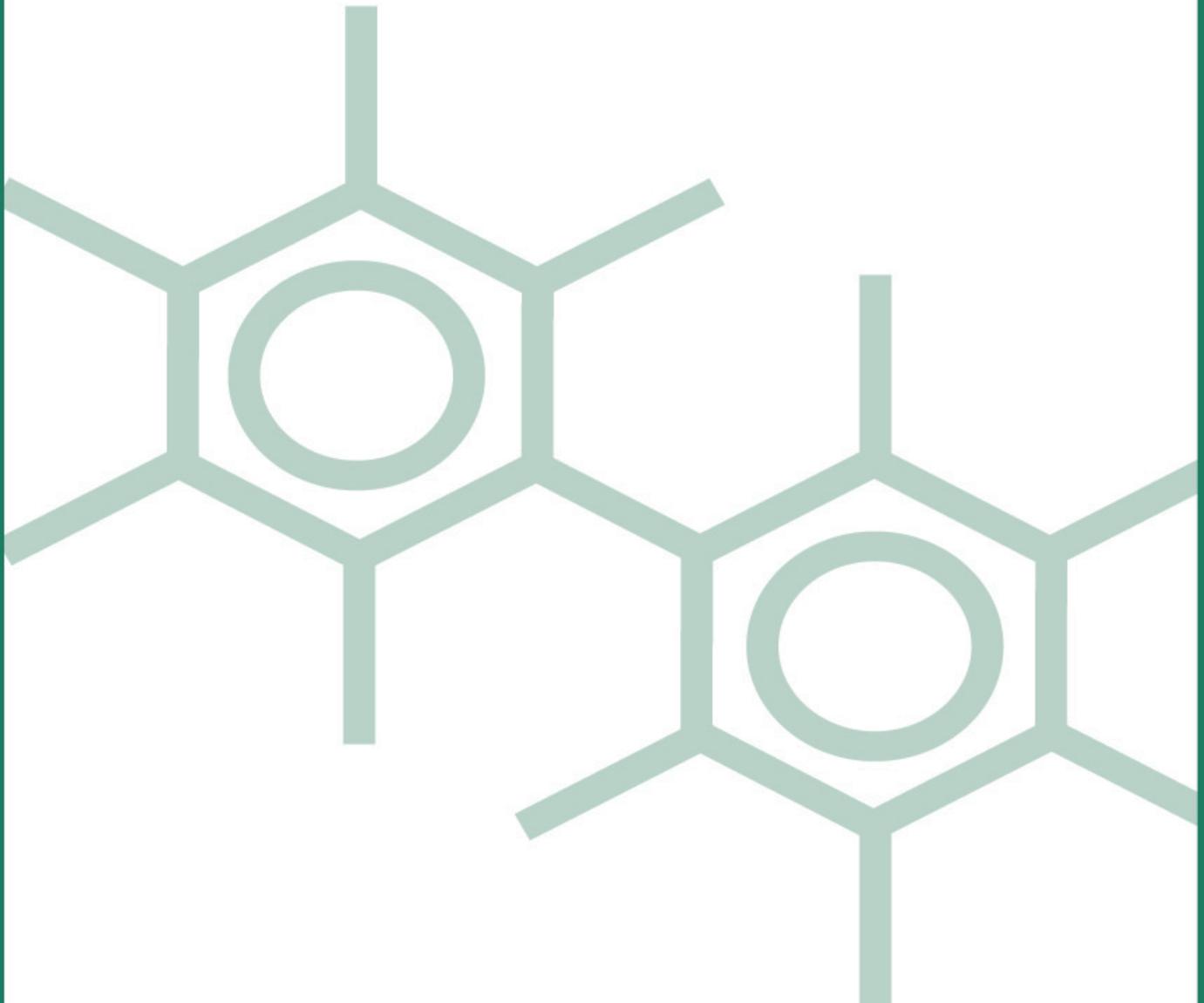




POLYCHLORINATED BIPHENYLS

MANAGEMENT PLAN

Revised Edition April 2003



ACKNOWLEDGMENTS

The objective of the Australian and New Zealand Environment and Conservation Council (ANZECC) is to provide a forum for consultation and co-ordination between the State, Territory and Commonwealth governments of Australia and the Government of New Zealand on environmental and conservation issues.

The polychlorinated biphenyl (PCB) waste management plan was prepared between April 1994 and November 1995 as part of the *National Strategy for the Management of Scheduled Wastes*. The assistance of a large number of organisations and individuals played a crucial role in its success and widespread acceptance. It was funded by ANZECC.

ANZECC would like to acknowledge the efforts of the Scheduled Wastes Management Group and the National Advisory Body (NAB). The SWMG was set up to oversee the development of scheduled waste management plans and the NAB was set up to provide interest group advice to ANZECC on scheduled waste issues. The NAB consists of representatives of a range of interested stakeholders: environment groups, farmers, local government, unions, waste holders (from the chemical industry, electricity supply and mining sectors), waste managers and scheduled waste treatment firms. The NAB conducted an extensive community consultation program for the PCB management plan on behalf of ANZECC and it played an important role in incorporating public comment through the process to prepare the endorsed plan.

Finally, ANZECC offers its thanks to the many interest groups and the general public who provided advice and specific comments through the extensive public involvement program.

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Information presented in this document may be copied provided that any extracts are fully acknowledged.

This 2002 edition of the Polychlorinated Biphenyls Plan includes references to juridical legislation referred to in the Explanatory Note.

Photographs courtesy of ELI Eco Logic Australia.

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EXPLANATORY NOTE

The *National Strategy for the Management of Scheduled Waste*, endorsed in 1993 by the Australian and New Zealand Environment and Conservation Council, requires that the PCB management plan:

- (a) is based on a risk assessment of environmental and human health effects, and the social and economic impacts;
- (b) specifies threshold concentrations, threshold quantities and notifiable quantities of chemicals;
- (c) indicates dates for cessation of the generation of scheduled waste, for cessation of the use of articles containing scheduled waste, and the disposal of scheduled waste; and
- (d) takes into consideration the principles defined in the Intergovernmental Agreement on the Environment (IGAE).

While meeting the last three objectives, the National Advisory Body and the Scheduled Wastes Management Group found it not possible to obtain a risk assessment of the environmental and human health impacts and to address possible synergistic effects of PCBs and other substances in setting management provisions contained in this plan.

Risk assessment methods for chemicals can be applied to situations where human beings or the environment are exposed to those chemicals. The risk can be estimated from a combination of the inherent hazard of the chemical (the toxicity) and the likelihood of exposure to that chemical. For pesticides, it is possible to estimate risk from the inherent hazard, which is based on the toxicity to animals, and likely exposure to the pesticide. In combination with safety factors, the inherent hazard is then used to generate what is known as an Acceptable Daily Intake (ADI). These values are then used in setting regulatory measures for pesticides.

It is difficult to apply this approach to industrial chemicals in containers or equipment, such as is the case for PCBs. The lack of exposure data relating to the intentional release of PCBs in the environment makes it particularly difficult to estimate risk to the non-human environment. Thus, the National Advisory Body and the Scheduled Wastes Management Group did not find it possible to apply a formal risk assessment method to situations in which PCBs are found because of the numerous possible scenarios involving PCBs and the limited information on the synergistic effects of PCBs or on how to use this information in setting management provisions.

ADI values have not been used as a basis for the provisions in this plan. It has not been possible to link particular values for ADI to expected levels of exposure through, for example, disposal of non-scheduled PCB waste to landfill and then to develop specific management provisions. Likewise, while data on the bioaccumulation and bioconcentration of PCBs and the acute, sub-acute and chronic effects of PCBs on animals have been considered, it has not been possible to use the data as the dominant basis for developing the management plan. A relative risk management methodology was therefore adopted, where PCBs posing a higher risk to human health or the environment, due to their concentration or location, are to be subject to more stringent requirements, including priority for phase out from use.

In addition to this plan, those involved in PCB management must comply with relevant statutory instruments to meet their full obligations.

However, in some instances, it is possible to assess the risk likely to arise from particular PCB treatment facilities and where this is the case, assessment is required by this management plan (see Section 9.5.1).

This plan does not address issues relating to contaminated soils that are dealt with by the *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*. However, storage, transport, treatment and disposal of scheduled and non-scheduled PCB contaminated soil are subject to the provisions of this plan.

The plan will be subject to periodic review. Any new information or risk assessment methods which may have an impact on the management provisions in the plan, particularly information on human health effects and environmental toxicology of PCBs, will be examined as part of this review.

Finally, it is important to recognise that this management plan will be given effect through Commonwealth, State and Territory statutory instruments and, as such, it represents guidance to governments.

Professor Ian Rae

Chair, National Advisory Body and Scheduled Wastes Management Group



1. DEFINITIONS

In this management plan:

- 1.1 'ADG Code' means the *Australian Code for the Transport of Dangerous Goods by Road and Rail*, published by the Commonwealth Government (as amended from time to time);
- 1.2 'agency' means the agency charged by the relevant Commonwealth, State or Territory Government with the responsibility for scheduled wastes;
- 1.3 'ANZECC' means the Australian and New Zealand Environment and Conservation Council;
- 1.4 'approved' means approved by the agency;
- 1.5 'ARMCANZ' means the Agricultural and Resource Management Council of Australia and New Zealand;
- 1.6 'Askarel' and 'Aroclor' mean well-defined commercial PCB mixtures;
- 1.7 'concentrated PCB material' means scheduled PCB material containing 10% or more of PCBs by mass;
- 1.8 'concentration' with respect to PCBs means the concentration of PCBs in the diluent;
- 1.9 'congeners' means a group of chemicals which have the same basic structure;
- 1.10 'diluent' means a matrix within which PCBs are distributed, such as oil, soil, concrete and some equipment parts. It does not mean the bulk casing or other solids surrounding PCB material.
- 1.11 'licence' means a statutory approval issued by the agency;
- 1.12 'management plan' means a plan approved by ANZECC for the management and disposal of specific categories or a combination of categories of scheduled wastes;
- 1.13 'NATA' means the National Association of Testing Authorities;
- 1.14 'National Protocol' means the *National Protocol for the Approval/Licensing of Commercial-Scale Facilities for the Treatment of Schedule X Wastes* (July 1994);
- 1.15 'National Strategy' means the *Draft National Strategy for the Management of Scheduled Waste* (Nov. 1992), supplemented and amended by the Scheduled Wastes Working Group Report to the Australian and New Zealand Environment and Conservation Council (Version B, May 1993)¹;
- 1.16 'NHMRC' means the National Health and Medical Research Council;
- 1.17 'non-scheduled PCB material' means any material (including material in equipment) which contains PCBs at levels below the threshold concentration or threshold quantity and above the concentration level defined as PCB-free;

¹ These and other scheduled wastes documents may be obtained from the Waste Management Secretariat, Environment Australia, GPO Box 787, Canberra ACT 2601 Telephone: FREECALL 1800 657 945, or email ocp@ea.gov.au

- 1.18 'non-scheduled PCB waste' means any material (including material in equipment) which has no further use and which contains PCBs at levels below the threshold concentration or threshold quantity and above the concentration level defined as PCB-free;
- 1.19 'notifiable quantity' means more than 10 kg of PCBs in scheduled PCB material or scheduled PCB waste held on any one premises;
- 1.20 'PCB-free' for the purposes of this plan means material or waste containing PCBs at a concentration of 2 mg/kg or less;
- 1.21 polychlorinated biphenyl' or PCB means a substance in which the biphenyl structure has chlorine atoms substituted for hydrogen atoms to varying degrees – PCB has the chemical formula $C_{12}H_{10-n}Cl_n$ where 'n' is 1-10;
- 1.22 'premises' includes any property, building and public place, ship, boat, aircraft and any other vehicle;
- 1.23 'priority area' means an area which requires a particularly high level of protection. Such areas include, but are not restricted to, proclaimed potable surface and underground water catchment areas, food processing facilities, animal feed lots, schools, hospitals, aquatic spawning areas and endangered species habitats²;
- 1.24 'scheduled PCB material' means any material (including material in equipment) which contains PCBs at levels at or in excess of the threshold concentration and threshold quantity;
- 1.25 'scheduled PCB waste' means any material (including material in equipment) which has no further use and which contains PCBs at levels at or in excess of the threshold concentration and threshold quantity;
- 1.26 'threshold concentration' means a concentration of PCBs of 50 mg/kg; and
- 1.27 'threshold quantity' means a quantity of PCBs of 50 g.

² 'Aquatic spawning area' means an area of the environment which fish and other aquatic vertebrate species use for spawning purposes. 'Endangered species habitat' means an area of the environment which provides a habitat for a species that is likely to become extinct unless action is taken to remove the factors which threaten its survival.

2. SCOPE OF THIS MANAGEMENT PLAN

2.1 This plan shall be known as the PCB Management Plan and is approved by ANZECC for the management of PCBs in accordance with the National Strategy.

2.2 Figure 1 provides a visual display of the scope of this Management Plan and it summarises the treatment provisions for the different types of PCB material and PCB waste. It has been included for guidance only and readers should refer to the text for details.

Figure 1: Scope of the PCB Management Plan

Concentration Quantity	Type of PCB	Treatment Provisions
100,000 mg/kg (10%)	Concentrated PCB	All scheduled PCB material and scheduled PCB waste is to be treated: <ul style="list-style-type: none"> • treatment methods to be licensed/approved by the agency • liquid residues from treatment plants – PCB free • gaseous emissions from treatment plants – less than 1µg PCBs per cubic metre • liquid discharges from treatment plants to fresh and marine waters – 0.1 and 0.4µg of PCBs per litre respectively • liquid discharges to sewer – less than 2µg of PCBs per litre • solid residue – PCB free • no intentional dilution or disaggregation merely to result in scheduled PCB waste becoming non-scheduled PCB waste Scheduled PCB solid or liquid waste must not go to landfill
50 mg/kg and 50g	Scheduled PCB <i>See sections 5 and 9</i>	
Threshold levels	Non-Scheduled PCB <i>See section 10</i>	Non-scheduled PCB material and non-scheduled PCB waste to be disposed of by methods approved by the agency in accordance with guidance notes at Appendices A&B. Solid non-scheduled PCB waste can go to landfill in accordance with guidance note at Appendix A. Non-scheduled PCB liquid wastes must not go to landfill.
2 mg/kg	PCB-free	PCB-free means material or waste containing PCBs at 2 mg/kg or less for the purposes of this plan. PCB-free material or waste is not controlled under this plan but there may be other controls for diluents.

Notifiable quantity = 10 kg

- 2.3 This plan places no management requirements on materials and wastes which are designated as PCB-free.
- 2.4 Several provisions of this management plan set out deadlines for completion of particular actions. These deadlines will depend on the timing of implementation of this plan by jurisdictions. The removal from service of all equipment containing scheduled PCB material should be completed no later than 13 years from 1 January 1996, with the exception of equipment described in Sections 5.3.4, 5.4 and 9.13.
- 2.5 It is intended that this plan be given effect through Commonwealth, State and Territory statutory instruments and provide guidance to relevant State regulatory authorities with responsibility for PCBs and organizations and persons involved in the keeping, handling, treatment and disposal of PCBs.

3. PCB ANALYSIS

- 3.1 Analyses shall be carried out by laboratories which are accredited and registered by NATA, or approved equivalents in Australia or other countries, for relevant PCB analyses. Laboratories carrying out PCB analyses shall incorporate quality assurance and quality control programs in accordance with NATA requirements.
- 3.2 Where analyses are required for regulatory purposes, the quality assurance program shall incorporate periodic check analyses by an independent laboratory.
- 3.3 Analytical methods acceptable to NATA, or approved equivalents in Australia or other countries, for inclusion in the scope of accreditation of laboratories shall be used for analysis of PCBs.
- 3.4 Existing analytical data on PCBs which have been obtained by non-NATA registered laboratories may be used for indicative purposes, including initial equipment classification purposes. Such data should be identified as non-NATA certified.
- 3.5 Analyses shall report the PCB concentration present in the sample as the sum of the concentrations of the PCB congeners where analysis is by congener-based methodology or, where appropriate for the sample, by the mass equivalent of Askarel or Aroclor where analysis is by Askarel or Aroclor pattern matching.
- 3.6 Sampling and extraction for analysis shall ensure that the material being analysed is representative, without altering or selecting the sample to result in scheduled PCB material or scheduled PCB waste becoming nonscheduled PCB material or non-scheduled PCB waste.



4. NOTIFIABLE QUANTITY

- 4.1 Where premises contain more than the notifiable quantity of PCBs (10 kg), the agency shall be notified of the quantity, concentration and location of scheduled PCB material and scheduled PCB waste.
- 4.2 Where a number of similar small equipment items containing PCBs, such as PCB lighting capacitors, are known to exist on any one premises, the requirement for notification shall be based on the aggregate weight of PCBs in these units.
- 4.3 The agency shall maintain a publicly accessible register of scheduled PCB material and scheduled PCB waste. Holders of notifiable quantities are obliged to register their holdings; and other holders are encouraged to do so.

5. EQUIPMENT MANAGEMENT AND PHASE-OUT

- 5.1 A relative risk-based phase-out strategy for equipment containing PCBs shall be adopted. This shall comprise the elements of surveying, testing and removal of identified high risk equipment. These steps will follow the schematic shown in Figure 2.
- 5.2 Surveys shall be carried out within three years of the national start date of 1 January 1996 by holders and possible holders of PCB material or PCB waste. These shall include an initial survey of equipment, with emphasis on priority areas, identifying probable locations and probable quantities of scheduled PCB material or scheduled PCB waste.
- 5.3 Risk management programs shall be implemented for all equipment by the end of the survey period set out in Section 5.2. They shall achieve:
 - 5.3.1 in priority areas, removal from service of all equipment containing concentrated PCB material within 2 years of the survey being completed and management of that material as scheduled PCB waste;
 - 5.3.2 in other than priority areas, in situ treatment to less than the threshold concentration or removal from service of all equipment (except that exempted in Section 9.13) containing concentrated PCB material within 5 years of the survey being completed;

Figure 2: Overview of PCB management strategy and timelines (refer to Sections 5, 9 & 11 for details)

Maximum timeline for actions – national start date = 1 Jan 96	Scheduled PCB waste in storage	Concentrated PCBs (>10%) in equipment which may affect priority areas	Concentrated PCBs in equipment in other areas	Equipment that has a probability of 1% or greater of containing scheduled PCB material (>50 mg/kg and 50g)	All other equipment except small equipment items likely to contain PCB material	Small equipment items (eg found in households or commercial buildings) likely to contain PCB material
Year 1	Consign for treatment by 1 Jan 1997	Survey equipment and establish risk management plans	Survey equipment and establish risk management plans	Survey equipment and establish risk management plans	Survey equipment and establish risk management plans	Identify at end of useful life or at time of maintenance, repair or decommissioning If equipment contains scheduled PCBs, dispose of as for scheduled PCB waste In priority areas, remove within 2 years of identification, followed by consignment for treatment within one year
Year 2						
Year 3						
Year 4		Removal within 2 years of completion of survey	In situ treatment to less than the threshold level	Testing of all equipment within 5 years of completion of survey	Testing of all equipment for PCB content on maintenance, repair or decommissioning	
Year 5						
Year 6		Consign for treatment within one year of removal	OR	In situ treatment to less than the threshold concentration OR Removal within 5 years of testing	If equipment contains scheduled PCB material treat or remove within 5 years (refer previous equipment-type box)	
Year 7						
Year 8			Removal within 5 years of completion of survey			
Year 9			Consign for treatment within one year of removal			
Year 10						
Year 11						
Year 12						
Beyond 2009				Consign for treatment within one year of removal	If equipment contains non-scheduled PCB material, eventual disposal by approved methods	

- 5.3.3 testing of all equipment which has a probability³ of 1% or greater of containing scheduled PCB material within 5 years of the initial survey being completed; in *situ* treatment to less than the threshold concentration or removal of all identified scheduled PCB material (except that exempted in Section 9.13) from service within 5 years of identification; and
 - 5.3.4 testing of all other equipment which is likely to contain scheduled PCB material at the time of maintenance, repair or decommissioning; in *situ* treatment to less than the threshold concentration or removal of all identified scheduled PCB material from service within 5 years of identification.
- 5.4 When small equipment items, such as lighting and other similar sized capacitors, containing PCBs above the threshold concentration and in aggregate above the threshold quantity exist at any one premises, they shall, at the end of their useful lives, be collected and managed as scheduled PCB waste. Where they are located in a priority area, they shall be removed from the priority area within two years of identification and managed as scheduled PCB waste.

6. PCB-CONTAMINATED LAND

- 6.1 Investigation and clean up of PCB-contaminated land shall be in accordance with the NEPM and relevant State and Territory requirements. ie. Outcome of onsite treatment should be no less stringent than outlined in the NEPM and complies with State and Territory requirements in determining management/treatment levels of contaminated soil.

In the absence of a site-specific risk assessment, as detailed in the ANZECC/NHMRC guidelines, US Environmental Protection Agency and ANZECC/NHMRC levels shall be used.⁴

- 6.2 Where it is intended to change land to a more sensitive use, such as from industrial to residential, the requirements in Section 6.1 for the intended land use shall apply.

³ The risk-based strategy is applicable to a range of items used in the electricity supply industry and industry in general. A statistical procedure has been developed and is available from the agency which, when applied to the required number of items, will provide a high level of confidence that more than 1% of items are, or are not, scheduled PCB material. Where this statistical approach is inappropriate due to sample size, all equipment can either be tested or removed without testing.

⁴ US Environmental Protection Agency guidelines for sites contaminated by PCBs:
 Industrial 25 mg/kg
 Electrical switch yards 25 mg/kg or
 50 mg/kg (with placarding at site entrance.)
 and ANZECC/NHMRC guidelines for sites contaminated by PCBs:
 Residential/public open space PCB investigation level as set by ANZECC and NHMRC

7. PCB STORAGE, HANDLING AND TRANSPORT

7.1 Scheduled PCB material and scheduled PCB waste, and material and waste having a probability of 1% or greater of being scheduled PCB material or scheduled PCB waste (see Section 5.3.3), shall be:

7.1.1 transported in accordance with the ADG Code and any conditions required by the agency, and in accordance with any other legislative requirements; and

7.1.2 stored in accordance with the requirements of dangerous goods legislation and other relevant legislation which, where applicable, includes AS 1940 – *The Storage and Handling of Flammable and Combustible Liquids* (1993).

7.2 Non-scheduled PCB material and non-scheduled PCB waste, and material and waste having a probability of less than 1% of being scheduled PCB material or scheduled PCB waste, shall be:

7.2.1 transported in accordance with any provisions applying to the diluent as described in the ADG Code and any conditions required by the agency, and in accordance with any other legislative requirements; and

7.2.2 stored in accordance with the requirements of dangerous goods legislation and other relevant legislation as they apply to the diluent which, where applicable, includes AS 1940 – *The Storage and Handling of Flammable and Combustible Liquids* (1993).

7.3 Control of PCBs in the workplace shall be in accordance with the *Control of Workplace Hazardous Substances – National Model Regulations and National Code of Practice* as published by Worksafe Australia and adapted into appropriate State or Territory legislation.⁵



⁵ A publication of the National Occupational Health and Safety Commission (NOHSC) Worksafe Australia: *Control of Workplace Hazardous Substances – National Model Regulations [NOHSC:1005(1994)] and National Code of Practice [NOHSC:2007(1994)]* – available from Commonwealth Government Bookshops.

8. EMERGENCY PROCEDURES

- 8.1 As a strategy to reduce risks, holders of scheduled PCB material and scheduled PCB waste shall develop emergency containment and clean up procedures for the accidental release of PCBs into the environment, in accordance with the requirements of the agency.
- 8.2 Where specific Commonwealth, State and Territory requirements are absent, the US Environmental Protection Agency spill response procedure guidelines⁶ shall be used.

9. TREATMENT AND DISPOSAL OF SCHEDULED PCB MATERIAL AND SCHEDULED PCB WASTE

- 9.1 Scheduled PCB material and scheduled PCB waste shall be treated wherever practicable.
- 9.2 Scheduled PCB waste in storage prior to 1 January 1996 shall be consigned prior to 1 January 1997 for treatment by a licensed treatment facility, unless the agency determines that viable treatment facilities are not available in Australia.
- 9.3 Scheduled PCB waste not in storage prior to 1 January 1996 shall be consigned, within 1 year of being removed from service or being placed in storage, for treatment by a licensed treatment facility, unless the agency determines that viable treatment facilities are not available in Australia.
- 9.4 Scheduled PCB waste shall be treated:
- 9.4.1 in accordance with an approval issued by the agency which is consistent with the National Protocol;
 - 9.4.2 by methods which only leave treatment residues for which approved methods of disposal are available;
 - 9.4.3 by technologies approved and licensed by the agency and which minimise release of waste to the environment; and
 - 9.4.4 without intentional dilution or disaggregation merely to result in scheduled PCB waste becoming nonscheduled PCB waste. With the approval of the agency, blending to facilitate treatment of scheduled PCB waste is permitted.

⁶ US EPA 40 CFR Part 761: *Polychlorinated biphenyls: notification and manifesting for PCB waste activities*: clause number 761.125.

- 9.5 Releases to water, air or land from PCB treatment facilities and clean up actions to be taken for accidental releases shall be specified in the facility licence, and shall be set at levels which ensure that the receiving environment is adequately protected, and in particular:
- 9.5.1 a risk assessment shall be carried out to confirm that the risk associated with normal operation and possible failure or malfunction of the facility is at an acceptable level, with the acceptability being determined by the agency; and
- 9.5.2 sampling and monitoring of all discharges and residues shall be carried out as described in Section 3.
- 9.6 Any liquid residue from the treatment of scheduled PCB waste shall be PCB-free.
- 9.7 Any liquid discharge to sewer shall meet the requirements of the ANZECC/ARMCANZ Guidelines for Sewerage Systems: Acceptance of Trade Waste (Industrial Waste).⁷
- 9.8 There shall be no discharge of liquid PCB effluent from treatment facilities to wetlands, whether naturally occurring or artificially created.⁸
- 9.9 Liquid effluent from the treatment of scheduled PCB waste and from sewage treatment facilities which is discharged to fresh or marine waters other than wetlands shall contain less than 0.1 and 0.4 microgram of PCBs per litre respectively.⁹
- 9.10 Emissions of PCBs to the atmosphere from the treatment of scheduled PCB waste shall be set in accordance with the following:¹⁰
- 9.10.1 Where discharge to air is likely to directly expose people to a largely undiluted source, as may be the case adjacent to a vent or near ground level, then the US National Institute of Occupational Safety and Health (NIOSH) and Canadian time weighted exposure average (TWA) level of 1 microgram per cubic metre shall apply; and
- 9.10.2 Where discharge occurs through a stack and mixing with the atmosphere will occur before people can reasonably be expected to be exposed to the emissions, the agency shall set a discharge limit based on the application of best practice control technology so that this does not result in a three minute design level concentration at the premises' boundary exceeding one thirtieth of the NIOSH and TWA value.¹¹
- 9.11 Emissions of dioxins and furans to atmosphere from the treatment of scheduled PCB waste shall not exceed 0.1 nanogram per cubic metre¹² as applied to the sum of all the congeners multiplied by North Atlantic Treaty Organisation toxic equivalency factors.

⁷ The level specified in the draft ANZECC/ARMCANZ Guidelines is 2 micrograms per litre.

⁸ "Wetland" means a low-lying area temporarily or permanently covered by shallow water.

⁹ The values of 0.1 and 0.4 micrograms per litre have been derived by applying a factor of x100 to the respective guideline values included in the *ANZECC Australian Water Quality Guidelines for Fresh and Marine Waters*, November 1992.

¹⁰ This approach may need to be reviewed should State or Territory air quality regulations be revised.

¹¹ Licensing procedures currently employed by State and Territory governments provide the basis for this approach.

¹² *First General Administrative Decree under the Federal Air Quality Act, 1990* (known as "TA Luft").

- 9.12 Any solid residue from the treatment of scheduled PCB waste shall be PCB-free. Where this is not practicable using existing technologies, the agency may permit treatment to the level approved for disposal to a landfill which has been approved for the disposal of non-scheduled solid PCB waste. That approval shall be given in accordance with the guidance note appended to this plan.¹³
- 9.13 Scheduled PCB material and scheduled PCB waste shall be removed from its place of storage for treatment, or treated in situ, unless it is determined by the agency after an open consultation process, that the risk of leaving it in situ without treatment is less than the risk associated with its removal or treatment.
- 9.14 Equipment may be retrofilled or treated in situ provided it is managed as described in Section 5.3. Management requirements shall be based on the PCB concentration in the diluent, measured after at least one month of normal operation following retrofilling or treatment of the equipment. PCB waste derived from retrofilling or in situ PCB treatment shall be disposed of as required by this plan.
- 9.15 Mobile plant for the treatment for disposal of scheduled PCB waste shall require approval by the agency as for other licensed treatment facilities. For operation at a new site, approvals already in place shall be taken into consideration. Additional requirements, including site-specific discharge requirements, may need to be met.
- 9.16 Mobile plant for retrofilling or in situ treatment of scheduled PCB material which does not involve off-site discharges shall require licensing once only by the agency. Additional site specific requirements, including emergency procedures, may need to be met.
- 9.17 Non-porous solid items may be reused or recycled if the surface PCB residue is less than 1 milligram per square metre of surface area.¹⁴

10. TREATMENT AND DISPOSAL OF NON-SCHEDULED PCB MATERIAL AND NON-SCHEDULED PCB WASTE

- 10.1 Material containing less than 50 g of PCBs at a concentration of 50 mg/kg or greater shall be disposed of as scheduled PCB waste at the end of its useful life.
- 10.2 Waste containing less than 50 g of PCBs at a concentration of 50 mg/kg or greater shall be disposed of as scheduled PCB waste.
- 10.3 Material containing PCBs at a concentration greater than 2 mg/kg and up to 50 mg/kg shall, at the end of its useful life, be disposed of by a method approved by the agency in accordance with the guidance notes appended to this plan.^{13,15}
- 10.4 Waste containing PCBs at a concentration greater than 2 mg/kg and up to 50 mg/kg shall be disposed of by a method approved by the agency in accordance with the guidance notes appended to this plan.^{13,15}

¹³ A guidance note for the disposal of non-scheduled solid PCB waste to landfill is at Appendix A to this plan.

¹⁴ US EPA Requirements for the Cleaning of Non-Porous Indoor and High Contact Surfaces (reference details as per footnote 8).

¹⁵ A guidance note for the disposal of non-scheduled liquid PCB waste is at Appendix B to this plan.

11. DISPOSAL OF PCB WASTE TO LANDFILL

- 11.1 Scheduled PCB waste shall not be disposed of to landfill or elsewhere in the environment.
- 11.2 Non-scheduled liquid PCB waste shall not be disposed of to landfill or elsewhere in the environment.
- 11.3 Non-scheduled solid PCB waste with a concentration of PCBs less than the threshold concentration may be disposed of to a landfill approved in accordance with the guidance note appended to this plan.15
- 11.4 The agency and the landfill manager should be encouraged to provide for the separation of electrical equipment or material suspected of containing PCBs.

12. PCB MONITORING

A nationally co-ordinated and statistically valid PCB sampling and monitoring program shall be carried out to determine whether concentrations of PCBs in the environment are decreasing with time. Through existing or new programs of sampling and analysis, a range of receiving environments shall be monitored, including:

- breast milk and foodstuffs;
- sewage treatment plants and outfalls;
- landfill sites suspected of having received scheduled PCB waste (including adjacent groundwater or leachate) which have been assessed by the agency as posing a potential risk to the environment; and
- appropriate biological indicators, including wildlife.

13. CERTIFICATION

The agency shall employ a transport certification system that is consistent with the transport certificates issued under the National Guidelines for the Management of Wastes (*National Manifest and Classification System*) – July 1994. The agency shall require a certificate of destruction or disposal to be issued by the treatment facility operator and a copy to be returned to the agency. A register of completed waste destruction certificates shall be maintained by the agency and shall be publicly accessible.

14. COMMUNITY-BASED COLLECTIONS

- 14.1 Community-based collection programs should include industry and all tiers of government in their funding and implementation.

Programs for the management of scheduled PCB waste should consist of, but not be restricted to, collection and disposal schemes, public information campaigns and regulations. Any community-based collections should be undertaken as part of a nationally co-ordinated collection program for dealing with all scheduled wastes.

Commonwealth, State and Territory environmental, health and other responsible bodies shall take responsibility for managing the proper collection and disposal of scheduled wastes, including PCBs, which are distributed in the wider community.

- 14.2 Private and public corporations shall be encouraged to co-operate with local, State and Commonwealth bodies in programs for the management of PCBs in the wider community.

15. COMMUNITY PARTICIPATION, EDUCATION AND TRAINING

- 15.1 Licensing and operation of facilities for the treatment and disposal of scheduled PCB material and scheduled PCB waste shall undergo a formal public consultation process.

- 15.2 Information relating to storage, emergency planning, transport, treatment and disposal of scheduled PCB material and scheduled PCB waste shall be made publicly accessible by the agency.

- 15.3 The agency shall ensure that education programs are formulated for electricians, building owners and operators, landfill operators, emergency workers and other people likely to come into contact with scheduled PCB material and scheduled PCB waste, to facilitate identification and disposal in keeping with the requirements of this plan.

- 15.4 In applying the relative risk-based phase-out strategy for equipment containing PCBs detailed in Section 5, organisations shall ensure the proper training of relevant personnel as a key component of implementing the risk-based strategy.

16. REVIEW PERIOD

16.1 The review period for this management plan shall be not greater than five years.

16.2 The review shall consider information made available through State of the Environment and other reporting mechanisms, including:

- progress in destroying scheduled PCB material and scheduled PCB waste;
- PCB treatment technologies and their adequacy for treating the different types of scheduled PCB material and scheduled PCB waste;
- appropriateness of the various values (for example, threshold concentration and quantity) and phase-out dates stipulated in the plan;
- changes in environmental PCB concentrations over time;
- concentrations of PCBs in groundwater and landfill leachate;
- human health and environmental toxicology of PCBs, including coplanar PCBs;
- cost/benefit analyses including intangible costs and benefits; and
- effectiveness of education programs.



REFERENCES

The following documents were integral to the development of the PCB Management Plan. All were prepared on behalf of ANZECC. Unless otherwise specified, the authors were the Scheduled Wastes Management Group and the National Advisory Body. All are obtainable from:

Waste Management Secretariat
Environment Australia
GPO Box 787, Canberra ACT 2601
Telephone: 1800 657 945 (free call)
Email: ocp@ea.gov.au

Draft PCB Management Plan: A report prepared by CMPS&F Environmental, November 1994.

Issues Paper for the PCB Management Plan: A report prepared by CMPS&F Environmental, November 1994.

PCB Background Paper: A report prepared by Sinclair Knight Merz Pty Ltd, November 1994.

Polychlorinated Biphenyls Management Plan (Draft Final), April 1995.

Summary Report of the PCB Consultation Panel on Major Outcomes from PCB Public Consultations 29 November to 15 December 1994: PCB Consultation Panel supported by the Waste Management Secretariat, April 1995.

Summary Report of the PCB Consultation Panel on Major Outcomes from PCB Public Consultations 18 May to 7 June 1995: PCB Consultation Panel supported by the Waste Management Secretariat, September 1995.

More comprehensive lists of references on PCBs are contained in the *PCB Background Paper* and the *Issues Paper for the PCB Management Plan*.

APPENDIX A

GUIDANCE NOTE FOR THE DISPOSAL OF NON-SCHEDULED SOLID PCB WASTE

The objectives of this guidance note are to:

- minimise the release of PCBs into the wider environment from non-scheduled solid PCB waste; and
- encourage a nationally consistent and acceptable approach to the management and disposal of non-scheduled solid PCB waste within the framework of the *PCB Management Plan*.

Consistent with the aim of best practice landfill management, landfill disposal of non-scheduled solid PCB waste shall require consideration of:

- siting issues, including hydrogeology and proximity to sensitive environments;
- landfill operating controls, including use of liners, cover management, capping, landfill gas management, leachate management, and fire prevention and control;
- landfill management practices, including site supervision and waste screening;
- monitoring, including ground and surface water and leachate; and
- closure, including post-closure ownership, monitoring and after care works to minimise infiltration.

The agency should encourage a community involvement program. Best practice community involvement programs include inspection, auditing and monitoring of the landfill sites.

Landfills for the disposal of non-scheduled solid PCB waste shall:

- be approved by the agency; and
- conform to requirements for discharge to air, water and land that apply to the treatment and disposal of scheduled PCB waste.

APPENDIX B

GUIDANCE NOTE FOR THE DISPOSAL OF NON-SCHEDULED LIQUID PCB WASTE

The objectives of this guidance note are to:

- minimise the release of PCBs into the environment from non-scheduled liquid PCB waste; and
- encourage a nationally consistent and acceptable approach to the management and disposal of non-scheduled liquid PCB waste within the framework of the PCB Management Plan.

Consistent with the waste management hierarchy, the following methods for treatment and disposal of non-scheduled liquid PCB waste should be considered in descending order of preference:

- treatment which allows for reuse or recycling of the diluent;
- use as a blending agent to facilitate the approved disposal of scheduled PCB waste;
- disposal by methods which recover energy; and
- disposal by combustion without recovering energy.

Facilities for the treatment and disposal of non-scheduled liquid PCB waste shall:

- be approved by the agency; and
- conform to requirements for discharge to air, water and land that apply to the treatment and disposal of scheduled PCB