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# **Analysis and Response to the Environmental Statement for the AWE Aldermaston Waste Transfer Station**

Report produced for

**Berkshire Nuclear Action Group -  
Pollution and Monitoring Committee**

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# 1. Introduction

This report has been produced on behalf of the Berkshire Nuclear Action Group's Pollution and Monitoring committee. The report considered the environmental statement<sup>[1]</sup> produced for the application by the Ministry of Defence (MoD) to construct a hazardous/special waste transfer station at the Atomic Weapons Establishment (AWE) Aldermaston.

AWE Aldermaston as part of the MoD have Crown status, and as such do not need to apply for planning permission. However, under the terms of Department of the Environment (DoE) Circular 18/84<sup>[2]</sup> they must consult with the relevant local authority. The 'application', as such it is, therefore consists only of a letter<sup>[3]</sup> informing BAPTIE Public Services Ltd - acting as planning agents on behalf of Berkshire County Council, that the development is going ahead.

In response to this application letter, I wrote a report<sup>[4]</sup> which was submitted to Berkshire County Council. This demonstrated the need for an environmental statement, and subsequently the MoD agreed to provide one. However, although the environmental statement was produced in October 1995, and received by Berkshire County Council shortly after, the statement was not put out for public consultation until May 1996 - although the 'statutory consultees' did receive copies at the end of 1995. This we see as a deliberate act by the MoD to restrict information about this development from the public. However, as the application cannot be determined until public consultation has taken place, the MoD have had no choice but to publish the statement for public comment.

The validity of this statement is called into question by the fact that the development has already been completed - in June 1995. Preparing an environmental statement after the development has actually taken place presents particular problems, especially where the statement identifies problems/issues which were not considered when the development was erected. For example, it could be that damage to areas of archaeological/ecological may have already taken place.

As a general view on the statement, it meets the requirements of the regulations, although some matters such as the prediction of construction noise are rendered irrelevant by the fact construction is already completed. But there is a general problem throughout the whole of the application - lack of information. For example, although general categories of waste are specified, and classified according to hazard, there is no detailed information on the actual quantities involved - just an overall volume of waste transferred each year.

The analysis of the environmental statement is divided into three sections. First is a commentary on the content of the statement. Second is an exploration of the issues not covered/insufficiently addressed by the statement. Finally, conclusions on the content of the statement are listed, and a recommendation to the planning authority made on the determination of the application.

## **2. Analysis of the Environmental Statement**

### **2.1. Construction/completion of the development (para. 1.1)**

It is noted in paragraph 1.1 that the development has already been completed - in June 1995, four months before the environmental statement was produced. However, the practical effects of this are not considered in the statement.

Regulation 4 of the Environmental Assessment Regulations<sup>[5]</sup> prohibits the granting of a planning permission where an environmental assessment is required. In this case, the granting of permission would equate to the authority giving approval to the Crown development under DoE Circular 18/84.

Development without planning permission is not unlawful - a retrospective application for permission may be made. The problem arises if Berkshire County Council wish to, on the basis of considering the content of the statement under regulation 4, approve the development with conditions. Enforcing such conditions may be difficult given that the development is already complete. It may be that the completion of development makes the application of conditions impossible - in which case the planning authority would, in terms of the guidance, have to refuse permission and seek enforcement action to rectify the breach of planning control.

Berkshire County Council must treat the application and environmental statement as if it were a 'proposed' rather than completed development. If the weight of evidence requires further investigation of the site and redesigning of the facility then this must be sought as if development had never taken place. Failure to require changes to the facility would in effect give approval to the actions of the MoD completing developments before proper approval had been given by the relevant authorities. This must not be allowed to take place in the future.

### **2.2. Capacity, function and radioactivity (paras. S2.1/1.3)**

In paragraph S2.1 it states that the capacity of the facility is 400m<sup>3</sup> per annum. Assuming that the density of the waste were 1.5 tonne (te) per cubic metre (m<sup>3</sup>), then there throughput under the environmental statement would be 600te/yr.

At no point in the application letter from AWE is it stated what the capacity of the development will be. Where the figure of 400m<sup>3</sup>/yr in the environmental statement comes from is therefore not clear. But we have doubts about the validity of this figure. In paragraph 6.69 of the statement it states that the capacity of the old and new facilities will be the same.

The old facility is operated in accordance with a waste license<sup>[6]</sup> issued by Berkshire Waste Regulation Authority (now part of the Environment Agency). Under the terms of this license, up to 500,000te of waste per year may be shipped through the old facility. Again assuming a density of 1.5te/m<sup>3</sup> this would equate to 333,000m<sup>3</sup>/yr. If this were a planning application, and the volume sought in the application were 400m<sup>3</sup>/yr, then any waste licensed issued for the facility could not approve a volume greater than this - waste licensing cannot override

planning conditions.

The issue here is what happens to the new facility if AWE wish to put more than 400m<sup>3</sup>/yr through the site? This would exceed the capacity approved by Berkshire County Council, and if capacity were made a condition on the approval of the facility, then the planning authority would be obliged to take enforcement action. Likewise the Environment Agency, when issuing a waste license for the facility, could not issue a license which exceeds any capacity stated in the approval, and would also be required to take action to prevent any exceedence.

Another matter is the statement as to the presence or not of radioactive materials. If the material were contaminated to low or intermediate level, then this would be quite straightforward. The problem we have is the presence of 'very-low-level waste' (VLLW), since at other sites such as Amersham International, or universities/hospitals, VLLW is often disposed of along with the everyday hazardous/special waste streams as it is considered radiologically insignificant.

There is also the issue as to how radioactive material will not be accepted for disposal through this facility. As it is assumed that no radioactive material will be present, there is no provision for checking that material disposed of through the facility is radioactive. It is conceivable, with the facility as described in the statement, for human error to allow intermediate level radioactive materials to be disposed through the facility because there is no obvious way of checking radioactivity levels.

Before the planning authority approve the application this discrepancy between the existing facility's capacity, and the stated capacity for the new facility, must be resolved. For the sake of certainty the capacity of the facility must be made a condition of any approval by the authority.

The issue regarding very-low-level radioactive waste disposal, and the checking of waste entering the facility for radioactivity, must also be resolved.

### **2.3. Composition of waste stream (para. 2.1)**

It would be normal in an environmental statement for a hazardous waste transfer station to consider the composition of the waste moved through the facility. However, this application contains no information on waste composition. This makes it very difficult to consider the adequacy of safety considerations - for example if 90% of the material were highly flammable solvent then this would require a completely different set of precautions to a composition of 5% solvent and 95% non-flammable material.

The failure to address the composition of the waste in the facility is a serious flaw in the statement, and information on the composition of the waste stream must be obtained from AWE before approval is given to ensure that the safety precautions taken at the facility are proportionate to the hazards of the various waste types present.

### **2.4. Planning context (paras. 2.15 - 2.26)**

It is not a straightforward matter to consider planning issues in this application since strictly

speaking the application falls outside the planning system. However, under paragraph 12 of Part IV of DoE Circular 18/84, the local planning authority (LPA) are directed to treat the application as they would any other statutory planning application. This we could assume to include the requirement under section 54A of the Town and Country Planning Act 1990 that... *"Where making any determination under the planning Acts, regard is to be had to the development plan, the determination shall be made in accordance with the plan unless material considerations indicate otherwise"*; as well as section 70(2) of the 1990 Act... *"In dealing with such an application the authority shall have regard to the provisions of the development plan, so far as material to the application, and to any other material considerations"*.

The statement contains a review of the relevant development plans, and the policies in those plans. However, the terms of some of the policies quoted are not strictly met within the application...

- Regarding Policy W4 of the Draft Structure Plan, and Policy WLP1 of the Draft Waste Local Plan, not all the waste passed through this facility comes from Berkshire. It is arguable under these policies, and other waste planning guidance, whether this facility should accept waste from outside the area since this does not accord to the 'proximity principle';
- Regarding Policy EN26 of the Adopted Structure Plan, and EN6 of the Draft Structure Plan, no meaningful archaeological evidence has been provided on this site. Given that the site was apparently undeveloped, and given its location, further archaeological investigation, or observations by a trained archaeologist during development, would have been welcome;
- Regarding Policy EN14 of the Adopted Structure Plan, and Policy EN6 of the Draft Structure Plan, there is no realistic assessment of the ecological value of this site;
- Regarding Policy WLP29 of the Draft Waste Local Plan, not only has no evidence of the cumulative impact of this development been given, but the decommissioning/afteruse of the site has not been considered.

This last point is quite important. The environmental statement makes reference to the discharges from the facility, but the existing background pollution levels, in both air and groundwater, are not given. Assessing the impact of the facility is very difficult - for example if the facility were to give emissions 5% of the air quality standard this would not be that significant, but if background levels were already 95% of that standard, it would.

Likewise, with a site that holds hazardous waste, the issue of land contamination is significant. For example, it would be reasonable to include conditions in a planning permission to require that on decommissioning of the facility, that any residual contamination were removed in order to bring the land within the relevant safety standard for the development which may subsequently take place on the site.

There is no clear evidence within the planning section of the environmental statement that all necessary policies of adopted and draft development plans have been adequately complied with. In terms of section 54A of the Town and Country Planning Act 1990, the case for approving this development is marginal. At the very least, the planning authority should seek to obtain a proposal from the MoD on how the site may be decommissioned, and how any residual land contamination will be dealt with.

## **2.5. Protection of soil/groundwater**

**(paras. 2.30, 4.27 & 4.31)**

The EC Groundwater Directive<sup>[7]</sup> requires that the discharge of 'List 1' (highly toxic, long-lived and bioaccumulative substances) be prevented, and that the discharge of 'List 2' (other toxic bioaccumulative substances) be minimised. This facility will handle both List 1 and List 2 substances, and so consideration needs to be given on how the terms of the Directive will be met.

In paragraph 4.31 it is not stated which National Rivers Authority (NRA) vulnerability category this land falls into - it is noted that the site is *'likely to'* present a low risk to groundwater. However the detailed surveys necessary to assess the vulnerability of groundwater have not yet been completed by the NRA (now the Environment Agency - EA). The only guide for this area at present is a large scale map (1:1,000,000), based on regional geology, published in a national guidance document<sup>[8]</sup>.

But despite the claim that the area is in the 'low vulnerability' class, the environmental statement notes that there are groundwater abstractions nearby, and at least one of them (in table 4.3, page 33) takes water from the Bagshot Beds in the 'shallow' part of the hydrogeological system. This, combined with the uncertainty about the groundwater regime in the area, means that any major spillage on this site, were it to contaminated the ground, could lead to serious pollution of potable groundwater. Any discharge of 'List 1' substances onto the soil must therefore be regarded as a breach of the Groundwater Directive, and if measures are not taken to fully minimise the discharge of other 'List 2' substances then this could also be considered a breach of the Directive.

Most significantly, it will not be possible to assess the risk to groundwater, and to in future show that there has been pollution of the groundwater, without having some baseline assessment of existing groundwater quality around the site. The statement should have provided analyses of the groundwater in the 'shallow' zone beneath the site to prove the existing quality, and provide a figure from which future pollution can be assessed.

Leaving aside this particular development for a moment, the evidence presented in the environmental statement should spark a note of concern about groundwater quality beneath the site in general. For many years the site has been the home to a major industrial process, operated not to normal practices but 'secret' standards enforced by bodies/inspectors who are not openly accountable. The likelihood of leakage from existing operations, or from the extensive drain and sewer system in the site is a real possibility, particularly if we compare this site with a nearby site developed in a similar fashion - the Harwell Laboratory.

It is made quite clear in reading the environmental statement that the hydrogeological regime - particularly in the shallow zone, is not well understood around the AWE Aldermaston site. Likewise, it has not been demonstrated that any leakage or spill from the site will not contaminated groundwater, which at a later date will migrate and contaminate private or public drinking water supplies some distance away. As has been shown with the Atomic Energy Authority's Harwell site, pollution caused by waste disposal activities can travel many miles - and at Blewbury the public water supply was closed for some time because of dangerously high levels of carbon tetrachloride and chloroform.

More detailed evidence should be produced by the MoD on the groundwater flow in the area, particularly within the Bagshot Beds. Information should also be provided on the existing groundwater quality beneath this site, and adjacent areas of the AWE complex to ascertain if

any pollution already present and to provide a baseline from which future monitoring can be carried out. I would also recommend that the planning authority ask for one or two monitoring boreholes to be sunk on this site, and that as part of the waste licensing system regular monitoring of groundwater quality is undertaken.

It is only when this information exists that the risk to groundwater, and thus the need to exercise the precautionary principle or not, can be considered properly. In terms of groundwater, the risk assessment within the environmental statement is meaningless without this basic information - for example, if the groundwater is already grossly contaminated the means needed to protect groundwater may be less severe.

## **2.6. Ground stability (paras. 2.30 & 3.4)**

Within the facility the concrete floor provides a barrier to most substances, but others - such as solvents - will still easily seep through this. Quite correctly then the concrete floor within the facility will be sealed with a layer of resin material. However, it is not stated how this layer will be inspected and maintained - particularly after a spill of any material which may attack the resin (some solvents or acids for example). Likewise, it is not clear how the concrete hardstanding outside of the building has been constructed, or even if it has been sealed. Given that loading and unloading will take place in this area, there is a serious risk of spillage, and thus of land contamination.

Given that the floor inside the facility is nominally protected, the main concern must therefore be the integrity of the internal concrete floor structure itself. Any stress caused by settlement could open up fine cracks or fissures which could allow the passage of contamination. Likewise if the concrete hardstanding has not been properly constructed, and it settles or cracks over time, contamination could also seep away after a spill, or through surface contamination on the concrete being washed into the cracks/fissures during rainfall.

There is no detailed information in the statement on the stability of the ground in this area - no attempt appears to have been made to ascertain the stability of the ground across the site, and there are no test results from standard ground surveying techniques. The question therefore arises about the stability of the ground, and in particular the risk of differential settlement across the site which may place large shear stresses on the concrete floors both inside and around the building.

## **2.7. Management procedures (para. 2.37)**

The management procedures mentioned on page 16, in relation to the management of the facility, are a material part of the environmental statement and should have been included. For example, in any risk evaluation the management procedures are the starting point for the assessment of the safety of the facility.

For the sake of certainty, and to allow a full evaluation of this proposal, details of the management practices to be implemented in the facility when operational should be submitted by the MoD. I do not see that such information is 'sensitive' since much of the detail would have to be produced as part of the working plan required by the waste license.

## **2.8. Ventilation systems (para. 2.42)**

The statement notes the use of ventilation systems. These have a role in not only lowering pollutant levels in the building to meet health and safety requirements, but in the event of the release of any explosive or flammable vapour the ventilation systems would prevent the build up of gases to levels where they reach their 'lower explosive limit' in air.

This raises the question of what systems are in place to detect the failure of the ventilation system. For example the overnight or weekend failure of the ventilation system could lead to a hazardous buildup of toxic or explosive vapours. It is important then that some alarm system is triggered when the ventilation equipment fails. Alternately, detection equipment could be fitted to monitor for the build up of toxic or flammable gases.

## **2.9. History of development on site (para. 3.4/3.9)**

There is a contradiction between paragraphs 3.4 and 3.9. 3.4 notes that the site is undeveloped. But paragraph 3.9 notes that it is **believed** to have been previously undeveloped.

There is no clear explanation as to whether the site has been previously developed, or that other previous agricultural development - such as land drains, exist. The potential for previous development on the site, as no clear explanation is given, raises questions about the suitability of the land for development (there is no survey of the stability of the ground).

## **2.10. Archaeological evidence (para. 3.11, 4.62, 4.63, & 4.66)**

Despite the evidence that the area has a long history of use/development, and the fact that some important archaeological features are nearby, I find it ridiculous that no fuller archaeological survey of the site could be produced. I see this in the main as the result of the facility being built already.

Given the presence of notable archaeological features nearby, it may have been wise to have had, during the excavation of foundations, an archaeologist on site with a 'watching brief' just in case any features of interest were unearthed. As it is, there is very little real archaeological data on the site itself (for example, a more detailed history of the nearby Park Farm), and at least with the benefit of hindsight which we possess in this case the presence of an archaeologist during the excavations may have provided some useful data not only in relation to the development of this site, but other areas nearby.

In terms of planning guidance on archaeology, the evidence presented here is poor, with very little interpretation (it is essentially the results of a desk study, without the benefit of field walking or perhaps some simple geophysics work), and it does not provide a convincing case that there are not archaeological features of interest on this site.

## **2.11. Meteorology data and dispersion modelling (paras. 4.3/6.5)**

I find it hard to believe that a large industrial complex, discharging radioactive materials, does not have its own weather station to assess local weather conditions, and on the basis of this, produce validated models of the distribution of pollutants from the site. If no such data exists from the site itself, it is a shortcoming which the local authorities should bring to the attention of the relevant regulatory bodies.

I can also find no supportable argument for the similarity between Heathrow and the Aldermaston site. Although there is only 30 miles between the Aldermaston site and Heathrow, there are very different patterns of development around each site. Although the general wind direction (at a regional level) will not differ much, the stability of the atmosphere could be very different. In general the greater preponderance of built up areas around Heathrow may lead to increased instability, and thus greater mixing, within the atmosphere. Such differences will tend to favour Pasquill stability classes A-C. This will mean that at Aldermaston the near-field modelling may over-estimate the pollutant levels, and underestimate pollution levels further down the plume axis.

I can also find no reason why data from Greenham Common, given its proximity to the site and its similar development patterns, should be any less relevant than Heathrow data. It may be that the data would have taken longer to obtain, but the purpose of an environmental statement is to objectively assess the project it is proposed to develop - the statement should not be 'rushed' because the developer has already erected the building.

It is also, I believe, a major oversight that the input data for the ISC model was not reproduced within the environmental statement. Without this data the results presented in the statement cannot be independently verified (I do possess the ISC long and short term computer models, but there was insufficient information to conduct a realistic modelling exercise). There are many variables in the modelling process which can drastically affect the results from the modelling procedure - for example mixing heights, the compensation made for building downwash, or the surface roughness coefficients which model the difference between rural and urban terrain. Without these values the whole modelling exercise given in the statement is meaningless.

To reiterate, I find it incredible that a large industrial facility such as AWE Aldermaston does not have its own weather station to accumulate long term meteorological data to model its own existing releases. Also, the use of potentially incompatible data from Heathrow means that there could be some error in the figures. More importantly, it is highly irregular that the data used to model the discharges from this facility - the source data fed into the ISC dispersion model - has not been reproduced in the environmental statement. Without this data nothing that is concluded within the statement can be independently verified.

## **2.12. Disposal routes (para. 4.4)**

With any waste transfer station proposal, certainly for the purposes of licensing (which the environmental statement should also consider) the question as to where the waste goes to when it leaves the site is quite important. In this case, disposal routes have not been identified.

Given the increasing scarcity of 'special waste' void space in landfill sites, and the further restriction of waste movements brought about by the new waste management licensing

regime of 1994, the destination of the waste is important. The MoD must identify where the waste from this site is to be sent. Apart from the purely practical 'duty of care' implications, it will also have a bearing on such things as the effect of transport movements further afield from the site (for example, nearby motorway junctions) and the consideration of the 'proximity principle'.

### **2.13. Risk assessment methodology (para. 5.2)**

Paragraph 5.2 notes that a 'safety audit tool' has been used as part of the hazard assessment in the environmental statement - but there is no reference to the particular method or assessment criteria use.

PPG23 notes the relevance of risk assessment as part of a planning application, and an environmental statement. Also, following the publication of the Dept. of the Environment's guidance document on environmental risk - "*A guide to Risk Assessment and Risk Management for Environmental Protection*"<sup>[9]</sup>, there are clear methods for how risk should be evaluated, and conclusions drawn.

In this case not only is there no reference to any risk assessment tool or methodology, but there is no real 'source data' from where a risk assessment could begin.

The failure by WS Atkins to include details process/methodology used within their 'proprietary safety audit tool', and the data fed into it, invalidates the safety and hazard assessment in section 5. Without the necessary data, and the methodology/assumptions used in the model, no independent validation of the conclusions drawn in the statement can possibly be given.

### **2.14. Use of facility as commercial enterprise (para. 5.5)**

It has not been stated whether this facility will deal solely with waste originated at the AWE establishments (Aldermaston, Burghfield, Cardiff and Foulness), or whether waste materials from outside the AWE establishments will be accepted. This, I believe, is further confused by the use of the word "customer" in paragraph 5.5.

It should be made clear by the MoD whether this facility will serve solely the Atomic Weapons Establishments, or whether waste will also be accepted from outside the four AWE site, and whether it will be in any way used on a commercial basis. This is not made clear within the environmental statement.

### **2.15. Receptacle skip (para. 5.6)**

At a facility handling special wastes, and potentially highly reactive materials, I find it incredible that an unsupervised 'skip' will be provided for the disposal of chemical containers. Such practices give rise to the possibility of mixing of substances, the the exposure of substances to the air, wind and rain, which has the potential to initiate chemical reactions, and the consequence for the discharge of toxic substances or a fire.

The use of a skip to deposit containers potentially containing reactive substances brings with it the potential for pollution or fire. More detail should be provided on the use of these skips, the types of material which may end up in them, and the practices which will be followed to ensure that there is no significant risk. In particular, there should be a comparative risk assessment to establish whether the controlled 'pick-up' of segregated containers would be safer than the random deposit of containers which may hold many different compounds,

## **2.16. Cubicle drains (para. 5.17)**

The purpose of the cubicles inside the facility - quite rightly - is to segregate chemicals which may react together. However this whole concept is significantly compromised by the fact that all the drainage channels from each cubicle run to the same drain, which then runs to the one tank. There therefore exists the potential for the mixing of reactive substances if they are split at the same time, or if there is insufficient cleaning of the drains between spills.

The use of one drain system from the separate cubicles is flawed, and presents a real risk on reactive substances mixing. Each cubicle should have its own separate drain system to ensure that there is no possibility of reactive substances coming into contact.

## **2.17. Fire safety (paras. 5.17/5.19)**

The worst possible scenario for this facility, as I see it, is fire. This is not only because the potential for toxic release is greater than the reference accident chosen for analysis in the statement (the release of cyanide), but the presence of fire will create a buoyant plume which has a greater dispersion capability than the ventilation system. Preventing fire must therefore be of top priority.

My concerns in respect of this facility are four-fold...

- The delay of only one or two minutes between detection of a fire, and the on-site fire service arriving, could be critical in terms of the spread of the fire/the release of pollution. Rather than just alerting the on-site fire brigade, the alarms should trigger internal fire-fighting equipment.
- The solvent store should have some automated means of fire fighting or fire prevention - in the event of a fire the presence of volatile substances presents a significant risk.
- The actual fire-safe design of the facility has not been discussed.
- There are no windows, and few doors in the facility. This means that should there ever be an explosion within the building, there exists the real risk of the building being demolished.

The MoD should make clear to the planning authority the measures taken in the design of the facility not only to reduce fire risk by removing ignition sources - for example through the use of special electrical wiring, lights and switches - but also that fire can be automatically controlled if it starts. To tackle fires inside the building, as sprinkler systems are not suited for use with chemicals, a halon gas system, linked to the fire alarm should be installed. Likewise in the solvent store, some sort of foam system should be present to quickly blanket the area in

the event of a fire inside or outside the building. Finally, to guard against the possibility of an explosion causing catastrophic damage to the building, blast panels should be built into the walls or roof which will release the explosive over-pressure before the building is damaged.

## **2.18. Results of the dispersion modelling (para. 6.18)**

As noted in point 2.11 above, I have particular reservations about the accuracy/validity of the air dispersion modelling carried out in the statement. Also, as noted in point 2.17 above, the release of cyanide is not the worst conceivable incident - fire is, and an aliases of the potential impact of fire should be prepared by the MoD.

However, considering directly the results of the dispersion modelling, there are still systematic errors in the assumptions and approach taken. Paragraph 6.18 notes that the 275g of hydrogen cyanide are released over the period of 1 hour through the ventilation system - which conveniently ties in with the 1-hour time averaged figures of the ISC model.

But if we look at paragraph 2.34, it is noted that the air is changed three times an hour. This means that the release takes place over the space of 20 minutes, not 60 minutes. Consequently, the levels predicted in the statement will be three times higher -  $42\mu\text{g}/\text{m}^3$  instead of  $14\mu\text{g}/\text{m}^3$ . This reduces the safety margin from a factor of 18, to a factor of 6.

Another error is the consideration of the Health and Safety Executive's 'occupational exposure limit' (OEL). The limit is based on a 15 minute average, which does not directly equate to a one-hour modelling period. But as pointed out above, the release period is actually 20 minutes. To produce a safety factor, the OEL is then divided by 40. This procedure is perfectly correct for an OEL - if hydrogen cyanide had an OEL. However, in the HSE's guidance document<sup>[10]</sup> hydrogen cyanide has a 'maximum exposure limit' (MEL) - which by law must never be exceeded. To take account of this, the correct procedure is therefore to divide the MEL by 100, not 40.

Taking account of the MEL, the safe limit is  $100\mu\text{g}/\text{m}^3$ . The safety factor is therefore reduced (even on the original figures) to a factor of 7, but on the revised estimates explained above to a factor of 2.

The final consideration is the confidence we can give to plume modelling estimates. With the old modelling systems based on the NRPB's R91 model, a confidence limit of  $\pm 100\%$  was probable. With the modelling refinements in more recent models such as ISC, modelling confidence is down to  $\pm 25\%$ . If we were therefore to assume that the model underestimated dispersion by 25%, the new level would be over half the 'safe' limit of  $100\mu\text{g}/\text{m}^3$ .

The consideration of the modelled hydrogen cyanide levels is a matter of conjecture in any case since there is not way of independently verifying the ISC modelling run carried out - the necessary data has not been provided. But in any case it can be shown that there are systematic errors in the modelling approach; the source term has been underestimated by a factor of three because it does not take account of the facility's ventilation system, the safety factor used to calculate a long-term exposure limit is incorrect, meaning that the correct limit is two-fifths of that stated in the text, and no account has been taken of the accuracy of the plume modelling. Taken together it mans that the original safety factor of 18 given in the document is reduced to less than 2 or 3.



### **3. Issues not covered by environmental statement**

There are two key matters which have not been addressed in the environmental statement...

#### **3.1 Alternative sites**

As is noted in Planning Policy Guidance 23, and in guides to environmental assessment, that one of the key parts of the early scoping exercise for a development is the consideration of a number sites. In this case, this is somewhat academic as the MoD have already erected the building.

The environmental statement should have highlighted the potential for alternative sites for this facility, and examined each site on a benefit/disbenefits basis to come to a final conclusion on which site to develop. The failure to do this means that there is no balanced view on the development of this site - other, better sites may have been available.

#### **3.2 Alternative approaches and the sustainable waste strategy**

Even the Atomic Weapons Establishment's are covered by the 'sustainable waste strategy', "Making Waste Work"<sup>[11]</sup>. Accordingly, the waste hierarchy should be applied to operations on the AWE sites. Where possible new practices should be introduced to minimise the production of waste, and waste should where possible be reused or recycled. Both these approaches reduce the quantities of waste required for final disposal. Then, having reduced production as much as possible, waste should be disposed of according to the 'best practical environmental option'.

In the case of this facility, it has not been demonstrated that efforts are underway to reduce the production of hazardous/special wastes, and the general lack of information in the statement means there is no way of assessing whether each of the different waste types is being disposed of according to BPEO. These areas should be clarified with the MoD, and detailed information on future practices sought, before any approval is given for the facility.

## 4. Conclusions and recommendations

The main conclusions of this report on the evidence contained in the environmental statement are...

### Planning issues:

- Before the planning authority approve the application the discrepancy between the existing facility's capacity - at least 300,000m<sup>3</sup>/year, and the stated capacity for the new facility - 400m<sup>3</sup>/year, must be resolved. For the sake of certainty the capacity of the facility must be made a condition of any approval by the authority.
- Berkshire County Council must treat the application and environmental statement as if it were a 'proposed' rather than completed development. If the weight of evidence requires further investigation of the site and redesigning of the facility then this must be sought as if development had never taken place. Failure to require changes to the facility would in effect give approval to the actions of the MoD completing developments before proper approval had been given by the relevant authorities. This must not be allowed to take place in the future.
- More detailed evidence should be produced by the MoD on the groundwater flow in the area, particularly within the Bagshot Beds. Information should also be provided on the existing groundwater quality beneath this site, and adjacent areas of the AWE complex, to ascertain if any pollution already present and to provide a baseline from which future monitoring can be carried out. I would also recommend that the planning authority ask for one or two monitoring boreholes to be sunk on this site, and that as part of the waste licensing system regular monitoring of groundwater quality is undertaken.
- There is no clear evidence within the planning section of the environmental statement that all necessary policies of adopted and draft development plans have been adequately complied with. In terms of section 54A of the Town and Country Planning Act 1990, the case for approving this development is marginal. At the very least, the planning authority should seek to obtain a proposal from the MoD on how the site may be decommissioned, and how any residual land contamination will be dealt with.
- The environmental statement should have highlighted the potential for alternative sites for this facility, and examined each site on a benefit/disbenefits basis to come to a final conclusion on which site to develop. The failure to do this means that there is no balanced view on the development of this site - other, better sites may have been available.
- There is no clear explanation as to whether the site has been previously developed, or that other previous agricultural development - such as land drains, exist. The potential for previous development on the site, as no clear explanation is given, raises questions about the suitability of the land for development (there is no survey of the stability of the ground).
- In terms of planning guidance on archaeology, the evidence presented here is poor, with very little interpretation and it does not provide a convincing case that there are not archaeological features of interest on this site.

### Dispersion modelling:

- I find it incredible that a large industrial facility such as AWE Aldermaston does not possess its own weather station to accumulate long term metrological data to model its own existing releases. Also, the use of potentially incompatible data from Heathrow means that there could be some error in the figures. More importantly, it is highly irregular that the data used to model the discharges from this facility - the source data fed into the ISC dispersion model - has not been reproduced in the environmental statement. Without this data nothing that is concluded within the statement can be independently verified.

- The consideration of the modelled hydrogen cyanide levels is a matter of conjecture in any case since there is no way of independently verifying the ISC modelling run carried out - the necessary data has not been provided. But in any case it can be shown that there are systematic errors in the modelling approach; the source term has been underestimated by a factor of three because it does not take account of the facility's ventilation system; the safety factor used to calculate a long-term exposure limit is incorrect, meaning that the correct limit is two-fifths of that stated in the text; and no account has been taken of the accuracy of the plume modelling. Taken together it means that the original safety factor of 18 given in the document is reduced to less than 2 or 3.
- The MoD should make clear to the planning authority the measures taken in the design of the facility not only to reduce fire risk by removing ignition sources - for example through the use of special electrical wiring, lights and switches - but also that fire can be automatically controlled if it starts. To tackle fires inside the building, as sprinkler systems are not suited for use with chemicals, an halon gas system, linked to the fire alarm, should be installed. Likewise in the solvent store, some sort of foam system should be present to quickly blanket the area in the event of a fire inside or outside the building. Finally, to guard against the possibility of an explosion causing catastrophic damage to the building, blast panels should be built into the walls or roof which will release the explosive over-pressure before the building is damaged.

#### **Risk analysis:**

- The failure by WS Atkins to include details process/methodology used within their 'proprietary safety audit tool', and the data fed into it, invalidates the safety and hazard assessment in section 5. Without the necessary data, and the methodology/assumptions used in the model, no independent validation of the conclusions drawn in the statement can possibly be given.
- The use of an on drain system from the separate cubicles is flawed, and presents a real risk on reactive substances mixing. Each cubicle should have its own separate drain system to ensure that there is no possibility of reactive substances coming into contact.
- For the sake of certainty, and to allow a full evaluation of this proposal, details of the management practices to be implemented in the facility when operational should be submitted by the MoD. I do not see that such information is 'sensitive' since much of the detail would have to be produced as part of the working plan required by the waste license.
- The use of a skip to deposit containers potentially containing reactive substances brings with it the potential for pollution or fire. More detail should be provided on the use of these skips, the types of material which may end up in them, and the practices which will be followed to ensure that there is no significant risk. In particular, there should be a comparative risk assessment to establish whether the controlled 'pick-up' of segregated containers would be safer than the random deposit of containers which may hold many different compounds,
- This raises the question of what systems are in place to detect the failure of the ventilation system. For example the overnight or weekend failure of the ventilation system could lead to a hazardous buildup of toxic or explosive vapours. It is important then that some alarm system is triggered when the ventilation equipment fails. Alternately, detection equipment could be fitted to monitor for the build up of toxic or flammable gases.

#### **Waste issues:**

- The issue regarding the possibilities of very-low-level radioactive waste disposal, and the checking of waste entering the facility for radioactivity, must also be resolved.
- The failure to address the composition of the waste in the facility is a serious flaw in

the statement, and information on the composition of the waste stream must be obtained from AWE before approval is given to ensure that the safety precautions taken at the facility are proportionate to the hazards of the various waste types present.

- Given the increasing scarcity of 'special waste' void space in landfill sites, and the further restriction of waste movements brought about by the new waste management licensing regime of 1994, the destination of the waste is important. The MoD must identify where the waste from this site is to be sent. Apart from the purely practical 'duty of care' implications, it will also have a bearing on such things as the effect of transport movements further afield from the site (for example, nearby motorway junctions) and the consideration of the 'proximity principle'.
- It should be made clear by the MoD whether this facility will serve solely the Atomic Weapons Establishments, or whether waste will also be accepted from outside the four AWE sites, and whether it will be in any way used on a commercial basis. This is not made clear within the environmental statement.
- In the case of this facility, it has not been demonstrated that efforts are underway to reduce the production of hazardous/special wastes, and the general lack of information in the statement means there is no way of assessing whether each of the different waste types is being disposed of according to BPEO. These areas should be clarified with the MoD, and detailed information on future practices sought, before any approval is given for the facility.

As a general commentary on the environmental statement, in my experience of many other environmental statements for various waste facilities, the standard of this statement was poor. There was insufficient information provided to enable external verification of the data presented in the document, and in many other parts of the document there were also conclusions drawn without any indication of the assumptions or methodologies involved.

Paragraph 7.3 of the statement notes that the predicted effects of the facility are 'negligible'. I cannot concur, given the information presented in the environmental statement. There is not any way in which the information in the statement can be said to demonstrate in an objective and scientific manner that the conclusions of the study are correct. In fact, the level of omission and error leads me, on a precautionary basis, to conclude that there is no demonstration that the facility is "safe".

The problem we have in this case is that the facility is already built - and may in fact be in use. There is also the matter that the existing facility has been condemned by the Health and Safety Executive, this making its replacement a pressing matter.

### **My recommendation to Berkshire County Council on this matter are as follows...**

1. The facility cannot be given planning approval on the basis of the presented environmental statement - it would be an erroneous decision on the part of the planning authority.
2. Further information should be sought from the MoD as soon as possible to address all of the concerns highlighted in this report. In particular...
  - The discrepancy between the existing facility's capacity and the stated capacity for the new facility must be resolved.

○ More detailed evidence should be produced by the MoD on the groundwater flow in the area, particularly within the Bagshot Beds. Information should also be provided on the existing groundwater quality beneath this site, and adjacent areas of the AWE complex, to ascertain if any pollution already present and to provide a baseline from which future monitoring can be carried out.

○ An assessment of alternative sites is needed.

○ More detailed data on the archaeological value of the site is needed.

○ The use of Heathrow weather data should be justified further, and the MoD should be asked to confirm the presence or not of a weather station on the Aldermaston site. If no other data is available, the Greenham data would be preferable.

○ The air dispersion modelling should be redone - taking account of the problems/errors noted in this report. The full set of data used in the ISC model should be provided for scrutiny.

○ The MoD should make clear to the planning authority the measures taken in the design of the facility not only to reduce fire risk by removing ignition sources.

○ WS Atkins must produce details of their 'safety audit tool' to show that it is a valid method for assessing the risk this facility presents.

○ Alternative proposals for segregating drainage from the cubicles should be produced.

○ For the sake of certainty, and to allow a full evaluation of this proposal, details of the management practices to be implemented in the facility when operational should be submitted by the MoD.

○ A justification of the use of a skip to deposit containers potentially containing reactive substances brings with it the potential for pollution or fire.

○ More detailed information on the precise composition of the waste in the facility.

○ The MoD must identify where the waste from this site is to be sent.

○ Clarification of the measures taken/being taken, to meet the requirements of the sustainable waste strategy, and the disposal of wastes according to BPEO.

3. Any further information submitted by the MoD on this issue must be made available for public comment.

**4. In any case, the most expedient way of finally resolving all the issues involved with this application would be to ask the Secretary of States for Environment and Defence to quickly institute an inquiry where these issues can be more readily explored. I do not believe that these issues can be satisfactorily resolved with the procedural difficulties involved in a Crown application, and the difficulties of extracting information from an organisation who have historically gone to great lengths to restrict the provision of information where it may be open to public scrutiny - the long delay in allowing public access to the environmental statement is a good example of this.**

I would welcome any comments or queries you may have on this report.

**Paul Mobbs, May 1996**

## 5. References

1. '*AWE Aldermaston - Waste Transfer Station for the Handling of Special Waste - Environmental Statement*', WS Atkins Consultants Ltd ref. AM2888/1995/October, October 1995.
2. Applications are made under Part IV of Dept. of the Environment/ Welsh Office Circular 18/84 - '*Crown Land and Crown Development*' - dated 3rd August, 1984.
3. Letter from I.D. Ward, Site Planning Officer, AWE Aldermaston, to R.J. Higgs, BABTIE Public Services, Berkshire County Council - 21/2/95.
4. '*Assessment of the planning application for a waste transfer station, AWE Aldermaston*', report prepared for Evelyn Parker (on behalf of the Nuclear Sites Community Forum), April, 1995.
5. Town and Country Planning (Assessment of Environmental Effects) Regulations 1988, Statutory Instrument (SI.) 1988/1199. These regulations implement EC Directive 85/337/EEC, '*The Assessment of the Effects of Certain Public and Private Projects on the Environment*' (27/6/85), into UK law.
6. Waste Disposal License No. 54/12/4/342. Granted to Hunting-Brae Ltd (trading as AWE Aldermaston), 29th March, 1995. License covers the treatment, transfer and temporary storage of waste.
7. EC Groundwater Directive, 80/68/EEC.
8. National Rivers Authority, '*Policy and Practice for the Protection of Groundwater*', 1992.
9. '*A guide to Risk Assessment and Risk Management for Environmental Protection*', Department of the Environment 1995. (Published by HMSO, ISBN 0 11 753091 3 - price £9.95)
10. '*EH40/96 - Occupational Exposure Limits, 1996*', Health and Safety Executive, 1996.
11. '*Making Waste Work: A strategy for sustainable waste management*', HMSO, £16.00, ISBN 0-10-130402-1. A 20-page summary is available, free of charge, from: Department of Environment Publications Despatch Centre, Blackhorse Road, London SE99 6TT. Fax: 0181 694 0099. Quote reference 95EP130.

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