

10 March 2011

**National Implementation Plan for the Stockholm Convention in the Cook Islands**

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## FOREWORD

It gives me great pleasure on behalf of the government and people of the Cook Islands, to endorse this National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants.

As a small island developing state, the Cook Islands faces particular vulnerabilities such as fragile ecosystems, limited supplies of fresh drinking water and limited areas of land suitable for development. For these reasons it is very important that our natural resources be protected from possible contamination by persistent organic pollutants, and other hazardous chemicals.

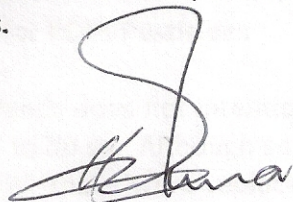
The Government of the Cook Islands is committed to ensure a safe environment for its people and future generations. The guiding principles for sustainable development are incorporated into the country's National Vision, which aims to:

"become a country within an inter-dependent world, with an enhanced socio-economic self-reliance, an educated, healthy, productive law-abiding and God-loving people in which individual freedom and fundamental human rights are protected and culture and traditions are respected and development and environmental sustainability are in harmony."

The Stockholm Convention on Persistent Organic Pollutants is one of many avenues by which the Government believes we can benefit in improving our quality of life by protecting human health and the environment. We therefore recognize and endorse this National Plan for Implementation of the Stockholm Convention and are committed to its obligations.

I commend the work of the National Coordinating Committee that has overseen this project, and the many organisations and individuals who have contributed to the development of the Plan. I would like to encourage the people of the Cook Islands to continue to participate in the implementation of the Plan, so that we can all work together towards a POPs-free future for the Cook Islands.

(Name)



(Position)

Prime Minister

(Date)

25 March 2011

## **EXECUTIVE SUMMARY**

This document presents the national plan for implementation of the Stockholm Convention on Persistent Organic Pollutants in the Cook Islands. It has been prepared in accordance with Article 7 of the Convention, which requires that each Party shall *“develop and endeavour to implement a plan for implementation of its obligations under the Convention”*.

The National Implementation Plan (NIP) was developed by the National Environment Service (NES) with financial assistance from the Global Environment Facility, with the United Nations Development Programme as the Implementing Agency. The work for the project was guided by a National Coordinating Committee (NCC), which included representation from central government and non-governmental organisations. Consultation with stakeholders was an important element in the preparation of the NIP. This was achieved through a combination of one-on-one consultations, national workshops and a public education and awareness programme.

The objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants (POPs). The convention currently covers fourteen pesticides, and five industrial chemicals. It also covers a class of complex organic chemicals known as dioxins and furans, which are formed as unintentional by-products in combustion processes, such as incineration and rubbish burning. The releases of POPs into the environment are to be controlled through various actions, including prohibiting future production and use of most of the pesticides and industrial chemicals, and the application of a range of measures for the reduction of releases of the dioxins and furans.

The current uses and releases of POPs in the Cook Islands are summarised below, along with an indication of the proposed actions that will be taken to minimise or eliminate any future releases. Full details of these activities are given in a series of action plans which are described in section 3 of the NIP, along with the detailed work plans and cost estimates given in Annex 2.

### **Action Plan for POPs Pesticides**

The Cook Islands does not intentionally produce or use any POPs pesticides, nor are there any future plans to do so. Although some POPs pesticides were used in the past, especially DDT for vector control, these were replaced long ago with more benign chemicals. The Customs Act 1913 and the Pesticides Act 1987 provides the basis of current pesticide controls although there are some concerns these are not being administered effectively. In addition, a survey of pesticide users carried out under the NIP project indicates significant problems with current practices for storage, handling and use of pesticides.

The goal of the Action Plan for POPs Pesticides is to upgrade pesticide management in the Cook Islands through prohibiting the intentional production and use of POPs pesticides, better controls on the import and use of other pesticides, and through improved user education and awareness. This will be achieved through the following actions:

1. Formal prohibition of POPs imports by amending the existing list of Prohibited Imports under the Customs Act;
2. Reactivating the Pesticides Act through the reinstatement of the Pesticides Board, the appointment of a Pesticides Advisory Officer (who would act as the Pesticides Registrar), pro-forma approvals of all existing pesticides, and setting up the necessary administrative arrangements for future registrations;
3. A formal review of the Pesticides Act once the new operating arrangements have been in place for three years;
4. The development and delivery of training courses on the safe handling and use of pesticides;
5. A programme for the promotion of non-chemical alternatives for pest management.

### **Action Plan for Polychlorinated Biphenyls (PCBs)**

PCBs were used in the past as dielectric fluids in electricity transformers, and in electrical capacitors. Most transformers in the Cook Islands were tested for PCBs in 2002, as part of an AusAID-funded project. While these results confirmed the general absence of PCBs, they did not preclude the possibility of occasional future discoveries of PCBs in old transformers; especially on some of the outer islands. More recently, checks on the light fittings in a number of buildings on Rarotonga identified a limited number of PCB-containing capacitors, and noted that more were likely to be found (see section 2.3.2). No formal system is in place for the environmentally sound management and disposal of these and other PCB wastes that may arise in the future.

The goal of the Action Plan for PCBs is to ensure the sound management of PCBs in the Cook Islands by prohibiting any future imports, identifying all current holdings and making provision for their safe storage and eventual disposal in an environmentally sound manner. This will be achieved through the following proposed activities:

1. Formal prohibition of imports by amending the existing list of Prohibited Imports under the Customs Act to include PCBs and equipment containing PCBs;
2. The provision of training to electrical workers, and an on-going awareness campaign for the identification of PCBs in electrical equipment, and implementation of a system for collection and storage;
3. Preparation of a list of transformers more than 20 years old, testing for PCBs, and removal for disposal, if necessary.

The storage and disposal of any PCBs will be addressed through the action plan for other stockpiles and wastes (see below).

### **Action Plan for Unintentional POPs (dioxins and furans)**

These POPs are formed and released during incomplete combustion involving organic matter and chlorine. There are no industrial facilities on the Cook Islands capable of producing

unintentional POPs by-products, and most of the releases are from waste disposal activities. An inventory of dioxin and furan releases in the Cook Islands was prepared under the NIP project, and showed that the most significant sources of dioxin releases were waste incineration, landfill fires, domestic rubbish burning, and the burning of green wastes.

The goal of the Action Plan for Unintentional POPs is to develop and implement actions for the minimization and ultimately elimination of unintentionally produced POPs. This will be addressed through the following activities:

1. Discouraging the burning of domestic and commercial wastes and green wastes, through education and/or regulation; promoting recycling and composting where feasible, and improvements to the existing waste collection and disposal systems;
2. Eliminating landfill fires by promoting appropriate design and management practices so as to minimise the potential for fires; and reviewing and upgrading waste disposal facilities on Aitutaki and other outer islands, as appropriate;
3. Reviewing the disposal options for airport and hospital wastes including possible replacement of the incinerators with state of the art low-emission units or more benign alternative systems such as steam sterilisation.
4. Developing capacity within the National Environment Service for identifying and estimating unintentional releases of POPs; promoting the application of best available techniques and best environmental practices for new and existing sources; and the assessment and monitoring of new and existing sources.

### **Action Plan for Stockpiles, Wastes and Contaminated Sites**

The most significant stockpiles of obsolete chemicals were removed from the Cook Islands in 2005 under an AusAID/SPREP disposal project. Inventory work carried out under the NIP project has found only limited quantities of chemical stockpiles, including small amounts of old laboratory chemicals and some old fertilisers. The disposal of most of these is currently being addressed under the NIP project.

The NIP project also noted a significant issue in the Cook Islands with the disposal of cement-asbestos sheeting, and there are concerns with the collection, storage and disposal of other potentially hazardous materials such as waste oil and e-waste. An initial e-waste clean-up was carried out on Rarotonga in December 2010, and it is hoped that this can be repeated on an annual basis. A preliminary assessment for the island of Aitutaki found similar issues with e-waste, asbestos, corrugated iron, batteries and other intractable wastes, and it is expected that much the same situation will apply on most of the outer islands.

Preliminary assessments of ten potentially contaminated sites were conducted in October and November 2010 as part of the NIP Project. Three out of the sites were ranked as high risk according to the potential for water contamination or other human contact. In addition, the assessment programme needs to be extended to other sites on Rarotonga and on other islands.

Finally, it was noted that the current system used by Customs for recording import statistics was of limited value in identifying specific items that could potentially contain POPs, or other chemicals of concern because it only classifies imports into very broad product categories.

The goal of the Action Plan for Stockpiles, Wastes and Contaminated Sites is to develop systems for the environmentally sound management of POPs stockpiles, intractable wastes, including POPs, and contaminated sites. This will be addressed through the following activities:

1. Implementation of the Globally Harmonised System for coding imports and exports, to ensure better documentation and control of imports;
2. Development of a national annual e-waste management programme;
3. Development of an intractable waste storage facility;
4. Development of the necessary regulations for controls on the exports of hazardous wastes;
5. Review of the use of economic instruments and other possible approaches for managing the production and disposal of intractable waste in the Cook Islands, and implementation as appropriate;
6. Investigation and remediation of priority contaminated sites.

#### **Action Plan to Address Public Information, Awareness and Education**

Parties to the Stockholm Convention are required to promote and facilitate public information, awareness and education, within their capabilities. Enhancing public awareness of POPs and providing a platform for education into POPs-related issues has been an integral part of the NIP project activities and it is envisaged that similar work will be carried out in future.

The Action Plan for Public Information, Awareness and Education covers the following activities:

1. Further development of an education and awareness campaign on POPs, based around publication of the NIP, and regular updates of the POPs section of the NES website;
2. Development of education, awareness and outreach programmes directed at chemical safety generally, and chemicals in food and the environment;
3. Periodic monitoring of public awareness levels, coupled with programme reviews.

#### **Action Plan for Research, Development and Monitoring**

Preliminary assessments of POPs and pesticides in food and consumer products have been undertaken as part of the NIP Project. The work included testing of imported tinned foods and locally produced vegetables. The results for all the food samples were negative for POPs, although traces of two non-POPs pesticides were found in some samples of local food. Traces of POPs and non-POPs pesticides and other potentially hazardous chemicals were also found in some of the soil samples collected during the contaminated site investigations.

Issues have also been identified with imported goods, in that some products do not contain written instructions in English or Māori, and some have no product information at all.

The technical infrastructure for environmental monitoring and research in the Cook Islands is limited. Rudimentary testing occurs at a number of laboratories but none are equipped to perform the sophisticated analysis necessary to test for POPs and other hazardous chemicals.

The goal of this action plan is to build capacity in the Cook Islands for routine monitoring of POPs and other hazardous substances and to improve product labelling. These matters will be addressed through the following activities:

1. Review, updating and implementation of the proposals for the development of a central laboratory for the Cook islands;
2. Design and implementation of a POPs monitoring programme, including monitoring of food and environmental samples. Initially the work would involve local sample collection followed by overseas laboratory analysis;
3. Participation in the existing environmental and biological global POPs monitoring programmes operated under the Convention;
4. An initial investigation of possible measures to improve labelling on imported products.

### **Action Plan for Information Exchange and Reporting**

In accordance with Article 9 of the Convention, Parties are required to undertake measures to facilitate information exchange relevant to the Convention activities. In addition, Article 15 requires each Party to *“report on the measures it has taken to implement the provisions of the Convention and the effectiveness of those measures”*. The reporting frequency under Article 15 is four years.

The NES is currently designated as the National Focal Point for information exchange under the Convention and should continue in this function. The NES should also be responsible for meeting the Convention reporting requirements. There is also a need for some form of national body to provide a coordinating mechanism for monitoring and reporting on the activities covered by this Plan. It is proposed that this be addressed through the development of a National Chemicals Committee.

The proposed activities under this action plan are as follows:

1. Formation of a National Chemicals Committee
2. Confirm and support the NES position to act as the Focal Point for information exchange;
3. Regularly update the NES POPs webpage;
4. Reporting to the Convention Secretariat as and when required.

## **Linkages to Other National Activities**

The activities described above have been determined by the specific requirements of the Stockholm Convention, and by some particular chemical-related issues identified during the NIP project. However, it is important to note that there are significant overlaps between some of the activities and those that are being addressed through other existing or proposed policies and plans. The most significant linkages to other national activities are noted below.

National Sustainable Development Strategy: this includes a specific goal for sustainable use and management of the Cook Islands environment and natural resources. The strategies developed around this goal include specific targets for: increased production of economically viable food products that are nutritious and safe; and the development and implementation of a prioritised National Waste Strategy and subcomponent strategies. The National Waste Strategy is to include a prioritised solid waste management plan to strengthen infrastructure and enhance institutional capacity to encourage private sector businesses and individual actions in increasing recycling and reducing residual solid wastes.

National Waste Strategy: this document was first produced as a draft in 2004 and has undergone several reviews and modifications since then. The key linkages to the NIP are the proposals for promotion of composting, waste recycling and waste reduction activities, and improvements to the existing waste disposal facilities.

National Agriculture Strategic Plan: the Ministry of Agriculture has a number of key priority areas under this plan that are directly relevant to the NIP proposals. These include programmes for the management of horticulture pests and diseases and for the promotion of organic agriculture. They are also working closely with FAO and SPC on several projects related to pest management and pesticide risk management.

Review of the Customs Acts: there are several acts controlling the imports of goods into the Cook Islands, but most of them are very dated. These acts are currently being reviewed with a view to developing a better coordinated and up-to-date piece of legislation.

SAICM: The Strategic Approach to Integrated Chemicals Management is an international programme coordinated by UNEP Chemicals. The NES has recently submitted an application for funding under this programme, which will support a review of the current systems in the Cook Islands for management of all types of chemicals throughout the lifecycle stages of import, storage, use and disposal. It is expected that the results from this work will augment the specific findings in relation to POPs and allow for the development of a more integrated approach to chemical risk management across all areas of chemical use.

It will be important for the activities proposed in this NIP to be designed and implemented with all of the above strategies and activities in mind, so as to eliminate any duplication and overlaps, and to capitalise on the potential synergies. The proposed National Chemicals Committee will provide a suitable mechanism for ensuring that this occurs.



## Capacity Building Proposals and Priorities

Much of the work included in the action plans is intended to be carried out by local personnel with assistance from international experts as and when required. This approach will assist in developing local capacity for POPs management and implementation of the Convention. A summary of the proposed capacity building activities is given in the table below.

**Table S1: Summary of the proposed capacity building activities**

| POPs Issues                               | Capacity Building Proposals  |
|---|--|
| POPs Pesticides                           | <ul style="list-style-type: none"> <li>• Training of MOA staff in pesticide registration procedures</li> <li>• Training of government personnel, importers and users for better compliance with the pesticide regulations</li> <li>• Training of MOA staff, users and other relevant groups in the safe handling and use of pesticides</li> <li>• Programmes for the promotion of non-chemical alternatives for pest management</li> </ul> |
| PCBs                                      | <ul style="list-style-type: none"> <li>• Training on identification, removal and storage of PCBs in electrical equipment, including old transformers.</li> </ul>   |
| Dioxins and Furans                        | <ul style="list-style-type: none"> <li>• Staff training for the enforcement of new regulations to control rubbish burning</li> <li>• Programmes to promote non-burning alternatives for green wastes</li> <li>• Training on dioxin inventories and the application of BAT/BEP</li> </ul>   |
| Stockpiles, Wastes and Contaminated Sites | <ul style="list-style-type: none"> <li>• Training in the use of the GHS system for coding imports and exports</li> <li>• Further training in the identification, assessment and management of contaminated sites.</li> </ul>   |
| Monitoring                                | <ul style="list-style-type: none"> <li>• Improved access to overseas resources, as appropriate, for the monitoring of POPs and other pollutants</li> <li>• Staff training in sample collection and processing techniques</li> </ul>  |

### Action Plan Timetable, Resource Requirements, and Measures of Success

The total estimated cost of all the activities planned to meet the Cook Islands' obligations under the Stockholm Convention is US\$1,486,050, with the breakdown between each of the different action plans as shown in the table below. The funds for these activities will be met from external (donor) and internal (mainly in-kind) sources.

**Table S2: Funding of Action Plan activities**

| Section | Action Plan  | External           | Internal         | Total              |
|---------|--|--------------------|------------------|--------------------|
| 3.3.1   | Intentional Production and Use of POPs<br>Pesticides | \$109,600          | \$63,250         | \$172,850          |
| 3.3.2   | Specific Requirements for PCBs                       | \$36,000           | \$18,000         | \$54,000           |
| 3.3.3   | Unintentional Production of POPs                     | \$577,000          | \$56,700         | \$633,700          |
| 3.3.4   | Stockpiles, wastes and contaminated sites            | \$318,000          | \$96,000         | \$414,000          |
| 3.3.5   | Public information, education and awareness          | \$16,000           | \$13,000         | \$29,000           |
| 3.3.6   | Research, development and monitoring                 | \$120,000          | \$40,000         | \$160,000          |
| 3.3.7   | Reporting and information exchange                   | -                  | \$22,500         | \$22,500           |
|         | <b>TOTAL</b>   | <b>\$1,176,600</b> | <b>\$309,450</b> | <b>\$1,486,050</b> |

Details of each of the proposed action plans including the timeframes, performance indicators, and estimated cost requirements are presented in Tables A1 to A7 of Annex 2.

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**LIST OF ABBREVIATIONS**

|         |   |
|---------|---|
| APS     | Aitutaki Power Station  |
| ARC     | Aitutaki Recovery Committee   |
| BAT/BEP | Best Available Technologies/Best Environmental Practices            |
| DDD     | 1,1-dichloro-2,2-bis(4-chlorophenyl)ethane                          |
| DDE     | 1,1-dichloro-2,2-bis(4-chlorophenyl)ethylene                        |
| DDT     | Dichlorodiphenyltrichloroethane                                     |
| FAO     | Food and Agriculture Organization of the United Nations             |
| GEF     | Global Environment Facility   |
| GHS     | Global Harmonized System  |
| HCB     | Hexachlorobenzene   |
| HCH     | Hexachlorocyclohexane   |
| ICO     | International Customs Organisation                                  |
| MEA     | Multilateral Environmental Agreement                                |
| MFEM    | Cook Islands Ministry of Finance and Economic Management            |
| MOA     | Cook Islands Ministry of Agriculture                                |
| MOH     | Cook Islands Ministry of Health                                     |
| MOIP    | Cook Islands Ministry of Infrastructure and Planning                |
| NCC     | National Coordinating Committee                                     |
| NES     | Cook Islands National Environment Service                           |
| NGO     | Non-Government Organization   |
| NIP     | National Implementation Plan  |
| OPM     | Office of the Prime Minister  |
| PAO     | Pesticide Advisory Officer  |
| PBDEs   | Polybrominated Diphenyl Ethers                                      |
| PCBs    | Polychlorinated biphenyls   |
| PCDDs   | Polychlorinated dibenzo-p-dioxins                                   |
| PCDFs   | Polychlorinated dibenzofurans                                       |
| PeCB    | Pentachlorobenzene  |
| PFOS    | Perfluorooctane sulfonates  |
| PIC     | Pacific Island Country  |
| POPs    | Persistent Organic Pollutants                                       |
| SAICM   | Strategic Approach to Integrated Chemical Management                |
| SPC     | Secretariat of the Pacific Communities                              |
| SPREP   | Secretariat of the Pacific Regional Environment Programme           |
| TAU     | Te Aponga Uira o Tumu-te-Varovaro (Rarotonga Electricity Authority) |
| TOR     | Terms of Reference  |
| UNEP    | United Nations Environment Programme                                |
| WHO     | World Health Organisation   |

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| <p><b>GOVERNMENT AGENCIES (continued)</b></p> <p><b>Ministry of Education (contd)</b><br/>         Delaney Yaqona - Tereora College<br/>         George Rasmussen - Nukutere College<br/>         Anthony De Villiers - Nukutere College<br/>         Gelling Jack – Avarua Primary School</p> <p><b>Ministry of Finance &amp; Economic Management (MFEM)</b><br/>         Kevin Carr - Acting Secretary<br/>         Garth Henderson – Acting Secretary<br/>         Kevin Hosking - Statistics Office<br/>         Ngapoko Ngatamaine - Customs<br/>         Pokoina Matara - Customs<br/>         Maria Ioane - Customs<br/>         Peerui Tunii - Finance Officer<br/>         Marianna Bryson - Aid Management (AMD)<br/>         Eddie Parker (AMD)<br/>         Takili Tairi (AMD)<br/>         Russell Thomas (AMD – Aitutaki Recovery)</p> <p><b>Ministry of Health</b><br/>         Tupou Faireka - Secretary of Health<br/>         Heather Aitu - Director, Hospital Services<br/>         Ana Silatolu – Finance Manager<br/>         Marama Anguna – Funding &amp; Planning<br/>         Myo Min - Property Manager<br/>         Liz Iro – Executive Manager<br/>         Waisiki Lomalagi – Xray Dept<br/>         Douglas Tou – Laboratory<br/>         Glassie Matata – Hospital Pharmacy<br/>         Taz Iorangi - Statistics<br/>         Charlie Ave – Public Health Inspector<br/>         Geoffrey Moekapiti<br/>         Arthur Taripo<br/>         Tama Joseph<br/>         Oirua Joseph<br/>         William Taripo (Public Health)<br/>         Apii Nimerota (Public Health)</p> <p><b>Ministry of Infrastructure and Planning</b><br/>         Otheniel Tangianau – Secretary<br/>         Tai Nooapii<br/>         Paul Maoate - Engineer<br/>         Timoti Tangiruaire - GIS<br/>         Takave Manea Roadworks<br/>         Adrian Teotahi – Water</p> | <p><b>Ministry of Internal Affairs</b><br/>         Bredina Drollett - Secretary<br/>         Helen Maunga – Labour &amp; Consumer Affairs<br/>         Eva Mapu<br/>         Taamo Heather<br/>         Joe Tommy</p> <p><b>Ministry of Marine Resources</b><br/>         Ben Ponia – Secretary<br/>         George Matutu<br/>         Rebekah Daniel</p> <p><b>Ministry of Transport</b><br/>         Aukino Tairea – Secretary<br/>         Ned Howard</p> <p><b>Office of the Prime Minister</b><br/>         Mac Mokoroa - Chief of Staff<br/>         Pua Hunter - Director, ICT Unit<br/>         Ronnie Sakai - ICT Unit<br/>         Mitch Tutangata - ICT Unit<br/>         Diane Charlie - Admin<br/>         Teumere Koteka-Heather - Admin<br/>         Mary Ann Nixon – Policy<br/>         Celine Dyer – Policy<br/>         Mata Nooroa - Energy</p> <p><b>Parliamentary Office</b><br/>         Nga Valoa - Clerk</p> <p><b>Pearl Authority</b><br/>         Caroline Tiria</p> <p><b>Ports Authority</b><br/>         Bim Ina Tou – General Manager<br/>         Esau Tupou Esau<br/>         John Fallon – Harbour Master</p> <p><b>Tourism Cook Islands</b><br/>         Metua Vaiimene</p> <p><b>AITUTAKI</b><br/>         Sabati Solomona - Island Secretary<br/>         Bobby Bishop - NES Environment Officer<br/>         Putangi Mose – Environment Authority<br/>         Paeru Cameron – Island Secretary’s Office<br/>         Mataiti Pitomaki – Ministry of Health<br/>         Vaine Teokotai – Chairman, ARC, Rarotonga</p> |
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| <p><b>PRIVATE SECTOR</b></p> <p>Air New Zealand – David Bridge<br/> Bank of the Cook Islands (BCI) – Vaine Arioka<br/> Cartoonist – Tim Buchanan<br/> CITC – Gay Whitta, and staff of the CITC Pharmacy and CITC Building Centre<br/> Cook Islands Motor Centre – Ken King<br/> Cook Island News – John Wood<br/> Cook Islands Pharmacy, Avarua<br/> Cook Islands TV – Jeanne Matenga<br/> Cook Islands Water Supplies<br/> Electrician – John Koteka (PCB Survey)<br/> Esther Honey Foundation – Gregg Young<br/> Hill Laboratories, Hamilton, New Zealand<br/> Michigan Motors<br/> MV Consulting - Terekino Vaireka &amp; Jeanne Matenga<br/> Phab Pharmacy, Nikao<br/> Reef Shipping – Maru Apera<br/> Sky Chef (Rarotonga Airport) – John Taripo<br/> Snowbird Laundry – Matthew Grierson<br/> Taio Shipping<br/> The Computer Man - Mike Pynenburg<br/> Te Aponga Uira – Apii Timoti<br/> Telecom Cook Islands – Kura Karika<br/> Toa Petroleum – Okirua Apera<br/> Triad Petroleum – Chris Vaile &amp; Kevin Rowell<br/> Tyre Centre – Barbara Ruaporo<br/> Vaka Konsultants – Debbie &amp; James Puati</p> | <p><b>NON GOVERNMENT ORGANISATIONS</b></p> <p>Koutu Nui - Te Tika Mataiapo, Dorice Reid<br/> Muri Environment Care – Mii Kauvai<br/> Red Cross – Mata Hetland<br/> Te Ipukarea Society - Jacqui Evans<br/> Te Rito Enuā - Mona Matepi<br/> Te Vaka Taunga - Te Rito O Te Vairakau Maori - Teariki Rongo</p> <p><b>COMMUNITY PARTICIPANTS</b></p> <p>Aporo Kirikava – Database developer<br/> Bill Hosking, Grower, Titikaveka<br/> Eliapa Benioni, Grower, Matavera<br/> George Ama, Grower, Matavera<br/> Hemi Enoka, Grower, Tupapa<br/> Henry Wichman, Insect and Pest Eradicator<br/> Nga Rau, Grower, Tupapa<br/> Pastor Clerk Turua, Grower, Matavera<br/> Patrick Arioka, Agricultural Database<br/> Puna Kamana, Grower, Upper Tupapa<br/> Teariki Matenga, Grower, Titikaveka<br/> Tira Albert, Grower, Matavera<br/> Tupapa Manuel, Grower, Tupapa<br/> Tupe Short, Consultation Workshop</p> <p><b>STUDENT PARTICIPANTS</b></p> <p>Liam Hilyard, Surveys, Database input<br/> Regina Mustonen, Surveys<br/> Tutai Vakalalabure, Surveys<br/> Clifton Tokoara, Surveys<br/> Mati Ngari, Surveys<br/> Anjima Aturai, Surveys<br/> Maree Aviu, Surveys</p> |
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## **1.0 INTRODUCTION**

Persistent Organic Pollutants (POPs) are a class of semi-volatile, long lasting, bioaccumulative organic compounds that demonstrate a variety of toxic effects. In humans, POPs have been linked to cancer, hypersensitivity and allergies, central and peripheral nervous system damage, reproductive disorders, immune system disruption and endocrine inhibition (GEF 2001; WHO 2003). POPs are highly mobile, they have been found in areas far from production zones - even remote Pacific Island communities are not isolated from their potential effects. POPs do not degrade easily; they exhibit minimal photo-decay rates, are not susceptible to degradation by micro-organisms at high concentrations and in most conditions are inert to chemical attack. Some POPs have demonstrated half-lives in excess of 15 years, meaning potential effects are long term. POPs bioaccumulate, mostly in fatty tissue, although new POPs have been demonstrated to accumulate in proteins. Bioaccumulation occurs at most ecosystem trophic levels hence high-level consumers are particularly prone to toxic build-up (Harrad 2001). This biomagnification aspect means that humans are particularly at risk.

Global efforts to eliminate persistent organic pollutants (POPs) are indicative of the serious threat posed by these groups of chemicals to human health and the environment.

### **The Stockholm Convention on Persistent Organic Pollutants**

The Stockholm Convention on Persistent Organic Pollutants (the Convention) is a legally binding treaty to protect human health and the environment from persistent organic pollutants. The Convention entered into force on 17<sup>th</sup> May 2004. As of November 2010, it has 172 Parties, including Cook Islands and the Pacific Island Countries of Fiji, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

The Stockholm Convention initially identified twelve POPs for global action, and a further nine chemicals were added in 2009. It is expected that additional chemicals will be added over time, in accordance with the process specified under Article 8 of the Convention.

Table 1.1 shows all of the POPs that are currently listed under the Stockholm Convention, and additional information on each of these is provided in Annex 1.

**Table 1.1: POPs currently listed in the Stockholm Convention**

| Chemical   | Uses*                                       |
|--|---|
| <b>The initial 12 POPs</b>   |   |
| Aldrin   | Pesticide                                   |
| Chlordane  | Pesticide                                   |
| Dieldrin   | Pesticide                                   |
| Endrin   | Pesticide                                   |
| Heptachlor   | Pesticide                                   |
| Hexachlorobenzene  | Pesticide, industrial chemical/ byproduct   |
| Mirex  | Pesticide                                   |
| Toxaphene  | Pesticide                                   |
| DDT (Trichloroethylenebis(4-chlorobenzene))  | Pesticide                                   |
| Polychlorinated dibenzo-p-dioxins (PCDD)   | Unintentional byproduct                     |
| Polychlorinated dibenzofurans (PCDF)   | Unintentional byproduct                     |
| Polychlorinated biphenyls (PCB)  | Industrial chemical/unintentional byproduct |
| <b>POPs added in 2009</b>  |   |
| Alpha-hexachlorocyclohexane ( $\alpha$ -HCH)   | Pesticide                                   |
| Beta-hexachlorocyclohexane ( $\beta$ -HCH)   | Pesticide                                   |
| Chlordecone  | Pesticide                                   |
| Hexabromobiphenyl (HBB)  | Industrial chemical                         |
| Lindane (Gamma-HCH)  | Pesticide                                   |
| Pentachlorobenzene (PeCB)  | Pesticide, industrial chemical/byproduct    |
| C-Octabromodiphenyl ether (OctaBDE)  | Industrial chemical                         |
| C-Pentabromodiphenyl ether (PentaBDE)  | Industrial chemical                         |
| Perfluorooctane sulfonate (PFOS) including its salts and Perfluorooctane sulfonyl fluoride (PFOSF) | Industrial chemical                         |

(\*Unintentional by-products are chemicals that are formed as by-products of chemical manufacturing process, from combustion (burning) processes and from the thermal processing of some industrial materials)

### **Status of the Convention in the Cook Islands**

The Cook Islands became a party to the Convention on 29 June 2004. Parties to the Stockholm convention are required to develop National Implementation Plans (NIPs) in accordance with Article 7, which states:

*1. Each Party shall:*

- (a) Develop and endeavour to implement a plan for the implementation of its obligations under this Convention;*

*(b) Transmit its implementation plan to the Conference of the Parties within two years of the date on which this Convention enters into force for it; and*

*(c) Review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.*

*2. The Parties shall, where appropriate, cooperate directly or through global, regional and sub-regional organisations, and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans.*

*3. The Parties shall endeavour to utilize and, where necessary, establish the means to integrate national implementation plans for persistent organic pollutants in their sustainable development strategies where appropriate.*

The NIP provides an operational framework for securing appropriate resources to carry out the tasks or mechanisms for action on POPs. Ultimately, the NIP serves as a basis for monitoring the Cook Islands' progress in addressing the POPs issue, and the effectiveness of the actions it has committed to for reducing or eliminating POPs use and release to the environment.

## **1.1 Development of the National Implementation Plan**

This Implementation Plan has been prepared under an enabling activity project funded by the Global Environment Facility (GEF). The Cook Islands National Environment Service (NES) is the government Executing Agency for the project, and the United Nations Development Programme (UNDP) is the GEF Implementing Agency.

The POPs Project was designed to create sustainable capacity and ownership for the Cook Islands in meeting obligations under the Stockholm Convention, including the preparation of a National Implementation Plan (NIP). Further to the overall Stockholm Convention principles of protecting human health and the environment from POPs, the project had the following objectives:

- i. Prepare the groundwork for implementation of the Convention in the Cook Islands;
- ii. Assist the Cook Islands in meeting its reporting and other obligations under the Convention; and
- iii. Strengthen the Cook Islands' national capacity to manage POPs and chemicals generally.

The project activities were based around the following step-wise process set out in a GEF guideline document for enabling activities for the Stockholm Convention:

- i. Determination of coordinating mechanisms and organization of process;

- ii. Assessment and strengthening of national infrastructure and capacity, adaptation of national legislation for Stockholm Convention implementation and establishment of a POPs inventory;
- iii. Setting of priorities and determination of objectives;
- iv. Formulation of a National Implementation Plan and specific Action Plans;
- v. Endorsement of the National Implementation Plan by stakeholders.

### **1.1.1 Establishment of a coordinating mechanism and process organization**

The POPs Project was implemented under the auspices of the Cook Islands National Environment Service. A National Coordinating Committee (NCC) was established with membership including Government and Non-Government Stakeholders, as shown in the table.

**Table 1.2. Membership of the NCC**

| <b>Name</b>                   | <b>Agency/Organisation</b>                                    |
|-------------------------------|---|
| Vaitoti Tupa                  | <b>Chair</b> , Director, National Environment Service         |
| Edwin Apera                   | Biodiversity Research, Ministry of Agriculture                |
| Dorothy Solomona              | Acting Director, Pearl Division, Ministry of Marine Resources |
| Tangata Veau                  | Chief Public Health Inspector, Ministry of Health             |
| Garth Henderson               | Acting Secretary, Ministry of Finance & Economic Development  |
| Tuaine Marsters               | President, Cook Islands NGOs                                  |
| John Wichman                  | CEO, Recycle Cook Islands                                     |
| Te Tika Mataiapo, Dorice Reid | President, Koutu Nui  |
| Maureen Hilyard               | POPs Project Coordinator, NES                                 |

The main role of the NCC was to oversee and advise on the development of the POPs Project. Regular meetings were conducted to advise the members on the work being undertaken. Members of the NCC provided advice and oversaw the implementation of the project.

### **1.1.2 Establishment of POPs inventories and assessment of national infrastructure and capacity**

The second phase in the development of the NIP established POPs inventories and involved assessment of national infrastructure for chemical management. The objective of this phase was to provide the background information and collect POPs baseline data to allow the project to understand the scope of the POPs issue, as well as adding to POPs knowledge to complete the NIP.

The inventory reports produced for the development of the Cook Islands' NIP are briefly highlighted below. The information gathered during this phase of the work is summarized in section 2. Investigations allowed the identification of gaps in resources, capacity and knowledge, which could be addressed through the NIP.

**(a) Public awareness reports**

A study was undertaken to ascertain the degree of general public awareness of POPs (Hilyard 2010c). A pre-awareness survey was conducted by secondary school students. In response to this an awareness and education campaign was carried out in local and national media, in English and Cook Islands Māori.

**(b) Legal review**

A review of existing laws and policies was carried out by a local consultant (Miria-Tairea 2010). All legal and enforcement mechanisms in relation to chemical management were reviewed. Many gaps were identified, most notably the lack of enforced regulations governing the import, storage and use of chemicals in general and the inactivity of the Pesticides Board. These will be discussed later in the NIP.

**(c) Preliminary food assessment**

A preliminary assessment of exposure to POPs in food was conducted by carrying out a survey of local and imported produce (Graham 2010b). POPs pesticides were all below detection limits.

**(d) Inventory of sources of dioxins and furans**

Sources of dioxins and furans were identified and quantified with the aid of the UNEP Standardised Toolkit for Identification and Quantification of Dioxin and Furan Releases. The majority of dioxin and furans came from waste disposal, including incineration (Graham 2010a).

**(e) Chemicals report**

A survey of Household, Agriculture and Laboratory Chemicals in Rarotonga was carried out under the POPs Project (Muir and Reichardt 2010). An investigation of chemical imports covered the importation of all chemicals, which ranged from general household cleaning agents to agricultural and hospital chemicals. Gaps were identified in terms of the lack of recording methods and processes designed to keep track of the quantities imported, storage practices and the safe use of some of these chemicals.

A separate survey in Aitutaki confirmed that there were no POPs pesticides on the island, but found issues with chemical storage facilities and practices (Hilyard and Muir 2011).

**(f) PCBs and other potentially hazardous materials**

PCB tests were conducted on electrical transformer oils as part of an AusAID funded project in 2003 (SPREP 2003). While, these results confirmed the general absence of PCBs in transformers, they do not preclude the possibility of occasional future discoveries of PCBs in old

transformers; especially on some of the outer islands. A report on PCBs and other hazardous materials in the Cook Islands identified a limited number of PCB-containing capacitors, and noted that more are likely to be found (Hilyard 2010b). At present the PCB capacitors identified are securely stored and await appropriate disposal.

The POPs study also found problems on both Rarotonga and Aitutaki with the storage and disposal of other intractable wastes, including cement asbestos sheeting, batteries, waste oil and corrugated iron (Hilyard 2010b, Hilyard and Muir, 2011). No formal system is in place for the environmentally sound management and disposal of these and other intractable wastes.

**(g) Contaminated sites assessment**

A preliminary contaminated sites assessment was conducted by the POPs Project team in conjunction with an international consultant (Kerrich Environmental Ltd 2010). Historical anecdotal evidence was gathered from former agricultural workers and used to identify possible contaminated sites. Ten sites were identified during this investigation and were ranked according to the degree of risk they posed to the general public and water resources.

**(h) Preliminary inventory of new persistent organic pollutants**

A preliminary inventory of new POPs was carried out by a local consultant (Ingram 2010). The study focused primarily on two new POPs most likely to be found in the Cook Islands; Polybrominated Diphenyl Ethers (PBDE) and Perfluorooctane sulfonic acid (PFOS). Significant quantities of PFOS were noted in the Airport Fire Service's Aqueous Film Forming Foam (AFFF).

**1.1.3 Priority assessment and objective setting**

The priority setting work was based around a 2-day stakeholder workshop held in Rarotonga, November 2010. The workshop presentations included background information on the Stockholm Convention and POPs, and reviews of the background information collected under phase 2 of the project. A list of possible issues and needs was compiled through group discussions, and these items were then prioritized by each of the working groups. The issues agreed during the workshop and their relative priorities have been taken into account in the drafting of the action plans given in section 3 of the NIP.

**1.1.4 Formulation of the NIP**

The Cook Islands' NIP has been developed in line with the UNEP document "Guidance for developing a national implementation plan for the Stockholm Convention". The NIP was initially drafted by international consultants, and was reviewed at a consultation workshop held on 15 February 2011. It was then finalised by the project team in consultation with the NCC.

The NIP has been designed to identify possible options for the management of POPs to meet the Cook Islands' obligations under the Stockholm Convention. It is intended that the NIP be

reviewed from time to time and updated to reflect progress with its implementation and any changes in circumstances. This is in accordance with Article 7 of the Convention.

**1.1.5 Endorsement and submission of the NIP**

The NIP was finalized in March 2011 and endorsed by Government of the Cook Islands under Cabinet Minute CM .....

## **2.0 COUNTRY BASELINE**

### **2.1 Country Profile**

A map of the Cook Islands is given in Figure 2.1.

#### **2.1.1 Geography and population**

The Cook Islands is a Polynesian island nation in the South Pacific Ocean, lying in the centre of the Polynesian Triangle. Fiji lies 2,300 km to the west, Tahiti 1,200 km to the east, Hawaii 4,700 km north and New Zealand 3,000 km southwest. There are fifteen major islands, thirteen of which are inhabited, scattered over 2.2 million square kilometres of ocean. Total land area is approximately 240 square kilometres.

The Cook Islands is geographically divided into two distinct groups: the Northern Cook islands and the Southern Cook islands. The Northern Group islands are Manihiki, Nassau, Penrhyn, Pukapuka, Suvarrow and Nassau, which is administered in conjunction with Pukapuka. Most Northern Group islands are small low-lying coral atolls with sparse vegetation and remain relatively isolated and less developed. The Southern Group islands are Aitutaki, Atiu, Mangaia, Manuae, Mauke, Mitiaro, Rarotonga, Palmerston, and Takutea, an uninhabited sand key. The islands of the Southern Group have been formed in comparatively recent volcanic activity, are generally much more elevated (up to 652 metres on Rarotonga) and possess rich soils with lush tropical vegetation. Together the Southern Group represents 90% of the total land area. The largest island, Rarotonga is the administrative capital and centre of commerce and represents just over 28% of the total land area.

The Cook Islands has a tropical maritime climate with a small temperature difference between day and night and modest seasonal variation. During the cool dry season, between April and November, temperatures fluctuate between an average maximum of 26°C and an average minimum of 20°C. The hotter, more humid months, between December and March, have an average maximum temperature of 28°C and an average minimum of 22°C. During warm humid months the Cook Islands will occasionally experience severe tropical storms and hurricanes.

The population of the Cook Islands is approximately 22,600, with a resident population of 13,200 (CI Statistics 2010a). The resident population is made up of approximately 84% Cook Islands Māori, 7% Part-Māori and 9% non-Māori. Significant ethnic diversity exists between islands, indigenous Māori in the north are more closely related to Samoans than to Cook Islanders in the South.



The languages of the Cook Islands reflect the islands cultural history and include [English](#), [Cook Islands Māori](#), or "Rarotongan," and [Pukapukan](#). Cook Islands Māori is closely related to both [Tahitian](#) and to [New Zealand Māori](#). [Pukapukan](#), by contrast, is considered closely related to the [Samoan language](#). Both English and Cook Islands Māori are [official languages](#) of the Cook Islands.

### **2.1.2 Political and Economic Profile**

The Cook Islands is a self-governing parliamentary democracy in free association with New Zealand. It has a unicameral parliament with 24 elected members and a parliamentary term of four years. Free association allows the Cook Islands to maintain New Zealand citizenship while administering its own affairs. In addition to parliament, a 15-member House of Ariki (chiefs) composed of six Ariki from Rarotonga and nine from the outer islands advises Government on customary and land use issues.

The international legal personality of the Cook Islands has developed steadily since the Cook Islands became self-governing in 1965. The Cook Islands has established diplomatic relations with 21 countries and international organisations, and maintains diplomatic posts in New Zealand and to the European Communities (non-resident). Germany, France and the United Kingdom are represented by Honorary Consuls in the Cook Islands. The Cook Islands has Honorary Consuls in Sydney, Oslo, Monaco and Istanbul. The Cook Islands is also a member, in its own right, of a range of international organisations. The Joint Centenary Declaration requires the Cook Islands and New Zealand to consult regularly on foreign affairs matters.

The Cook Islands is economically among the best performing of the Pacific Island countries, but is under increasing pressure to curb government debt. Economic development has been hampered by a combination of geographic isolation, a lack of natural resources, and natural disasters. The country has a severe trade imbalance and in 2009, was estimated to have a trade deficit of nearly US\$214 million<sup>1</sup> (CI Statistics 2010b). Foreign aid from New Zealand and other countries, and remittances sent by islanders living abroad only partly offsets this deficit. Heavy reliance on a narrow range of economic activities makes the country vulnerable to external shocks, including the global economic crisis. Other threats to the Cook Islands economic growth include environmental damage, lack of infrastructure, weak policy, limited capacity in project preparation and planning, and labour shortages. The country is particularly vulnerable to natural disasters; a series of cyclones hit the islands in 2005 causing considerable damage and in February 2010, Aitutaki was hit by Tropical Cyclone Pat, substantially damaging housing and public infrastructure. Furthermore, sea level rise and more frequent and damaging hurricanes associated with global warming are likely to add to these threats.

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<sup>1</sup> The Cook Islands uses New Zealand currency. In November 2010, 1 NZ dollar (NZ\$) was worth approximately 0.75 US dollars (US\$)

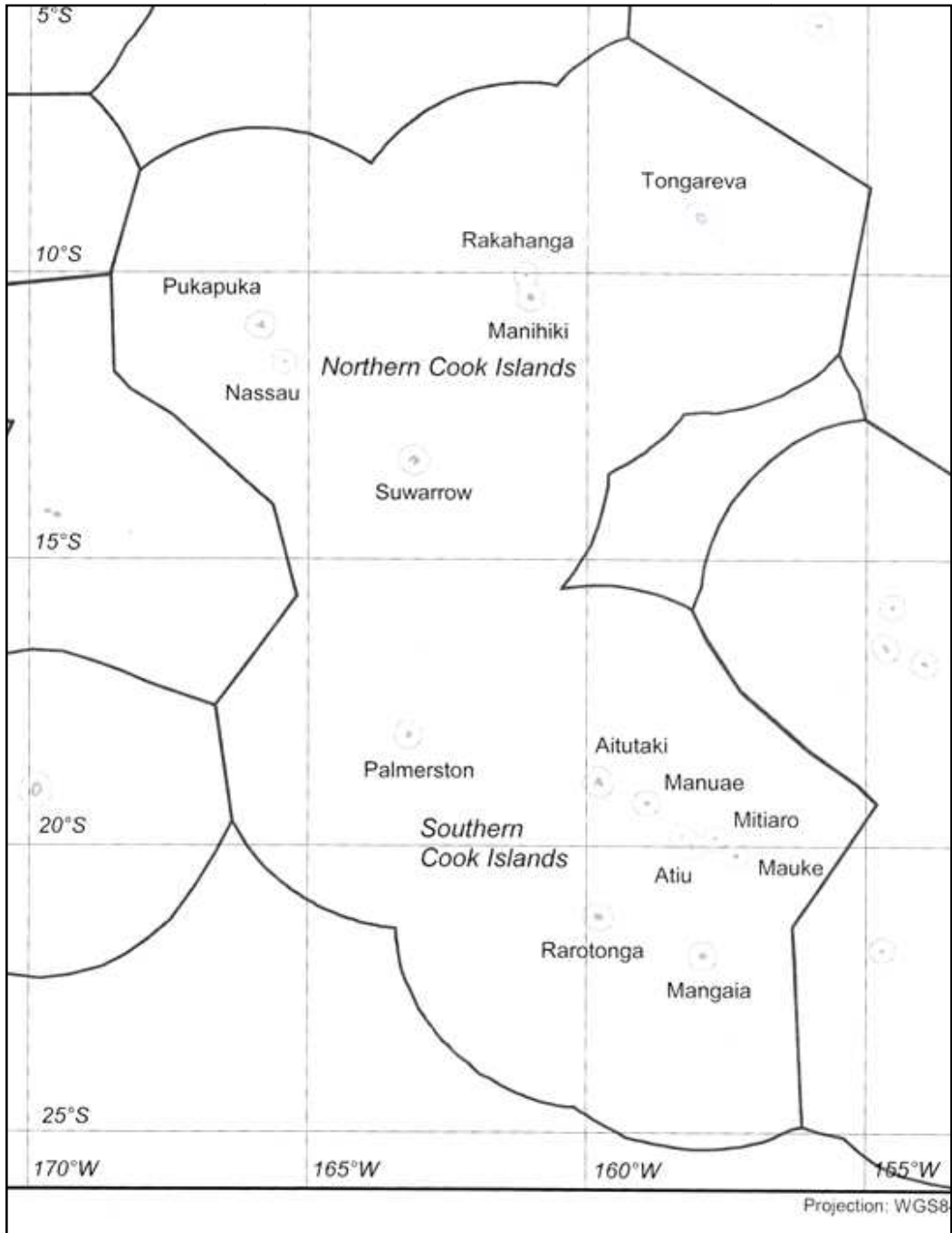


Figure 2.1 Cook Islands Geography (Government of the Cook Islands 2003)

Population loss through emigration is a major concern to the Cook Islands. There are now many more Cook Islanders living in New Zealand than there are on the Cook Islands. Cook Islanders are able to live in New Zealand and Australia because they are New Zealand citizens. Census estimates suggest the resident population declined by 12% between 2006 and 2010 (CI Statistics 2010a). Emigration has led to labour shortages, particularly in the tourism sector. These shortages are being addressed through the employment of foreign workers, particularly from Fiji and the Philippines and foreign workers now account for around 10% of the resident population. Localised emigration is also having an effect on Cook Islands culture. Increasingly, residents of the remote outer islands have moved into the main centres; about 65% of the population now lives in Rarotonga.

### **2.1.2 History**

The islands today making up the Cook Islands were part of an area of the Pacific that was explored, visited and settled by Maori (Polynesians) before the arrival of Europeans. These explorations and settlements took hundreds of years and many generations with Aotearoa (New Zealand) being the last place to be settled. The islands of the Cook Islands were settled by various warrior sailors from other countries. Rarotonga was settled by Tangiia from Tahiti and Karika from Samoa. However others were already here when they arrived. Aitutaki was initially settled by Ru from Tubuai in French Polynesia and later by others like Atonga from Tonga, Maraeara, Maio, etc. European explorers arrived later, including the Spanish and James Cook, after whom the Cook Islands is named.

Written history of the Cook Islands began with the Spanish voyages of discovery and explorer Alvaro de Mendaña who, while leading an expedition in search for *Terra Australis*, sighted the island of Pukapuka in 1595. His ill-fated voyage was quickly followed up by another expedition from Pedro Fernandes de Queirós, landing on Rakahanga in 1606. The islands then remained virtually unvisited by Europeans until the British expedition of Captain James Cook in 1772.

Early contact between Cook Islands Māori and Europeans was initiated in 1814, by commercial operators from Australia and New Zealand. In 1821, John Williams of the London Missionary Society landed on Aitutaki, introducing Cook Islanders to Christianity. Following the conversion of a number of important Ariki (traditional leaders), support for Christianity rapidly spread throughout the Southern Group. The influence of Christianity on Cook Islands culture remains strong today.

In 1888, at the request of several Ariki, the Cook Islands became a British protectorate. In 1901, the Cook Islands were annexed by New Zealand and remained a dependent territory until 1965, when, following an act of self-determination, the Cook Islands became self-governing in free association with New Zealand.

### **2.1.3 Profiles of economic sectors**

The Cook Islands economic base is underpinned by tourism, marine resources and offshore banking, with small additions made from agriculture. The following section provides a brief overview of these activities.

#### **2.1.3.1 Tourism**

Tourism is the mainstay of the Cook Islands economy, estimated to account for around 60% of GDP. Approximately 111,000 people visited the Cook Islands in 2009, representing 11% growth since 2005 (CI Statistics 2010c). Further growth is anticipated due to increased flights scheduled for 2011. As well as encouraging employment in local tourism industries, this has boosted farmers and small business people and supported the development of social infrastructure such as medical centres, roads and banking. Furthermore, a visitor levy, introduced in 2003 as part of the environmental legislative reforms was intended to help in offsetting some of the environmental burden associated with tourism.

#### **2.1.3.2 Offshore banking**

The Cook Islands' offshore finance business was created by a series of legislative enactments in the 1980s which established a regime for international companies, partnerships and trusts, offshore banking, insurance companies and registered trustee companies. There are six trustee companies in the Cook Islands which contribute to the economy in terms of direct value added (wages and profits), licence fees and taxes and a range of indirect benefits. The industry's total contribution of the offshore sector to the national economy is about 8.2% of GDP, making it second only to tourism. Entities established under the offshore regime are exempt from any form of income taxation, stamp duties and withholding tax. Strong confidentiality provisions apply to the offshore regime and no exchange controls apply to offshore activities.

As a demonstration of the Government's commitment to the offshore industry, in June 2009 it established a statutory authority, the Financial Sector Development Authority to assist in further development of the industry. The Authority will perform the functions of strategic planning, liaison, advisory and promotional functions. It will enable the Cook Islands to have generic marketing of the jurisdiction which will assist with international recognition of the Cook Islands as an offshore centre.

#### **2.1.3.3 Fishing**

Both commercial and subsistence fishing is important to the Cook Islands. Traditional subsistence and artisanal harvesting of a wide variety of inshore reef and lagoon fish is widespread. The Cook Islands has vast fisheries resources in an Exclusive Economic Zone of 2.2 million square kilometres of ocean. To support the development of a viable fishing industry the government has been supporting local fishermen to develop co-operatives to purchase or lease fishing boats (UNESCO 2002). A maximum sustainable yield strategy has been developed, a quota system managing a fleet of around 30 local fishing boats working out of locations in the northern and southern regions. Together they generate approximately US\$1.5 million annually. The Northern fleet, of 20 vessels, offloads its catch in Pago Pago, American Samoa, however the

future is uncertain due to the potential closure of the canneries. The Southern fleet, which lands in Rarotonga, supplies fish to the tourism industry, for domestic consumption and for export.

#### **2.1.3.4 Pearl farming**

Pearl Farming is the Cook Islands' third largest income earner. Pearl growing is especially important to the economic development of the remote Northern islands of Manihiki and Penrhyn Atoll. The industry peaked in 2000 with export revenue of US\$18 million, but declined to approximately US\$2 million as a result of a severe disease outbreak in the Manihiki lagoon and low international pearl prices (FAO 2007). Pearl production in the Cook Islands presently amounts to approximately 5% of world production of black South Sea cultured pearls (FAO 2007).

#### **2.1.3.5 Agriculture**

The Agriculture Sector of the Cook Islands is relatively small in comparison to some of its Pacific neighbours. Production is primarily concentrated on small farms, an agriculture census in 2000 found 1721 holdings with an average farm size less than 1 hectare (MOA 2000). Production has declined in the last twenty years and most produce is now sold on the local market. The export market is dominated by four products. *Noni (Morianda citrifolia)* is the latest income crop trend, spurred on by international demand for health food supplies and supplements. To cater for this market, Noni is grown on organic farms, and has contributed to the 'organic revolution' seen on the islands. Harvests of Noni have now expanded to include the outer island's naturally grown stocks. Pawpaw exports have declined to only US\$6,000 compared to a peak of US\$1.2 million in 1993. *Maire (Alyxia elliptica)* exports to Hawaii continue though production has dropped to less than US\$15,000 in 2009 compared to US\$150,000 in 1994. *Maire* export has expanded from Mauke to include Mangaia and Mitiaro. Taro is the remaining agriculture export, generating approximately US\$3,800 in 2009.

The Cook Islands Government is attempting to reinvigorate its agricultural production sector, particularly in the Southern Group. The programme's intention is for Cook Island-grown produce to supply the local market and tourism industry, and to eventually reduce or eliminate the need for imported agricultural products.

#### **2.1.4 Environmental overview**

The state of the Cook Islands' environment is one of its major assets and a principal concern for Cook Islanders. The soils of the volcanic islands are productive, while the waters are well endowed with fish and relatively unpolluted. A tropical climate, lush vegetation, pristine reefs and lagoons make the country a popular tourist destination as well as providing the foundation for a pleasant local lifestyle.

However, the Cook Islands' environment is fragile and is being severely tested by pressures of development growth, a concentration of population and economic activities, coastal erosion and climate change. While tourism has enhanced economic growth, it has generated pressure

on scarce environmental resources. Development of tourist facilities has been fairly haphazard and foreshore alteration has created erosion issues and access conflict. Precious reefs are being damaged by anchoring of cruise ships and dive excursions as well as being threatened by ecosystem imbalances caused through the exploitation of certain species. Population pressure has led to eutrophication of the Titikaveka lagoon where severe outbreaks of *Ciguatera* poisoning have been reported.

Climate change presents a particular concern to the Cook Islands. In his address to the Earth Summit in Johannesburg, then Prime Minister Dr. Robert Woonton noted “the security of our Pacific Region and my country continues to be threatened by climate change and sea level rise.” (Prime Minister of the Cook Islands 2002). The physical characteristics of the islands would give any visitor a clear indication as to why this is so; of the 15 islands which make up the Cook Islands, 8 have a maximum elevation of less than 10 metres making them particularly vulnerable to changes in sea level and storm surges. Environmental modelling predicts more frequent El Nino events bringing an increased risk associated with tropical cyclone frequency and severity. Furthermore, due to increases in ocean acidity, the Cook Islands’ pristine reefs may be threatened. Accordingly, the Cook Islands Government has been a strong advocate of global accountability and extensive anthropogenic emissions reductions, declaring “in light of the best available scientific information and assessment on climate change and its impacts, [the Cook Islands Government] considers the emissions reduction obligation of the Kyoto Protocol to be inadequate to prevent dangerous anthropogenic interference with the climate system.” (Government of the Cook Islands, 1998)

The Cook Islands is committed to following a path of sustainable development. A National Sustainable Development Programme has been formulated with the aim of improving wellbeing for all Cook Islanders while protecting the environment (Government of the Cook Islands 2007). This includes significant commitments to reverse activities that have led to environmental degradation.

#### **2.1.4.1 Waste Disposal, Water Supply and Sanitation**

The island of Rarotonga has an organised solid waste management system with most wastes being disposed of in an engineered landfill. Solid waste is collected weekly around the island by a local contracting company. MOIP and NES have recently introduced a separate collection programme for recyclable materials. Aluminium cans are being crushed and exported for recycling. However the other recyclable materials are simply held in storage until suitable disposal options are found. A long-term programme is in place to remove the legacy of ferrous and non-ferrous metal waste, approximately 12 containers of scrap metal are shipped annually to New Zealand (SPREP 2010). Hazardous waste such as batteries are stockpiled, packaged and similarly shipped to a recycling facility in New Zealand, in accordance with the Waigani and Basel Conventions.

Aitutaki also has a regular (weekly) waste collection system, with residents being required to put their recyclable wastes separate from the general household rubbish (Hilyard and Muir, 2011). Aluminium cans are the only recyclable materials sent offshore. Most other wastes are

simply stored at the landfill site, which has significant problems with site drainage and overall capacity.

There are three incinerators in Rarotonga; located at the airport, the hospital, and a private facility at the Motor Centre. The airport incinerator facility is over 30 years old and hence well past the end of its economic life. The incinerator has a single combustion chamber, which is fitted with a diesel burner, and a small un-fired secondary chamber at the back of the unit. Waste data collected in November 2005 indicated a daily waste throughput of about 400 kg/day, and there have been no significant changes in throughput since that time.

The hospital incinerator is a single chamber diesel-fired unit that was installed within the last few years. It is used for the disposal of infectious wastes such as bandages, swabs and dressings. Needles are disposed separately in a special electric unit. The current waste throughput for the incinerator is 20 kg per day. On some of the other islands, medical wastes are disposed of by open burning, often with other solid wastes (eg. Hilyard and Muir 2011). However, on the basis of the Rarotonga data, the actual quantities of medical wastes being burned are likely to be very small.

The Motor Centre incinerator is a portable 'drum' incinerator used for the disposal of waste cardboard and other dry solid wastes. The unit is relatively new and is designed to achieve a high level of waste destruction when burning dry wastes. The total waste throughput has not been estimated, but it is unlikely to be of any significance compared to the waste quantities disposed of in the other two incinerators.

Waste management is a critical yet problematic infrastructure issue on the Cook Islands. While engineered landfills have been operating on Rarotonga and Aitutaki for several years, substantially increased input has reduced their anticipated useful life. A long term strategy is being developed with an emphasis on reducing source volumes.

The Cook Islands possess rudimentary facilities for sewage treatment. Only one village on Rarotonga has a reticulated sewage collection system which is connected to a small 'package' treatment plant. Most homes simply treat their waste through septic tanks and soak aways. Septic tank sludge is currently collected by private contractors and dumped on vacant land or on fields at the request of planters. While septic tanks have historically proven an adequate form of sewage treatment, the increasing density of development in some areas has made them too crude a treatment method for the natural environment to receive. A Sewage Treatment Improvement Program has been initiated by the Ministry of Health for the purpose of reducing lagoon nutrient enrichment and preventing bacterial contamination (MOH 2008). It aims to achieve this by improving on-site sewage treatment and facilitating the development of sewage infrastructure for areas with high density development.

Since 2004, progress in sanitation standards has been achieved through enactment of the Public Health (Sewage) Regulations 2008 and the development of a Public Health Piggery Waste Policy and Public Health Piggery Odour Policy. Although the Sewage Regulations have only been

applied to new installations, there is provision to require existing properties (whether householders, businesses or farmers) to comply.

The Cook Islands water supply comes from two main sources. On the volcanic islands of the Southern Group, surface water is sourced from springs and streams within catchment valleys, while on the coral atolls water is sourced from rainwater and groundwater. Freshwater lens supplies are available, however, the past practice of manually extracting water from wells has been discontinued. In general, the water system is vulnerable to any form of disaster, such as contamination from agriculture chemicals, sewage contamination and saltwater intrusion (SOPAC 2007).

Until recently Rarotonga's water supply system suffered from corrosion and leakage problems due to old steel and galvanised pipes, but these have recently been replaced by PVC pipes. Only the main township area of Avarua is still to be completed.

#### **2.1.4.2 Energy Supply in the Cook Islands**

Like most other Pacific Island nations, the Cook Islands is overwhelmingly dependent on oil. Imported refined petroleum fuels account for an estimated 85% of gross energy supply; biomass provides approximately 10%, mainly for traditional cooking, and other assorted supplies make up the remaining 5%.

Diesel powered generators dominate electricity production although the outer islands use a variety of methods to satisfy their energy requirements. The Avatiu Diesel Power Station supplies electricity to the whole of Rarotonga, with a maximum capacity of 9.6 MW. Beyond Rarotonga, a 24-hr energy supply operates on Aitutaki, Mangaia hosts a wind energy grid-connected system, and a hybrid system is planned for Rakahanga. The island of Pukapuka in the northern group has a photovoltaic system which will shortly be upgraded to meet current household requirements. Small diesel generators supply limited power on the rest of the islands, electricity only being provided on a restricted basis. Solar water heaters have been installed in most new housing and commercial buildings. On the outer islands, various solar photovoltaic installations operate for lighting, radio, water pumping, fish freezing and refrigeration although many have suffered from the lack of post-installation support. On the other hand, Telecom has installed many photovoltaic generators, ranging from 600-7,800 peak watts with excellent performance and high reliability due to the quality of installations and good maintenance using well trained staff. Approximately 99% of all Cook Island households had electricity in 2009.

Environmental issues such as energy use have made a particular impact on the nation's thinking, with the Cook Islands government making a strong commitment to sustainable energy use. In 2003, The Cook Islands adopted a National Energy Policy, setting out the Government's vision for the development of the Cook Islands national energy sector. It provides an ambitious framework for increasing the uptake of renewable energy and improved energy efficiency. It is envisaged that the implementation of this action plan will result in substantial greenhouse gas emission reductions and provide a more stable energy supply. In 2009 the Government of the



Cook Islands adopted the Framework for Sustainable Energy Action Plan (Government of the Cook Islands 2010), however further efforts to implement the Framework have been held back by competing priorities within the national budget.

## **2.2 Institutional, policy and regulatory framework**

### **2.2.1 Environmental policy, sustainable development policy and general legislative framework.**

The Cook Islands government is committed to sustainable development, through the guiding principles incorporated into the Cook Islands National Vision, or “Te Kaveinga Nui” (Government of the Cook Islands 2007):

*To enjoy the highest quality of life consistent with the aspirations of our people, and in harmony with our culture and environment.*

*Te oraanga tu rangatira, kia tau ki te anoano o te iti tangata, e kia tau ki ta tatou peu Māori ete aotini taporoporoia ote basileia.*

The National Vision was adopted at a National Retreat Forum in 1997, during a time when the nation was facing severe economic difficulties. Whilst the country has made a significant recovery since then, the vision continues to embody the aspirations of the people.

The primary objective of the National Sustainable Development Plan, 2007-2010 was also formulated to support the national vision (Government of the Cook Islands 2007):

*To build a sustainable future that meets our economic and social needs without compromising prudent economic management, environmental integrity, social stability, and our Cook Islands Māori culture, and the needs of future generations.*

Specifically dedicated to environmental matters, the National Environment Strategic Action Framework (NESAF) 2005-2009 sets out environment policy directions for the Cook Islands (NES 2004). The NESAF vision is dedicated to environmental sustainability and calls for collective responsibility in managing the environment to maintain the qualities of the “kura” (gift) that will continue to provide for successive generations of Cook Islands people.

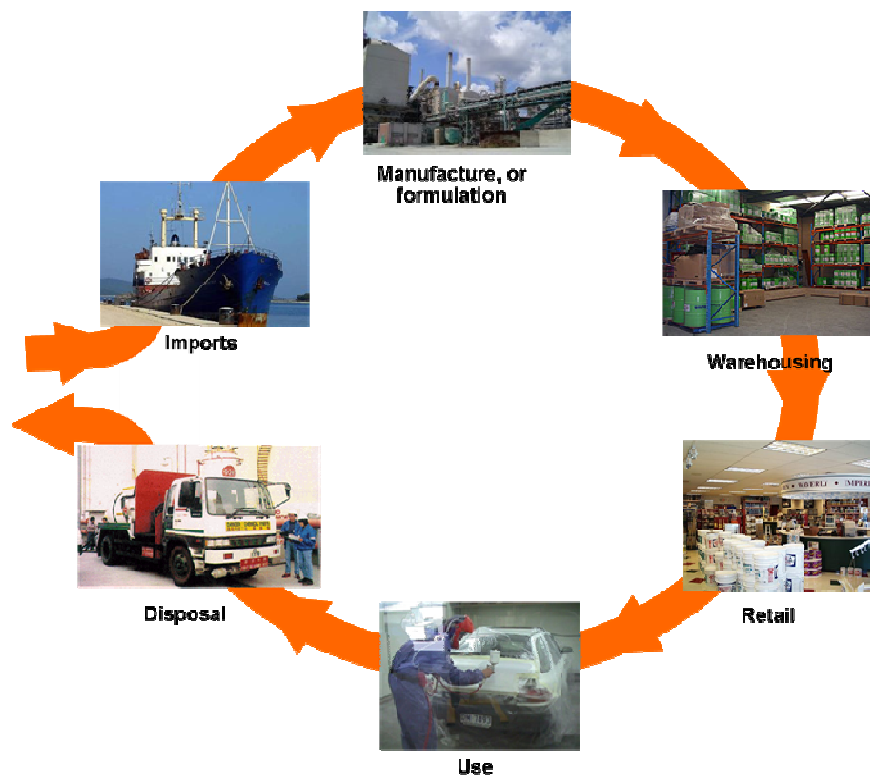
The NESAF vision is to achieve environmental sustainability through:

- **Equal Responsibility for**
- **Natural Resources Utilisation and Management, built on**
- **Values consistent with our Traditional and Cultural Practices, through**
- **Innovative and Exciting Means, whilst recognising the**
- **Rights of all Cook Islanders, and promoting**
- **On-going Commitments by All, through,**

- **New and Strengthened Partnerships, for**
- **Meaningful Actions at every level of Cook Islands society, and**
- **Equitable Sharing of Benefits, with the support of a**
- **National Enabling environment**
- **To Ensure Access to Healthy and Resilient Ecosystems for present and future generations.**

### 2.2.2 Roles and responsibilities of ministries, agencies and other governmental institutions involved in POPs life cycles.

A general life cycle for POPs pesticides and industrial chemicals is illustrated in Figure 2.2, with the stages of most relevance to the Cook Islands being imports, retail, use and disposal. The unintentional POPs are not represented directly in the figure, but these would be formed and released during the use or disposal life cycle stages of other materials, such as fuels.



**Figure 2.2. General life cycle of POPs Pesticides and industrial chemicals**

The key agencies and organisations with responsibilities relevant to POPs management through the various stages of the life cycle are described below.

### **2.2.2.1 National Environment Service (Tu'anga Taporoporo)**

The Cook Islands has established a National Environmental Service or Tu'anga Taporoporo (NES) with broad powers to protect the environment. NES is an agency of the Crown as defined by the Environment Act 2003, and its statutory responsibilities include:

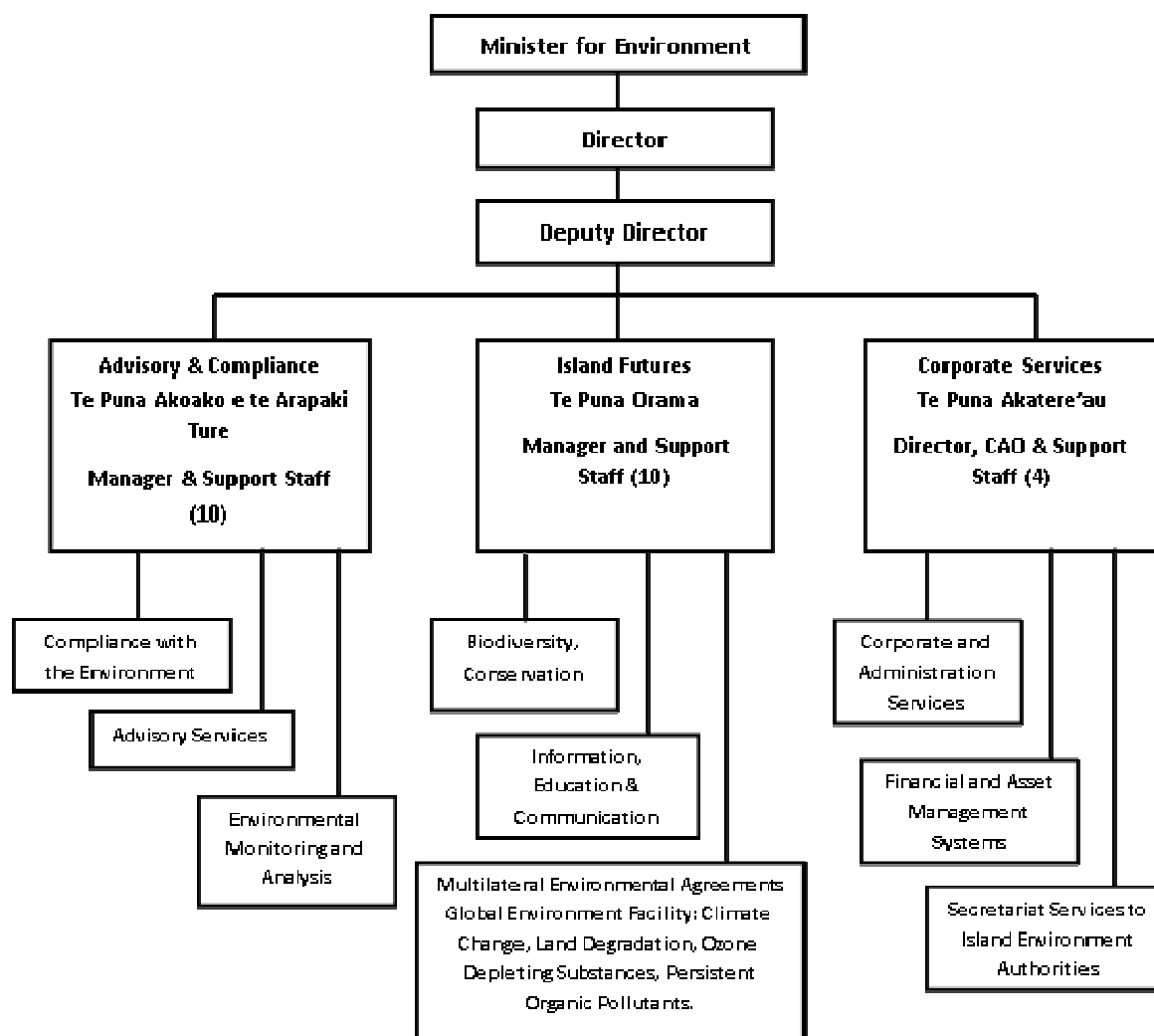
- Study of the impact of human activities on natural resources,
- Prevention of degradation or impairment of the environment,
- Regulation of human activities to ensure safe and healthy surroundings.

The functions of the National Environment Service of most relevance to the Stockholm Convention are to:

- Control and correct the pollution of air, water and land;
- Ensure environmentally safe disposal of toxic chemicals and wastes;
- Recommend ratification, implement and review obligations relating to Multilateral Environmental Agreements

The structure of the NES is shown in Figure 2.3. The Minister of Environment is the Crown representative directly responsible for administering the Environment Act. This position is currently held by the Prime Minister of the Cook Islands Government.

The NES Director is responsible for the efficient and proper administration and management of the Service. Island Authorities are primarily responsible for identifying priority areas of environmental concern within each island, and determining local applications for permits. Environment officers are NES staff responsible for monitoring and enforcing provisions of the Environment Act to ensure protection, conservation and management of the environment in a sustainable manner. At present, no one in the Environment Service has specific responsibility for hazardous chemicals or hazardous waste management.



**Figure 2.3. Structure of the National Environment Service**

### 2.2.2.2 Ministry of Agriculture

The Ministry of Agriculture is established by the Ministry of Agriculture Act 1978. Its principal aim is to enable the country to be self-sufficient in food and livestock production to the extent possible, and to be relatively free of serious plant and animal pests and diseases.

The Ministry of Agriculture has broad-ranging responsibilities in relation to agricultural development, and this includes investigation of pesticide efficacy. The purpose of the Ministry of Agriculture is to enact all agricultural legislation pertaining to the export and import of plants and plant products, animals and animal products (border control), and implement Government policy relating to agriculture sector development. The Ministry of Agriculture is charged with

the administration of the Biosecurity Act and the Pesticides Act. There are presently 31 staff in the Ministry of Agriculture, including 10 biosecurity officers and 13 researchers.

The Ministry of Agriculture is in the process of updating its National Agriculture Strategic Plan (MOA 2001). The Ministry's long term aims are to ensure economic and physical access to sufficient food to sustain a healthy and productive life for all Cook Islanders, to increasingly supply Cook Island grown produce to the tourist industry and local market, and to reduce pesticide use throughout the Islands.

### **2.2.2.3 Ministry of Health**

The Ministry of Health is responsible for a wide range of activities throughout the health sector, including public health. Their responsibilities relevant to POPs include the public health aspects of waste management and sanitation, quarantine requirements, water supply quality, and the control of vector-borne diseases. The Vector Control Unit is responsible for the control of pests which are of concern to public health.

The Ministry of Health has the capacity to conduct drinking water quality testing in its own laboratory, but this is currently not done. However, the Ministry has recently appointed two additional public health junior staff to strengthen its activities in this and other related areas, including the enforcement and monitoring of sanitation, drinking water quality and waste management programmes under the new Public Health Act.

The hospital on Rarotonga and the medical clinics on other islands also fall under the control of the Ministry of Health. These are the main producers of healthcare wastes within the Cook Islands. The hospital is also a significant user of chemicals, mainly within the hospital laboratory, and the x-ray facility.

### **2.2.2.4 Ministry of Finance and Economic Management**

The Ministry of Finance (MFEM) is a central agency in the Cook Islands Government responsible for the provision of advice on financial and economic issues. The Aid Management Division of MFEM is responsible for the administration of overseas donor funds including GEF appropriations, while the Statistics Office is responsible for the collection and managing of data on national activities, including environment-related information.

The Ministry has a staff of 70 full time and 14 part-time employees (Miria-Tairea 2010). These staff are distributed across 5 divisions, including Revenue Management, which administers taxation and border management Acts, and the management and collection of crown taxes, duties and charges.

There are 8 staff in the Taxation and Customs section, and this group is the most pertinent to the Stockholm Convention, through the provision of border control services at both the air and sea ports. It was noted at the POPs workshop in July 2010, that pesticides and PCBs are on a list of prohibited imports held by the Customs Officers. However, monitoring and enforcement of these controls is weak, due to the limited staff capacity and general lack of training in this area.

#### **2.2.2.5 Te Aponga Uira o Tumu-te-Varovaro (Rarotonga Electricity Authority) and Aitutaki Power Supplies**

Power generation, maintenance and electricity distribution on Rarotonga and Aitutaki are managed by two State Owned Enterprises; Te Aponga Uira o Tumu te Varovaro (TAU) and Aitutaki Power Supplies (APS). On the outer islands, the respective island authorities are responsible for their own energy needs, assisted by grants channelled through MOIP.

Te Aponga Uira and Aitutaki Power Supplies would be responsible for investigation of any transformers and capacitors likely to contain PCBs. Te Aponga Uira is also active in the promotion of energy efficiency and conservation through consumer education and awareness programmes.

All of the electricity on Rarotonga is supplied from the Avatiu Power Station which consists of 8 diesel-fired generators with a total combined capacity of 9.6 MW. Te Aponga Uira and Aitutaki Power Supplies are actively investigating alternative energy sources such as solar power and wind but, as a commercial entity, these will only be developed by Te Aponga Uira and Aitutaki Power Supplies if they are able to show an economic rate of return. The power station on Aitutaki has three generators with a total installed capacity of 1.97 MW.

#### **2.2.2.6 Ministry of Infrastructure and Planning**

The Ministry of Infrastructure and Planning (MOIP) was formed in 2009 through a merger of the Ministry of Works and the Office of the Minister of Outer Island Administration. MOIP is involved in infrastructure development works on roads and bridges, building construction and foreshore development, including coastal protection installations. These activities require Environmental Impact Assessments to be conducted and/or applications for construction permits.

The Waste and Treatment Services group of the Operation and Maintenance Services Division is responsible for the collection and disposal of solid waste. There is an organised rubbish collection service on Rarotonga, provided under contract to MOIP, and dedicated waste management facilities in Arorangi (Rarotonga) and Aitutaki consisting of an engineered landfill and recycling centres.

#### **2.2.2.7 Ministry of Internal Affairs**

The Ministry of Internal Affairs has a diverse range of responsibilities across the areas of social development (including welfare payments, promotion and protection of the rights of target groups such women, at risk youth, children and families, people with disabilities); sports development; community development; labour and employment regulation; dangerous goods regulation; censorship; and market and consumer regulation. The Ministry administers a range of legislation and international conventions in relation to these responsibilities and provides policy advice to the Government in these areas.

The Labour and Consumers Division within the Ministry is responsible for workplace-related activities, including the storage and handling of dangerous goods, and occupational safety and health. However, there are only two staff in the section responsible for these activities.

#### **2.2.2.8 Office of the Prime Minister**

The Office of the Prime Minister has a range of central government functions that are intended to support good governance and economic development, and demonstrate social responsibility to the Cook Islands people and the environment. Units within the OPM include Central Policy and Planning, Cabinet Services, Outer Islands Government Representatives, Corporate Services, Information and Communication Technology, Research, Emergency Management and Energy.

The Central Office of Policy and Planning (CPPO) supports the Government through the provision of sound advice regarding national policies and plans, including administering the National Sustainable Development Plan for the Cook Islands. The planning and policy support service also extends to all government ministries, Crown agencies and State Owned Enterprises. The CPPO are key facilitators for new development programmes and initiatives that are later mainstreamed to the relevant Ministries or other stakeholders. They facilitate communications between and among stakeholders and provide input into national, regional and international planning reports or policy documents.

#### **2.2.2.9 Ministry of Education**

The Cook Islands follows the New Zealand curriculum and education is compulsory for all children between 5 and 15 years of age. The Government provides free secular education at primary and secondary school levels. The Nursing School, the Trade Training Centre and the Hospitality and Tourism Training Centre provide tertiary training. The University of the South Pacific has an extension centre providing vocational, foundation and degree courses.

There are 24 early childhood education centres, 13 primary schools, 4 secondary schools and 12 area schools in the Cook Islands. Governance for public schools sits with the Ministry of Education. However, each school has its own stakeholder committee which makes decisions on individual school policy.

The Ministry of Education through its Curriculum Advisory Unit and the Education & Awareness section of the National Environment Service have begun incorporating environmental education courses and/or materials into the school curriculum including marine studies at all levels of schooling. Most secondary schools and some of the primary schools have chemical laboratories. Reviews of some of these laboratories (reported elsewhere in the NIP) have found significant issues with the storage of chemicals, a lack of appropriate safety equipment, and a need for better staff training in aspects of chemical safety. The Ministry and the National Environment Service are actively moving to address these issues.

#### **2.2.2.10 Ministry of Foreign Affairs and Immigration**

The Ministry of Foreign Affairs and Immigration is the official National Focal Point for all international conventions and multi-lateral environmental agreements (MEA). MFAI also

contributed to and continues to play a major part in the MEA negotiations and also on information dissemination and exchange. They also facilitate and support the ratification process for any MEA that the Cook Islands decides to become a party to.

#### **2.2.2.11 Ministry of Transport**

The Ministry of Transport is the regulatory agency responsible for civil aviation & maritime safety and security, and the management and licensing of domestic and international shipping. The Ministry also takes a lead role in the facilitation of emergency procedures for oil spill cleanups and, in that regard it collaborates with NES, Te Aponga Uira, MOIP and the oil companies.

#### **2.2.2.12 Ministry of Marine Resources**

The objective of the Ministry of Marine Resources (MMR) is to ensure the sustainable development of the living and non-living marine resources for the benefit of the people of the Cook Islands. The marine environment contains many of the nation's major exploitable natural resources. Currently marine resources are exploited through aquaculture (black pearls), offshore fishing (tuna and other pelagic species), and coastal reef associated fisheries (trochus, aquarium fish, reef fish, etc.).

The Ministry of Marine Resources employs about forty persons spread out over Rarotonga, Manihiki, Palmerston, Penrhyn, Pukapuka, Rakahanga and Aitutaki. The Ministry operates a pearl oyster hatchery at Penrhyn, a giant clam hatchery at Aitutaki, a marine laboratory at Manihiki and a water quality laboratory at Rarotonga.

There are three main sections to the organisation: Economic Development, Research, and Policy and Resource Management.

### **2.2.3 Relevant international commitments and obligations.**

The international legal personality of the Cook Islands has developed steadily since the Cook Islands became a self-governing State in free association with New Zealand in 1965. In 1992, the Secretary General of the United Nations formally recognised the full treaty making capacity of the Cook Islands after it had already been accepted as a member of several UN organisations. The Cook Islands is now a member in its own right of a range of international organisations, including the Food and Agriculture Organisation (FAO), the International Civil Aviation Organisation (ICAO), the World Health Organisation (WHO) the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the International Maritime Organisation (IMO) and the Asian Development Bank (ADB). It is also a member of regional organisations such as the Pacific Islands Forum and its agencies, the Secretariat of the Pacific Community (SPC), the Pacific Islands Applied Geoscience Commission (SOPAC), and the Pacific Regional Environment Programme (SPREP).



The Cook Islands is a Party to the following international agreements of general relevance to POPs:

- Stockholm Convention on Persistent Organic Pollutants
- Basel Convention
- Waigani Convention
- Climate Change (UNFCCC)
- Kyoto Protocol
- Ozone Layer Convention (Vienna)
- Montreal Protocol
- Copenhagen Amendment
- UNCLOS (Law of the Sea)
- SPREP Convention
- Biosafety Protocol
- Desertification (CCD)
- Apia Convention

In becoming a party to these agreements, the government has been able to demonstrate its commitment to addressing a number of environmental concerns. Further details on the more specific 'chemical' conventions are given below.

#### **2.2.3.1 Stockholm Convention on Persistent Organic Pollutants**

The Cook Islands became a Party to this Convention on 29 June 2004 and is now working on its implementation through the development of this Plan. The National Environment Service has day-to-day responsibility for matters relating to the Stockholm Convention, although other agencies, such as Agriculture and Customs are also involved.

#### **2.2.3.2 The Basel Convention**

The Cook Islands is a party to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal. This agreement aims to achieve the environmentally sound management of hazardous wastes through the reduction in transboundary movements to the minimum consistent with:

- Environmentally sound and efficient management.
- Treatment and disposal as close as possible to the source of generation.
- Minimisation of generation.

The Basel Convention is of particular importance to the Cook Islands when considering disposal of POPs and other hazardous wastes by export to treatment facilities in other countries. All exports of hazardous wastes are required to comply with stringent control procedures, including being approved by both the exporting and importing countries. This approval is subject to

demonstrating that the wastes will be properly managed and disposed in an environmentally sound manner.

The National Environment Service has day-to-day responsibility for matters relating to the Basel Convention, although other agencies, such as Customs and Foreign Affairs (MFAI), are also involved.

#### **2.2.3.3 Waigani Convention**

The Cook Islands is a party to the Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region (Waigani Convention).

The Waigani Convention objective is to prevent the importation of hazardous and radioactive waste into the South Pacific region, to minimize production within the region and to ensure the environmentally sound management and disposal of existing wastes.

The Waigani Convention is the regional equivalent of the Basel Convention and carries much the same control requirements for exports or imports of hazardous wastes. The National Environment Service has day-to-day responsibility for matters relating to this convention.

#### **2.2.3.4 Rotterdam Convention**

The Cook Islands is a party to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. Its purpose is “to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.”

Parties to the Rotterdam Convention nominate chemicals which have been severely restricted or banned in their country. Once approved for inclusion in the Prior Informed Consent procedure, these chemicals become subject to controls in international trade. Furthermore, a country seeking to export a chemical subject to a ban or severe restriction in its own territory must inform the importing country at the time of first export and then on an annual basis.

The National Environment Service has day-to-day responsibility for matters relating to the Rotterdam Convention, although other agencies, such as Customs, Agriculture and Foreign Affairs are also involved.

#### **2.2.3.5 Vienna Convention and Montreal Protocol**

The Vienna Convention for the Protection of the Ozone Layer and the associated Montreal Protocol provide for the global elimination of substances known to cause ozone depletion. The Protocol has been implemented in the Cook Islands through the Environment (Ozone Protection Layer) Regulations 2008. The National Environment Service administers these regulations.

The import control provisions included under the regulations are likely to be similar to those that would be required for intentionally produced POPs.

#### 2.2.3.6 SPREP Convention

The Cook Islands is a party to the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SPREP Convention) and a member country for the related Pacific Regional Environment Programme. The work of the programme Secretariat (SPREP) covers a wide range of environmental issues, including nature conservation and biodiversity, coastal management, climate change, waste management and pollution prevention. Past SPREP activities most relevant to POPs are:

- “POPs in Pacific Island Countries” Project (identification, packaging, transport and disposal of POPs wastes) – Funded by AusAid (SPREP 2003)
- The development and implementation of national waste management strategies; and
- Regionally-based Assessment of Persistent Toxic Substances (with UNEP).

In addition, SPREP is to be a key partner in a project, starting in 2011, on Pacific POPs Reduction through Improved Management of Solid and Hazardous Wastes, which has been developed by UNEP and FAO under the GEF Pacific Alliance for Sustainability.

#### 2.2.4 Description of existing legislation and regulations addressing POPs.

This section presents a review of the Cook Islands legislation relevant to the Stockholm Convention, and the effectiveness of regulatory and enforcement infrastructure and national capacity for managing POPs. More detailed information is given in the report prepared for the POPs Project (Miria-Tairea 2010).

A summary of the relevant legislation is given in Table 2.1, followed by more detailed discussion below, of the individual laws and regulations.

**Table 2.1. Summary of Key Legislation Relating to Protection of Human Health and Environment, and the Sound Management of Chemicals.**

| Legal Instrument                                    | Responsible Agency                        | Objectives of Legislation   |
|---|---|---|
| <b>Environment Act 2003</b>                         | National Environment Service              | Protection, conservation, and management of the environment in a sustainable manner |
| <b>Pesticides Act 1987</b>                          | Ministry of Agriculture                   | Regulation and control of the importation, sale and use of pesticides               |
| <b>Customs Act 1913 and Customs Tariff Act 1980</b> | Ministry of Finance & Economic Management | Control of imports and exports and the collection of duties                         |

| <b>Legal Instrument</b>                        | <b>Responsible Agency</b>    | <b>Objectives of Legislation</b>  |
|--|------------------------------|---|
| <b>Biosecurity Act 2008</b>                    | Ministry of Agriculture      | Prevent the entry of animal and plant pests and diseases                                |
| <b>Public Health Act 2004</b>                  | Ministry of Health           | Protection of the public health   |
| <b>Food Act 1992-93</b>                        | Ministry of Health           | To ensure the safety of food  |
| <b>Prevention of Marine Pollution Act 1998</b> | Ministry of Transport        | Prevention of marine pollution, regulations on the transportation and dumping of wastes |
| <b>Dangerous Goods Act 1984</b>                | Ministry of Internal Affairs | To control the storage and transport of dangerous goods                                 |
| <b>Ozone Protection Layer Regulations 2008</b> | National Environment Service | Controls on the import, export and use of ozone depleting substances                    |

#### **2.2.4.1 Environment Act 2003**

The Environment Act 2003 is the Cook Islands' primary legal instrument for addressing matters of environmental quality, and provides a comprehensive framework for the protection, conservation, and management of the environment in a sustainable manner. The Act extends environmental management to the outer islands and provides for the establishment of an appropriate institutional structure and an effective regulatory and enforcement/compliance framework (ABD 2003).

The Act empowers the Environment Service to enforce the Act's provisions and any regulations made under it. Under the Act, any activity likely to cause significant environmental impact is regulated through a permit system. To obtain a permit an Environment Impact Assessment (EIA) is required detailing the possible adverse effects, including long-term and short-term effects, how these effects may be mitigated and any other alternatives that are available. In principle, the Act requires EIAs to be undertaken for any activity likely to have an environmental impact, however the wording is vague and there is no distinction between large and small scale projects. In practice very few EIAs have been conducted.

Section 70 of the Act allows for the passing of regulations to address specific matters relevant to protection of the environment. This includes pollution prohibition, regulating or prohibiting the export or import of hazardous wastes, and for the purpose of implementing any regional or international conventions, treaties, protocols, or agendas.

To date, the sole regulation passed under the Act is the Environment (Ozone Protection Layer) Regulations 2008, which provide for the prohibition of import, export, manufacture and sales of substances and goods likely to contribute to ozone depletion. Other regulations have been proposed in an Asian Development Bank review (ABD 2003), however none have been implemented to date. The provision for developing regulations under the Act would provide an appropriate vehicle for addressing some of the requirements of the Stockholm Convention, such as prohibiting the import and use of POPs pesticides.

#### **2.2.4.2 Pesticides Act 1987**

The Pesticides Act provides for regulation and control of the import, sale and use of pesticides in the Cook Islands. In order to exercise this power the Minister must act on the recommendations of the Pesticides Board consisting of representatives from the Ministries of Agriculture and Health, the National Environment Service, and a pesticides importer.

The main mechanism for managing pesticides under the Act is through a Pesticide Register. Pesticides are placed on the Register by the Pesticides Board and declared by public notification. Pesticide importers must apply to the Board for registration of the pesticide prior to arrival, and registration may last up to five years. Customs officers are required to inspect and release incoming pesticide cargoes.

At present, the Director of Research in the Ministry of Agriculture is the only member of staff administering the Pesticides Act 1987. The Pesticides Board has been inactive since 1994 (NES 2005), but the Ministry has indicated that they intend to rectify this situation in the near future. There are capacity issues in terms of legislative understanding and the knowledge of pesticides and their use. Efficient and effective implementation of the Pesticides Act relies on staff being sufficiently well-trained across all aspects of pesticide imports, storage, handling and use.

#### **2.2.4.3 Biosecurity Act 2008**

The Biosecurity Act primarily aims to prevent the entry of animal and plant pests and diseases into the Cook Islands. Enabling the Act are quarantine facilities set up at biosecurity points of entry. Quarantine wastes from aircraft are disposed of by the Airport Authority in its incinerator located at the airport.

#### **2.2.4.4 Prevention of Marine Pollution Act 1998**

The Prevention of Marine Pollution Act 1998 establishes provisions for the prevention of marine pollution, the transportation and dumping of wastes in Cook Islands waters by vessels, and gives effect to various international conventions on marine pollution and protection of the marine environment. The regulatory agency may declare to be a pollutant any substance which, when added to any waters has the effect of contaminating those waters so as to render the waters unclean, noxious, or impure, or detrimental to the health, safety or welfare of any person, or poisonous or harmful to marine life. Hence POPs may be specified as pollutants under this legislation. The Act is administered by the Ministry of Transport

#### **2.2.4.5 Customs Act 1913 and Customs Tariff Act 1980**

The Customs Act 1913, together with the Customs Tariff Act 1980, make provision for the collection of import duties and levies. With specific relevance to POPs, the Acts provide for prohibited imports which are specified in a Schedule. The current list of prohibited imports (available from the Customs web site) includes non-specific references to "PCBs", "Pesticides", and "Hazardous Substances (including explosives, certain toxic substances and pesticides)" (MFEM 2010). This control mechanism could well be applied more specifically to prohibit the import of POPs into the country.

The Customs Act is administered by the Ministry of Finance and Economic Management, and is currently under review.

#### **2.2.4.6 Public Health Act 2004**

The Public Health Act 2004 consolidates the law relating to protection of public health. The Act includes provisions which identify waste and hazardous waste, and POPs wastes may fall under these definitions. The Act requires that waste collection, treatment or disposal operators obtain an Offensive Trades Permit. It also prohibits the uncontrolled burning of tyres and plastics, and provides for the issuing of abatement notices to address public health hazards. The Public Health Act may also be used to monitor POPs levels in people; however no monitoring has been undertaken to date.

#### **2.2.4.7 Food Act 1992-93**

The Food Act controls the importation, processing, packaging, preparation, storage, transport, advertising and sale of food. The Act is administered by the Ministry of Health and contains provisions which empower the Minister to prohibit the cultivation, harvesting, or otherwise obtaining any food from any area, including any lagoon or reef, if the Minister thinks the food may be dangerous or injurious to the consumer (e.g. if POPs contamination is found). It also provides for regulations for the prescription of labelling, packaging, prescription, composition and quality of any food.

While no provision is made for the monitoring of substances in food, the Minister of Health can authorize testing for chemicals, including POPs. If food monitoring did show high levels of POPs in food, the Food Act would allow the Minister of Health to declare the food as dangerous.

#### **2.2.4.8 Dangerous Goods Act 1984**

This Act makes provision for the packing, marking, handling, carriage, storage, and use of certain flammable, oxidising, and corrosive materials, and certain compressed, liquefied, dissolved and other gases. The definition of “dangerous goods” includes a section on poisons which could possibly be applied to some of the POPs, by virtue of their toxicity. The Dangerous Goods Regulations 1985 provide more detail on the requirements for handling and storage of flammable substances, and are based on the corresponding Australian Standards.

### **2.2.5 Key approaches and procedures for POPs chemicals and pesticide management including enforcement and monitoring requirements.**

The Cook Islands does not manufacture, import or use any of the original POPs chemicals and pesticides covered by the Stockholm Convention, although two of the new groups of POPs (polybrominated diphenyl ethers and perfluorooctane sulfonates) may be present in some imports of manufactured goods. Pesticide and Customs legislation provides suitable mechanisms for the prohibition of PCBs and POPs pesticide imports but no actions have yet been taken. There is also a need for significant capacity building efforts for customs and agriculture officials to ensure that any controls can be adequately monitored and enforced.

Unintentional POPs production in the Cook Islands occurs primarily through waste incineration and rubbish burning. The uncontrolled burning of plastics and tyres is prohibited under the Public Health Act. There are no specific controls on the releases from any other sources under the Environment Act, although the potential exists for regulations to be passed to address these. However, the capacity for identification and monitoring of releases of unintentional POPs is extremely limited. There is also only limited understanding of the requirements for best available techniques and best environmental practices (BAT/BEP).

Unintentional production of POPs from rubbish fires and other domestic waste burning is an issue that can only be dealt with through continued public awareness and education activities. Reductions in the releases from waste incineration will require significant investment in new technologies.

## 2.3 Assessment of the POPs issue in the country.

### 2.3.1 Assessment with respect to Annex A, part I chemicals (POPs and other Pesticides)

The Cook Islands does not intentionally produce or use any of the POPs pesticides listed in Annex A, Part I and there is no evidence of any current trade. Historical inventory data supports anecdotal evidence that some POPs were used in the past, in particular dieldrin and lindane, however use has discontinued and past stockpiles have been removed (Hilyard 2010a; Muir and Reichardt 2010). No POPs pesticides were discovered in recent food sampling, which is consistent with the fact that none of the POPs pesticides are known to have been used in the Cook Islands for the last 20 to 30 years (Graham 2010b). The Cook Islands has no intention of using any of the POPs pesticides in future however their import and use has never been formally prohibited.

General pesticide use is low on the Cook Islands and limited to a small number of products. A survey of Household, Agriculture and Laboratory Chemicals carried out under the POPs Project found a total of 23 different pesticides currently available in Rarotonga for use in agriculture (Muir and Reichardt 2010). These are listed in Table 2.2, below.

**Table 2.2. List of Pesticides Currently Available in Rarotonga**

| Active Ingredient | Product Names or Types    | Use           | WHO Class |
|-------------------|---------------------------|---------------|-----------|
| Abamectin         | Avid                      | Insecticide   | II        |
| Acephate          | Orthene                   | Insecticide   | II        |
| Chlorelthephon    | Ethrel                    | Defoliant     | III       |
| Chlorothalonil    | Bravo, Chlorotek, Taratek | Fungicide     | U         |
| Copper Hydroxide  | Kocide                    | Fungicide     | II        |
| Dazomet           | Basamid Granules          | Soil fumigant | II        |

|                                 |                          |             |        |
|---------------------------------|--------------------------|-------------|--------|
| Dicamba                         | Woody Weed Killer        | Herbicide   | II     |
| Fluazifop-p-butyl               | Fusliade                 | Herbicide   | III    |
| Glyphosate                      | Roundup, Sting, Weed-Out | Herbicide   | III    |
| Imidacloprid                    | Velcroprid, Confidor     | Insecticide | II     |
| Cyhalothrin                     | Icon, Cyhella            | Insecticide | II     |
| Lufenuron                       | Match                    | Insecticide | III    |
| Mancozeb                        | Dithane M45              | Fungicide   | U      |
| Metalaxyl                       | Ridomil Gold MZ          | Fungicide   | II     |
| Methomyl                        | Lannate                  | Insecticide | Ib     |
| Paraquat                        | Gramoxone                | Herbicide   | II     |
| Permethrin                      | Coopex                   | Insecticide | II     |
| Pyrethrins + Piperonyl butoxide | Fumigator                | Insecticide | II, U  |
| Pirimphos-methyl + permethrin   | Attack                   | Insecticide | II, II |
| Rotenone                        | Derris Dust              | Insecticide | II     |
| Spinosad                        | Success                  | Insecticide | III    |
| Sulphur                         | Sulphur                  | Fungicide   | III    |
| Thiophanate-methyl              | Not specified            | Fungicide   | U      |

The entries in the right-hand column of Table 2.2 show the World Health Organisation (WHO) hazard classification for each of the active ingredients (WHO 2010b). It should be noted that the WHO classifications apply to the pure (ie. 100%) active ingredient. The hazard classification for the actual products may be lower, depending on how much of the active ingredient is present in the product.

The available information on the import and use of pesticides is quite limited, but it appears that the overall quantities are low. MOA imports less than 5 tonnes per annum including Glyphosate (Roundup), Paraquat (Gramoxone) herbicides; Copper Hydroxide, Chlorothalonil, and Metalaxyl fungicides; Abamectin, imidacloprid, and Spinosad insecticides and Bromadiolone rodenticide. Three companies are primarily responsible for pesticide imports and inventories have been performed on current pesticide stocks at two of these three suppliers; these show similar trends with small quantities of synthetic pyrethroids, organophosphates and carbamate pesticides dominating (Muir and Reichardt 2010). Some of these pesticides are distributed widely for use in domestic households and commercial premises. Stocks are held in limited quantities and are only bought for immediate needs. There is no indication of POPs pesticides being imported, and accidental import is unlikely since most stocks are sourced from New Zealand.

A range of common household insecticides and personal health care products were also found in the POPs survey (Muir and Reichardt 2010), and these are listed in Table 2.3. The effect of concentration on the WHO hazard classification is especially relevant to the two most hazardous



substances in this list; coumatetralyl and dichlorvos. The 100% chemicals are both classified as 1b toxicity. However, their concentration in both of the products is less than 0.5%, which indicates a hazard rating of class III or U.

**Table 2.3 List of Pesticides Present in Household Products**

| Active Ingredient                      | Product Type                | WHO Class |
|--|-----------------------------|-----------|
| d-Allethrin                            | Mosquito coils, fly spray   | II        |
| Bifenthrin                             | Ant poison                  | II        |
| Bioallethrin                           | Fly spray                   | II        |
| Bioresmethrin                          | Fly spray                   | U         |
| Chlorpyrifos                           | Cockroach bait              | II        |
| Citronella                             | Mosquito repellent          | U         |
| Coumatetralyl                          | Rat poison                  | Ib        |
| Cypermethrin                           | Fly spray                   | II        |
| Deltamethrin                           | Surface insect spray        | II        |
| Dichlorvos                             | Fly spray                   | Ib        |
| Diethyltoluamide (DEET)                | Insect repellent            | III       |
| Di-n-propylisocinchomeronate           | Insect repellent            | U         |
| Di-n-octyl bicycloheptene dicarboximid | Fly spray                   | III       |
| Imiprothrin                            | Insect spray                | III       |
| Metaldehyde                            | Slug bait                   | II        |
| n-Octylbicycloheptene Diacarboximide   | Insect repellent            | III       |
| Permethrin                             | Insect spray, mosquito coil | II        |
| d-Phenothrin                           | Insect spray                | U         |
| Piperonyl butoxide                     | Fly spray                   | U         |
| I-Propoxur                             | Surface insect spray        | II        |
| Tetramethrin                           | Fly spray                   | U         |

The POPs survey report highlights several issues pertinent to good pesticide management (Muir and Reichardt 2010). Adequate use of safety equipment and storage of chemicals is a concern. Economic factors and lack of awareness contribute to these problems. Most planters simply cannot afford to build separate sheds for pesticides, fertilizers and farm fuel. Furthermore, some pesticides fail to contain written instructions in English or Cook Islands Māori. Consequently, applicators may have little knowledge regarding the toxicity or correct dosage of the chemicals they are using. There is clearly a need for better provision of this information, as well as general education and awareness activities at the user level. This should include the promotion of alternative (non-chemical) methods for pest control which will require capacity building measures to be introduced within the ranks of the Department.

The Pesticides Act 1987 provides for controls on the importation and use of pesticides, including a possible ban on all imports of POPs pesticides. The implementation of this provision simply requires formal publication of an official notice by the Pesticides Board. Given the absence of intentional production and use of POPs in the Cook Islands, it is proposed that this action be taken in the very near future.

An updated Pesticides Bill has been in draft form for several years. In fact, the Cook Islands draft is now the model for the Pacific. A recent NES report suggests the timeliness of revisiting the draft Bill to incorporate provisions relating to the Stockholm Convention (Miria-Taiera 2010).

A number of capacity building and awareness-raising requirements were identified in relation to pesticide use generally in the Cook Islands. These include the need for additional training of Customs officers, MOA staff, and other government personnel, in the application of the pesticide regulations. There is also a need to develop the capacity for identification and testing of imported products.

### **2.3.2 Assessment with respect to Annex A, part II chemicals (PCBs)**

PCBs have previously been used in the Cook Islands as transformer fluids. Most of the transformers in Rarotonga were replaced in 1991 with non-PCB units, although some of the old transformers were then relocated for use on some of the outer islands (SPREP 2000). In 2001, tests on stockpiled transformers on Rarotonga, Aitutaki, Mangaia and Atiu found no PCBs (SPREP 2003). While these results confirm the general absence of PCBs in transformers, they do not preclude the possibility of occasional future discoveries of PCBs in old transformers; especially on some of the outer islands.

PCBs have been found in a survey carried out by the NES for the identification of PCB capacitors (Hilyard 2010b). Twenty buildings older than 20 years were investigated, and capacitors were identified by checking against lists of known PCB capacitors. Seven PCB capacitors were discovered which will require safe storage and disposal. There is currently no system in place for the environmentally sound management of this type of equipment, and a complete absence of suitable disposal facilities. It is therefore proposed that a system be developed for awareness raising, identifying, collecting and managing PCBs in small capacitors and other equipment. A management system should include placement into safe storage and ultimate disposal.

### **Other hazardous materials**

The NES survey (Hilyard 2010b) also noted a significant issue in the Cook Islands with the disposal of cement-asbestos sheeting, which was used extensively in the past, especially on government buildings. There are also concerns with the collection, storage and disposal of other potentially hazardous materials such as waste oil and e-waste (NES 2010). The actions noted above for the storage and disposal of PCBs should be designed to accommodate these parallel issues.

### **2.3.3 Assessment with respect to Annex B chemicals (DDT)**

Prior to 1980, DDT was used as a primary means of disease vector (mosquito) control in the Cook Islands (Muir and Reichardt 2010). Alternatives such as Malathion were used after that time but in more recent years, the Ministry of Health has increasingly moved away from the use of synthetic chemicals, preferring instead to use 'natural' substances such as Key Pyrethrum™ and Vectobac™. The MOH purchases are limited to what is required for one year only so that they do not have a problem with storage or disposal of old stocks.

While Malaria has been effectively eradicated, Dengue Fever remains a concern on the islands with the last significant outbreak occurring in 2006. Emergency supplies of more aggressive insecticides may be procured during these outbreaks. Systemic efforts to reduce vector numbers are sporadic and long term management plans should be introduced and reviewed.

Five different samples of mosquito coils present on Rarotonga were tested in 2010 and shown to be DDT free (Graham 2010b).

### **2.3.4 Assessment with respect to new POPs: BDEs and PFOS**

At its fourth meeting, the COP decided to list nine new chemicals to the Annexes of the Stockholm Convention (these are listed in the annex to this NIP). New POPs include pesticides, industrial compounds and intentionally produced substances.

A recent survey of agriculture, household and laboratory chemicals conducted for the purposes of this NIP found no evidence of any current uses of the nine new POPs chemicals in the Cook Islands (Muir and Reichardt 2010). Nor has any specific evidence been found to indicate past uses although it is likely that Lindane was used in the past as a treatment for head lice. The two new POPs of most interest are the PBDEs and PFOS chemicals because it is known from other countries that these may be present in a range of imported manufactured articles and products. These two groups of chemicals are addressed in the following sections.

#### **2.3.4.1 PBDEs**

Polybrominated brominated diphenyl ethers (PBDEs) are just one of many different types of chemicals that are used as flame retardants in a wide range of manufactured articles. Flame retardants are added to materials such as plastics, foam rubber, fabrics and textiles, to inhibit the spread of fire. The use of flame retardants in plastics and other synthetic materials dates back to about 30 years ago, when it was recognised that the use of plastics was rapidly increasing, and fires involving them were especially hazardous because of both the speed and intensity with which the materials burned. Flame retardants are intended to reduce the likelihood that an item will catch fire, and to inhibit the spread of any fire. It has been estimated that the flame retardants can give occupants up to 15 times more escape time from a fire than if they are not used.

Background information on the two groups of PBDEs listed under the Stockholm Convention is given in Appendix 1 of this document. The manufacture and use of the two groups of PBDEs has been stopped in many countries and their level in new consumer goods should rapidly decline.

No direct information is available on the presence or use of PBDEs in the Cook Islands. However, it is highly likely that PBDEs have entered the country in manufactured articles. The strongest evidence for this comes from a recent report on the presence of PBDEs in New Zealand. Many of the manufactured goods imported to the Cook Islands come from New Zealand or are sourced from the same countries as those imported to New Zealand. Therefore it is reasonable to expect that the current situation regarding PBDE imports to the Cook Islands will be similar to that of New Zealand, which is summarised below.

The New Zealand survey was based on use of a broad screening method for total bromine in each article, followed by more extensive testing of selected articles for the PBDEs. A total of 800 new and used consumer items were tested and the results showed that bromine was present in 15% of the articles. However, only about 50% of the bromine present was due to PBDEs. The study confirmed that PBDE based flame retardants had been used in a range of consumer articles and products imported into NZ since the 1990's. These PBDEs may be present in plastic components of common household and office goods, such as computers and electrical appliances, and in furniture fabrics and textiles, and in foamed plastics and rubbers such as that used in furniture, mattresses, carpet underlays, car seats, and in foamed building insulation.

The Cook Islands lacks any formal system for management and disposal of old electronic equipment and computers (e-waste). The quantities of e-waste generated are relatively small, although they are believed to be rapidly increasing. An e-Day was held in December 2010 (in collaboration with the organisers of e-Day New Zealand and SPREP) and resulted in the collection of 7 container-loads of old computers and related electronic equipment. This material was exported to New Zealand for processing and on-shipment to Asia for recycling or disposal. The shipment procedures were done in accordance with the requirements of the Basel Convention, including the requirement for confirmation by the New Zealand authorities that the wastes were to be treated and disposed in an environmentally sound manner.

A formal procedure for the management and disposal of these materials should be introduced to decrease the risk of future environmental releases of chemical contaminants such as the PBDEs.

#### **2.3.4.2 PFOS**

Perfluorooctane sulfonic acid (PFOS) is a fully fluorinated anion, commonly used in its anionic form or incorporated into larger polymers. With long carbon chains, PFOS is both lipid-repellent and water-repellent. These properties have provided PFOS with a wide variety of uses, for example PFOS has been used in the protection of paper, leather, fabric, upholstery and carpets, as a surfactant in the mining industry, in floor polishes, photographic film, denture cleaners,

shampoos, chemical intermediates, coating additives, carpet spot cleaners, as an insecticide, and as a component of fire fighting fluids. Due to concerns over environmental persistence and toxicity, in May 2000, 3M (the leading global producer) voluntarily began phasing out production. Eight major producers globally have committed to reducing emissions by 95% relative to the year 2000 by the end of 2010; and to fully eliminating PFOS emissions and product content by 2015.

PFOS is slightly different to other POPs chemicals in that it accumulates in proteins rather than fatty tissue. Fluorinated compounds were first noted in human blood in the late 1960s, and by 2000, PFOS was specifically identified worldwide. Further background information PFOS is given in Appendix 1 of this document.

Very little is known about the existence or otherwise of PFOS in the Cook Islands. A preliminary assessment of PFOS in the Cook Islands was conducted as part of the POPs project (Ingram 2010). A range of consumer products were identified as potentially containing PFOS, but no information is available to verify the presence or otherwise of PFOS chemicals. Aqueous film forming foam (AFFF), believed to contain PFOS, has been identified in stocks for use by the Airport Fire Rescue. Approximately 12 tonnes are held on Rarotonga and 2.5 tonnes on Aitutaki. AFFF is retained for incidents at the airport or the fuel storage depots, and has a shelf-life of 10 years. If unused after this time, the current stocks may need to be appropriately disposed.

The lack of information on PFOS reflects a wider issue identified in some of the other surveys regarding the lack of information on composition and/or potential contaminants in many imported goods. Systems need to be set up to ensure better quality information on the characteristics of imported materials for the purposes of regulating imports. These issues will need to be addressed in an action plan. Furthermore, a formal procedure for the identification, management and disposal of PFOS containing materials should be introduced.

No form of biomonitoring has been conducted for PFOS. In view of the fact some recent studies have discovered elevated levels of PFOS in certain pelagic species (Hart, Kannan et al. 2008), and that the diet for most Cook Islands consists of a high proportion of seafood, it may be prudent to check exposure.

### **2.3.5 Laboratory chemicals**

As part of the preparation for this NIP, a survey of obsolete chemical stockpiles was conducted at a veterinary laboratory, the Cook Islands hospital, and several high school laboratories on Rarotonga (Muir and Reichardt 2010). The high school laboratory on Aitutaki was also assessed (Hilyard and Muir 2011). Both surveys included preliminary investigations of storage, handling and disposal practices.

Results of the investigation for school laboratories demonstrate a general lack of awareness of safe storage and handling practices, although the Aitutaki school was significantly better in this

regard. Most laboratories visited on Rarotonga were disorganised and lacked separate locked storage areas for toxic, flammable and corrosive substances. High staff turnover and inappropriately packaged and labelled chemicals has led to problems identifying some chemical stocks. Two of the Rarotonga schools had considerable quantities of outdated, unwanted, or unknown stock but had no means for environmentally sound disposal and were awaiting Ministry of Education assistance. There is also a small stockpile of obsolete chemicals on Aitutaki.

Hospital and veterinary facilities were more organised but had the same disposal issues. The veterinary laboratory currently has no old or out of date chemical stock. Historically old stocks, as well as used plastic syringes have been sent to the landfill for disposal. The veterinary laboratory has no facilities for safe disposal of sharps and future unwanted stock. The hospital laboratory and x-ray facility also have only limited unwanted stocks but again lack the facilities for safe storage and disposal.

Issues of storage, management and safe disposal of unwanted stocks will need to be addressed through the development of a formal action plan for these chemicals. This will be included in the action plan for reducing or eliminating releases from POPs stockpiles, wastes and contaminated sites. The lack of appropriate storage facilities, safety equipment, and better staff training in aspects of chemical safety should also be addressed in the schools. The Ministry of Education is already actively moving to remedy some of these issues.

### **2.3.6 Assessment of releases from unintentional production of Annex C chemicals (PCDD/PCDF, HCB, PCBs and PeCB)**

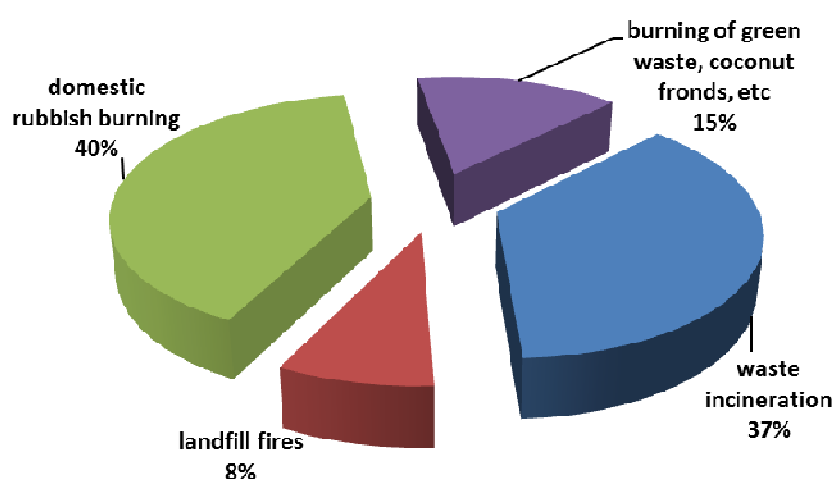
An initial estimate of dioxin and furan releases<sup>2</sup> in the Cook Islands has been prepared using the UNEP Standardised Toolkit (UNEP 2003b). The report on dioxin and furan releases in the Cook Islands (Graham 2010a), includes background information on dioxins, a description of the methodology used for estimating the releases, the source activity data and other relevant information used for the release estimates, and the inventory results. The key results from the assessment are summarised in Table 2.4 and in Figure 2.4 (for air and residues combined).

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<sup>2</sup> PCBs, PeCB and HCB can also be formed as unintentional byproducts of combustion. However, the inventory was restricted to releases of dioxins and furans because the available information on the other releases is extremely limited. As a general rule, the measures taken to release dioxins and furans will also reduce the releases of PCBs, PeCB and HCB.

**Table 2.4. Estimated Releases of Dioxins and Furans**

| Cat        | Source Categories                          | Annual Releases (g TEQ/a) |            |            |            |            |
|------------|--|---------------------------|------------|------------|------------|------------|
|            |  | Air                       | Water      | Land       | Products   | Residue    |
| 1          | Waste Incineration                         | 0.450                     | 0.000      | 0.000      | 0.000      | 0.003      |
| 2          | Ferrous and Non-Ferrous Metal Production   | 0.000                     | 0.000      | 0.000      | 0.000      | 0.000      |
| 3          | Heating and Cooking                        | 0.001                     | 0.000      | 0.000      | 0.000      | 0.000      |
| 4          | Production of Mineral Products             | 0.000                     | 0.000      | 0.000      | 0.000      | 0.000      |
| 5          | Transportation and Power Generation        | 0.002                     | 0.000      | 0.000      | 0.000      | 0.000      |
| 6          | Uncontrolled Burning                       | 0.426                     | 0.000      | 0.000      | 0.000      | 0.332      |
| 7          | Production of Chemicals and Consumer Goods | 0.000                     | 0.000      | 0.000      | 0.000      | 0.000      |
| 8          | Miscellaneous                              | 0.001                     | 0.000      | 0.000      | 0.000      | 0.000      |
| 9          | Disposal/Landfilling                       | 0.000                     | 0.000      | 0.000      | 0.000      | 0.000      |
| <b>1-9</b> | <b>Total</b>                               | <b>0.9</b>                | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.3</b> |

**Figure 2.4. Main sources of dioxin release in the Cook Islands**

As shown in the figure, the most significant sources of dioxin releases for the Cook Islands are waste incineration, landfill fires, domestic rubbish burning, and the burning of green wastes (including coconut fronds). Together these account for 99% of the total dioxin releases to air and in residues.

The predominance of these sources indicates that the priority area for achieving reductions in dioxin releases for the Cook Islands should be waste management generally, but with a particular focus on current disposal practices for domestic wastes and the special wastes generated at the airport and hospital. The options for minimising releases from these sources include the following:

- Domestic rubbish burning: discourage waste burning through education and/or regulation; promote recycling where feasible, and the use of organised waste collection and disposal systems (ie controlled landfill).

- Green waste disposal: promote alternatives such as use as a mulch, or composting.
- Landfill fires: require landfills to be properly designed and managed so as to minimise the potential for fires (either accidental or deliberately lit).
- Airport and hospital incinerators: consider replacing with state of the art low-emission units or more benign alternative systems such as steam sterilisation.

For new sources of unintentional POPs, the Stockholm Convention requires the application of best available techniques and best environmental practices (BAT/BEP). The requirement to apply BAT/BEP would be relevant for the Cook Islands if the airport and hospital incinerators are ever replaced. For existing sources of unintentional POPs release the Stockholm Convention requires parties to promote the application of BAT/BEP. This approach is consistent with the various options noted above for minimising releases from the main sources (other than incineration). The knowledge and application of BAT/BEP for new and existing sources is however very limited in the Cook Islands and training will be required.

### **2.3.7 Information on the state of knowledge on stockpiles and contaminated sites**

#### **2.3.7.1 Stockpiles**

An assessment of stockpiles of waste and obsolete chemicals and the identification of contaminated sites was carried out in the Cook Islands as part of the AusAID/SPREP project on POPs in Pacific Island Countries (1997 to 2005). No PCB contaminated oils were found in stockpiled transformers. Chemicals and some related hazardous wastes were collected from various facilities on the Cook Islands, including the outer islands. A total of 4 tonnes of obsolete pesticides were collected, including 100 kg Dieldrin and 11 kg Lindane. All of the chemical wastes were packed and shipped to a waste treatment plant in Queensland, Australia. The shipment from the Cook Islands occurred in January 2005.

The inventory work carried out under the current project has found only limited quantities of chemical stockpiles. Small quantities of old laboratory chemicals were identified, along with a stockpile of agricultural chemicals, although these are mainly fertilisers. No significant build-up of stockpiles is anticipated in the foreseeable future, due to the immediate use practices of planters, and the high cost of procurement.

The existing small stockpiles noted above, should be addressed through an action plan for the management of stockpiles, wastes and contaminated sites.

#### **2.3.7.2 Contaminated sites**

A preliminary assessment of potentially contaminated sites was carried out as part of the initial studies done under the POPs Project (Kerrich Environmental Ltd 2010). The work also included a significant training component, to assist with capacity building.

Information for the assessment was gathered from interviews and questionnaires with ex-workers from the Ministries of Health and Agriculture and a review of Ministry of Agriculture



records and archives. Further information on potentially contaminated sites was obtained during a three-day workshop with representatives from the National Environment Service, Ministry of Health, Ministry of Agriculture and various other stakeholders. Ten potentially contaminated sites were identified associated with former pesticide storage sites, horticultural research and general waste disposal operations. Site visits were then conducted to investigate each site in more detail.

**Table 2.5. Summary of potentially contaminated sites**

|                                  | Risk to Surface Water | Risk to Ground Water | Risk from Direct Contact | Result from POPs Testing |
|----------------------------------|-----------------------|----------------------|--------------------------|--------------------------|
| Toa Petroleum Depot              | Low                   | Medium               | Low                      |                          |
| Manihiki / Rakahanga Hostel      | High                  | Low                  | High                     | Trace                    |
| Turangi Recycling Centre         | Not assessed          | Not assessed         | Not assessed             |                          |
| Totokoitu Research Station       | Medium                | Medium               | High                     | Trace                    |
| MOIP Roadworks Yard              | Medium                | Medium               | Medium                   |                          |
| Landfill, Arorangi               | Low                   | Low                  | Medium                   |                          |
| Te Aponga Uira                   | Medium                | Low                  | Low                      |                          |
| Old Triad depot, Takuvaine       | Low                   | Low                  | Low                      |                          |
| Old landfill, Panama             | High                  | Medium               | Medium                   |                          |
| Triad fuel storage depot, Panama | Medium                | Medium               | Low                      |                          |

The sites were ranked in accordance with a New Zealand risk screening system (MfE 2004), and the rankings are shown in Table 2.5. Of the ten sites investigated, two were ranked as high risk, and three were identified as being potentially contaminated with POPs. Samples were collected from all of the sites and sent to New Zealand for analysis. Testing showed low concentrations of DDT isomers in the soil samples collected from two of the sites, but the concentrations were well below the guideline values given for both agricultural/horticultural and residential land use. In addition, dieldrin residues were found in stream sediment collected near one of these sites, the former agricultural research station at Totokoitu, but not at concentrations expected to have any significant environmental effects (Kerrich Environmental Ltd 2010).

The results from this work indicate a need for further more detailed investigations at some of the sites, with a view to possible remediation. There is also a need for similar investigations to be carried out at other sites on Rarotonga, and also on other islands. The National Environment Service has the necessary authority under the Environment Act to initiate further work on identification and management of contaminated sites. At present however, the NES lacks the capacity (technical and personnel) for management and remediation of identified sites.

### **2.3.8 Summary of future production, use and releases of POPs**

The Cook Islands does not anticipate any future need for the chemicals listed in the Stockholm Convention. It is expected that future releases of unintentional POPs will be gradually reduced in response to the strategies documented in section 3 of this NIP.

### **2.3.9 Existing programmes for monitoring releases and environmental and human health impacts**

In general, the level of POPs pollution on the Cook Islands is not well understood, simply because there has been no monitoring, other than the initial investigations carried out under the POPs Project. Environmental monitoring is very limited in the Cook Islands due to the lack of technical capacity and trained personnel.

Limited water quality evaluations were performed at the Manihiki lagoon and Penrhyn atoll in 2007, in response to a severe disease outbreak in black pearl oysters (Diggles, Hine et al. 2007). No tests specific to POPs were undertaken although tests for short and long chain organics were included. A more extensive monitoring programme has been suggested (Heffernan 2006).

An environmental monitoring programme has been set up by the Ministry of Marine Resources. This includes environmental monitoring of the pearl culture industry, including water quality, pearl oyster health and growth, and pearl farm mapping and census. It also involves baseline surveys and monitoring of the fish, corals and invertebrates of various islands. In addition, a ciguatera programme monitors the lagoon around Rarotonga for outbreaks of ciguatera several times a year and provides information to the public about areas that should not be fished (MMR 2010).

Preliminary monitoring of possible contaminated sites has been conducted during the preparation of this NIP, however further monitoring will be necessary. Recent food sampling on a variety of fruit and vegetable consumables (POPs and pesticide screening) indicates only low levels of two pesticides in a few of the samples (Graham 2010b). There would be merit in developing this work into a routine monitoring programme.

### **2.3.10 Current level of information, awareness and education among target groups**

The following activities were carried out under the POPs Project to raise awareness of POPs chemicals and the Stockholm Convention both within government departments, NGOs, and the private sector, and also among the general public (Hilyard, 2010c).

Consultation with key stakeholder groups and other interested organisations and individuals was facilitated through two workshops. The initial meeting provided an introduction to the POPs project and the Cook Islands' obligation to the Stockholm Convention. Reports were also sought from key Ministries as to the status of their institutional capacity and systems to deal

with hazardous chemicals and materials. Local consultants were recruited to further investigate these reports, and to draw up inventories on current, obsolete and stockpiled chemicals, pesticides and other potentially hazardous products on Rarotonga. These reports were presented to the subsequent Priority Setting Workshop where the issues were discussed and a prioritised list was established for further consideration within the National Implementation Plan.

General awareness about POPs was surveyed in August 2010 and indicated that general knowledge about POPs was minimal. Raising awareness was identified by the public as an important need. A search for a concept resulted in a media campaign based on a comic strip to address literacy needs and general interest in a science-related topic. The programme covered 8 themes. Each theme consists of three strips which were published three times a week in the CINews and an audio-visual representation was aired on CITV three times a week, both in English and in Cook Islands Māori, over an 8 week period. A local artist and cartoonist was recruited to draw up the comic strip which was based on a concept and script developed by the POPs Project Coordinator. A classroom teaching package for schools, posters and a dvd will be made available for schools in 2011 through NES.

A database of chemicals and pesticides will be added to the POPs page of the website of the National Environment Service. This database will provide information about products containing potentially hazardous chemicals. Consumers can use this database to check if a particular product is available on Rarotonga and whether it contains any at-risk elements.

### 2.3.11 Relevant activities of non-governmental stakeholders.

Several non-governmental organisations (NGOs) and private sector businesses are actively involved in promoting environmental issues nationally and implementing related activities, especially at the local community level. Many provide opportunities for children, youth and community members to engage in environmental discussions and actions. Those NGOs with specific interests relevant to POPs and/or hazardous chemicals generally, are summarised in Table 2.6.

**Table 2.6: Summary information for relevant NGOs**

| NGO                             | Purpose  | POPs Activity  |
|---------------------------------|--|--|
| CIANGO                          | Umbrella organisation for Cook Islands NGOs                                | President is a member of the POPs Steering Committee   |
| Te Rito Enuā                    | WWF projects related to environmental issues – climate change, biosecurity | Interest in impact on environment of any chemicals or household or other products containing chemicals |
| Taporoporoanga Ipukarea Society | Raising awareness about environmental issues                               |  |
| National Council of Women       | Women's organisation that looks at   | Is hosting the GEF Small   |

|   |  |   |
|---|--|---|
|   | environmental issues as they impact on women   | Grants programme  |
| Island Sustainability Alliance Cook Islands (ISACI) | Advocates for waste management, alternative energy sources and anti-pollution practices  | Interest in disposal of chemical-based waste                                    |
| Te Vaka Taunga - Te Rito O Te Vairakau Maori        | Focuses on the use of traditional knowledge of local plants for use as Maori medicine. Most of the plants are considered weeds which are usually sprayed with weed killers   | They want to identify local plants to be preserved (from weed killers)          |
| Muri Environment Care                               | Local organisation focusing on keeping their lagoon free of pollution – especially from local piggeries and the chemicals from household products  | Interest in chemical – based household products and how they are disposed of    |
| Mangaia Tangaero Rangers                            | A youth NGO on the island of Mangaia, which focuses on education and awareness programmes. Activities include the collection and processing of recyclable aluminium, and plastic and glass and tree planting programmes. | Waste issues generally  |
| Tourism Industry Council                            | Has a strong focus on dealing with environmental issues relevant to the tourism industry   | Negative impacts of POPs releases (eg incinerator smoke)                        |
| Red Cross   | Assists in times of disaster and clean-up activities relating to follow up in conjunction with Emergency Management Cook Islands   | Interest in any hazardous chemicals exposed during and following disaster event |

### 2.3.12 Overview of technical infrastructure for POPs assessment

Technical infrastructure for environmental monitoring and research in the Cook Islands is extremely limited. No chemical laboratories are available on the Cook Islands capable of testing and analysis for POPs chemicals. At present samples are sent to New Zealand laboratories or the University of the South Pacific in Fiji.

### 2.3.13 Identification of impacted populations or environments

The impacts of POPs on the environment of the Cook Islands, and on the population, are largely unknown. A few limited studies have however been undertaken and these are documented below.

### 2.3.13.1 POPs Pesticides and PCBs

An investigation on POPs in lagoon water in Rarotonga was carried out from November 2004 to December 2005 by a non-government organization, with support from NZAID (Ingram and Manoa 2006). This study set out to assess the concentration of POPs in Rarotonga lagoon, and is believed to be the first of its kind for the Cook Islands. Two organochlorine pesticides - 4,4'-DDT and methoxychlor were found in one sample, at concentrations of 0.7 and 0.5 µg/L, respectively. Seven polycyclic aromatic hydrocarbons (PAH) were also detected on one occasion from samples collected at one of the sites, and one PAH was detected on one occasion at another site. Two phthalate esters were detected, one of them at all sites throughout the survey, and the other in one sample on one occasion.

A preliminary assessment of pesticides and PCBs in food was conducted as part of the POPs Project (Graham 2010b). No POPs pesticides or PCBs were detected; that is, the results were all reported as less than the limit of detection for each of the pesticides. Trace levels of two other pesticides (chlorothalonil and permethrin) were found in three out of the eight samples of vegetables tested. However, all of these results were comfortably below the allowable residue limits (assuming that the New Zealand MRLs will be applicable to the Cook Islands). Samples of canned meat, fish and coconut cream were also analysed for pesticides and PCBs, but no residues were detected in any of the samples.

The Cook Islands has not yet participated in any biomonitoring programs for POPs in humans. However our Pacific Island neighbours, Fiji, Kiribati and Tonga, have participated in the WHO Global Human Milk Surveys. Some of the most recent results for these countries are shown in Table 2.7 along with comparative data for other parts of the world. The Pacific Island results show very low levels of PCBs and POPs pesticides, and similarly low levels can be anticipated for the Cook Islands population.

The results from New Zealand breast milk surveys (CPHR 2010) are also of relevance to the Cook Islands. Three consecutive surveys were conducted, in 1988, 1998 and 2008, with the aim of measuring individual levels of dioxins and furans, polychlorinated biphenyls and organochlorine pesticides. Some of the New Zealand results are shown in Table 2.7. Generally the levels found for all POPs were towards the bottom end of the ranges reported for other countries, especially those in the northern hemisphere. In addition, the concentrations of all the POPs have shown steady declines over the last 20 years, which is consistent with the removal of all POPs pesticides and PCBs from use in New Zealand, coupled with a range of measures that have been taken to reduce some of the releases of dioxins and furans.

**Table 2.7: Comparative Data for PCBs and POPs pesticides in Breast Milk**

| Country                                 | Survey Year       | POPs Concentration Range, in µg/g of milk fat |                   |
|---|-------------------|---|-------------------|
|   |                   | Total PCBs                                    | Total DDT isomers |
| Fiji                                    | 2007 <sup>c</sup> | 0.0009 – 0.0014                               | 0.57 – 0.80       |
| Kiribati                                | 2007 <sup>c</sup> | 0.0010  | 0.19              |
| Tonga                                   | 2007 <sup>c</sup> | 0.0007  | 0.79              |
| 8 Industrialised countries <sup>a</sup> | 2002 <sup>d</sup> | 0.22 – 0.93                                   | 0.27 – 2.4        |
| 5 Middle Eastern countries <sup>b</sup> | 2002 <sup>d</sup> | -   | 0.25 – 2.8        |
| China                                   | 2002 <sup>d</sup> | -   | 2.7 – 3.6         |
| Australia                               | 2002 <sup>d</sup> | -   | 0.22 – 0.80       |
| New Zealand                             | 1988 <sup>e</sup> | 0.108 <sup>f</sup>                            | 2.05              |
| New Zealand                             | 1998 <sup>e</sup> | 0.034 <sup>f</sup>                            | 0.66              |
| New Zealand                             | 2008 <sup>e</sup> | 0.017 <sup>f</sup>                            | 0.39              |

**Footnotes:**

- a The 8 Industrialised countries are Finland, Ireland, Norway, France, Italy, Russia, Spain, Croatia;  
b The 5 Middle Eastern Countries are Jordan, Turkey, Egypt, Kuwait, Saudi-Arabia;  
c Aalbersberg, (Pers. Comm.) University of the South Pacific, Suva, Fiji;  
d UNEP Chemicals(2003a)Regionally Based Assessment of Persistent Toxic Substances; Global Report 2003;  
e CPHR (2010) Concentrations of persistent organic pollutants in the milk of New Zealand women;  
f The results for PCBs have been limited to the 6 dominant congeners, for consistency between the 3 surveys

**2.3.13.2 PBDEs**

The current understanding of how trace levels of contaminants such as polybrominated diphenylethers move through the environment, suggests that PBDE is absorbed into our bodies via the food we eat and by breathing and swallowing PBDE-contaminated household dust. No measurements have yet been made of PBDEs in Cook Islands food, but the chemicals have been found in other countries at trace levels in a wide range of food items, including meat, fish, cereals and dairy products.

PBDEs have been detected in New Zealand house dust. Dust is believed to be a direct route of exposure of people to PBDEs, and more so for young children. The concentrations of PBDEs in New Zealand house dust were similar to those measured in parts of Europe, but much lower than those in the USA and Canada. The higher PBDE dust levels in North American houses are believed to be due to the much more extensive use of PBDE flame retardants in foam rubber and other household furnishings.

PBDEs have been detected in New Zealand samples of human blood serum and breast milk. The concentrations in serum were comparable to, and in some cases higher than, those found in Europe but lower than those found in Australia, and much lower than those in North America. An Australian study of PBDEs in breast milk, which showed higher levels than those found in New Zealand, concluded that there was no significant risk to breast-fed infants.

The World Health Organisation considers that breast milk is the best food for babies, especially in their first six months. The levels of BDEs in breast milk are very low (less than one part in a hundred million) and are expected to fall as use of these chemicals declines. Babies are likely to be exposed to BDEs even if they are not breastfed. Alternative foods for babies, such as infant formula, may also contain these chemicals.

It is likely that PBDEs would also be found in the bodies of Cook Islanders because of the significant use of imported products, such as electronics goods, home appliances and home furnishings, for which tests in New Zealand and other countries have shown the presence of PBDEs. However, it is also likely that the concentrations in Cook Islanders would be lower than in other countries, because of the consumption of local vegetables and seafood.

#### **2.3.13.3 PFOS**

A reasonable amount of data has been assembled over the last decade on the distribution of PFOS in the environment, but there is only a limited number of studies on the concentrations and effects in humans. All monitoring data published show that PFOS accumulates up through food chains and also biomagnifies. However, because of the unusual physical-chemical characteristics of this substance, PFOS does not follow the “classical” pattern of partitioning into fatty tissues, but instead binds preferentially to proteins in the plasma, such as albumin and  $\beta$ -lipoproteins, and in the liver.

In general, the available monitoring data show that animals at higher trophic levels have higher concentrations of PFOS than animals at lower trophic levels, which indicates that biomagnification is taking place.

No data is available on the presence or otherwise of PFOS in the Cook Islands environment, or in humans. In addition, no such data is available from any of our nearby neighbours, such as New Zealand and other Pacific Island countries.

#### **2.3.14 Details of any relevant system for the assessment and listing of new chemicals and regulation of chemicals already in the market.**

In principle, the Pesticides Act provides a system for the assessment and regulation of new and existing pesticides in the Cook Islands. However, as noted previously, the Act is currently not being applied.

There is no system for the assessment and listing of any other new or existing chemicals.

## **3.0 STRATEGY AND ACTION PLAN ELEMENTS OF THE NATIONAL IMPLEMENTATION PLAN**

### **3.1 Policy Statement**

The Government of the Cook Islands is committed to sustainable development, ensuring the highest quality of life consistent with the aspirations of our people, in harmony with our culture and environment. Furthermore, we are acutely aware of the global effects of environmental pollution and cognisant of the threat caused by Persistent Organic Pollutants (POPs). We are therefore committed to actions which protect and enhance human and environmental health.

The Stockholm Convention on Persistent Organic Pollutants provides a global framework for alleviating the threat of POPs. The Government of the Cook Islands and its people recognize the importance of this National Plan for Implementation of the Stockholm Convention and are committed to its obligations.

### **3.2 Implementation Strategy**

The execution of the National Implementation Plan (NIP) will be coordinated by the National Environment Service, the government Ministry primarily responsible for environmental issues and strategies in the Cook Islands. The joint participation of many other government agencies will ensure the success of the NIP and it is envisaged that the Plan will be integrated into the activities of each Agency without significantly adding to their workload. The NES would also be responsible for reporting to the Convention Secretariat on all of the activities carried out in support of this Plan.

The action plan for information exchange and reporting (see section 3.3.7) includes a proposal for establishing a National Chemicals Committee (NCC). The membership and functions of this committee will be determined by consultation between the relevant government agencies and will be contingent on endorsement by the Government. However, it is envisaged that the NCC would act as a coordinating mechanism and advisory body for all matters related to chemicals management in the Cook Islands, including POPs. It would also provide a specific national mechanism for monitoring progress with implementation of the NIP.

A stakeholder workshop held in November 2010 provided a forum for discussion and prioritisation of POPs-related issues in the Cook islands, including the options available for addressing specific obligations under the Stockholm Convention (Hilyard 2010c). The national priorities which emerged from the workshop were:

- Bio-security – monitoring of pesticides in food;
- eWaste disposal and recycling;



- Pesticides management;
- Contaminated sites;
- Waste burning and incineration issues;
- Other waste issues – asbestos, waste oil, used tyres and old building materials, including paint.

Some of these priority items extend across a much wider range of interests than those covered by the Stockholm Convention. In addition, some of them are directly relevant to existing national programmes and initiatives, such as the National Waste Strategy. However it is still appropriate for them to be addressed through the NIP because this will assist in achieving a more coordinated approach than might otherwise be the case.

The detailed work plans given in the next section are based around the specific obligations of the Stockholm Convention, with the above priority items incorporated where appropriate.

### **3.3 Activities, Strategies and Action Plans**

The National Implementation Plan consists of the following specific strategies and action plans each targeting aspects of the Convention requirements.

1. Action Plan to address the intentional production and use of POPs Pesticides;
2. Action Plan to address the specific requirements for PCBs;
3. Action Plan on measures to minimize and ultimately eliminate the production of unintentional POPs;
4. Action Plan on measures to reduce or eliminate releases from stockpiles, wastes and contaminated sites;
5. Action Plan to address public information, awareness and education;
6. Action Plan to address research, development and monitoring.
7. Strategy to address information exchange and reporting.

#### **3.3.1 Action Plan to address the Intentional Production and Use of POPs Pesticides (Articles 3 and 4, Annexes A and B).**

##### **3.3.1.1 Context and Analysis of Issue**

Articles 3 and 4 of the Convention require Parties to undertake measures to reduce or eliminate releases from the intentional production and use of the POPs chemicals listed in Annexes A and B of the Convention, and regulate any trade in these POPs with both Parties and Non-Parties.

The Cook Islands does not intentionally produce or use any POPs pesticides, nor are there any future plans to do so. Although some POPs pesticides were used in the past, especially DDT for vector control, these have long been replaced with more benign chemicals.

The Customs Act 1913 and the Pesticides Act 1987 provides the basis of current pesticide controls although there are some concerns these are not being administered effectively. A list of prohibited substances published under the Customs Act includes a general listing for “pesticides”. This in principle bans all pesticide imports although there is no evidence any such ban is being implemented or advocated. The Pesticides Act 1987 provides for the regulation and control of pesticide imports, sale and use through a registration process, which is administered by a Pesticides Board. This Board has not been active for many years, but actions are now underway to have it reinstated. The first meeting of the Board has been set down for March 2011.

A survey of pesticide users carried out under the POPs project indicates significant problems with current practices for storage, handling and use of pesticides. In addition, a number of capacity building and awareness-raising requirements have been identified in relation to pesticide use generally in the Cook Islands. These include the need for additional training of Customs officers, MOA staff, and other government personnel in the application of the pesticide regulations. Additionally, general education and awareness activities are required at the user level including further promotion of alternative (non-chemical) methods for pest control.

### **3.3.1.2 Goals and Objectives**

- Goal: To upgrade pesticide management in the Cook Islands through prohibiting the intentional production and use of POPs pesticides, better controls on the import and use of other pesticides, and through improved user education and awareness
- Objective 1. To prohibit the import of POPs chemicals in the Cook Islands, including PCBs (see 3.3.2.2)
- Objective 2. To take action to ensure effective implementation and enforcement of the Pesticides Act
- Objective 3. To review the Pesticides Act 1987 after 3 years’ experience in its use, including a possible extension to cover other chemicals
- Objective 4. To develop an on-going national program to improve practices for pesticide handling, storage, use and disposal through training, education and awareness
- Objective 5. To develop an on-going programme to promote non-chemical alternative pest management strategies

Additional objectives related to the development of national capacity for monitoring and analysis will be addressed under the action plan for Research, Development and Monitoring.

### 3.3.1.3 Management Options

Objective 1: There is currently no intentional production and use of POPs pesticides in the Cook Islands, and no foreseeable requirement for their future use. The Convention requires that all imports and use of POPs pesticides be prohibited, and this can be achieved reasonably quickly and effectively by using the existing provisions for controlling imports under the Customs Act. The prohibition on POPs imports should be implemented fairly rapidly, so as to demonstrate commitment to, and compliance with, the Convention. The Customs "prohibited list" already exists so it should be a quick and easy process to amend it by adding the specific POPs pesticides (and PCBs). The alternative approach of promulgating regulations under the Pesticides or Environment Acts would take much longer, and would still have to be followed up by amending the Customs list.

Objectives 2 and 3: At the POPs workshops conducted as part of the development of this NIP a number of representatives advocated replacement of the existing Pesticides Act with a new one because it is currently not working. However, the fundamental issue is a lack of resourcing within MOA, so the first of the proposed actions under this objective aims to address this issue. None of the subsequent proposed actions are likely to happen, without specific staffing for pesticides management. Once the staffing is in place, it is proposed to quickly carry out a pro forma registration process for existing pesticides, and to set up the routine systems required for future registrations. It will be appropriate to draw on overseas expertise from countries such as New Zealand, that have (historical) experience with the operation of similar legislation.

The most appropriate time to review the Pesticides Act would be a few years after it has been operating properly. The most appropriate starting point for such a review would be to draw on the experiences of other Pacific Island countries, because these are likely to be of most relevance for the Cook Islands. It will be necessary to draw on external expertise for the review, because there is none available locally, and it will also be important to draw on the work being done by SPC, who are the key source of regional expertise in this area.

It should also be noted that there is some interest within the Cook Islands in having the Act extended to cover a much wider range of chemicals. This aspect will be examined further in a proposed study of chemicals management, for which NES has recently submitted a funding proposal under the UNEP SAICM<sup>3</sup> programme.

Objectives 4 and 5: These are intended to promote the environmentally sound management and use of pesticides, and the use of alternative (non-chemical) methods of pest control, through educational campaigns and demonstration projects. In general, education and awareness programmes are preferred over alternative approaches, such as regulation and enforcement. Principally, a non-regulatory approach is advocated to avoid time delays in putting appropriate regulations in place, and because of insufficient capacity within MOA for enforcement (especially staff numbers and relevant training/experience).

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<sup>3</sup> SAICM: Strategic Approach to Integrated Chemical Management

Principally, the target groups for this programme include farmers and agricultural workers. Training in the environmentally sound management of pesticides will be undertaken using a train the trainers approach. Because of a lack of in-country capacity, an external expert will be needed to initially train key staff; these staff will then propagate the training regime to pesticide users. This approach represents a cost effective solution and ensures maximum capacity building within the Cook Islands. The target groups for the initial training will include MOA staff and other relevant stakeholders. An on-going education and awareness programme will then be developed and implemented to spread the messages out to pesticide users and the general public. Resource materials will be produced in both Cook Islands Māori and English to ensure the maximum coverage possible.

#### **3.3.1.4 Implementation Strategy**

##### **Lead Agencies**

The lead agency for this action plan will be the Ministry of Agriculture, with assistance as appropriate from the National Environment Service and the Ministry of Finance and Economic Management (Customs).

##### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A1). The major aspects of the action plan follow:

1. Formal prohibition of POPs imports by amending the existing list of Prohibited Imports under the Customs Act;
2. Reactivating the Pesticides Act through reinstatement of the Pesticides Board, appointment of a Pesticides Advisory Officer (who would act as Pesticides Registrar), pro-forma approvals of all existing pesticides, and setting up the necessary administrative arrangements for future registrations;
3. A formal review of the Pesticides Act once the new operating arrangements have been in place for three years. The possible extension to cover other chemicals will be initially assessed under the separate SAICM programme.
4. The development and delivery of training courses on the safe handling and use of pesticides.
5. A programme for the promotion of non-chemical alternatives for pest management.

External consultants will be required to conduct initial training in pesticides management and for review of the Pesticides Act. As shown, it is expected that the work can be completed within a period of 4 to 5 years, although the education and awareness programmes should continue indefinitely.

##### **3.3.1.5 Resources Needed**

The financial resources required for this action plan are summarized in Table A1 of Annex 2. The majority of this work will require external donor funding, with a contribution, largely “in

kind”, from the government of the Cook Islands. In addition, it is proposed that the full time position of a Pesticides Advisory Officer be met from within the existing budget of the Ministry of Agriculture. Monitoring of the programme will be in accordance with the performance indicators identified in Table A1.

### **3.3.2 Action Plan to address the Specific Requirements for PCBs (Annex A, Part II)**

#### **3.3.2.1 Context and Analysis of Issue**

Parties to the Stockholm Convention are obligated to eliminate PCBs. The specific requirements for PCBs under Annex A, Part II, of the Convention are as follows:

- Production is to be eliminated.
- Use of PCBs in equipment, such as transformers and capacitors, is to be eliminated by 2025 and until then is permitted only in a manner that prevents or minimizes human exposure and release into the environment.
- Import and export of PCBs is prohibited, except for the purpose of environmentally sound waste management.
- Parties are required to work towards the environmentally sound management of PCB wastes as soon as possible, but no later than 2028.

There is no industrial production or use of PCBs in the Cook Islands. Therefore the only measures required to control further PCB accumulation relate to import restrictions. The legal requirements regarding prohibitions and any future imports and exports of PCBs have already been addressed through the action plan for intentional production and use of POPs pesticides (see 3.3.1).

PCB tests were conducted on electrical transformer oils as part of an AusAID funded project (SPREP 2003). While, these results confirmed the general absence of PCBs in transformers, they do not preclude the possibility of occasional future discoveries of PCBs in old transformers; especially on some of the outer islands.

A report on PCBs and other hazardous materials in the Cook Islands identified a limited number of PCB-containing capacitors, and noted that more are likely to be found (Hilyard 2010b). No formal system is in place for the environmentally sound management and disposal of these and other PCB wastes.

#### **3.3.2.2 Goals and Objectives**

Goal: To ensure the sound management of PCBs in the Cook Islands by prohibiting any future imports, identifying all current holdings and making provision for their safe storage and eventual disposal in an environmentally sound manner.

Objective 1: To prohibit the import of PCBs into the Cook Islands

Objective 2: To establish a system for identifying and managing PCBs in small capacitors and other electrical equipment

Objective 3: To identify any remaining PCB transformers in the Cook Islands and, if necessary, arrange for their safe removal and disposal

### **3.3.2.3 Relevant Management Options**

Objective 1: For effective and efficient implementation, measures to prohibit the importation of PCBs and PCB containing equipment should be undertaken concurrently with Objective 1 of Action Plan 3.3.1. Further discussion of the management options are given in that section.

Objective 2: Following the banning of imports, it is essential that any current stocks of PCB containing equipment are managed in an environmentally sound manner. The best action to address this requirement would be to set up a system for identifying and managing PCBs in small capacitors and other equipment as they arise, including safe storage and ultimate disposal. Although regulatory measures are possible through the Environment Act, the length of time required to develop any regulations and the currently limited capacity for enforcement means that a voluntary approach will be more efficacious. Such an approach requires an effective, timely awareness campaign coupled with a training programme for electrical contractors to ensure that PCBs are appropriately identified and removed from service.

Objective 3: This aims to complete the identification and removal of any PCB-containing transformers possibly remaining in the Cook Islands. Significant progress has already been made within this area, following the AusAid/SPREP project. Appropriate staff training and the development of a management system will be undertaken with support from an external consultant; this will enable the necessary capacity to be developed within MOIP and TAU. The most practical method of assessing remaining transformers in operation is initially through visual inspection and characterisation by age. Any transformers more than 20 years old are the most likely to contain PCBs, and these will be tested and removed from service, if they are found to contain PCBs.

The Cook Islands lacks any facility for environmentally sound disposal of PCB containing equipment, therefore any equipment found will need to be stored and then disposed overseas. The safe storage and disposal of PCBs is directly linked to the action plan for stockpiles and wastes, including provisions for the safe storage of hazardous chemicals and other intractable wastes. Transportation to an overseas destruction facility must be done in accordance with the provisions of the Basel and Waigani Conventions.

### **3.3.2.4 Implementation Strategy**

#### **Lead Agencies**

The lead agency for this Action Plan will be the Ministry of Infrastructure and Planning, working closely with representatives from Te Aponga Uira o Tumu-te-Varovaro (TAU) and Aitutaki Power Supplies (APS).

### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A2). The major aspects of the action plan are:

1. Formal prohibition of imports by amending the existing list of Prohibited Imports under the Customs Act to include PCBs and PCB containing equipment;
2. The provision of training to electrical workers, and an on-going awareness campaign for the identification of PCBs in electrical equipment and implementation of a system for collection and storage;
3. Preparation of a list of transformers more than 20 years old, testing for PCBs, and removal for disposal, if necessary.

The storage and disposal of any PCBs will be addressed through the action plan for other stockpiles and wastes (see section 3.3.4).

External technical experts will be required to provide training in testing and environmentally sound management of PCB-containing equipment. The estimated timeframe for the initial implementation of the action plan is 3 years, although there will be an on-going requirement for storage and export/disposal activities for some years beyond that time.

#### **3.3.2.5 Resources Needed**

It is anticipated that most components of this work plan will be implemented within three years, although some PCB containing capacitors and other equipment may not be identified for several more years beyond that date. The financial resources required to implement the work plan within the given timeframe are shown in Table A2 of Appendix 2. The Cook Islands Government will seek funds from international donors to support all or part of the activities shown in the detailed work plan.

### **3.3.3 Action Plan on measures to minimize and ultimately eliminate the Unintentional Production of POPs (Article 5 and Annex C, Parts I, II and III).**

#### **3.3.3.1 Context and Analysis of Issue**

Parties to the Stockholm Convention are required to take measures for continuous minimization, and where possible elimination of releases of unintentionally produced POPs (dioxins and furans, PCBs, HCB and PeCB). Article 5 of the Convention defines the following specific obligations:

- Prepare an action plan within 2 years after entry into force (1<sup>st</sup> release inventory included);
- Require best available techniques (BAT) as soon as possible but not later than four years after entry into force of the Convention, for all new sources or substantial modifications of existing plants, for those sources listed in Annex C, Part II, and promote the application of BAT and best environmental practices (BEP) for all other sources;

- Report on the success of identified strategies every five years.

Unintentionally produced POPs are formed and released during incomplete combustion involving organic matter and chlorine. There are no industrial facilities on the Cook Islands capable of producing unintentional POPs by-products, and most of the releases are from waste disposal activities. For this report, dioxins and furans have been the focus of investigation. Other unintentional POPs (i.e. HCB, PCBs and PeCBs) are likely to also be released in those processes identified as significant sources of dioxins and furans. Therefore the management of all unintentionally produced POPs will be effectively addressed through the one set of proposed actions.

An inventory of dioxin and furan releases in the Cook Islands was conducted as part of the preparation for this NIP (Graham 2010a). The most significant sources of dioxin releases were identified as waste incineration, landfill fires, domestic rubbish burning, and the burning of green wastes. Together these account for 99% of the total dioxin releases to air and in residues (see Table 2.4 and Figure 2.4).

The uncontrolled burning of plastics and tyres is prohibited under the Public Health Act; however there is evidence of difficulties in enforcing this legislation.

Landfill fires are often a sign of sub-standard landfill operational practices, which should be addressed through improved landfill management systems and procedures. In addition, the need for significant improvements to the existing waste management and disposal services was noted in the POPs assessment report for Aitutaki (Hilyard and Muir 2011).

The Cook Islands currently lacks the capacity to estimate the releases of dioxins and furans. The knowledge and application of BAT and BEP for new or existing sources is also very limited or non-existent. These requirements need to be considered when any new facility is developed; for example the installation of a new treatment plant for quarantine wastes.

### **3.3.3.2 Goals and Objectives**

- Goal: To develop and implement actions for the minimization and ultimately elimination of unintentionally produced POPs.
- Objective 1: To reduce releases from the burning of paper, plastics, old tyres, waste oil and other domestic and commercial wastes in the Cook Islands
- Objective 2: To reduce green waste burning in the Cook Islands
- Objective 3: To improve landfill management practices and reduce landfill fires, including on Aitutaki and other outer islands
- Objective 4: To review and implement the 2005 recommendations for upgrading the existing facilities for the management and disposal of quarantine and medical wastes.



Objective 5: To establish capacity within the Cook Islands for identifying and estimating unintentional releases of POPs; promoting the application of BAT/BEP for new and existing sources; and the assessment and monitoring of new and existing sources.

### **3.3.3.3 Relevant Management Options**

Objectives 1 & 2: Measures to reduce the burning of domestic rubbish, old tyres and green waste may be implemented using a regulatory approach, through voluntary measures, or through a combination of the two. Due to difficulties in enforcing regulations because of limited capacity (resources and people), educational campaigns, coupled with effective monitoring, are for the most part preferred. However, a review and upgrading of the existing disposal services for domestic rubbish should also be carried out to ensure that people have access to appropriate disposal options (as alternatives to burning). Further development of the options available for green wastes should also be explored, including the possible provision of centralised composting services.

It should be noted that the activities proposed under these two objectives are similar to activities identified in the Cook Islands' National Waste Strategy. It will be important that the NIP activities be designed and implemented in association with any similar work carried out under the National Waste Strategy.

Some external consultancy inputs may be required to assist with the review and development of these programmes, including an assessment of the current regulatory regime. There may also be significant capital costs for the provision of appropriate waste processing equipment.

Objective 3: The most effective approach for reducing releases from landfill fires will be to work closely with the landfill operators to develop effective site management procedures, including better controls over waste types, daily waste covering, and improved site security. These procedures should be implemented through an agreed site improvement plan which will include specific targets which should be monitored regularly to ascertain whether they have been met, and to establish whether further interventions are necessary for continued improvement.

The need for significant improvements to the existing waste management and disposal services was noted in the POPs assessment report for Aitutaki, and similar concerns are expected to apply to some of the other outer islands. It would be appropriate for these facilities to be reviewed by a technical expert, followed by implementation of any recommended improvements.

As with objectives 1 and 2, the above activities are also relevant to the National Waste Strategy and a coordinated approach should be taken to their design and implementation.

Objective 4: Medical and quarantine wastes represent a significant contribution to unintentional POPs releases on the Cook Islands. A review of options for quarantine waste was carried out in 2006 (Graham 2006). Five years have passed since that review and other options may now be

available. The costs estimates should also be updated. Due to limited institutional capacity within the Cook Islands, this review should be done by an external technical expert. In addition, implementation of the proposal will require a whole-of-government approach, because the costs are likely to be well beyond the financial capacity of the Airport Authority alone.

Objective 5: At present the Cook Islands lacks the capacity for identifying or estimating releases of unintentionally produced POPs, or for making decisions on the application of BAT/BEP. The first of these activities is required in order to meet the Convention requirement for periodic reporting on progress in reducing POPs releases, while the second will be required for any new potential sources, such as boilers and incinerators. The most effective way to develop the institutional capacity will be through the provision of training for key NES staff, most likely through the training offered from time to time through the Convention Secretariat. The NES POPs focal point will liaise with the Stockholm Convention Secretariat and SPREP to ensure that they keep up to date on these international and regional training opportunities.

There is also a need for monitoring the performance of existing and new sources of unintentional POPs, to ensure that the BAT/BEP systems and procedures are effective. This should be addressed through additional capacity building, including the provision of basic test equipment, so that NES staff are able to undertake the work.

#### **3.3.3.4 Implementation Strategy**

##### **Lead Agencies**

The lead agency for this Action Plan will be the National Environment Service in conjunction with the Ministry of Infrastructure and Planning (for objectives 1 to 3).

##### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A3). As indicated, the key parts of the plan include:

1. Discourage waste burning through education and/or regulation; promote recycling and composting where feasible, and improvements to the existing waste collection and disposal systems;
2. Eliminate landfill fires: require landfills to be properly designed and managed so as to minimise the potential for fires, review and upgrade waste disposal facilities on Aitutaki and other outer islands, as appropriate;
3. Review disposal options for airport and hospital wastes: consider replacing the incinerators with state of the art low-emission units or more benign alternative systems such as steam sterilisation.
4. Develop capacity within NES for identifying and estimating unintentional releases of POPs; promoting the application of BAT/BEP for new and existing sources; and the assessment and monitoring of new and existing sources.

### **3.3.3.5 Resources Needed**

It is expected that this work plan will be implemented within a timeframe of five years, although some of the activities are intended to be on-going. The financial resources required to implement the work plan within the given timeframe are indicated in Table A3 of Appendix 2. The Cook Islands Government will seek funds from international donors to support all or part of the activities shown in the detailed work plan.

### **3.3.4 Action Plan on measures to reduce or eliminate releases from stockpiles, wastes and contaminated sites (Article 6)**

#### **3.3.4.1 Context and Analysis of Issue**

Article 6 of the Stockholm Convention requires Parties to address issues associated with POPs stockpiles, wastes and contaminated sites. The primary requirements are as follows:

- Identification of stockpiles that consist of or contain intentionally produced POPs;
- Management of such stockpiles in a safe, efficient and environmentally sound manner;
- Identification of products and articles in use and wastes that consist of, contain or are contaminated, with intentionally or unintentionally produced POPs;
- Measures to ensure safe handling, collection, transport and storage of POPs wastes, and environmentally sound disposal;
- Identification of sites contaminated by POPs.

While these requirements are quite specific for POPs chemicals, the focus of this action plan has been extended to a much wider range of intractable wastes and site contaminants, mainly because these were identified as priority issues in the Priority Setting Workshop.

The Cook Islands has already addressed some of the Convention requirements for stockpiles and wastes. An AusAID/SPREP disposal project (POPs in PICs) identified stockpiles of obsolete chemicals from old agricultural chemical storage sites around the islands, some of which were cleaned up, repackaged and shipped to Australia for disposal (SPREP 2003).

Inventory work carried out under the current project has found only limited quantities of chemical stockpiles (Hilyard 2010b). Small quantities of old laboratory chemicals were identified at various school facilities, along with some more significant quantities of agricultural chemicals, although these are mainly fertilisers. No significant build-up of agricultural stockpiles is anticipated in the foreseeable future, due to the immediate use practices of planters, and the high cost of procurement. No system is in place for collection, storage and disposal of laboratory chemicals and has been highlighted as an area of significant concern.

The POPs project also noted a significant issue in the Cook Islands with the disposal of cement-asbestos sheeting, which was used extensively in the past, especially on government buildings. There are also concerns with the collection, storage and disposal of other potentially hazardous

materials such as waste oil and e-waste (NES 2010). An initial e-waste clean-up was carried out on Rarotonga in December 2010, and it is hoped that this can be repeated on an annual basis.

A preliminary assessment for the island of Aitutaki found similar issues with e-waste, asbestos, corrugated iron sheeting, batteries and other intractable wastes, and it is expected that much the same situation will apply on most of the outer islands.

Preliminary assessments of 10 potentially contaminated sites were conducted in October and November 2010 as part of the POPs Project (Kerrich Environmental Ltd 2010). These sites were identified through historical and anecdotal evidence and were assessed using a Risk Screening System. Three out of the ten sites were ranked as high risk according to the potential risk to the water supplies and the general public, and have been prioritised for action. In addition, the assessment programme needs to be extended to other possible sites on Rarotonga, and to all other islands.

Finally, it was noted that the current system used by Customs for recording import statistics was of limited value in identifying specific items that could potentially contain POPs, or other chemicals of concern.

#### **3.3.4.2 Goals and Objectives**

- Goal: To develop systems for the environmentally sound management of POPs stockpiles, intractable wastes, including POPs, and contaminated sites.
- Objective 1: To improve import statistics on products and articles which possibly contain POPs
- Objective 2: To improve the safe and environmentally sound management of e-Waste in the Cook Islands
- Objective 3: To develop a system for safe and environmentally sound management of intractable wastes in the Cook Islands
- Objective 4: To put in place the necessary legislative requirements for the management and disposal of intractable wastes
- Objective 5: To review the use of economic instruments and other possible approaches for managing the production and disposal of intractable waste in the Cook Islands, and implement as appropriate
- Objective 6: To carry out preliminary site identification and site assessments for potentially contaminated sites throughout the Cook Islands, followed by remediation where necessary.

#### **3.3.4.3 Relevant Management Options**

Objective 1: Improving statistics on products and articles which possibly contain POPs is best undertaken by adopting the Globally Harmonised System for coding of imports and exports, which was developed by the International Customs Organisation and has been adopted by many countries worldwide. It will be necessary to obtain external expert advice on the preconditions

necessary to implement the system, to assist in its development, and to train staff after the system is in place. This will enable appropriate data to be collected on imports which may then be used to identify possible POPs sources, and to better enforce import prohibitions.

Objectives 2 & 3: The Cook Islands currently has no proper systems in place that deal directly with the environmentally sound management of stockpiles or safe storage of hazardous wastes. Electronic waste was highlighted as a particular concern at the POPs workshops. Therefore it is important that the Cook Islands sets up a system that addresses these issues until further actions are developed to dispose of the wastes in an environmentally sound manner. Due to the extensive costs of developing a hazardous waste disposal facility, the relatively small volumes of hazardous waste accumulating on the Islands (by comparison with typical treatment plant capacities), and the potentially significant risks to the Cook Islands fragile environment from such a facility, it is preferable that hazardous waste is transported off the Cook Islands to controlled facilities in other countries. An appropriate site will need to be identified to temporarily store wastes prior to transport overseas. An external technical expert will be required to screen potential sites, provide options for implementation strategies and to provide cost estimates for those options.

Objective 4: The export of hazardous wastes is subject to management processes under two international agreements, the Basel and Waigani Conventions (see section 2.2.3). While some exports of hazardous wastes have been successfully carried out in the past, it would be best for the departmental responsibilities, and the necessary documentation and approval processes to be formalized through appropriate regulations, for example, under the Environment Act.

Objective 5: This objective seeks to identify ways of minimising and/or managing imports of goods and materials that have the potential to cause subsequent disposal difficulties. A number of options are available, including advanced disposal fees, government purchasing policies, and the promotion of Extended Producer Responsibility programmes. The proposed activities set out a process for the assessment of all available options, consultation with relevant stakeholders, followed by implementation of the agreed approaches.

Objective 6: All potentially contaminated sites in the Cook Islands should be identified, investigated, and if necessary, cleaned up, to remove any potential risks to people and to the fragile Cook Islands environment. Some local consultants have already been trained in the procedures required for preliminary site assessments, and should therefore be able to continue with this work, with on-going support from an external technical expert. However, the more detailed site investigations required for sites identified as high-risk, would need to be done by an experienced international technical expert, because the Cook Islands has no institutional capacity in this area. External technical experts will also be required for any subsequent site remediation work. All contaminated soil and other materials removed from the contaminated sites (if any) should be stored in the facility developed for intractable wastes, until appropriate disposal methods are identified. This will help to minimise any potential threats to public health and the environment.

#### **3.3.4.4 Implementation Strategy**

##### **Lead Agencies**

The lead agencies for this Action Plan will be the National Environment Service and the Ministry of Infrastructure and Planning.

##### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A4). As indicated, the key parts of the plan include:

1. Implementation of the Global Harmonised System for coding imports and exports, to ensure better documentation and control of imports;
2. Development of a national e-waste management programme;
3. Development of an intractable waste storage facility;
4. Development of the necessary regulations for controls on the exports of hazardous wastes;
5. To review the use of economic instruments and other possible approaches for managing the production and disposal of intractable waste in the Cook Islands, and implementation as appropriate;
6. Investigation and remediation of priority contaminated sites.

External technical experts will be required to assist with the development of the storage facility, for conducting detailed assessments of potentially contaminated sites and capacity building programs. The expected timeframe for completion of these activities is four to five years.

#### **3.3.4.5 Resources Needed**

Funding from external donors will be required in order to successfully acquire all the necessary resources needed to implement the majority of the activities in this action plan. It is expected that this work plan will be implemented within five years, although there will be a continuing need for work beyond that time. Table A4 of Annex 2 summarises the financial resources required to implement the work plan over the first five years. The Cook Islands Government will seek funds from international donors to support all or part of the activities shown.

### **3.3.5 Action Plan to address public information, awareness and education (Article 10)**

#### **3.3.5.1 Context and Analysis of Issue**

In accordance with Article 10 of the Stockholm Convention, Parties are required to promote and facilitate public information, awareness and education, within their capabilities. Developing educational and public awareness programmes targeting women, children and the least educated, on the health and environmental effects of POPs is especially emphasised. Parties are also obligated to promote public participation *“in addressing persistent organic pollutants and their health and environmental effects and in developing adequate responses, including opportunities for*

*providing input at the national level regarding implementation of this Convention".* Furthermore, Parties are required to ensure that the public has access to up-to-date information regarding POPs and Convention activities, both in-country and at an international level.

Enhancing public awareness of POPs and providing a platform for education into POPs related issues has been an integral part of the enabling activities for the development of the NIP in the Cook Islands. It is envisaged that similar work will be carried out over the following five years and beyond.

### **3.3.5.2 Goals and Objectives**

**Goal:** To enhance public knowledge, participation and access to relevant information with regard to persistent organic pollutants, their effects on people and the environment, and the activities carried out under the Stockholm Convention.

**Objective 1:** To develop a system for on-going public information, awareness, education, and outreach, on POPs and other chemicals

**Objective 2:** To regularly monitor the effectiveness of all public information, awareness and education programmes implemented.

### **3.3.5.3 Relevant Management Options**

Enhancing public awareness regarding POPs and other hazardous chemicals, and sound chemicals management, were highlighted as concerns at the POPs workshop, November 2010.

Inventory reports and other documents compiled in the development of this NIP will be made publicly available on the NES webpage and in printed form. An awareness campaign has already been implemented as part of the development of this NIP and this campaign will be continued in modified form over the next few years. A broader programme on general chemical safety and chemicals in food and the environment will also be carried out. Resources will also be committed to monitoring the effectiveness of the programmes, thus ensuring their continual improvement and relevance.

These initiatives will be linked to the current international programmes on chemicals management, through UNEP Chemicals, the Stockholm Convention and SAICM Secretariats, and SPREP.

### **3.3.5.4 Implementation Strategy**

#### **Lead Agencies**

The lead agencies for this Action Plan will be the National Environment Service and the Ministry of Health.

#### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A5). As indicated, the key parts of the plan include:

1. Further development of an education and awareness campaign on POPs, based around publication of the NIP, and regular updates of the POPs section of the NES website;
2. Development of education, awareness and outreach programmes directed at chemical safety generally, and chemicals in food and the environment;
3. Periodic monitoring of public awareness levels, coupled with programme reviews.

Several awareness programmes have been proposed for other areas of the NIP (e.g. campaigns to reduce rubbish burning and promote alternatives to green waste burning), and the objectives specified in this section should be aligned with those programmes. In addition, the work should be integrated with any activities developed under the SAICM programme, if the NES application for SAICM funding is successful.

Monitoring of this programme will be in accordance with the performance indicators identified in Table A4. It is important to continually monitor the effectiveness of these activities and make changes where necessary.

#### **3.3.5.5 Resources Needed**

The requirements for this programme include both human and technical resources. Designing appropriate awareness materials will be guided by consultation with the public, and may include the provision of resources translated into Cook Islands Māori and Pukapukan. Specialized technical input may be needed in developing awareness aids for television or other media. Both internal and external financial resources are needed to carry out the majority of these activities.

A summary of the financial resources required to address public information, awareness and education on POPs and the Stockholm Convention is presented in Table A4 of Appendix 2. This programme is intended to be carried out over at least the next five years, but with periodic reviews to ensure programme effectiveness and assess the need for on-going work.

#### **3.3.6 Action Plan to address research, development and monitoring (Article 11)**

##### **3.3.6.1 Context and Analysis of Issue**

In accordance with Article 11 of the Stockholm Convention, Parties are required to *“within their capabilities, at the national and international levels, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants”*

Preliminary assessments of POPs and pesticides in food, chemical imports and in the environment have been undertaken as part of the development of this NIP. Many of these assessments are the first of their kind in the Cook Islands, providing valuable baseline data as a benchmark and for use in monitoring changes over time.



Some initial concern related to the possibility of POPs being present in some foodstuffs, especially imports, hence a selection of imported tinned foods were included in the monitoring. Locally produced foods were also sampled and tested. The results for all the food samples were negative for POPs, although traces of two non-POPs pesticides were found in some samples of local vegetables. Traces of POPs and non-POPs pesticides and other potentially hazardous chemicals were also found in some of the soil samples collected during the contaminated site investigations.

Issues have also been identified with the availability of detailed product information, including chemical composition, on some imported goods. Some products do not contain written instructions in English or Cook Islands Māori, and some have no product information at all.

The technical infrastructure for environmental monitoring and research in the Cook Islands is extremely limited, and there is no capability for any such work in relation to POPs and other hazardous chemicals. Rudimentary testing occurs at a number of laboratories on Rarotonga, Aitutaki and Manihiki principally to monitor water quality, but no laboratory is equipped to perform the sophisticated analysis necessary to test for POPs. There are no dedicated chemical research facilities on the Cook Islands.

#### **3.3.6.2 Goals and Objectives**

- Goal: To build capacity in the Cook Islands for routine monitoring of POPs and other hazardous substances and to improve product labelling
- Objective 1: To develop an appropriate POPs monitoring programme for the Cook Islands, including monitoring of food and environmental samples
- Objective 2: To participate in the existing environmental and biological global POPs monitoring programmes
- Objective 3: To develop systems to improve product labeling in the Cook Islands.

#### **3.3.6.3 Relevant Management Options**

The Cook Islands has very limited capability to carry out research and development initiatives as it simply does not have the infrastructure to do so. Furthermore, POPs are not intentionally produced, imported or used, therefore an extensive POPs monitoring program may be unnecessary and unreasonable. In the first instance, the most appropriate option for obtaining POPs data for the Cook islands, would be by participation in the global monitoring programmes currently operated under the auspices of the Stockholm Convention by the World Health Organisation (breast milk surveys) and UNEP (environmental monitoring).

The analysis of food and environmental samples for other hazardous chemicals is technically demanding and requires significant capital investment in laboratory facilities and on-going operation and support costs. There have been a number of proposals in the past for development of a central laboratory to service all of the analytical needs of government departments, and this could prove to be the most cost-effective approach. However, the development of any such facility will take some time. In the interim, the most practical strategy

for the Cook Islands will be a continuation of the approach used for the POPs project, with local staff undertaking the collection of samples, which are then sent overseas for analysis.

Building the technical capacity of staff among different government departments adds to the effectiveness of the monitoring programme. Participation in programmes such as the WHO and UNEP surveys, and involvement in the programme design and sample collection and processing for other monitoring will enhance the capacity of local staff to carry out these activities.

Finally, there are no immediately obvious solutions for addressing the issues around product labeling, as the Cook Islands market is too small to be able to dictate to overseas suppliers. There may also be problems with simply deciding to prohibit specific products. The proposed programme simply sets up a process for looking into this issue in the hope of identifying appropriate local solutions.

#### **3.3.6.4 Implementation Strategy**

##### **Lead Agencies**

The lead agencies for this Action Plan will be the National Environment Service and the Ministry of Health.

##### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A6). As indicated, the key parts of the plan include:

1. Review, updating and implementation of the proposals for development of a central laboratory for the Cook islands;
2. Design and implementation of a POPs monitoring programme, including monitoring of food and environmental samples. Initially the work would involve local sample collection followed by overseas laboratory analysis;
3. Participation in the existing environmental and biological global POPs monitoring programmes;
4. An initial investigation of possible measures to improve labelling on imported products.

The initial steps for laboratory development and the design of appropriate monitoring programmes may require expert assistance. There will also be a requirement for staff training in sample collection methods and procedures.

##### **3.3.6.5 Resources Needed**

Table A5 of Appendix 2 presents a summary of the financial resources required to implement the proposed programme. The key costs items include consultancy fees and laboratory costs, with the latter being estimated for a 5-year programme.

### 3.3.7 Strategy to address information exchange (Article 9) and reporting (Article 15)

#### 3.3.7.1 Context and Analysis of Issue

In accordance with Article 9 of the Convention, Parties are required to undertake measures to facilitate information exchange relevant to *“the reduction or elimination of the production, use and release of persistent organic pollutants and alternatives to persistent organic pollutants, including information relating to their risks as well as to their economic and social costs”*. Article 9 further states that Parties are to *“designate a national focal point for the exchange of such information”*. Furthermore, each Party is required under Article 15 to *“report on the measures it has taken to implement the provisions of the Convention and the effectiveness of those measures”*. Information to be reported includes statistical data on the total quantities of production, import and export for each of the chemicals listed in Annex A and B, and periodic estimates of the total releases of unintentional POPs. The reporting intervals under Article 15 were decided by the first Conference of the Parties to be every four years.

The NES is currently designated as the National Focal Point for information exchange under the Convention and should continue in this function. The NES will also be responsible for meeting reporting requirements, although all formal reports will be submitted through the Official Focal Point for the Convention, which is the Ministry of Foreign Affairs and Immigration.

There is also a need for some form of national body to provide a coordinating mechanism for monitoring and reporting on the activities proposed in this Plan. It is proposed that this be addressed through the development of a National Chemicals Committee.

#### 3.3.7.2 Goals and Objectives

- |              |   |
|--------------|---|
| Goal:        | to establish a national mechanism for the oversight of chemical management in the Cook Islands, and for monitoring the implementation of this NIP, including meeting all information exchange and reporting requirements of the Convention. |
| Objective 1: | To develop a national mechanism for facilitating information exchange and government actions in relation to chemical management in the Cook Islands   |
| Objective 2  | To develop a mechanism for information exchange in relation to POPs and the Stockholm Convention in the Cook Islands  |
| Objective 3: | To develop a reporting mechanism for the Stockholm Convention in the Cook Islands.  |

#### 3.3.7.3 Relevant Management Options

This action plan includes a proposal for establishing a National Chemicals Committee (NCC). The membership and functions of this committee will be determined by consultation between the relevant government agencies and will be contingent on endorsement by the Government. However, it is envisaged that the NCC would act as a coordinating mechanism and advisory body for all matters related to chemicals management in the Cook Islands, including POPs. It

would also provide a specific national mechanism for monitoring progress with implementation of the NIP.

The other two components of the action plan address two specific Convention requirements: the distribution of relevant information to interested people and organisations within the Cook Islands, when such information is received from the Secretariat or from other Parties; and the provision of the information required for reporting under Article 15, as and when required. The main requirement for meeting these obligations is the allocation of an approximately 0.1 full-time-equivalent staff position within NES. This person should also be the preferred candidate for participation in regional and international meetings relating to the Convention, to ensure that they remain up to date with Convention activities and developments.

#### **3.3.7.4 Implementation Strategy**

##### **Lead Agencies**

The lead agency for this Action Plan will be the National Environment Service, although the formation of the NCC should be an inter-department initiative.

##### **Programme Implementation**

The key steps involved in implementation are summarised below, while a more detailed list of activities required for this work and a list of proposed performance indicators is given in Annex 2 (Table A7). As indicated, the key parts of the plan include:

1. Formation of the National Chemicals Committee
2. Confirm and support the NES position to act as the Focal Point for information exchange;
3. Regularly update the NES POPs webpage;
4. Reporting to the Convention Secretariat as and when required.

The establishment of the Focal Point position should take place immediately, and should be maintained for as long as the Cook Islands remains a Party to the Convention.

##### **3.3.7.5 Resources Needed**

Table A7 in Appendix 2 presents a summary of the financial resources required to implement the proposed programme. The key costs items are “in kind” contributions for staff time and minor operational costs.

### **3.4 Development and Capacity-Building Proposals and Priorities**

Much of the work included in these action plans is intended to be carried out by local personnel with assistance from international experts as and when required. This approach will assist in developing local capacity for POPs management and implementation of the Convention. Table 3.1 presents a summary of the proposed capacity building activities.

**Table 3.1: Summary of capacity building proposals**

| <b>POPs Issues</b>                        | <b>Capacity Building Proposals</b>   |
|---|--|
| POPs Pesticides                           | <ul style="list-style-type: none"> <li>• Training of MOA staff in pesticide registration procedures</li> <li>• Training of government personnel, importers and users for better compliance with the pesticide regulations</li> <li>• Training of MOA staff, users and other relevant groups in the safe handling and use of pesticides</li> <li>• Programmes for the promotion of non-chemical alternatives for pest management</li> </ul> |
| PCBs                                      | <ul style="list-style-type: none"> <li>• Training on identification, removal and storage of PCBs in electrical equipment, including old transformers.</li> </ul>   |
| Dioxins and Furans                        | <ul style="list-style-type: none"> <li>• Staff training for the enforcement of new regulations to control rubbish burning</li> <li>• Programmes to promote non-burning alternatives for green wastes</li> <li>• Training on dioxin inventories and the application of BAT/BEP</li> </ul>   |
| Stockpiles, Wastes and Contaminated Sites | <ul style="list-style-type: none"> <li>• Training in the use of the GHS system for coding imports and exports</li> <li>• Further training in the identification, assessment and management of contaminated sites.</li> </ul>   |
| Monitoring                                | <ul style="list-style-type: none"> <li>• Improved access to overseas resources, as appropriate, for the monitoring of POPs and other pollutants</li> <li>• Staff training in sample collection and processing techniques</li> </ul>  |

### 3.5 Timetable, resource requirements, and measures of success

The total estimated cost of all the activities planned to meet the Cook Islands' obligations under the Stockholm Convention is US\$1,486,050, with the breakdown between each of the different action plans as shown in Table 3.2 below. Details of each of the proposed action plans including the timeframes, performance indicators, and estimated cost requirements are presented in Tables A1 to A7 of Annex 2.

**Table 3.2: Summary of resource requirements for the implementation of the action plans.**

| <b>Section</b> | <b>Action Plan</b>                                | <b>External</b>    | <b>Internal</b>  | <b>Total</b>       |
|----------------|---|--------------------|------------------|--------------------|
| 3.3.1          | Intentional Production and Use of POPs Pesticides | \$109,600          | \$63,250         | \$172,850          |
| 3.3.2          | Specific Requirements for PCBs                    | \$36,000           | \$18,000         | \$54,000           |
| 3.3.3          | Unintentional Production of POPs                  | \$577,000          | \$56,700         | \$633,700          |
| 3.3.4          | Stockpiles, wastes and contaminated sites         | \$318,000          | \$96,000         | \$414,000          |
| 3.3.5          | Public information, education and awareness       | \$16,000           | \$13,000         | \$29,000           |
| 3.3.6          | Research, development and monitoring              | \$120,000          | \$40,000         | \$160,000          |
| 3.3.7          | Reporting and information exchange                | -                  | \$22,500         | \$22,500           |
|                | <b>TOTAL</b>                                      | <b>\$1,176,600</b> | <b>\$309,450</b> | <b>\$1,486,050</b> |

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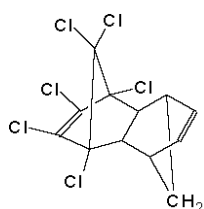


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## Annex 1: Technical Information on Persistent Organic Pollutants

### Aldrin

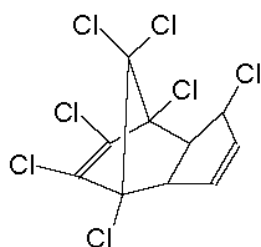
*Listed under Annex A without specific exemptions.*



<sup>4</sup> Aldrin has been manufactured commercially since 1950 and used throughout the world up to the early 1970s for control of soil pests such as corn rootworm, wireworms, rice water weevil and grasshoppers. It has also been used for protection of wood against termites. Aldrin is readily metabolised to dieldrin by both plants and animals. Biodegradation is slow and it binds strongly to soil particles and is resistant to leaching into groundwater.

### Chlordane

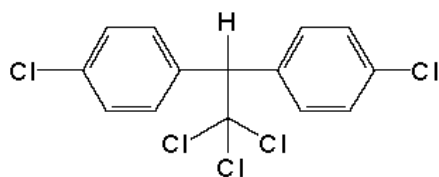
*Listed under Annex A without specific exemptions.*



Technical grade chlordane is a mixture of at least 120 compounds. In the past, chlordane was released into the environment primarily from its application as an insecticide and for seed dressings and coatings. In the USA, it was used extensively before 1983, and from 1983 to 1988, it was registered for termite control. It was cancelled for this use in 1988.

### DDT (Dichlorodiphenyltrichloroethane)

*Listed under Annex B with acceptable purposes and specific exemptions.*

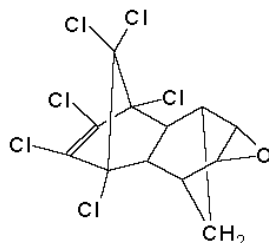


DDT was introduced in 1945 as an insecticide and is still in use today in many parts of the world where malaria is endemic. The technical product consists of 4,4'-DDT (or *p,p'*-substituted) and its *o,p'*-DDT isomer, as well as their dechlorinated analogs (*p,p'*- and *o,p'*-DDD). DDT is highly persistent in soil, with a half life of up to 15 years. It also exhibits high bioconcentration factors. In the environment it is metabolised to DDD and DDE, both of which have similar properties to DDT.

<sup>4</sup> Structural diagrams derived from <http://www.chem.unep.ch/pops/alts02.html>

### Dieldrin

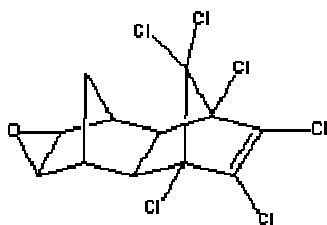
*Listed under Annex A without specific exemptions.*



Dieldrin was mainly used as a soil insecticide. It is no longer manufactured in Canada and the USA, and its use is now restricted for termite control. Manufacture in Europe, especially for export to developing countries, continued until the late 1980s. It is also a degradation product of aldrin. Dieldrin is extremely persistent in soil (half-life greater than seven years) and has a long half-life in biota (Howard 1991). It is the most potent carcinogen of the major organochlorine pesticides.

### Endrin

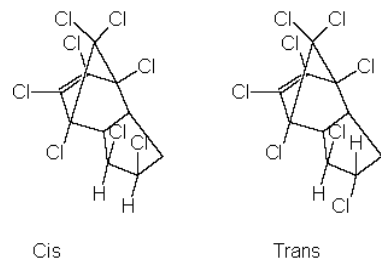
*Listed under Annex A without specific exemptions.*



Endrin was first used in the 1950s against a wide range of agricultural pests, mostly on cotton but also rice, sugar cane, maize and other crops. It has also been used as a Rodenticide. It is highly persistent in soils (half-life of up to 12 years) and has a high bioconcentration factor in fish. It is very toxic to fish, aquatic invertebrates and phytoplankton.

### Heptachlor

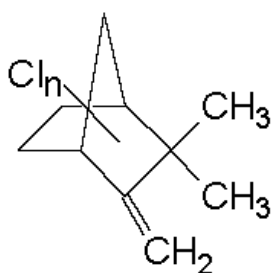
*Listed under Annex A without specific exemptions.*



Heptachlor is a non-systemic stomach and contact insecticide, used primarily against soil insects and termites. It has also been used against cotton insects, grasshoppers, some crop pests and to combat malaria. Heptachlor has a similar use profile and is of particular interest since its oxidation product, heptachlor epoxide, is carcinogenic, and has been found in the Arctic abiotic and biotic environments.

### Toxaphene

*Listed under Annex A without specific exemptions.*

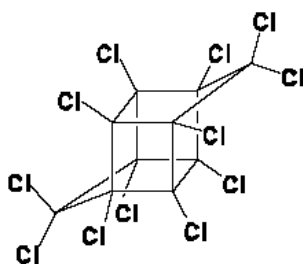


Toxaphene is produced by the chlorination of technical camphene or  $\gamma$ -pinene and can consist of over 300 congeners, mainly bornanes and camphenes substituted with 6-10 chlorines, with an average composition of  $C_{10}H_{10}Cl_8$ . Analysis has been difficult because of the mixture's complexity, and because of lack of standards for individual components. Analytical standards for some chlorinated bornanes have recently become available. Nevertheless, the levels and effects of toxaphene are not well

studied even though it is a significant contaminant in some regions. The half-life of toxaphene in soil ranges from 100 days up to 12 years, depending on the soil type and climate, and is likely to bioaccumulate.

### Mirex

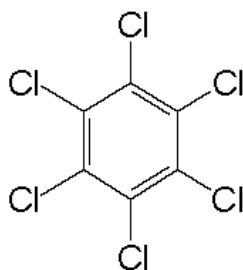
*Listed under Annex A without specific exemptions.*



Mirex was used as an insecticide and fire retardant, mainly in the USA and Canada. Its presence in the Lake Ontario food web has been well documented. Mirex is extremely persistent in soils and sediment with an estimated 'field half-life' of five to ten years. Although mirex has a very high molecular weight, it has the physical properties of a relatively volatile compound capable of undergoing long-range transport. Its presence in the Arctic at low levels is consistent with its volatility and persistence.

### Hexachlorobenzene

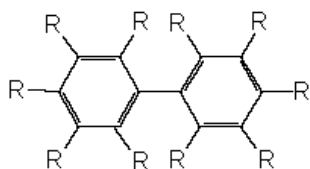
*Listed under Annex A without specific exemptions and under Annex C.*



HCB is formed as a by-product in the production of a large number of chlorinated compounds, particularly lower chlorinated benzenes, and in the production of several pesticides. It had limited use in the 1960s as a fungicide. HCB is emitted to the atmosphere in flue gases generated by waste incineration facilities and metallurgical industries. HCB has an estimated 'field half-life' of 2.7-5.7 years. HCB has a relatively high bioaccumulation potential because of high lipophilicity ( $\log K_{ow} = 5.5$ ) and long half-life in biota.

### Polychlorinated biphenyls (PCBs)

*Listed under Annex A without specific exemptions and under Annex C.*



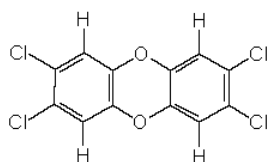
PCBs were introduced in 1929 by the Monsanto Chemical Corporation and were manufactured in the USA, Japan, the former Soviet Union, and eastern and western Europe under various trade names (e.g., Aroclor, Clophen, Phenoclor). They are chemically stable and heat resistant, and were used worldwide as transformer and capacitor oils, hydraulic and heat exchange fluids, and lubricating and cutting oils.

There are 209 chlorinated biphenyl congeners, with different chlorine substitutions on the biphenyl ring. Most PCB congeners, particularly those lacking adjacent unsubstituted positions on the biphenyl rings (e.g., 2,4,5-, 2,3,5- or 2,3,6-substituted on both rings) are extremely persistent in the environment. They are estimated to have half-lives ranging from three weeks to two years in air and, with the exception of mono- and di-chlorobiphenyls, are essentially non-

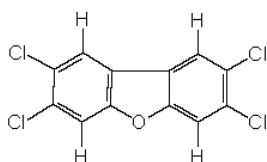
biodegradable in aerobic soils or sediments. Highly chlorinated PCBs have been shown to be dechlorinated in anaerobic sediments, but only where present at relatively high concentrations (>10 g/g dw). PCBs also have extremely long half-lives in adult fish.

### Polychlorinated dibenzo-p-dioxins and furans (PCDD/Fs)

*Listed under Annex C.*



2,3,7,8-TCDD



2,3,7,8-TCDF

Polychlorinated dibenzo-p-dioxins and furans (PCDD/Fs) enter the environment as by-products of industrial processes. The most significant sources are low-temperature, incomplete incineration of wastes, and especially chlorine-containing materials such as plastics. Other major sources include thermal

processes, such as motor vehicle fuel combustion in countries where leaded petrol is still used, and metallurgical industries. Pulp and paper mills using chlorine in the bleaching process have been important sources, although discharges have been significantly reduced in recent years because of the substitution of molecular chlorine by other bleaching agents. PCDD/Fs are also trace contaminants in chlorophenoxy herbicides, PCB formulations, and chlorophenol wood preservatives.

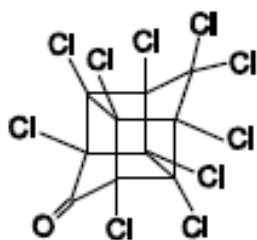
Most PCDD/F congeners are extremely hydrophobic and resistant to biodegradation in soils and sediments. Historical profiles of PCDD/Fs in sediment cores from large lakes show no evidence of transformation of congeners (such as anaerobic dechlorination) over time. The tetra- to octa-chlorinated PCDD/Fs have lower vapour pressures and Henry's Law constants than PCBs and are therefore not expected to undergo long-range transport to the same extent. PCDD/Fs are rapidly photodegraded in air, water, and on surfaces. The 2,3,7,8-substituted PCDD/F congeners are known to bioaccumulate in fish and invertebrates, however non-2,3,7,8-substituted congeners (which predominate in combustion sources) are readily degraded by vertebrates.

### NEW POPs

#### Chlordecone

*Listed under Annex A without specific exemptions.*

<sup>5</sup>



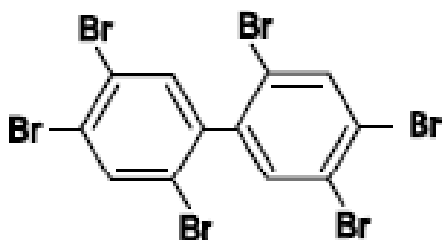
Chlordecone is a synthetic chlorinated organic compound, chemically related to Mirex, and has been primarily used as an agricultural pesticide. It was first produced in 1951 and introduced commercially in 1958. Chlordecone is highly persistent in the environment, has a high potential for bioaccumulation and biomagnification and based

<sup>5</sup> New POPs Structural diagrams derived from UNEP (2009). *The Nine New POPs*, United Nations Environment Programme.

on physico-chemical properties and modelling data, chlordecone can be transported for long distances. It is classified as a possible human carcinogen and is very toxic to aquatic organisms.

### Hexabromobiphenyl

*Listed under Annex A without specific exemptions.*

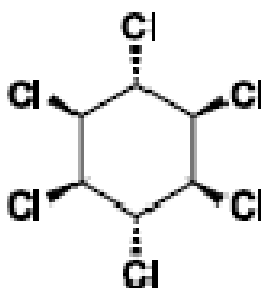


Hexabromobiphenyl belongs to the group of polybrominated biphenyls, which are brominated hydrocarbons formed by substituting hydrogen with bromine in biphenyl. Hexabromobiphenyl is an industrial chemical that has been used as a flame retardant, mainly in the 1970s. According to available information, hexabromobiphenyl is no longer produced or used in most countries.

Hexabromobiphenyl is highly persistent in the environment, highly bioaccumulative and has a strong possibility for long-range environmental transport. It is classified as a possible human carcinogen and has other chronic toxic effects.

### Lindane

*Listed under Annex A with a specific exemption for use as a human health pharmaceutical for control of head lice and scabies as second line treatment.*

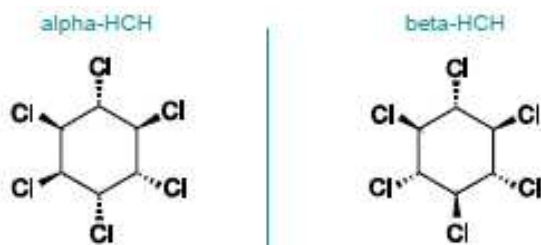


Lindane is the common name for the gamma isomer of hexachlorocyclohexane (HCH). Technical HCH is an isomeric mixture that contains mainly five forms, namely alpha-, beta-, gamma-, delta- and epsilon-HCH. Lindane has been used as a broad-spectrum insecticide for seed and soil treatment, foliar applications, tree and wood treatment and against ectoparasites in both veterinary and human applications. The production of lindane has decreased rapidly in the last few years and only few countries are still known to produce it.

Lindane is persistent, bioaccumulates easily in the food chain and bioconcentrates rapidly. There is evidence for long-range transport and toxic effects (immunotoxic, reproductive and developmental effects) in laboratory animals and aquatic organisms.

### Alpha hexachlorocyclohexane and beta hexachlorocyclohexane

*Listed under Annex A without specific exemptions.*

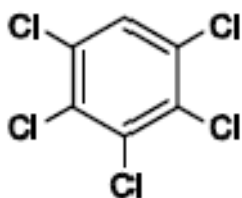


Although the intentional use of alpha- and beta-HCH as an insecticide was phased out years ago, these chemicals are still produced as unintentional by-products of lindane. For each ton of lindane produced, around 6-10 tons of the other isomers including alpha- and beta-HCH are created. Large stockpiles of alpha- and beta-HCH are therefore present in the environment.

Alpha- and beta-HCH are highly persistent in water in colder regions and may bioaccumulate and biomagnify in biota and arctic food webs. These chemicals are subject to long-range transport, are classified as potentially carcinogenic to humans and adversely affect wildlife and human health in contaminated regions.

### Pentachlorobenzene (PeCB)

*Listed under Annex A without specific exemptions and under Annex C.*

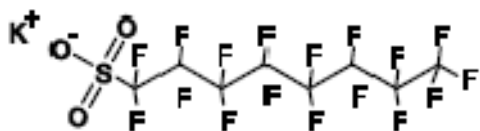


PeCB was used in PCB products, in dyestuff carriers, as a fungicide, a flame retardant and as a chemical intermediate e.g. previously for the production of quintozone. PeCB might still be used as an intermediate. PeCB is also produced unintentionally during combustion, thermal and industrial processes. It also present as impurities in products such as solvents or pesticides.

PeCB is persistent in the environment, highly bioaccumulative and has a potential for long-range environmental transport. It is moderately toxic to humans and very toxic to aquatic organisms.

### Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctanesulfonyl fluoride (PFOS-F)

*Listed under Annex B with acceptable purposes and specific exemptions.*



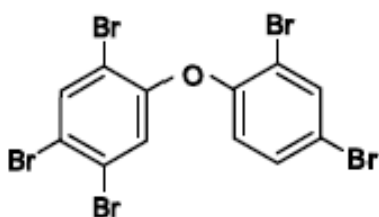
PFOS is a fully fluorinated anion, which is commonly used as a salt or incorporated into larger polymers. PFOS and its closely related compounds, which may contain PFOS impurities or substances that can result in PFOS, are

members of the large family of perfluoroalkyl sulfonate substances. PFOS is both intentionally produced and an unintended degradation product of related anthropogenic chemicals. The current intentional use of PFOS is widespread and includes: electric and electronic parts, fire fighting foam, photo imaging, hydraulic fluids and textiles.

PFOS is extremely persistent and has substantial bioaccumulating and biomagnifying properties, although it does not follow the classic pattern of other POPs by partitioning into fatty tissues but instead binds to proteins in the blood and the liver. It has a capacity to undergo long-range transport and also fulfils the toxicity criteria of the Stockholm Convention.

### **Tetrabromodiphenyl ether and pentabromodiphenyl ether**

*Listed under Annex A with a specific exemption for use as articles containing these chemicals for recycling in accordance with the provision in Part IV of Annex A.*



Tetrabromodiphenyl ether and pentabromodiphenyl ether are the main components of commercial pentabromodiphenyl ether. Due to similarities in production, chemical structure and POPs characteristics, Tetrabromodiphenyl ether and pentabromodiphenyl ethers are covered in the section below on Polybrominated Diphenyl Ethers (PBDEs).

### **Hexabromodiphenyl ether and heptabromodiphenyl ether**

*Listed under Annex A with a specific exemption for use as articles containing these chemicals for recycling in accordance with the provision in Part IV of Annex A.*



Hexabromodiphenyl ether and heptabromodiphenyl ether are the main components of commercial octabromodiphenyl ether. Due to similarities in production, chemical structure and POPs characteristics, Hexabromodiphenyl ether and heptabromodiphenyl ether are covered in the section below on Polybrominated Diphenyl Ethers (PBDEs).

### **Polybrominated Diphenyl Ethers (PBDEs)**

The polybrominated diphenyl ethers are based around a common structure of a brominated diphenyl ether molecule, with anywhere from 1 to 10 bromine atoms attached. Depending on the location and number of bromine atoms, there are 209 possible PBDE compounds, each termed *congeners*. PBDEs have been marketed in three primary formulations, and the formulations differ in their composition of BDE congeners:

1. the pentaBDE formulation, commercially known (in the US) as DE-71 and Bromkal 70-5DE. The penta formulation is dominated (by weight) by penta congeners (50–62%) with secondary contributions by tetra (24–38%) and hexa congeners (4–12%).
2. the octaBDE formulation, DE-79. The octa formulation is dominated by hepta (45%) and octa congeners (33%), with secondary contributions by hexa (12%) and nona (10%) congeners.



3. and the decaBDE formulation, DE-83R or Saytex 102E. The deca formulation is composed of essentially all BDE 209 (97–99%, with 1–3% other, mainly nona-, congeners), which is the congener with all 10 Br positions occupied.

The major uses of penta-BDE have been in flexible polyurethane foams (ie. what we call foam rubber), which were mainly used for furniture and upholstery in automotive, aviation and domestic applications. Other minor uses have been in rigid polyurethane foams (eg. in vehicle dashboards); epoxy resins; textile fabrics (eg. furniture and car seat covers); paper laminates; flexible PVC wire coatings; in rubber, paints and lacquers; elastomer instrument casings; and in adhesives. There also appears to have been significant use as a protective coating on printed circuit boards manufactured in Asia.

By far the dominant uses of octa-BDEs were in acrylonitrile-butadiene-styrene (ABS) plastics. These are thermoplastics (ie. formed into shapes using heat) used to make light, rigid, molded products, which combine the strength and rigidity of the acrylonitrile and styrene polymers, with the toughness of the polybutadiene rubber. ABS plastics cover an enormous range of uses, including casings for computers, office equipment and home appliances, pressure piping, furniture parts, children's toys (eg. Lego), vehicle parts, musical instruments, protective headgear, and golf club heads.

Penta-BDE: Tetra-BDE and penta-BDE isomers have been listed under Annex A of the Stockholm Convention, as the main components of commercial penta-BDE. These components of pentaBDE are believed to be highly persistent in the environment, bioaccumulative, and have a high potential for long range environmental transport. The chemicals have been detected in humans in all regions. There is evidence of the potential for toxic effects in wildlife, including mammals.

Octa-BDE: hexa-BDE and hepta-BDE isomers have been listed under Annex A of the Stockholm Convention, as the main components of commercial octa-BDE. These components of commercial octaBDE are highly persistent, have a high potential for bioaccumulation and food-web biomagnification, as well as for long-range transport. The only degradation pathway is through debromination and producing other bromodiphenyl ethers

The possible listing of the octa, nona and deca-BDE isomers were also considered *inter alia* by the POPs Review Committee in its deliberations on commercial octa-BDE, however some of the evidence was inconclusive. In particular:

1. The potential for bioaccumulation of octa- and nona-BDEs from water and food is much lower than expected from their Kow values, possibly as a result of metabolism.
2. The potential for long-range transport has not been confirmed for Octa- and Nona-BDE, possibly because of the lower relative contribution to bio accumulation and/or metabolism via debromination.

3. The potential for long range transport has been observed for Deca-BDE, but there is insufficient evidence for potential adverse human and/or environmental effects. However, the potential for degradation to lower congeners was noted (see below).

The addition of penta- and octa-BDEs to the list of POP chemicals controlled under the Stockholm Convention in 2009, means that Parties to the Convention are now required to stop manufacturing and/or incorporating POP chemicals into articles and products. The listing under the Stockholm Convention follows in the footsteps of international activities such as voluntary phase-outs by major international manufacturers, and regulatory actions in Australia, China, Japan, North America, and Europe. As other countries similarly prohibit the use of BDEs in the manufacture of articles, this will reduce and eventually eliminate the import into the Cook Islands of manufactured products and articles that contain BDEs.

Concerns have been raised about the potential for deca-BDEs to break down in the environment to form lower BDE congeners, and this has been the subject of intensive research over the last 10 years or so. The situation was summarised by Rae (2008) as follows:

*The degradation of PBDEs in the environment and biota is a key issue as higher congeners may be converted to lower, and possibly more toxic, congeners. This possibility has been demonstrated for debromination of DecaBDE and several commercial octa-BDEs components but the biodegradation reactions are slow. The extent to which different PBDEs can be degraded under various conditions, the role of metabolism in addressing the bioaccumulation potential, and the identity of all lower congeners that may be produced, is an active field of research.*

The main reason for these concerns relates to the fact that global deca-BDE usage has been much greater than that of the penta and octa-BDEs, especially in the last decade. Thus even a moderately small amount of breakdown may add significantly to total exposures to the lower, potentially more toxic, congeners.

## Annex 2: Detailed Work Plans and Cost Estimates

**Table A 1. Detailed work plan to address the intentional production and use of POPs Pesticides (Articles 3 and 4, Annexes A and B)**

| Detailed list of activities   | Key Contributors    | Timeline        | Performance Indicators  | Funding Sources       | Estimated Cost (USD)        | Resources Needed                                     |
|---|---------------------|-----------------|---|-----------------------|-----------------------------|--|
| <b>Objective 1: To prohibit the import of POPs chemicals in the Cook Islands (including PCBs)</b>   |                     |                 |   |                       |                             |  |
| 1. Draft background paper for consideration of POPs prohibition.  | MOA, NES, MFEM, OPM | Months 1& 2     | Background paper completed  | Internal              | \$750 (in kind)             | Staff time   |
| 2. Agreement to add POPs chemicals to the Customs list of Prohibited Imports  | MFEM                | Months 3& 4     | Decision confirmed  | Internal              | \$1,000 (in kind)           | Staff time   |
| 3. Publish revised Prohibited Imports list on the Customs website   | MFEM                | Month 4         | New Prohibited Imports Schedule published   | Internal              | \$1,000 (in kind)           | Staff time   |
| <b>Objective 2: To take action to ensure effective implementation and enforcement of the Pesticides Act</b>   |                     |                 |   |                       |                             |  |
| 1. Reinstatement of the Pesticides Board  | MOA                 | Already done    | First Board Meeting held in March 2011  | Internal              | \$2,000 (in kind)           | Staff time   |
| 2. Draft TOR for a dedicated position within the MOA of a Pesticides Advisory Officer (PAO)   | MOA                 | Months 1 to 2   | TOR for PAO completed and agreed  | Internal              | \$1,000 (in kind)           | Staff time   |
| 3. PAO position created from within existing staff structure, and PAO appointed   | MOA                 | Months 3 to 4   | Funding committed, PAO recruited (Note: it is expected that the PAO salary will be met from existing budgets) | Internal              | \$1,000 + \$1,000 (in kind) | Recruitment costs, staff time                        |
| 4. External secondment (eg. from Fiji or NZ) to provide advice on the pesticide registration system, including staff training   | MOA(PAO)            | Months 6 to 9   | Development of all necessary forms, record systems and databases for the pesticides registration system       | External and Internal | \$5,000 + \$2,000 (in kind) | Technical expert costs, including travel, staff time |
| 5. Review list of existing pesticides given in the NES 'pesticides and other chemicals' database  | MOA(PAO)            | Months 10 to 12 | Confirmed list of pesticides currently in use in the Cook Islands   | Internal              | \$2,500 (in kind)           | Staff time   |
| 6. Carry out an initial pro-forma approval/registration procedure for pesticides known to be currently in use (excluding those where full product information is not available) | MOA (PAO)           | Months 12& 13   | Pesticides Board approval of pro forma registration   | Internal              | \$2,500 (in kind)           | Staff and Board members' time                        |

| Detailed list of activities   | Key Contributors                   | Timeline        | Performance Indicators  | Funding Sources     | Estimated Cost (USD)         | Resources Needed  |
|---|------------------------------------|-----------------|---|---------------------|------------------------------|---|
| 7. Publish official notice of registered pesticides   | MOA(PAO)                           | Month 1         | Pesticides list published   | Internal            | \$100 + \$500 (in kind)      | Publication costs<br>Staff time   |
| 8. Prepare information materials and provide training for MAF and Customs personnel, importers and growers on the new approval system.  | MOA(PAO)                           | Months 14 to 16 | Initial training material developed, training provided  | Internal            | \$500 + \$2,000 (in kind)    | Leaflet printing costs, .And training costs (venue, refreshments, stationery)<br>Staff time   |
| 9. Maintain the registration system on a continuing basis   | MOA (PAO)                          | On-going        | Assess and process applications for new registrations, and maintain 'pesticides and other chemicals' database           | Internal            | Funded from MOA budget       | Staff time  |
| 10. Provide list of registered pesticides to Customs and update as required   | MAO (PAO)                          | On-going        | Initial list provided during Customs training (step 8 above), then updated whenever new products are added to the list. | Internal            | Funded from MOA budget       | Staff time  |
| <b>Objective 3: To review the Pesticides Act 1987, after 2-3 years' experience in its use, including a possible extension to cover other chemicals</b>                                      |                                    |                 |   |                     |                              |   |
| 1. Consult with FAO and SPC on opportunities available under their programme on Pesticide Risk Management in the Pacific  | MOA                                | Months 32 to 36 | Potential funding sources and appropriate experts identified  | Internal            | \$2,000 (in kind)            | Staff time  |
| 2. Draft TOR for legal expert to conduct tasks below  | MOA, NES                           | Months 34 to 36 | TOR completed and endorsed by CI Government   | Internal            | \$3,000 (in kind)            | Staff time  |
| 3. Obtain funding and engage legal expert to carry out an initial review of the existing Act, including extending the Act to cover other chemicals, followed by the activities listed below | MOA, NES, Crown Law, legal expert  | Months 37 to 39 | Funding obtained, legal expert engaged, initial review completed, including discussion paper of possible future options | External & internal | \$5,000 + \$2,000 (in kind)  | Legal expert fees and staff time (Note: an initial assessment of extending the Act to other chemicals may have already been done under the SAICM programme) |
| 4. Conduct national workshop to explore and agree on the most appropriate approach for CI   | MOA, importers, other stakeholders | Month 41        | National workshop completed and future approach agreed on   | External & internal | \$12,000 + \$3,000 (in kind) | Legal expert fees and travel costs (\$10,000), meeting costs (\$2,000), staff time (venue, refreshments)  |
| 5. Draft and enact new laws and/or regulations as appropriate   | MOA, Crown Law                     | Months 42 to 48 | New laws/regulations drafted and enacted  | External & internal | \$5,000 + \$5,000 (in kind)  | Legal expert fees, staff time   |

| Detailed list of activities  | Key Contributors           | Timeline           | Performance Indicators   | Funding Sources       | Estimated Cost (USD)        | Resources Needed  |
|--|----------------------------|--------------------|--|-----------------------|-----------------------------|---|
| <b>Objective 4: To develop an on-going national program to improve practices for pesticide handling, storage, use and disposal through training, education and awareness</b> |                            |                    |  |                       |                             |   |
| 1. Obtain funding for Pesticides Training Programme  | MOA                        | Months 10 to 12    | Funding obtained for technical expert  | Internal              | \$2,000 (in kind)           | Staff time  |
| 2. Prepare Terms of reference, identify and recruit technical expert to conduct training   | MOA                        | Months 11 to 15    | Technical expert recruited   | Internal              | \$2,000 (in kind)           | Staff time  |
| 3. Provide training to MOA officers and other key govt and non-govt personnel.   | MOA (via technical expert) | Months 18 to 24    | Training conducted   | External              | \$20,000                    | Technical expert fees, travel and training costs  |
| 4. Carry out analysis of target user groups  | PAO                        | Months 18 to 21    | Report on target audience and usage characteristics                          | Internal              | \$1,000 (in kind)           | Staff time  |
| 5. PAO and technical expert to prepare resource materials, including versions in CI Maori, for use at the user (grower) level  | MOA(PAO)                   | Months 22 to 26    | Resource materials prepared  | External & internal   | \$3,000 + \$3,000 (in kind) | Technical expert costs (\$2000, printing and audio/visual materials (\$1000), staff time. |
| Develop and implement training programmes, including identification and training of local trainers   | MOA(PAO)                   | Months 27 to 30    | Training programmes developed, 4 workshops delivered including 1 on Aitutaki | External and internal | \$3,000 + \$5,000 (in kind) | Training costs, training materials, internal travel, staff time                           |
| 6. Initiate regular awareness campaigns through local media  | MOA(PAO)                   | Months 31 onwards  | TV and radio spots broadcast, plus other publicity as opportunities arise    | Internal              | \$5,000 + \$1,000 (in kind) | Material costs, broadcast costs, staff time   |
| 7. Conduct review of training programme for continual improvement  | MOA(PAO)                   | Once every 2 years | Review completed   | Internal              | \$2,000 (in kind)           | Staff time  |
| <b>Objective 5: To develop an on-going programme to promote non-chemical alternative pest management strategies</b>  |                            |                    |  |                       |                             |   |
| 1. Consult with FAO and SPC on opportunities available under their programme on Pesticide Risk Management in the Pacific (including support for existing MOA programmes)     | MOA                        | Months 1 to 3      | Potential funding sources and appropriate experts identified                 | Internal              | \$2,000 (in kind)           | Staff time  |
| 2. Obtain funding as appropriate to deliver programmes in non-chemical   | MOA                        | Months 4           | Funding obtained for technical experts and                                   | Internal              | \$2,000 (in kind)           | Staff time  |

| Detailed list of activities  | Key Contributors | Timeline           | Performance Indicators | Funding Sources       | Estimated Cost (USD)          | Resources Needed                                   |
|--|------------------|--------------------|------------------------|-----------------------|-------------------------------|--|
| alternatives, including Integrated Pesticide Management, Conservation Agriculture and Organic Production |                  | to 6               | other programme costs  |                       | kind)                         |  |
| 3. Deliver agreed programmes   | MOA              | On-going           | Programme reports      | External and Internal | \$50,000 + \$10,000 (in kind) | Technical expert costs, workshop costs, staff time |
| 4. Conduct review of training programme for continual improvement  | MOA              | Once every 2 years | Review completed       | Internal              | \$2,000 (in kind)             | Staff time   |

**Table A2: Detailed work plan to address the specific requirements for PCBs in the Cook Islands(Annex A, Part II).**

| Detailed list of activities   | Key Contributors                 | Timeline       | Performance Indicators   | Funding Sources       | Estimated Cost (USD)         | Resources Needed  |
|---|----------------------------------|----------------|--|-----------------------|------------------------------|---|
| <b>Objective 1: To prohibit the import of PCBs into the Cook Islands</b>  |                                  |                |  |                       |                              |   |
| 1. Covered in objective 1 of the work plan for POPs pesticides  | NES, MOA, MFEM                   | Months 1 to 4  | New Prohibited Imports Schedule published                            | Internal              | Included in Table A1         | Included in Table A1  |
| <b>Objective 2: To establish a system for identifying and managing PCBs in small capacitors and other electrical equipment</b>  |                                  |                |  |                       |                              |   |
| 1. Draft TOR(s) for technical expert to conduct tasks below as well as tasks set out in objective 3 of this action plan   | NES, MOIP, TAU, APS              | Month 4 to 6   | TOR approved by CI Government  | Internal              | \$2,000 (in kind)            | Staff time  |
| 2. Seek and obtain funding in support of objectives 2 and 3   | NES, MOIP, TAU, APS              | Months 5 to 8  | Funding obtained   | Internal              | \$2,000 (in kind)            | Staff time  |
| 3. Engage technical expert to provide training, advise on purchases of test kits, safety gear, and storage/handling equipment, and to assist with preparation of information hand-outs and web site resource materials. | NES, MOIP, technical expert      | Months 9 to 15 | Technical expert engaged, training materials developed               | External & internal   | \$20,000 + \$3,000 (in kind) | Technical expert fees and travel cost, venue costs, training materials, plus staff time (in-kind) |
| 4. Hold training course for electricians and home handymen on PCB capacitor ID, handling and storage  | MOIP, TAU, APS, technical expert | Month 7 to 12  | Training completed   | External & internal   | \$2,000 + \$1,000 (in kind)  | Training costs(venue, refreshments), Staff time (technical expert costs covered above)            |
| 5. Establish system for receipt and storage of old capacitors, for eventual export for disposal, including purchase of a suitable storage unit (links to objective 2 in Table A4)                                       | MOIP                             | Months 9 to 12 | PCB Capacitor management system developed and storage unit purchased | External and internal | \$4,000 + \$3,000 (in kind)  | Equipment costs<br>Staff time (including training)  |

| <b>Objective 3: To identify any remaining PCB transformers in the Cook Islands and, if necessary, arrange for their safe removal and disposal</b> |                                  |                 |   |                     |                             |  |
|---|----------------------------------|-----------------|---|---------------------|-----------------------------|--|
| 1. Provide training for power company staff on ID, testing, handling and storage of PCB transformers (using the same technical expert as above).  | TAU, APS, MOIP, technical expert | Months 7 to 12  | Training completed  | External & Internal | \$500 + \$1,000 (in kind)   | Workshop costs, staff time   |
| 2. Draw up a list of all transformers greater than 20 years old in the Cook Islands (which can potentially contain PCBs).                         | TAU, APS, MOIP                   | Month 7         | Inventory complete  | Internal            | \$2,000 (in kind)           | Staff time   |
| 3. Purchase test kits if required and test, including follow-up lab analyses to check any field test positives.                                   | TAU, APS, MOIP                   | Months 10 to 14 | List of confirmed PCB transformers                                | Internal & External | \$3,500 + \$2,000 (in kind) | Analysis and test kit costs (\$2500), internal travel costs (\$1000), staff time |
| 4. If tests positive, purchase storage containers and safety equipment for all personnel involved in handling of PCBs if required                 | TAU, APS, MOIP                   | Month 15 to 18  | Equipment received  | External            | \$3,500                     | Safety equipment, drums, plastic bags, emergency response kits                   |
| 5. Arrange for transformer replacement and safe storage as necessary (detailed in action plan for stockpiles and wastes), for eventual disposal   | TAU, APS, MOIP                   | 18 to 36 Months | Transformers replaced as appropriate and placed into safe storage | External & internal | \$2,500 + \$2,000 (in kind) | Transportation costs<br>Staff time   |



**Table A3: Detailed work plan for reducing the unintentional production and release of POPs (Article 5 and Annex C).**

| Detailed list of activities  | Key Contributors                      | Timeline                      | Performance Indicators   | Funding Sources     | Estimated Cost (USD)         | Resources Needed  |
|--|---------------------------------------|-------------------------------|--|---------------------|------------------------------|---|
| <b>Objective 1: To reduce POPs releases from the burning of paper, plastics, old tyres, waste oil and other domestic and commercial wastes in the Cook Islands</b> |                                       |                               |  |                     |                              |   |
| 1. Develop and implement an on-going education and awareness programme to discourage rubbish burning and promote alternatives                                      | NES, MOH, NGOs                        | Months 1 to 6, then on-going  | Programme implemented  | Internal & External | \$5,000 + \$2,500 (in kind)  | Advertising costs, TV and radio costs, publications, staff time |
| 2. Review national waste strategy and existing services to identify options for improved waste collection, recycling and disposal                                  | NES, MOIP                             | Months 1 to 6                 | Options identified   | Internal            | \$3000 (in kind)             | Staff time  |
| 3. Implement identified options as appropriate   | NES, MOIP, and other key stakeholders | Months 6 to 12, then on-going | Periodic review of waste throughout data and other effectiveness indicators of the chosen programmes | External & internal | \$50,000 + \$5,000 (in kind) | Possible equipment purchases (eg. compactor/baler) staff time   |
| 4. Review existing laws and regulations, need for new ones (e.g. fire bans), and options for improved enforcement  | NES                                   | Months 6 to 12                | Review of regulations completed  | External & internal | \$5,000 + \$200 (in kind)    | legal advice, plus staff time                                   |
| 5. Draft and enact new regulations as appropriate  | NES, Crown Law                        | Months 12 to 18               | New regulations drafted and enacted  | Internal            | \$5,000 (in kind)            | Staff time  |
| 6. Undertake staff training and a public awareness programme on the new regulations  | NES                                   | Months 18 to 24               | Programme implemented  | Internal            | \$1,000 + \$2,000 (in kind)  | Awareness programme costs (TV/radio), staff time                |
| <b>Objective 2: To reduce green waste burning in the Cook Islands</b>  |                                       |                               |  |                     |                              |   |
| 1. Obtain information from SPREP on options for organic waste management, and possible support from the regional programme   | NES                                   | Months 1 to 6                 | Information received   | Internal            | \$2,000 (in kind)            | Staff time  |
| 2. Design and implement programmes to promote home composting and other domestic uses of green wastes  | NES                                   | Months 7 to 24                | Green waste programmes implemented   | Internal            | \$1,000 + \$2,000 (in kind)  | Internal travel costs, staff time                               |

| Detailed list of activities   | Key Contributors                 | Timeline                      | Performance Indicators   | Funding Sources     | Estimated Cost (USD)         | Resources Needed  |
|---|----------------------------------|-------------------------------|--|---------------------|------------------------------|---|
| 3. Carry out an assessment of options for centralised green waste processing services   | NES, MOIP                        | Months 12 to 24               | Assessment completed with agreed recommendations for action                    | Internal & external | \$2,000 (in kind)            | staff time  |
| 4. Implement recommendations and review their effectiveness at regular intervals  | NES, MOIP                        | Months 25 to 36 then on-going | Services operating   | Internal & External | \$25,000 + \$5,000 (in kind) | Uncertain but likely to include equipment costs, staff time, operating costs etc... |
| <b>Objective 3: To improve landfill management practices and reduce landfill fires</b>  |                                  |                               |  |                     |                              |   |
| 1. NES to meet with MOIP and Rarotonga landfill operator to discuss current operational issues, including landfill fires, and identify options and needs for improved site management   | NES, MOIP and landfill operator  | Months 4 to 6                 | Agreed actions   | Internal            | \$2,000 (in kind)            | Staff time  |
| 2. Develop and implement the agreed programme, including NES monitoring of performance  | NES, MOIP, Landfill operator     | Months 7 to 12                | Programme implemented  | Internal            | \$10,000 + \$1,000 (in kind) | Equipment costs (minor), operating costs, staff time                                |
| 3. Periodic monitoring of programme effectiveness and review of programme activities  | NES                              | Months 24, 36, etc            | Reports on effectiveness monitoring and endorsement of programme review by NCC | Internal            | \$2,000 (in kind)            | Staff time  |
| 4. Review waste disposal sites on Aitutaki and other islands and develop a programme for upgrading as appropriate   | NES, MOIP                        | Months 6-12                   | Outer island waste management report completed                                 | External            | \$2,000 (in kind)            | Staff time  |
| 5. Implement agreed programme   | MOIP                             | Months 12 to 48               | Programme implemented  | External            | \$50,000                     | Equipment costs   |
| <b>Objective 4: To review and then implement the recommendations for upgrading the current facilities for the disposal of quarantine and medical wastes.</b>  |                                  |                               |  |                     |                              |   |
| 1. Draft TOR for a technical expert to review and update the 2005 assessment of the airport quarantine incinerator, including cost estimates for upgrading or replacing the equipment, and the option of including medical wastes | NES, Airport Authority, MOH, MOA | Months 7 to 9                 | TOR agreed   | Internal            | \$2,000 (in kind)            | Staff time  |

| Detailed list of activities  | Key Contributors                 | Timeline                      | Performance Indicators   | Funding Sources     | Estimated Cost (USD)          | Resources Needed                                   |
|--|----------------------------------|-------------------------------|--|---------------------|-------------------------------|--|
| 2. Engage technical expert and carry out the review  | NES, Airport Authority, MOH, MOA | Months 10 to 15               | Technical report accepted and endorsed by all key stakeholders                           | External & internal | \$10,000 + \$2,000 (in kind)  | Technical expert fees and travel costs, staff time |
| 3. Pursue discussions within central government on recommendations from the review and funding options   | NES, Airport Authority, MOH, MOA | Months 16 to 24               | Funding secured  | Internal            | \$2,500 (in kind)             | Staff time   |
| 4. Implement agreed approach   | Airport Authority                | Months 16 to 36               | System purchased, installed and operating  | External & internal | \$400,000 + \$2,000 (in kind) | Equipment costs, staff time                        |
| <b>Objective 5: To establish capacity within the Cook Islands for identifying and estimating unintentional releases of POPs; promoting the application of BAT/BEP for new and existing sources; and the assessment and monitoring of new and existing sources.</b> |                                  |                               |  |                     |                               |  |
| 1. Liaise with the Stockholm Convention Secretariat to identify training opportunities in the preparation of dioxin inventories and the application of BAT/BEP to new and existing sources   | NES                              | Months 1 to 6, then on-going  | Options identified and proposed training programmes endorsed by NES CEO                  | Internal            | \$2,000 (in kind)             | Staff time   |
| 2. Send key staff overseas for training as and when opportunities arise  | NES, MOH                         | On-going                      | Training completed and reported as appropriate   | External & internal | \$10,000 + \$2,500 (in kind)  | Travel costs, staff time                           |
| 3. Set up and implement systems for on-going data collection and regular updating & reporting of the dioxin inventory  | NES                              | Months 18 to 24, and on-going | Systems in place and operational in time for the next Convention reporting period (2014) | Internal            | \$5,000 (in kind)             | Staff time   |
| 4. Prepare local guidance documents on BAT/BEP requirements for local sources, including performance monitoring and testing  | NES                              | Months 12 to 24               | Guidance documents produced and available on NES web site                                | Internal            | \$5,000 (in kind)             | Staff time   |
| 5. Carry out regular inspections on local sources, including performance monitoring and testing  | NES                              | On-going from month 12        | Annual summary reports on inspection programme   | External & internal | \$10,000 + \$5,000 (in kind)  | Equipment costs, staff time                        |

**Table A4: Detailed work plan for achieving obligations for reducing or eliminating releases from stockpiles, wastes and contaminated sites.**

| Detailed list of activities  | Key Contributors                 | Timeline                     | Performance Indicators                             | Funding Sources     | Estimated Cost (USD)         | Resources Needed  |
|--|----------------------------------|------------------------------|--|---------------------|------------------------------|---|
| <b><i>Objective 1: To improve import statistics on products and articles which possibly contain POPs</i></b>   |                                  |                              |  |                     |                              |   |
| 1. Request assistance from the ICO for the introduction of the Globally Harmonised System (GHS) for coding of imports and exports and for training in system implementation. | MFEM Customs                     | Months 1 to 3                | ICO assistance confirmed                           | Internal            | \$2,000 (in kind)            | Staff time  |
| 2. Implement GHS system, including any necessary computer upgrades and staff training  | MFEM, Customs                    | Months 4 to 12               | GHS implemented and staff training completed       | External & internal | \$10,000 + \$3,000 (in kind) | Technical expert costs, computer upgrades, staff time         |
| 3. Prepare information and instruction sheets on the system for importers and other possible users   | MFEM, Customs                    | Months 13 to 15              | Information sheets available                       | External & internal | \$1,000 + \$500 (in kind)    | Printing costs, staff time                                    |
| <b><i>Objective 2: To improve the safe and environmentally sound management of e-Waste in the Cook Islands</i></b>   |                                  |                              |  |                     |                              |   |
| 1. Review 2010 e-waste clean-up and develop plans for an on-going (eg. annual) programme, including costings, lead agency, etc   | OPM, NES, and other stakeholders | Months 1 to 3                | Development of a plan for annual e-waste clean-ups | Internal            | \$2,000 (in kind)            | Staff time  |
| 2. Seek and obtain funding and implement   | OPM, NES, and other stakeholders | Months 6 to 9, then annually | Annual clean-up reports                            | External & internal | \$10,000 + \$2,500 (in kind) | Publicity, materials, transport and storage costs, staff time |
| 3. Explore options for carrying out similar programmes on Aitutaki and other outer islands   | OPM, NES, and other stakeholders | Months 1 to 6, then on-going | Programmes agreed and implemented                  | External & internal | \$10,000 + \$2,500 (in kind) | Publicity, materials, transport and storage costs, staff time |
| <b><i>Objective 3: To develop a system for the safe and environmentally sound management of intractable waste in the Cook Islands</i></b>                                    |                                  |                              |  |                     |                              |   |
| 1. Draft TOR(s) for technical expert to conduct tasks below; seek and obtain funding.  | MOIP, NES                        | Month 1 to 6                 | TOR approved by CEOs of MOIP and NES               | Internal            | \$3,000 (in kind)            | Staff time  |

| Detailed list of activities  | Key Contributors                            | Timeline        | Performance Indicators  | Funding Sources     | Estimated Cost (USD)          | Resources Needed  |
|--|---|-----------------|---|---------------------|-------------------------------|---|
| 2. Engage technical expert to advise on the development of a permanent storage facility on Rarotonga for intractable wastes, including identification of possible sites, site selection, facility design and costs | MOIP, NES, technical expert, private sector | Months 7 to 9   | Reports accepted by MOIP  | External & internal | \$20,000 + \$3,000 (in kind)  | Technical expert fees and travel costs<br>Staff time              |
| 3. Decide on preferred facilities, seek and obtain funding   | NES, MOIP private sector,                   | Months 10 to 14 | Decision made on preferred option, funding obtained               | Internal            | \$5,000 (in kind)             | Staff time  |
| 4. Implement proposed plan, including facility construction, staff training, provision of protective gear, handling equipment, etc   | MOIP, private sector                        | Months 14 to 24 | Facility commissioned, staff trained, management systems in place | External + internal | \$50,000 + \$4,000 (in kind)  | Construction costs, equipment, staff time                         |
| 5. As wastes accumulate and info on quantities and types becomes available, initiate discussions with aid partners on options for export and disposal – then action, as appropriate                                | MOIP, NES, private sector                   | On-going        | Intractable waste exported  | External & Internal | \$20,000 + \$3,000 (in kind)  | Transportation costs, administration costs, staff time.           |
| 6. Conduct a review of waste issues on Aitutaki and other islands, current storage/disposal systems, and need for dedicated facilities on each islands and/or shipping arrangements to centralised facilities      | NES, MOIP                                   | Months 1 to 6   | Review completed  | Internal            | \$2,000 + \$5,000 (in kind)   | Internal travel costs, staff time                                 |
| 7. Seek and obtain funding and implement item 6  | MOIP  |                 | Recommendations implemented                                       | External & internal | \$50,000 + \$10,000 (in kind) | Uncertain, but probable, equipment and facility costs, staff time |
| <b>Objective 4: To put in place the necessary legislative requirements for the management and disposal of intractable wastes</b>   |   |                 |   |                     |                               |   |
| 1. Review recommendations from the 2005 ADB review for regulations under the Environment Act for the managing intractable wastes, and export under the Basel and Waigani Conventions.                              | NES, Crown Law                              | Months 13 to 15 | Agreement on scope and content of regulations                     | Internal            | \$3,000 (in kind)             | Staff time  |
| 2. Prepare draft regulations and submit for processing through the   | NES, Crown Law                              | Months 16 to 36 | Regulations passed  | Internal            | \$10,000 (in kind)            | Staff time  |

| Detailed list of activities   | Key Contributors                          | Timeline        | Performance Indicators   | Funding Sources     | Estimated Cost (USD)         | Resources Needed   |
|---|---|-----------------|--|---------------------|------------------------------|--|
| legislative system  |   |                 |  |                     |                              |  |
| 3. Assign staff responsibilities for administering the regulations  | NES                                       | On-going        | All export approvals processed as and when required  | Internal            | On-going                     | Staff time, funded from the NES budget   |
| <b>Objective 5: To review the use of economic instruments and other possible approaches for managing the production and disposal of intractable waste in the Cook Islands, and implement as appropriate</b> |   |                 |  |                     |                              |  |
| 1. Carry out a review of possible instruments including government preferential procurement policies, advanced disposal fees on imports, and the promotion of Extended Producer Responsibility programmes   | NES, OPM, Crown Law, MFEM                 | Months 6 to 12  | Review completed and results published in a discussion document                              | Internal            | \$10,000 (in-kind)           | Staff time   |
| 2. Community consultations, including with the private sector, on the possible/preferred options  | NES, OPM, Crown Law, MFEM                 | Months 13 to 18 | Report on consultations including recommendations to the Government on the preferred options | Internal            | \$5,000 + \$2,000 (in-kind)  | Meeting costs, travel staff time   |
| 3. Submit recommendations to Government and action once approved  | NES, OPM, Crown Law, MFEM                 | Months 19 to 36 | Recommendations agreed and actioned  | Internal            | \$10,000 (in-kind)           | Staff time, including legal drafting   |
| <b>Objective 6: To carry out preliminary site identification and site assessments for potentially contaminated sites throughout the Cook Islands, followed by remediation, where necessary</b>              |   |                 |  |                     |                              |  |
| 1. NES to consult with stakeholders to draw up a full list of potential sites on all islands  | NES                                       | Months 6 to 9   | List of potentially contaminated sites   | Internal            | \$5,000 (in-kind)            | Staff time   |
| 2. Engage/train local technical experts to carry out preliminary assessments of all sites, using external technical expert for advice as necessary  | NES, other stakeholders                   | Months 10 to 18 | Preliminary risk assessment reports for all potentially contaminated sites                   | External & internal | \$10,000 + \$2,500 (in-kind) | Local expert fees and internal travel costs, staff time  |
| 3. Engage technical expert to carry out detailed assessments of all specific sites, including appropriate levels of sample collection and analysis  | NES, other stakeholders, technical expert | Months 19 to 24 | Comprehensive report on all sites considered significant risk                                | External & internal | \$30,000 + \$3,000 (in-kind) | Technical expert fees and travel costs, equipment hire, laboratory charges for sample analysis, staff time |

| Detailed list of activities                                       | Key Contributors                          | Timeline               | Performance Indicators                         | Funding Sources     | Estimated Cost (USD) | Resources Needed   |
|---|---|------------------------|--|---------------------|----------------------|--|
| 4. Prepare site management plans, including remediation proposals | NES, other stakeholders, technical expert | Months 25 to 30        | Management plans accepted by NES               | External & internal | \$2,000 (in kind)    | Staff time (technical expert costs included in previous entry) |
| 5. Obtain funding for site remediation                            | NES                                       | Months 36 to 42        | Funding obtained                               | Internal            | \$3,000 (in kind)    | Staff time   |
| 6. Implementation of management plans and site remediation        | NES, site owners                          | On-going from month 30 | Management systems in place, sites remediated. | External & internal | \$100,0000           | Estimated clean-up costs                                       |

**Table A5: Detailed workplan to address public information, awareness and education (Article 10).**

| Detailed list of activities   | Key Contributors    | Timeline                            | Performance Indicators  | Funding Sources     | Estimated Cost (USD)         | Resources Needed                      |
|---|---------------------|-------------------------------------|---|---------------------|------------------------------|---------------------------------------|
| <b>Objective 1: To develop a system for on-going public information, awareness and education on POPs and other chemicals.</b>                                       |                     |                                     |   |                     |                              |                                       |
| <b>Objective 2: To regularly monitor the effectiveness of all public information, awareness and education programmes implemented.</b>                               |                     |                                     |   |                     |                              |                                       |
| 1. Prepare information materials on the NIP and on-going programmes arising out of it, and use materials as appropriate in routine education & awareness programmes | NES, MOH, MOA, NGOs | Months 1 to 6, then on-going        | Preparation of NIP resource materials, regular updating of the NES POPs web pages, programme implementation | External & internal | \$10,000 + \$5,000 (in kind) | Publication costs, staff time         |
| 2. Undertake public awareness survey at the end of the NIP project, and then repeat at 2 yearly intervals to monitor programme effectiveness                        | NES, MOH, MOA, NGOs | Months 1, and at 2 yearly intervals | Surveys completed and reported  | Internal            | \$2,000 + \$2,000 (in kind)  | Survey personal costs, staff time     |
| 3. Develop an education and awareness programme dedicated to chemical safety, chemicals in food, and the environment  | NES, MOH, MOA, NGOs | Months 7 to 12, then on-going       | Chemicals education and awareness programme developed and implemented                                       | External & internal | \$2,000 + \$2,000 (in kind)  | Resource production costs, staff time |
| 4. Develop and implement outreach programmes on chemical safety at the user level (ie. at village level and within the home)  | NES, MOH, MOA, NGOs | Months 7 to 12, then on-going       | Programmes developed and implemented  | External & internal | \$2,000 + \$2,000 (in kind)  | Resource production costs, staff time |
| 5. Periodically monitor the effectiveness of the education and awareness activities, and revise programmes accordingly  | NES, MOH, MOA, NGOs | Months 26, 50, 74, etc.             | Programmes revised and implemented  | Internal            | \$2,000 (in-kind)            | Staff time                            |



**Table A6: Detailed work plan to address research, development and monitoring (Article 11).**

| Detailed list of activities  | Key Contributors         | Timeline         | Performance Indicators   | Funding Sources     | Estimated Cost (USD)           | Resources Needed   |
|--|--------------------------|------------------|--|---------------------|--------------------------------|--|
| <b>Objective 1: To develop an appropriate POPs monitoring programme for the Cook Islands, including monitoring of food and environmental samples.</b>  |                          |                  |  |                     |                                |  |
| 1. Update previous proposals for a national laboratory to include proposals for monitoring POPs pesticides and other chemicals in food and environmental samples   | NES, MOH, MOA, MMR, MOIP | Months 9 to 12   | Proposal updated   | Internal            | \$5,000 (in kind)              | Staff time   |
| 2. Submit proposal to Government for further consideration and for discussion with possible donors   | NES, MOH, MOA, MMR, MOIP | Months 13 to 24  | Proposal accepted by Government and potential donors identified  | Internal            | \$5,000 (in kind)              | Staff time   |
| 3. Funding obtained and facility built   | NES, MOH, MOA, MMR, MOIP | Months 25 to 48  | Laboratory facility developed  | External            | uncertain                      | Capital costs  |
| 4. Implementation of on-going POPs monitoring programme (initially using an overseas lab)  | NES, MOH                 | Month 13 onwards | Reports and reviews as per item 5 below  | External & internal | \$100,000 + \$10,000 (in kind) | Analysis costs (over 5 years), staff time  |
| 5. Periodic reporting of results and programme reviews   | NES, MOH                 | On-going         | Endorsement of programme reports and any proposed changes, provision of further funding                    | Internal            | \$2,000 (in kind)              | Staff time   |
| <b>Objective 2: To participate in the existing environmental and biological global POPs monitoring programme</b>   |                          |                  |  |                     |                                |  |
| 1. Liaise with the Stockholm Convention Secretariat and WHO regarding future participation in the global POPs monitoring programme, and the WHO breast milk surveys, and also initiate discussions with NZ regarding inclusion in future breast milk studies | NES, MOH                 | Months 1 to 6.   | Agreement for the Cook Islands to be included  | Internal            | \$1,000 (in kind)              | Staff time   |
| 2. Implementation of on-going programmes, including staff training as required   | NES, MOH                 | Month 7 onwards  | Staff trained in sample collection, samples submitted and reports obtained from the international agencies | External & internal | \$20,000 + \$5,000 (in kind)   | Staff training and equipment costs, travel and sample shipping costs, staff time |
| 3. Internal reporting of results   | NES, MOH                 | On-going         | Results reported within the Cook Islands   | Internal            | \$2,000 (in kind)              | Staff time   |

| Detailed list of activities  | Key Contributors  | Timeline        | Performance Indicators                    | Funding Sources | Estimated Cost (USD) | Resources Needed |
|--|---|-----------------|---|-----------------|----------------------|------------------|
| <b>Objective 3: To improve product labelling in the Cook Islands</b>   |   |                 |   |                 |                      |                  |
| 1. Conduct review of existing laws and policies regarding labelling of imported goods, including food, and develop recommendations for the most appropriate way to address current issues and concerns, including need for labelling in English and/or Maori | Crown Law, NES, MOH, MFEM, Internal Affairs, Private sector, NGOs | Months 7 to 12  | Review completed, with recommendations    | Internal        | \$5,000 (in kind)    | Staff time       |
| 2. Implement as appropriate  | as above  | Months 13 to 36 | Recommendations agreed on and implemented | Internal        | \$5,000 (in kind)    | Staff time       |

**Table A7: Detailed work plan to address information exchange (Article 9) and reporting (Article 15)**

| Detailed list of activities  | Key Contributors   | Timeline      | Performance Indicators   | Funding Sources | Estimated Cost (USD) | Resources Needed                |
|--|--------------------|---------------|--|-----------------|----------------------|---------------------------------|
| <b>Objective 1: To develop a national mechanism for facilitating information exchange and government actions in relation to chemical management in the Cook Islands</b>        |                    |               |  |                 |                      |                                 |
| 1. Prepare a policy paper on the formation of a National Chemical Committee (NCC) and submit for endorsement by Government   | NES, MOH, MOA, OPM | Months 1 to 6 | Discussion paper submitted and endorsed  | Internal        | \$5,000 (in kind)    | Staff time                      |
| 2. Take actions as necessary for formal establishment of the NCC   | NES, MOH, MOA, OPM | Months 7 to 9 | NCC established  | Internal        | \$5,000 (in kind)    | Staff time                      |
| 3. NCC to meet on a regular basis (eg. 6 monthly) to receive and review reports on all activities taken under the NIP and any other initiatives related to chemical management | NCC members        | On-going      | NCC meeting minutes or reports   | Internal        | \$5,000 (in kind)    | Staff time (on an annual basis) |
| <b>Objective 2: To develop a mechanism for information exchange in relation to POPs and the Stockholm Convention in the Cook Islands</b>                                       |                    |               |  |                 |                      |                                 |
| 1. Confirm POPs Focal Point support under the existing NES budget and assign Focal Point activities to a specific staff position   | NES                | Months 1 to 3 | POPs focal point established in job prescription   | Internal        | \$500 (in kind)      | Staff time                      |
| 2. POPs Focal Point representative to provide reports on a regular basis to the meetings of the NCC  | NES                | On-going      | Reports presented to NCC meetings  | Internal        | \$2,000 (in kind)    | Staff time (on an annual basis) |
| 3. Maintain POPs web page on NES web site and distribute POPs information materials to interested groups, as and when received from the Convention Secretariat                 | NES                | On-going      | Web page periodically updated  | Internal        | \$2,000 (in kind)    | Staff time (on an annual basis) |
| <b>Objective 3: To develop a reporting mechanism for the Stockholm Convention in the Cook Islands</b>  |                    |               |  |                 |                      |                                 |
| 1. NES should allocate at least 0.1 FTE staff time for on-going reporting and other Convention needs   | NES                | On-going      | POPs reporting listed in NES staff job description; reports provided to the Secretariat as and when required | Internal        | \$3,000 (in kind)    | Staff time                      |