REGULATION IMPACT STATEMENT FOR THE CONSIDERATION OF THE ADDITION OF NINE CHEMICALS TO

THE STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS (POPS)

2009

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Introduction

The objective of the Stockholm Convention on Persistent Organic Pollutants (POPs) is to protect human health and the environment from the effects of these POPs. The Convention sets out a range of control measures to reduce and, where feasible, eliminate POPs releases, including emissions of by-product POPs or through unintentional releases. The Convention also aims to ensure the sound management of stockpiles and wastes that consist, contain or are contaminated by POPs.

POPs are chemicals that are toxic, persist in the environment, accumulate in the food chain and pose a risk of causing adverse effects to human health and the environment, even at low concentrations. Due to their long range transport, persistence and toxicity, POPs released overseas, as well as in Australia, have the potential to affect the health and environment of Australians. The Stockholm Convention covers control measures on the twelve POPs shown below.

The initial twelve POPs	
aldrin[1]	toxaphene[1]
chlordane[1]	mirex[1]
DDT[1]	hexachlorobenzene (HCB)[1,2,3]
dieldrin[1]	polychlorinated biphenyls (PCBs)[2,3]
endrin[1]	polychlorinated dibenzo-p-dioxins (dioxins)[3]
heptachlor[1]	polychlorinated dibenzofurans (furans)[3]

[1] Pesticide chemical
[2] Industrial chemical
[3] By-product (unintentionally produced)

Many developing countries, however, still use and produce POPs, for instance in agriculture and vector management associated with disease control. In addition, stockpiles of unwanted POPs exist in many parts of the world including Australia. POPs move freely and widely throughout the environment *via* the atmosphere, water and migratory species. Therefore, POPs may enter Australia through the environment as well as through contaminated products. Only a multilateral approach can adequately address the problem posed by the trans-boundary movement of POPs. In 1997, governments agreed that the most effective form of multilateral action was by way of a binding international agreement.

Australia has a commitment to supporting an effective and balanced approach to an environmental problem of concern to all countries, through the Convention.

Negotiations on text for a multilateral convention on POPs began in mid-1998 and concluded in December 2000. Australia, together with 90 other countries, signed the Stockholm Convention on Persistent Organic Pollutants at a diplomatic conference held in Stockholm on 16 May 2001.

The Stockholm Convention came into force on 17 May 2004, with Australia ratifying the Convention on 20 May 2004 and becoming a Party on 18 August 2004.

Article 8 of the Convention provides for the addition of new POPs through an open, transparent, science-based process. A POPs Review Committee (POPRC) of experts advises Parties on the application of the science-based criteria and procedures for assessing chemicals that have been nominated for inclusion in the Convention.

Initially, the POPRC assesses the listing proposal against the screening criteria listed in Annex D of the Convention. Annex D requires information on the identity, persistence, bio-accumulation, potential for long-range environmental transport and adverse effects to human health and the environment.

If the POPRC considers that the screening criteria are fulfilled, the proposal is made available to all parties and observers so submissions can be made to assist the POPRC in drafting a risk profile in accordance with Annex E. If the POPRC determines that global action is warranted, it compiles information from parties and observers to prepare a risk management evaluation on the chemical according to Annex F. The risk profile and risk management evaluation are reviewed by the POPRC to determine whether the chemicals will be recommended for listing to the Conference of the Parties (COP).

The final decision to include a nominated chemical as a POP in the Convention, and secondly in which Annex it is listed, is made by the COP. At its next meeting in May 2009, the Stockholm Convention COP will consider the recommendations of the POPRC for the listing of nine additional chemicals (listed below) in the Convention.

The proposed additional nine chemicals	
Commercial pentabromodiphenyl ether[2] (c-penta BDE)	Commercial octabromodiphenyl ether[2] (c-octa BDE)
Hexabromobiphenyl[2] (HBB)	Chlordecone[1]
Pentachlorobenzene[1,2]	Lindane[1]
Alpha hexachlorocyclohexane[3]	Beta hexachlorocyclohexane[3]
Perfluorooctane sulfonate[2] (PFOS) and PFOS related substances	

[1] Pesticide chemical
[2] Industrial chemical
[3] By-product (unintentionally produced)

This Regulation Impact Statement should be read in conjunction with the text of the Stockholm Convention.

1 Problem

1.1 What is the problem being addressed? How significant is it?

As a Party to the Stockholm Convention, Australia accepted obligations relating to the twelve initial chemicals when it ratified the Convention. At its next meeting in May 2009, the Stockholm Convention COP will consider the recommendations of the POPRC for the listing of nine additional chemicals in the Convention. The Australian Government will need to decide if it can support the listing of these nine additional chemicals in the Convention.

POPs are chemicals that are toxic, persist in the environment, accumulate in the food chain, and pose a risk of causing adverse effects to human health and the environment even at low concentrations.

As POPs move freely and widely throughout the environment, their release in other countries, as well as in Australia, has the potential to affect the health of Australians and the environment. POPs levels in the southern hemisphere are generally lower than in the northern hemisphere, but there is evidence of limited inter-hemispheric mixing. There are significant southern hemisphere sources of POPs from Asia, Africa and South America. Studies have identified relatively high concentrations of POPs even at significant distances from sources.

The principal source of human exposure to POPs (over 90%) occurs through diet, with foods of animal origin (including milk) identified as the predominant dietary source. Specific effects on humans include allergies and hypersensitivity, damage to the nervous systems, cancer, reproductive disorders, and disruption of the immune system.

While pesticide POPs have long been identified as a problem, over the last few years concern has grown regarding risks from industrial POPs and, in particular, those POPs produced as unwanted by-products. Human exposure to these compounds occurs throughout life, albeit at low levels. Although the long term consequences of this exposure are difficult to quantify, nevertheless there is international concern regarding the health hazard of POPs, particularly with respect to certain vulnerable groups in the population such as unborn infants and young children.

1.2 Why is (new) Government action needed to correct the problem?

The Commonwealth Government is committed to protecting people and the environment from potential hazards associated with POPs. Due to their long range transport, persistence and toxicity, POPs released overseas have the potential to affect the health and environment of Australians. As well, POPs released in Australia may potentially affect the health of people and the environment overseas.

Proposals were submitted by Parties nominating each of the nine chemicals for listing under the Stockholm Convention. These proposals have been assessed by the POPRC under Annexes D, E, and F of the Convention.

The POPRC has prepared risk profiles and risk management evaluations for each chemical. These documents draw on and summarise scientific research regarding potential impacts on the environment and human health, as well as wider socio-economic considerations. Inferences for human health are drawn mainly from animal experimentation, rather than epidemiological studies. Nevertheless, the Committee has found sufficient evidence to conclude these chemicals are toxic to humans and exposure can lead to a wide range of problems, with some being intergenerational. Also, due to the persistence of these chemicals in the environment and a capacity for long distance transport via air, water and/or migratory species movements, cross-border detections have been measured at considerable distance (eg the Arctic) from the source of pollution.

Brominated Flame Retardants (c-octaBDE, c-pentaBDE and HBB)

Brominated flame retardants (BFRs) were previously used widely in foam for furniture and upholstery, and for the casing of electronic goods. They are toxic, persistent and bio-accumulative and have been detected in remote regions long distances from any production or release. In its risk management evaluation, the POPRC provided experimental evidence indicating that the blood levels of BFRs found in women of child bearing age pose potential developmental risks to their unborn children.

Chlordecone

Many areas where chlordecone was used remain polluted due to the high persistency of the chemical. Chlordecone is bio-accumulative, readily absorbed and is classified as a potential human carcinogen. It is highly toxic to aquatic organisms and humans causing reproductive, musculoskeletal and liver toxicity, neurotoxicity and immunotoxicity.

Perfluorooctane sulfonate (PFOS) and PFOS related substances

PFOS is an industrial chemical used in a wide variety of manufacturing processes as a flame retardant along with its use in fire fighting foams. PFOS is easily absorbed and bio-accumulative. It is toxic to humans and wildlife, especially aquatic organisms, due to its persistency and long range transport in the environment.

Pentachlorobenzene

Pentachlorobenzene is known to be persistent, bio-accumulative, toxic to humans (affecting the central nervous system, liver, kidneys and reproductive system) and is highly toxic to aquatic organisms. It also has high bio-magnification potential and can undergo long range transport in the air.

Lindane (gamma hexachlorocyclohexane)

Lindane is known to be persistent, bio-accumulative and has been found to be transported over long distances especially as a result of accumulation and bio-magnification in aquatic organisms to whom it is highly toxic. It also accumulates in humans reliant on this food source and has been identified as toxic and possibly carcinogenic to humans.

Alpha and beta hexachlorocyclohexane (alpha and beta HCH)

Both alpha and beta hexachlorocyclohexane are by-products from the production of lindane. Both chemicals have toxic effects on aquatic organisms and are classified as possibly carcinogenic to humans along with causing reproductive and immunosuppressive impacts as well as neurotoxicity. They both undergo long range transport in the environment and bio-accumulate and bio-magnify.

1.3 Is there relevant regulation already in place? Why is additional action needed?

There are a variety of different regulations and restrictions already in place for the nine chemicals proposed for listing.

Commercial pentabromobiphenyl ether (c-penta BDE)

The POPRC has recommended the listing of BDE-47, BDE-99 and all other tetra- and pentaBDEs that are present in the commercial penta BDE mixture.

PentaBDE is currently being assessed as a Priority Existing Chemical (PEC) by the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). An interim risk assessment has been completed resulting in an interim ban on the manufacture and importation of this chemical and mixtures containing c-penta BDE while the chemical remains a PEC.

Being listed as a PEC means that industry are required to provide information on the total quantity of the chemical manufactured, quantities of the chemical or products containing the chemical imported into Australia and for articles manufactured in Australia the total quantities used in the manufacture since July 2003 for the duration of its listing as a PEC.

This chemical has not been used or imported since 2006, but there are products containing this chemical that remain in Australia as a result of importation prior to 2006.

A full risk assessment of c-penta BDE is currently underway by NICNAS and is due for completion in mid 2009.

It is important to note that NICNAS does not currently have the legislative powers to control the importation of articles containing restricted or banned chemicals such as c-penta BDE.

Polybrominated biphenyls (PBBs), c-penta BDE (and c-octa BDE), are characterised as ‘hazardous’ under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and ‘wastes, substances and articles containing, consisting of or contaminated with’ PBBs are also characterised as hazardous and designated as substances ‘to be controlled’. Australia has been a Party to the Basel Convention since February 1992.

The Basel Convention includes several domestic obligations regarding hazardous wastes, include Article 4 paragraph 2(b) which requires that Parties "ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal".

Commercial octabromobiphenyl ether (c-octa BDE)

The POPRC has recommended the listing of BDE-153, BDE-154, BDE-175, BDE-183 and other hexa- and heptabromodiphenyl ethers present in commercial octa BDE.

C-octaBDE, like c-penta BDE was declared a PEC in 2006. NICNAS removed this chemical from the Australian Inventory of Chemical Substances (AICS) on 6 February 2007 as no applications were received for the assessment. The manufacture and importation of this chemical into Australia requires notification to and assessment of the chemical by NICNAS. Manufacture and importation of octaBDE is also not permitted under the NICNAS exemption categories except as laboratory standards for analytical determination.

As noted above with c-penta BDE, Australia currently has obligations under the Basel Convention regarding the environmentally sound management of wastes containing c-octa BDE.

Hexabromobiphenyl (HBB)

Production and use of HBB in Australia ended in the 1970s. There is no known current use of HBB in Australia and as it is not listed on AICS. Importation and manufacture of this chemical without a valid assessment certificate from NICNAS is not permitted.

HBB is listed under Annex III of the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. HBB is listed under Polybrominated biphenyls (PBB) which includes hexa-, otca- and decabrominated biphenyls.

Chlordecone

Chlordecone is an insecticide that is not currently and has never been registered for use in Australia. Chlordecone is therefore restricted for use in Australia.

Perflurooctane sulfonate (PFOS) and PFOS related substances

The POPRC has recommended listing of perfluorooctane sulfonic acid, its salts and perflurooctane sulfonyl fluoride.

NICNAS began monitoring the quantities of PFOS and related compounds manufactured and imported into Australia and their uses in 2002. NICNAS has recommended that PFOS be used only for identified essential uses for which no suitable less hazardous alternatives are available. The survey in 2002 identified that PFOS is not manufactured in Australia and this has been confirmed in subsequent surveys including the recent on in 2008.

NICNAS is working in conjunction with the Department of the Environment, Water, Heritage and the Arts (DEWHA) to introduce regulatory measures to restrict the manufacture, import and use of PFOS and the related compounds. The findings of the 2008 NICNAS call for information on the manufacture, import and use of PFOS were published in the January 2009 *Chemical Gazette*.

Pentachlorobenzene

Pentachlorobenzene is no longer used in Australia, although it is listed on AICS.

Australian governments implemented the *National Strategy for the Management of Scheduled Wastes* in 1992 with pentachlorobenzene listed in *Schedule X* of the National Strategy. As a result, in Australia the production of this chemical ceased in 1995 and the use of articles containing pentachlorobenzene ceased in 1998.

Lindane

Lindane is listed in Schedule 2 and Schedule 9 of the *Customs (Prohibited Exports) Regulations 1958* and the *Customs (Prohibited Imports) Regulations 1956*, respectively. Its import and export are banned unless specific permission is granted by the Minister for Agriculture, Fisheries and Forestry.

Lindane is listed in Part 2 of Schedule 1 of the *Agricultural and Veterinary Chemicals (Administration) Regulations 1995*. This is a listing under regulation 1.3 under the definition of a controlled chemical sitting under the Rotterdam Convention.

Lindane is also listed under Annex III of the Rotterdam Convention and on *Schedule X* of the *National Strategy for the Management of Scheduled Waste 1992.*

Lindane was deregistered for general use in 1985 with one current registered use in Australia, as an insecticide for use in pineapples.

Alpha and beta hexachlorocyclohexane (HCH)

Alpha and beta HCH are captured in the listing of mixed HCH isomers in Schedule 2 and Schedule 9 of the *Customs (Prohibited Exports) Regulations 1958* and the *Customs (Prohibited Imports) Regulations 1956* respectively. Their import and export are banned unless specific permission is granted by the Minister for Agriculture, Fisheries and Forestry.

Alpha and beta HCH are also captured in the listing of mixed HCH isomers in Part 2 of Schedule 1 of the *Agricultural and Veterinary Chemicals (Administration) Regulations 1995*. This is a listing under regulation 1.3 under the definition of a controlled chemical for sitting under the Rotterdam Convention.

These two chemicals are captured by the Rotterdam Convention, where they are listed under Annex III and on *Schedule X* of the *National Strategy for the Management of Scheduled Waste 1992.*

Alpha and beta HCH are by-products from the production of lindane. Lindane production has not occurred in Australia since 1985.

As can be seen, domestic restrictions and regulations already apply to all of the proposed nine chemicals to some degree. The additional action (agreeing to the listing of these chemicals in the Stockholm Convention) will provide a comprehensive basis for ensuring the reduction and, where feasible, elimination of releases of these chemicals into the environment. Listing will also ensure the sound management of stockpiles and wastes containing these chemicals.

2 Objectives

2.1 What are the objectives, outcomes, goals or targets of government action?

Should the Australian Government agree to the inclusion of the nine new chemicals on the Stockholm Convention, the objectives of doing so would be to:

1. protect the health and environment of Australians from the adverse effects of POPs;
2. enhance Australia's international standing and global prospects for a sustainable environment by participating in an inter-governmental regime that encourages and assists countries to adopt and maintain sound chemical management processes and, thereby reduce the global production and spread of POPs; and
3. consolidate existing domestic measures to control these chemicals.

3 Options

3.1 Identify a range of viable options, including non-regulatory options

New chemicals can be listed in either Annex A or B and/or C of the Convention:

- Annex A requires elimination of the import, export, production and use of a chemical;
- Annex B restricts the use of chemicals to acceptable purposes or a specific exemption; and
- Annex C covers POPs when they are formed and released unintentionally from anthropogenic sources.

The possible impacts on Australia of listing any of the chemicals will be determined by the COP's decision of under which Annex to list the chemicals, and Australia's decision to accept the amendments.

There are five possible outcomes for the listing of each of the nine chemicals:

1. Listing in Annex A and Australia agrees.
    - Production, import, export and use of the chemical will be banned.
2. Listing in Annex A and Australia does not accept the amendment.
    - The banning of the chemical will be enforced in countries accepting the amendment independently of Australia. It should be noted that it could be difficult for Australia to obtain the listed chemical in this instance.

3. Listing in Annex B, Australia agrees and the acceptable purpose category is consistent with the current use of the chemical in Australia.
    - There will be no changes and production, import, export and use can still occur for the specified category.
4. Listing in Annex B and Australia agrees but the acceptable purpose category does not include the current use of the chemical in Australia.
    - Would have the same effect as listing in Annex A (outcome 1).
5. Listing in Annex B and Australia does not accept the amendment.
    - The restriction of the chemical will be enforced in countries accepting the amendment independently of Australia. It should be noted that it could become difficult for Australia to obtain the listed chemical in this instance (as with outcome 2).

In addition, there are two possible outcomes for the listing of pentachlorobenzene:

1. Listing in Annex C and Australia agrees.
    - Australia will need to take measures to reduce or eliminate releases from unintentional production, consistent with Article 5 of the Convention.
2. Listing in Annex C and Australia does not accept the amendment.
    - Australia takes no measures to reduce or eliminate releases from unintentional production.

Finally, any chemical which is listed in Annex A or B attracts obligations under Article 6 of the Convention regarding reducing or eliminating releases from stockpiles and wastes. This includes:

- Managing stockpiles, as appropriate, in a safe, efficient and environmentally sound manner;
- Taking appropriate measures so that wastes, including products and articles upon becoming waste, are handled, collected transported and stored in an environmentally sound manner; and
- Taking appropriate measures so that wastes, including products and articles upon becoming waste, are disposed of or destroyed.

4 Impact Analysis

4.1 Who is affected by the problem and who is likely to be affected by proposed solutions?

The POPRC has made the following listing recommendations:

Chemical	Known historical use in Australia	Currently used in Australia	Recommended listing by Committee
Commercial pentabromodiphenyl ether (c-penta BDE)	Yes	No	Annex A
Commercial octabromodiphenyl ether (c-octa BDE)	Yes	No	Annex A
Hexabromobiphenyl (HBB)	No	No	Annex A
Chlodecone	No	No	Annex A
Perfluorooctane sulfonate (PFOS)	Yes	Yes	Annex A or B
Pentachlorobenzene	Yes	No	Annex A & C
Lindane	Yes	Yes	Annex A
Alpha hexachlorocyclohexane (alpha HCH)	No	No	Annex A
Beta hexachlorocyclohexane (beta HCH)	No	No	Annex A

Groups potentially affected by the issue include:

- The general population, particularly those potentially exposed to POPs:
  - users of chemicals (such as farmers) and workers in chemical and metals processing industries;
  - breast-feeding babies whose mothers may have been exposed to levels of POPs;
  - others spending significant parts of their lives near sources of POPs; and
  - anyone consuming food contaminated with POPs.
- Farmers, whose exports and imports may be threatened by POPs contamination.
- Industries
  - emitting by-product POPs
  - collecting, storing and disposing of POPs
  - with POPs stockpiles
  - with POPs still in use
  - whose products may be threatened by POPs contamination e.g. food-processing industry.
- Commonwealth Government departments, agencies and authorities including assessors and regulators
  - Department of the Environment, Water, Heritage and the Arts (DEWHA)
  - Department of Agriculture, Fisheries and Forestry (DAFF)
  - Australian Pesticides and Veterinary Medicines Authority (APVMA)

  - Department of Health and Ageing (DoHA)
    - Office of Chemical Safety (OCS)
    - National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
  - Food Standards Australia New Zealand (FSANZ)
  - Australian Customs Service (ACS)
  - Department of Employment, Education and Workplace Relations
    - National Occupational Health & Safety Commission (NOHSC).
- State and Territory government agencies that are responsible for chemical and waste management, regulation of industrial emissions, and food standards, these include: environmental protection; agriculture; and health portfolios.

A full list of those consulted during the development of this Regulation Impact Statement can be found at Appendix 1.

4.2 Identify and categorise the expected economic, social and environmental impacts of the proposed options as likely costs and benefits.

Listing the nine nominated chemicals in the Stockholm Convention will trigger changes to regulations and practices in Australia. The measures outlined in Article 6 of the Convention, *inter alia*, encompass most of the possible changes which could occur.

To assess the economic benefits and incremental costs of a proposed regulatory change, benefit cost analysis is conducted to measure the differences (qualitatively and possibly quantitatively) between a business as usual or base case and a regulatory change case (the listing option). The two cases can broadly be defined as follows:

- Business as usual (base case) - representing a situation without listing, where there will be no additional regulation of imports, exports, manufacture, use, storage, and disposal of wastes in Australia; and
- Listing case - where additional measures in accordance with the objectives of Annex A, B and/or C under the Stockholm Convention will be implemented.

Note, the extent, timing and specific methodologies for the nominated chemicals, as they relate to Article 6, Annexes and other Articles of the Convention, will not be agreed by the Parties for some years.

Benefits

Listing these nine additional chemicals in the Convention would deliver the following benefits to Australia:

- greater certainty for continued POPs management in Australia, by consolidating, augmenting and complementing existing controls on those chemicals, and continuing to provide access to valuable information, through the Stockholm Reference Group, for domestic stakeholders and government agencies on international techniques and approaches to POPs;

- Australia's capacity to protect its national interests would be enhanced by maintaining its stake in international cooperation in reducing the presence of POPs at the lowest administrative costs to industry and government;
- increased surety of access to overseas markets for Australian produce. Many countries are moving towards placing stricter limits on the levels of POPs in foods and stock-feed so the Australian agriculture industry would benefit through reduction of POPs in the environment, thus, lessening the risk of contaminants affecting their products;
- support Australian agriculture by maintaining Australia's reputation as a supplier of products which are "clean and green" and demonstrate Australia's commitment to ecologically sustainable development;
- other countries would benefit from the provision of technical assistance and Australia would be much better placed to encourage and assist these countries to take action to address POPs, where they otherwise might not have the capacity to do so themselves; and
- Protecting human health and the environment from the adverse effects of POPs.

Costs

Listing of these nine additional chemicals in the Convention would involve additional domestic costs incurred through activities, administration, salaries and amendments to legislation. These costs would be absorbed by agencies associated with domestic implementation of the amendments to the Convention. There would also be some costs to industry.

State and Territory Governments

If chemicals are listed on the Stockholm Convention, controls would be required to be put in place to meet Convention requirements. This would be achieved through the occupational, public and environmental frameworks in place in the State and Territory governments.

Commonwealth Government

The Commonwealth Government's additional costs would be spread across the three portfolios responsible for the Convention, namely:

- Department of the Environment, Water, Heritage and the Arts (DEWHA);
- Department of Agriculture, Fisheries and Forestry (DAFF); and
- Department of Health and Ageing (DoHA).

Pesticides

Imports and exports of lindane, alpha and beta HCH are already controlled by Schedule 2 and Schedule 9 of the *Customs (Prohibited Exports) Regulations 1958* and the *Customs (Prohibited Imports) Regulations 1956, respectively*. The remaining pesticides would need to be added to Schedule 9 to control imports and Schedule 2 to control exports of listed pesticide chemicals.

Section 69CA of the *Agricultural and Veterinary Chemicals (Administration) Act 1994* allows banning of the importation into, manufacture in, or exportation from Australia. This applies to the constituent or product, either absolutely or subject to such conditions or restrictions as are prescribed, where the active constituent for a proposed or existing chemical product is the subject of a prescribed international agreement or arrangement. The Convention is so prescribed in the *Agricultural and Veterinary Chemicals (Administration) Act 1995*.

Costs to government to make these amendments to the Customs regulations would be absorbed by the Commonwealth, including informing relevant stakeholders of the changes. Few imports or exports of these chemicals occur, so costs to industry will be minimal, with the exception of lindane where the use of alternatives will be necessary. This is covered in more detail in section 4.4.

Industry

The costs to industry will include:

- implementation of Best Available Techniques (BAT) and Best Environmental Practices (BEP) Guidelines to reduce POPs emissions (when the guidelines are finalised);
- implementation and use of identified alternatives (lindane and PFOS); and
- destruction of stockpiles and wastes.

There would be minimal, if any, costs for business associated with the addition of these new chemicals to the Customs (Prohibited Import) Regulations and the Customs (Prohibited Exports) Regulations. Small business will incur little to no cost if Australia supports listing of these new chemicals.

There would be minimal costs to industry in relation to implementation of BAT and BEP to reduce by-product POPs because many industries have already taken measures to meet State and Territory government licensing requirements.

There would also be minimal additional costs to industry for disposing of POPs as the *National Strategy for the Management of Scheduled Waste 1992* (Section 1.2) already places obligations on industries to remove and destroy or dispose of these wastes.

Community

The general population would benefit from improved health, food and environment as a result of reduced POPs contamination in Australia and globally. There would be no cost to the general population.

End of Life

As noted in section 1.3 above, the Basel Convention already applies obligations on Australia to exercise environmentally sound management of hazardous wastes, including wastes containing BFRs. Nevertheless, there are many issues surrounding the end life of the BFRs, especially considering there is a lack of data surrounding the number of products containing these chemicals. End of life issues are further addressed in section 4.4.

Current landfill levies are in the vicinity of $15/tonne for ordinary household waste in Victoria, or $38/tonne in New South Wales. Levies are a state tax which is additional to the cost charged by the owner of the landfill site for disposing of waste. Queensland does not currently charge a landfill levy.

As noted in section 3.1 above, Article 6 of the Stockholm Convention outlines obligations which Parties have in regard to the management of wastes containing listed POPs. Paragraph 2 of Article 6 provides that methods for environmentally sound disposal of such wastes are to be developed between the Conferences of the Parties of the Basel and Stockholm Conventions.

A guideline document that specifically relates to this issue, the *Updated general technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with POPs*, has been produced by the Basel and Stockholm Conventions secretariats. The purpose of this document is to provide general guidance on the disposal of wastes consisting, containing or contaminated by POPs and to provide a framework to assist Parties meet the obligations imposed by Article 6 of the Stockholm Convention. This document is to be used in conjunction with the BAT BEP Guidelines.

These documents address the issues associated with the end-of-life of POPs. There are two options for disposal of POPs in landfill:

1. Creation of a specially engineered landfill site using the framework provided in the general guideline document and in conjunction with the BAT BEP Guidelines; and

2. Immobilisation or treatment of POPs so that they are no longer classified as a hazardous waste and can be disposed of in identified landfill sites.

The costs associated with constructing a specially engineered landfill site are not known. In order to ascertain the costs associated with this option, it is necessary to have a proposed site as well as an understanding of how much tonnage will be disposed of in that landfill. The unknowns of this particular option make it impossible to provide a suitable costing.

The costs associated with immobilisation via treatment technologies are also unknown. Extensive testing would have to be undertaken to establish whether or not current treatment technologies would work on POPs.

Assuming that treatment technologies proved to be effective in the immobilisation of POPs, costs associated with disposal of these at identified landfill sites is around $250/tonne. This cost does not include transportation, which can cost approximately $450/tonne.

Another alternative may be to dispose of liquid POP stockpiles at appropriate destruction facilities. Costs associated with destruction at these facilities would be in the vicinity of $30,000 per tonne.

4.3 Assess the costs and benefits that will be experienced by different stakeholder groups, including small business, and by the community as a whole.

This section pre-screens the nine chemicals to determine which chemicals are likely to be present in the Australian environment because of past and/or present use in Australia. The screened chemicals are then examined further to determine cases where listing could significantly reduce releases to the environment. This screening is used to assess the costs and benefits of listing to government, industry and community.

Initial screening

The table below classifies each chemical according to its potential presence in the Australian environment, because of past or ongoing use or other factors such as unintentional production from degradation of other chemicals or from by-products of other chemical production processes. Using these criteria, the following two chemicals can be eliminated from further analysis:

- Hexabromobiphenyl (HBB)
- Chlordecone

Hexabromobiphenyl and chlordecone have not been used in Australia and are banned. Also, there is no evidence of unintentional production.

Alpha HCH and beta HCH, although by-products of lindane manufacture, which has not occurred in Australia, have not been screened out, because technical grade HCH consisting of a mixture of alpha, beta and gamma isomers, was predominantly used as an insecticide for sugar cane grub control in Australia prior to 1987.

Initial screening of nominated chemicals

	Past Use in Australia	Current use in Australia	Existing stockpiles	Environmental release from Australian sources	Environmental release from background pollution	Environmental release from unintentional production	Environmental release from articles, materials or wastes	Comment
C-penta BDE	Yes	No	??	Yes	Yes	No	Yes	Screen for further assessment
C-octa BDE	Yes	No	??	Yes	Yes	No	Yes	Screen for further assessment
HBB	No	No	No	No	No	No	No	No need for further assessment
Chlordecone	No	No	No	No	No	No	No	No need for further assessment
PFOS	Yes	Yes	Yes	Yes	Yes	Yes[b]	Yes	Screen for further assessment
Pentachlorobenzene	Yes	No	No	Yes	Yes	??	??	Screen for further assessment
Lindane	Yes	Yes	Yes[a]	Yes	Yes	No	Yes	Screen for further assessment
Alpha HCH	No	No	No	No	No	No	No	Considered with lindane[c]
Beta HCH	No	No	No	No	No	No	No	Considered with lindane[c]

(a) Lindane stockpiles expected to be fully depleted during 2009
(b) Unintended production from degradation of related anthropogenic chemicals
(c) Environmental releases from background pollution will be assessed in conjunction with lindane, since the three isomers of HCH have been used as technical HCH as an insecticide in the sugar cane industry prior to 1987.

The remaining seven chemicals listed below have been selected for further assessment:

- Commercial pentabromodiphenyl ether (c-penta BDE)
- Commercial octabromodiphenyl ether (c-octa BDE)
- Perfluorooctane sulfonate (PFOS) and related substances
- Pentachlorobenzene
- Lindane, alpha and beta HCH

All of these chemicals have been used in Australia, but only PFOS (related substances) and lindane are in current use. Chemical pollution is diffuse for the most part because of past use. The following subsection examines the potential for controlling point sources of pollution.

Costs and benefits identified as a result of this assessment are examined in section 4.4 and section 4.5.

4.4 Quantify these impacts where significant.

Commercial pentabromodiphenyl ether (c-penta BDE)

Current status in Australia

C-penta BDE was declared as a Priority Existing Chemical (PEC) by the Minister for Health and Ageing in 2006. Under Section 61 of the *Industrial Chemicals (Notification and Assessment) Act, 1989*, the importation and/or manufacture of c-penta BDE and mixtures containing c-penta BDE are prohibited while it remains a PEC. NICNAS has prepared an interim risk assessment of c-penta BDE (as well as c-octa BDE). A full risk assessment of c-penta BDE is currently underway by NICNAS and is due for completion in mid 2009.

Polybrominated biphenyls (PBBs), including c-penta BDE (and c-octa BDE), are characterised as 'hazardous' under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and 'wastes, substances and articles containing, consisting of or contaminated with' PBBs are also characterised as hazardous and designated as substances 'to be controlled'. Australia has been a Party to the Basel Convention since February 1992.

The Basel Convention includes several domestic obligations regarding hazardous wastes, include Article 4 paragraph 2(b) which requires that Parties "ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal".

Uses in Australia and stockpiles

The POPRC, in its risk profile on c-penta BDE, reported that 95-98% of use internationally since 1999 had been as an additive in polyurethane foam, which can contain 10-18% of c-penta BDE. It is added to various media primarily because of its flame retardant properties. It has been used in upholstery for furniture, and in the motor vehicle and aviation industry. It has also been used in electrical and electronic appliances, textile and plastic interiors of cars, trains, aircraft, and ships, as well as in building and packaging materials. Many of the articles containing c-penta BDE are expected to be still in use. Articles and wastes containing c-penta BDE are expected to be widely distributed throughout Australia.

It is understood that 72 tonnes of c-penta BDE were imported in 1998/99, 20 tonnes of technical grade penta BDE and products were imported in 2004 and imports ceased in mid 2005. In 2007, NICNAS reported that articles such as furniture and cars containing commercial pentaBDE have been imported into Australia. However, with a voluntary phase out of the manufacture of the chemical by the major international manufacturers and international regulatory activity such as bans on production and restriction of use in articles, it is expected that there will be a decline in the quantities of the chemical imported in articles. Although some articles might not have been declared, NICNAS noted that it would be improbable that significant quantities would be involved, as the worldwide availability of these chemicals was 'extremely limited'. Statistics regarding stockpiles (if any) and the quantity of products containing c-penta BDE are not available.

Releases to the environment

The main environmental releases are from the continued use of products containing c-penta BDE, and from waste streams. The chemical is released in volatile materials and dusts, and is found in the air, soils and water. A major cause of pollution is the degradation of treated foams in furniture and other articles. Also, recycling of articles containing brominated fire retardants, including c-penta BDE, contributes to additional dispersion of pollutants, via physical destruction methods (eg shredding), and re-use, such as the recycling of foam materials for carpet underlay. Foams and other waste materials containing c-penta BDE additives are generally disposed of at municipal landfill sites. Experience from overseas, as identified by the POPRC in its risk profile, indicates these sites do not adequately contain brominated pollutants.

Scope to further reduce environmental releases

Although evidence for stockpiles of c-penta BDE in Australia was not found, there may be residual material that could be recovered and destroyed. If this proves to be the case, the quantities are expected to be small.

Identification of articles that may contain c-penta BDE is likely to be problematic, since there appears to be no definitive list of end-use products available. Differentiation of articles that contain c-penta BDE (as opposed to similar articles that do not contain c-penta BDE) within the product pool is likely to be similarly difficult. Goods do not appear to have been marked to identify them as containing c-penta BDE. These difficulties limit the opportunity to recall items in use, or to isolate them in the waste stream for environmentally sound disposal or destruction.

Diversion from municipal landfill would probably require separation of all possible candidate plastic materials for alternative environmentally sound disposal or destruction, whether they actually contain c-penta BDE or not.

Although there is uncertainty about the acceptability of disposal methods, the European Union has regulations for disposal and recovery of currently-listed POPs that permit options of physio-chemical treatment, incineration on land, or as a fuel or other means to generate energy. These apply for waste streams that exceed a stated threshold concentration of the POP material, which for existing chemicals other than dioxins is 50 mg/kg. Waste streams below the threshold are subject to normal waste regulatory practices. In addition, in exceptional cases, there is provision for defined waste streams contaminated with POPs to be permanently stored in either safe, deep, underground, hard rock formations; salt mines; or for material below defined concentrations of POPs, a landfill site for hazardous waste (provided that the waste is solidified or partly stabilised where technically feasible).

Australia does not currently have waste incinerators capable of destroying a waste stream consisting of plastic materials diverted from landfill. It is possible that combustion facilities such as cement kilns could use the waste stream as fuel, but research would be needed to demonstrate its feasibility and to confirm the destruction of contained c-penta BDE. Combustion facilities that could possibly convert waste streams containing c-penta BDE to energy are in many cases located a considerable distance from population centres in Australia, adding to the logistical problems of transporting the waste securely to the destruction facility.

Although it is theoretically possible to recover c-penta BDE from solid material and subsequently destroy it in a plasma arc, no tests have been undertaken to verify the commercial viability of the treatment or its environmental acceptability. The quantities of material in the plastics waste stream needing treatment would require significant research and development to scale up existing treatment systems.

There is an operational intractable waste facility at Mt Walton East in Western Australia, operated by the Western Australian government. The facility may only accept wastes from Western Australia for secure burial, and acceptance of material and the cost of disposal is determined on a case by case basis. No other operational secure landfill or underground storage as specified by the European Union regulation has been identified in Australia.

For articles containing c-penta BDE already disposed of to landfill, the options for recovery and destruction appear to be limited. Management of leachate from landfills where c-penta BDE is detected in the leachate could include strategies to destroy or irreversibly transform the c-penta BDE.

Commercial octabromodiphenyl ether (c-octa BDE)

Current status in Australia

The use of c-octa BDE in Australia has been in decline since the 1970s. It was declared a PEC in 2007, and NICNAS removed it from the Australian Inventory of Chemical Substances (AICS) in the same year as no applications for assessment had been received (for the 1 year from its declaration as a PEC). The manufacture and importation of this chemical into Australia requires notification to and assessment of the chemical by NICNAS. Manufacture and importation of octaBDE is also not permitted under the NICNAS exemption categories except as laboratory standards for analytical determination. Australia's obligations as a Party to the Basel Convention in regard to c-octa BDE would be the same as those for c-penta BDE in regard to management and disposal of wastes containing c-octa BDE, as outlined in section 1.3 above.

Uses in Australia and stockpiles

The POPRC, in its risk management evaluation of c-octa BDE, reported that worldwide c-octa BDE has been used primarily in the production of acrylonitrile-butadiene-styrene (ABS) polymers at 12-18% weight loadings in the final product. About 95% of c-octa BDE had been supplied in Europe for ABS production. These polymers are used in the manufacture of hard plastic components such as housings for computers and photocopiers. It has also been incorporated in other products including nylon, resins, adhesives and coatings. NICNAS has reported 47 tonnes of c-octa BDE were imported in 1998/99, and less than 10 tonnes were imported in 2003/04. Imports ceased in mid 2005, and, as for c-penta BDE, with a voluntary phase out of the manufacture of the chemical by the major international manufacturers and international regulatory activity such as bans on production and restriction of use in articles, it is expected that there will be a decline in the quantities of the chemical imported in articles. No information is available regarding stockpiles of c-octa BDE in Australia.

Releases to the environment

There is no evidence that c-octa BDE is produced anywhere in the world, but the POPRC has suggested that releases of the chemical to the environment remain significant. It can be concluded from this finding that Australia would also experience releases from in-use articles and waste streams containing c-octa BDE.

Scope to further reduce environmental releases

As discussed for c-penta BDE, there appears to be no easy way to identify products in use or products in the waste stream containing c-octa BDE.

Perfluorooctane sulfonate (PFOS) and related substances

Current status in Australia

NICNAS began monitoring the quantities of PFOS and related compounds manufactured and imported into Australia and their uses in 2002. NICNAS has recommended that PFOS be used only for identified essential uses for which no suitable less hazardous alternatives are available.

NICNAS is working in conjunction with the Department of the Environment, Water, Heritage and the Arts (DEWHA) to introduce regulatory measures to restrict the manufacture, import and use of PFOS and the related compounds. The findings of the 2008 NICNAS call for information on the manufacture, import and use of PFOS were published in the January 2009 *Chemical Gazette*.

Uses in Australia and stockpiles

NICNAS has identified the essential uses in Australia as being in: aviation (hydraulic fluid); metal plating (mist suppressant); photography and photolithography.

Historical uses have included: fire fighting foams; carpets; leather/apparel; textiles/upholstery; paper and packaging; coatings and coating additives; metal plating; industrial and household cleaning products; and pesticides.

A 2008 survey conducted by NICNAS indicated that PFOS (and related substances) continues to be imported for use in aviation hydraulic fluid, mist suppressant in metal plating, photolithography in semi conductor manufacture and as a surfactant in photography. These are uses which have been recognised by the POPRC where technically feasible and less hazardous alternatives are presently not available. Other applications were also listed by the Committee which do not appear to be practised in Australia.

The NICNAS survey revealed the following quantities were imported in 2006 and 2007.

Australian imports and stocks of PFOS

Use category:	2006	2007	Stock (2007)
	Kilograms		
Aviation	8.70	10.13	Nil
Fire fighting foams	Nil	Nil	7,554
Metal plating	747.50	1,335.00	225.0
Photography	4.80	4.0	Nil
Photolithography	Nil	1.5	Nil
Total	761.00	1,350.63	7,779.00

Over 98% of PFOS was imported for metal plating purposes. Only very small quantities were imported for aviation hydraulic fluid, photography and photolithography purposes. With these uses, all or most of the imports were conducted on an 'as-required' basis, leaving very low stocks. NICNAS has noted that there have not been imports of PFOS based foams in recent years, and many new alternatives such as non-PFOS fluorosurfactants, silicone and hydrocarbon based surfactants, and fluorine free foams are replacing the old foams for B Class fires. The current stock of PFOS of 7.554 tonnes in fire fighting foams could be replaced by non-PFOS based foams. PFOS is not an essential use for fire fighting foams.

Releases to the environment

Because PFOS and related materials have not been intentionally manufactured in Australia, the main environmental releases have occurred as a result of industrial and consumer applications, leaching from wastes and waste consolidations (eg sewage treatment plants and landfill sites), and from unintentional production from the degradation of related anthropogenic substances. Precursors to PFOS can degrade chemically and/or biochemically to ultimately form PFOS, and contribute to the ultimate environmental loading of PFOS, and may also contribute to long range transport of PFOS. The POPRC has noted that, due to its extreme stability, PFOS is likely to be the final degradation product of all PFOS-related substances. The available information indicates that apart from some limited current use of PFOS, the main sources of environmental release are from a dispersed historical use of the chemical and related substances.

Scope to further reduce environmental releases

The POPRC, in its risk management evaluation, recognised that 'a positive impact on human health and on the environment can be expected from reduction or elimination control measures on PFOS (and related substances) on a global scale. The establishment of further control measures for those uses of PFOS for which no substitution is yet possible, will presumably contribute positively to human health and the environment, especially concerning reprotoxicity and blood values.' The POPRC also observed that 'industry has noted that no negative impact is anticipated to result from the ongoing small number of critical uses e.g. the imaging industry and the semi conductor industry.' It is not clear if this also applies to metal plating, which is the major use in Australia.

The POPRC's emphasis appears to be on the continued winding back of production and elimination of non-critical uses. Identification and destruction of wastes and articles containing the chemical were not highlighted in the risk management evaluation.

For Australia, which is not a producer of PFOS or related substances, its main contribution to reducing PFOS pollution appears to lie with the removal of redundant stocks of fire fighting foam and the ultimate replacement of PFOS and related substances for critical uses with acceptable substitutes. These uses are not unique to Australia, and it should benefit from ongoing international research.

Articles incorporating PFOS will have been disposed of in landfills. Management of leachate from landfills where PFOS is detected in the leachate could include strategies to destroy or irreversibly transform the PFOS.

Pentachlorobenzene

Current status in Australia

Pentachlorobenzene is listed on the Australian Inventory of Chemical Substances (AICS). However, it is classified as an intractable waste and is cited in the *National Strategy for the Management of Schedules Waste - November 1992*. This controls the way that it is disposed, and restricts its production and use. Production ceased in 1995, and the use of articles containing pentachlorobenzene ceased in 1998.

Uses in Australia and stockpiles

The POPRC, in its risk profile on pentachlorobenzene, listed a number of past uses. It has been used as a fungicide (and as a feedstock for the production of a second fungicide – quintozene), as a pesticide and flame retardant. It was also used in conjunction with PCBs in dielectric fluids in transformers and capacitors, and in hydraulic and heat transfer liquids. It was also previously registered as a wood preservative in Western Australia.

Releases to the environment

Environmental releases have occurred from timbers treated with substances containing pentachlorobenzene, and timber treatment plants which previously used this chemical. The POPRC, in its risk profile on pentachlorobenzene, observed that environmental concentrations of pentachlorobenzene are decreasing, but it was not possible to distinguish between the impacts on the global environment caused by intentional use and unintended production and release. The latter can be caused by processes unrelated to the direct production or use of pentachlorobenzene. Incomplete combustion of fuel material containing chlorides, especially biomass and waste has been identified as the most significant source of pentachlorobenzene in the environment in the EU and USA. Other sources include industrial chlorination reactions in ore treatment for copper, aluminium, titanium dioxide, magnesium, tantalum, niobium, and steel production, among others.

The POPRC, in its risk profile on pentachlorobenzene, noted that ‘as a result of long range transport of pentachlorobenzene, neither a single country nor a group of countries alone can abate the pollution caused by this substance.’

Scope to further reduce environmental releases

Although evidence for stockpiles of pentachlorobenzene in Australia was not found, there may be residual material that could be recovered and destroyed. There may be residual contamination of timber treatment plants where pentachlorobenzene was used.

The POPRC, in its risk management evaluation on pentachlorobenzene, noted that in regard to unintentional production from combustion sources, the application of existing BAT BEP Guidelines for the unintentional production of other POPs would already be largely addressing pentachlorobenzene and therefore listing in Annex C will not lead to additional cost.

Lindane

Current status in Australia

Lindane is registered as a controlled chemical under the *Agricultural and Veterinary Chemicals (Administrative) Regulations 1995* under the *Agricultural and Veterinary Chemicals Code Act 1994*. The Act (and its regulations) is administered by the Australian Pesticides and Veterinary Medicines Authority (APVMA). It can only be used by commercial pineapple growers in Queensland to control white grubs and symphylids. The registered product label stipulates maximum applications prior to planting of 23 litres per hectare for the control of white grubs or at the maximum rate of 11.25 litres per hectare to control symphylids. It is used mainly for the control of symphylids.

A maximum residue limit is set by APVMA for pineapples of 0.5 mg/kg. APVMA has determined that these limits are not likely to be exceeded if the chemical is used in accordance with approved label instructions. The residue limit has been set following a dietary exposure evaluation to ensure that the levels do not pose an undue hazard to human health. APVMA has also set extraneous residue limits (ERLs) on other foodstuffs entering directly or indirectly the human food chain. These limits relate to the take-up of chemical residues from environmental sources (including former agricultural uses) other than the use of lindane on pineapples directly or indirectly. Lindane, for example, was previously used extensively as a pesticide in sugar cane cultivation, and chemical residues remain in these soils. Lindane has been nominated for review by the APVMA, but only at the lowest priority (Priority 4) level.

Lindane is classified as an intractable waste and is included as a scheduled waste on Schedule X. The storage and disposal of lindane is controlled under the *National Strategy for the Management of Scheduled Waste – November 1992.* Drums which have been used to store lindane are collected and recycled under a national drumMUSTER program. Waste chemicals are stored and disposed under the ChemClear ® program.

In addition, lindane is listed in Annex III of the Rotterdam Convention. Australia is a Party to the Convention which promotes environmentally sound international trade, use and disposal of hazardous chemicals. Prior Informed Consent procedures are required to be followed before an exporter in another country can export lindane or agricultural and veterinary chemical products containing lindane to Australia. This also applies for Australian exporters.

Uses in Australia and stockpiles

Lindane has been used in past years as a broad-spectrum insecticide for agricultural and non-agricultural purposes. UNEP (2006d) reported uses including treatment of soils, seeds, plants, wood, and parasites on humans (notably treatment of head lice) and on animals. It was used extensively in Queensland in the sugar cane industry prior to 1987, as a component of a mixture of HCH isomers referred to as Technical HCH or benzene hexachloride (BHC).

Growcom advised that some 4,500 ha are dedicated for pineapple production in Queensland, of which about 1,500 ha are re-planted to pineapples annually. On average, about 600 ha of the re-plant area can be affected by symphylids, with some of this area also being infested by white grub. The combined area requiring treatment is generally in the order of 850 ha per year.

Lindane is imported into Australia from India in solid, near pure (>99.5%) form (Lindane Technical or Lindan20). A liquid product comprising 20% lindane and more than 75% xylenes (Lindan30) is sold to registered, commercial, pineapple growers through approved merchants. The chemical is stored by the importer at an authorised dangerous and hazardous goods warehouse in Brisbane. Farmers order the chemical on an ‘as-required’ basis from one of these merchants. Lindane cannot be warehoused by the merchants.

During the period from September 2002 to November 2008, there were 12 tonnes of Lindane Technical imported into Australia, averaging approximately 2 tonnes per annum. Diluted lindane is held as stocks awaiting distribution to farmers. Stock holdings have generally remained low at less than 2 tonnes of Lindane Technical equivalent. The importer advised it imported its last consignment in early 2008, and has ceased importing the chemical. There are approximately 4,500 litres of Lindan30 (or 0.9 tonnes pure lindane equivalent) remaining in stock. The pineapple industry does not anticipate other companies will seek approval to re-commence imports.

Lindane has been particularly important in controlling symphylids. Without a suitable substitute, it has been estimated that pineapple production would decline by about 10-20% over the full cropping cycle of about 4 years (allowing for a plant crop and one ratoon). Most farmers are using chlorpyrifos to control white grub.

Details of imports and stocks of lindane are provided in the table below.

Australian imports and stocks of lindane

Year	Month	Imports (tonnes)	Stock (litres)	Stock (tonnes)
2002	September		1,900	0.38
2003	January	1.0	5,000	1.00
2003	April	1.0	3,560	0.712
2003	July	1.0	1,780	0.356
2003	October		5,280	1.056
2003	December		4,340	0.868
2004	March		3,700	0.74
2004	June	2.0	1,980	0.396
2004	September	1.0	6,260	1.252
2004	December	1.0	4,700	0.94
2005	March	1.0	3,680	0.736
2005	June	1.0	2,320	0.464
2005	September	1.0	1,360	0.272
2005	December		4,500	0.9
2006	March		3,560	0.712
2006	June		2,360	0.472
2006	September	0.5	1,060	0.212
2006	December		2,720	0.544
2007	March		1,200	0.24
2007	June		0	0
2008	March	1.5	7,500	1.5
2008	November		4,500	0.9

Imports of Lindane Technical (Lindan20) in 25 kg lots. Diluted to Lindan30 (formerly CM 200 Lindane) at the rate of 20% lindane.
Source: Australian Government Department of Agriculture, Fisheries and Forestry (DAFF); Redox Pty Ltd

The pineapple industry is adjusting its pest control methods to sustain full production without the use of lindane. APVMA issued a permit to Growcom to use fipronil or bifenthrin to control symphylids. The permit is from 9 January 2008 to 31 March 2010, and enables registered commercial pineapple grower members in Queensland to use these chemicals as substitutes for lindane in the control of symphylids. Bifenthrin is the preferred chemical substitute. This chemical is already registered by APVMA for the control of insect pest and mites for a range of crops. Trials of bifenthrin were conducted by Golden Circle Limited some years ago which showed promising results. Crop safety and efficacy trials are proposed by the industry for 2009/10, and GLP (good laboratory practice) residue trials for 2009/10 or 2010/11. Residue trials must be completed before the chemical is assessed by APVMA for registration for use in the pineapple industry.

The available information shows that the pineapple industry is adjusting to operate without lindane. Although some farmers continue to use lindane, waiting to see how bifenthrin performs under normal farming conditions. Listing is unlikely to significantly impact pineapple production. There could, however, be some stocks remaining in May 2009. It may be necessary to recover this material and destroy it.

Releases to the environment

Residues of lindane and the alpha and beta isomers of HCH have been found in detectable concentrations in the surface soils of sugar cane fields, although the levels measured were highly variable. This could be the source of contamination found in the waters of the Great Barrier Reef lagoon, perhaps resulting from transport by stormwater runoff of leached chemicals and contaminated sediment.

Scope to further reduce environmental releases

Existing mechanisms such as ChemClear ® could be used to recover any remaining stocks of lindane from farms and distribution points. Destruction of the relatively small quantities of material expected to be remaining in stocks is likely to be feasible using plasma arc technology. Research will be needed to demonstrate the destruction can be achieved in an environmentally acceptable manner.

HCH mixed residues in soils where it has been used prior to 1987 in the sugar cane industry are reported as a median 0.6 ppb in the Burdekin and 6 ppb in the Herbert. These results are far below the concentration set to trigger waste controls in the European Union, where 50 ppm has been adopted. Widespread remediation of soils contaminated at such low levels is not practicable. Further releases will be minimised by preventing contaminated stormwater runoff from entering waterways in catchments where HCH has been used from entering waterways. Because other agricultural chemicals of environmental concern have been used in these catchments, efforts to manage stormwater runoff are likely to have a broader focus than preventing release of HCH.

4.5 Quantify the compliance costs on business.

The costs to human health (resulting from morbidity and mortality) and to the environment, caused by continued releases of the subject chemicals to the environment, have not been quantified in the suite of reports prepared by the POPRC. However, the authors of these reports have drawn on an extensive body of scientific knowledge and expertise to form their conclusions regarding each of the nine nominated chemicals. In each case, they have concluded that based on the prepared risk profiles and other assessments, the chemicals are likely to cause '*significant adverse effects on human health and the environment, such that global action is warranted*'. The cost avoidance benefits of reducing environmental releases should therefore also be significant.

It is not possible to conduct a full benefit cost analysis without having estimates of the costs to human health and the environment. However, through screening and examination of issues it is possible to qualitatively weigh costs against the benefits. This is undertaken in the following sub sections.

Commercial penta and octa bromobiphenyl ether

Given the volume of products in use potentially containing these substances and wastes located mainly in landfills, the costs of a full scale clean up cannot be estimated at this time, and could easily exceed the benefits to human health and the environment if not undertaken in a responsible manner. However, the additional costs incurred by Australia if these chemicals were listed under the Stockholm Convention as compared with the business as usual case (with Australia being a Party to the Basel Convention) are likely to be marginal. In addition, the amelioration problem can be approached incrementally and geared in such a way as to ensure the additional costs do not exceed the benefits. For leachate from landfills, actions are likely to be a component of the management that will be undertaken to address a variety of environmental concerns rather than specifically aimed at BDEs. Similarly, segregation of articles entering the waste stream based on BDE content does not appear to be practicable, since there is no easy way to identify such items. It may be possible to identify a waste stream comprising of articles possibly containing BDEs, and segregate them. Collection and disposal costs are likely to be significant. For the intractable waste landfill operated by the Western Australia government at Mt Walton East, a recent burial of 15 tonnes of chemical waste and 62 drums of low level radioactive waste cost $2.74m.

Perfluorooctane sulfonate

The costs for this chemical would relate mainly to recovery and disposal of the fire fighting foam stockpiles. While the locations of stockpiles are known, costs for secure transport to a destruction facility are not known. Restrictions placed on the transport of other hazardous wastes have made this a major component of the disposal costs. Destruction of this material (after appropriate research to demonstrate environmentally responsible disposal) is estimated at $30,000 per tonne. These costs should be well below the benefits.

Pentachlorobenzene

The cost differences between the base case and the listing case should be minor as scheduled waste requirements already apply to its use and disposal, and the POPRC has identified that existing BAT BEP guidelines for managing emissions of POPs from combustion will already be largely addressing unintentional emissions of pentachlorobenzene. Possible costs may relate to specific clean-up projects at sites where pentachlorobenzene was used (eg for timber treatment in Western Australia). Listing should be broadly cost and benefit neutral.

Lindane, alpha and beta hexachlorocyclohexane

The cost differences between the base case and the listing case should be relatively minor as imports of lindane have ceased in Australia and there would be no major costs associated with remediating farm lands. There could be a small cost to dispose of any remaining stockpile of lindane should it not be fully exhausted by the time new regulations are implemented, which could be some years. Based on the present stock of 0.9 tonnes the costs would be about $30,000 plus collection and transport to a destruction facility. Specific clean-up costs for sites where lindane contamination of land may have triggered threshold levels will apply independent of listing.

In summary, the costs incurred in Australia of listing the nine chemicals should not exceed the benefits of listing, provided the benefits for human health and for the environment are significant (as concluded by the POPRC), and appropriate approaches to reducing chemical pollution are adopted.

4.6 Examine the effect of each option on individuals, and on the cumulative burden on business.

Commercial penta and octa bromobiphenyl ether (c-penta and c-octa BDE)

Costs associated with listing these chemicals are associated with the remediation of existing contaminated landfill sites. If not carefully managed the costs could outweigh the benefits of listing these chemicals.

Listing c-penta and c-octa BDE in the Stockholm Convention will add little additional requirement and cost regarding management and disposal of wastes given that the Basel Convention already provides obligations regarding the environmentally sound management of such wastes.

Perfluorooctane sulfonate (PFOS) and related substances

Should PFOS and related substances be listed in Annex B of the Stockholm Convention the effect would be a limiting of access to the chemical for specified purposes. The effect would be the same if PFOS (and related substances) were listed in Annex A and Australia claimed exemptions for the continued use of PFOS for those purposes where no substitute is available. It is expected that the internationally identified critical uses are in line with the Australian critical uses (as identified by NICNAS).

Therefore listing in either manner would have no effect on the business as usual case, with the exception of use in fire fighting foams. These foams are currently being replaced with non-PFOS related substances and as such the effects on business would be restricted to disposal issues.

Pentachlorobenzene

There is no expected effect to business or individuals of listing this chemical in Annexes A and C of the Stockholm Convention. It is expected that this chemical is already largely restricted by a combination of existing regulations.

As noted by the POPRC, management of unintentional releases of pentachlorobenzene from combustion sources will be largely addressed by existing BAT BEP guidelines under the Stockholm Convention.

Lindane

Listing of lindane in Annex A is likely to create additional cost to pineapple growers as the available alternative chemicals for the treatment of white grubs and symphylids are more expensive. It is possible that this cost might be passed on to the consumer (and thereby individuals).

The replacement of lindane with other chemicals is a process that is already underway in Australia.

4.7 Identify the data sources and assumptions used in making these assessments, and any gaps in data.

For this study, due to the POP characteristics of these chemicals, it is taken as a given that controlling and reducing their release to the environment will be significantly beneficial for environmental outcomes and human health. This is supported by the risk management evaluation and risk assessment done by the POPRC under Annexes E and F of the Stockholm Convention. There is no need to re-visit the literature on this matter. A key research question for this RIS was whether Australia's ratification of listing in Annexes of the Convention would make a difference for releases to the environment *in Australia*?

Many data gaps exist surrounding listing and the development of methodologies relating to Article 6 of the Stockholm Convention. These methodologies will not be drafted until some years after listing. All assumptions are based on the extrapolation of existing methodologies for already listed chemicals. Data gaps exist relating to the cost of creating a specially engineered landfill site as we are not able to estimate costs.

In the suite of reports prepared by the POPRC, the costs to human health and the environment (caused by these nominated chemicals) are not quantified. Based on the conclusions drawn by these reports it is assumed that the cost avoidance benefits of reducing environmental releases of these chemicals should be significant.

Commercial penta and octa bromodiphenyl ether

Statistics regarding stockpiles (if any) and the quantity of products containing c-penta and c-octa BDE are not available. Quantities of these chemical stockpiles (not products containing) are assumed to be small.

There are no definitive lists of end-use products available for either c-penta or c-octa BDE and as a result it has made it difficult to quantify costs associated with sound environmental disposal.

End-use issues also give rise to the problem of clean up of existing sites (as a result of disposal of products contained in general landfill). It is not possible to estimate costs associated with such a clean up as the scale of such landfill contamination is not known at this time.

Pentachlorobenzene

Evidence of stockpiles of pentachlorobenzene in Australia was not found and it is assumed that should stockpiles exist, they would be small.

Perfluorooctane sulfonate

A data gap exists in the secure transportation of PFOS stockpiles to a destruction facility. It is not known whether this could occur and if so at what cost.

Lindane

It is assumed that stockpiles of lindane will be exhausted before listing occurs and that no further imports of lindane will occur. Should this not be the case it is also assumed that any remaining stockpiles would be destroyed on a per tonnage basis through an appropriate destruction facility.

It is also assumed that the proposed substitute chemicals will be registered by APVMA for use in the pineapple industry after residue trials are concluded in 2011.

4.8 Summarise outcomes for each option examined.

An initial screening was conducted to identify chemicals which have not been used in Australia and there is no likelihood of future use. Listing in these cases would lead to no significant costs being incurred by Australia, and there would be benefits from any reduction in long distance transport of these chemicals to Australia from source countries. The initial screening process eliminated hexabromobiphenyl (HBB) and chlordecone on this basis.

The remaining seven chemicals were examined in greater detail to determine if additional requirements of listing (ie hitherto not implemented in Australia) would significantly reduce releases of chemical pollutants to the environment. In regard to alpha hexachlorocyclohexane (alpha HCH) and beta hexachlorocyclohexane (beta HCH) environmental releases from background pollution were assessed in conjunction with lindane, since the 3 isomers of hexachlorocyclohexane have historically been used as components of a single formulation. The main findings were as follows:

- Commercial pentabromodiphenyl ether (c-penta BDE) – although c-penta BDE was imported into Australia until mid 2005, there are no known stockpiles of the chemical and imports of articles and materials containing c-penta BDE are likely to be small. Most of the pollution is caused by degradation of articles in use or in waste streams. Polyurethane foams with c-penta BDE additives appear to be the main source of pollution. These foams were used extensively in furniture and many other applications. Most waste products have been disposed at landfill sites in Australia rather than recycled or incinerated. To significantly reduce pollution it would be necessary to recover articles and materials containing c-penta BDE and manage their disposal in scientifically engineered landfill facilities or by incineration. Also, it would be necessary to remediate or reconstruct landfill sites which are emitting pollutants above guideline levels. Programs could be designed to remediate the problem incrementally. This needs to be seen in the context of the existing status of c-penta BDE under the Basel Convention, to which Australia is a Party, which already requires environmentally sound management of wastes containing c-penta BDE.

- Commercial octabromodiphenyl ether (c-octa BDE) – most of the risk associated with c-octa BDE is being generated by in-use and waste articles containing acrylonitrile-butadiene-styrene (ABS) polymers with c-octa BDE additives. The sources of pollution are widely diffuse. Again, an incremental approach would be necessary to address the problem. As for c-penta BDE, such considerations are relevant to existing domestic obligations regarding environmentally sound management of wastes under the Basel Convention.

- Perfluorooctane sulfonate (PFOS) and related substances – Listing in Annex B of the Convention would allow for the use of PFOS for specified essential uses. These essential uses would need to be captured in new domestic regulations. Should listing in Annex A occur, Australia will be able to apply for exemptions for specific essential uses. In either case, there should be no major change from the business as usual case for these applications. Australia holds stocks of obsolete fire fighting foams containing PFOS. In either case these stocks would need to be disposed of consistent with the requirements of Article 6. Pollution from other sources would appear to be highly dispersed and largely unrecoverable.

- Lindane, alpha and beta HCH – lindane has been used extensively as a pesticide in Australia. However, background chemical residue levels for all isomers of HCH in soils and sediments are generally very low, and widescale remediation of farm lands is not warranted. Lindane is now restricted to being a pre-plant pesticide for the cultivation of pineapples by registered commercial growers in Queensland. Imports of lindane have now ceased and the growers have a permit to assess the use of bifenthrin as a substitute for lindane to control symphylids. Lindane has also been used to control white grub, but chlorpyrifos (already registered) is the chemical of preference in the industry. With the exception of some residual stocks of lindane should the Stockholm Convention COP decide to list lindane in May 2009 and Australia agrees to this amendment, there should be no other major issues. The major impact on production of pineapples and costs of cultivation would have been absorbed by industry by that time as they are currently preparing for its removal from the Australian market. However, the alternatives to lindane are more expensive.

- Pentachlorobenzene – this chemical was previously registered as a wood preservative in Western Australia, and there could be residual contamination at treatment sites. However, there is no evidence of stockpiles of pentachlorobenzene. Various combustion processes can lead to unintentional production of pentachlorobenzene however research into selected combustion processes may provide benefits in managing unintentional releases of this chemical to the environment. Listing of pentachlorobenzene in Annex A and Annex C would incur little cost to Australia.

5 Consultation

5.1 Who are the main affected parties? Who had been consulted?

The main affected parties have been identified under section 4.1.

Problems as a result of listing will be encountered by pineapple growers as a result of listing of lindane and possibly on those using PFOS for non-essential uses.

Views on the inclusion of the nine new chemicals under the Convention were sought from affected and interested parties, including State and Territory governments, industry, government agencies and non-government environmental organisations and the general public. A list of these parties is at Appendix 1.

5.2 What are their views?

The views gathered during the first consultation period (issues paper) agreed with listing these chemicals in the Stockholm Convention as a way of consolidating existing domestic regulation.

Questions were raised regarding the correct listing of the chemicals and compounds for listing as well as the suggestion that references be included.

5.3 How have stakeholders' views been taken into account?

Views collected during the first consultation period (issues paper) were collected to establish initial concerns or comments.

All comments were given due consideration before changes were made to the draft RIS. Some of the comments included were changes to the naming of chemicals and compounds to match the listing of chemicals made in the recommendations put forward by the POPRC.

A similar process will be undertaken at the conclusion of the second, more extensive public consultation period.

5.4 What was the consultation process?

Consultation was undertaken in two phases. Initially an issues paper was circulated in October 2008 (and again in November 2008) to the parties listed in Appendix 1 for their views on the listing of the nine chemicals.

The issues paper consisted of background information on the Stockholm Convention, as well as a summary of the nine chemicals and their current usage in Australia.

This paper was in circulation for a period of eight weeks before comments were collected and collated. This information was then forwarded to the consultant undertaking the Benefit Cost Analysis for the Department so that they could incorporate the information into their study.

Communication with the parties was also maintained during this process via alternative means, including email and telephone communication. This encouraged as much information sharing as possible during the consultation process, thereby ensuring a superior quality of feedback from both of the periods of public consultation.

5.5 Where consultation was limited or not undertaken, why was full consultation inappropriate?

Consultation was undertaken with all government agencies (both Commonwealth, and state and territory), and all industry and community stakeholders known to DEWHA with an interest in Stockholm Convention issues generally, on the use of the nine proposed chemicals in particular.

6 Conclusion

6.1 What is the preferred option? Why is this option preferred and others rejected?

The preferred option is to have the nine chemicals listed in the Convention, due to their potential risk to human health and the environment.

In the case of each of the nine chemicals, listing will protect human health and the environment from the effects of these POPs. The aim is to reduce and, where feasible, eliminate POPs releases, including emissions of by-product POPs. An additional aim is to ensure the sound management of stockpiles and wastes that contain POPs.

It is not feasible however, to list all of the chemicals in Annex A, as there are not always suitable alternatives available for use. In the case of PFOS, the POPRC has recommended listing in either Annex A or B. Preferred listing options for each of the nine chemicals are presented below with an explanation for the reasoning behind the suggestions made.

It is recommended that Australia, through the introduction of minor legislative amendments and regulations to meet its obligations under the Convention. One option would be to introduce regulations under Section 106 of the *Industrial Chemicals (Notification and Assessment) Act* to meet the obligations of the Stockholm Convention as the Stockholm Convention is a prescribed international agreement under this section of the Act. Ratification of these amendments will deliver the benefits of international cooperation in reducing the presence of POPs at the lowest administrative costs to industry and Government.

Other arguments to support this recommendation include:

- the Convention is consistent with existing Australian policy to promote sound chemicals management and ecologically sustainable development;
- it will augment and consolidate existing Australian controls on hazardous chemicals;
- Australia is already well advanced in meeting the Convention's obligations in relation to intentionally produced chemicals and wastes, and would not need to spend a large amount of additional funds in relation to these;
- Australia has pre-existing obligations under the Basel Convention regarding the environmentally sound management of wastes containing brominated flame retardants such as c-penta BDE and c-octa BDE;

- the Convention provides the global action required to eliminate POPs, given their persistent and trans boundary nature;
- ratification of the addition of these chemcials by Australia would enhance Australia's influence in the context of continuing work carried out under the Convention; and
- a decision not to support the addition of these chemicals could have a negative impact on Australia's trading relationships if there is a perception by other countries that Australia is not committed to the global effort to reduce and eliminate POPs.

Commercial pentabromodiphenyl ether (c-penta BDE)

C-penta BDE is already restricted in its uses in Australia at the present time (as a result of the NICNAS report). Listing this chemical in Annex A of the Convention will have little additional impact on industry, government and the community at the present time and would have positive environmental and health benefits.

NICNAS does not have the regulatory power to ban the use of c-penta BDE permanently, but a temporary ban will remain in place until the release of their report in mid 2009. The outcomes of this report will not affect listing on the Convention, which could occur in May 2009. Should listing in Annex A occur and Australia ratifies this amendment, it will be necessary for relevant regulation to be put in place by an authority. One option would be to introduce regulations under Section 106 of the *Industrial Chemicals (Notification and Assessment) Act* to meet the obligations of the Stockholm Convention as the Stockholm Convention is a prescribed international agreement under this section of the Act.

It should be noted that the costs for the safe deconstruction and disposal of articles and waste containing c-penta BDE (and the other BFRs – c-octa BDE and HBB) will be dependent on the final environmentally sound processes approved by the Convention. However, existing requirements under the Basel Convention regarding the environmentally sound management of wastes containing these chemicals means that listing in the Stockholm Convention represents little in the way of new and additional obligations. Costs associated with disposal and destruction of these wastes are unknown due to the lack of information on products containing c-penta BDE at this time.

It is considered that the costs of disposal are outweighed by the potential benefits to human health and the environment.

Commercial octabromodiphenyl ether (c-octa BDE)

C-octa BDE is already heavily restricted in its uses in Australia. Listing of this chemical in Annex A of the Convention would seem to be the most suitable option as there would be little additional cost to industry, government and the community, with the exception of disposal costs. As with c-penta BDE, it is not possible to estimate costs associated with the disposal and destruction of products containing. It is considered however, that the potential benefits to human health and the environment outweigh the costs.

Hexabromobiphenyl (HBB)

This chemical, like c-octa BDE, is not listed on AICS and thereby already heavily restricted in Australia.

Additionally, HBB is listed under Annex III (under polybrominated biphenyls) of the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

These two conditions mean that listing of this chemical in Annex A of the Convention would mean little impact on industry, government and the community of Australia.

Research indicates that HBB has not been imported into Australia in products and as such the costs associated with disposal and destruction are minimal.

Chlordecone

It is considered that listing chlordecone in Annex A is the most suitable option, as this chemical has never been registered for use in Australia and does not present costs associated with listing.

As with all of the chemicals proposed for listing, it would be of most benefit to list them in Annex A from an environmental and human health perspective.

Perflurooctane sulfonate (PFOS)

It is proposed that PFOS be listed in Annex B of the Convention as Australia has been undergoing a voluntary phase out of the use of PFOS chemicals in industry from 2000, with critical uses identified as allowable restricted uses under the Convention.

It is considered that the costs associated with listing this chemical under Annex A would outweigh the benefits as there are some critical uses that do not have alternatives available at this time. Listing under Annex B would allow for these critical uses to continue, while at the same time limiting the production, import and export of this chemical to those uses. Alternatively, if PFOS were listed in Annex A, Australia would be able to claim exemptions for continuing those critical uses.

Both options would present suitable outcomes for industry, government and community while meeting global obligations to reducing the proliferation of this hazardous chemical. Relevant regulations would need to be put in place by an authority to allow only the essential uses. An option would be to use Section 106 of the *Industrial Chemicals (Notification and Assessment) Act* to meet the obligations of the Stockholm Convention as the Stockholm Convention is a prescribed international agreement under this section of the Act.

Pentachlorobenzene

Listing of pentachlorobenzene in Annex A and Annex C of the Convention would be in line with current regulatory actions already in place in Australia.

Regulation resulting from listing on the Convention would only build upon previously agreed strategies cited in the *National Strategy for the Management of Scheduled Waste 1992*. This strategy aims to provide requirements for the safe management and disposal of scheduled waste by removing the sources of such waste through restrictions on production and articles containing.

In light of existing regulation, it is considered that the impact of listing in Annex A and Annex C would be minimal and the benefits presented as a result of listing are desirable.

Lindane

Lindane was deregistered for general use in 1985 with only one registered use in Australia, as an insecticide for use in pineapples.

It appears likely that this chemical will be listed in Annex A of the Convention by the COP. Should this occur, Australia would need to make a decision regarding its position on this chemical.

Currently there are alternatives being researched for this critical use in Australia. The costs associated with listing on Annex A will relate to the viability of these alternatives. Additional costs would also be incurred should Australia be required to dispose of stockpiles of the chemical after listing.

As it stands, these alternatives are available to pineapple growers by permits expiring in 2010, albeit at an additional cost. Through the consultation process it was found that this cost was considered to be fair when weighed against the benefits to human health and the environment. Additionally, agreeing with the listing of the chemical under Annex A would not put Australia at odds with other countries should they ratify the proposed amendments to the Convention.

Alpha and beta hexachlorocyclohexane (alpha and beta HCH)

Both of these chemicals are listed in the prohibited import and export regulations governed by Customs. The import or export of these chemicals is prohibited unless special permission is granted.

Alpha and beta HCH are by-products from the production of lindane. Production of lindane has not occurred in Australia since 1985.

In the case of both of these chemicals the impacts of listing in Annex A would be negligible, as it is understood that no stocks of these chemicals exist in Australia.

7 Implementation and Review

7.1 How will the preferred option be implemented?

Implementation of the inclusion of the nine new chemicals under the Convention would be the responsibility of three Commonwealth portfolios:

- DEWHA;

- DAFF; and
- DoHA.

DEWHA would have responsibility for overall coordination of the Commonwealth's actions to meet the obligations under the Convention.

Where possible, existing administrative procedures that are already familiar to stakeholders, would be used. Where changes to existing administrative procedures or the development of new procedures are required, stakeholders would be consulted.

DAFF will initiate the required changes to the agricultural and veterinary chemicals legislation and liaise with the Australian Customs Service on amendments to the *Customs (Prohibited Imports) Regulations 1956* and addition of the new chemicals to the *Customs (Prohibited Exports) Regulations 1954*.

Relevant regulations would need to be put in place by an authority to allow only the essential uses. An option would be to use Section 106 of the *Industrial Chemicals (Notification and Assessment) Act* to meet the obligations of the Stockholm Convention as the Stockholm Convention is a prescribed international agreement under this section of the Act.

7.2 Is the preferred option clear, consistent, comprehensible and accessible to users?

If Australia decides to ratify the inclusion of any chemicals in the Convention, this decision would be communicated to stakeholders through existing government channels including:

- gazettal notifications;
- agency websites;
- agency publications;
- media releases;
- direct contact with stakeholders; and
- stakeholder meetings.

Changes to current regulations or introduction of new regulations will also be widely publicised through the same channels.

The appropriate mechanism for consultation would be discussed with stakeholders during a period of consultation. This would include a framework for ongoing consultation to develop a clear and consistent understanding for all stakeholders on any amendments that are made to the Convention.

7.3 Is the preferred option sufficiently flexible to adapt to various situations and circumstances?

The preferred options presented are suitably flexible to allow for changes in listing on the Convention. Should listing of the chemicals occur in a different Annex to those addressed in this RIS, changes to associated regulation are similar enough to allow for flexibility. This also applies should it be decided that listing is not necessary.

7.4 How will the preferred option interact with existing regulation of the sector?

The effects of any amendments to the Stockholm Convention can be described with reference to the major elements including:

- intentionally produced and used POPs;
- unintentionally produced or by-product POPs;
- POPs in stockpiles and wastes; and
- public information, awareness and education.

Intentionally produced and used POPs

Article 3 of the Convention requires Parties to restrict or eliminate production, use, and trade of the listed POPs subject to allowable exemptions and trade between Parties and non-Parties to the Convention. Australia has already ceased to produce, import, export or use four of the nine chemicals listed for possible inclusion in the Convention under Annexes A, B and/or C.

Article 3 of the Convention prohibits imports and exports of the POPs listed under Annex A and B unless for environmentally sound disposal or for a quantity to be used for either laboratory-scale research or as a reference standard or where a Party has registered a specific exemption.

Six of the nine chemicals (not including lindane, alpha or beta HCH) proposed for listing, are not currently controlled by the Customs Regulations. Schedule 2 for export and Schedule 9 for import would need to be amended to include these chemicals.

Unintentionally produced or by-product POPs

Article 5 of the Convention requires Parties to promote and require the use of Best Available Techniques (BAT) for new sources of by-product POPs within specified categories in Part II of Annex C. Parties are also required to promote the use of Best Environmental Practices (BEP). Any additional BAT BEP Guidelines required for the nine new chemicals will be developed in conjunction with other Parties after listing.

By-product obligations are already being met as part of licensing conditions imposed by State and Territory governments. Amendments to the Convention are therefore, not expected to affect existing regulations other than minor amendments to ensure that obligations under the Convention continue to be applied consistently across the State and Territory governments.

POPs in stockpiles and wastes

Article 6 of the Convention contains obligations aimed at ensuring the sound management of stockpiles and wastes that consist of, contain, or are contaminated by POPs.

Australia has already taken considerable steps to meeting these obligations through the development of three management plans under the *National Strategy for the Management of Scheduled Waste*. However, the scheduled waste management plans do not cover wastes produced as by-products.

The Stockholm Convention's obligations regarding the management, import and export of POPs wastes are adequately covered by the *Hazardous Waste (Regulation of Exports and Imports) Act 1989*. This Act, in referencing paragraph 1(a) of Article 1 of the Basel Convention, adequately covers POPs because they are contained in at least one of several categories of the Basel Convention. Paragraph 2 of Article 6 of the Stockholm Convention requires the Conference of the Parties to cooperate with the Basel Convention in relation to the trans-boundary movement and disposal of POPs.

No amendments to the Hazardous Waste Act would be required should these chemicals be added to the Convention.

Public information, awareness and education

Article 10 of the Stockholm Convention requires Parties to promote and facilitate awareness of POPs, among policy and decision makers, and provide up-to-date information to the public as well as develop education and training programs.

With regard to information availability, NICNAS already publishes assessment reports on all industrial chemicals they assess. A range of workplace education and training activities relating to hazardous substances are undertaken (usually at the State and Territory government level) and occupational health and safety legislation requires information provision and training for hazardous substances used in workplaces.

7.5 What is the impact on business, including small business, and how will compliance and paper burden costs be minimised?

Costs to business will be minimal, as described in the Impact Analysis.

The impact on business would also be minimal as Australia has already ceased to produce, import or use four of the nine intentionally produced chemicals proposed for listing in the Convention.

For by-product POPs, most of the industries that potentially release by-product POPs tend to be large businesses and many have already begun to implement technologies that should be in line with the BAT and BEP requirements of Article 5, if they need to be developed for the nine new chemicals. In the case of pentachlorobenzene, existing BAT BEP Guidelines for the unintentional production of other POPs would already be largely address management of that chemical.

For this reason, and the fact that the development of new or existing industrial facilities are already subject to conditions under State and Territory government licensing requirements, impacts on business in relation to by-products would be minimal.

7.6 How will the effectiveness of the preferred option be assessed? How frequently? Is there a built-in provision to review or revoke the regulation after it has been in place for a certain length of time?

Assessment of the inclusion of these chemicals in the Stockholm Convention would in part be automatic, as the Convention contains a number of in-built self-assessment provisions.

The development of Australia's National Implementation Plan (NIP) under Article 5, includes a five-yearly review of its success. This review period is to commence at the next COP, with a report to be presented aimed at assisting Australia with establishing priorities for this period.

Likewise, Australia's National Implementation Plan under Article 7 includes provisions for review of Australia's ratification of the Convention [Article 7 (1) (c)]. This includes an evaluation of the effectiveness of existing and new regulations as well as reports on monitoring activities nationally and on regional and global activities that Australia has participated in.

This information would include scientific, environmental and economic evaluations. The implementing agencies, in consultation with stakeholders, would maintain an ongoing review of the relevance of ratification to Australia's national interests, through the consultation processes that would be established.

Further automatic evaluation will occur under Articles 15 and 16 of the Stockholm Convention, which requires the COP to report on measures that each Party has taken to implement the Convention and to evaluate the effectiveness of those measures and consequently, the Convention.

Article 28 of the Stockholm Convention includes the provision that a Party may withdraw from the Convention at any time after three years from the date on which the Convention has entered into force.

As noted above, the NIP would provide for regular review of Australia's ratification. Should the Government determine at any time in the future that Australia's obligations under the Convention are no longer congruent with Australia's national interest, a proposal to withdraw would be subject to Australia's domestic treaty making procedures.

Appendix 1 - Stakeholders whose views were sought on addition of chemicals

Government	• Department of Foreign Affairs and Trade (DFAT) • Office of Chemical Safety (Department of Health and Ageing) • Department of Agriculture, Fisheries and Forestry (DAFF) • Department of Education, Employment and Workplace Relations (DEEWR) • Department of Industry, Innovation, Science and Research (DIISR) • Department of Resources, Energy and Tourism (DRET) • National Industrial Chemicals Notification and Assessment Scheme (NICNAS) • NSW Department of Environment and Climate Change • QLD Environment Protection Agency • QLD Department of Primary Industry • Department of Environment, Parks, Heritage and the Arts (TAS) • Department of Environment and Conservation (WA) • SA Environment Protection Authority • Victoria Environment Protection Authority • Victoria Department of Primary Industries • NT Department of Natural Resources, Environment , the Arts and Sport • ACT Department of Environment, Climate Change, Energy and Water • Environment Protection and Heritage Council (EPHC) • CSIRO • Ausaid
Industry	• Cement Industry Federation • Australasian Cemeteries and Crematoria Association • Plastics and Chemicals Industries Association Inc (PACIA) • Nufarm • Australian Aluminium Council • Energy Networks Association • Minerals Council of Australia • Sims Group • SITA • Bioenergy Australia • Australian Plantation Products and Paper Industry Council (A3P)

	• Australian Institute of Petroleum • Veolia • Thiess Services • Waste Management Association of Australia • Federal Chamber of Automotive Industry • Australian Industry Group • Clean Air Society Australia New Zealand • CropLife Australia Limited • Animal Health Alliance (Australia) Limited • Australian Environment Business Network • The Australian Contaminated Land Consultants Association • Orica Australia Pty Ltd • APVMA • Avcare • Chamber of Commerce • Boral Ltd • CMA Ecocycle
Primary Producers	• Australian Chicken Meat Federation • Cattle Council of Australia • Australian Food and Grocery Council • Tuna Boat Owners Association of SA • Dairy Australia • Growcom (pineapple growers) • Sheepmeat Council of Australia • National Farmers Federation • Australian Lot Feeders' Association • Lindane stakeholders through (DAFF)
Environment Groups	• National Toxics Network • Greenpeace • Australian Conservation Foundation • Environmental Defenders Office NSW • Earth Foundation • Conservation Foundation • World Wildlife Fund
Public Health	• Public Health Association of Australia • Australian Breastfeeding Association
Other	• Australian Representative, POPRC (Prof. Ian Rae) • University of Queensland

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