental liabilities arising from fires on site.

2.7 ENVIRONMENTAL MANAGEMENT PRACTICES

When the plant is built and is fully operational it will be have approximately 50 permanent personnel, who will work in 3 x 8 hour shifts. Staffing levels will ensure that the facility is continuously manned and operational 24 hours per day. Attachment L2 of the waste licence application details key management of the proposed facility and their responsibilities.

Key staff will be recruited prior to commissioning the plant and will be trained at existing comparable Indaver plants. All Indaver staff will be fully trained and will receive environmental awareness training. Indaver Ireland intends to have the plant accredited to ISO 14001 or equivalent.

A number of key control parameters will be monitored at all stages throughout the process to optimise the incineration conditions and to maximise the control of emissions. The entire waste to energy process will be monitored and controlled by a process computer system that will include safety systems.

Indaver also plan to prepare an Emergency Response Plan prior to start-up that will set out the response measures to be taken in the event of an emergency, such as a fire or an environmental incident. Further details of the content of the plan, based on successful operation of similar plans in Indaver's plant in Flanders, in outlined in Attachment K1.1 of the waste licence application.

3.0 POTENTIAL ENVIRONMENTAL LIABILITIES

The potential for environmental liabilities is associated with impacts on the receiving environment of emissions from site activities. Environmental liabilities are deemed to include contamination or damage to environmental media (air, surface water, soils, groundwater, and vegetation).

The potential liabilities of emissions, to each of the environmental media, from the MRF, waste to energy plant and ancillary activities are discussed below under the following headings:

- Normal Operating Conditions
- Abnormal Operating Conditions (including start-up and shutdown)
- Emergency Shutdown Sequence
- Decommissioning & Post Closure

3.1 MATERIALS RECYCLING FACILITY (MRF)

Only dry recycleable waste will be accepted at the MRF. All MRF operations will take place indoors and in a building which will be maintained under negative pressure i.e. air will be drawn through all openings rather than escaping thereby reducing the potential for odours outside the building. This air will be used as combustion air in the incineration process. The potential for windblown litter and vermin/bird nuisances will be eliminated, as all operations will take place inside the MRF building.

Normal Operating Conditions

Under normal operating conditions the potential for odour or litter generation will be mitigated by the enclosure of all operations within a building under negative pressure. Noise sources will not cause environmental nuisance, as they will be located indoors and far enough away from sensitive receptors. All waste material will be segregated and sent for recovery or disposal as appropriate. The emissions from the MRF under normal operating conditions would not be considered likely to give rise to environmental liabilities.

Abnormal Operating Conditions

In the unlikely event that the negative air pressure system failed there could be some short lived odour problems associated with the development. Any such odour problem would be short term and would not be expected to cause severe nuisance due to the dry nature of the recyclable waste.

Therefore, there are not expected to be any environmental liabilities associated with the operation of this part of the development under abnormal operating conditions.

Emergency Operating Conditions

Emergency situations such as fire or a major spillage would not be considered a risk in the MRF as it will be monitored and protected by a fire protection system (Section 2.6 above) and all materials storage i.e. diesel fuel and other oils will be stored in bunded areas. Sources of ignition will also be kept to a minimum in this area. All internal drains from the MRF will be collected in the 1,500m^3 underground storage tank and will be used as process water in the flue gas cooling process. Indaver intend to carryout a firewater retention study prior to construction of the plant. The findings of that survey will be implemented and will help to reduce environmental liabilities associated with emergency situations.

Decommissioning & Post Closure

In the event that the MRF closing down all waste and holding containers would be washed down and decontaminated in accordance with Attachment G1 of the waste licence application. Bord na Mona understands that any waste waters generated during the decommissioning phase would be contained in the process water tank and disposed of in an environmentally acceptable manner e.g. tankered off-site for treatment in a wastewater treatment plant.

Therefore, there are not expected to be any environmental liabilities associated with the operation of this part of the development during decommissioning or post closure.

3.2 WASTE TO ENERGY PLANT

The ten process steps of the waste to energy process outlined in section 2.3.3 above give rise to emissions to air and the production of solid waste in the form of ash. There will be no process wastewater emissions from the plant as all waste waters generated will be recycled to the flue gas coolers where it will be evaporated during the cooling of the flue gases leaving a solid residue to dispose off.

The emissions to air will be made via a 40m stack. Extensive emissions dispersion modelling has been carried out on typical/expected emissions to determine the maximum ground level concentrations. Another minor emission would be from the gas fired backup generator.

Solid waste generated during the waste to energy process will be made up of:

- Bottom ash from the furnace
- Boiler ash from the boilers
- Flue gas cleaning residues
- Gypsum from the wet flue gas cleaning plant

Normal Operating Conditions

Under normal operating conditions the air emissions from the incineration process will be treated by extensive treatment technologies prior to being emitted to atmosphere. Treatment technologies will include Flue Gas Cooling, Activated Carbon/Lime Mixture Injection and Baghouse Filter, Wet Flue Gas Cleaning, Tail End Flue Gas Cleaning and Plume Abatement and Discharge. These mitigation measures will be in accordance with Best Available Techniques (BAT). The proposed flue gas treatment process incorporates a two step dioxin removal process. According to the waste licence application this will be more than sufficient to meet the EU limit of 0.1 TEQ ng/m^3.

Typical emission concentrations expected from the stack, along with relevant EU Limit values, are listed in Table 3.1 below. Table 3.1 is taken from Attachment D2 Section 4.10 of the waste licence application. According to the waste licence application document the waste to energy plant is expected to meet all EU emission limit values on an ongoing basis.

The results of the dispersion modelling to assess the potential impact of the emissions from the stack on the atmosphere showed that the predicted ground level concentrations were significantly below the most stringent Air Quality Standards. According to the waste licence application "… the impact of these emissions on the surrounding environment will be insignificant".

The only potential atmospheric emission from the ash storage and handling process is from fugitive wind blown emissions. The ash bunker and ash loading area will be enclosed within the main building thereby eliminating the potential for windblown ash. All trucks removing ash from the plant will be covered to remove any potential for windblown ash.

Boiler ash and flue gas cleaning residues will be transported by enclosed conveyor to their respective silos. The silos will be equipped with abatement filters to prevent any emissions from the silos.

All ash, flue gas cleaning residues and gypsum will be classified according to the European Waste Catalogue and be sent off –site for either recovery or disposal as per Attachment H11.1 of the waste licence application. Proper classification and recovery/disposal of the solid waste (in accordance with Directive 2000/76 and waste licence conditions) will minimise any environmental liabilities associated with its disposal.

The risk of Environmental liabilities arising from the waste to energy plant under normal operating conditions is considered to be low due to the degree of control of the process, monitoring of the process and proposed emergency response procedures.

Table 3.1: Typical Emission Limits

Emission	Typical Emission Concentration (mg/Nm^3)*	EU Limit Value (mg/Nm^3)
NO_x (as NO_2)	150	200
SO_2	20	50
Dust	1	10
CO	20	100
TOC	1	10
HCl	1	10
HF	1	1
PCDD/PCDF	0.01 ($ng/TEQ/m^3$)	0.1 ($ng/TEQ/m^3$)
Cd & Tl	0.025	0.05
Hg	0.025	0.05
Sum of 9 Heavy Metals: Sb, As, Pb, Co, Cu, Mn, Ni, V	0.25	0.5

* These are typical emissions. There may be short term fluctuations; however these will still be well below the EU limit values.

Abnormal Operating Conditions

Emissions to atmosphere from the waste to energy plant during abnormal operating conditions are described in Attachment D2 Section 4.12 of the waste licence application. Three separate scenarios were identified Start-up Sequence, Shutdown Procedure and Emergency Shutdown Sequence.

During any one of these three scenarios emissions to atmosphere could potentially exceed EU emission values or likely waste licence emission limits. However, the engineering design of the plant will be such that emissions during start-up and shutdown will be subject to rigorous process controls, which will ensure that emissions are in compliance with Directive 2000/76. However, the potential for emissions to atmosphere to be above the EU limit values is greater for emissions under emergency shutdown sequence due to the unexpected nature of such an emergency. The abnormal situations section of each unit operation of the waste to energy process (Attachment D2 Section 4) identifies potential emergency situations that could arise in each stage of the process and outlines process controls, monitoring, interlocks and preventative maintenance that would be used reduce the potential for such situations to occur.

Bord na Mona understands that these controls, monitoring and maintenance will substantially reduce the risk of such situations occurring. However, in the event of an emergency shutdown sequence having to be implemented, as described in Attachment D2 Section 4.12.3, flue gas abatement treatment efficiency would be reduced. Elevated levels of HCl, HF and SO2 could be emitted however, the second stage of dioxin removal (tail end flue gas cleaning) is expected to remove dioxins by either an activated carbon/lime mixture injection and baghouse filter system or a carbon bed system (depending on which system is selected).

The fixed emissions monitoring equipment on the stack will continue to monitor even during abnormal emissions, which will allow an assessment of liabilities to be made subsequently.

In the event of a malfunction of the conveyor system for the boiler or baghouse filter, there will be sufficient storage within both systems for approximately one days worth of ash to allow the conveyor system to be repaired. If the conveyor cannot be repaired in this timeframe the plant will be shut down. Ash will be disposed of as per normal operating conditions above.

Emergency Operating Conditions

The main risk of fire in the waste to energy process will be in the waste storage bunker. This bunker will be monitored continuously by a fire detection system. It will also be manned 24hrs/day by a crane driver who will be able to initiate action quickly in the event of a fire i.e. lift the fire into the hoppers which feed the furnace or use the water canons to extinguish the fire. Any fire water generated would be retained in the waste bunker. All other areas of the plant will be protected by a fire control system as described in Attachment D1.O of the waste licence application. In the event of a fire on-site which necessitates the shutdown of the waste to energy plant the procedures outlined in Attachment D2 Section 4.12 will be followed. These measures are expected to greatly reduce the potential for any emissions from fires on-site. All oils, diesel fuel and process chemicals will be stored in properly bunded areas, which will minimise the potential of emissions from these sources.

Decommissioning & Post Closure

In the event that the waste to energy plant should close down all waste and holding containers would be washed down and decontaminated in accordance with Attachment G1 of the waste licence application.

Therefore, there are not expected to be any environmental liabilities associated with the decommissioning or post closure phase of the waste to energy plant.

4.0 FINANCIAL PROVISIONS

Indaver NV has an insurance policy which covers public liability and product liability (Appendix 2). Discussions with senior Indaver staff indicate that environmental liability is covered under the Public Liability portion of this policy. This policy covers "… accidental pollution, incidental and sudden to the process". However, as is common in such policies "long term environmental pollution" is not covered. Therefore, the proposed facility at Carranstown would be covered for accidental environmental liability to the sum of €12,500,000. The insurance policy is provided by American International Group. This type and level of insurance cover is the same as the level of cover that is applied to other waste management facilities operated by Indaver NV in Europe.

All accidental pollution which could be caused by the facility i.e. emissions to air outside EU limit values or accidental spills would be covered by this policy. As long as the facility is operated in accordance with Directive 2000/76 and its waste licence conditions the likelihood of long term pollution occurring is considered to be low. The proposed site design, level of process control, emergency response procedures and ongoing emissions and ambient monitoring (Attachment J1 of the waste licence application) planned for this facility will minimise the potential for long term emissions to occur.

In addition to this insurance cover Indaver Ireland intend to put in place a bond to provide a source of funding for decommissioning and restoration works. This bond will be in accordance with Condition 29 of Indaver's planning permission. The amount of the bond shall be agreed with Meath County Council, but is not expected to be less than £1,500,000 (€1,905,000) and shall be indexed in accordance with the Wholesale Price Index.

5.0 CONCLUSIONS

5.1 POTENTIAL ENVIRONMENTAL LIABILITIES

Materials Recycling Facility

The risk of environmental liabilities associated with the MRF are considered to be low due to the nature of the activities carried out and work practices and control measures which Indaver intend to implement.

Waste to Energy Plant

Under normal operating emissions to atmosphere from the incineration process will be extensively treated and are expected to be within EU limit values and potential waste licence limits. As long as the process is controlled and all emissions are kept within the licence limits the risk of environmental liabilities posed by emissions to atmosphere are considered to be low. However, there is a potential environmental liability associated with any abnormal emissions to atmosphere from the waste to energy plant, which could result in emissions outside of EU emission values and the waste licence conditions. An abnormal discharge to the atmosphere could give rise to an incident which could impact on the surrounding environment i.e. air, soil and waters. The risk of such an incident occurring is considered to be low due to the process controls, interlock systems on the process, monitoring and preventative maintenance proposed for the process. The scale of the impact would be dependent on the scale of the discharge and it is not possible to quantify the costs to address such impacts. However, Bord na Mona believes that Indaver's insurance cover (€12,500,000) is adequate to meet any likely costs.

All solid wastes must be classified as hazardous, non-hazardous or inert and be disposed of or recovered as such. As long as this is done the potential for environmental liabilities is considered to be low.

Other Activities

Indaver propose to store all materials i.e. diesel, oils, water treatment chemicals etc. in properly bunded areas. This will minimise potential liabilities associated with storage of materials on-site.

The entire plant will be designed to provide adequate fire protection and detection systems and will be consistent with the requirements of Meath County Council, building regulations and Indaver's insurance requirements. Indaver intend to complete a firewater retention study prior to the construction of the facility to ensure that the proposed firewater retention measures are satisfactory. As long as the findings of this study are implemented this will eliminate the potential for environmental liabilities arising from fires on site.

5.2 INSURANCE COVER

Indaver's insurance cover for environmental liabilities is €12,500,000. Bord na Mona estimate this is in excess of any environmental liability that may arise due to environmental incidents.

Appendix 1

Letter from EPA
re 'Notice in accordance with Article 14(2)(b)(ii) of the Waste Management (Licensing) Regulations

ENVIRONMENTAL PROTECTION AGENCY
An Ghníomhaireacht um Chaomhnú Comhshaoil

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Dea-Radharc
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Baile Átha Cliath 14, Éire
Email: info@epa.ie
Website: www.epa.ie

Date: 27 March, 2003
Our ref.: 167-1
Your ref.:

re: Notice in accordance with Article 14(2)(b)(ii) of the Waste Management (Licensing) Regulations

Dear Ms Burke,

I am to refer to the above referenced application for a waste licence relating to a facility at Indaver Ireland, Waste Management Facility, Carranstown, Duleek, Co Meath. Having examined the documentation submitted, I am to advise that the Agency is of the view that the documentation does not comply with Article 12 and Article 13 of the Waste Management (Licensing) Regulations.

You are therefore requested, in accordance with Article 14(2)(b)(ii) of the regulations, to take the steps and supply the information detailed below:

ARTICLE 12 COMPLIANCE REQUIREMENTS

A1 Non-Technical Summary

1. Provide details in the non-technical summary of the licence application relating to financial provision.

B Waste Activities

1. Clarify if it is your intention to proceed with the civic waste facility (community recycling park.).

D Waste to Energy Plant

1. In relation to the Waste to Energy plant and requirements of best available techniques (BAT), provide details of alternatives considered specifically in relation to furnace type and gas cleaning.
2. Clarify whether metal recovery prior to incineration has been considered and provide details on why it is not proposed at this facility.

E2 Proposed Waste Types

1. In relation to the waste to energy plant, clarify if it is the intention to accept sewage and industrial sludges.

H1 Air

1. Provide completed Tables 1.1 Air Emissions and 1.2 Air Emissions Characterisation for the back-up generator (emission point reference A2.1 given in Attachment H1.4, Drawing No. 2666-22-DR-009). Provide details on any emissions and the impact of such emissions on the environment from operating this generator. Provide details on the monitoring of any such emissions from this generator.
2. The maximum air volume to be discharged from emission point reference A1.1 appears to be listed differently in different sections of the application (i.e. Table 1.1 lists 232,237 m^3/h; Section D2.1, p.50 lists 142,000 Nm^3/h; Section D2.1, p.21 lists 2 x 63,000 Nm^3/h; Table 1.5 of H2.1, p.16 lists 126,000 Nm^3/h typical and 150,980 Nm^3/h maximum). Please reconcile these figures and confirm that the dispersion modelling used the correct value.
3. The Cumulative Impact Assessment in Section H1.2 was carried out for NO_2 and SO_2. This should also be carried out for particulate and for dioxins.
4. An assessment of the annual average impact of SO_2 from emission point reference A1.1 should be included in Section H1.2.
5. Please indicate what reference 28 refers to on p. 8 of 35 of Appendix 1.2 of Section H1.2.
6. The impact assessment in Section H4.1 refers to maximum annual ground level concentrations inconsistent with the air dispersion modelling. This assessment should be redone with the correct values used. Specific reference should be made in this assessment to potential impacts on pNHAs, SACs [flora and fauna] etc already identified.
7. Provide details on heat emissions, including source, location, nature, composition, quantity, level and rate; the impact of such emissions on the environment; and details on the monitoring of any such emissions.

L3 Financial Provision

1. Provide information to show compliance with section 40(7)(c) of the Waste Management Act of 1996. This information should include the following:

a) The two most recent years audited accounts;
b) A copy of business plan for the company (or relevant parts thereof) including income and expenditure projections with particular reference to the facility at Carranstown, Duleek;
c) The manner by which funds will be available for site development, operation, closure, and restoration;
d) A fully costed Environmental Liabilities Risk Assessment for the facility which addresses liabilities arising from the carrying on of the proposed waste activities (to include all proposed waste activities); and
e) A proposal for Financial Provision to cover any liabilities incurred in carrying on the proposed waste activities.

ARTICLE 13 COMPLIANCE REQUIREMENTS

1. Provide a non-technical summary of the Environmental Impact Statement (EIS) as it has not been included with the application. The non-technical summary should be updated to reflect the further information you supply below in compliance with this notice, insofar as that information impinges on the relevant non-technical summary.

2. The maximum air volume to be discharged from emission point reference A1.1 appears to be listed differently in different sections of the application (i.e. Table 1.1 lists 232,237 m^3/h; Section D2.1, p.50 lists 142,000 Nm^3/h; Section D2.1, p.21 lists 2 x 63,000 Nm^3/h; Table 1.5 of H2.1, p.16 lists 126,000 Nm^3/h typical and 150,980 Nm^3/h maximum). Please reconcile these figures and confirm that the dispersion modelling used the correct value.

3. The Cumulative Impact Assessment in Section 6 of attachment 5 of the EIS was carried out for NO_2 and SO_2. This should also be carried out for particulate and for dioxins.

4. An assessment of the annual average impact of SO_2 from emission point reference A1.1 should be included.

5. Please indicate what reference 28 refers to on p. 8 of 35 of Appendix 1.2 of the air dispersion modelling.

6. The impact assessment in Section 11 of the EIS refers to maximum annual ground level concentrations inconsistent with the air dispersion modelling. This assessment should be redone with the correct values used. Specific reference should be made in this assessment to potential impacts on pNHAs, SACs etc already identified.

7. Provide details on heat emissions, including source, location, nature, composition, quantity, level and rate; the impact of such emissions on the environment; and details on the monitoring of any such emissions.

In the case where any drawings already submitted are subject to revision consequent on this request, a revised drawing should be prepared in each case. It is not sufficient to annotate the original drawing with a textual correction. Where such revised drawings are submitted, provide a list of drawing titles, drawing numbers and revision status, which correlates the revised drawings with the superseded versions.

The requested information should be submitted to the Agency within one month of the date of this notice, in order to allow the Agency to process and determine your application.

Please supply Article 12 information in the form of an original and five copies and Article 13 information in the form of an original and fifteen copies.

Please note that the application's register number is 167-1. Please direct all correspondence in relation to this matter to *Administration, Waste Management Licensing, Environmental Protection Agency, Headquarters, PO Box 3000, Johnstown Castle Estate, County Wexford* quoting the register number.

Yours sincerely,

pp. Peter Carey

Dr Ken Macken
Inspector
Environmental Management & Planning Division

Appendix 2

Insurance Certificate

EOS RISQ Benelux

INSURANCE CERTIFICATE

We undersigned, EOS RISQ Benelux division of J. Van Breda & C° g.v.e., Plantin & Moretuslei 295, 2140 Antwerpen, certify herewith that **Indaver NV**, Poldervlietweg, B2030 Antwerpen has taken out a liability programme, covering both Public and Products Liability, through us.
Co insured : all subsidiaries of Indaver NV (participation of more than 50%).

The coverage is provided for losses occurring during the operations as well as after goods delivery or works receipt.

Coverage is granted by insurer AIG Europe, Avenue de Cortenbergh 168/170, 1000 Brussels. Policy number : 310/3.016.012.

Public Liability :
12.500.000 EUR per occurrence for bodily injury and property damage combined

Products Liability :
12.500.000 EUR per occurrence and per insurance-period for bodily injury and property damage combined

Policy Period :
This certificate is valid till 31 december 2003.

This summary is only to be used for reference and will not modify any clause of the original policy.

Drawn up in Antwerp on July 17, 2002.

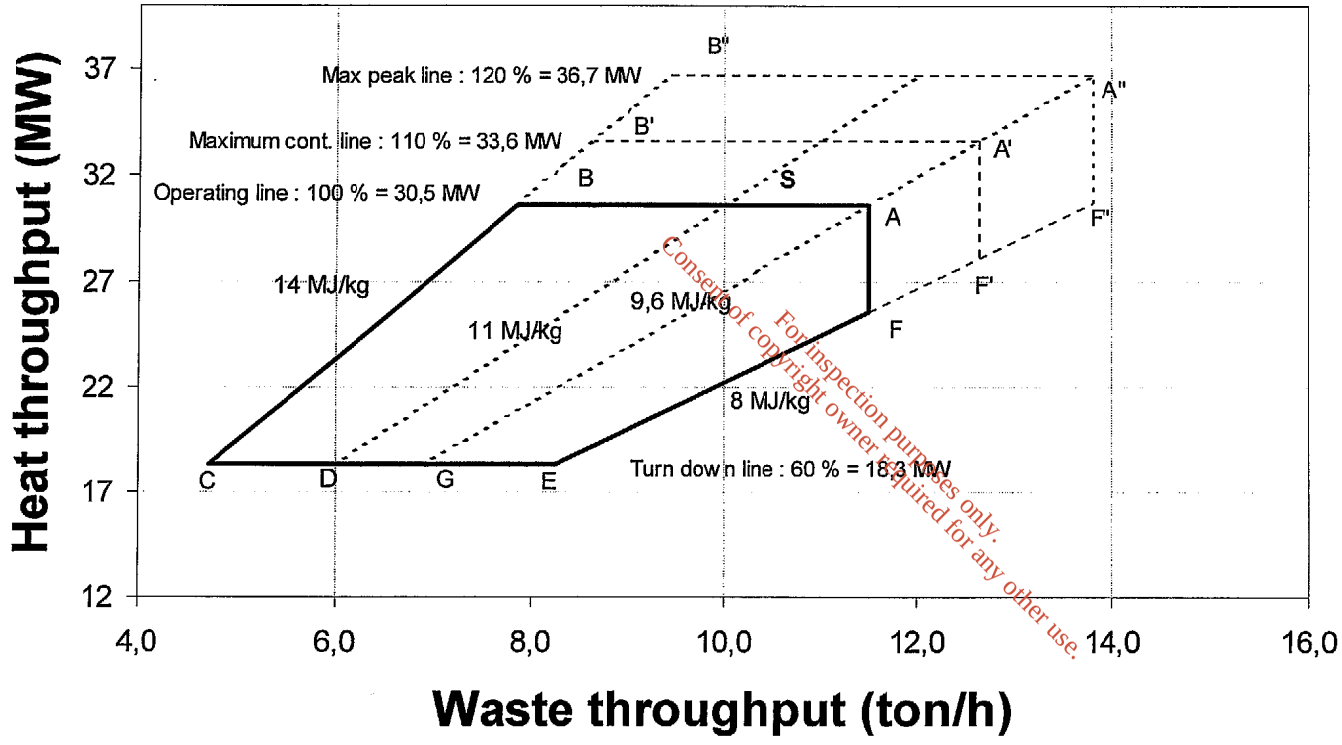
Philippe Bisschop
Account manager

635810 (0202) 12,pc.075 (6202)

Appendix 15

Combustion Diagram

COMBUSTION DIAGRAM Grate Meath



Revision : NA 01/5/2003

S : operating point : 10 t/h ; 30,5 MW ; 11 MJ/kg

Moving Grate Furnace Throughput

The figure overleaf shows the combustion diagram for the moving grate. The thick outer line represents the expected normal operating envelope for the furnace. The yearly average thermal throughput of each furnace line is expected to be 30.5MW, giving a total throughput of 61MW. If the waste has a calorific value of 14MJ/kg, only circa 7.8 tonnes/hour will be treated. With lower calorific value waste, e.g. 8MJ/kg, 13.6 tonnes/hour will be treated. 10 tonnes/hour of waste with a 'typical' calorific value of 11MJ/kg will be treated, giving a nominal annual capacity of ca. 150,000 tonnes, based on 7500 hours per year of operations. The furnace will be designed to operated at up to 36.6MW, representing 120% of the average yearly thermal throughput. The maximum continuous load, with an ideal mix of waste, will be 33.6MW, which will be 110% of the average yearly thermal throughput. It will be possible to operate the furnace at a lower thermal input, to a practical minimum of 18.3MW, representing a turn down to 60% of the yearly average.

Appendix 16

Emergency Shutdown Procedure

Potential Abnormal Operating Conditions

Furnace Start-up and Shutdown Procedures

15.2.7 Emergency Shutdown Procedure

The emergency shut down will bring one or both incinerator lines to a safe status.

The main objectives of the emergency shut down procedure are as follows:

- To shut down the plant safely, avoiding injury to staff or damage to equipment
- to minimise emissions
- to prevent over pressure in the furnace
- to protect equipment from damage caused by temperatures which are too high.

The emergency shut down will be initialised by situations such as:

- An electric power failure
- Simultaneous occurrence of a flue gas temperature at the outlet of the boiler above 250°C and a failure of the water feed to the flue gas cleaning systems or a temperature at the inlet of the bag house filter of greater than 250°C
- Some plant interlocks including over-pressure in the furnace
- Manual alarm.

The experience of the operators of Indaver's plants in Flanders is that an emergency shut down is not a frequent occurrence. Over pressure in the furnace is the most common reason for an emergency shut down.

In case of failure of electrical power supply, motors and equipment required for the emergency shut down, will be powered by the emergency generator.

The emergency shut down will be automatically executed in two steps.

Step 1 is the waste burn out. As soon as the emergency shut down commences all waste and fuel supply will be stopped immediately. The ID-fan will be stopped. The water supply to the spray tower and scrubbers will be stopped. An emergency supply may be provided for use in the spray tower, if the temperature of the flue gases exceed 250°C. This option will be decided at detailed design stage. A valve will be opened to supply water from the scrubber systems' emergency supply into the scrubbers in order to avoid overheating of the resin of the scrubbers.

The injection of activated carbon and lime will stop and may be reactivated by the operator, manually, once the reason for the shut down is known and it is determined that there will be no risk in doing so.

The inertia of the ID-fan will ensure that the flue gases will continue to be evacuated through the flue gas cleaning systems, prior to the start-up of the ID-fan via the auxiliary motor, which will be powered by the emergency generator.

In the grate furnace, air to burn out the residual waste will be drawn into the furnace because the inertia of the ID-fan will maintain under-pressure in the furnace. During this period the flue gas flow will drop quickly to less than 20 % of the normal flow. At this stage the waste in the furnace will be almost completely burned. Only a few bigger waste parts will still be smouldering. The auxiliary motor (with gear box) of the ID-fan will then be switched on and connected to the shaft by means of a clutch. The ID-fan, running on the auxiliary motor will continue for approximately 2 hours. The power of this motor will be enough to evacuate the remaining flue gas through the flue gas cleaning system. The water supply from the emergency water will then be stopped. The temperature in the scrubber will be measured. A fire water supply will be provided through an emergency nozzle, if the temperature is too high.

Step 2 is the cooling step . A small heat vent after the boiler, in the line before the flue gas cleaning systems, will be opened and the ID-fan stopped. The function of the heat vent will be to evacuate heat (not combustion gases) from the furnace to the atmosphere instead of to the flue gas cleaning system. The vent release will not be pressurised. It is unlikely that the vent release will result in a visible plume. The filter cake in the bag house filter will act as a barrier between the hot and the cold part of the plant. The approximate heat emitted from the plant during this process would be subject to the detailed design of the plant but would be in the order of 3MW.

The plant will now be safely shutdown. The furnace will be cooling down slowly by the natural draft through the heat vent.

In no instance will the heat vent be opened while there is waste in the furnace. During any emergency shutdown, while there is waste in the furnace all the flue gases pass through the gas cleaning system and are emitted through the stack. As stated above, the ID Fan is kept operating during the shutdown by means of an auxiliary motor and an emergency generator. In the event of an emergency shutdown and failure of the emergency generator the inertia of the ID Fan would continue to draw the flue gases through the gas cleaning system for an initial period. The heat vent would not be opened but there may be overpressure within the furnace. It is highly unlikely that there would be both an emergency shutdown and a failure of the emergency generator at the same time.

When both lines are out of operation the ventilation of the waste bunker will not be guaranteed by forced draft. The ventilation will only be by natural draft through the smoke louvers in the roof. A potential explosion risk in the bunker area could arise if there was methane present. As methane is lighter than air it would be evacuated through the roof vents, thus removing any potential risk of explosion.

While step 1 of the shutdown sequence is underway, the combustion gases will continue to pass through the flue gas cleaning systems and the bag house filter and particulates will be removed as efficiently as during normal operations(except in the case of catastrophic failure of the baghouse). The activated carbon/lime mixture present on the sleeves of the bag house filter will continue to remove heavy metals, dioxins, HCl, HF and SO_2 from the combustion gases.

The combustion gases will pass through the reheater, which will heat the flue gases but not to a particular set point as during normal operation. The flue gases will then discharge to atmosphere via the stack, possibly with a visible plume.

In the event of a loss of mains power, key pumps, fans and other equipment required to ensure the orderly shut down described above, will be supplied with power from the emergency generator.

The fixed installed emissions monitoring equipment located on the stack will continue to monitor the emissions from the stack. In the event of loss of mains power, the monitoring equipment will be supplied with electricity from the Uninterruptible Power Supply (UPS) and emergency generator for a period of at least one hour.

A risk analysis will be carried out on this procedure during the detailed design phase of the project (in the form of a Hazard and Operability Study) during which the final details of the procedure will be decided. Indaver will submit the final procedure to the Agency during this phase.

PLANT OPERATION DURING ABNORMAL OPERATING CONDITONS

1. WASTE ACCEPTANCE

Reception Hall And Waste Bunker

An abnormal occurrence in the reception hall or bunker, which could result in an emission, would be a fire in the bunker. A fire could occur in the waste bunker, due to localised heating because of decomposition of organic material or as a result of hot ash in the waste leading to isolated fires. Decomposition of waste can raise the temperature of the waste to 75 °C, drying the waste and causing it to smoulder. Incoming ashes from domestic fires wrapped in other waste can retain their heat. When waste in the bunker is moved these ashes could be exposed to air and could start to smoulder.

As the waste bunker will be permanently monitored by the grab crane operator, smouldering of waste as described above will be detected at an early stage. The grab crane operator will simply lift the smouldering waste into a hopper from where it will enter the furnace. This waste will then be covered by placing another layer of waste into the hopper.

Should the grab crane operator fail to detect smouldering waste and it develops into a flame and hence becomes a fire, the smoke detection system will activate an alarm in the control room to alert plant operators to the situation. The fire will then be put out using either one of two remotely controlled water cannons located above the bunker. The water used to extinguish the fire would be absorbed into the waste. If the volume of water used to extinguish the fire is large and cannot be absorbed, the concrete construction of the bunker will provide water retention until the water is pumped out and disposed of. Any smoke or fumes arising in the bunker will be drawn into the furnaces and thus through the flue gas cleaning system. There will be no emissions from the bunker in an abnormal situation, unless the vents in the roof above the bunker open. This would happen in a major fire or a build up of methane.

If the LEL detector triggers a higher level alarm, all electrically powered equipment in the bunker will be shut down, the vents in the roof over the bunker will open and methane gas or other volatiles will be emitted.

2. COMBUSTION PROCESS

Moving Grate Furnace

Each furnace will normally be maintained under negative pressure. There will be a number of reasons why there might be excessive air pressure in the furnace, for example, a blockage downstream of the furnace in the flue gas treatment systems or the sudden increase in the calorific value of the waste. Pressure sensors in the furnace will detect the high pressure in the flue

gases. The computerised control system will increase the speed of the induced draught fan, which will control the velocity of the flue gases, to reduce the pressure in the furnace. If the fan reaches its full capacity without a corresponding drop in pressure in the furnace, the plant will automatically generate an alarm to reduce the waste feed. If there is a further increase in the pressure, the plant will automatically initiate an emergency shut down. The emergency shutdown sequence is described in Appendix 16

There may be the possibility that a pressurised object, such as a large gas cylinder, would enter the furnace undetected in the waste feed. It could cause an explosion which would result in damage to the refractory brick lining of the furnace. The furnace will be designed to withstand such incidents and continuous monitoring of the condition of the refractory bricks will be undertaken.

3. Energy Recovery

Boiler

There will be no emissions to the environment from the boiler during normal operation.

As with the furnace, the boiler passes will normally be maintained under negative pressure. An abnormal situation would be excessive pressure. The reasons for this to occur will be the same as for the furnaces and the measures to be taken to rectify over pressure in the boiler will be the same as for the furnaces.

Another abnormal situation that could occur in the boiler would be a boiler tube leak, which would result in boiler feed water leaking into the flue gases. In the event of a major boiler tube leak, an emergency shutdown of the line will be initiated. A boiler tube leak will be detected by an abnormally high consumption of demineralised water and the water level in the boiler feed water tank will drop faster than expected. Use of anti-corrosion chemicals in the boiler feed water and preventative maintenance of the boiler tubes will reduce the occurrence of boiler tube leaks.

The steam flow will be controlled by valves, which will control the flow of the steam to the turbine. The system will be equipped with stop valves, which will interrupt the steam flow if the boiler operating conditions fall outside preset levels.

There will be no emission from the boiler in the event of an abnormal situation.

Steam Turbine

There is no emission from the turbine during normal operation.

In the event of turbine or generator failure, the motorised isolation valve on the inlet to the turbine will close, the bypass line will open automatically and steam will be dumped directly into the condenser through a pressure reducing and de-superheating station. The plant will be able to continue operating in

the event of turbine or generator failure until the corrective maintenance is complete.

4. Flue Gas Cooling

The main failure which could occur in the evaporating spray tower would be the failure of one of the nozzles or the rotary atomiser used to spray the liquid to cool the combustion gases. There will be sufficient redundancy to ensure reliability of the spray tower. Nozzles will be changed and cleaned weekly and the atomiser fortnightly to reduce the risk of nozzle or atomiser failure.

There will be no emissions to the environment from the evaporating spray towers during abnormal operations.

5. Ammonia Injection

An abnormal situation would be a dosage system malfunction, resulting in the injection of too much ammonia or urea, which would register as a drop in the NO_x measured in the stack emissions, or too little ammonia or urea, which would result in a rapid rise in the NO_x measured in the stack emissions. Injection of too much ammonia or urea would give an ammonia-like odour to the boiler ash. Upper and lower alarm levels will be set, to alert the plant operator to take corrective action

6. Activated Carbon/Lime Injection

An abnormal situation would be the failure of the injection of the activated carbon and lime. The second stage dioxin removal system would still be in operation and the emission limits for dioxins and heavy metals would not be exceeded.

7. Baghouse Filter

At temperatures greater than 180°C, heat may be generated due to oxidation of the carbon granules. The heat generated could cause hot spots in the bag house filter. If the quantity of carbon is relatively low, the probability of a hot spot is reduced. The use of lime mixed with the activated carbon, rather than pure activated carbon, will minimise the possibility of hot spots in the bag house filter.

Operating with the flue gases at high temperatures for the long term could cause damage to the sleeves of the bag house filter. Operating with the flue gases at low temperature may cause wet sleeves in the bag house filter. The flue gases leaving the evaporating spray towers are monitored and maintained at circa 170°C to avoid either situation.

Sleeves will be replaced as required, usually every 3 to 6 years. The rupture of a sleeve will be detected by very small dust peaks in the stack emissions. It will be possible to replace a sleeve on-line by closing off one module.

Dust accumulation in the bag house filter, due to a blockage in the discharge system, could lead to a sudden overpressure failure. Differential pressure indication will be provided on the bag house filter to reduce the risk of dust accumulation on the sleeves. The hopper, in which the dust from the bag house filter will be collected, will be fitted with a high level alarm to indicate either a blockage in the hopper or that the silo for the dust is full and needs to be emptied.

8. Scrubbers

In the event of loss of the scrubbing liquid to either scrubber, melting of the lining material in the scrubber would occur. Both low flow and no flow alarms will be provided on the scrubbing liquid supply and a back-up water injection system from the fire ring main will be interlocked to the loss of scrubbing liquid. In the event of loss of either scrubber in Option 1, the other scrubber could continue to operate to remove HCl, HF and SO_2 assuming that the first scrubber is still quenched. If the required emission levels cannot be reached, an automatic shut down will be initiated. In the event of loss of the single scrubber in Option 2, an emergency shut down will be initiated, if the emission levels of HCL, HF or SO_2 in the stack rise above a preset level, which will be below the licensed limit.

There will also be a dedicated emergency water supply to the scrubbing system. This may be fed from a tank at high level under the roof, which would supply the scrubbers by gravity, or a dedicated diesel powered pump. In the event of an interruption to the normal water supply due to an emergency shut down initiated by a power failure, there may be a brief interval before the diesel pump set of the fire main system cuts in. The emergency water supply will ensure that there will be a continuous water supply to the scrubbers in the interval.

9. Carbon Injection/ Carbon Bed

The activated carbon/lime mixture injection and bag house filter system would have similar potential problems to those described in sections 9.5.4 and 9.5.5.

Blockages could occur in sections of the carbon bed if the lignite cokes are not changed at the required frequency. The flue gases must pass through the entire carbon bed and therefore dioxins will still be removed. As the carbon bed will be at over pressure, a leak in the container of the bed would result in a leak into the main process building. The carbon bed will be a polishing step and such a leak would be of treated flue gas. A leak would be detected by routine visual inspection.

10. ID Fan

In the event of ID fan failure, overpressure would be generated in the waste to energy plant and an emergency shutdown sequence, described in detail in Appendix 16, would be automatically initiated. An emergency motor will be provided on the ID fan to keep it running in the event of failure of the main motor. The fan will be a critical item of plant and therefore will be inspected regularly. Vibration detection and thermocouples will also be provided on the ID fan.

Furnace Start Up and Shut Down Procedures

The start-up and shut down of the furnaces will be carefully controlled, in accordance with standard operating procedures. The procedures will be developed in detail prior to the commissioning of the furnaces. The procedures are outlined below.

The start-up sequence for a furnace line will be as follows:

- The computerised control system for the line will be started up, which will mean that measurements and interlock systems will be in operation.
- Utilities for the line such as water, electricity, instrument air, the firewater system and safety systems will then be started up.
- Monitoring of some of these utilities will be carried out, as certain conditions such as firewater availability must be satisfied before the start-up procedure can commence.
- Peripheral equipment, such as the equipment to supply chemicals to the plant, to receive the process stream from the plant and the stack emissions monitoring equipment will then be started up.
- After verification of process parameters such as liquid levels, pressures, steam cycle etc., and adjustment as necessary, the flue gas cleaning systems will be started up.
- The ID-fan will commence running and pre-ventilation of the line for a pre-set time period of 20 minutes will occur.
- The gas-fired burners, to initiate the combustion in the furnace, will be started up and the flue gas temperature will be raised to 850°C at a gradient of 50°C per hour.
- Once the temperature in the furnace has stabilised, the supply of waste will then commence and gas firing will be stopped.

The shut down sequence for a furnace line will be as follows:

- The waste supply to the furnace will be shut off
- To ensure complete combustion of the waste remaining in the furnace, the gas burners will be re-started to ensure that a temperature of 850°C, as appropriate, will be maintained for a period of up to 1 hour.
- The ID fan of the flue gas cleaning system will remain operating to ensure that the flue gases will be treated to the emission limits during the operation.
- The furnace will then be allowed to cool down to a temperature of 200°C at a gradient of 50°C per hour (a period of circa 13 hours) which will be controlled by supplementary firing.

- The furnace line will have stopped incinerating waste for a number of hours, there will be no waste remaining in the furnace and consequently there will be no flue gases to be cleaned. Once the temperature at the stack is sufficiently low at approximately 60°C, the flue gas cleaning systems will be stopped.
- Some utilities to the line such as instrument air, etc. and the majority of the peripheral equipment will be shut-off.
- Other utilities such as electrical supply will continue operating as they will be required even when the line is shut down.

If both lines are shut down and there is waste remaining in the bunker, one ID fan will continue operating if possible at a lower capacity to ensure that the waste reception hall and bunker will be kept under negative pressure to prevent odours.

Appendix 17

Indaver Static Kiln

Static Kiln, Antwerp Site

The incineration directive 2000/76/EC requires that existing incineration plants meet a new emission limit for NOx of 200mg/Nm3 by 2005. Indaver have a static kiln for the treatment of highly chlorinated wastes and PCB waste, which has been in operation since the early 1990's. Whilst Indaver were not required to upgrade this facility until 2005, in 2002 it was decided to modify the plant in order to be in compliance with the 2005 standard. This would be achieved by replacing the existing burner with a new burner system.

In June 2002 these modifications took place and the plant was restarted in July 2002. All the continuous monitoring systems indicated that the new burner was operating successfully and that the emission targets had been achieved. As dioxins cannot be continuously monitored an external accredited laboratory was used to take and analyse samples of dioxins from the flue gases.

The analysis detected a dioxin emission of 28 ng TEQ/Nm^3 (limit 0.1 ng TEQ/Nm^3). A second sample was taken as soon as Indaver were notified of this result and the kiln was switched off. Indaver also immediately notified its regulatory authority (Aminal), the local community and the media. The second sample confirmed the high emission values for dioxins.

As a result of the incident an intensive and complete survey for dioxins in the surroundings took place by the Food Safety Authority. No elevated dioxin levels were measured in the different samples of foodstuff, vegetables, milk and soil taken in an area with a radius of ca. 3 km in the vicinity of the Antwerp site. Therefore the Food Safety Authority confirmed that there was no increased level of dioxin detectable in the area and that therefore no corrective action was required.

Following design reviews and further modifications to the plant a trial burn of the kiln was conducted in January 2003 and samples were taken over a three day period. The kiln was then switched off while awaiting results of these samples. This trial burn was conducted under the control of the regulatory authority. Monitoring results showed that there had been a significant reduction in dioxin emissions, the kiln was still not operating to the required standard of 0.1ng/Nm3.

Whilst the kiln and the gas cleaning equipment had been thoroughly cleaned prior to the trial burn it is believed that the dioxin memory effect caused these elevated readings for dioxins.

To overcome this temporary memory effect the kiln was connected to an additional dioxin coke bed filter. A recommisioning programme was then agreed with the regulatory authority.

In March 2003, the kiln was recommisoned in line with this programme and dioxin measurements were again taken. The results of these measurements were less than 0.01ng/ Nm3, therefore in better than 90% below the requirements of 2000/76/EC.

The kiln is now fully operational and accepting chlorinated waste for disposal. The company has installed a continuous dioxin sampling system and regular dioxin measurements are being taken.

2nd May 2003