3rd January 2006

Office of Environmental Enforcement,
Environmental Protection Agency,
P.O. Box 3000,
Johnstown Castle Estate,
Co. Wexford.

Reference: Fuel Substitution

I refer to your letter dated the 18th November 2005. As requested please find enclosed our proposal to use clean solvents as a fuel substitute in the Thermal Oxidiser. I also enclose the required fee of €126.

I look forward to hearing from you.

Yours sincerely,

Fergal Gilhawley
ENVIRONMENTAL OFFICER

EPA
Main File
Public File
Evaluation File
Date 30/04/06
PROPOSAL TO RE-USE SOLVENTS AS A FUEL SUBSTITUTE AT THE THERMAL OXIDISER

JANUARY 2006

Schering Plough (Avondale) Co.
Rathdrum
Co.Wicklow
1.0 BACKGROUND

Schering-Plough (Avondale) Co. uses a Direct Thermal Oxidiser (DTO) for the destruction of volatile organic vapours from production activities. The operating temperature is maintained at 850°C. Natural gas is currently used as the support fuel however the Thermal Oxidiser has in the past operated on Gas Oil.

The annual fuel consumption of natural gas is currently over 610,000Nm³.

The Company has a number of clean solvents that are currently sent off-site for recovery. These have a high calorific value and are of a higher purity than Gas Oil. The Company is seeking approval from the EPA to substitute natural gas with one or more of these clean solvents.

The Company holds an IPC Licence Registration Number 488. There is currently no provision in this licence to allow solvents to be re-used at the Thermal Oxidiser.

The Consultancy firm, Byrne O'Cleirigh (BOC), has prepared a "Report on Environmental Impact of Fuel Substitution in the Thermal Oxidiser at Schering Plough (Avondale) Co". A copy of this is provided in Attachment 1; some of the key points from this report are outlined in this proposal.

The following is therefore the Company's proposal for reusing solvents on-site as a substitute for natural gas in the Thermal Oxidiser.
2.0 LEGAL ASSESSMENT

A legal assessment (attachment 2) was carried out in 2004 by Dr. Yvonne Scannell, Arthur Cox Solicitors, this concluded;

1. "The burning of solvents is a waste recovery operation"

2. "This should not constitute a material change of use of the premises"

3. "Planning permission should not be required to burn the solvents"

4. "A revised IPC Licence will be required"
3.0 ADVANTAGES OF FUEL SUBSTITUTION

Some advantages associated with solvent fuel substitution would be;

- Reduction in the consumption of a non renewable energy source i.e. natural gas.
- Reduced waste shipments off-site and less traffic on the roads means reduced likelihood of an accident.
- Lowering associated transport fuel consumption and exhaust emissions equating to annual savings of;
  - Carbon Dioxide 33,700kg/yr
  - Sulphur Dioxide 32kg/yr
  - Nitrogen Oxides 165kg/yr
- Significant financial savings both in terms of waste disposal and reduced fuel consumption costs.
- A reduction in VOC emissions as currently solvents sent for recovery are used in paints, thinners, glues etc that after use eventually make their way to atmosphere.
4.0 PROPOSED SOLVENTS/VOLUMES

The Company has identified four suitable solvents. The BOC report estimates that over 500 tonnes of solvent will be needed to substitute for the equivalent heat value of natural gas.

4.1 Solvent Acceptance Criteria/Calorific Values

The following criteria were chosen in selecting suitable solvents:

- Non-chlorinated or sulphur containing compounds
- Low solids residues
- Low water content
- High calorific value (CV)
- Reliability of supply

The following are therefore deemed suitable by the Company:

A. Toluene/THF/Hexane
B. Acetone/Isopropanol/Toluene
C. MTBE/Heptane/Toluene/Xylene
D. Methanol/Dimethyl formide

The BOC report assessed these four streams and has recommended both Solvent A and Solvent C as the most suitable. Solvent B is also acceptable but would need to be tested for its CV prior to use as it is close to the minimal acceptable CV of 30MJ/kg. Solvent D could only be used if blended with either solvent A or C.
Table 1: Calculation of the Calorific Values of the proposed solvents

<table>
<thead>
<tr>
<th>Component</th>
<th>Individual CV</th>
<th>Comp%</th>
<th>CV's of components in mixture</th>
<th>Overall CV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solvent A – Toluene / THF / Hexane</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>42.44</td>
<td>54.59%</td>
<td>23.17</td>
<td>41.61</td>
</tr>
<tr>
<td>THF</td>
<td>34.72</td>
<td>17.79%</td>
<td>6.18</td>
<td></td>
</tr>
<tr>
<td>Hexane</td>
<td>48.31</td>
<td>11.11%</td>
<td>5.37</td>
<td></td>
</tr>
<tr>
<td>Xylene</td>
<td>42.95</td>
<td>15.75%</td>
<td>6.76</td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>22.66</td>
<td>0.61%</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>0.23%</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><strong>Solvent B – Acetone / Isopropanol / Toluene</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>31</td>
<td>76.39%</td>
<td>23.68</td>
<td>30.96</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>33.38</td>
<td>18.87%</td>
<td>6.30</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>42.44</td>
<td>0.38%</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>MIBK</td>
<td>36.89</td>
<td>2.08%</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>25.4</td>
<td>0.22%</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>2.99%</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><strong>Solvent C – MTBE / Heptane / Toluene / Xylene / Ethyl Acetate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTBE</td>
<td>38.17</td>
<td>66.54%</td>
<td>25.40</td>
<td>40.65</td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>25.4</td>
<td>0.74%</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Heptane</td>
<td>48.07</td>
<td>31.33%</td>
<td>15.06</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>0.09%</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><strong>Solvent D – Methanol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>22.66</td>
<td>86.54%</td>
<td>19.61</td>
<td>19.88</td>
</tr>
<tr>
<td>Acetone</td>
<td>31</td>
<td>0.74%</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>MIBK</td>
<td>36.89</td>
<td>0.09%</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>42.44</td>
<td>0.02%</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>5.30%</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

Therefore on this basis the choice of solvents for use as a fuel is ranked as follows;

Table 2 Solvent mix selection

<table>
<thead>
<tr>
<th>Solvent Mix</th>
<th>Description</th>
<th>CV MJ/Kg</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;A&quot;</td>
<td>Toluene/THF/Hexane</td>
<td>41.61</td>
<td>Primary Fuel</td>
</tr>
<tr>
<td>&quot;C&quot;</td>
<td>MTBE/Heptane/Toluene/Xylene/Etac</td>
<td>48.28</td>
<td>Primary Fuel</td>
</tr>
<tr>
<td>&quot;B&quot;</td>
<td>Acetone/ISO/Toluene</td>
<td>30.96</td>
<td>Back Up Fuel</td>
</tr>
<tr>
<td>&quot;D&quot;</td>
<td>Methanol</td>
<td>19.88</td>
<td>Back Up Fuel, blending required</td>
</tr>
</tbody>
</table>
4.2 Fuel Acceptance Criteria

The Company wishes to maintain some flexibility and should solvent mixes change or new processes come on-site would therefore propose the following acceptance criteria rather than naming specific solvents.

- Only clean solvents will be used

- No chlorinated or sulfur containing solvents will be used. A limit of <1% will be specified to allow for trace levels or false analytical positives.

- The Calorific Value will either before or after blending be >30 MJ/kg. This will be calculated theoretically based on the percentage components of the solvent mix.

- The use of any solvents other than those listed above would be agreed in advance with the EPA.
5.0 PLANT EQUIPMENT/TESTING REGIME

The thermal oxidiser already has two solvent fuel nozzles available. Any solvents sent to the Thermal Oxidiser as fuel will be done on a batch basis.

The expected daily feed to the Thermal Oxidiser is 2,800 litres per day. To allow for the completion of analysis prior to sending to the thermal oxidiser a 3-5 day retention time is envisaged. The volume of each feed tank therefore needs to be at least 15,000 litres.

These tanks will be located either in the tank farm or adjacent to the thermal Oxidiser. Inlet and outlet filters with pressure drop indicators will be installed to protect against solids entering or leaving the tanks. All tanks will be bunded and fitted with conservation vents.

Prior to feeding the storage tanks will be tested by GC and Karl Fisher for percentage breakdown of the organic components and the water content. Note both of these tests are accredited to ISO 17025 "General Requirements for the Competence and Testing and Calibration Laboratories".

This testing will prove the absence of any chlorinated organic and will allow for theoretical calculation of the CV. If the sample does not meet the agreed criteria then the material will be shipped off-site for recovery.

Written procedures will be developed and all analysis records will be retained on site and will be readily available for inspection by the EPA.
6.0 OUTLINE PROCEDURE

The following flow chart summarises the steps from the generation of a solvent for fuel substitution to its actual use in the Thermal Oxidiser.

- Fill tank with agreed solvents for fuel substitution
- Test contents
- Use in Thermal oxidiser
- Fail: Send off-site for recovery
- Pass:
  - For inspection purposes only.
  - Consent of copyright owner required for any other use.
8.0 CONCLUSIONS

The Company has identified suitable solvents for fuel substitution and will put in place equipment and systems to ensure continued compliance with the emission limit values from the Thermal Oxidiser.

The Company believes this project is acceptable under Irish and European Legislation and as it will be regarded as a recovery operation a waste licence or a planning approval is not required. The Company will consult with the Planning Authority to confirm this.

The substitution of solvents results in emissions that is still cleaner than when the Company operated the Thermal Oxidiser on Gas Oil.

An environmental assessment by Byrne O'Cleirigh has concluded that this is a positive course of action as there are a number of environmental benefits.
Attachment 1 “Report on Environmental Impact of Fuel Substitution in the Thermal Oxidiser at Schering Plough (Avondale) Co”. Byrne O'Cleirigh (BOC)
Client: Schering-Plough (Avondale) Company

Report on Environmental Impact of Fuel Substitution in the Thermal Oxidiser at Schering-Plough (Avondale) Company

CERTIFIED FINAL
311-X017
October 2005
This report has been prepared by Byrne Ó Cléirigh Limited with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporating our Terms and Conditions and taking account of the resources devoted to it by agreement with the Client.

We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.
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1. Introduction

Schering-Plough (Avondale) Company (SP(A)C) operates a thermal oxidiser at its plant in Rathdrum. The plant, which oxidises mixed vapours from a number of individual production units on the site, was commissioned in May 1999. It was designed to burn both liquid solvent streams and vapours.

Up to now the plant has operated as a thermal oxidiser for vapours only. The plant destroys a range of organic vapours before discharging cleaned flue gases to atmosphere. Since the unit was commissioned in May 1999, the organic content of the vent gases reaching the oxidiser has generally been too dilute to support oxidation in auto thermal mode. This is due in part to the use of nitrogen to blanket and purge production vessels. A supplementary fuel, natural gas, is burned to maintain the combustion chamber at 850°C in accordance with the site’s IPC licence.

SP(A)C have requested Byrne Ó Cléirigh (BÓC) to conduct an independent review of the environmental impacts which would arise from the proposed fuel substitution project whereby organic solvent liquids would replace natural gas as the oxidiser fuel. Note that this is an update of a previous report (ref: 292-X004) which assessed the impacts of fuel substitution based on switching part of the fuel consumption, which at that time was gas oil, to burning the waste solvents generated in 1999.

2. Current Arrangements

2.1 Oxidiser Operation

The thermal oxidiser currently reduces the emissions to atmosphere of organic vapours from the production processes by oxidising them at high temperature (850°C). The majority of the organic vapours are converted primarily into carbon dioxide (CO₂) and water vapour (H₂O).

The raw waste gas contains some chlorinated solvents and solvents containing nitrogen. The thermal oxidation process thus results in some HCl and NOx being produced. These gases are, in turn, removed by means of a scrubber and a NOx removal step. The concentrations of these compounds are not currently measured at the exit point from the combustion chamber as they are subsequently removed by the flue gas clean up equipment. The residual concentrations after gas treatment are measured in the final flue gas to atmosphere.

SP(A)C have reported that the oxidiser uses 610,000 Nm³ of natural gas in a full year at an annual cost of over €300,000.
The thermal oxidiser is fitted with a heat recovery unit which produces steam, a portion of which can be used in the production plant. The balance of the heat is rejected to atmosphere. The generation of steam in the oxidiser backs out some natural gas used in the boiler plant. The thermal oxidiser supplies approximately 25% of the thermal demand for the site during the summer months and 20% during the winter.

2.2 Solvents as Alternative Fuels

SP(A)C have identified four waste solvent streams which are currently sent off site for recovery but which may be suitable for use as substitute fuels in the thermal oxidiser. These solvent streams are shown in Table 1.

Table 1: Solvent Streams proposed for use as Substitute Fuels

<table>
<thead>
<tr>
<th>Component</th>
<th>Individual CV</th>
<th>Comp</th>
<th>CV's of components in mixture</th>
<th>Overall CV</th>
<th>Annual Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solvent A – Toluene/THF/Hexane</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
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<td>54.59%</td>
<td>23.17</td>
<td>41.61</td>
<td>590</td>
</tr>
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<td>THF</td>
<td>34.72</td>
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<tr>
<td>Xylene</td>
<td>42.95</td>
<td>15.75%</td>
<td>6.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>22.66</td>
<td>0.61%</td>
<td>0.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>0.23%</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solvent B – Acetone/Isopropanol/Toluene</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>31</td>
<td>76.99%</td>
<td>23.68</td>
<td>30.96</td>
<td>230</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>33.38</td>
<td>18.87%</td>
<td>6.30</td>
<td></td>
<td></td>
</tr>
<tr>
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<tr>
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<td>2.08%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>25.4</td>
<td>0.22%</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>2.99%</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solvent C – MTBE/Heptane/Toluene/Xylene/Ethyl Acetate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTBE</td>
<td>38.17</td>
<td>60.54%</td>
<td>25.40</td>
<td>40.65</td>
<td>300</td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>25.4</td>
<td>0.74%</td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heptane</td>
<td>48.07</td>
<td>31.33%</td>
<td>15.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>0.99%</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solvent D – Methanol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>22.66</td>
<td>86.54%</td>
<td>19.61</td>
<td>19.88</td>
<td>488</td>
</tr>
<tr>
<td>Acetone</td>
<td>31</td>
<td>0.74%</td>
<td>0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIBK</td>
<td>36.89</td>
<td>0.09%</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>42.44</td>
<td>0.02%</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>5.30%</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Between these four waste solvent streams, there was a total of 1,608 tonnes sent off site for disposal/recovery in 2004. These solvents contained a total calorific value of 53,570 GJ p.a. It is important to note that this figure is a gross calorific value, the actual net calorific value will be less than this, depending on the hydrogen content of the fuel. This is discussed in more detail in Section 4.

The cost of removing these waste streams is in the region of €400,000 per annum.
Arthur Cox already examined the legal implications of this proposed change to SP(A)C’s IPC Licence. They found that this should be considered a subsidiary activity at SP(A)C and that this would not require a waste licence but rather should be covered under the existing IPC Licence. They noted that this will require some changes to the wording of the licence, which must be agreed with the EPA.

3. **Suitability of Thermal Oxidisation Plant**

From our review of documentation produced by SP(A)C at our request, the oxidiser would appear to be suitable for burning liquid solvent streams on the following basis:

- The original specification for the oxidiser, which was issued by Jacobs Engineering and which formed part of the contract with Caloric (the oxidiser manufacturer), included a requirement that the unit should be capable of burning both organic vapours and organic liquids. It was a requirement that the emissions should meet the EPA’s licence limit values when burning liquid or vapour feeds.

  Note, we did not check as part of this study whether the oxidiser was constructed in accordance with the original specification. We assume that SP(A)C could demonstrate that this is the case to the EPA if required using Mechanical Completion Certificates or a similar quality assurance system.

- Previous testing showed that the unit had successfully burned liquid Dichloromethane (DCM) at a feed rate of 150 kg/hr while comfortably meeting the IPC emission limit values for HCI and dioxins during the test.

- The thermal oxidiser is fitted with a back end clean-up unit and has been designed to suppress dioxin formation (by operating at 850°C with a 2 second residence time and by the inclusion of quench step), to remove acid gases, e.g. SO2 and HCl by scrubbing, and it also has an NOX removal system fitted. The unit also has the capability to operate at 1,100°C should the EPA require a higher operating temperature for the waste solvent streams.

- SP(A)C have conducted extensive emissions monitoring at the stack over the past few years. The results show that there has been a very good level of compliance with their licence conditions while burning process vapours using first supplementary gas oil firing and now using supplementary firing with natural gas. The monitoring programme involves the collection of composite samples every half-hour and every 24 hours. Each sample is monitored for a range of parameters to ensure compliance with the licence.
Over the past three years, there were a very small number of exceedances based on the 30 minute samples but no exceedances based on the 24 hour samples, indicating that while there may have been the very occasional spike in the emissions, they were only of short duration. The level of compliance has improved since the thermal oxidiser was converted to natural gas; since then there have been no breaches of the emission limit values and in general SP(A)C have found that their normal emission levels are usually only a small fraction of the emission limit value for each of the parameters.

The oxidiser is designed to be able to burn a range of liquids. The range included in the original specification includes liquid feeds with an organic nitrogen content, e.g. acetonitrile, and the chlorinated solvents dichloromethane and methyl chloride, together with other organic solvents containing only carbon, hydrogen and oxygen.

It should be noted that any proposal for fuel substitution using waste solvents will require a revision of the IPC licence as Condition 7.3 states that “waste solvent streams shall not be used as an alternative fuel in the thermal oxidiser”.

4. Selection of Solvent Streams for Fuel Substitution

This proposal to use solvent streams to reduce the amount of natural gas consumed at the oxidiser is a waste recovery activity. This activity falls under the scope of an IPPC Licence and not under a separate waste licence. Nevertheless, while it does not apply to this activity, we have examined Council Directive 2000/76/EC on the Incineration of Waste to see what criteria could be applied for assessing the suitability of potential solvent streams for use as substitute fuels. These waste streams contain no PCBs or PCPs and so the main criteria which we feel should be considered when assessing the suitability of solvents for use as fuels are:

- That waste cannot cause, in the flue gas directly resulting from their combustion, emissions other than those from gas oil
- That the net calorific value amounts to at least 30MJ per kilogramme

The four waste solvent streams identified by SP(A)C for the fuel substitution programme are shown in Table 2.
Table 2: Energy Content of streams sent for off-site recovery which are considered for use as Substitute Fuels

<table>
<thead>
<tr>
<th>Solvent Waste Stream</th>
<th>Quantity (tonnes/year)</th>
<th>Gross CV (MJ/kg)</th>
<th>Hydrogen Content (%)</th>
<th>Net CV (MJ/kg)</th>
<th>Energy (GJ/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Toluene/THF/Hexane</td>
<td>590</td>
<td>41.61</td>
<td>10.1%</td>
<td>39.6</td>
<td>23,368</td>
</tr>
<tr>
<td>B. Acetone/Isopropanol/Toluene</td>
<td>230</td>
<td>30.96</td>
<td>11.1%</td>
<td>29.4</td>
<td>6,756</td>
</tr>
<tr>
<td>C. MTBE/Heptane/Toluene/Xylene/EA</td>
<td>300</td>
<td>40.65</td>
<td>14.3%</td>
<td>38.1</td>
<td>11,436</td>
</tr>
<tr>
<td>D. Methanol</td>
<td>488</td>
<td>19.88</td>
<td>11.5%</td>
<td>18.8</td>
<td>9,189</td>
</tr>
</tbody>
</table>

The Gross Calorific Values are calculated using the Heats of Combustion of the individual components of each waste stream, as shown in Table 1. The Net Calorific Values are calculated by reference to the hydrogen content of each stream. We have compared the hydrogen contents of these streams with those of various petroleum products and examined how the ratio of Net CV/Gross CV varies with these products. This has allowed us to estimate the Net Calorific Value of each stream. Based on these figures, the total energy available in these four waste solvent streams is c.50,750 GJ per year.

An assessment of the compositions of the four solvent streams is shown in Table 3.

Table 3: Composition of Waste Solvent Streams, breakdown by weight

<table>
<thead>
<tr>
<th>Stream</th>
<th>Carbon (%)</th>
<th>Hydrogen (%)</th>
<th>Oxygen (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream A</td>
<td>85.5%</td>
<td>10.1%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Stream B</td>
<td>60.7%</td>
<td>11.1%</td>
<td>29.2%</td>
</tr>
<tr>
<td>Stream C</td>
<td>72.1%</td>
<td>14.3%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Stream D</td>
<td>33.0%</td>
<td>11.5%</td>
<td>48.2%</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>73.6%</td>
<td>23.7%</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

The composition of Stream A is the closest match for a petroleum product. Gas oil, which was previously used as the fuel for the thermal oxidiser, typically has a carbon content of c.86% and a Hydrogen content of c.13%. The energy content of this stream is also comparable to that of gas oil.

Stream A is generated in the largest quantities and also has the highest calorific value of the four streams and would, by itself, be capable of fully backing out the recent natural gas consumption. Initially, we recommend that SP(A)C opt to keep some natural gas flowing to the oxidiser as a back-up fuel source.
Our interpretation is that the proposal for fuel substitution will meet the criteria described earlier, with the provisos that SP(A)C should monitor the composition and calorific value of the waste streams. We note that SP(A)C will not blend any chlorinated solvents into the fuel batches. However there may occasionally be some traces of chlorinated solvents in the waste solvent streams which may result in higher emissions of HCl immediately after combustion in the flue gas when compared to gas oil. If this did ever arise then it should be noted that the emissions from the thermal oxidiser are routed to a scrubber which would remove any HCl generated. There would therefore be a negligible impact on the emissions to air from this.

Although this activity is fuel substitution and not incineration, the waste streams which SP(A)C propose to use for this project meet all of the exemption criteria described in the Waste Incineration Directive and would in fact be exempt from the requirements for hazardous waste set out in this Directive. Therefore we believe that these wastes should also be acceptable for use as substitute fuel in the thermal oxidiser at SP(A)C.

The waste solvent streams were selected by SP(A)C using the following criteria:

- No chlorinated or sulphur-containing materials
- Low solids residues
- Low water content
- High calorific value
- Reliability of supply

Based on an annual usage of 610,000 Nm³ per year of natural gas, the energy requirement of the thermal oxidiser is 22,140 GJ per year. Therefore, the waste solvent streams contain more than sufficient energy to meet the requirements of the thermal oxidiser and to back out the 610,000 Nm³ of natural gas which is the current annual demand for the oxidiser. In fact, there is enough energy in Stream A alone to meet this energy requirement.

If the energy requirements at the oxidiser were to increase considerably, or if the quantities of the various waste solvent streams were to change significantly, then the situation could arise whereby SP(A)C would need to consider using more than just Stream A in order to meet the energy requirements of the oxidiser. If solvent Stream A was not able to meet the energy requirements of the oxidiser on its own then SP(A)C should consider using the solvent streams in the following order of preference:

1st. Stream A
2nd. Stream C
3rd. Stream B
4th. Stream D
As noted already, Solvent Stream A is the closest match to gas oil, which was the liquid fuel previously used for supplying energy to the thermal oxidiser. The next best match is Stream C. The energy content of both of these streams is greater than 30MJ/kg and so each could be used as a fuel without any need to blend them beforehand to meet a minimum CV.

The energy content in Stream B looks to be slightly lower than the 30MJ/kg, but this is based on our estimation of the Net Calorific Value using the hydrogen content. It looks to be very close to the level required and so it may prove to be acceptable for use as a fuel but the energy content of each batch would need to be checked before use.

The energy content of Stream D is lower than the other solvents and it would need to be blended with one of the higher energy streams (Stream A or C) to bring the calorific value up above 30MJ/kg.

SP(A)C should also note that this proposal for fuel substitution will require some additional work in order to comply with the Seveso Regulations (S.I. 476 of 2000). SP(A)C will need to implement their Management of Change procedure to assess whether this proposal could give rise to any new risks of major accident scenarios and, if it is found necessary, will need to set up a team to review the Hazard Identification & Risk Assessment (HAZID&RA) exercise to assess the impacts of these changes. If the exercise finds that there is an increased risk of major accident scenarios occurring then the Health and Safety Authority would need to be notified.

5. **On Site Emissions**

5.1 **Emissions to Air**

Based on current energy requirements, there is sufficient energy available in Stream A to fuel the thermal oxidiser. If the energy requirements increase, there is sufficient energy in the other solvent streams to meet any foreseeable increase in demand.

Table 4 details the level of resource consumption to meet the current energy requirements of the thermal oxidiser based on natural gas firing only and compares this with the resource consumption using solvent streams to meet 90% of this energy requirement.
Table 4: Impact of Fuel Substitution on overall Resource Consumption – Indicative Figures

<table>
<thead>
<tr>
<th>Resource Consumption</th>
<th>Units</th>
<th>Current Energy Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Natural Gas Only</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Requirement</td>
<td>MJ/year</td>
<td>22,141,000</td>
</tr>
<tr>
<td>Natural Gas Consumption</td>
<td>Nm³/year</td>
<td>610,000</td>
</tr>
<tr>
<td>Solvent Consumption</td>
<td>kg/year</td>
<td>0</td>
</tr>
<tr>
<td><strong>Fuel Substitution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Requirement</td>
<td>MJ/year</td>
<td>22,141,000</td>
</tr>
<tr>
<td>Natural Gas Consumption</td>
<td>Nm³/year</td>
<td>61,000</td>
</tr>
<tr>
<td>Solvent Consumption</td>
<td>kg/year</td>
<td>503,000</td>
</tr>
<tr>
<td>Reduced Gas Consumption</td>
<td>Nm³/year</td>
<td>549,000</td>
</tr>
<tr>
<td>Reduced Solvent Waste</td>
<td>kg/year</td>
<td>503,000</td>
</tr>
<tr>
<td>Overall Cost Saving</td>
<td>€/year</td>
<td>~ € 400,000</td>
</tr>
</tbody>
</table>

The potential impact of fuel substitution on the emissions from the thermal oxidiser would be as follows:

- **Oxides of Sulphur:** These emissions should continue to be very low as there should be no Sulphur present in the waste solvent streams. The use of waste solvents should give much lower SOₓ emissions than gas oil (which was used at the oxidiser prior to the changeover to natural gas).

- **Nitrogen Oxides:** These emissions should be similar to the current levels; there are no Nitrogen-containing compounds included in any of the waste solvent streams under consideration. It should be noted also that there is already a De-NOₓ unit in place to treat these emissions.

- **Carbon Monoxide:** These should also remain similar to the current levels. All solvent streams will be monitored prior to being sent to the stack so that SP(A)C can ensure that there is always sufficient Oxygen in the feed so that complete combustion takes place.

- **Particulates:** These are not expected to be a problem as the oxidiser is fitted with a liquid scrubber which should remove any particulates in the emissions.

- **Hydrogen Chloride:** SP(A)C will not blend any chlorinated solvents into the fuel batches. However there may occasionally be some traces of chlorinated solvents in the solvent streams. Nevertheless it should be noted that the thermal oxidiser has been designed to burn a pure DCM liquid stream and has done so at a rate of 150 kg/hr during trials. It should also be noted that chlorinated solvents in vapour form are a constituent of the current raw gas to the oxidiser. As such, the possibility that the fuel could contain trace amounts of chlorinated solvent is not considered significant because the oxidiser is already handling chlorinated vapours and has been designed to do so. The actual emissions to atmosphere should be unchanged after the scrubber unit.
• **Total Organic Carbon:** There may be a slight increase in TOC generation due to the increased Carbon content per Gigajoule in the solvent streams compared with natural gas. However, the emissions would be comparable to those associated with gas oil, particularly in the case of stream A.

• **Dioxins:** As discussed for Hydrogen Chloride, there may sometimes be a slight increase in chlorine content in the solvent fuel compared with natural gas, but the chlorine content would be minor. The oxidiser is designed to handle much higher concentrations than this. It should be noted that, in addition to emissions monitoring, SP(A)C has conducted regular testing of dioxins in soil and milk in the vicinity of the site and the results show that the levels are low and are within the range normally expected for rural, uncontaminated sites. The proposal for fuel substitution should not change this as trials have shown the unit can treat liquid Dichloromethane at a feed rate of 150 kg/hr while comfortably meeting the IPC emission limit values for both HCl and dioxins.

While there are some parameters for which the emissions may increase slightly when compared with natural gas, they would be comparable to or less than the emissions that would be obtained if gas oil was used as the fuel. The emissions would also continue to be comfortably within the emission limits in the current IPC licence for each of these parameters. SP(A)C had no breaches of their licence conditions in 2004 and the emissions are typically only a small fraction of the licensed limit values. This should continue to be the case with the proposal for fuel substitution in place.

However, it should be noted that while there would be little impact on the licensed emissions from the stack, the waste solvents contain a greater amount of Carbon per unit of energy compared with natural gas, meaning that the use of these solvents would result in increased CO₂ emissions from the site. The on-site CO₂ emissions would increase by 385 tonnes per annum based on the current energy requirements. SP(A)C would therefore need to consider how this would influence their overall status under the Kyoto Agreement. However, this increase in CO₂ emissions at the site would be more than off-set by the reduced global CO₂ emissions arising from VOC emissions offsite, as discussed in Section 6.2.

This proposal for fuel substitution would also give rise to a further reduction in emissions off site because of the reduction in road transport of waste solvents, as discussed in Section 6 of this report.

### 5.2 Emissions to Surface Water

There would be no significant impact on the emissions to water from this proposal. In our previous report (292-X004), we found that the proposed change would in fact reduce the emissions of SO₂ which would, in turn, lead to a reduced discharge of sulphates to the Waste Water Treatment Plant from the scrubber. However, this was because the oxidiser was fired on gas oil at the time.
It is likely that fuel substitution would lead to a small increase in HCl emissions from the oxidiser. However, any such increase would not be emitted to air as it would be removed by the wet scrubber. This would instead lead to a small increase in the HCl concentration in the scrubbing liquid which would be neutralised in the Waste Water Treatment Plant (WWTP).

5.3 Emissions to Soil/Groundwater

No change in emissions to soils or groundwater is foreseen as a result of fuel substitution.

6. Off Site Emissions

6.1 Transport

Under the current energy requirements of the oxidiser, the proposal to back out 90% of the energy requirement of the oxidiser would result in 503 tonnes of solvent being used as fuel rather than being disposed of off site. This would result in a reduction of approximately 29 bulk shipments of Toluene/Tetrahydrofuran/Hexane to recovery sites in Britain. The sites are at Southampton and Rye in Sussex. The full round trip from Rathdrum via Dublin Port to Southampton is 680 miles, giving a reduction in annual miles travelled by solvent tankers of 19,700 miles or 31,550 km.

Table 5 shows the reduction in off-site emissions as a result of this reduction in road transport of waste solvents.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Reduced Emissions (kg/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide</td>
<td>33,700</td>
</tr>
<tr>
<td>Sulphur Dioxide</td>
<td>32</td>
</tr>
<tr>
<td>NO&lt;sub&gt;x&lt;/sub&gt;</td>
<td>165</td>
</tr>
</tbody>
</table>

CO<sub>2</sub> emissions calculated based on road diesel savings @ 86% Carbon in fuel
SO<sub>2</sub> emissions calculated based on road diesel savings @ 0.15% Sulphur in fuel
NO<sub>x</sub> emissions calculated based on EC emission standards for diesel engines
6.2 Emissions from Off-Site use of Solvent

Waste solvents from pharmaceutical manufacture tend to be recycled into paint, paint stripper and similar applications and would ultimately be evaporated to atmosphere as VOC emissions. These emissions could participate in ground level ozone formation by reacting with NOX to form ozone and various carbon compounds (hydrocarbons and CO2). The 2003 National Inventory Report by the EPA shows that CO2 emissions arising from VOC are derived by assuming that 85% of the mass emissions of VOC converts to CO2 (i.e. assuming that the VOC emissions comprise 85% Carbon and that all of this Carbon is ultimately converted to CO2).

As shown in Table 4 the proposal for fuel substitution would result in a reduction in solvent usage of 503 tonnes per year. If Solvent Stream A were used as the substitute fuel it would have a Carbon content of 85.5% which would ultimately correspond to 1,577 tonnes of off-site CO2 emissions.

In contrast, if the solvents were used in the oxidiser they would be converted into CO2 and water vapour and there would be no VOC emissions associated with this. The increase in CO2 emissions was shown in Section 5.1 to be 385 tonnes per annum based on the current energy requirements for the stack.

The difference between the current arrangement and the proposal for fuel substitution is that under the current arrangement there is an on-site CO2 emission from the oxidiser (as well as the other parameters discussed previously) and an off-site VOC emission from the waste solvents. Under the proposal for fuel substitution, there would be a slight increase in the on-site CO2 emission but there would be a more significant decrease in the global VOC emission.

6.3 Savings in Fossil Fuel Resources

Under current energy requirements at the oxidiser, fuel substitution would result in a reduction of 549,000 Nm³ in natural gas consumption per year. In addition there would be a reduction of approximately 10.6 tonnes road Diesel consumption.
7. Conclusions

Our view is that the proposal to use waste solvent as a substitute instead of natural gas to fuel the thermal oxidiser should be technically acceptable to the EPA based on a comparison of the impacts on the environment compared with current operations. There are several similar plants already licensed by the EPA on sites in the Pharma sector in Ireland.

There are a few points that SP(A)C should note before commencing with this project.

1. Solvent streams A (Toluene/THF/Hexane) and C (MTBE/Heptane/Toluene/Xylene/EA) can meet all the exemption criteria under Article 2(a) of the Waste Incineration Directive (2000/76/EC). This means that these waste streams would be acceptable for use under the Waste Incineration Directive and would in fact be exempt from the requirements for hazardous waste set out in the Directive. Therefore we believe that these wastes should also be acceptable for use as substitute fuel in the thermal oxidiser at SP(A)C.

2. Solvent stream B (Acetone/Isopropanol/Toluene) may not always meet the hazardous waste exemption criteria in Directive 2000/76/EC and would need monitoring of its composition if it were to be used as a substitute fuel. The net calorific value of this stream is very close to the limit specified in the Waste Incineration Directive and would need to be monitored to ensure that it was always above 30MJ/kg. Solvent stream D (Methanol) could only meet the exemption criteria if it was blended with stream A or C.

3. The maximum amount of waste solvent that SP(A)C should use at the oxidiser would be the quantity required to treat the vapour emissions from the plant. From the standpoint of licensing under IPPC we do not recommend that SP(A)C use the oxidiser to treat surplus quantities of waste solvent over and above that needed to back out the energy requirement of the oxidiser as this would no longer be fuel substitution. This is something that would need to be discussed with the EPA before it could be taken any further.

4. In order to comply with the Seveso Regulations, SP(A)C will need to implement its Procedure for the Management of Change to see if there is any potential for major accident scenarios arising from this change. SP(A)C may also need to convene the HAZID&RA Team to assess these hazards.

While there may be a slight increase in the emissions of some of the parameters covered by the IPC Licence arising from this change when compared with the emissions from natural gas firing, they would not be significant and would remain comfortably within the emission limit values from the licence. There should be no risk to man or the environment from such a change. However, there would be an increase in CO₂ emissions from the stack because of the fact that the waste solvents have a higher Carbon content per unit energy than does natural gas. This would be more than offset by the reduction in off-site emissions that would result from this proposal.
Overall there are a number of positive environmental benefits to this proposal for fuel substitution at SP(A)C. These include:

- An overall global reduction in the emissions of VOCs and CO2, due to the reduction in waste solvent sent off site
- A reduction in natural gas consumption at the thermal oxidiser due to the fact that it would be replaced by solvent streams generated on site
- A reduction in diesel consumption due to the reduced number of truck movements the waste solvent streams, with a corresponding reduction in the emission of combustion products to atmosphere (CO2, SO2, NOx)

In addition there would be a considerable financial saving arising from this proposal due to the reduction in the amount of fuel consumed and in the amount of waste sent for disposal off site.

Finally we agree with the findings of Arthur Cox that this proposal for fuel substitution does not constitute incineration and that it does not require a new licence but can be accommodated by a review of the current IPC Licence.
Attachment 2: Legal assessment by A. Cox on fuel substitution.
Attachment 2: Legal assessment by A. Cox on fuel substitution.
Opinion of Dr. Yvonne Scannell on queries raised by Schering-Plough (Avondale) Co. in relation to the operation of its Thermal Oxidiser

The essential question here is to consider the planning implications of burning solvents in the Thermal Oxidiser. Schering Plough is considering doing this but wishes to know if planning permission is required to do so.

In my opinion, the burning of solvents constitutes the burning of wastes and probably the burning of hazardous wastes under Irish and EU law. In my opinion also, the burning of so much solvents as are genuinely required for fuel would be a waste recovery operation and not a waste disposal activity. This is quite clear from the decisions of the European Court of Justice and the Waste Framework Directive ("WFD") which provides that the disposal of waste by using it principally as a fuel is classified as a "recovery operation" and not a "disposal operation". (Annex II of Council Directive 75/442 as amended).

I understand that no construction work is required to burn solvents in the Thermal Oxidiser. I understand that the Thermal Oxidiser does not qualify as an incinerator at present because it is essentially dealing with gaseous air emissions rather than wastes. I understand that no planning permission was required for the Thermal Oxidiser and that Wicklow County Council issued a determination that planning permission was not required for it and that it constituted exempted development being an item in the nature of plant and machinery.

The question therefore is whether planning permission is required to use the Thermal Oxidiser for burning solvents. Planning permission would be required if the burning of solvents was not exempted development or a material change of use. It might not be exempted development for several reasons but the most likely are that:

(i) there is a condition in any of the planning permissions for the Schering-Plough site which effectively de-exempts exempted development; i.e. states that no further development may be carried out on the site without the permission of the planning authority.

(ii) Burning solvents constitutes a material change of use of the premises so that instead of being premises for the manufacture of pharmaceuticals, it now becomes a premises for the manufacture of pharmaceuticals and the recovery of waste.

(iii) Any additional plant and equipment required would be not be exempt under Class 21 of Part 1 of the Second Schedule to the 2001 Planning Regulations.

(iv) If the burning of hazardous waste at the facility is not an activity for which an Environmental Impact Assessment ("EIA") is required.

(i) There is a condition in any of the planning permission for the Schering-Plough site

1 In certain circumstances the burning of solvents may not be regarded as burning hazardous wastes. See Directive 2000/76/EC on the incineration of waste, article 1, para 2(b).
which effectively de-exempts exempted development

The fact that the planning authority has already ruled that no planning permission was required for the Thermal Oxidiser leads me to the conclusion that no such condition exists because if it did, the planning authority should have required planning permission for the Thermal Oxidiser. However, the fact that there is no planning condition de-exempting exempted development should be confirmed by Schering Plough's planning consultant because if it is ever argued that planning permission is required to burn solvents, the burden of proving that the Thermal Oxidiser was exempted development rests with Schering Plough.

(ii) Does burning solvents become a material change of use?

In my opinion, burning solvents would be a material change of use if the objective of so doing is merely to dispose of the solvents. However, if the objective as to use them as a fuel and only as a fuel, burning the solvents would not be a material change of use.

The use of waste by using it "principally as a fuel or other means to generate energy" is classified as a waste "recovery" process in Annex 11 to WFD and the Fourth Schedule to WMA. The European Court of Justice has held in Commission v Germany (C-228/00, European Court of Justice, 13 February 2003):

"The essential characteristic of a recovery operation is that its principal objective is that waste serves a useful purpose in replacing other materials which would have had to be used for that purpose. In relation to incineration, it followed that "the combustion of waste therefore constitutes a recovery operation where its principal objective is that the waste can fulfil a useful function as a means of generating energy, replacing the use of a source of primary energy which would have had to have been used to fulfil that function."

In my opinion therefore, it is not a material change of use to recover waste solvents in the Thermal Oxidiser. It might be a material change of use to dispose of the waste solvents "where the disposal of the solvents is the paramount objective of the exercise". I base this opinion also on English law decisions to the effect that it is not a material change of use to recover waste generated on one's own premises. In R v Durham CC ex p. Lowther [2002] JPL 197; [2002] 1 P&CR 283 a plant, at Thrislington in Durham, converted quarried rock into dolime, by a process involving heating the crushed rock in kilns. In 1996, the operators had begun using "secondary liquid fuel" ("SLF"), a fuel that consisted of constituent parts each of which was a form of waste produced from solvents. An issue arose whether the substitution of this form of fuel involved a separate planning activity, requiring planning permission, on the basis that it involved the disposal of waste. It was submitted by the applicants that in burning SLF, the plants were not only used for the production of cement or lime in rotary kilns but also were plants for the disposal of toxic and dangerous waste by incineration. The Court of Appeal unanimously held:

"there is no question of the second respondents holding SLF for the purpose of disposing of it as waste. They acquire it because they wish to use it as a fuel, and that is how they use it. If SLF was not waste, but was produced as a fuel, there could be no suggestion of..."

See 2002 JPL at 211, para 57.
the second respondents making two uses of their land, one being burning of fuel and the other the manufacturing of lime. To postulate that the designation of SLF as waste makes all the difference and results in a separate use of the land is unreal.

The court stated: -

"[T]he mere fact that a fuel used in the manufacturing process is classified as waste, or even as hazardous waste, does not of itself necessarily lead to the conclusion that the use of the fuel creates a land use distinct from that of manufacturing. I have come to the conclusion, upon the facts, as set out by the Master of the Rolls in his judgment, that the inference should not be drawn that the disposal was in this case a separate and distinct use of land. The disposal by use as fuel should in this case properly be categorised as an integral part of the process of lime manufacture."

Moreover, Lord Phillips held:

"I have been unable to identify any principle of planning law that decrees that, simply because waste is matter which has to be disposed of, a person who makes constructive use of the waste for the purpose of some activity other than disposal of the waste, but who incidentally disposes of the waste at the same time, must be deemed to be making two uses of the land, namely waste disposal and the ulterior activity".

And

"I agree with the obiter observation of Harrison J in R v The Environment Agency and Redland Agriculture Ltd ex parte Gibson (8 May 1988) at p46 that: "On any sensible analysis the plants at Thrislington are lime producing plants; they are not plants for the incineration of waste."

The Court of Appeal determined that the great public concern at the disposal of hazardous waste did not require that a separate and distinct use of land should inevitably be established for planning purposes, not even when significant waste disposal is undertaken.

However, somewhat against my opinion, there is a ruling by An Bord Pleanala which may appear to take a different view on the planning issues involved in this case. This is the ruling in the Edenderry Power case Ref RL.2032 There the issue was whether burning meat and bone meal is or is not exempted development. The Board held that it was not. The reasons for its decisions may be found in the report of the Inspector, Mr Philip Jones. Although the reasoning is somewhat obtuse, it appears that he considered that burning meat and bone meal was not exempted development. He considered that "to be classified as development in this instance, the proposal has to be adjudged to consist of a material change of use." And he went on to say: -

"In my judgement, the key test in this context is whether the existing planning permission reveals a particular purpose for which the existing power station was intended. If it does, and the proposed use differs materially from this, so that it has planning implications, it is a material change of use, and hence is development"
Mr Jones answered the question primarily by looking at the existing planning permission for Edenderry. He based his opinion on:

(a) the fact that the existing planning permission for the premises was expressly granted for a peat fuelled power station and no other kind of power station. Accordingly, to fuel it with some other fuel was contrary to Condition 1 of the planning permission. 3and

(b) the fact that the planning permission for Edenderry was granted on the basis of its specific location near the source of fuel.

Mr Jones went on to hold that the burning of MBM was a new use at Edenderry and then proceeded to examine if that use was a material change of use. 4 In deciding whether the use of MBM was a material change of use, the Inspector considered:

(a) the basis on which the original planning permission had been granted i.e. the proximity to the source of fuel.

(b) traffic implications. 5 and 6

(c) the environmental implications.

Applying these tests to the Schering Plough situation, there is no limitation in the planning permissions as to the fuels which may be used on site, there are no traffic implications whatsoever from burning the solvents, and there are no significant environmental effects, because if there were, the EPA could not legally licence the burning of the solvents. Although the planning authority is entitled to take the environmental effects of a project into account in determining if it is exempted development, it is also entitled to have regard to the fact that separate regulatory regimes are in place to deal with hazardous substances and pollution risks. 7

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3 Accordingly, I consider that the planning permission granted by the Board under file ref. PL19.107858 was clearly indicated and specified as being for a particular purpose viz. the generation of electrical power from the combustion of peat, and not for a general purpose of generating power through the combustion of fuels generally.

4 "The question then arises whether these changes are material in planning terms."

5 "It seems to me that any significant changes in the road transportation regime, including the sourcing of the inputs, are material in that they could involve different traffic patterns on roads other than the designated haul routes specified in the E.I.S., and may involve either greater traffic flows or larger vehicles, or both. . . . would therefore be material.

6 "Transportation and traffic safety issues were a significant part of the Inspector's report."

7 Gateshead v Secretary for State for the Environment [1994] Env.LR 37. "Unless it appears on the material before the planning authority that the discharges will, or will probably, be unacceptable to the environment agency, it is a proper course to leave that matter to be dealt with under the IPC system."

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In my opinion, the use of solvents as a fuel does not make any difference to the creation of the product. The objective purpose of the process (the manufacture of pharmaceuticals) therefore remains the same. The change of a fuel and/or waste recovery in a premises does not constitute a material change of use. Moreover, the only difference that burning solvents makes is that it changes the quality of air emissions in what would be deemed an insignificant matter; it has no other effects either in planning terms or in terms of the environment.

There are also policy reasons for not holding waste recovery to be a material change of use of premises i.e. it would discourage waste recovery. It is Government policy to encourage waste recovery. To require planning permission each time a manufacturing facility engaged in waste recovery would deter developers from recovering their wastes. The use of the Thermal Oxidiser for burning solvents is merely a use ancillary to the main use of the premises for the manufacture of pharmaceuticals, not a new use of the premises.

(iii) Provided any additional plant and equipment required would be exempt under Class 21 of Part 1 of the Second Schedule to the 2001 Planning Regulations.

I assume this is the case. If it would not, planning permission would be required for any plant that is not exempted development.

(iv) Provided the burning of hazardous waste at the facility is not an activity for which an Environmental Impact Assessment is required.

EIA is required for:

(i) waste disposal installations for the incineration, chemical treatment as defined in Annex 11 A to Directive 75/442/EEC under heading D9, or landfill of hazardous wastes.


(ii) waste disposal installations for the incineration, chemical treatment as defined in Annex 11 A to Directive 75/442/EEC under heading D9 of non-hazardous wastes exceeding 100 tonnes per day.


(iii) Installations for the disposal of waste with an annual intake greater than 25,000 tonnes not included in Part 1 of this Schedule.

[Planning and Development Regulations 2001, Schedule 5, Part 2, para 11(b)]

Below threshold developments of any of the above in environmentally sensitive areas if they would have significant environmental effects. Environmentally sensitive locations are European sites and certain other environmentally sensitive locations designated under sections

8 Reasoning based on this extract from R (ex p Lowther) v Durham CC (CA).
9 See at R (on the application of Lowther v Durham Co Co [2001] JPL March 354 -372 para 89
15, 16, 17 of the Wildlife Act 1976, as amended, or on, or in, a Natural Heritage Area designated under section 18 of the Wildlife (Amendment) Act 2000, or a site subject to a notice under section 16(2)(b) of the Wildlife (Amendment) Act 2000. I am assuming that the Schering-Plough facility is not in or adjacent or adjoining to an environmentally sensitive location from my prior knowledge of the site. If this assumption is wrong, the above opinion may be wrong.

Why the proposed development does not require an EIA

1. It is not a waste disposal installation; it is a waste recovery installation.

2. Even if it was a waste disposal operation, which it is not, it does not satisfy the thresholds of 100 tonnes per day or annual intake.

3. Even if it were a sub threshold development, it would not be likely to have significant effects on the environment. The EPA could not licence it if it would.

4. It is true that the IPC licence for the activity will have to be revised if solvents are used as a fuel and that Directive 2000/76/EC may have to be complied with.

Summary and Recommendations

1. The burning of solvents is a waste recovery activity.

2. This should not constitute a material change of use of the premises if the assumptions made above are correct.

3. Planning permission should not be required to burn the solvents if the assumptions made above are correct.

4. A revised IPC licence will be required.

Recommendation

For precautionary reasons, Schering-Plough should ask the local authority for a ruling under section 5 of the Planning and Development Act, 2000 that the burning of solvents does not require planning permission. It should ensure that the planning officer is appropriately briefed before lodging the request. I can revise this opinion for submission to the planning officer when this is done.

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(JL2176)