



Australian Government

Department of the Environment, Water, Heritage and the Arts

Ms Lone Schou  
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Danish Environmental Protection Agency  
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Dear Ms Schou

*Transboundary Movement of Hazardous Waste*  
*Application Numbers AUH 082037T, AUH 086637O, and AUH 086937R*

I refer to the attached applications from Orica Australia Pty Ltd (Orica) regarding the proposed export of hexachlorobenzene (HCB) waste to Denmark.

I provide with this application the following Duly Reasoned Request (DRR) as required under Article 41 (4) of Regulation (EC) No. 1013/2006 on the basis that Australia does not have and cannot reasonably acquire the technical capacity and the necessary commercial facilities in order to dispose of the Orica HCB waste in an environmentally sound manner.

On 24 November 2008, the Department of the Environment, Water, Heritage and the Arts ('the department') accepted three applications from Orica under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989* ('the Act') to export HCB waste and contaminated materials from its Botany Bay site in Sydney to Denmark for final disposal.

The three current export applications referred to in this DRR will account for 6,100 tonnes of the total 16,000 tonne (estimated) HCB stockpile. The remaining 9,900 tonnes (estimated) will be dealt with in new and separate applications in 2009. Once all of these applications have been completed, there will be no further requests from Australia to deal with this waste.

The three export applications to Denmark are for a total of up to 6,100 tonnes of HCB waste for final disposal over a 12 month period at the Kommunekemi high temperature incineration (HTI) facility in Nyborg, Denmark.

The total Orica HCB waste stockpile of approximately 16,000 tonnes is the only one of its kind in Australia and one of the largest of its kind in the world. It was created as a by-product from the manufacture of chlorinated solvents from 1964 to 1991 at the Botany site in Sydney, New South Wales (NSW). The existing stockpile comprises over 50,000 drums and many large concrete storage tanks. Due to the corrosive nature of the stored waste, the drums have required frequent repackaging resulting in an annual increase of 10% of contaminated waste.

We have provided at **Attachment A** four photographs which show the status of the old drums in storage and the new re-packaged drums.

HCB waste is a generic term used to describe the collective residues from the now decommissioned manufacturing processes of Orica's Botany plants. The waste material is comprised of four major constituents, namely, hexachlorobenzene (HCB), hexachlorobutadiene (HCBd), hexachloroethane (HCE) and octachlorostyrene (OCS).

The HCB waste also contains some residual solvents, carbon tetrachloride (CTC) and perchloroethylene (PCE) as well as traces of dioxins and furans. It also has a highly variable physical form, ranging from liquid with particulate matter up to 6 mm in size, partially polymerised solids, reaction residues and pure HCB in crystalline form which cannot be easily dissolved. Different phases are also present including volatile compounds, viscous liquids and solids. There also are many other materials such as contaminated cement, steel, wood, plastic and fabric. This heterogeneity limits the number of disposal methods which can be used to successfully destroy the waste.

The details of the waste proposed for destruction at the Kommunekemi HTI facility are at **Attachment B**.

There are potentially significant ongoing risks associated with longer term storage of this HCB waste stockpile and there is the potential for environmental and human health impacts from the wastes should leaks and accidents occur onsite at Botany. Leaks and accidental spills could occur due to the corrosive nature of the HCB waste on the older packaging drums and cement containers that have not been repackaged. Once repackaged, new drums can be stored or transported within a five-year timeframe before re-drumming is required.

We have provided two photographs of the geographical location of the Botany park site and the stored HCB waste at **Attachment C**. These photographs show the proximity of the HCB stockpile to residential housing, public facilities (e.g. shopping centre), the centre of Sydney and Sydney Airport (also known as Kingsford Smith International Airport).

In addition, the Department is aware of restrictions for continued storage and repackaging due to the size of the storage site at Botany. Due to ongoing re-drumming of the HCB waste, the site is now nearing maximum allowable capacity. This means that the re-drumming of stockpiled drums will cease until additional storage areas can be located and permitted, or the material exported.

Although Australia is a relatively wealthy OECD country and has a strong industrial capacity in areas such as mining, its chemical industry is quite small producing little intractable hazardous waste. Australia's annual production of chlorinated wastes, and wastes it accepts from countries in the region lacking facilities, can be dealt with by its existing domestic waste treatment facilities which are small and relatively specialised to suit the wastes produced from the local market. These facilities, which are private sector, commercial operations, have been established to deal primarily with these small continuing waste streams rather than legacy chemicals no longer produced, such as the Orica HCB stockpile.

While there is no continuing production of HCB in Australia there are some other stockpiles of legacy chemicals requiring destruction. These are mainly old pesticides that were collected from farms during clean up programmes. A survey carried out in early 2008 indicated that these pesticide stockpiles amount to only 94 tonnes with the largest, 64 tonnes, located in Victoria.

The other significant reason why Australia does not have high capacity destruction facilities is that Australia does not use HTIs for the disposal of solid waste, such as household or

commercial waste. Australia has a relatively small population relative to its large area, so solid waste typically is disposed to controlled landfills rather than incinerated or otherwise destroyed. Consequently, there has been little incentive to develop HTIs except for small-scale, special purposes such as the disposal of medical and quarantine wastes. Given these circumstances, there was no obvious facility in Australia which might be capable of destroying the Orica HCB waste stockpile in an environmentally sustainable manner.

In 2006, Orica applied to the Australian Government for an export permit under the Act to send the waste for disposal at HTI facilities in North Rhine Westphalia and Schleswig-Holstein in Germany. Despite support for the export from the Basel Competent Authority of the German Federal Government, the regional governments refused to grant consent for the 2006 applications. The reasons provided for the rejection, in our view, indicated significant misunderstandings and incorrect assumptions about the volume of hazardous waste generated in Australia and the domestic capacity to deal with legacy waste of the kind comprising the Orica HCB waste stockpile.

We hope that the material provided in this DRR will clarify the reasons why Australia does not have the capacity to deal with the Orica HCB waste. In particular, a fresh review of Australia's hazardous waste disposal capacity has been conducted since the Orica applications in 2006.

In March 2008, the department commissioned Sustainable Infrastructure Australia Pty Ltd (SIA) to conduct an independent review to assess all potential and existing technologies which might be capable of treating hazardous wastes in Australia, including the Orica HCB waste stockpile.

The SIA report is provided for your consideration at **Attachment D**.

SIA is a private sector firm of consultants specialising in hazardous waste and was not previously involved in the Orica HCB waste issues. The purpose of this assessment was to re-examine the feasibility of these technologies to treat the stockpile within a technical, environmental and commercial framework.

The SIA assessment has confirmed that Australia currently does not have the capability to treat the existing stockpile of HCB waste in an environmentally sound manner, and there is no prospect of Australia developing this capacity for many years.

All technologies assessed were considered not feasible when considering the scale and time to treat the waste. No facilities would be able to take the volume of waste from the Orica HCB stockpile through the treatment process within the critical time frame of five years. This five year time frame is considered significant by SIA because of the constraints of storing the waste at Orica's Botany site and because of the cycle for re-drumming the corrosive HCB waste. The stockpile is being re-drummed on site. Once re-drummed, the HCB waste must be transported or destroyed within five years, otherwise the drums need to be re-shredded and re-drummed again if they are to be transported. This is a major task which leads to yet another increase in the size of the Orica HCB stockpile.

SIA also went on to conclude that the heterogeneous nature of the Orica waste poses a major challenge for the physical pre-treatment of the HCB waste before it can be subjected to the destruction or treatment process. No facilities in Australia have the infrastructure that can pre-treat the waste in a form acceptable for processing. As well, the unknown capability of many of the technologies in Australian facilities in treating the Orica HCB waste creates unacceptable risks associated with the treatment process, emissions and any residues.

The Basel Convention technical guideline for the environmentally sound management of wastes consisting of, containing, or contaminated with persistent organic pollutants (POPs), identifies HTI as the preferred treatment technology for HCB. Consistent with this, Australia considers that the Orica HCB waste must be disposed of exclusively in hazardous waste plants that are operated and equipped for this purpose, not only to comply with relevant national laws but also in the interests of a sustainable environmental policy.

The SIA assessment report notes that only HTI technology has an international track record, especially in Europe and North America, of treating waste such as HCB at a commercial and industrial scale. Australia does not have a track record of HTI use in treating large scale volumes of high chlorine content waste such as HCB. The report considers that it would take a minimum of six years and most likely more to develop a suitable HTI in Australia capable of dealing with the Orica waste depending on the scale of the facility, the location and the permitting requirements. This timeframe does not take into account any possible public opposition to the process.

Also, considering the small amount of hazardous waste produced annually in Australia, the new facility probably would be redundant once the disposal of the Orica HCB waste stockpile was completed, and would need to be dismantled.

SIA identified only one HTI in Australia, ToxFree in Port Headland Western Australia, as an alternative to Australia creating a new, specialised HTI facility. The ToxFree facility has successfully treated PCBs, organochlorine pesticides, drilling waste and hydrocarbon-contaminated wastes, but its current licence does not require dioxin monitoring.

Also, if ToxFree were to treat the Orica HCB stockpile, the facility would need to be expanded by 10 times its current capacity, operate at increased temperatures and have considerable improvements made to its emissions controls in order to achieve required standards. There would be a requirement under State law for ToxFree to undertake a full Environmental Impact Statement (EIS) process for a newly developed industrial scale facility. This process would take considerable time and face significant technical and permitting hurdles.

A photograph of the ToxFree HTI facility is provided at **Attachment E**. You will notice the very small scale of the facility compared with those in Europe.

SIA also concluded that there would be difficulties in Australia of obtaining the large quantities of low heating value, less reactive and lower chlorine content waste needed for blending or co-feeding with the Orica HCB waste for satisfactory operation of the HTI. This largely is because municipal waste is disposed to landfill in Australia rather than to HTIs as in Europe.

Given the findings of the SIA report, and earlier reviews, it is clear that Australia currently does not have the domestic capacity to dispose of the Orica HCB waste stockpile, nor is it realistic to consider that a suitable facility could be developed even assuming that no unexpected technical or licensing difficulties were encountered. A timeframe of ten years probably is more realistic. By way of example, the German AGR Unternehmens Gruppe is to commission two new HTIs in December 2008 on their already established Herten site some 16 years after commencing the design stage in 1992.

The likely timeframe needed to develop a safe disposal facility in Australia would result in significant growth of the Orica waste stockpile, owing to corrosion of the packaging,

creating further storage problems. Two full cycles of repackaging the entire stockpile would result in an increase of approximately 5,000 tonnes.

Given the continuing danger posed by the HCB wastes and the requirements of the Stockholm Convention to eliminate such stockpiles, it would seem desirable to have the wastes destroyed as quickly as possible and in a facility that has a proven capability to deal with such wastes in an environmentally sound manner. As Australia does not have such a facility, Orica has searched for HTI facilities with proven world class standards and capacity to deal with the particular characteristics of the Orica HCB waste stockpile and which are located in countries that are Parties to the Basel Convention.

It is clear that countries in Western Europe, particularly Denmark, have amongst the best such facilities in the world and provide the safest means of disposal, consistent with the Basel Convention. While using HTIs in Denmark means that the wastes need to be transported a significant distance from Australia, this is inevitable given Australia's geographic position, as none of its neighbours has the capacity to deal with the HCB wastes.

Orica has advised the department that it carried out surveys in 2004 and 2007 of HTI facilities in Europe, North America and Asia that might be capable of treating the HCB stockpile. It concluded that no facilities in North America or Asia had sufficient spare capacity to treat the HCB waste in an environmentally sound manner. As well, the United States of America (USA) is not a Party to the Basel Convention, so it would not be possible for it to receive the waste for disposal without an Article 11 agreement with Australia under the Basel Convention. Accordingly, Orica concentrated on agreeing commercial terms with world class HTI facilities such as Kommunekemi which indicated that it had sufficient capacity to deal with the volume of waste and the expertise and facilities to treat the HCB waste in an environmentally sound manner.

The distance should not be a practical issue as the shipping and other transport arrangements proposed by Orica are of the highest standard and exceed all international requirements for safe handling and transport. The safety precautions and comprehensive risk management plan proposed for the port handling and sea voyage are very thorough, so that the risk of an incident occurring during transport would be extremely low and, in the unlikely event that an incident occurred, there would be immediate and effective containment of any consequences.

We note that there will be no significant land transport through Denmark as the distance from port to treatment facility is no more than a few hundred metres.

Given the circumstances detailed in this DRR, combined with the technical analysis and report prepared by SIA, the independent consultants, the department considers that the proposed export of the Orica HCB wastes for destruction by a world class facility, such as the Kommunekemie plant in Denmark, is the most environmentally sound manner of dealing with the HCB waste.

Australia hopes that Denmark will be prepared to help destroy this legacy of past industrial practices so that it can no longer pose a threat to human health and the environment. There is no continuing production of HCB in Australia, so once the entire stockpile is destroyed, there will be no further requests from Australia to deal with HCB wastes.

I look forward to hearing from you with your decision on whether you consent to the shipment of the HCB waste from Australia and if there is any further assistance that we can provide in relation to this statement or the Orica application, please do not hesitate to contact Mr Damien Hall, by phone on +61 2 6274 1622, or by email at [damien.hall@environment.gov.au](mailto:damien.hall@environment.gov.au).

Yours sincerely



Greg Plummer  
Acting Assistant Secretary  
Environment Protection Branch  
24 November 2008

Cc Ms Heidi Hilbert

Enc.

- (i) Report and assessment by Sustainable Infrastructure Australia Pty Ltd.