Ass # 009

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MINISTER FOR ENVIRONMENT

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL
PROTECTION ACT 1986)

PCB INCINERATOR AT KOOLYANOBBING
HEALTH DEPARTMENT OF WESTERN AUSTRALIA

This proposal may be implemented subject to the following conditions:

1. The proponent adhering to the proposal as assessed by the Environmental Protection Authority and to the commitments made for environmental protection (copy of proponent's commitments attached). Each of the two sites proposed near Koolyanobbing are environmentally acceptable.

2. The proponent shall, prior to commencement of construction of the project, prepare a hazards management strategy as outlined in the Public Environmental Report, to the satisfaction of the Environmental Protection Authority and other appropriate Government agencies.

3. The proponent shall, prior to commissioning the plant, prepare a safety management strategy as outlined in the Public Environmental Report, to the satisfaction of the Environmental Protection Authority and other appropriate Government agencies.

4. All bulk transportation of PCBs from the storage depots in Perth to the incinerator facility shall be by rail.

5. The proponent shall, prior to any transport of PCBs to the site obtain the approval of the Environmental Protection Authority and relevant Government agencies to the following for all stages of the transport operation:

   - establish detailed specifications for PCB loading, transfer and unloading areas;
   - outline specific safeguards for rail containers containing PCBs;
   - detail plant site storage and handling requirements, including fire safety;
   - identify responsibility for the various aspects of transport and transfer operations; and
   - prepare contingency plans for dealing with spillages should they occur.

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6. The incineration facility should be operated and managed by an experienced operator to the satisfaction of the Minister for Environment.

7. The proponent shall prepare a monitoring programme to the satisfaction of the Environmental Protection Authority before the commissioning of the incineration facility. This programme shall include the following:

   - the parameters contained in the proponent's commitments;
   - reporting to the EPA;
   - the programme to be reviewed by the EPA after 2 years; and
   - baseline and post-PCB disposal monitoring requirements.

8. The proponent shall obtain a Works Approval (prior to construction) and a Licence (prior to commissioning) for the proposed facility under the provisions of Part V of the Environmental Protection Act 1986.

Barry Hodge, MLA
MINISTER FOR ENVIRONMENT

27 NOV 1987

LIST OF COMMITMENTS

Environmental protection and other commitments made by the proponent in the PER; in the proponent's response to issues raised in submissions; and to issues raised by the EPA.

*Indicates commitments made in response by the Health Department of WA (23 April 1987) to the EPA.

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1. GENERAL

1.1 *The State accepts responsibility for the disposal of Western Australia hazardous wastes.

1.2 *The proponents considered a wide range of studies during development of the present proposal. They believe that the data presented clearly indicate that the level of hazard posed by the Western Australian proposal is so low that for all practical purposes it must be regarded as non-existent.

1.3 *Attempts to establish a national facility have been made but have failed for a number of reasons. As Western Australia has a long-standing problem of PCB disposal it stands to reason that this problem alone be addressed.

1.4 Any disposal facility established in the State would be used exclusively for PCB treatment and would handle only PCB waste originating from within Western Australia.

1.5 The PCB disposal operation will be controlled by the Health Department of Western Australia.

1.6 The Environmental Protection Authority will form the independent safeguard authority and will have access to the specialist assistance of the Government Chemical Laboratories for monitoring analysis.

1.7 An experienced and competent contractor will be selected by tender to design, construct, commission and operate the disposal facility.

1.8 Financial arrangements covering the capital and operating costs associated with the disposal facility are subject to further investigation and evaluation.

1.9 The owners of PCB wastes will be responsible for disposing of PCBs within the proposed system, within the timescale proposed and at the charge rates specified for packaging and disposal.

1.10 *The incinerator will operate for from 4 to 6 years and not on a continuous basis.

1.11 *The best guarantee against accident lies in the use of proven technology, careful design, contractual specification of construction and operational detail, and monitoring.

1.12 *There will be a high security fence around the plant. No admission by unauthorised persons unless cleared by the manager, and there will be a security patrol during periods of non-operation.

1.13 *It is suggested that a Liaison Committee be established to monitor and be informed of the activities at the facility. The Committee

could consist of one or two elected members of the Yilgarn Shire Council, the local health surveyor and one or two local residents. These people would meet at regular intervals with the manager of the plant and representatives of the Health Department of WA, the Environmental Protection Authority and the Department of Occupational Health, Safety and Welfare.

1.14 *It is also proposed that the existing working groups overseeing the development of the PER be maintained throughout the design and construction period, and if necessary during the operation of the plant.

1.15 *The proposed programme for disposal of PCBs in Western Australia may provide opportunities for field evaluations of biological treatment, particularly for treatment of contaminated soils in situ.

2. CONSTRUCTION

2.1 *Design time will be 3-4 months and construction time 6-8 months.

2.2 *A tender for construction will be chosen by the Health Department of Western Australia.

2.3 *Materials for construction will be selected using all necessary engineering skills and will incorporate experiences of other hazardous waste facilities around the world. Materials specification will be included in the detailed design.

2.4 There will be minimal environmental impact during the construction phase and all emissions and wastes can be handled by normal procedures.

3. PCB INVENTORY (PER S10.2)

3.1 Further work on compilation of a full inventory is necessary to locate small and individual items of electrical equipment that contain PCBs and to identify any PCB wastes that may have been dumped in sanitary landfill sites.

3.2 *Transformer oils currently in use must be disposed of due to unacceptable levels of PCBs. Also soils are known to contain unacceptable levels at certain sites in Western Australia.

4. OPERATION (PER S10.3)

4.1 *It is proposed to have private industry operating the facility on contract to the Health Department of WA. The contractual basis for operation will provide a legal mechanism to ensure safe operating standards. It is considered that this structure will provide the greatest assurance that the facility will be strictly regulated and subject to independent monitoring. However, if this is unacceptable the Health Department is willing to consider operating the plant itself by employing suitable personnel for the task.

4.2 *If a private operator is chosen it will be only with continuous on-site presence of a government officer with relevant qualifications for the task.

4.3 *If the Health Department was to operate the facility it would hire suitably qualified personnel for operation, monitoring and bookkeeping.

4.4 The process will handle all forms of PCB waste identified in Western Australia.

4.5 The process operates at 99.9999% efficiency.

4.6 The process can be effectively monitored and controlled at all times.

4.7 Plant and operating costs are not excessive and a suitably sized incinerator can be assembled quickly on a relatively small site area.

4.8 High temperature incineration is a proven technology.

4.9 The process involves minimal operator exposure.

4.10 *Workers with experience in operation of plants such as refineries will operate the facility.

4.11 *At least one employee will be a tradesman.

4.12 *Scheduled maintenance will be programmed during the design phase.

4.13 *As plant is operated at one shift only, maintenance can take place during non-operation if required.

4.14 *Major unscheduled maintenance will be carried out as required. The PCB destruction programme need not be interrupted as extra shift can "catch up" with any backlog.

4.15 *Through put will be one tonne per day or 300 tonnes per year.

5. DESIGN CRITERIA (PER S10.4)

The selection of a stationary hearth high temperature incinerator will provide a highly efficient and cost effective means of disposing of PCB wastes. However, the incinerator unit itself forms only a small part of the overall disposal facility and there is a significant amount of associated operating, control and monitoring equipment that forms a necessary part of the overall disposal facility and contributes towards achieving a reliable, efficient and safe operation. In the following sections the essential design aspects of the disposal facility that will form the basis of the eventual detailed design are outlined.

5.1 PRIOR TO COMBUSTION

5.1.1 PCB wastes will be tested before delivery to the disposal facility to allow optimum incineration control for each type of waste.

5.1.2 Waste unloading and preparation for incineration will be automated as far as economically possible to minimise chances of worker exposure.

5.1.3 Equipment will be provided in the unloading area to contain PCB spills and to remove excessive levels of PCB vapours from sealed containers.

5.1.4 PCB liquids will be stored in a liquids tank farm that will provide full fire control, spillage containment and vapour control for all waste liquids stored.

5.1.5 PCB containers such as capacitors will be drained and prepared for treatment in the incinerator using automatic equipment.

5.1.6 Waste feed to the incinerator will be achieved by positive displacement metered pumping through an atomising lance for liquids, and by a ram feed into an air lock for solids.

5.1.7 *No milling will take place. See 7.1.10 and 7.1.11.

5.1.8 Liquids will be pumped into the primary combustion chamber through an atomising lance.

Drained capacitors will be transferred in leak proof trays by a monorail to the main feed conveyor and then pushed into the air lock with a ram. Insertion of a tray into the air lock will push the previous tray into the incinerator and push another tray from the incinerator into the exit air lock. The frequency of moving new trays into the inlet air lock will determine the retention time of the capacitors in the primary combustion chamber.

Liquids in drums will be drained to the liquid storage tanks under conditions which minimise fugitive emissions and the possibility of fires (if solvents are involved).

Solids in drums will be removed by hand-operated extension tongs or, for heavier items, by overhead monorail, and then placed in steel trays and sealed with a combustible membrane. The trays will then be stored in a covered well vented area prior to being fed to the incinerator via the ram feed/air lock system as described above. Emptied drums will then either be flushed with solvent for later re-use for transporting PCBs or crushed into a concertina form and fed through the incinerator before being disposed of as landfill.

5.1.9 *Liquid feed will be monitored continuously with alarm for high or low flow.

The frequency of loading of the steel trays will determine the solids retention time in the primary combustion chamber. The requirement will be determined during the trial burn procedure. Retention times are likely to be about half an hour for loose contaminated solids (gloves etc) and may be up to 4 hours for drained capacitors.

5.2 COMBUSTION

5.2.1 The primary and secondary combustion chambers will be operated at 15 mm negative pressure to control fugitive emissions with facility to vary solids retention times and to achieve specified minimum temperatures, gas retention times and excess oxygen content in the flue gas.

5.2.2 A combination of automatic and manual controls will be used to monitor and control the system.

5.2.3 *Equipment for automatic fuel control will be installed. Fuel/air ratio is set and fuel is burnt to maintain a set temperature in each chamber.

5.2.4 *Flame failure for any reason will cause a drop in temperature and the automatic instant liquid PCB feed cut-off will operate.

5.2.5 *The incinerator system will operate at a negative pressure to prevent fugitive emissions and allow venting of PCB feed areas.

5.2.6 *Based on previous experience in Perth it is doubtful if any refractory relining will be required. If relining is required, the disposal programme can be kept on schedule through overtime or extra shifts.

5.2.7 *Leak prevention from the kiln will be managed by keeping negative draft throughout furnace and pressure indicators at strategic locations.

5.2.8 *Over pressure should not be possible: Flame failure will cut fuel supply, and liquid feed will be tested for calorific value before supply to furnace.

5.2.9 *The criteria for achieving 99.9999% Destruction and Removal Efficiency (DRE) are given by the USEPA as two seconds residence time in the secondary chamber at 1200 ^{o}C and a minimum of 3% Excess Oxygen. Trial burns will confirm the DRE.

5.2.10 *The residence time of the system is a minimum of three seconds in the secondary chamber at maximum gas flow.

5.2.11 *In the event of a power failure, DRE is not applicable as the fuel, PCB feed and airflow stop immediately. Emergency power supply (generator) for lighting, controls, fire fighting, etc will be installed.

5.3 CONTROLS

5.3.1 *The type, location and reliability of process control instrumentation and the parameters they will measure are described in Section 5.2.7 PER.

5.3.2 *Liquid PCBs are fed to the primary chamber via the centre of the burner. All feed lines are outside the furnace and vapourisation

does not take place until the feed reaches the centre of the naked flame. High/low temperature, pressure loss, etc will cause instantaneous shut-off of feed.

See section 5.2.7 PER for details.

5.4 RESIDUES

5.4.1 *Automatic solids discharge to vented area for cooling, then transport to landfill (quarry) will take place.

5.4.2 *The quench unit and scrubber are conventional, well proven pieces of equipment. Their efficiency will guarantee hydrogen chloride emissions well within national and international standards. Loss of cooling water will shut off PCB feed.

5.4.3 *If burning pure PCBs at maximum rates, approximately 400 kilogram per day of sodium hydroxide would be required to neutralise flue gases. Actual requirements will be far less as a large proportion of the PCB wastes are solids (steel, contaminated clothing, etc) and solvents.

5.5 SAFETY

5.5.1 PCB liquids will be stored in a liquids tank farm that will provide full fire control, spillage containment and vapour control for all waste liquids stored.

*Further details will be developed during the design phase in consultation with relevant agencies.

5.5.2 *A fault tree analysis with meaningful figures is not possible to develop until detailed design of the plant is done. Naturally, such analysis (ie a HAZOP) will be carried out at that stage. At present, a comprehensive fault identification has been undertaken with consequences and preventive measures outlined for each possible fault.

5.5.3 *To maximise operational safety it will be necessary to have special equipment to prepare and introduce the waste into the incinerator.

5.5.4 *LPG tanks have a long record of safe use and can be sited at a safe distance so that even if a tank exploded there would be no hazard to the other components of the incinerator plant.

5.5.5 *A comprehensive fire suppression system will be installed and safety procedures applicable to the handling of flammable liquids will be adopted.

5.5.6 Provision for emergency services will include fire water supply, foam dousing (or similar) in flammable liquid storage areas, firebreaks, emergency washing facilities, visual and audible alarms and contingency planning.

5.6 GENERAL

5.6.1 Services required at the disposal facility include electrical power, auxiliary fuel, potable water and sodium hydroxide.

5.6.2 *A training programme will be developed at the design phase in consultation with the staff at existing overseas facilities and state authorities such as the Department of Occupational Health, Safety and Welfare. Relevant unions will be also be asked for advice. Overall management will be by a government officer with relevant qualifications and experience.

6. SITE SELECTION (PER S10.5)

6.1 *The proponents acknowledge that use of stringent criteria provides extra assurance that the site presents no hazard to the public, to human activities such as farming, or to the natural environment.

6.2 *The Koolyanobbing site is an ideal location for the disposal of PCBs as it offers an optimal combination of a high level of environmental security, public safety and reasonable construction and operation costs.

6.3 *Furthermore this site has by far the biggest buffer zone ever used.

6.4 *There will be no uncontrolled runoff from the site.

6.5 *Process water will be retained within the plant area and evaporated or burnt if contaminated.

6.6 *Stormwater runoff will be retained and only released if uncontaminated.

6.7 *Site selection has been based on giving the absolute maximum protection to the environment and the residents of the area in accordance with the EPA guidelines.

7. HANDLING, STORAGE AND TRANSPORT (PER S10.6)

7.1 HANDLING

7.1.1 Storage, handling and transport of PCBs will be carried out only by properly trained and fully qualified operators.

7.1.2 Purpose-built sealed steel containers will be used for the PCB disposal operation as this allows for the wide variation in the form of PCB waste and the variable nature and condition of present PCB waste containers. It also ensures that the most stringent Dangerous Goods (Road Transport). Regulations can be applied to transport of PCBs without modification.

7.1.3 The sealed, steel containers provide additional security against leakage or accidental rupture and ensure that large loads are separated into discrete packages of manageable size. They allow for semi-automated handling and provide a conveniently sized container for automated decontamination ready for re-use.

7.1.4 Collection and storage of PCBs is best achieved by the use of a local collection operation in Perth to a central bulk transfer location with subsequent bulk transport to Koolyanobbing.

7.1.5 The workforce involved in the storage, handling and transport of PCBs will be carefully selected and fully trained.

7.1.6 *Record keeping will be very tight. Apart from standard documentation required by the Transport of Dangerous Goods Regulations, the Health Department will have its own "Cradle-to-grave" system with forms being signed by PCB owner, transporter and disposal site operator. All relevant details of the waste will be demanded throughout the process. The information will be computerised.

7.1.7 Prior to entering into an agreement to treat the PCB wastes the incinerator operator, with a Government officer and a representative of the owner of the waste, will inspect the waste and take samples to determine:

(a) PCB content;

(b) heat content (related to the proportion and type of solvent present); and

(c) contamination with water, clothes, rags, grit etc.

The waste containers will be appropriately labelled.

7.1.8 Waste PCBs will arrive at the Material Receiving Dock in heavy duty steel containers. On arrival at the facility the containers will be removed from the truck by a hoist and placed on the receival dock. When required they will be moved to the preparation area and opened with hand tools. The contents will then be lifted out by hoist and moved into the processing system.

Some PCB wastes will arrive at the site in large shipping containers in which they are currently stored. In these cases the container will need to be vented to the incinerator (three air exchanges) to prevent the emission of any evaporated PCBs. The shipping containers will also be cleaned on-site and then disposed of as landfill.

7.1.9 Interim storage of waste PCBs at the incinerator site will be undertaken in the transport containers for solids and in the liquids tank farm for liquids. Features of the storage facilities include:

(a) 100% containment capacity for the liquids storage tanks. (This will be by way of a bunded area around the tanks, draining to a remote (greater than 10 m) subsurface sump. Any spilt material will be pumped from the sump into drums and moved to the waste feed into the incinerator.);

(b) inert gas blanket for flammable solvents contaminated with PCBs;

(c) fire prevention systems will be provided to all areas of flammable material storage to meet the requirements of the Flammable Liquids Regulations;

(d) venting of gases from liquids storage tanks to the incinerator;

(e) storage of drummed wastes and other PCB-contaminated solids under a roofed area to minimise surface run-off contamination;

(f) facility for removal of sludge from the base of liquids tanks;

(g) mixing tank to blend various liquids (solvents, PCB oils) to achieve a uniform heat loading on the incinerator; and

(h) contained and controlled drainage, and drainage water disposal system for the whole site.

7.1.10 The capacitors will be drained of liquid PCBs prior to being charged to the incinerator, as far as the viscosity of the fluid allows. Holes will be punctured in the casing by an automatic press and the liquid PCB allowed to drain into a sump before being pumped to the liquid PCB storage tank. The operation will be undertaken in an enclosed hood, with extracted fumes being vented to the incinerator. After draining has finished, the holed capacitor will move onto a steel tray in a well vented area ready to be charged to the incinerator. Remote handling operations will be assisted by an overhead monorail crane and/or a forklift.

7.1.11 Liquid PCBs in drums will be removed by pumping or by inverting each drum over a sump from where it will be automatically pumped to the main PCB storage tank. The drums will then be moved to the puncturing press and treated in the same way as capacitors (see 7.1.10).

7.1.12 PCB spills will be handled according to the following guidelines:

(a) any skin contact with PCBs is to be prevented;

(b) protective clothing including gloves, wet weather clothing, gum boots, must be worn;

(c) gloves, clothing or gumboots which have come into contact with PCBs are not to be retained for future use but are to be disposed of by incineration;

(d) eye protection must be worn;

(e) no smoking is to be permitted during the clean-up;

(f) if a large spill occurs, a bund is to be formed with absorbent material to prevent any escape of PCB material;

(g) under no circumstances are PCBs to be permitted to enter sewers or water courses;

(h) spilled fluid must be absorbed, using materials such as cloth, paper towel, sand or sawdust;

(i) soil or gravel which has been contaminated by the spill/leak is to be dug up;

(j) all absorbent waste materials including clothing, soil etc are to be placed in a strong polyethylene bag;

(k) the bag must be sealed and placed in a sound metal drum;

(l) the drum must be securely sealed with a ring lock;

(m) the drum must be labelled;

(n) where a significant spill (ie in excess of 500 mL) to the environment has occurred, the Environmental Protection Authority must be notified;

(o) equipment is to be cleaned down with a suitable solvent such as kerosene and contaminated solvent placed in a sound metal drum;

(p) further leakage is to be prevented either by containment or decanting into heavy duty metal drums in good condition;

(q) flammable PCB contaminated clean-up fluids must be stored in separate drums; and

(r) drums containing contaminated kerosene must be labelled.

7.1.13 *Further details of receival, handling and storage will be contained in the operations manual to be developed concurrently with detailed design of the plant.

7.2 STORAGE

7.2.1 *PCBs will be collected on rotation from the current storage points. Only existing sites will be used for storage until the PCBs are transported to the incinerator site. A possible exception may be a small Health Department controlled depot for collection of small PCB items.

*The same safeguards as at present will be maintained at the storage points.

7.2.2 *The quantity of PCBs stored on-site will be approximately three weeks' supply. It should be remembered that tonnes of PCB means PCBs and their containers. For example, a capacitor weighs approximately 40 kilograms, but only 10 kg is PCB.

7.3 TRANSPORT

7.3.1 The use of a single private transport operation selected by tender will provide the most consistent, safe and efficient means of collection and bulk conveyance of PCB wastes.

7.3.2 Main highways from the Pilbara to Perth and from Perth to Koolyanobbing provide the most suitable routes for bulk conveyance of PCBs.

7.3.3 *The need for contingency planning to cover any emergency situations is recognised.

The existing State Road Transport Emergency Assistance Scheme (WATEAS) provides the most effective and suitable means for handling emergency situations involving PCB transport.

*This well established emergency response arrangement involves the Police, Fire Brigade, Mines and Health Departments and other agencies are on stand-by for assistance. In the case of PCB handling and transport it is proposed to enlarge the scheme by providing specific training to all agencies which may be involved in such an emergency. It will include local fire brigades and police, local authorities, as well as hospitals and the Royal Flying Doctor Service. In addition, radio or telephone contact will be available between all parties which may be involved.

7.3.4 *Transport will comply with all relevant requirements of the Dangerous Goods (Road Transport) Regulations. In addition further safeguards will include:

(a) specific transport containers;

(b) definition of specific transport routes;

(c) specific documentation of PCB waste;

(d) regular stops during transport to check load;

(e) equipment on truck for emergencies and spills; and

(f) radio contact with relevant authorities.

7.3.5 *The PCB material will be transported in special containers, ie double sealing from the environment.

7.3.6 Action is required to develop an Emergency Procedures Guide card relating to PCBs before transport connected with the disposal operation is commenced.

8. ENVIRONMENTAL ISSUES (PER S10.7)

8.1 ENVIRONMENTAL MANAGEMENT

8.1.1 Gaseous residues will be disposed of by enhanced atmospheric dispersion.

8.1.2 Liquid residues will be contained and evaporated.

8.1.3 Solid residues will be disposed of as landfill.

8.1.4 *With the controls and safeguards employed no contamination should take place.

8.1.5 *All solid residues will be covered at regular intervals. The aim will be to rehabilitate the quarry to its original contours and return the site to its natural state.

8.1.6 Prior to examining the impact of emissions and wastes from the disposal plant, consideration was given to setting allowable limits of PCB contamination as follows:

(a) Levels of PCBs constituting hazardous wastes - a level of 50 ppm PCBs should be generally adopted as the lower limit for materials to be classified as PCB contaminated with the exception that a 2 ppm lower limit be used as the standard for effective decontamination as applied to solid residue from the incinerator;

(b) PCBs in atmospheric emissions - standards set by United States agencies for incinerator efficiency will be adopted for the proposed disposal facility, these being that the Destruction and Removal Efficiency of the incinerator will be not less than 99.9999% and that the combustion efficiency will be not less than 99.9%;

(c) Standards for other residues from PCB incineration - standards adopted will be as prescribed by the Australian National Health and Medical Research Council (1985);

(d) Occupational standards for PCBs - the standard for PCB levels set by the US National Institute for Occupational Safety and Health in the workplace will apply, this being that the average PCB levels over an 8 hour working day should not exceed 1 microgram per cubic metre of air;

(e) Environmental standards for PCBs - ground level concentration of PCBs shall not exceed 0.033 micrograms per cubic metre;

(f) Landfill disposal of PCBs - no standard is adopted for landfill but levels of PCB contamination in all solid waste from the incinerator will be less than 2 ppm which is well below allowable levels in the United States;

(g) PCB tolerances in food - maximum permissible levels will be as specified by the National Health and Medical Research Council of Australia (1986); and

(h) Standards relating to PCDFs and PCDDs - these standards have yet to be adopted but shall comply with those under consideration by New York authorities which set allowable daily intake of 2,3,7,8 TCDD at 2 picograms per kilogram of body weight per day.

8.1.7 There will be minimal environmental impact during the construction phase and all emissions and wastes can be handled by normal procedures.

8.1.8 Transport of PCBs represents the highest risk activity associated with the disposal operation. However, the use of sealed, steel containers will minimise the risk of spillage in a traffic accident and will also limit the quantity of PCBs that may be released in a serious accident. Training of transport crews and adequate contingency planning through the TEA Scheme will further limit impact associated with an emergency situation.

8.1.9 Adverse impact on the social environment from the proposal will be minimal and limited to some marginal increase in risk of contamination caused by the need to transport bulk PCBs through population centres. Beneficial effects are predicted from the safe disposal of hazardous materials presently in unreliable storage around the State and the ultimate destruction and thereby elimination of all PCBs in Western Australia.

8.1.10 Decommissioning and rehabilitation can be achieved without excessive cost and with minimal long term effects on the plant site or its surrounding environs.

8.1.11 *The amount of PCBs stored on the site will be approximately three weeks' supply. Note that tonnes of PCB means PCBs and their containers.

8.1.12 *Transport containers where necessary will be cleaned at the disposal site with solvents before re-use for PCBs transport and the solvent will be burnt in the incinerator. The Government Chemical Laboratories will be asked to design a trial cleaning exercise to determine the treatment necessary to ensure that the containers are free of PCBs before re-use. During the trial the amount of PCB surface contamination in the containers after various degrees of cleaning will be measured. Thereafter, the appropriate cleaning prescription will be strictly adhered to by the operator as a condition of the contract. At the end of the project the containers will be finally decontaminated and salvaged or disposed of at the quarry landfill.

8.1.13 *The need for contingency planning to cover any emergency situation is recognised. A well established emergency response arrangement already exists: ie The WA Transport Emergency Assistance Scheme (WATEAS) which involves the Police Fire Brigade, Mines and Health Departments with other agencies being on stand-by for assistance. In the case of PCB handling and transport it is proposed to enlarge the scheme by providing specific training to all agencies which may be involved in such an emergency. It will include local fire brigades and police, local authorities, as well as hospitals and the Royal Flying Doctor Service. In addition, radio or telephone contact will be available between all parties which may be involved.

8.2 GASEOUS EMISSIONS

8.2.1 *The efficiency for destruction of PCBs in the proposed unit has been proven conclusively.

8.2.2 Despite extremely low health risks, a decision has been made to site the incinerator at a remote location with effectively a 7 km radius "buffer zone" around the disposal site.

8.2.3 The high efficiency of the incinerator (DRE not less than 99.9999% and combustion efficiency not less than 99.9%) will limit stack emissions, but flue gas will be further treated in a scrubber system to remove hydrogen chloride.

8.2.4 An air pollution control system using either a wet or dry scrubber system will be installed to limit particulate and gaseous emissions to acceptable levels.

8.2.5 *Air dispersion modelling presented in the PER indicates that ground level concentrations of significant chemicals outside the plant will be well within national and international standards.

8.3 LIQUID WASTES

8.3.1 On-site liquid wastes will be fully contained and generally disposed of by evaporation unless they result from PCB spillage in which case they will be fed into the incinerator.

8.3.2 *THERE WILL BE NO UNCONTROLLED RUNOFF FROM THE SITE.

8.3.3 *Process water will be retained within the plant area and evaporated or burnt if contaminated.

8.3.4 *Stormwater runoff will be retained and only released if uncontaminated.

8.3.5 *All potentially contaminated stormwater will be collected and stored in the ponding system. No release to the environment without proof of no contamination will occur.

8.3.6 *The evaporation pond size is approximately 1 000 cubic metres which will adequately cover the event of a very heavy thunderstorm. This pond will be lined.

8.3.7 *There will be no evolution of particulate fugitive emissions from the wastewater pond. Only sodium chloride (common salt) will be in high concentration.

8.4 SOLID WASTES

8.4.1 Solid residues including remnants of burnt PCB containers and residue from evaporation ponds will be disposed of as landfill in the quarry adjacent to the site. Monitoring of leachates will be carried out to ensure no pollution occurs from this waste.

8.4.2 *Solid waste deposited in the quarry will be burnt out capacitors, ash, etc.

8.4.3 *PCB - containing capacitors can be burnt to a stage where PCBs are not detectable.

8.4.4 *US EPA standard for non-PCB material is defined as less than 50 ppm and incinerator ash as less than 2 ppm. Solid waste from the facility will easily comply with these standards.

8.4.5 *Automatic solids discharge to a vented area for cooling will take place prior to transport to landfill (quarry).

8.4.6 During the trial burn period, PCB equipment which has passed through the incinerator will be tested to ensure that the scrap metal is decontaminated. The need for further random testing during the operational phase will be finally determined after consultation with the Environmental Protection Authority. The design for these tests will be determined by the Government Chemical Laboratories. The system has been designed to ensure that all metal surfaces that have been in contact with PCBs will be exposed to heat in the incinerator. As a result, effective destruction of PCBs is expected. If this is the case, the proponents believe that no further checking of the scrap metal will be necessary as the required combustion efficiency will ensure that the necessary destruction level is maintained.

8.4.7 Sludge from the base of the recirculation tank will consist of particulates captured in the scrubber water. The sludge will be periodically analysed for organic and heavy metal contents before being disposed of as landfill. High organic contents will mean the sludge will be re-incinerated. High heavy metal contents will require solidification and fixation treatment (binding with cement to form a concrete) prior to disposal. The sludge will be dewatered on site by natural evaporation prior to disposal.

8.4.8 Ash from the primary combustion chamber will be handled in the same manner as sludge from the recirculation tank (see 8.4.7).

8.5 MONITORING

8.5.1 A monitoring programme involving continuous and intermittent sampling, testing and monitoring of plant operating conditions together with soil and leaf sampling and testing from around the incinerator site will be carried out.

8.5.2 *The monitoring programme will include the following:

(a) monitoring of the Lake Deborah system;

(b) monitoring of locally produced honey;

(c) monitoring of cattle, sheep and crops on the Guerini and Della Bosca family lands;

(d) monitoring of local ponds/farm dams; and

(e) regular monitoring within the plant including land disposal site and within a 2 km radius of the facility.

*Additional monitoring suggested by the Department of Agriculture, the Department of Conservation and Land Management and the Environmental Protection Authority will also be included.

8.5.3 *The monitoring programme will be developed during the design phase and background sampling carried out before start-up. A systematic air, soil and biological sampling study will be implemented prior to the start of operations to enable levels during operation to be compared with pre-existing conditions.

8.5.4 *The Department of Agriculture will be consulted on the monitoring programme for sandalwood and honey.

8.5.5 *Monitoring of PCB levels and for the presence of furans and dioxins in and around the plant will be the responsibility of a combination of Government agencies, especially the Health Department and the Government Chemical Laboratories. One of these agencies will maintain an officer on-site at all times to monitor operating parameters and general operational safety.

8.5.6 *The Health Department is prepared to finance independent low-frequency monitoring.

8.5.7 *The results of monitoring will be made available to workers at the facility and to residents of the Shire of Yilgarn through a proposed Community Liaison Committee (see 1.13).

8.5.8 *Intensive monitoring will ensure this to be a safe facility.

9. OCCUPATIONAL HEALTH (PER S10.8)

The protection of workers at the disposal site has been a major concern during the development of this proposal. Commitments to ensure adequate health protection for all employees involved in the plant operation are:

9.1 Initiation by the Occupational Health, Safety and Welfare Commission to develop comprehensive guidelines for safe handling of PCBs during storage, transport and destruction operations.

9.2 All personnel will be fully trained in the handling of PCBs using a course to be developed and administered by the Occupational Health, Safety and Welfare Commission or by the Trades and Labor Council.

9.3 *A training course will be provided for all personnel involved with PCB disposal in Western Australia. Such training may be coordinated by the Occupational Health, Safety and Welfare Commission in accordance with Section 14 of the Occupational Health, Safety and Welfare Act or by the Trades & Labor Council with support by Government agencies or by the operator/manager. The training programme will occur prior to the start of the project and refresher courses will be provided as necessary. All new employees will be trained.

9.4 A thorough medical surveillance programme will be provided to give baseline and progressive personal health data throughout and beyond the employment period for each worker.

9.5 First aid and hygiene measures will be provided at the disposal facility.

9.6 The need for full protective clothing during normal operations will be evaluated just prior to the time when the facility becomes operational. Sufficient protective clothing will be provided at the site to cover emergency situations.

9.7 Contingency planning will be developed as part of the handling guidelines (see also 7.3.3 and 7.1.12).

9.8 Noise levels in the disposal plant will comply with the Noise Abatement (Hearing Conservation in Workplaces) Regulations, 1983.

9.9 *The proponent gives an assurance that occupational health matters will receive close attention during the design stage, and consultation with relevant agencies, unions and overseas operating facilities will take place. See also 8.1.6, 8.5.5, 8.5.7 and 8.5.8.

10. INSURANCE AND COMPENSATION

10.1 *Insurance cover will be determined by Government policy. Basically two possibilities exist:

(a) Public and Third Party Indemnity with an appropriate liability (eg $5 million), or

(b) A Government guarantee.

*The former would involve a sizeable addition to the annual operating costs and therefore to the unit costs for destruction. Coverage by Government guarantee is a common approach to underwriting risks and avoids the annual outlay of a premium, but involves direct costs to Government in case of claims.

10.2 *The mechanism for assessing any claim would in either case probably be based on detailed assessment of the validity of the claim and the damages sought, employing competent assessors.

* Indicates commitments made in the response by the Health Department of WA (23 April 1987) to the EPA.