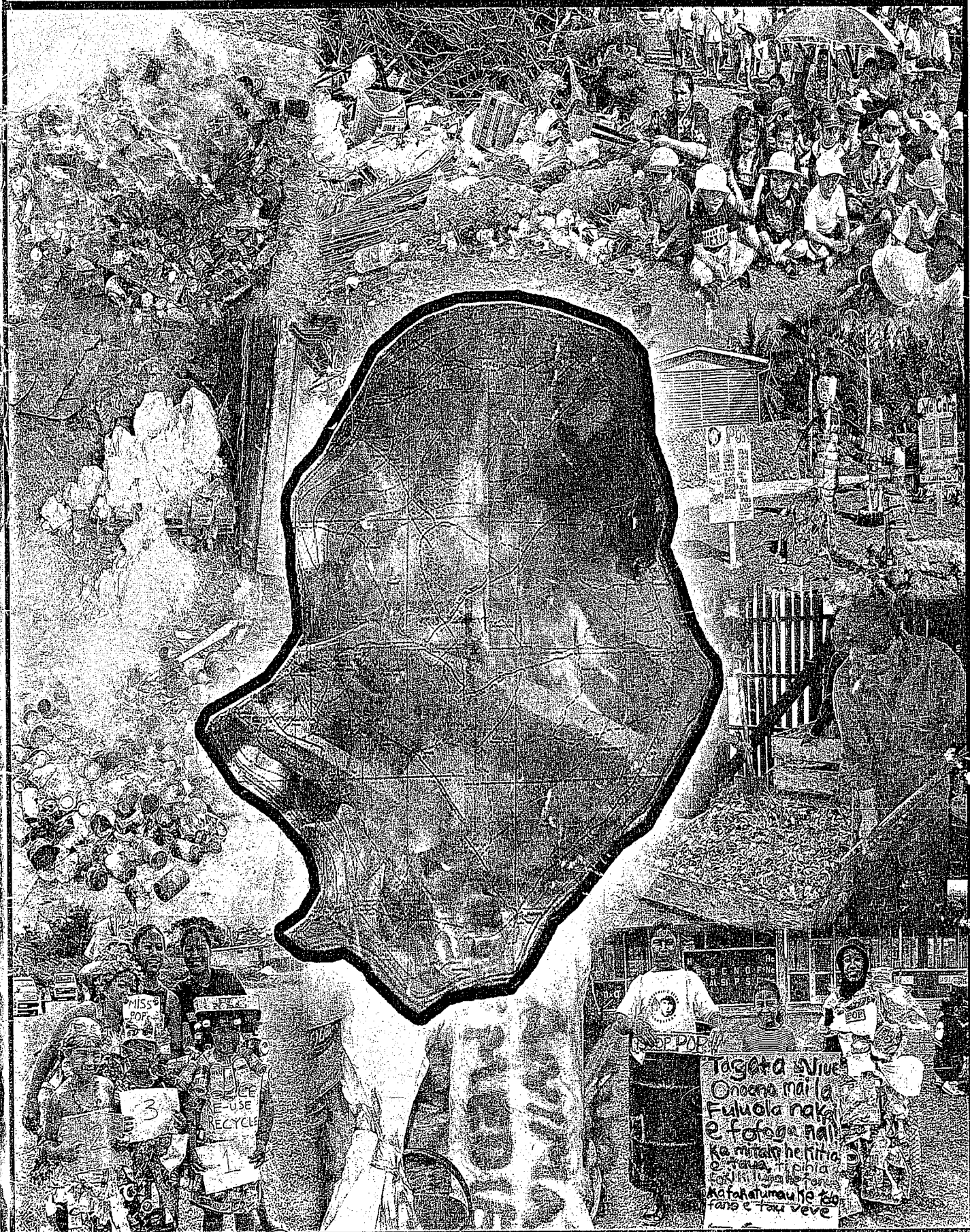


NIUE

National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants



Compiled by: The Niue POPs Project Team with assistance from International and National Consultants, Dr Bruce Graham, Mrs Gaylene Tasmania, Miss Terryanne Mokoia and Miss Natasha Toeono.

Overseen by: The Niue POPs Project Steering Committee of Government Departments, Private Sector and Non Government Organisations.

Reviewed by: International Consultant Dr Bruce Graham.

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Government of Niue 2005

Cover Design; The cover was designed by the Niue POPs Project Team with assistance from Mr Shane Tohovaka of the Broadcasting Corporation of Niue.

The centre of the design depicts the Map of Niue Island. Inside the Map is a picture of the open burning of waste material such as polystyrene, a contributing source of dioxins and furans released here on Niue. The surrounding pictures are of different activities which took place on Niue during the development of the National Implementation Plan for POPs. These photos show some of the Public Awareness activities greatly supported by the schools and general public; some contaminated sites that need to be cleaned up, compost making as an alternative to burning and some of the main sources of dioxins and furans such as the open burning of landfills and household rubbish.

FOREWORD

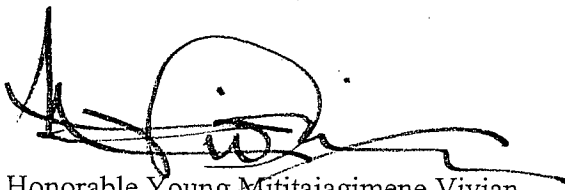
It gives me great pleasure on behalf of the government and people of Niue, to endorse Niue's National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants.

As a small island developing state, Niue faces particular vulnerabilities such as fragile ecosystems, contamination of limited underground drinking water and relatively small areas of land suitable for food production. Our way of life relies heavily on agriculture and fisheries, and it is therefore very important that our natural resources be protected from possible contamination by persistent organic pollutants, and other hazardous chemicals.

The Government of Niue is committed to ensure a safe environment for its people and future generations. The advent of the Environment Act 2003 is one such example of Government's commitment to the protection of the environment. Furthermore, the Government's vision as stated in the Niue Integrated Strategic Plan 2003-2008, confirms that "Niue will be recognized internationally for its unspoilt and unique environment, particularly its pristine coastal waters. It will protect that environment through sustainable environmental practices such as a managed fishery and organic farming". Niue Government has endorsed the goal of the Niue Island Organic Farmers Association in progressively working towards becoming an eco-nation by year 2010 through organic practices.

The Stockholm Convention on Persistent Organic Pollutants is one of many avenues in which the Government believes Niue can benefit in improving quality of life by protecting human health and the state of its environment. Therefore, the Government of Niue and its people recognize the importance of this National Plan for Implementation of the Stockholm Convention in Niue and are committed to its obligations.

I commend the work of the National Steering 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 Niue to continue to participate in the implementation of this Plan, so that we can all work together towards a POPs-free future for the Island of Niue.



Honorable Young Mititaiagimene Vivian
Premier of Niue

EXECUTIVE SUMMARY

This document presents the Niue national plan for the implementation of the Stockholm Convention on Persistent Organic Pollutants. Niue is a signatory to the Convention and is about to ratify it. The Convention entered into force on 17 May, 2004.

The objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants (POPs). The convention currently covers the following twelve chemicals: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene, hexachlorobenzene (HCB), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*p*-dioxins, and polychlorinated dibenzofurans. The first nine of these are pesticides. HCB is also classed as an industrial chemical, as are PCBs, while the dioxins and furans are formed as unintentional by-products in combustion processes and some industrial activities. These chemicals 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 unintentional POPs.

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

Persistent Organic Pollutants in Niue

The current situation regarding persistent organic pollutants in Niue is summarised in chapter 2 of this document along with a more general Country Profile. The key issues relating to POPs chemicals and implementation of the Convention are as follows:

POPs Pesticides

Niue does not intentionally produce or use any POPs chemicals, nor are there any future plans to do so. However, there is anecdotal evidence to indicate that some POPs pesticides (especially DDT) were used in the past. Legislation governing the intentional production and use of POPs in Niue is non-existent. The only piece of legislation that mentions a POPs chemical is the Customs Import Prohibition (Insecticides Order) 1964 which prohibits the import of Benzene hexachloride (BHC) and Dichlorodiphenyltrichlorethane (DDT) except with the consent of the Minister for Customs. Given the absence of intentional production and use of POPs in Niue, the most appropriate action to consider would be to formally ban all imports and use of POPs pesticides and PCBs in Niue by regulation.

PCBs

Tests have shown that none of the current stock of electrical transformers in Niue contain PCBs. However, no tests were conducted on transformers which were in use

at the time, and these will need to be tested once they are out of service. The report for the inventory of chemical imports and use in Niue identified a small number of capacitors containing PCBs and noted that more are likely to be found. There are no systems in place for the environmentally sound management of PCBs on Niue. The normal method of disposal for these types of equipment has simply been to dump or burn them with normal household rubbish. It is therefore proposed that a system be developed for identifying and managing PCBs in small capacitors and other equipment as they arise, including safe storage and ultimate disposal.

Unintentional POPs (Dioxins and Furans)

Dioxins and Furans are formed and released from thermal processes involving organic matter and chlorine and as a result of incomplete combustion or chemical reactions. A preliminary inventory of dioxin and furan releases has shown that the main sources on Niue are the incineration of quarantine and medical wastes and uncontrolled burning, including landfills and backyard rubbish fires.

Niue lacks the capacity to record, control or monitor the releases of dioxins and furans. The knowledge and application of best available techniques (BAT) and best environment practices (BEP) for new or existing sources in Niue is very limited or non-existent. Consideration of BAT/BEP measures need to be undertaken when any new facility is developed for the disposal of medical or quarantine wastes.

The development of improved waste management systems in Niue is a fundamental requirement for the reduction of unintentional releases from activities such as rubbish burning. This should be based around enhancing the implementation of the existing National Waste Management Plan, including improvements to collection services, recycling programmes, and the promotion of alternative methods such as composting. Capacity building and public awareness programmes on POPs will also be a key focus towards the reduction in releases of dioxins and furans.

Chemical Stockpiles and Contaminated Sites

Current stockpiles of obsolete POPs and other chemicals in Niue are being addressed through an AusAID/SPREP project (POPs in PICs), and most of these will be removed from the island within the next few months, for disposal in Australia. There are no proper systems in place for dealing with the safe storage of any other chemical stockpiles and hazardous wastes which might arise in the future, so the NIP includes a proposal to develop such a facility, as part of a National Waste Management Centre, with the flexibility to support all of Niue's waste management needs, such as the recycling programmes.

The POPs Project also conducted a preliminary assessment of 12 potentially contaminated sites. Six out of the twelve sites were ranked as high risk according to the potential risk to the underground water lens and the general public. Measures have already been taken to deal with the clean up of three of these sites, but detailed site investigations need to be conducted on the other three, followed by remediation activities, as required.

Implementation Plan

The prioritization of suitable management options to address the requirements of the Stockholm Convention was undertaken during a stakeholder consultation in September 2004. All the following options were considered as high priority during the workshop to fulfill Niue's obligations to the Stockholm Convention;

- Review and assessment of the need for specific chemical management legislation.
- Establishment of a system for identifying and managing POPs such as PCBs in electrical equipment.
- Development of a facility for safe storage of obsolete and unwanted chemicals.
- Consideration of BAT/BEP guidelines for managing dioxin and furan releases and promotion of alternatives.
- Implementation of detailed investigations of contaminated sites, followed by management and remediation as required.
- Design and implementation of a continuing programme for capacity building, education, awareness, monitoring, research, information and data collection on POPs and chemical management.

The National Implementation Plan consists of several specific strategies and action plans each targeting different goals and objectives. The goals and objectives of each strategy and action plan reflect those of the Stockholm Convention on POPs and attempt to address the POPs issues in Niue. The action plans are as follows:

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

The action plans have been developed in close consultation with key stakeholders. Much of the work is intended to be carried out by local personnel with assistance from international experts as and when required. This approach is intended to assist in developing local capacity for POPs management and implementation of the Convention. The plans include the following specific proposals for capacity building:

POPs Pesticides

- Training in legislative review and drafting of regulations.
- Formulation of methodologies for pesticide disposal.

PCBs

- Training on identification, removal and storage of PCBs in electrical equipment.

- Training on carrying out national PCB inventory .
- Training on database use and management.

Unintentional POPs (Dioxins and Furans)

- Training on BAT/BEP guidelines including field training on existing sources around Niue.
- Training on application of BAT/BEP when undertaking an EIA.
- Training on collection of information on medical and quarantine wastes.
- Training on incinerator use.
- Training on compost making and other alternatives to open burning.

Contaminated Sites

- Training in identification and management of contaminated sites, including clean-up.
- Training in sample collection procedures.
- Training in environmentally sound storage and disposal procedures.

The timetable for implementation of these plans is included in a detailed matrix of activities given in Section 3.5. Most of the activities are intended to be carried out over the next three years, although some involve on-going commitments which will continue on for many years into the future.

The total estimated cost for implementing all of the planned activities is US\$903,000, of which US\$54,500 will be met from within existing resources, as a contribution in-kind, while the remainder will need to be funded externally. It is envisaged that this be tackled in two stages, with an initial requirement for US\$498,500 which will allow a start to be made on all of the proposed activities. This will be followed about two years later by a need for an additional \$350,000, which is required for three significant capital items, namely the National Waste Management Centre, and new disposal facilities for medical and quarantine wastes.

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LIST OF ABBREVIATIONS

ADI	Acceptable Daily Intake
DAFF	Department of Agriculture, Forestry and Fisheries
DDD	1,1-dichloro-2,2-bis(4-chlorophenyl)ethane
DDE	1,1-dichloro-2,2-bis(4-chlorophenyl)ethylene
DDT	Dichlorodiphenyltrichloroethane
DoE	Department of Education
DEn	Department of Environment
DSAP	Development of Sustainable Agriculture Programme
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation
FSM	Federated States of Micronesia
GEF	Global Environment Facility
GEMS	Global Environment Monitoring System
GMO	Genetically Modified Organisms
HCB	Hexachlorobenzene
IARC	International Agency for Research on Cancer
IWP	International Waters Programme
LMO	Living Modified Organisms
NBF	National Biosafety Framework
NEMS	National Environment Management Strategy
NGO	Non-Government Organisation
NIOFA	Niue Island Organic Farmers Association
NIP	National Implementation Plan
NSC	National Steering Committee
PCBs	Polychlorinated biphenyls
PCDDs	Polychlorinated dibenzo-p-dioxins
PCDFs	Polychlorinated dibenzofurans
PIC	Pacific Island Country
POPs	Persistent Organic Pollutants
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme (formerly South Pacific Regional Environment Programme)
TEF	Toxicity Equivalency Factors
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VC	Village Council
VFMP	Village Fisheries Management Programme

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We also acknowledge the great efforts of the Principal, Teachers and especially the students of ECE and Niue Primary School for their tremendous support towards the Public Awareness activities on POPs.

A special thank-you is also extended to all the staff from the Department of Agriculture, Forestry & Fisheries for their support and assistance with the implementation of the project activities that have ensured the successful completion of the NIP.

1.0 INTRODUCTION

The Stockholm Convention is a global treaty designed to protect human health and the environment from a group of chemicals known as Persistent Organic Pollutants (POPs). The Convention specifies a range of measures which will achieve this goal, including controls on the production, import, export, use and disposal of POPs chemicals, and measures to minimize releases of unintentional POPs. The Convention was adopted in Stockholm, Sweden on 22 May 2001, and was signed by the Government of Niue on 12 March 2002.

This Implementation Plan for the Stockholm Convention has been prepared under an enabling activity project funded by the Global Environment Facility (GEF). The Project Document was officially signed by the Government of Niue in February 2003. The Department of Agriculture, Forestry and Fisheries (DAFF) is the lead Government Executing Agency for the project, and the United Nations Development Programme (UNDP) is the GEF Implementing Agency.

The objective of the project is to create sustainable capacity and ownership in Niue to meet their obligations under the Stockholm Convention, including the initial preparation of a POPs National Implementation Plan (NIP), and broader issues of chemical safety and management as articulated in Chapter 19 of Agenda 21. The NIP will describe how Niue will meet its obligations under the Convention to phase-out POPs sources and remediate POPs contaminated sites on Niue as articulated in Article 7 of the Convention.

The NIP is intended to demonstrate the commitment of the Niue Government to the objectives of the Stockholm Convention and to achieve compliance with the obligations of the Convention as a Party to it. It presents the information base and associated analysis supporting the development and implementation of effective Action Plans and Strategies to achieve reduction and elimination of POPs with associated improvement of environmental quality and human health.

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 Niue's 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

When it becomes a Party to the Stockholm Convention, Niue will be obligated to develop a National Implementation Plan as stated in Article 7 of the Convention:

“1. Each Party shall:

(a) Develop and endeavor 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."

(Ref: UNEP, 2002)

The process of developing Niue's National Implementation Plan was divided into the following five phases;

1.1 1 Establishment of a coordinating mechanism and process organization

The Niue POPs Project was implemented under the auspices of the Department of Agriculture, Forestry and Fisheries. The Niue POPs Project Steering Committee was established in November 2003 and consisted of Government and Non-Government Stakeholders.

The Committee was chaired by the Project Manager, Mr Sauni Tongatule (Former Director of the Department of Agriculture, Forestry and Fisheries (DAFF) and current Director of Environment).

Members include; Mr Ernest Nemaia (Director of DAFF),
Mr Crossley Tatui (Office of External Affairs),
Mr. Aokuso Pavihi (Coordinator of the Niue Island Organic Farming Association),
Mr. Haden Talagi (Environment Officer),
Mr. Pita Vakaafi (Public Health Officer) and
Ms Natasha Toeono (Coordinator of the Niue POPs Project).

The main role of the National Steering Committee (NSC) was to oversee the Niue POPs project. Monthly meetings were conducted to ensure regular updates on work undertaken by consultants as well as reviewing reports and evaluation activities. Members of the NSC provided advice and oversaw the implementation of the project. The NSC acts as a body with sufficient political commitment to allow the successful development of the NIP.

Among the various tasks needed in the preparation of the NIP, the NSC:

- Endorsed the detailed work plan and schedule for the NIP development.
- Endorsed the recruitment of several national consultants tasked with providing inventory information.
- Reviewed and commented on inventory reports and awareness reports.
- Recommended further tasks to be undertaken where appropriate.

1.1.2 Establishment of POPs inventories and assessment of national infrastructure and capacity;

The second phase in the development of the NIP was that of establishing POPs inventories and assessing national infrastructure for chemical management. The objectives of this phase were to provide the necessary background information and POPs baseline to allow the Niue POPs Project to understand the scope of the POPs issue and to complete the NIP.

Collection of the information during this phase allowed the identification of gaps in resources, capacity and knowledge which could be addressed in the NIP. It also identified the country's needs in terms of technical expertise and other assistance. In addition, the coordination and integration with national sustainable development, chemical management and pollution control policies was identified.

The inventory reports produced for the development of Niue's NIP include;

(a) 1st and 2nd Public Awareness Reports

The first of these reports was compiled in December 2003 to gauge the initial awareness level of the public in understanding the Niue POPs Project through a series of questionnaires to various age groups (Punu, 2003). The second report was compiled six months later to gauge the increase in awareness levels among the public (Punu, 2004). Public information, awareness and education are another of a Party's obligation as stated under Article 10 of the Stockholm Convention.

(b) Legal Review

The Legal Review was carried out by Niue's Assistant Crown Counsel. This covered the review of all legal and enforcement mechanisms in relation to chemical management. Many gaps were identified from this review, most notably the lack of enforced regulations governing the import, storage and use of chemicals in general (Hekau, 2004). This will be discussed accordingly in the NIP.

(c) Food, Water and Breast Milk Sampling

The presence and levels of POPs in local foods was identified by carrying out a survey of local foods and water sources from different outlets on the Island. While it was the initial decision of the NSC to test for the presence of POPs in human blood samples, this did not eventuate due to the absence of adequate hospital facilities at the time. Hence, as

an alternative, breast milk samples were collected from a number of women and sent for analysis (Tasmania, 2004).

(d) Inventory of Sources of Dioxins and Furans

The sources of dioxins and furans were identified and quantified with the aid of the Dioxins and Furans Toolkit. Many of the subcategories were not quantified, specifically because Niue does not have those various sources. The biggest source of dioxins and furans came from waste incineration (Okesene, 2004).

(e) Chemical Imports Report

The chemical imports report 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 these chemicals (Okesene, 2004).

(f) Contaminated Sites Assessment

Historical anecdotal evidence was gathered from former agricultural workers and used to identify possible contaminated sites. Twelve sites were identified during this investigation and were ranked according to the degree of risk they posed to the general public and the underground water lens. Findings from this investigation will be covered in forthcoming sections of the NIP (Niue POPs Project, 2004).

1.1.3 Priority Assessment and Objective Setting

The objective of this phase was to develop country-specific criteria for prioritizing the health and environmental impacts of POPs, by assessing the information gathered in Phase Two to identify areas for attention. Ultimately, the completion of this phase allowed for the setting of appropriate short- and long-term objectives for the management of POPs in compliance with the Stockholm Convention.

Two stakeholders' consultations were held on the 27th and 29th of September 2004. The first stakeholder consultation was held for Heads of Government Departments and other senior representatives from various Government Departments. These ranged from the Bulk Fuel Corporation to the Niue Public Service Commission. The second stakeholder consultation was held for representatives from various Non-Government Organisations (NGOs) and Village Councils (VCs).

The first step in the consultation was to provide each stakeholder with the background material they needed in order to make informed decisions on the direction of priority setting. For each of the inventory reports compiled for Phase Two, a summary was presented by the individual(s) responsible for compiling the report. This gave the opportunity for stakeholders to request clarification in areas they were uncertain of.

A discussion paper compiled by the International Consultant was also presented and the activities contained within prioritized. Based on the deliberations on the day, the highest priority was given to an assessment of the advantages of, and Government contributions

towards ratifying the Stockholm Convention. While it was clear that funding for the activities stated in the NIP would only be received if Niue ratifies the Stockholm Convention, it was not clear what Niue's 'other' obligations are. This is in terms of membership fees, reporting costs and so forth.

The general criteria used for the basis of prioritizing the activities identified in the discussion paper included the following:

1. Practicality/feasibility: consider whether the task suggested is achievable.
2. Cost: consider possible associated costs both monetary and environmental.
3. Benefits: consider the benefits of undertaking the activity.
4. Long term implications: consider whether the activity can be maintained by local government/non-government bodies after funding has stopped.
5. Socio-economic: consider whether the activity will disadvantage some groups in the community.

However other considerations could be made and were entirely up to the view of the participants in their working groups. More detailed findings of the stakeholder consultations can be found in the report on 'Priority Setting for Niue's National Implementation Plan' (Tasmania & Mokoia, 2004).

1.1.4 Formulation of the NIP

Niue's NIP has been developed in line with the UNEP document "Guidance for developing a national implementation plan for the Stockholm Convention". The NIP has been formulated via consultations with various stakeholders and consideration of all parties involved has been noted.

The NIP has been designed to identify possible options for the management of POPs to meet Niue's obligations under the Stockholm Convention. The activities contained in the NIP are based on background information collected in the previous phases of the enabling activities for POPs and prioritized during stakeholder consultations.

The NIP is not a fixed document in that the objectives and activities proposed are based on information available at the present time. Hence, any other information relevant to POPs management collected in the future can be included and additional objectives added to this original plan. 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 on 1st July 2005 and endorsed by the Government of Niue's Ministers of Cabinet during their sitting on the 26th July 2004. The Stockholm Convention was ratified by the Government of Niue on the 12th August 2005.

1.2 Persistent Organic Pollutants

For the past 40 odd years, awareness has been growing about the threats posed to human health and the global environment by the ever-increasing release in the natural environment of synthesized chemicals. Mounting evidence of damage to human health and the environment has focused the attention of the international community on a category of substances referred to as Persistent Organic Pollutants (POPs). Some of these substances are pesticides, while others are industrial chemicals or unwanted by-products of industrial processes or combustion.

POPs are organic compounds that, to a varying degree, resist photolytic, biological and chemical degradation, thus making them environmentally persistent. They are characterized by low water solubility and high lipid (fat) solubility, hence the ability to pass readily through the phospholipid structure of biological membranes and accumulate in fatty tissue. These pollutants resist biological degradation, resulting in biomagnification up the food chain; inevitably, humans at the top of the food chain are exposed to greater concentrations of POPs.

POPs are highly toxic and semi-volatile, enabling them to be transported by natural and meteorological processes over long distances. Low concentrations of emission to the environment can contribute in the long term to significant risks to the health of animals, birds, marine mammals and humans. POPs have been linked to a variety of health problems including reproductive, developmental, and immune disorders, and some cancers.

There are 12 POPs that have been recognized by the Stockholm Convention as in need of international efforts towards global regulation. Nine of these, namely aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene, and polychlorinated biphenyls (PCBs), are listed as chemicals where efforts will be made to eliminate their production. However, some of these are listed as having restricted use by some Parties. DDT, a pesticide used for disease vector control (eg malaria), is allowed restricted production and use. The remaining POPs are polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs). These chemicals are unintentional by-products of thermal processes involving organic matter and chlorine as a result of incomplete combustion or chemical reactions. Some examples in Niue include the incineration of medical or quarantine waste, domestic rubbish burning and even preparation of the traditional underground oven (umu).

1.2.1 Aldrin

Aldrin is a pesticide used to control soil insects such as termites, corn rootworm, wireworms, rice water weevil, and grasshoppers. It has been widely used to protect crops such as corn and potatoes. Aldrin is readily metabolised to dieldrin by both plants and animals, hence residues are rarely found in foods and animals. It binds strongly to soil particles and is very resistant to leaching into groundwater. Volatilization is an important mechanism of loss from the soil. Aldrin is banned in many countries.

Aldrin is toxic to humans; the lethal dose of aldrin for an adult man has been estimated to be about 5g, equivalent to 83 mg/kg body weight (Ritter et al, 1996). Dietary exposure to aldrin is possible through the consumption of dairy products such as milk and butter and animal meats.

1.2.2 Chlordane

Chlordane is a broad spectrum contact insecticide that has been used on agricultural crops including vegetables, small grains, maize, other oilseeds, potatoes, sugarcane, sugar beets, fruits, nuts, and cotton. It has also been used extensively in the control of termites. Chlordane is soluble in organic solvents and insoluble in water.

The half-life of chlordane in soil has been reported to be approximately one year, combined with its semi-volatile nature, it has the ability to bioconcentrate in organisms, as opposed to bioaccumulate. Thus, while food is a pathway of exposure to chlordane, it is not the main route of exposure, especially for aquatic organisms.

The chemical properties of chlordane (low water solubility, high stability, and semi-volatility) favour its long range transport, and chlordane has been detected in arctic air, water and organisms (Ritter et al, 1996). Chlordane was used in the past in New Zealand, but is now banned.

1.2.3 Dieldrin

Dieldrin has been used in agriculture for the control of soil insects and several insect vectors of disease. Its latter use has been banned in many countries. Dieldrin binds strongly to soil particles and hence is very resistant to leaching into groundwater. Volatilization is an important mechanism of loss from the soil and, because of its persistent nature and hydrophobicity, dieldrin is known to bioconcentrate.

The IARC has concluded that there is inadequate evidence for the carcinogenicity of dieldrin in humans, and limited evidence in experimental animals and has been classified by IARC in Group 3¹.

The half life of dieldrin in temperate soils is approximately 5 years. The characteristics of persistence and high lipid solubility add to dieldrin's ability to bioconcentrate and biomagnify in organisms. Dieldrin's chemical properties (low water solubility, high stability, and semi-volatility) favour its long range transport, and dieldrin has been detected in arctic air, water and organisms (Ritter et al, 1996).

Dieldrin residues have been detected in air, water, soil, fish, birds and mammals, including humans and human breast milk. As aldrin is readily and rapidly converted to

¹ IARC specifies 4 levels of carcinogenicity: Group 1 – confirmed human carcinogen, Group 2a – probable human carcinogen, Group 2b – possible human carcinogen, and Group 3 – insufficient evidence to allow classification

dieldrin in the environment and in organisms, the levels of dieldrin detected likely reflect the total concentrations of both compounds.

1.2.4 Endrin

Endrin is a foliar insecticide used mainly on field crops such as cotton and grains. It has also been used in mice control. It is rapidly metabolised by animals and does not accumulate in fat to the same extent as other compounds with similar structures. It can enter the atmosphere by volatilization, and can contaminate surface water from soil run-off. Endrin is banned in many countries including New Zealand, although it was previously allowed there for restricted use.

IARC has concluded that insufficient evidence is available on the carcinogenicity of endrin, based on human and animal models, and it is therefore classed in Group 3.

The half life of endrin in soil may be up to 12 years. This persistence, combined with high partition ability, provides the necessary conditions for endrin to bioconcentrate in organisms. The chemical properties of endrin (low water solubility, high stability in the environment, and semi-volatility) favour its long range transport, and it has been detected in arctic freshwater. The main source of endrin exposure for the general population is residues in food

1.2.5 Heptachlor

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 is highly insoluble in water, and is soluble in organic solvents. It is quite volatile and can be expected to partition into the atmosphere as a result. It binds readily to aquatic sediments and bioconcentrates in the fat of living organisms. Heptachlor is metabolized in animals to heptachlor epoxide, whose toxicity is similar to that of heptachlor, and which may also be stored in animal fat (Ritter et al, 1996).

The IARC has concluded that there is inadequate evidence for the carcinogenicity of heptachlor in humans, but there is sufficient evidence in experimental animals. Thus, heptachlor is classified as a possible human carcinogen (Group 2B).

The half life of heptachlor in temperate soil is up to 2 years. The combination of persistency and high partition coefficient provides the necessary conditions for heptachlor to bioconcentrate in organisms. The chemical properties of heptachlor (low water solubility, high stability, and semi-volatility) favour its long range transport, and heptachlor and its epoxide have been detected in arctic air, water and organisms (Ritter et al, 1996). The WHO suggests that food is the major source of heptachlor exposure for the general population.

1.2.6 Mirex

Mirex is a stomach insecticide with little contact activity. Its main use was against fire ants in the southeastern United States. It has also been used as a fire retardant in plastics, rubber, paint, paper and electrical goods. Mirex is very resistant to breakdown, is very insoluble in water and has been shown to bioaccumulate and biomagnify.

IARC has concluded that while there is inadequate evidence for the carcinogenicity of mirex in humans, there is sufficient evidence in experimental animals. IARC has classified mirex as a possible human carcinogen (Group 2B).

Mirex is considered to be one of the most stable and persistent pesticides, with a half life of up to 10 years. This persistence, combined with lipophilicity, provides the conditions necessary for mirex to bioconcentrate in organisms. The chemical properties of mirex (low water solubility, high lipid solubility, high stability, and semi-volatility) favour its long range transport, and mirex has been detected in arctic freshwater and terrestrial organisms. The main route of exposure of mirex for the general population is through food, especially meat, fish and wild game.

1.2.7 Toxaphene

Toxaphene is a nonsystemic and contact insecticide that was used primarily on cotton, cereal, grains, fruits, nuts and vegetables. It has also been used to control ticks and mites in livestock. Toxaphene is highly insoluble in water, and has a half life in soil of up to 12 years. It has been shown to bioconcentrate in aquatic organisms and is known to undergo atmospheric transport.

IARC has concluded that while there is inadequate evidence for the carcinogenicity of toxaphene in humans, there is sufficient evidence in experimental animals. IARC has classified toxaphene as a possible human carcinogen (Group 2B).

The half-life of toxaphene in soil ranges from 100 days up to 12 years, depending on the soil type and climate. This persistence, combined with a high partition coefficient suggests that toxaphene is likely to bioconcentrate. The chemical properties of toxaphene (low water solubility, high stability, and semi-volatility) favour its long range transport, and toxaphene has been detected in arctic air. Exposure of the general population is most likely through food.

1.2.8 Polychlorinated Biphenyls (PCBs)

Polychlorinated biphenyls (PCBs) are mixtures of chlorinated hydrocarbons that have been used extensively from 1930 through to the 1980s in a variety of industrial uses, including as dielectrics in transformers and large capacitors, as heat exchange fluids, as paint additives, in carbonless copy paper and in plastics. The value of PCBs for industrial applications is related to their chemical inertness, resistance to heat, non-flammability, low vapour pressure and high dielectric constant. There are 209 possible PCBs.

Generally in PCBs, the water solubility and vapour pressure decrease and the lipid solubility increases with increasing chlorine substitution. PCBs in the environment may

be expected to associate with the organic components of soils, sediments, and biological tissues or with dissolved organic carbon in aquatic systems, rather than being in solution in water. Atmospheric transport may be a significant pathway for the distribution of PCBs in the environment.

IARC has concluded that there is limited evidence for the carcinogenicity of PCBs in humans, and there is sufficient evidence in experimental animals. PCBs are therefore classified as probable human carcinogens (Group 2A).

The degradation of PCBs in the environment depends largely on the degree of chlorination of the biphenyl, with persistence increasing as the degree of chlorination increases. Half-lives for PCBs undergoing photodegradation range from approximately 10 days for a monochlorobiphenyl to 1.5 years for a heptachlorobiphenyl. The persistence of PCBs, combined with the high partition coefficients of various isomers provide the necessary conditions for PCBs to bioaccumulate in organisms.

It has been suggested that PCBs are bioconcentrated as opposed to being bioaccumulated. The chemical properties of PCBs (low water solubility, high stability, and semi-volatility) favour their long range transport, and PCBs have been detected in arctic air, water and organisms. The main source of PCB exposure for the general population is through food, especially fish.

1.2.9 DDT

DDT was widely used during the Second World War to protect the troops and civilians from the spread of malaria, typhus and other vector borne diseases. After the war, DDT was widely used on a variety of agricultural crops and for the control of disease vectors as well. It is still being produced and used for vector control.

DDT is soluble in most organic solvents and insoluble in water. It is semi-volatile and therefore has the ability to partition into the atmosphere. It is lipophilic and partitions readily into the fat of all living organisms and has been demonstrated to bioconcentrate and biomagnify. The breakdown products of DDT, 1,1-dichloro-2,2-bis(4-chlorophenyl)ethane (DDD or TDE) and 1,1-dichloro-2,2-bis(4-chlorophenyl)ethylene (DDE), are also present virtually everywhere in the environment and are more persistent than the parent compound (Ritter et al, 1996).

The IARC has classified DDT as a possible human carcinogen based on sufficient evidence from animal studies. DDT and related compounds are very persistent in the environment, as much as 50% can remain in the soil 10-15 years after application.

DDT is persistent and coupled with its high partition coefficient has the ability to bioconcentrate in organisms. The chemical properties of DDT (low water solubility, high stability and semi-volatility) favour its long range transport and DDT and its metabolites have been detected in arctic air, water and organisms. DDT and its metabolites have also been detected in food from all over the world and this route is likely the greatest source of exposure for the general population.

1.2.10 Dioxins and Furans

Polychlorinated dibenzo-para-dioxins (dioxins) and polychlorinated dibenzofurans (furans) are two groups of planar tricyclic compounds that have very similar chemical structures and properties. They are generally very insoluble in water, are lipophilic and are very persistent. They are not commercially produced and have no known use. They are simply unintentional by-products resulting from the production of other chemicals.

Dioxins may be released into the environment through the production of pesticides and other chlorinated substances. Furans are a major contaminant of PCBs. Dioxins and furans have been detected in emissions from the incineration of hospital waste, municipal waste, hazardous waste, vehicle exhausts, and the burning of coal, peat and wood. There are 210 possible dioxins and furans, of which 17 contribute most significantly to the toxicity of complex mixtures.

International Toxic Equivalency Factors (TEFs) have been assigned to individual dioxins and furans based on a comparison of toxicity to 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD). For example, 2,3,7,8-TCDF has been shown to be approximately one-tenth as toxic as 2,3,7,8-TCDD in animal tests, and its toxic equivalent value is 0.1. TEFs are regarded as risk management tools and have been calculated conservatively.

1.2.11 Hexachlorobenzene (HCB)

Hexachlorobenzene (HCB) is a fungicide that was first introduced in 1945 for seed treatment. It is also a by-product of the manufacture of industrial chemicals including carbon tetrachloride, perchlorethylene, trichloroethylene and pentachlorobenzene.

HCB is soluble in organic solvents and highly insoluble in water. It is quite volatile and can be expected to partition into the atmosphere as a result. It is very resistant to breakdown and has a high partition coefficient, resulting in bioconcentration in the fat of living organisms.

Animal models have shown the effects of HCB on the immune system of rats and suppression of the immune system of mice. HCB has also been reported to produce adverse effects on reproduction and reproductive tissue. Human studies have shown insufficient evidence, however in light of evidence from animal studies; IARC has classified HCB as a possible human carcinogen.

Estimated half lives of HCB in soil from aerobic and anaerobic degradation range from 2.7 to 22.9 years. This persistence, combined with a high partition coefficient provides the necessary conditions for HCB to bioconcentrate in organisms. The chemical properties of HCB (low water solubility, high stability, and semi-volatility) favour its long range transport, and HCB has been detected in arctic air, water and organisms. HCB is ubiquitous in the environment, and has been measured in foods of all types (Ritter et al, 1996).

2.0 COUNTRY BASELINE

2.1 Country Profile

2.1.1 Geography and population

Niue is reputedly the world's largest upraised coral atoll with a total land area of 26,100 hectares (ha). It is located 2400km north-east of New Zealand, on the eastern side of the International Dateline. Niue consists of a single up-thrust, roughly circular coral atoll characterized by a rugged and rocky coastline, featuring steep cliffs, caves, deep chasms and blowholes.

It lies at 19° south and longitude of 169° West. The island is isolated, being approximately 480km east of Tonga, 930km west of Rarotonga and 660km southeast of Samoa; and known for its un-spoilt environment and pristine coastal waters. Niue has an exclusive economic zone (EEZ) of 293,988 sq km.

Niue consists of an uplifted coral limestone plateau perched on top of a submerged (and inactive) volcano. The topography is of a central plateau of gentle undulating relief, slightly dished in shape with the rim at about 68m above mean sea level, dropping to about 30m in the center, which suggested that it was once a lagoon.

A narrow lower terrace 100m to 200m wide at about 28m above sea level surrounds this central plateau. The coastline is rugged, and consists of precipitous cliffs, which drop straight into the sea, except for the west coast where there is a wave-cut rock platform 20m to 80m wide and then a very steep drop-off.

The island is composed of pure limestone of 3 types – reef rock, beach conglomerate and cemented or loose coral sand (Schofield, 1959). The ground surface is often jagged with exposed sharp rock outcrops and boulders, with pockets of topsoil varying in depth between them. In some areas there is a thin coating of ash that was thought to have been deposited by volcanic activity after the uplifting process, and the cause of locally high radioactivity.

There are no watercourses on the island. Rainfall infiltrates quickly through the thin layer of topsoil and down the cracks and cavities in the base rock. The permanent ground-water table is found about 60m below the surface of the central plateau, indicating a mounded body of fresh water above mean sea level. Springs of brackish water leak out from the base of the cliffs. Many caves occur around the coastline and in the center of the island, those in the latter area often containing pools of freshwater. The freshwater lens below the island is its main source of water, tapped by a series of bores.

Seismic activity is not uncommon although major earthquakes have not been recorded in recent times. There are wide joints (chasms) showing evidence of past activities that were associated with the uplifting process.

Niue lies within the tropical cyclone belt and significant cyclones have occurred on average with a 10-year frequency. Cyclone Ofa struck in 1990 with wind speeds of 185kph (100knots). But more recently on Monday 5th of January 2004, 14 years after the last cyclone, tropical cyclone Heta struck the island. The cyclone center is estimated to have passed within 30km of the Niue capital, Alofi. Winds in excess of 270km and a mountainous storm surge battered the west coast.

The combination of a high, spring tide, directional travel, wind velocity, spiral direction, and a sloping seabed combined to a maximum effect in producing a sea surge estimated at 50m. This overtopped the cliffs and in cases pushed 100m inland devastating all in its path. The cyclone was subsequently confirmed as category five or (T6.5) which is the top end of the scale and termed a 'super cyclone'.

The damage to communities was most severe in the western coastal villages from Hikutavake to Avatele with Alofi District sustaining the most damage to both housing and property. All Government housing and private homes at the Aliluki housing estate were totally destroyed together with the only hospital and health institution on Niue, Justice and Lands Department, Museum and Cultural Centre, the Niue Hotel, Industrial Center, Community Halls, Churches and supporting facilities for community and NGOs activities.

The assessment found that 90% of total housing on Niue (570 occupied and 432 unoccupied, mostly built in the 1960s to 1980s period) sustained some form of damage. Thirty occupied houses were totally obliterated (not including 13 government housing) and 20 no longer structurally sound.

The total population from the last Census conducted officially in September 2001 was 1788. This compares with 20,145 residents of New Zealand who claimed to be of Niuean descent in the New Zealand 2001 Census. The population deficit in Niue continues to increase with an estimated annual rate of growth of -3.8%. The declining population has created difficulties in delivering services but more importantly threatens the existence of Niue's cultural heritage and sovereignty. The next official Census is scheduled for year 2006.

The median age at the time of the last census was 29.0 years, with more than half the population (56%) being between the ages of 15 and 59 years. More than 87% of the population speaks Niuean, 90% speak English as a second language, and a small number of fewer than 5% speak Niuean only.

2.1.2 Political and economic profile

Niue is an independent, self-governing state in free association with New Zealand. The General Assembly of the United Nations recognized Niue's act of self-determination on 13th December 1974. Niue maintains all the privileges and responsibilities of a modern state.

Niue is a parliamentary democracy and its Government consists of an Assembly of 20 members, a Premier (elected by the Assembly), a Cabinet (Executive) made up of the Premier and three Ministers whom the Premier selects from amongst the members of the Assembly, and a Judiciary. The Assembly is Niue's supreme law-making authority. Elections are held every three years under a system of universal suffrage.

The Niue Assembly rules in collaboration with 14 Village Councils. This national and local partnership shows Government commitment to community based development, which reflects the very close-knit nature of Niuean society. Customary tenure patterns would make it very difficult for government to impose policies on communities without community agreement.

The Government of Niue has had to adjust to a greatly reduced level of aid from New Zealand. In the 1991/92 financial year, total aid from New Zealand fell from NZ\$9.5 million to \$7.0 million. Niue total expenditure for 1993/94 on the other hand was estimated at \$13.8 million².

In the period 2002, New Zealand assistance stood at \$5.8 million or approximately 4% of GDP (UNDP, 2002). Without this level of external assistance, Niue's balance of payments would have been unmanageable.

In 2002 GDP was \$14.2m, which equates to \$7,470 per capita. The Government is the major employer in Niue. New Zealand provides almost 50% of the GDP through budget support programmes. Until recently telecommunication facilities were the next major source of income. International business company registrations are next in importance but these are to be reviewed in light of current international pressure.

Most trading is done with New Zealand however there is a large trade imbalance with imports of approximately \$4m in 2002 compared with exports of approximately \$200,000. Export commodities consist mainly of taro, honey and small quantities of coconut, handicrafts and vanilla.

The Government of Niue's current economic objectives are to:

- (i) Become independent of external aid in the long term;
- (ii) Substantially reduce government costs;
- (iii) Strengthening the tourist industry;
- (iv) Improve agricultural production to replace imports and develop specialized export produce;
- (v) Improve returns from foreign fishing in Niue's Economic Exclusive Zone (EEZ)
- (vi) Develop alternative energy sources

² The New Zealand dollar is used as the official currency in Niue, and all figures quoted in this report are in NZ\$ unless otherwise indicated

Niue's economic development strategic objective is to "maximize benefits from Niue's resources in a sustainable manner" with the aim to promote economic development. Niue's Integrated Strategic Plan for 2003-2008 covers the following aims for economic development among the different sectors.

Private Sector	Promote, assist and support a vibrant private sector and form and foster partnerships with non-government organizations.
Agriculture	Facilitate agricultural development of products with proven commercial merits, particularly vanilla through research and product and market development.
Fisheries	Increase the returns from the fisheries resource in a sustainable and responsible manner.
Tourism	Increase tourism in a responsible and sustainable manner taking advantage of our clean, green environment and cultural and social values.
Trade and Marketing	Promote and secure markets for our products.
Investment	Seek and encourage venture capital investment and skills and technology transfer.

2.1.3 Profiles of economic sectors

2.1.3.1 Agriculture

The early 1990s saw a growth in agricultural exports, particularly of taro. Quantities of honey, handicrafts and banana were also exported from time to time. Exports remain well below potential levels both in the range of products produced and the volumes that could be generated. Quarantine requirements in destination countries are a major constraint to broadening the agricultural export base, as well as transportation.

Taro exports have been considerably hindered by the devastation caused by cyclone Heta earlier in 2004. New plantations have only recently been planted which may not be harvested until late 2004/early 2005.

Crop Research, Extension Services, Agricultural Marketing, Plant Protection and Quarantine Services are continual programmes undertaken by the Agriculture Dept. The first two aim to support growers by developing new crops (e.g. vegetables) and supporting current ones like taro, coconuts and vanilla, seeking sustainability by improving soils, promoting organic farming and providing irrigation.

Other than the Niue POPs project, the Agriculture Department is also implementing other projects such as the Biosafety Framework, Irrigation, Pacific Pestnet, the Niue Island Organic Farmers Association (NIOFA), Younger Farmers Association, and the Development of Sustainable Agriculture in the Pacific (DSAP).

Biosafety Framework:

Niue's National Biosafety Framework project was established on the 7th October 2002 under the guidance of UNEP. The final objective of this 18-month project is the establishment of Niue's National Biodiversity Framework (NBF) in accordance with the Cartagena Protocol on Biosafety.

The overview of the development of the NBF for Niue is as follows:

- Organizational structure for the development of the NBF Project
- Survey results/Findings
- Outreach materials

The NBF is a collective action of Niue to do surveys on GMO (Genetically Modified Organisms)/LMO's (Living Modified Organisms) and existing data on all related activities and institutions of importance that may deal with likely introduction or to engage in modern biotechnology relating to GMO's and LMO's in Niue, thus focusing on the guideline of the Cartagena Protocol.

Irrigation:

This project is funded by the United Nations Food and Agriculture Organisation (FAO) with the purpose to strengthen the government's agricultural support services for, and build the capacity of Niue's farmers to intensify and increase the import substitution agriculture on the island by means of sustainable and appropriate irrigation technology. The project therefore aims to enhance the cultivation of in particular, vegetables and fruits with irrigation technologies and techniques that make efficient use of Niue's scarce water resources.

The major objective of the project is to assist the Government of Niue in devising; implementing and promoting a viable and sustainable irrigation plan for the intensification of import substitution agriculture.

The realization of these objectives will enable the Government of Niue to reach its central policy goal to increase the island's agricultural capacity to produce import substitution and export products in order to enhance the economy of the island and the income of the population.

Pacific PestNet:

This project is also funded by the FAO and includes a network of 14 Pacific Island countries. It includes the initial development of a website (www.pestnet.org) as a portal for plant protection information, its hosting for 3 years, and the development of promotional materials to increase exposure to PestNet to target audiences in the Pacific

and South East Asian Countries. The project aims to increase participation from research, quarantine and extension services, to contribute knowledge, skills and experience to PestNet and thereby strengthen the resource base of PestNet of meeting plant protection needs in the 21st century.

In terms of economic development, the objective of the PestNet Project is to “develop and promote an effective email network through the use of “Pacific PestNet” among Pacific Island countries for the transfer of plant protection and quarantine information and advice to farmers.

Niue Island Organic Farming Association (NIOFA):

NIOFA exists to promote and drive the principles and practices of organic farming in Niue for the benefit of its people. NIOFA, since its inception as a legally recognized organization have approached the NZAid organisation with the unequivocal support of the Niue Government, for financial assistance in order to facilitate and necessitate the project titled the “Niue Organic Farming Project”.

The general objectives of the project include promoting organic arming techniques and methods and the underlying benefits and to encourage Niueans to adopt them; establishment of a register of Niuean farmers who adopt the organic methods and issue certificates of membership once registration processes are completed among others.

Niue Young Farmers Project:

This project was set up as a commercial farming project for young farmers for a 3-year period under the DAFF. The Government funded it in an effort to accommodate school leavers who could not progress to the next education level. This was also seen as an initiative introducing farming to the youth as another alternative income generation scheme.

Development of Sustainable Agriculture in the Pacific (DSAP):

This project is funded by the European Union and implemented by the Secretariat of the Pacific Community (SPC). It is a 4-year regional project for 10 Pacific Island countries and territories that will contribute to this objective.

One of the objectives of the programme is to support the development of national capacities in agricultural extension and the promotion of sustainable agriculture development, with the ultimate goal of improving food security and the livelihood of target farm families. These objectives will be achieved through building a capacity of national partners i.e. Ministry of Agriculture, NGOs, private sector to use participatory methods to identify farmer problems and develop strategies to solve these problems through on-farm demonstrations, training and other extension methods.

2.1.3.2 Fisheries

The overall goal of the Fisheries Division is to promote fisheries development on a sustainable and environmentally sound basis for both inshore and offshore marine resources.

Key objectives in the fisheries sector include improving the effectiveness and quality of the services to fishermen while promoting the sustainable use of the resource, and exploring the possible use of offshore resources. The key issue identified in departmental consultation was the unsustainable use of inshore fish resources, coupled with the lack of baseline information on these. Other concerns include possible pollution from land-based sources and also from visiting boats.

International Waters of the Pacific (IWP):

The fisheries division is also responsible for an international programme for small island states called the IWP. It is a five-year (2000 – 2005) Global Environment Facility (GEF) – funded programme with two main elements: *oceanic* – which is concerned with the management and conservation of tuna stocks in the Western Central Pacific and *coastal* – focused on integrated coastal watershed management. The coastal element which aims to encourage action at the community level to address priority issues in participating countries relating to: marine and fresh water quality, habit and community modification and degradation, and the unsustainable use of marine resources.

2.1.3.3 Tourism

The Niue tourism industry is coordinated by the Niue Tourism Office, which was re-established under the Niue Tourism Authority Act of 1995. The country is marketed to the global tourism industry as a “soft adventure destination”, concentrating on niche markets such as diving, fishing, sports, people and culture, and eco-tourism, primarily for visitors from New Zealand and Australia. Many of the scenic sites and sea tracks are in private hands and their use for tourism depends on the good will of owners.

The role of the Niue Tourism Office is to ensure that promotion and marketing of Niue does not conflict with the national goals and strategic plan of the country. Recognition of the importance of the environment to tourism led to the drafting of an accreditation scheme for the tourism industry, incorporating environment management guidelines to be followed by those participating in the scheme.

2.1.3.4 Private Sector

Although the private sector is small by any standard, Government acknowledges that assistance to private sector and the speed of delivery of that assistance is vital for the economy of Niue. The impact assessment that was conducted in the month of January 2004 straight after cyclone Heta struck confirmed that the sector was hard hit and required urgent attention and assistance.

Confirmation that buildings that housed some members of this sector were destroyed completely along with all their contents, a majority suffered significant structural damage to their buildings resulting in ruined inventory and essential equipment and tools. All this has inflicted significant losses in terms of stock, trading or production time, finance, and overall investment capital.

Government is also aware of the importance of developing a framework to deal with the immediate and long-term development needs of this sector and is mindful of the fact that some businesses provide essential services to the community and assisted those businesses during the response phase of the disaster. The next step would be to assist others to start trading again and the development of that assistance.

2.1.4 Environmental Overview

The Department of Environment (DEn) was established in 2004 as a separate government agency (formerly part of Community Affairs) and is duly responsible for coordinating environmental management activities in Niue. One of the key roles for the DEn is the development of environmental policies and programmes for implementation by others.

The DEn's Plan for 2001/2002 had a goal of "effectively managing natural resources whilst promoting sustainable practices to ensure inter-generational equity". With a very limited staff and budget, the DEn is under considerable pressure to achieve this goal.

Some of the programmes carried out by the DEn in recent years have included:

- Establishment of the Huvalu Conservation Area (established through the UNDP/GEF –funded SPBCP);
- Implementation of the Capacity Building for Environment Management Programme (CBEMP) project;
- Environment education and awareness programme;
- Facilitate the implementation of the Cartagena Protocol on Biosafety;
- Implementation of the National Biodiversity Strategic Action Plan (NBSAP)
- Implementation of the Pacific Environment Information Network (PEIN)
- Coordinating of annual environment campaign associated with World Environment Days in June each year (GoN, 2001).

The DEn is also largely responsible for the implementation of Niue's obligations under the Environment Conventions for which the country is a party. The Cabinet Ministers have endorsed the Environment Bill as the Environment Act 2003.

2.2 Institutional, policy and regulatory framework

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

Over the past decade, Niue has taken important steps to manage its environment and natural resources as a precursor to achieve sustainable development for its people. The development of the National Environment Management Strategy (NEMS) in 1992 with financial assistance from United Nations Development Programme (UNDP) was an important step in this regard. The NEMS was seen as a major first step towards linking economic growth and environment management.

As such, it was considered at the highest political level as a "guide to assist the country towards its ultimate goal of sustainable development". Although some aspects of the NEMS have been overtaken by recent developments and policies, the NEMS remains an important platform for the development of plans and programmes to support the management and conservation of Niue's environment and natural resources.

The general legislation framework started off as the Environment Bill which has now become the Environment Act 2003.

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

Department of Agriculture, Forestry and Fisheries (DAFF):
The implementing agency for the Niue POPs project is the DAFF. The Project Coordinator is based in the Dept. and is responsible for coordinating all enabling activities for POPs. All activities pertaining to the Stockholm Convention are directed through the NSC, by the DAFF.

The DAFF is also the first point of contact for any persons interested in importing agricultural and/or other pesticides. The Pesticides Act of 1991 is administered by the Dept. which led to the establishment of a national pesticides committee under section 4 of the Pesticides Act. The functions of the pesticides committee include the assessment of applications for pesticide import permits, determination of conditions of import and sale, and the power to revoke or suspend import permits.

Niue Health Department:

The Environmental Health Section of the Health Department has responsibilities relevant to the protection and management of public health. Consequently, their roles also assist with the protection of the environment. Management and safe disposal of wastes are carried out by the Environmental Health Officer. This person works closely with the Environment Department. The Chief Medical Officer, Inspector of Health and the Minister of Health have the authority to issue permits or licences for importing chemicals used by the Department. The Health Department is one of the main chemical users on the Island, with chemicals being used in the radiology section as well as test reagents in the laboratory.

The Health Department is also responsible for implementing the waste management plan which was endorsed by Cabinet on December 21, 2000. The plan covers all waste produced in Niue including solid, liquid and hazardous wastes. Among the hazardous wastes discussed in the plan is that from waste oil, batteries and hospital wastes.

Department of Environment:

The Department of Environment has only recently been established as a stand-alone Department. Previously, all activities pertaining to the environment were undertaken by the environment section of the Community Affairs Department. The Department of

Environment has the overall responsibility for addressing and taking action for environment issues. Their roles have involved educating, promoting and co-ordinating activities related to environment protection and management.

The future implementation of the Niue POPs Project and Biosafety Framework will be directed under the Department of Environment. These are currently being held by the Dept. of Agriculture, Forestry and Fisheries and hence require a close working relationship between the two departments.

Niue Power Corporation:

The Niue Power Corporation is responsible for maintaining all of the Island's power generation capabilities and electrical equipment. The possibility that PCBs may be in some older transformer oils still in operation is uncertain at this stage. Not all transformers in operation have been tested and this cannot be done until an appropriate time when the transformers can be safely tested without disrupting local power supply.

Bulk Fuel Corporation:

The Bulk Fuel Corporation is responsible for handling all fuel imported to Niue. Their activities include the safe storage, handling and distribution of all fuel imported including aircraft fuel.

Public Works Department:

The Public Works Department assists by providing the machinery and manpower for carrying out environmental activities such as safe disposal, removal or cleaning up of wastes. They work closely with the Department of Agriculture Forestry and Fisheries, Department of Health, Department of Environment and the Customs Department.

Niue Customs Department:

The Customs Department are the port of entry authorities who are responsible for the inspection of all imports that require permits and licenses. Where there are no permits or licenses authorising the import of goods, the authorities have a responsibility to seize and destroy such goods.

Niue Police Department:

The Police Department have the responsibility to guard or investigate offences against the environment such as disposal of wastes without permit. They also assist with the collection, transport and exporting of hazardous wastes under the Waste Management Plan.

2.2.3 Relevant international commitments and obligations.

Basel Convention:

Niue is not a party to the Basel Convention, however Article 11 of the Convention allows for Parties to enter into agreements or arrangements either with other Parties or with non-Parties. These agreements or arrangements can also set out controls which are different

from those prescribed by the Convention itself, so long as they too are aimed at reducing environmental pollution. The Waigani Convention is one such agreement.

Waigani Convention:

The Waigani Convention is a convention to ban the importation into Forum Island Countries of hazardous and radioactive wastes and to control the trans-boundary movement and management of hazardous wastes within the South Pacific region. This Convention entered into force in October 2001.

The Waigani Convention bans the importation of hazardous wastes into Forum Island countries and enables countries such as New Zealand and Australia to receive hazardous wastes exported from South Pacific Forum Island countries which are not Parties to the Basel Convention, such as Niue.

The Government of Niue signed the Waigani Convention on September 16th, 1995. This was further ratified in July 22nd, 2003 and came into force on August 21st, 2003. The Waigani Convention is implemented under the auspices of the Niue Health Department and is the instrument that enables the safe removal and disposal of POPs from Niue. The POPs in Pacific Island Countries (PICs) is a current national/regional project that is enabled through Niue's commitment to the Waigani Convention.

United Nations Convention on the Law of the Sea (UNCLOS):

The Government of Niue is a signatory to the UNCLOS and has agreed to the implementation of the provisions of the Convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks. At the time of writing this report, Niue's instrument of ratification had been sent but a reply was yet to be received.

While on the outset the UNCLOS appears to have little relevancy to the Stockholm Convention, Article 194 of the UNCLOS provides an obligation for Parties to undertake measures to prevent, reduce and control pollution of the marine environment. This includes the "release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping".

2.2.4 Description of existing legislation and regulations addressing POPs.

Niue has a number of laws and regulations relating to chemicals. Some have provisions similar to provisions in other legislation. However, a greater part of chemical management is not covered in most of them. Moreover, much of the legislation is New Zealand made law applied directly to Niue or by the request and consent of the Niue General Assembly. All laws enacted in New Zealand before October 1974 automatically become Niuean law. Any other law thereafter can become Niue law by request and consent of the Niue General Assembly. New legislation in New Zealand post 1974 does not affect Niue. Normally where Niue eventually enacts a law similar to an existing New Zealand law, it will mention that such law repeals the existing New Zealand law.

Most of the legislation does not adequately address the core concerns of chemical management. For example, a few laws provide controls on the import, storage, transport, distribution, use or disposal of a few specific classes of chemicals, but there is no one all-embracing law covering all chemicals.

Ideally such concerns could be resolved with the introduction of a new instrument that will regulate the management of all chemicals brought into and distributed for use throughout Niue. This will effectively replace the existing fragmented legislation and provide coverage across all types of chemicals.

Existing primary legislation relevant to the Stockholm Convention includes the following:

2.2.4.1 Customs Act 1966

This Act provides for the control of the importation and exportation of goods. There is a requirement for the production of a license or permit to import restricted goods. Restricted goods include goods prohibited under the Food Control Act. These are goods and articles that do not comply with the provisions of that Act.

Applications for permits and licenses are to be made to the Minister, Chief Medical Officer, Director of Agriculture, Forestry and Fisheries, Quarantine Officer or Custom Officer depending on the requirements for the import of that particular good.

There is no specific reference to chemicals or any class of chemicals except with tobacco and methylated spirits which gives powers to Cabinet to make regulations for the importation, supply, storage, removal, sale, delivery, use and exportation of methylated spirits and the importation, manufacture and sale of tobacco. There are no provisions for the specific target of any dangerous and hazardous chemicals and substances in the Act.

A secondary legislation relevant to POPs is the Custom Import Prohibition (Insecticides Order) 1964. This order prohibits the import of benzene hexachloride (BHC) and dichlorodiphenyltrichlorethane (DDT) except with the consent of the Minister for Customs.

2.2.4.2 Electric Power Supply Act 1960

This Act makes provision for the control of electrical installations, wiring, materials and appliances. A person outside of Government who wishes to sell electric appliances and fittings must apply to Cabinet for a license to do so.

There are no provisions for the import, storage, transport and maintenance of electrical materials and appliances, nor anything that covers the origin and components of light fittings that may contain PCBs.

2.2.4.3 Environment Act 2003

The Environment Act is administered by the Department of Environment and has only recently been enacted with most provisions yet to be exercised at the time of compiling the NIP. The Act enables the establishment of a National Environment Council to advise the Minister on matters relating to environmental, planning, development and resource management policies as well as reviewing the work of the Department of Environment.

It forms an umbrella addressing all environment concerns. One of the functions of the Department of Environment is to design and implement programmes for waste management and pollution control, nature conservation and protection of historic areas. There are wide powers given to Cabinet to make regulations on all issues pertaining to the environment which may include prescribing procedures and requirements for environmental impact assessment, prescribing waste management and pollution control measures, for the regulation of hazardous wastes and for the rehabilitation of any contaminated and polluted land.

2.2.4.4 Marine Pollution Act 1974

This is another New Zealand made law directly applied to Niue. The Act makes provisions for preventing and dealing with pollution of the sea. A person found responsible for discharging oil pollutants into Niue waters or outside Niue waters commits an offence.

Cabinet has power to make regulations requiring ships to carry and install equipment on vessels to prevent pollution or to deal with and clean up pollution. Furthermore, Niue harbor is required to have facilities for the proper discharge or deposit of oil or residues or pollutant residues.

There are provisions making the dumping of wastes and other matters into Niue waters without permit by any aircraft or ship an offence. This is similar to the provisions in the Niue Water Resources Act 1996 where it is an offence to dump wastes underground without a permit by the Minister for Public Works.

2.2.4.5 Pesticide Act 1991

This is the principal Act for the regulation of import, sale and use of pesticides. There is provision for the constituting and functioning of a Pesticides Committee who will issue permits for the importation, sale, distribution and use of pesticides. When the Committee issues permits, they may impose conditions on such things as the use, handling and storage of pesticides.

The Chairman of the Committee is the Director of Agriculture, Forestry and Fisheries, with other members which comprise of the Director of Health together with one other person representing the interests of the importers and another person representing the interests of pesticide users.

Supporting services from the Customs Department include the control of entry of pesticides. A customs officer must not allow the release of pesticide imports if the

importer does not hold a permit to import such products. Cabinet may make regulations providing for the minimum standard requirements to import and use pesticides.

2.2.4.6 Niue Public Health Act 1965

This Act consolidates all laws relating to Public Health. It has similar provisions to the Niue Act 1966 where it makes it an offence to throw any offensive matter into or otherwise pollute any water supply. There are provisions for the storage of drugs and to protect it from deterioration. There is also provision for the offense of selling drugs that have deteriorated and harmful to health.

2.2.4.7 Water Resources Act 1996

This Act makes provision for the investigation, use, control, protection and management of water. The purpose of the Act is to ensure the application of appropriate standards and techniques for the investigation, use, control, protection, management and administration of water resources. A person intending to dispose wastes underground must apply and obtain a license from the Manager or Minister of Public Works.

Chemical management is not amongst Niue's priorities. The problems and challenges that Niue faces are in at least two aspects. Firstly, there are many practices relating to chemical uses that are not legislated for. Persons working with chemicals therefore have no physical and legal protection against loss and suffering arising from chemical use.

Secondly, a number of Committees and responsible officers under a number of laws do not exist or function. This shows a very lenient approach towards entry, use, transportation, storage and disposal of chemicals in general. This may have either arisen out of ignorance of the law or a lack of human and technical resources.

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

Niue does not manufacture, import or use any of the POPs chemicals and pesticides covered by the Stockholm Convention. Unintentional production of POPs is an issue that can only be dealt with through continued public awareness and education activities. The secondary legislation prohibiting the importation of DDT and benzene hexachloride is the only one that specifically mentions some POPs chemicals. Therefore, enforcement or monitoring requirements are non-existent for POPs chemicals and pesticides, including unintentional production of POPs.

2.3 Assessment of the POPs issue in the country.

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

Niue does not manufacture or has ever manufactured any of the POPs pesticides listed in Annex A, Part 1 nor is there any future intention of doing so. In that respect, details of

historical, current and projected future production do not apply. None of these POPs pesticides have ever been used in Niue, based on information obtained from the Inventory data collected. It is not envisaged that there is a need for these pesticides in Niue and therefore future importation is not considered. Export of these POPs pesticides may be required for the removal and disposal of the existing (small) stockpiles. This is further discussed in section 2.3.2.

No legislation exists that specifically covers the listed POPs pesticides but there are opportunities for addressing this as a piece of secondary legislation either under the Customs Act 1966 or the Environment Act 2003.

Preliminary findings of tests on local food sources have shown no definite levels of the listed POPs pesticides in any of the samples tested. All levels of POPs pesticides were undetected, that is, they were all less than the level of detection for each of the POPs pesticides. For comparative purposes, we estimated dietary exposure using a level of half the LOD to calculate daily intake based on the average weight of a Niuean male and female. The results showed on average only 5% of the Acceptable Daily Intake (ADI) for any of the pesticides was being met when consuming 1kg of any of the foods tested. This method was used to estimate dietary exposure to all the POPs pesticides listed in Annex A and Annex B.

Preliminary findings on human exposure from breast milk samples showed undetectable levels of all the POPs pesticides. The presence of DDT and PCBs was detected and these will be discussed in the subsequent sections. These results are to be treated as a baseline and future testing will be done for monitoring purposes.

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

The transformer oils used at the Niue Power Corporation for the Island's power generation do not contain PCBs. However, they may have been used in the past but there are no historical records to verify this. A recent report on tests carried out by the South Pacific Regional Environment Programme (SPREP) on current stock of transformers was negative. These tests were performed on decommissioned transformers. Testing of the other transformers which are still in operation will need to be done when appropriate.

PCBs may be present in capacitors of old electrical equipment such as old radios and fluorescent lights containing capacitors. There were a number of such capacitors found in the fluorescent lights from the hospital and hotel. These were sighted and stored after the damage inflicted by cyclone Heta.

There is still the need for further investigation on the presence of PCBs present in capacitors of old electrical equipment around the Island. Hence, at this stage there is some uncertainty on the number of such capacitors on the Island.

There is no intention for future importation of PCBs to Niue. At this stage, work will be aimed at identifying existing sources of PCBs as mentioned before and disposing of

these. The POPs in PICs Project is currently responsible for the export of identified PCBs from the Niue.

Preliminary investigations on human exposure to PCBs were taken from breast milk samples. From the small sample size of six women that were tested, half of them had detectable levels of PCBs. The levels found for total PCBs ranged from 0.012 to 0.075 mg/kg fat basis. While these levels are very low compared to other countries, it indicates the possibility of exposure from either the environment or from the food they eat. It is noted that these samples are only preliminary and do not represent levels in the entire population. Further investigation is warranted to determine 'population' levels if any.

2.3.3 Assessment with respect to Annex B chemicals (DDT)

Niue prohibited the importation of DDT as stated in the Insecticides Order of 1964, unless consent is given by the Minister for Customs. While this Order does not necessarily ban the importation of DDT outright, there has never been a case where it has been (knowingly) imported since the Order took effect and there are no future plans for the use of DDT in Niue.

In terms of exposure levels; DDT was undetected in all the food samples tested during the inventory phase of the POPs Project. However, definite levels were detected of 4,4'-DDE ranging from 0.26 to 1.12 mg/kg fat basis. This was not of major significance since almost all international studies of breast milk samples have detected the breakdown products of 4,4'-DDT. What was surprising was the presence of the parent compound 4,4'-DDT in all but one sample of breast milk (83%). This implies recent exposure, of which the most obvious source in Niue's case is mosquito coils. Further investigation confirmed that this was the case, and the suspect mosquito coils have been removed from sale. In addition, further monitoring will be warranted to establish if the parent compound is present in the larger population.

2.3.4 Assessment of releases from unintentional production of Annex C chemicals (PCDD/PCDF, HCB and PCBs)

The most significant releases from unintentional production in Niue are in relation to dioxins and furans. The use of the standardized UNEP toolkit for identification and quantification of dioxin and furan releases determined Niue's highest source of dioxins and furans came from waste incineration. This included both quarantine and medical waste incineration producing an estimated 227.4 mg TEQ/annum. The second highest source of emission for Niue came from uncontrolled combustion processes producing an estimated 158.4 mg TEQ/annum.

Four out of the ten source categories included in the toolkit were relevant to Niue's situation. The third highest source of emission was from transportation, followed by power generation at 1.2 and 0.6 mg TEQ/annum.

A comparison of Niue's levels of emission to those from bigger countries shows that Niue's levels are well below those of other bigger nations. In essence, the other countries are highly populated and more industrialized than Niue which may be a reason for the high emissions. It would be interesting to compare Niue's data with other neighbouring Pacific Island countries such as Samoa, Tonga or the Cook Islands.

2.3.5 Information on the state of knowledge on stockpiles, contaminated sites and wastes, identification, likely numbers, relevant regulations, guidance, remediation measures and data on releases from sites.

A preliminary assessment of potentially contaminated sites was conducted as part of Niue's inventory profile. Information for the assessment was gathered from interviews and questionnaires with ex-workers from the Health and Agriculture Departments and a review of Department of Agriculture records and archives. Further information on potentially contaminated sites was obtained during a two-day workshop with various stakeholders. Site visits were also undertaken to further investigate each site and a total of twelve potentially contaminated sites were investigated.

A risk screening system was used in ranking the sites. Of the twelve sites investigated, three of these sites were ranked as high risk namely Vaiea Farm Historical Chemical Dump; Falehavaiki Historical Chemical Dump; and Makato Landfill Chemical Dump, all potentially contaminated with POPs. Hence, detailed site investigations were recommended for all three areas. Results of the detailed site investigations will confirm if clean up is required. During excavation chemical containers and chemical residues may be confirmed, and therefore some clean up equipment should be on hand to remove anything hazardous.

The disposal of any identified POPs chemicals from these sites can be implemented under the POPs in PICs project.

2.3.6 Summary of future production, use and releases of POPs – requirements for exemptions.

Two multi-stakeholder consultations conducted for priority setting confirmed that there was no present and envisaged future need for any of the POPs chemicals in Niue. Hence, at this stage Niue has no requirements for any exemptions for the use of any of the POPs chemicals.

2.3.7 Existing programmes for monitoring releases and environmental and human health impacts, including findings.

There are no existing programmes for monitoring releases and environmental and human impacts of POPs in Niue. The preliminary investigations to determine the presence and level of POPs in the environment and human exposure were carried out as a requirement for the formulation of Niue's NIP. The results of these investigations will now be used as

baseline for future monitoring programmes. This baseline data is contained within the following reports:

- (a) 1st and 2nd Public Awareness Reports for POPs
- (b) Legislative Review of Chemical Management in Niue
- (c) A report on the Food and Water Sampling Programme
- (d) Report for the Inventory of Releases of Dioxins and Furans in Niue
- (e) Report for the Inventory of Chemical Imports and Use in Niue
- (f) Niue – Preliminary Assessment of Contaminated Sites

2.3.8 Current level of information, awareness and education among target groups; existing systems to communicate such information to the various groups; mechanism for information exchange with other Parties to the Convention.

The most widely targeted group in Niue at present is school children, particularly at primary school level. This has been a result of collaborative assistance between the Niue POPs Project team and the staff of the Primary School. Education programmes have been aimed at reducing wastes, particularly those that are usually burnt, whether at home or at school. The message of reduce, reuse and recycle has been actively promoted in an attempt to address the unintentional production of dioxins and furans from uncontrolled burning processes.

The implications on human health of high levels of POPs have also been widely promoted but more work needs to be done in this area. There is also a need to translate all POPs messages and issues into the Niuean language. This is not easily done and requires advice from language personnel from the Department of Education to ensure the messages are not misinterpreted and therefore become ineffective. Niue's small population means that information easily reaches people of all ages whether the information is relayed via the radio or television.

Written materials appear to be less effective than visual awareness materials. This appears to be the most appropriate method for relaying information on POPs and getting some effective results seeing as no POPs are imported or in use in Niue. The support of the NIOFA in public awareness of POPs is advantageous for both the POPs Project and the endeavors of NIOFA for Niue to become the first certified 'organic nation' by 2010.

The DAFF as the current implementing agency for the Niue POPs Project can assist in relevant information exchange with other Parties to the Convention. This is usually conducted through the Office of External Affairs, the Government's official channel of communication with international partners.

2.3.9 Relevant activities of non-governmental stakeholders.

Niue's non-governmental stakeholders include the importers and retailers of various chemicals, mainly for agricultural or household use. The importation of various motor oils is also made through a non-governmental stakeholder. There are no importers of POPs chemicals.

The most relevant non-governmental group is the NIOFA. The ultimate goal of the NIOFA is to promote Niue as the first organically certified nation by 2010. This involves activities targeting compost making and the use of organically certified fertilizers and pesticides, none of which covers POPs.

Public awareness activities have already been made in association with the NIOFA, and this cooperation is envisaged to continue in order to achieve the goals of both the Niue POPs Project and the NIOFA.

2.3.10 Overview of technical infrastructure for POPs assessment, measurement, analysis, alternative and prevention measures, management, research and development – linkage to international programmes and projects.

It has been shown during the course of gathering the necessary background information for the NIP that local personnel are capable of carrying out the necessary tasks required with some assistance from international consultants.

Niue has the human resource capability to carry out routine assessment and measurement, and to some extent, POPs analysis. More detailed analyses in terms of research and development may require input from international consultants, if only to provide direction, as well as the services of accredited testing facilities overseas.

Alternative and prevention measures can be considered in terms of reducing Niue's dioxin and furan releases through increased public awareness ie by promoting compost making instead of uncontrolled combustion processes. Other alternative and prevention measures must consider Niue's cultural integrity.

Recommendations have been made to investigate the possibility of Niue becoming an active participant in the food component of the WHO Global Environmental Monitoring System (GEMS). This would involve routine monitoring and reporting of pesticide residue concentration and exposure data.

2.3.11 Identification of impacted populations or environments, estimated scale and magnitude of threats to public health and environmental quality and social implications for workers and local communities.

Niue's population presents both an opportunity and threat in terms of the effects of the levels of POPs in the environment and potential impacts on the population. The 'opportunity' in Niue's population lies in the effective control of chemical imports and use on the island. Most, if not all of the households in Niue have alternative sources of fuel for cooking; hence the use of uncontrolled or open fires is not necessary. Uncontrolled burning of scrub and other biomass is mainly practiced by the more traditional growers, a process that is unnecessary if the land is properly cleared by heavy machinery. The belief that smoke enhances plant growth is a key to educating these growers to reduce and ultimately cease this practice. The small number of importers in Niue makes it possible for an enhanced control system to ensure that POPs chemicals are not permitted.

The 'threat' in terms of population lies in the fact that any high levels occurring in any particular area or age group may wrongly represent high rates within the entire population. The close proximity of households within each village may lead to transfer of any potential contamination by livestock or other food sources.

The threats to public health at this time do not appear to be significant, given the low rates of POPs levels that are present in Niue. Whilst this situation may change in the future, the steps taken to fulfill Niue's obligations under the Stockholm Convention should prevent any future threats to public health or the environment.

2.3.12 Details of any relevant system for the assessment and listing of new chemicals.

The Pesticides Act is the only piece of legislation that covers the importation of any agricultural pesticides. The Pesticides Committee receives applications for the importation of any new pesticides and will proceed to assess the application before deciding whether or not to approve the application. Other functions of the pesticides committee include determination of conditions of import and sale, and the power to revoke or suspend import permits. A list of all pesticides approved by the Committee is held by the Director of the DAFF.

Assessment and listing of chemicals other than for agricultural use is not undertaken in Niue. Whilst the Customs Department is the first point of contact for all incoming goods, including chemicals, there is a lack of record keeping of the various quantities of such items.

2.3.13 Details of any relevant system for the assessment and regulation of chemicals already in the market.

There is no legislation that covers storage, handling and disposal of chemicals already in the market and hence there is no system in place for regulating such activities. In respect to storage and disposal, recommendations on safe practices have been made to the various importers and retailers. For the wider public, awareness of these issues needs to be encouraged and maintained.

3.0 STRATEGY AND ACTION PLAN ELEMENTS OF THE NATIONAL IMPLEMENTATION PLAN

3.1 Policy Statement

The Government of Niue is committed to ensure a safe environment for its people and future generations. It is with this commitment that the Government is obligated to protect its unique environment and biological diversity. The advent of the Environment Act 2003 is one such example of Government's commitment to the protection of Niue's environment.

Furthermore, the Government's vision as stated in the Niue Integrated Strategic Plan (NISP) 2003-2008 confirms that "Niue will be recognized internationally for its unspoilt and unique environment, particularly its pristine coastal waters. It will protect that environment through sustainable environmental practices such as a managed fishery and organic farming" (Niue Government 2003).

The Stockholm Convention on Persistent Organic Pollutants (POPs) is one of many avenues in which the Government believes Niue can benefit in improving quality of life by protecting human health and the state of its environment. Therefore, the Government of Niue and its people recognize the importance of this National Plan for Implementation of the Stockholm Convention in Niue and are committed to its obligations.

3.2 Implementation Strategy

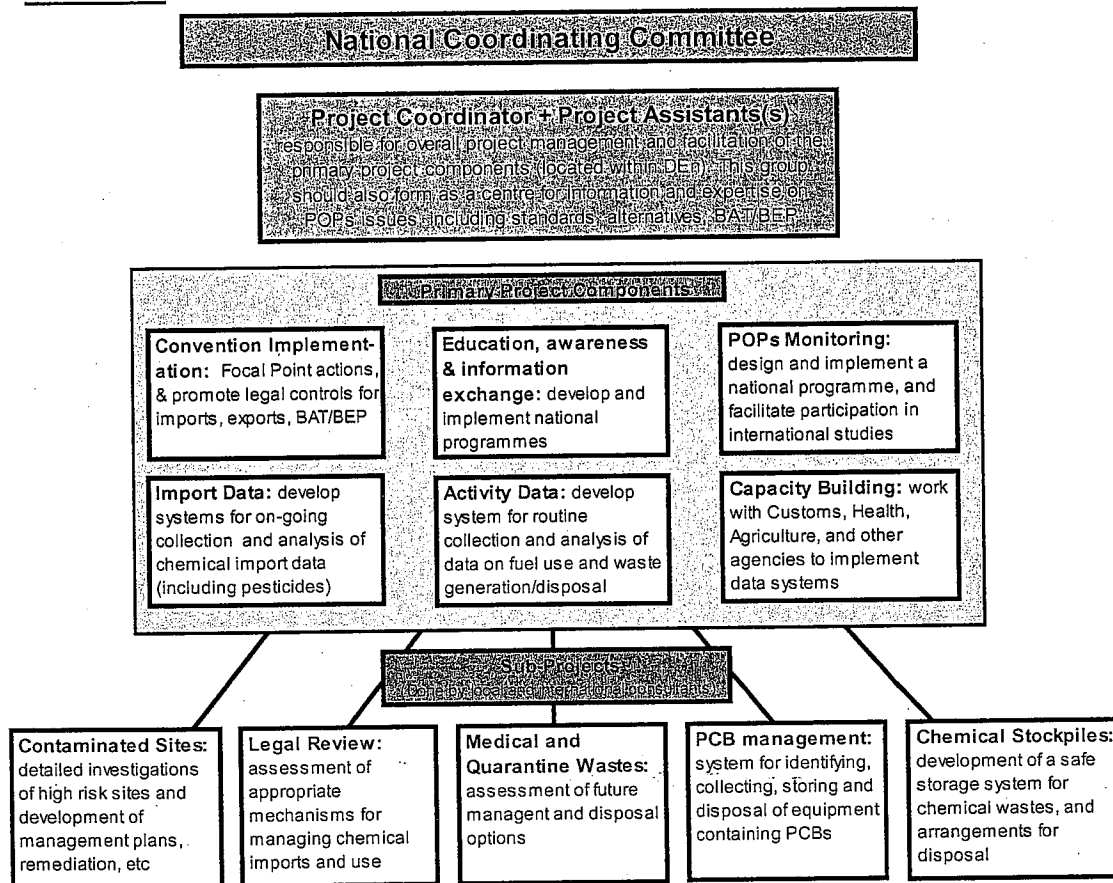
The execution of the National Implementation Plan for POPs will be primarily coordinated by the Department of Environment who govern most of Niue's environmental issues and strategies. The joint participation of many other Government Departments will ensure the success of the NIP and it is envisaged that the Plan will be integrated into the activities of each Department without adding to their workload.

The Department of Environment will hold the coordinating mechanism for the NIP and will be responsible for monitoring its progress and report accordingly. The National Coordinating Committee (NCC) will be responsible for overseeing the implementation of

all the action plans in Niue's NIP. They will monitor the progress of these action plans to ensure that they are successfully implemented within the given timeframe.

A proposed management and project structure for implementation of the NIP is shown in Figure 3.01 below.

Fig 3.01 Niue's National Implementation Structure for Persistent Organic Pollutants.



The prioritization of suitable management options to address the requirements of the Stockholm Convention was undertaken during a stakeholder consultation in September 2004. All these options were ranked as high priority during this consultation and specific action plans were developed according to these options.

All the following management options were considered as high priority during the prioritization workshop to fulfill Niue's obligations to the Stockholm Convention;

- Review and assessment of the need for specific chemical management legislation.
- Establishment of a system for identifying and managing POPs such as PCBs in electrical equipment.

- Development of a facility for safe storage of obsolete and unwanted chemicals.
- Consideration of BAT/BEP guidelines for managing dioxin and furan releases and promotion of alternatives.
- Implementation of detailed investigations of contaminated sites, followed by management and remediation as required.
- Design and implementation of a continuing programme for capacity building, education, awareness, monitoring, research, information and data collection on POPs and chemical management.

The proposed options will be implemented according to the detailed work plans in the following sections.

3.3 Activities, Strategies and Action Plans

The National Implementation Plan consists of several specific strategies and action plans each targeting different goals and objectives. The goals and objectives of each strategy and action plan reflect those of the Stockholm Convention on POPs and attempt to address the POPs issues in Niue.

The following Strategies and Action Plans define the goals, objectives and key actions proposed for Niue's National Implementation Plan, details of which are presented in the succeeding sections.

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

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

3.3.1.1 Context and Analysis of Issue

Niue became a Signatory to the Stockholm Convention in 2002 and is considering becoming a Party. Under Articles 3 and 4 of the Convention, Parties are required to undertake measures to reduce or eliminate releases from intentional production and use of POPs chemicals as listed in Annexes A and B of the Convention and regulate any trade in these POPs with both Parties and Non-Parties.

An inventory of chemicals imported and used in Niue was previously carried out and no POPs chemicals were identified amongst these, although there is anecdotal evidence to indicate that some POPs pesticides (especially DDT) were used in the past. Niue does not intentionally produce or use any POPs chemicals nor are there any future plans to do so. However, PCBs have been identified in Niue, most of which have been collected and stored awaiting safe export within the current POPs in PICs programme already being implemented in Niue.

Legislation that governs the intentional production and use of POPs in Niue is non-existent and therefore it is important to develop an action plan to strengthen the legalities of preventing such an event. A legislative review was conducted as part of the Niue POPs Project enabling activities. The only piece of legislation that mentioned a POPs chemical was the Customs Import Prohibition (Insecticides Order) 1964 which prohibits the import of Benzene hexachloride (BHC) and Dichlorodiphenyltrichlorethane (DDT) except with the consent of the Minister for Customs. In effect, this means there is an opportunity for the prohibition to be lifted by the Minister for Customs.

Given the absence of intentional production and use of POPs in Niue, the most appropriate action to consider would be to formally ban all imports and use of POPs pesticides and PCBs in Niue by regulation. In addition, a system to approve any future chemical exports is also necessary, to cover any future requirements for disposal of obsolete chemicals and/or residues arising from the clean-up of contaminated sites.

3.3.1.2 Goals and Objectives

Goal: To prohibit the intentional production and use of POPs in Niue and to ensure that any existing POPs chemicals are disposed in an environmentally sound manner.

Objective 1: To develop a legal framework to formally ban the importation, production, and use of POPs in Niue by 2008.

Objective 2: To have a system in place by 2008, to ensure the environmentally sound disposal of POPs chemicals from Niue.

3.3.1.3 Relevant Management Options

The fact that there is currently no intentional production and use of POPs in Niue provides the option for formally banning the importation, production and use of such chemicals to prevent future imports/production and use of POPs. In addition, regulating trade with both Parties and Non-Parties for the environmentally sound disposal of any identified POPs from Niue is paramount to the effective implementation of this obligation.

There are a number of possible non-regulatory alternatives to this approach, including education and awareness programmes to discourage the use of POPs chemicals, and the application of financial mechanisms such as import duties, to achieve the same end. However, none of these would provide the level of certainty that is required under the

Convention (eg. Article 3, paragraph 1. Each Party shall (a) Prohibit and/or take the legal and administrative measures necessary to eliminate...).

Prioritising suitable management options was undertaken during the stakeholder consultation in 2004. This resulted in a High priority allocated to both of the above proposed actions. However, identifying the most relevant Act on which to base appropriate regulations needs further investigation and therefore is one of the activities in this action plan.

Cost: The cost for developing a legal framework to prevent future imports, production and use of POPs in Niue will include the recruitment of a Consultant to review and assess the need for specific chemical management legislation. The Consultant can be recruited either locally or from abroad; the costs will be dependant on their level of experience. The legal framework developed here will also address the environmentally sound disposal of future chemical exports from Niue. Costs will also be involved in raising public awareness of any new regulations or legislation arising from this action plan.

Potential Benefits: The benefits from undertaking both these management options is the assurance that no future importation, production or use of POPs in Niue will occur because a legal framework is in place to prohibit this. In addition, any POPs that need to be exported from Niue can be done so in an environmentally sound manner.

Social Impact: There are no negative social impacts in undertaking these options as they are both geared towards ensuring a safe environment for the people of Niue. The health of the people will be protected if these steps were taken to ensure POPs chemicals are prohibited and therefore cannot be brought into the country in the first place. The safe removal/export of POPs from Niue also has a positive social impact in that no stockpiles are maintained on the Island thereby preventing unintentional and intentional releases into the environment.

3.3.1.4 Implementation Strategy

Responsible Agency

It is envisaged that the lead agency responsible for carrying out these activities will be the Office of the Attorney General with assistance from the Department of Environment. The legal framework required to formally ban the importation, production and use of POPs can be implemented by the Government's crown councilors and is well within their professional roles and responsibilities. However, external assistance will be required to ensure that the work can be undertaken without undue delays.

The Department of Environment is responsible for the Environment Act which may be a suitable avenue for developing regulations to address the POPs issue in Niue. Technical input would be required from other Government Departments including the Customs Office, the Niue Power Corporation, the Department of Agriculture, Forestry and Fisheries and the Niue Health Department.

The Niue POPs Project Steering Committee will also continue to coordinate this action plan and provide technical advice as needed.

Programme Implementation

A detailed list of activities required for this work and a list of proposed performance indicators is given in Table 3.04. As indicated, the key steps include:

- engagement of a consultant to review current laws and regulations,
- the drafting of any new legislation required, and
- a significant element of public awareness, to ensure public understanding and participation.

As shown, it is expected that the work can be completed within a timetable of three years.

3.3.1.5 Resources Needed

The implementation of this programme is based on the assumption that any existing POPs on the Island (specifically PCBs) will have been exported and disposed of in an environmentally sound manner by the time funds have been secured for this particular programme.

Hence, the following financial resources are designed to meet Objectives 1 and 2 of this action plan to address the intentional production and use of POPs in Niue. The majority of this work will require external donor funding, with a contribution “in kind” from the Government of Niue. Such contribution from the Government of Niue will include office space and staff remuneration and some other operating costs at approximately 10% of the total estimated costs for this programme. Table 3.03 presents the summary of financial resources required for the intentional production and use of POPs in Niue. This programme is estimated to be completed within the next 3 years (36 months) and therefore meeting its objectives by the year 2008. Monitoring of this programme will be in accordance with the performance indicators identified and coordinated by the POPs Steering Committee within the Department of Environment.

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

The Stockholm Convention is an internationally binding treaty which is directed at the sound management of hazardous chemicals known as Persistent Organic Pollutants. Niue became signatory to the Stockholm Convention on Persistent Organic Pollutants in 2002 and is considering becoming a party. Parties are required to address the specific requirements for PCBs under Annex A Part II of the Stockholm Convention 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 waste management of PCBs as soon as possible but no later than 2028.

SPREP conducted PCB tests on electrical transformer oils in 2002 as part of an AusAID funded project (POPs in PICs). These tests confirmed that none of the current stock of electrical transformers contained PCBs. No tests were conducted on the transformers which were in use at the time therefore actions should be taken to test these transformers once they are out of service.

The report for the inventory of chemical imports and use in Niue identified a small number of capacitors containing PCBs and noted that more are likely to be found. These capacitors have been securely stored and will be included in the inventory of chemicals for the POPs in PICs project for disposal in Australia in mid 2005.

The food and water sampling program conducted in 2004 as part of the POPs Inventory showed that breast milk samples contained levels of PCBs similar to those reported for other countries such as New Zealand. Proposals for further testing have been covered in the action plan for research, development and monitoring.

There are currently no systems in place for the environmentally sound management of PCBs on Niue, especially for those present in small capacitors or other electrical equipment. The normal method of disposal for these types of equipment has simply been to dump or burn them with normal household rubbish.

Elimination of the production of PCBs does not apply in this case as this does not take place on Niue. The legal requirements regarding imports and exports of PCBs have been dealt with in the action plan for intentional production and use of POPs.

The best action to address the specific requirements for PCBs in Niue 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. The safe storage of these PCBs equipment links to the action plan on stockpiles and wastes, which includes provisions for the safe storage of hazardous chemicals and wastes.

3.3.2.2 Goals and Objectives

Goal: To reduce and ultimately eliminate the use and release of PCBs on Niue Island and subsequently dispose of them in an environmentally sound manner.

Objective 1: To have systems in place for identifying and managing PCBs in small capacitors and other electrical equipment by the year 2008.

Objective 2: To develop actions for the safe storage and disposal of PCBs in an environmentally sound manner for Niue by 2008.

3.3.2.3 Relevant Management Options

Niue has no proper management system in place to deal with PCBs especially those in electrical capacitors and other electrical equipment. The most appropriate management option for Niue would be to set up a system for identifying and managing PCBs in these electrical capacitors and develop further actions for their safe storage and subsequent disposal.

The outcome of a prioritization workshop for stakeholders held in September 2004 showed that the above management option for addressing PCBs was rated as high priority. Capacity building will be one of the key activities of this action plan.

The safe storage and disposal of PCBs is directly linked to the action plan for stockpiles and wastes that addresses Article 6 of the Stockholm Convention. This requires parties to develop systems for the environmentally sound management and disposal of POPs wastes. Legal measures regarding PCBs have been dealt with in the action plan for intentional production and use of POPs.

Cost: The cost of setting up a system for identifying and managing PCBs in small capacitors and other electrical equipment includes capacity building programmes to strengthen the knowledge and expertise of technical and managerial staff in this area; engagement of experienced consultants to conduct these capacity building programmes; public awareness on PCBs; procurement of safety equipment for the safe handling and storage of PCBs; and the cost of computers for the establishment of a central database system which reports all the identified capacitors and other equipment that contains PCBs, along with records of other hazardous chemicals.

The Department of Environment and the Niue POPs Project Steering Committee will also influence the progress of these activities by closely monitoring them and offering technical support when needed.

The Government of Niue also needs to allocate financial resources towards the long term maintenance and monitoring of this system once it has been established.

Potential Benefits: There are many potential benefits for this action plan such as the identification of management of any risks posed by capacitors and other equipment that contains PCBs, including their safe handling, storage and disposal. Capacity building programmes will also help strengthen the capacity of the responsible agencies to deal with the environmentally sound management of PCBs. Other benefits include the reduction in the release of PCBs into the environment through incorrect disposal practices, which in turn reduces the risk posed to the environment and community health.

Social Impact: The health and welfare of the people are most likely to be affected in the long term if they continue to leave PCBs in their current unmanaged state. A positive social impact will occur if this system is set up for the management of PCBs as it will reduce the threat posed to the health and welfare of the community.

3.3.2.4 Implementation Strategy

Responsible Agency

Niue Power Corporation has been identified as the lead agency for the management of PCBs. This government agency is best suited with this responsibility as they have the technical expertise for dealing directly with the issues regarding electrical matters on the island.

Assistance will also be required from the Department of Environment and other electrical businesses within the private sector. The Government of Niue cannot establish this system on its own resources therefore it will be necessary to seek funding from international donors for the majority of activities required under this action plan.

These agencies need to work in close collaboration to ensure that these systems are in place and fully operational by 2008.

Programme Implementation

The detailed work plan in table 3.05 gives a detailed breakdown of the activities needed to achieve the above objectives in order to fulfill the specific requirements for PCBs as stated in Annex A, Part II of the Stockholm Convention. The estimated timeframe for the implementation of this action plan is approximately 3 years and takes into account the phase out dates for PCBs.

This plan consists of key contributors, a timeframe, potential donors, potential performance indicators, costs and resources needed to conduct these activities. The main activities in the work plan include the implementation of capacity building programmes; detailed inventory of PCBs on Niue Island; and the collection, storage and disposal of PCBs in an environmentally sound manner.

This work plan can be implemented in accordance with the following key steps.

- (a) Identification of a national coordinating body.
- (b) Draft Terms of Reference for consultant to conduct the tasks.
- (c) Capacity building programs to train management and technical personnel in government and private sector on the identification, safe removal and storage of PCBs in electrical equipment.
- (d) Training of management and technical staff of the responsible agencies to report, monitor and maintain PCB identification and removal system.
- (e) Procurement of safety equipment for handling and storage of PCB containing equipment.
- (f) Preparation of detailed inventory on PCB containing equipment.
- (g) Establishment of a computerised database system to record all identified PCBs, POPs and other hazardous chemicals.
- (h) Public awareness on the management process of PCBs.

3.3.2.5 Resources Needed

It is expected that this work plan will be implemented within three years, preferably by the year 2008. Table 3.03 summarises the financial resources required to implement this work plan with the given timeframe. Niue Government could seek funds from different international donors to fund all or part of the activities in the detailed work plan. Included in the overall costs in the table below is approximately 10% "in kind" contribution by the Niue Government. The costs associated with public awareness on PCBs will be covered in the action plan on public awareness of POPs.

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

3.3.3.1 Context and Analysis of Issue

The Stockholm Convention is an internationally binding treaty aimed at protecting human health and the environment from Persistent Organic Pollutants (POPs). The Government of Niue signed the convention on the 12th of March 2002 and is considering becoming a Party. Under Article 5, and Annex C, Parts I, II, III of Convention, Parties are required to take measures for continuous minimization of releases of unintentionally produced POPs (PCBs, HCBs, Dioxins and Furans) and where possible, eliminate their releases. The unintentionally produced POPs and the source categories are detailed in Article 5 and Annex C of the Convention.

Parties are required to fulfill the following requirements for minimizing releases from unintentional Production of POPs within the given timeframe;

- Establish and finalise action plan within 2 years after entry into force (1st release inventory included)
- Use of Best Available Techniques (BAT) require as soon as possible but not later than four years after building a new source or substantial modification of a plant (for those sources listed in Annex C, Part II), and Promote the application of BAT and BEP for all other sources
- Report on success of identified strategies Every five years

Dioxins and Furans are unintentionally produced POPs which are formed and released from thermal processes involving organic matter and chlorine and as a result of incomplete combustion or chemical reactions. In Phase II of the development of the National Implementation Plan a preliminary inventory of Dioxin and Furan releases was conducted on the source categories in Annex C, Part II and III of the Convention that were present on Niue. These sources were identified using the UNEP toolkit³ for identification and quantification of dioxin and furan releases.

³ UNEP, 2003. Standardized Toolkit for Identification and Quantification of Dioxin and Furan releases.

The estimated releases from the dioxin and furan inventory for Niue are displayed in Table 3.01 and emissions are represented in mg TEQ/a⁴. The main sources of dioxins and furans were identified as the incineration of quarantine and medical wastes followed by uncontrolled burning including landfills and backyard rubbish fires. Other sources identified were power generation and heating which includes wood burning for cooking and transportation. It should be noted that the results for fuel combustion for electricity power generation are represented under transportation as the generators are driven by stationary engines rather than power boilers. The total dioxin and furan releases for Niue are low by comparison with other countries, although they are much more comparable on a per capita basis.

Table 3.01: Overall annual releases (mg TEQ/a) from the different source categories.

Cat.	Source Categories	Annual Releases (mg TEQ/a)				
		Air	Water	Land	Products	Residues
1	Waste Incineration	227.408	0.000	0.000	0.000	1.100
2	Ferrous and Non Ferrous Metal Production	0.000	0.000	0.000	0.000	0.000
3	Power generation and heating	0.609	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	0.443	0.000	0.000	0.000	0.000
6	Uncontrolled combustion Processes	163.400	0.000	4.120	0.000	165.8
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/Land filling	0.000	0.000	0.000	0.000	0.000
10	Identification of Potential Hot-Spots	-	-	-	-	-
1-9	Total	391.9	0.0	4.1	0.0	166.9

The incinerator for the Health Department was destroyed by a Cyclone in Jan 2004, although the results for the incineration of medical wastes were collected before the cyclone struck. Consideration of BAT/BEP measures need to be undertaken when a new incinerator is set up for the disposal of medical wastes or proper alternatives need to be put in place instead of the current practise of open burning of medical wastes.

Niue lacks the capacity to record, control or monitor the releases of dioxins and furans. The knowledge and application of best available techniques (BAT) and best environment practices (BEP)⁵ for new or existing sources in Niue is very limited or non existent. Environmental personnel and those who are associated with the main sources of dioxins and furans should undergo training on how to use BAT and BEP guidelines and gain a better understanding of this document. Government of Niue should take measures for consideration of BAT/BEP guidelines in its institutional framework. These are some areas that need to be addressed in order for Niue to reduce the production and releases of unintentional POPs to achieve its obligations to the Convention. Capacity building and

⁴ The dioxin and furan releases per year are calculated and presented in grams of toxic equivalent per year mg TEQ/a.

⁵ Guidelines on best available techniques and provisional guidance on best environmental practices relevant to Article 5 and Annex C of the Stockholm Convention on Persistent Organic Pollutants, December 2004.

public awareness programs on POPs could be a key focus towards the reduction in releases of dioxins and furans.

The development of improved waste management systems in Niue is a fundamental requirement for the reduction of unintentional releases from activities such as rubbish burning. This should be based around enhancing the implementation of the existing National Waste Management Plan, including improvements to collection services, recycling programmes, and the promotion of alternative methods such as composting.

There is no available data on releases from other unintentional POPs (ie HCB and PCBs) as no major sources of these chemicals were identified on the island. It is safe to assume that those processes identified as significant sources of dioxins and furans will also have significant releases of other unintentional POPs, and will therefore be effectively addressed through the same proposed action.

3.3.3.2 Goals and Objectives

Goal; To develop an action plan to identify measures for minimization and ultimate elimination of unintentionally produced POPs.

Objective 1: To promote the use of BAT/BEP guidelines for managing dioxin and furan releases on existing sources and in any new developments by 2008.

Objective 2: To enhance the implementation of the National Waste Management Plan, through improved collection and disposal services, recycling programmes, and a campaign to discourage rubbish burning and promote alternatives such as composting by 2008.

Objective 3: To design and implement a program for obtaining better information on quarantine and medical waste generation and upgrading current management and disposal methods by 2008.

3.3.3.3 Relevant Management Options

Currently Niue has no management systems in place to address the production and release of unintentionally produced POPs. There are a number of management options for controlling and minimizing releases of unintentional POPs in the main sources identified on Niue such as monitoring and control of POPs sources. However, Niue has neither the technical or financial resources that would be required for proper implementation if these approaches. Non-regulatory alternatives should be considered as one of the primary management options, especially education and awareness to discourage open burning.

The following options have been considered for addressing the unintentional POPs sources on Niue;

- Promote the use of BAT/BEP guidelines for managing dioxin and furan releases on existing sources and in any new developments.
- Design and implementation of a program for obtaining better information on quarantine and medical waste generation and upgrading current management and disposal methods.
- Implement a programme for improved waste management systems, including a campaign to discourage rubbish burning and promote alternatives such as composting.

The outcome of a prioritization workshop for stakeholders held in September 2004 showed that the above management options for addressing unintentional produced POPs were rated as high priority. Public awareness and capacity building will be the key options included in this action plan as it will have some significant influence on the reduction of unintentionally produced POPs.

Cost: Moderate costs are associated in carrying out measures to reduce releases of unintentional POPs compared to the potentially large costs that will arise in future if nothing is done at all. Costs include the running of Public Awareness and Capacity building programs, establishment of a system for upgrading and managing quarantine and health care wastes, and administrative costs to ensure that BAT/BEP guidelines are considered for managing dioxin and furan releases in existing sources and any new developments. Long term costs will also be considered in future for administrative arrangements to be put in place to ensure that Niue is able to readily comply with the requirement for 5-yearly reporting on the effectiveness of measures taken in this area once it becomes a party.

Potential Benefits: There are a number of potential benefits if these measures are put in place especially for the environment, health and welfare of people. The main benefit will be the reduction of dioxin and furan emissions into the air, which leads to the reduction of the risk posed to the environment and human health. Niue will also benefit by using appropriate technologies that adhere to BAT/BEP guidelines and minimize dioxin and furan emissions. Capacity building programs will benefit relevant agencies by strengthening their capacity to manage and reduce the release and production of unintentional POPs. Public awareness programs will benefit the community at large by offering alternatives to burning and minimizing the production of wastes.

Social Impacts: Awareness and education programs on BAT/BEP can target people by encouraging them to change their current practices or habits of waste management, and will create a positive social impact. This will make them aware and hopefully change their habits and improve their way of life. The application of BAT/BEP to current or new technologies associated with the reduction in dioxin and furan emissions will create a safer environment for workers in this field and reduce the health risks posed to communities at large.

3.3.3.4 Implementation Strategy

Responsible Agency

The agency best suited for taking charge of this action plan should be the Department of Environment. It is only appropriate that they are the lead agency because they are the focal point for the Stockholm Convention on POPs for Niue. The Government Solicitors Office, Department of Health and the Department of Agriculture, Forestry and Fisheries and the Government generally, are key stakeholders who will play a major role in the implementation of this program. Important stakeholders who will also play an active role in the implementation of the activities are the private sector and NGO's.

The Niue POPs Project Steering Committee will keep track of the progress of these activities to ensure that they are successfully implemented within the set timeframe of three years.

Programme Implementation

The detailed work plan presented in Table 3.06 has a list of activities required to achieve the objectives towards minimizing the release and production of unintentional POPs. The plan consists of activities, key contributors, a timeframe, potential donors, potential performance indicators, costs and resources needed to conduct these activities. The timeframe for the completion of these activities is aimed at 3 years, with completion by about 2008.

As indicated in the work plan the key steps include; engagement of consultant(s), stakeholder consultations, application of BAT/BEP guidelines in Environmental Impact Assessments (EIA), capacity building and public awareness programs.

The storage of hazardous medical wastes links to the action plan for stockpiles and wastes which includes a proposal for the development of a storage facility for hazardous wastes.

3.3.3.5 Resources Needed

The success of this action plan highly depends on funding from international donors. Securing these funds will ensure that the majority of the activities will be successfully implemented within 3 years. An in-kind contribution from the Government of Niue will be approximately 10% of the overall costs.

Table 2 displays a summary of the costs required for the implementation of the activities to successfully achieve the objectives of the action plan.

The progress of the program and dispersal of funds will be closely monitored by the Niue POPs Project Steering Committee and coordinated by the Department of Environment over the duration of three years. The performance indicators will give a good indication on the progress of the project. Table 3.03 presents a summary of financial resources

required for the implementation of activities for reducing the release and production of unintentional POPs.

3.3.4 Action Plan on measures to reduce or eliminate releases from stockpiles and wastes (Article 6)

3.3.4.1 Context and Analysis of Issue

The Stockholm Convention is an internationally binding treaty which is directed at the sound management of hazardous chemicals known as Persistent Organic Pollutants. Niue became a signatory to the Stockholm convention on the 12th of March 2002 and is considering becoming a party.

Parties must address their obligations for stockpiles and wastes as detailed in Article 6 of the Stockholm Convention on POPs. 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.

Niue has addressed some of these requirements through an AusAID/SPREP disposal project (POPs in PICs). This project identified stockpiles of obsolete chemicals from old agricultural chemical storage sites around the island which were then cleaned up, repackaged and properly stored in a secure storage area. The report for the inventory of chemical imports and use in Niue identified a small number of capacitors containing PCBs and noted that more are likely to be found. These capacitors have been securely stored and will be included in the inventory of chemicals for the POPs in PICs disposal project. These chemicals are awaiting shipment to Australia for disposal before the end of the year 2005.

The Niue POPs Project also conducted a preliminary assessment on 12 potentially contaminated sites in June 2004. These sites were identified through historical and anecdotal evidence and were assessed using the Risk Screening System developed by the New Zealand Ministry for the Environment. Six out of the twelve sites were ranked as high risk according to the potential risk to the underground water lens and the general public.

Detailed site investigations need to be conducted on the following high-risk sites: *Vaiea Farm Historical Chemical Dump*; *Falehavaiki Historical Chemical Dump*; and *Makato Landfill Chemical Dump*, all potentially contaminated with POPs. The other 3 high risk sites were asbestos storage sites and the bulk fuel depot site contaminated with hydrocarbons. Measures have already been taken to deal with the clean up of these sites. Further actions for the remediation of the six medium risk sites should be undertaken once the detailed site assessments have been completed.

Niue currently has no proper systems in place that deal directly with the environmentally sound management of stockpiles or safe storage of hazardous wastes. Therefore it is important that Niue sets up a system that addresses these issues until further actions are developed to dispose of these wastes in an environmentally sound manner. Contaminated matter which is identified from the contaminated sites (if any) can also be stored in this facility until appropriate disposal methods are identified. This will help ensure that no significant threats are posed to the public health and the environment. In addition, it is proposed that this storage facility be developed as a National Waste Management Centre, with the flexibility to support all of Niue's waste management needs, such as the recycling programmes.

3.3.4.2 Goals and Objectives

Goal: To develop environmentally sound measures to help manage the releases of chemicals from stockpiles and wastes by the year 2008.

Objective 1; To have systems in place for the sound management of obsolete and unwanted chemicals by the year 2008.

Objective 2; To conduct detailed site investigations on potentially contaminated sites on Niue Island by 2010 and to develop further remediation actions for these sites if necessary.

3.3.4.3 Relevant Management Options

The following are relevant management options that could be considered for reduction of releases of stockpiles and wastes;

Options for objective 1

1. Development of a facility for safe storage of obsolete and unwanted chemicals.
2. Undertake immediate packaging and export for disposal of unwanted and obsolete chemicals, as and when required.
3. Leave chemical wastes in their current unmanaged state.

Of these options, the third one is clearly unacceptable as it does nothing to address the potential risks. The second one is considered to be relatively impractical because the chemicals will generally only arise in small quantities and at irregular intervals. It would be more efficient and cost effective to hold these in secure storage until the quantities are large enough to justify the time, effort and expense involved in organising and obtaining approvals for a waste shipment.

Options for objective 2

1. Detailed investigations into these potentially contaminated sites followed by management and remediation as required.

2. Leave sites in their current state.

Of these options, the second is clearly unacceptable as it does nothing to address the potential risks.

The relevant management options that were identified to address the above objectives were a result of the recommendations from the POPs inventory reports in Phase II. These activities were discussed at the prioritisation and objective setting workshop that was held on Monday the 27th of September 2004 and were ranked as high priority using the following criteria;

Cost: It will be costly to set up a new storage facility to house hazardous chemicals and wastes especially if it has to adhere to international environmental standards. Large costs are also associated with the detailed assessments of contaminated sites especially for the remediation of these sites. However further costly implications will arise in future if nothing is done about these chemical wastes and potentially contaminated sites. Maintenance and monitoring of these wastes will also be less costly if they are in a centralised location.

Niue could seek funding from international donors to assist with the development of this storage facility and detailed assessment of contaminated sites. Niue should also plan to set up a system that will deal with the maintenance and monitoring of this site in the long term, until further actions are developed for disposal of the wastes.

Potential benefits: A major benefit in having a storage facility and conducting detailed assessments would be the reduction of the risk posed to the health and environment especially to Niue's ground water system. The storage facility would address the current problems faced by organisations such as the Niue Power Corporation (NPC), Department of Agriculture, Fisheries and Forestry (DAFF), Health and Public Work Department (PWD) in storing these wastes. Confirmation of contamination is another benefit that will ensure the remediation process can take place if necessary. The wastes collected from the contaminated sites could possibly be stored in the storage facility once it has been developed. Capacity building will be one of the beneficial outcomes if these two objectives are achieved as it will increase the capabilities for identification, handling, monitoring, maintenance, control and research of hazardous wastes.

Social Impacts: The disadvantages to the community would arise in future if nothing is done about these wastes or potentially contaminated sites. Wastes could leach into the ground contaminating the ground water consequently affecting the quality of commercial crops such as nonu, taro, vanilla, other food crops and industries. There will be a significant threat to the health and welfare of the people of Niue.

3.3.4.4 Implementation Strategy

Responsible Agency

Waste Management is one of the main sections under the recently established Department of Environment (DEn). Therefore, it is only appropriate that DEn be the leading agency responsible for conducting the activities to achieve the two objectives of reducing and ultimately eliminating releases of chemicals from stockpiles and wastes.

Assistance will also be required from departments involved in waste management such as the Department of Health, Department of Agriculture Forestry and Fisheries, Public Works Department, and Niue Power Corporation, to ensure the successful implementation of these activities.

External assistance will be necessary for the development of the National Waste Management centre, including a specialized chemical storage facility and to conduct the detailed site assessments of potentially contaminated sites. Capacity building will be one of the key activities in this action plan that will contribute towards the safe management of stockpiles and wastes on Niue Island.

The Niue POPs Project Steering Committee will coordinate and closely monitor the progress of these activities as they are carried out.

Programme Implementation

The key steps of the work plan in Table 3.07 involve the engagement of consultants to assist with the development of the storage facility, conducting the detailed assessments of potentially contaminated sites and the initiation of capacity building programs.

The expected timeframe for completion of these activities is three years, possibly by the year 2008. A list of proposed performance indicators is also included in these tables.

3.3.4.5 Resources Needed

Funding from external donors needs to be secured as soon as possible in order to successfully acquire all the necessary resources needed to implement the majority of the activities in this action plan. Government of Niue will make an in kind contribution of approximately 10% towards the overall cost for these activities. Table 3.03 presents a summary of financial resources required for the implementation of activities to address stockpiles and wastes.

The Niue POPs Project Steering committee and the Department of Environment will monitor the implementation of these activities to ensure they are successfully completed by 2008.

3.3.5 Action Plan to address measures related to information exchange (Article 9)

3.3.5.1 Context and Analysis of Issue

Niue became a Signatory to the Stockholm Convention in 2002 and is considering becoming a Party. Under 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"*.

The enabling activities for the Niue POPs Project were coordinated by a National Steering Committee (NSC) through the Niue Department of Agriculture, Forestry and Fisheries (DAFF). Hence, the operational focal point for the enabling activities was the DAFF. However, as the Niue Government has newly established a Department of Environment (DEn), it is envisaged that the DEn will become the operational focal point for the National Implementation Plan (NIP) for the Stockholm Convention.

The Office of External Affairs under the Niue Premier's Department is the formal national focal point for information exchange between the Niue Government and external organizations such as the United Nations Programmes. In effect, any formal exchange of information between the Niue Government and other Governments will be channeled through the Office of External Affairs. Therefore keeping in line with Government policy, it is envisaged that any exchange of information will be formally channeled through the Office of External Affairs by the DEn.

Niue is a small nation that relies heavily on both technical and financial assistance from international organizations. In this respect, access to information such as that related to the health and safety of humans and the environment is vital in that it will help support and direct Niue's efforts to meet its obligations to the Stockholm Convention.

3.3.5.2 Goals and Objectives

Goal: To maintain access to information relevant to the health and safety of the people and the environment of Niue.

Objective 1: To establish a national focal point for information exchange within the first year of Niue becoming a Party to the Stockholm Convention.

Objective 2: To simultaneously develop (with objective 1) a system to ensure information is exchanged as required with other Parties either directly or through the Convention Secretariat.

3.3.5.3 Relevant Management Options

As mentioned earlier, Niue will be reliant on information obtained from overseas for the conduct of sound chemical management. In this respect, the capacity to exchange information with countries and organizations that can provide it can only be beneficial to protecting the health and safety of the people and environment of Niue.

A formal channel of communication is already in place through the Office of External Affairs in Niue and will continue to be used for communications with the Convention Secretariat. At an operational level, information will be exchanged through channels that already exist within the DEN. These will include information related to chemical safety, alternatives, and global monitoring, amongst others.

In terms of protecting the rights of the Niuean people in line with proper ethical conduct, any information collected for the purposes of monitoring human exposure to POPs will not include the names or contacts of any of its study subjects. This will be regulated through the design of the study or monitoring programme and endorsed with the consent of all the subjects. As part of Niue's obligations however, the results obtained and conclusions reached will be available for information exchange.

The most effective approach for Niue to meet article 9 of the Convention is to remain with the information exchange structures already in place in Government. At the operational level, information can be exchanged through the DEN with prior endorsement from the Niue POPs Steering Committee.

Cost: The costs for enabling information exchange will not be high as current information exchange structures already in place will continue to be used. The time allocated to information exchange will not necessitate a full time staff position but operating costs to ensure reliable access to information exchange will be required. Such costs will include computer equipment and internet access as well as administrative costs for publications and other communication materials.

Potential Benefits: The benefits for Niue will be access to information that it would otherwise not have nor be able to obtain through its own studies or limited international contacts. In addition, being informed of activities and/or findings from the global community can only assist Niue in identifying the best steps to protect the wellbeing of the Niuean people.

Social Impact: There are no negative social impacts in undertaking this programme as only current information exchange structures will be utilized. Where there is confidential information to be considered, the social impacts will be eliminated by maintaining procedures (such as prior endorsement from the Niue POPs Project Steering Committee) to ensure sensitive information is not exchanged whilst adhering to Niue's obligations under Article 9 of the Convention.

3.3.5.4 Implementation Strategy

Responsible Agency

It is envisaged that the lead agency responsible for carrying out this programme will be the DEN, with assistance from the Niue POPs Project Steering Committee. At the point where formal communications are required between the Government and the Convention Secretariat, the Office for External Affairs will take on the lead role as is appropriate at that level.

Programme Implementation

A detailed list of activities required for this work and a list of proposed performance indicators is given in Table 3.08. As indicated, the key steps include endorsement of information to be exchanged and access to the proper communication channels. As only current information exchange structures will be used, steps will only be taken to strengthen these structures, including the procurement of appropriate infrastructure such as computer equipment. As shown, it is expected that the work can be completed within a timetable of less than one year (12 months).

Monitoring of this programme will be in accordance with the performance indicators identified and coordinated by the POPs Steering Committee within the Department of Environment.

3.3.5.5 Resources Needed

The majority of the resources required to meet Article 9 of the Convention will be sourced internally given that current structures need only to be strengthened and a pathway clearly identified and agreed to by all stakeholders, including NGOs. The major financial contribution from external sources will be for the procurement of reliable infrastructure such as computer equipment. Table 3.03 presents a summary of the total contribution of financial assistance required to address measures related to information exchange.

Ongoing administration costs are not included in this programme and are envisaged to be supported by annual budgetary allocations of the Department of Environment. This programme is estimated to be completed within the first year of Niue becoming a Party to the Stockholm Convention.

3.3.6 Action Plan to address public information, awareness and education (Article 10)

3.3.6.1 Context and Analysis of Issue

Article 10 of the Stockholm Convention requires Parties to promote and facilitate public information, awareness and education, within their capabilities. Particular emphasis is put on promoting awareness among its policy makers and developing educational and public awareness programmes targeting women, children and the least educated on the health and environmental effects of POPs. In addition, Parties are 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"*. Parties are also required to ensure that the public has access to up-to-date awareness and education information regarding POPs and Convention activities whether in-country or from abroad.

Public awareness and education was an integral part of the enabling activities for the development of the NIP in Niue. Given the limited resources, public awareness programmes centered on school children and used visual aids, particularly television to attract public attention. The many billboards seen around the Island were a result of promoting public awareness and education of the Niue POPs Project. These were designed by the different village youth groups and endorsed by the Niue POPs Project Steering Committee.

The public awareness and education programmes that were implemented in Niue were aimed at reducing unintentional production of POPs, ie. dioxin and furan releases. This was because Niue does not intentionally produce, import or use any POPs chemicals and therefore unintentional production was targeted. Uncontrolled burning was a major source of unintentional production of POPs, and was commonly practiced as a method for reducing waste around the home.

The Niue POPs Project team with the support of the NIOFA organization promoted compost making as an alternative to open burning. This team effort remains strong and is a good example of the interaction of different groups on the Island to achieve a common objective. The NIOFA organization is committed to making Niue the first 'organic' nation by 2010 and therefore continues to support efforts towards eliminating the use of inorganic chemicals in Niue, including POPs pesticides.

The Niue POPs Project team will continue to promote public awareness and education with support from the schools, community groups and non-government organizations.

3.3.6.2 Goals and Objectives

Goal: To enhance public knowledge, participation and training requirements in meeting Niue's obligations to the Stockholm Convention.

Objective 1: To develop a system for on-going public information, awareness and education within the first year of becoming a Party.

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

3.3.6.3 Relevant Management Options

The main option here will be the designation of a coordinating agency or focal point to carry out these activities. Given the common elements between information exchange and public awareness, it is only appropriate that the same focal point be used to meet

Niue's obligations to Articles 9 & 10 of the Convention. The infrastructure required for both these obligations is similar and therefore exclusive resources for this programme will be minimal.

The inventory reports and other documents compiled as part of the development of the NIP can be used as a starting point to inform policy and decision makers and be made available to the public as and when requested. Appropriate public awareness programmes should start to be developed using the results of any investigations contained within those reports as they too are the basis of the NIP.

Training of key personnel to ensure that management options are effectively carried out has been integrated into programmes addressing specific POPs and therefore will not be detailed in this particular action plan.

As mentioned earlier, initiatives related to POPs and other chemical management activities can provide linkages between different organizations to meet common objectives. The activities outlined in this programme can strengthen a range of linkages from the safe handling and use of pesticides to reducing releases from unintentional POPs. Suitable linkages need to be identified by the focal point and supported through this programme.

Cost: The costs involved in establishing a coordinating mechanism for public awareness will be shared with the information exchange programme, particularly the infrastructure costs (computer equipment). The majority of the costs will be in providing on-going public awareness and education programmes and monitoring.

Potential Benefits: The benefits of this programme are increased public awareness of the Convention and increased public education in terms of chemical safety and subsequent health benefits. Added benefits include public assurance that national regulations or policies that are put in place are there to protect their health and that they have been kept informed throughout the decision making process.

Social Impact: There are only positive social impacts associated with this programme in that the public will have access to information that will benefit their health and wellbeing. Educating the public in chemical management and safety, alternative pesticides and related issues can only improve the public's ability to make informed decisions. Active public participation in the decision making process for national policies relating to proper chemical management provides further positive social benefits.

3.3.6.4 Implementation Strategy

Responsible Agency

It is envisaged that the lead agency responsible for carrying out this programme will be the DEN, with assistance from the Niue POPs Project Steering Committee.

Programme Implementation

A detailed list of activities required for this work and a list of proposed performance indicators is given in Table 3.09. As indicated, the key steps include public consultations on the NIP and input towards the most appropriate avenues for disseminating information to the general public. A system for informing policy and decision makers is already in place for many matters and therefore will continue to be used. However, a system for the public to use will be established under this programme so that anyone can have access to information regarding the NIP and the Stockholm Convention. Another important activity is the development of links with other organizations so that the public can also see common goals being shared. In the first year of implementation, a lot of effort will go towards increasing public awareness of the NIP. Thereafter, the information disseminated is required to update the public on progress.

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

3.3.6.5 Resources Needed

The majority of the resources required for this programme consist of both human and technical requirements. Designing appropriate awareness materials will depend on consultations with the public and these may include the provision of resources translated into the Niuean language. This will include the specialized process of contextualization of new (technical) words, such as POPs into Niuean. 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. External resources are required for the initial setup of the activities; however ongoing activities may be implemented via budgetary support from the Niue Government. Table 3.03 presents a summary of financial resources required to address public information, awareness and education.

Ongoing administration costs are not included in this programme and are envisaged to be supported by annual budgetary allocations of the Department of Environment. This programme is estimated to be completed within the first year of Niue becoming a Party to the Stockholm Convention.

3.3.7 Action Plan to address research, development and monitoring (Article 11)

3.3.7.1 Context and Analysis of Issue

According to 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”*

Part of the NIP development work in Niue included the collection of baseline inventory data which ranged from such as things as chemical imports to investigating levels of POPs in the local food and water supply. The data collected are the first for Niue and aim to provide a benchmark on which to monitor changes over time.

The results obtained from the chemical inventory were encouraging in that there were no POPs identified as being intentionally imported and used in Niue. The only concern in this area is the environmentally sound disposal of PCBs identified in some of the capacitors of fluorescent lights from older buildings in Niue.

There was some initial concern regarding the likely possibility of POPs being present in some imported foods, hence many tinned foods that were products of countries other than New Zealand, such as Thailand and South Africa, were included in the monitoring of POPs in imported foods. Foods that were locally produced such as pork, chicken and fish were also sampled and tested for POPs. The results for all the food and water samples tested were negative which provides a good starting point for monitoring.

The use of the standardized UNEP toolkit for identification and quantification of dioxin and furan releases determined Niue's highest source of dioxins and furans came from waste incineration. This included both quarantine and medical waste incineration producing an estimated 227.4 mg TEQ/annum. A comparison of Niue's levels of emission to those from bigger countries shows that Niue's levels are well below those of other bigger nations.

Human exposure to POPs was also included in the inventory investigations however the study subjects were breastfeeding mothers as facilities for taking blood samples from the wider population were not available at the time. Nevertheless, the results were the first for Niue and provided an indication of dietary exposure to some POPs. The presence of low levels of PCBs and some DDT isomers were detected in many of the breast milk samples. The most significant finding was the presence of the parent compound 4,4'-DDT in all but one sample of breast milk (83%). This implies more recent exposure to DDT and therefore warranted further investigation for a possible source.

The most obvious suspected source of DDT exposure was through mosquito coils and therefore the two brands of mosquito coils available in Niue were sent for analysis of DDT. The results were positive for one of the brands, a brand which was labeled completely in Chinese characters and was cheaper to purchase than the brand with no DDT. This was a good example of the way in which POPs can be transported globally and confirmed the need for Niue to regulate imported products to ensure that at the very least, they are clearly labeled in the English language.

3.3.7.2 Goals and Objectives

Goal: To ensure a POPs-free Niue is maintained through ongoing research, development and monitoring initiatives.

- Objective 1: To establish on-going participation in a harmonized monitoring system of human exposure to POPs with international agencies by 2010.
- Objective 2: To develop an in-country recording system to support regular monitoring of the unintentional production of POPs by 2010.
- Objective 3: To build capacity of technical staff through ongoing training in monitoring procedures.

3.3.7.3 Relevant Management Options

Given that Parties are to implement initiatives "*within their capabilities...*" there are only a few options that Niue could take to meet their obligations under Article 11. One of them is to take no action because Niue does not have the infrastructure or the technical expertise to undertake a detailed research, development and monitoring programme. However, this would not address any of Niue's needs and would only go against the objectives of the Convention.

It is unlikely that Niue can carry out research and development initiatives as i) it does not have the infrastructure to do so, and ii) POPs are not intentionally produced, imported or used in Niue. The most feasible and highly advantageous option would be to establish a Government-based monitoring programme with some external financial support. A good example of this would be Niue's participation in the food component of the World Health Organisation (WHO) Global Environment Monitoring System (GEMS). This would involve routine monitoring and reporting of pesticide residue concentration and exposure data.

Monitoring of unintentional production of POPs appears to be Niue's main concern in terms of dioxin and furan releases from sources such as waste incineration and fuel consumption. Routine record keeping of the amounts of waste being incinerated and/or fuel use can be integrated within the relevant Department's responsibilities. The UNEP Toolkit should then be utilized for estimating annual releases. Seasonal variations can also be gauged when using this method of record-keeping. It may initially be envisaged as added workload but the effort involved as a result of non-record-keeping has already been seen during the development of the NIP and one of the many recommendations from the inventory reports is the need for regular record-keeping. This recommendation extends to all facets of the NIP to ensure that up-to-date data is available as a point of reference for monitoring purposes and subsequent remedial action.

Building the technical capacity of staff among different Government Departments adds to the effectiveness of the monitoring programme. By being a participant in programmes such as the GEMS, Niue will have access to resources that will enhance the capacity of staff to carry out these activities.

Cost: The costs involved in establishing a monitoring programme may be high to begin with, because it may involve staff training on sample/data collection procedures, record keeping and maintenance. The highest costs would be incurred during pesticide analysis

of any collected samples as these can only be tested in New Zealand by an accredited laboratory.

Potential Benefits: The baseline data resulting from the development of the NIP is the benchmark for monitoring progress of activities over time. The establishment of a monitoring programme will also enable incorporation of other national concerns such as underground water contamination (from non-POPs chemicals). These will in turn aid in the decision-making processes of Niue's policy makers.

Social Impact: The positive social impacts in this programme outweigh any potential negative impacts. The uncontrolled combustion processes that take place in Niue are also related to clearing of plantations for growing crops but whilst it is not as common today, there are still some members of the public who practice this method of clearing brush prior to planting. It is envisaged that the practice will be reduced further if public awareness programmes were aimed at promoting the use of alternative clearing methods.

The positive social impacts would stem from public assurance that efforts are being made to maintain their low levels of exposure to POPs both from sources generated within Niue and from imported foods and other products. Through public awareness programmes, people will be able to understand the impact of their actions and the positive results of preventive measures.

3.3.7.4 Implementation Strategy

Responsible Agency

It is envisaged that the lead agency responsible for carrying out this programme will be the DEN, with assistance from the Niue POPs Project Steering Committee.

Programme Implementation

A detailed list of activities required for this work and a list of proposed performance indicators is given in 3.10. One of the key steps in this programme is consultation with all relevant Heads of Departments. The success of the monitoring programme will depend largely on the cooperation of each Department to ensure appropriate records are kept and updated on a regular basis. Information can quickly be gathered for advising policy makers or for implementing corrective actions when required. A consultant would be contracted to draft a more detailed monitoring programme to achieve the stated objectives by 2010.

3.3.7.5 Resources Needed

The majority of the inputs required for this programme will consist of both human and financial resources. Financial resources will be needed for laboratory testing of food and water samples in addition to testing human exposure to POPs. Ongoing monitoring of imported chemicals, waste incineration and other elements may be incorporated into a Department's annual budget, once these duties become part of someone's job description. Technical resources will also be needed as part of building the capacity of relevant staff

to undertake various monitoring tasks. Table 3.03 presents a summary of financial resources required to address research, development and monitoring.

Some ongoing administration costs are envisaged to be supported by annual budgetary allocations of the relevant Government Departments. The costs shown here primarily reflect establishment costs. A more detailed cost analysis will be included in the final monitoring programme document which will be drafted by the consultant.

3.3.8 Action Plan to address reporting (Article 15)

3.3.8.1 Context and Analysis of Issue

Parties are 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 total quantities of production, import and export of each of the chemicals listed in Annex A and B. The reporting intervals and format under Article 15 will be decided at the first Conference of the Parties in May 2005.

The other reporting requirements under the Convention are specific to other Articles such as Article 5 and 7. Where applicable, these have been dealt with in other sections of the NIP and will not be detailed here.

Each of the various action plans and programmes detailed in the NIP will have a monitoring component. However, a consistent reporting format needs to be developed to include all the data that is required under Article 15 which can be readily updated and submitted to the Secretariat. These activities can also be considered as part of the measures to address information exchange.

3.3.8.2 Goals and Objectives

Goal: To ensure that Niue meets its reporting obligations under the Convention.

Objective 1: To develop a national reporting system within the first year of Niue becoming a Party to the Stockholm Convention.

3.3.8.3 Relevant Management Options

Given that the format and timeframe for reporting to the Secretariat will be determined at the first Conference of the Parties, Niue can only concentrate on developing a system for collating the information required under Article 15 and other related Articles. This will include the development of a database to store information which can be regularly updated.

The NIP is considered Niue's first reporting 'tool', in addition to the background reports which were compiled as part of developing the NIP. Hence, when the decision has been made regarding the format and timeframes for reporting at the first COP, Niue can utilize the information gathered for the NIP as a starting point for reporting baseline data.

There will need to be a central body to process/collate information and this is envisaged to be the national focal point. Future reporting obligations will be based on the monitoring programme established in earlier sections of the NIP.

Cost: The cost of reporting is expected to be integrated with those for information exchange. The cost is not expected to be high as information can be submitted quickly via electronic avenues. Additional costs of maintaining/updating the database may be incurred.

Potential Benefits: The benefits here are that Niue will meet its obligations under Article 15 and other related Articles of the Convention. The same reporting document can be used to update not only the Convention Secretariat but also the Government of Niue.

External assistance can also be justified if donor organizations receive the same reporting document and are kept updated.

Social Impact: There are no negative social impacts under this programme as it is merely a formality of Niue's obligations to the Convention.

3.3.8.4 Implementation Strategy

Responsible Agency

It is envisaged that the lead agency responsible for carrying out this programme will be the DEN, with assistance from the Niue POPs Project Steering Committee (although formal reporting will take place via the Office of External Affairs).

Programme Implementation

A detailed list of activities required for this work and a list of proposed performance indicators is given in Table 3.11. One of the key steps in this programme is the establishment of a database to store all the required data for monitoring and reporting. A system of information collection will also be agreed to by relevant Departments so that results are handed to the national focal point on a regular basis and added to the database. Once these preliminary steps are in place, updating the information should be easy and a report generated with minimum effort.

The establishment of this reporting system should take place within the first year of Niue becoming a Party.

3.3.8.5 Resources Needed

The resources needed here are not expected to be any different to those needed for information exchange. The infrastructure needed (ie computer equipment and software) will be the highest initial cost, ongoing administration of the database will require perhaps 5% of personnel time and therefore can be included as part of an existing job description. Once the database is established, compiling a report will require minimum

effort as long as the information is regularly updated. Table 3.03 presents a summary of financial resources required to address reporting measures

3.4 Development and Capacity-Building Proposals and Priorities

The action plans presented above were developed on the basis of agreed priorities for implementation of the Stockholm Convention in Niue. Much of the work is intended to be carried out by local personnel with assistance from international experts as and when required. This approach is intended to assist in developing local capacity for POPs management and implementation of the Convention. Table 3.10 presents a summary of the proposed capacity building activities.

Table 3.02: Summary of capacity building proposals.

POPs Issues	Capacity Building Proposals
POPs Pesticides	<ul style="list-style-type: none"> • Training in legislative review and drafting of regulations. • Formulation of methodologies for pesticide disposal.
PCBs	<ul style="list-style-type: none"> • Training on identification, removal and storage of PCBs in electrical equipment. • Training on carrying out national PCB inventory . • Training on database use and management.
Dioxins and Furans	<ul style="list-style-type: none"> • Training on BAT/BEP guidelines including field training on existing sources around Niue. • Training on application of BAT/BEP when undertaking an EIA. • Training on collection of information on medical and quarantine wastes. • Training on incinerator use. • Training on compost making and other alternatives to open burning.
Contaminated Sites	<ul style="list-style-type: none"> • Training in identification and management of contaminated sites, including clean-up. • Training in sample collection procedures. • Training in environmentally sound storage and disposal procedures.

3.5 Timetable resource requirements and measures of success

The total estimated cost of all the activities planned to meet Niue's obligations under the Stockholm Convention is USD653,000. Table 3.03 presents the different action plans and their associated costs estimated as external and internal contributions.

Details of each of the proposed action plans including the timeframes, performance indicators, and estimated cost requirements are presented in Tables 3.04 to 3.11.

Table 3.03: Summary of resource requirements for the implementation of the action plans.

Section	Action Plan	External	Internal	Total
3.3.1	Intentional Production and Use of POPs	\$ 49,000	\$ 6,500	\$ 55,500
3.3.2	Specific Requirements for PCBs	\$ 46,000	\$ 6,000	\$ 52,000
3.3.3	Unintentional Production of POPs	\$ 383,500	\$ 13,000	\$ 396,500
3.3.4	Stockpiles and wastes	\$ 258,000	\$ 4,000	\$ 262,000
3.3.5	Information exchange	\$ 17,000	\$ 1,500	\$ 18,500
3.3.6	Public information, awareness and education	\$ 85,000	\$ 10,000	\$ 95,000
3.3.7	Research, development and monitoring	\$ 10,000	\$ 5,500	\$ 15,500
3.3.8	Reporting	\$ -	\$ 8,000	\$ 8,000
	TOTAL	\$ 848,500	\$ 54,500	\$ 903,000

Table 3.04: Detailed work plan to address the intentional production and use of POPs (Articles 3 and 4, Annexes A and B).

Detailed list of activities	Key Contributing Agencies	Timeline (duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate (USD)	Resources needed
<p>Objective 1: To develop a legal framework to formally ban the importation, production, and use of POPs in Niue by 2008.</p> <p>Objective 2: To have a system in place by 2008, to ensure the environmentally sound disposal of POPs chemicals from Niue.</p>						
1. Stakeholder consultations to confirm no current or future need for POPs chemicals in Niue.	DEn, POPs Steering Committee	Months 1 to 6.	Confirmation of the current and future absence of need for POPs chemicals in Niue.	Internal & External	\$1000 (plus \$2,500 in kind)	Venue and meeting costs, Background info on POPs chemicals,
2. Draft TOR for assessment of legal framework by a consultant.	AG's Office POPs Steering Committee, DEn.	Months 4 to 5	Finalisation and endorsement of the TOR by the coordinating/implementing agencies.	Internal & External	\$500 (in kind)	Technical advice from POPs Steering Committee.
3. Engagement of a consultant to carry out assessment of the need for specific chemical management legislation. (including draft TOR for step 5)	AG's Office, POPs Steering Committee, DEn.	Months 7 to 12	Assessment and report completed and Recommendations accepted by PSC.	External	\$20,000	Access to current legislation and consultations with appropriate Government Departments and other relevant stakeholders.
4. Engagement of a consultant to draft regulations or new legislation based on recommendations from the above assessment.	AG's Office POPs Steering Committee, DEn.	Months 13 to 18	Draft regulations completed.	External	\$20,000	Access to current legislation and consultations with appropriate Government Departments and other relevant stakeholders.
5. Stakeholder consultations on the draft regulations or new legislation.	AG's Office, POPs Steering Committee, DEn.	Months 19 to 24	Recommendations from consultations noted and amendments made to draft if necessary.	Internal and External	\$1000 (plus \$2,500 in kind)	Venue, Relevant stakeholders.
6. Public Awareness of draft and final regulations or new legislation (including translation costs).	AG's Office, POPs Steering Committee, DEn.	Months 25 to 28	Increased awareness of the draft and final regulations via pamphlets or public notices.	External	\$5,000	Equipment and materials needed for mass production of information.
7. Presentation of draft regulations or new legislation to Government followed by its endorsement and enactment.	AG's Office, POPs Steering Committee, DEn.	Months 29 to 34	Endorsement and enactment of regulations by the Niue Government.	Internal & External	\$1,500 (\$1,000 in kind)	Technical advice from the Attorney General's Office and lobbying of MPs.

Table 3.05: Detailed work plan to address the specific requirements of PCBs on Niue Island.

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate , US\$	Resources needed
<p><i>Objective 1: To have systems in place for identifying and managing PCBs in small capacitors and other electrical equipment by the year 2008.</i></p> <p><i>Objective 2: To develop actions for the safe storage and disposal of PCBs in an environmentally sound manner for Niue by 2008.</i></p>						
1. Draft TOR(s) for international consultant to conduct tasks below.	NPC, DEn, PSC, NPSC	Month 1-3	TOR approved by PSC.	Internal	\$1,000 (in kind)	Operating costs
2. Engage consultant to conduct training sessions for management and technical personnel in govt and private sector on identification, removal and storage of PCBs in electrical equipment, including provision of resource materials and guidance document.	NPC, Electrical businesses, IC, DEn.	Month 3-4	-Training of relevant personnel completed. -Consultation of all local personnel who do not attend training sessions.	External	\$10,000	Workshop venue, Operating costs, training material, safety equipment, demonstration exercises,
3. Procurement of safety equipment for all personnel involved in handling of PCBs. Safety equipment includes storage containers and other materials needed to safely store PCBs.	NPC, NZ OSH, Customs	Month 3-4	- Safety equipment received and controlled distribution to all relevant personnel.	External	\$3,500	Safety equipment catalogues, Drums, plastic bags etc Emergency response kits.
4. PCB Inventory Engage consultant to set up a system to ensure that all PCBs are reported, documented, removed and safely stored including training on how to use this system. Includes training on monitoring and maintenance of system.	IC, NPC, DEn	Month 3-4	- Training of all relevant personnel - System set up for reporting all identified PCBs - Record of PCB Inventory on Niue Island.	External	\$10,000	Standardized recording sheets, Computers, guidance documents on identification of PCBs out in the field.
5. Technical personnel in Govt and Private sector to conduct national PCB inventory headed by National consultant	National consultant, All relevant trained personnel	Month 5-7	- Completion of 1 st PCB inventory - Baseline data on PCBs for Niue Island	External	\$10,000	Standardized recording sheets, safety equipment
6. Engage consultant to establish computerised database system for all PCBs, POPs & hazardous chems. Consultant to train all relevant personnel on how to use this database.	PSC, DEn, NPC, Health, PWD, Bulk Fuel and other relevant agencies.	Month 3-6	- Establishment of Central computerised database system for all hazardous chemicals on Niue Island completed.	External	\$10,000	Computer, Venue for training session,
7. Long term monitoring and maintenance of system,	IC, NPC, DEn, PSC	On-going	- Proper functioning system	Internal	\$5,000 (in kind)	IC to check system
8. Public Awareness programs on management of PCBs on Niue Is.	NPC, NGOs P.A.Task Team.	On-going	-Continuous awareness programs on PCBs	External	\$2,500	Awareness materials, pamphlets etc.

Table 3.06: Detailed work plan for achieving obligations for the production and release of unintentional production of POPs.

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate, US\$	Resources needed
Objective 1: To promote the use of BAT/BEP guidelines for managing dioxin and furan releases on existing sources and in any new developments by 2008.						
1. Draft TOR and engage consultant to conduct training on BAT/BEP guidelines for government personnel and other relevant stakeholders. Include field training on existing sources around Niue.	DEn, Project Steering Committee (PSC), Health, DAFF,	1-6 months	- TOR for Consultant approved by PSC - Stakeholder training completed. - Feedback on training	External Internal	\$10,000 (plus \$1,000 in kind)	BAT/BEP guidance document, Venue, Workshop supplies,
2. Draft TOR and engage Consultant to conduct consultations with relevant agencies for inclusion of BAT/BEP guidelines in the specifications for EIA for new sources and consideration of alternative materials and processes of minimizing releases of unintentional POPs.	DAFF, PSC, Attorney Generals Office, DAFF, Dept of Health and other relevant stakeholders.	6-8 months	- TOR for Consultant approved by PSC - Engagement of Consultant - Report on outcome of consultation process.	External Internal	\$10,000 (plus \$1,000 in kind)	TOR for Consultant, Relevant Stakeholders
3. Engage consultant to conduct consultation and training for environmental personnel on how to apply BAT/BEP when undertaking EIA.	DEn, International Consultant	10-12 mths	- Training process complete - Application of BAT/BEP	External	\$10,000	EIA guidelines, Environmental personnel
Objective 2: To implement a campaign to discourage rubbish burning and promote alternatives such as composting by 2008.						
1. Organise meeting for Public Awareness task team to develop campaign discouraging burning and promote alternatives.	DEn, DoE, PSC, Public Awareness Task Team, Primary and Secondary schools and other relevant stakeholders	Month 1-2	- Detailed action plan on Public awareness campaign completed. - Campaign approve by PSC.	External Internal	\$500 (plus \$1,000 in kind)	Meeting costs
2. Develop printed resources and informational material based on national situation on POPs for public and schools.	DEn, DoE, PSC, BCN, NGOs, and other relevant stakeholders.	Month 1-6	- Education awareness resources develop and disperse	External	\$10,000	Education awareness printed resources in Niuean and English.

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate, US\$	Resources needed
3. Conduct Public awareness surveys on current levels of awareness on rubbish burning and alternatives.	DEn, PSC Temporary Project Assistants,	Month 1-2 Month 11-12	- 1 st and 2 nd Public awareness reports completed. - Report approved by PSC. -- Results on effectiveness of awareness campaign.	External	\$3,000	Survey forms Temporary Assistants
4. Draft TOR and engage consultant to conduct stakeholder consultations within each village on alternatives to burning. Field sessions included.	DEn, PSC, Public Awareness Task team (PATT) & relevant stakeholders.	Month 2-9	- Consultations completed - Report on Consultation	External Internal	\$5,000 (plus \$500 in kind)	Venue, Meeting costs Relevant Stakeholders
5. Support for school programmes on waste management, renewable energy and other relevant subjects	DEn, DoE, PATT	On-going	- Resource materials produced and in use, school projects successfully completed	External, internal	\$30,000 (plus \$3000 in-kind)	Resource materials, translation costs, equipment & supplies
6. Support for national waste management activities as an extension of the school programmes	DEn, DoE, NIOFA, PATT	On-going	- Community programmes, successfully implemented, changes in waste stream composition	External, internal	\$20,000 (plus \$2,000 in-kind)	Resource materials, including translation costs. Operational equipment and supplies
7. Improvements to collection and disposal services, including training of rubbish collectors and those responsible for landfill management on system for collection, separation and proper disposal of wastes.	DEn, PSC, PATT	Month 3-5	- Training completed - improvements completed for collection services and disposal facilities	External Internal	\$30,000 (plus \$3,000 in kind)	Venue, Meeting costs
8. Development of a National Waste Management facility (see table 3.07)	DEn	Month 6-24	See Table 3.07	See Table 3.07	See Table 3.07	See Table 3.07
9. Subsidize recycling bins for people to sort household rubbish and minimize rubbish going to the dump. Instructions on how to use bins.	DEn, Public Awareness Task Team, PSC	Month 5-10	- Bins provided for all households, businesses and government departments.	External	\$5,000	Recycling bins
Objective 3: To design and implement a program for obtaining better information on quarantine and medical waste generation and upgrading current management and disposal methods by 2008.						
1. Draft TOR and engage consultant to set up a system for collection of information on production of wastes (quantity, types etc) for medical and quarantine wastes.	DEn, Dept of Health, DAFF, PSC,	Month 1-3	- Engagement of Consultant - Est of system for information collection	External Internal	\$5,000 (plus \$500 in kind)	Standard recording sheets, Computer system for data input
2. Train personnel on collection of information on medical and quarantine wastes.	DEn, Dept of Health, DAFF, PSC,	Month 3-6	- Engagement of Consultant - personnel trained	External	\$5,000	Venue and DAFF, Health personnel

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate, US\$	Resources needed
3. Draft TOR and engage a consultant to set up a system within the health department for consideration of BEP for waste disposal such as waste minimization and/or segregation of medical wastes or alternatives disposal methods to incineration.	DEn, Dept of Health, DAFF, PSC.	Month 3	- Est of system for waste disposal	External	\$15,000	Waste disposal bins and bags for different types of wastes,
4. Training of staff and public awareness on new system for waste disposal within the hospital.	DEn, Dept of Health, DAFF, PSC, NGOs	On-going	- correct disposal of wastes - implementation of awareness programs	External Internal	\$5,000 (plus \$500 in kind)	Awareness materials
5. Source new incinerator (or alternative) for medical wastes based on information on waste production and that it adheres to BAT/BEP standards.	DEn, Dept of Health, PSC,	Month 6-24	- Medical incinerator in use	External	\$100,000	Medical incinerator
6. Upgrade and improve air pollution control systems for Quarantine incinerator or source new incinerator (or alternative) for quarantine wastes based on information of waste production and ensure it adheres to BAT/BEP standards.	DEn, DAFF, PSC,	Month 6-24	- Air pollution controls in place and in use in existing incinerator. - Quarantine incinerator in use	External	\$100,000	Quarantine Incinerator
7. Engage technical expert to train staff on use of waste incinerator including the long term monitoring and maintenance process.	DEn, Dept of Health, DAFF, PSC, technical expert	Month 24	- Engagement of technical expert - correct use of incinerator by DAFF and Health staff - servicing of incinerator by technical experts	External Internal	Included in the purchase price of the incinerator.	- Instructions on use of incinerator
8. Procurement of safety gear when handling and incinerating of wastes.	DEn, Dept of Health, DAFF,	Month 24	- Use of safety equipment during incineration	External	\$5,000	Safety gears
9. Draft TOR and engage Consultant to design and set up a system for the environmentally sound disposal of ash collected from incinerators.	DEn, Dept of Health, DAFF, PSC,	Month 5-6	- Environmental sound disposal of ash	External Internal	\$10,000 (plus \$500 in kind)	Drums for storage of ash before disposal
10. Ongoing maintenance of incinerators every 2 years.	DEn, Dept of Health, DAFF, PSC,	On-going	- Engagement of Technical expert - Report on review and service of incinerators.	Internal	\$5,000	Feedback from DAFF/Health staff

Table 3.07: Detailed work plan for achieving obligations for reducing or eliminating releases from stockpiles and wastes.

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate, US\$	Resources needed
Objective 1: To have systems in place for the sound management of obsolete and unwanted chemicals by the year 2008.						
1. Identify specific site (preferably on crown land to avoid land issues) to construct this facility by conducting EIA, social impact assessments, also taking into account factors such as centralised location, easy accessibility etc	DEn, Justice, Lands and Surveys, POPs Steering Committee (PSC).	Month 1-2	- Report on EIA, social impact assessment for the identification of site. - Site identified - Approval by PSC and Cabinet.	Internal	\$2,000 (in-kind)	Environment Officer Justice Lands & Surveys personnel Meeting and consultation costs with Cabinet, PSC and other relevant stakeholders.
2. Draft TOR for the engagement of a consultant to assist with the design of the National Waste Management Centre, including a specialized storage facility that adheres to environmentally sound standards.	PWD International Consultant DEn, PSC.	Month 3-6	- Finalisation and endorsement of the TOR by the coordinating/ implementing agencies. - Design of facility complete and approved by NCC.	External	\$20,000	International Consultant PWD Architect
3. Advertise, identify and engage contractors to construct National Waste Management Centre, based on approved design.	PWD Local or overseas contract(s) PSC	Month 6 -24	- Contractor recruited - Construction of storage facility completed - Identification of technical advisor from DEn	External	\$150,000	Contractors Costs of building materials etc. Building Inspectors Technical advisor from DEn to oversee construction.
4. Draft TOR for the engagement of a consultant to assist with capacity building on management, monitoring of site and safe handling and safe transportation of chemicals to storage site.	PSC, DEn, DAFF, Health, PWD, NPC and other relevant agencies	Month 24-26	- Finalisation of TOR by PSC and engagement of consultant. - Complete training of decision makers and staff from each department on the management of storage site. - Public Awareness on site - Est of safe transport route - Identification of responsible agency.	External	\$10,000	International Consultant Staff from relevant departments
5. Consultation between Government departments to identify responsible agency for management, monitoring and maintenance of storage site	DEn, NPC Health, PSC PWD	Month 1		External	\$5,000	Meeting costs 2x personnel

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate, US\$	Resources needed
6. Procurement of safety equipment, packaging materials, for safe handling of chemicals.	DEn	On-going	Safety equipment acquired.	External	\$20,000	Safety equipment and packaging material
7. Establish a system for continuous monitoring, reporting and detailed inventory of stored wastes and chemicals.	DEn Health PWD DAFF	On-going	Detailed inventory of wastes and a proper monitoring system established.	Internal	(refer to Action Plan for PCBs)	1x Computer for inputting data, and maintaining an up dated inventory of wastes and chemicals
8. Develop an action plan to identify environmentally sound disposal methods for these wastes.	DEn PSC Health NPC International consultant	On-going	Completion of Action plan for environmentally sound disposal of stored wastes and obsolete chemicals.	External Internal	\$5,000 (\$1,000 in kind)	IC to assist with development of action plan.
Objective 2: To conduct detailed site investigations on potentially contaminated sites on Niue Island by 2010 and to develop further remediation actions for these sites if necessary.						
1. Draft TOR and engage international consultant, national counterpart, and field assistant, to conduct detailed site assessment on the three high risk sites and further assessment of medium risk sites.	FSC, DEn, NPSC	Month 1-3	- Finalisation and endorsement of the TORs by the PSC and implementing agencies. - Engagement of Consultant, National counterpart and field assistant.	External Internal	\$20,000 (\$500 in kind)	IC Advertisements Operating costs
2. IC to draft project description for approval by PSC	PSC, IC, DEn	Month 1-3	- Completion of project description, Approval of project description by PSC	External	Included in above	Communication costs
3. Protective clothing and emergency response equipment.	IC, DEn, DAFF	Month 4-6	- procurement of safety equipment - Emergency response equipment acquired. - Chemical wastes managed and securely stored	External	\$1500	Emergency response equipment.
4. Location and investigation of former dumping areas using backhoe and local resources.	IC, PWD, PSC, DAFF,	Month 4-6	- Former dumping sites for 3 high risk sites located.	External Internal	\$5,000 (plus \$500 in kind)	Backhoe, National counterpart, backhoe driver, hire of local machinery, field assistant

Detailed list of activities	Key Contributors	Timeline (Duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate, US\$	Resources needed
5. Sampling and analysis of potentially contaminated areas and groundwater bores.	PSC, IC, NC, Water Division, DEn	Month 4-8	- Samples collected - Results of analysis of samples received	External	\$10,000	Laboratory for testing of water samples. Shipping equipment, Quarantine process handling/destruction, Meeting venue
6. Review of laboratory results, design of clean-up plans (if deemed necessary) and cost estimate.	IC, PSC, DEn,	Month 8-9	-Results reviewed and clean up plans completed	External	\$5,000	
7. Public awareness related to contaminated sites and hazardous chemicals generally	BCN, DEn, PSC, PA task team	Month 1-12	- Public awareness programs, materials produced.	External	\$5,000	Public awareness material ie posters, tapes etc
8. Signage and Fencing of contaminated sites until remediation process is complete.	DEn, PSC, Local carpenter	Month 1	-Signage for each site completed -Areas fenced off	External	\$1,500	Building material for signs and fences.
9. Detailed assessment on 6 medium risk sites including remediation	IC,PWD, DEn, PSC	Month 12-24	-Detailed assessments complete for 6 medium risk sites	External	To be confirmed	IC, Local personnel, Lab etc.

* The detailed assessment on the 6 medium risk sites will be undertaken after the completion of the assessments on the 3 high risk sites.

Table 3.08: Implementation strategy to address measures related to information exchange (Article 9).

Detailed list of activities	Key Contributing Agencies	Timeline (duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate (USD)	Resources needed
<p><i>Objective 1: To establish a national focal point for information exchange within the first year of Niue becoming a Party to the Stockholm Convention.</i> <i>Objective 2: To simultaneously develop (with objective 1) a system to ensure information is exchanged as required with other Parties either directly or through the Convention Secretariat.</i></p>						
1. Nomination and endorsement by the Niue Government of the national focal point for information exchange.	POP's Steering Committee, DEn, Office of External Affairs.	Months 1 to 2.	Agreement by key stakeholders of the nominated national focal point.	Internal	\$500 (in kind)	Human/personnel, technical, venue.
2. Stakeholder consultations to develop suitable information exchange process between different Government Departments and NGOs in Niue.	POP's Steering Committee, DEn, Heads of Departments.	Months 3 to 6.	Agreement and Documentation of the process to be utilized for information exchange within Niue.	External and Internal	\$2,000 (plus \$1,000 in kind)	Human/personnel, technical, venue.
3. Engage a consultant to draft terms of reference for endorsing information that will be exchanged between the Government and the Convention Secretariat.	POP's Steering Committee, DEn, Heads of Departments.	Months 7 to 8.	Documented Terms of Reference endorsed by all stakeholders and the Cabinet of Ministers.	External	\$5,000	Human/personnel, technical assistance.
4. Procurement of suitable infrastructure for information exchange.	DEn	Month 6.	Infrastructure for information exchange in place and working well.	External	\$10,000	Human/personnel, technical, venue.

Table 3.09: Implementation strategy to address public information, awareness and education (Article 10).

Detailed list of activities	Key Contributing Agencies	Timeline (duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate (USD)	Resources needed
<p>Objective 1: To develop a system for on-going public information, awareness and education within the first year of becoming a Party.</p> <p>Objective 2: To regularly monitor the effectiveness of all public information, awareness and education programmes implemented.</p>						
1. Public consultation to present the NIP once endorsed by Cabinet, including translation.	POPs Steering Committee, DEn, Heads of Departments.	Completed	Increased public awareness of the NIP and its activities.	External	\$5,000	Human/personnel, technical, venue.
2. Public consultation to select appropriate avenues for disseminating awareness and education materials.	POPs Steering Committee, DEn,	Months 1 to 2.	Document of appropriate methods for information dissemination.	External	\$5,000	Human/personnel, technical, venue.
3. Preparation and implementation of public awareness and education materials as per recommendations from consultations.	POPs Steering Committee, DEn, DoE	Months 3 to 8.	Implementation of public awareness and education materials.	Internal and External	\$20,000 (plus \$2,000 in kind)	Human/personnel, technical, infrastructural.
4. Provide support of awareness programmes by organizations such as NIOFA to meet common objectives such as reducing unintentional releases of POPs.	POPs Steering Committee, DEn, and NGOs, including women's and youth groups.	Ongoing	Increased public awareness of the links established between various organizations.	Internal and External	\$25,000 (plus \$3,000 in kind)	Human/personnel, technical, infrastructural.
5. Provide on-going technical support to schools in educating students about environmentally sound chemical management.	POPs Steering Committee, DEn.	Ongoing	Provision of technical or other materials to support school curriculum activities relating to POPs.	External	\$25,000	Human/personnel, technical, infrastructural.
6. Establish a system to provide ongoing public information as needed regarding the NIP, POPs and the Stockholm Convention to the general public.	DEn	Months 9 to 12.	Increased awareness among stakeholders of the established system and how to access it.	External	\$5,000	Human/personnel, technical, infrastructural.
7. Monitor the effectiveness of the activities carried out.	POPs Steering Committee, DEn.	Ongoing	Document successes found and rectify failures in delivery of information.	Internal	\$5,000 (in-kind)	Human/personnel, technical, infrastructural.

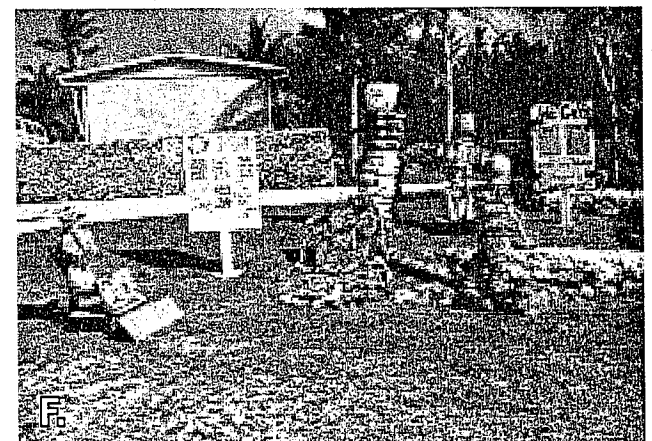
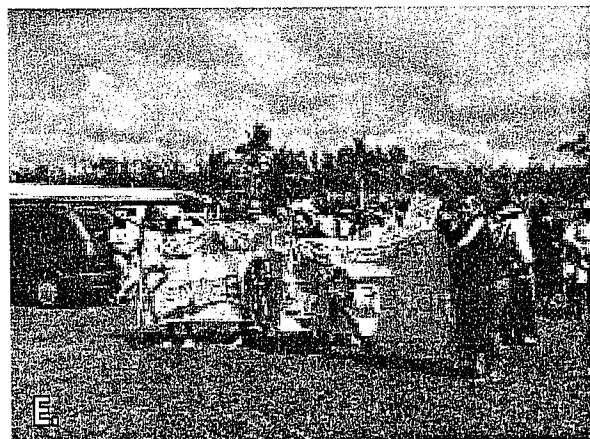
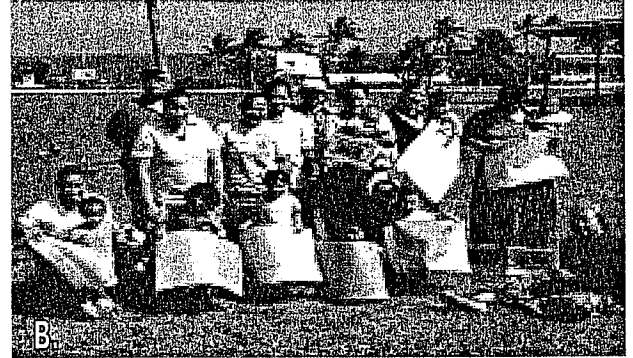
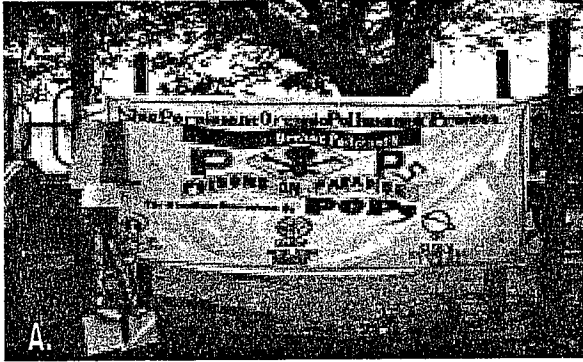
Table 3.10: Implementation strategy to address research, development and monitoring (Article 11).

Detailed list of activities	Key Contributing Agencies	Timeline (duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate (USD)	Resources needed
<p><i>Objective 1: To establish on-going participation in a harmonized monitoring system of human exposure to POPs with international agencies by 2010.</i></p> <p><i>Objective 2: To develop an in-country recording system to support regular monitoring of the unintentional production of POPs by 2010.</i></p> <p><i>Objective 3: To build capacity of technical staff through ongoing training in monitoring procedures.</i></p>						
1. Draft TOR for a Consultant to prepare a POPs monitoring programme for Niue.	POPs Steering Committee, DEn	Months 1 to 2.	Documented TOR and advertisement for Consultant.	Internal	\$1000 (in kind)	Human/personnel
2. Engagement of a Consultant to draft a POPs monitoring programme based on the NIP inventory reports.	POPs Steering Committee, DEn,	Months 3 to 6.	Draft POPs monitoring programme completed and received by POPs Steering Committee.	External	\$5,000	Human/personnel, technical
3. Consultations with Government Heads of Departments regarding the draft monitoring programme.	POPs Steering Committee, DEn, Heads of Departments.	Months 7 to 9.	Recommendations and input from Consultations.	Internal	\$1000 (in kind)	Human/personnel, technical,
4. Review and compile final POPs monitoring programme based on recommendations from the consultations.	POPs Steering Committee, DEn.	Months 10 to 11.	Submission of final POPs monitoring programme document to Steering Committee.	Internal	\$1000 (in kind)	Human/personnel,
5. Submission of the POPs monitoring programme to the Cabinet for endorsement.	POPs Steering Committee, DEn.	Month 12.	Cabinet endorsement of the monitoring programme.	Internal	\$1000 (in kind)	Human/personnel, technical.
6. Source and confirm financial support for the implementation of the programme.	DEn.	Months 12 to 16.	Financial support confirmed and acknowledged.	Internal and External	To be confirmed.	Human/personnel.
7. Implementation of the POPs monitoring programme by all relevant parties such as Health, DAFF, Customs and DEn.	DEn and relevant Government Departments.	Month 17 onwards.	Results received and compared with baseline data.	Internal and External	To be confirmed.	Human/personnel.
8. Ongoing monitoring and reporting initiatives as detailed in the monitoring programme.	POPs Steering Committee, DEn.	Ongoing	Document successes found and rectify failures in the programme.	Internal and External	\$5,000 (plus \$1500 in kind)	Human/personnel, technical, infrastructural.

Table 3.11: Implementation strategy to address reporting (Article 15).

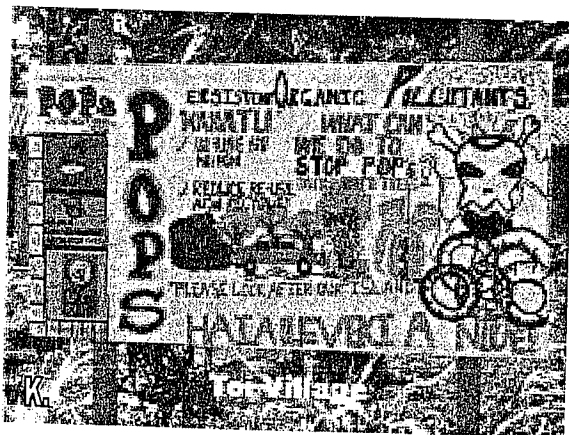
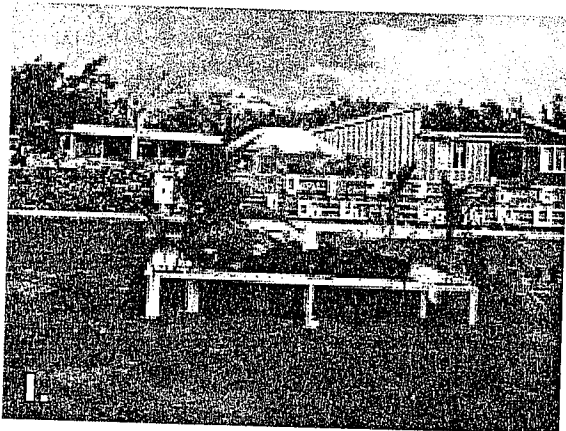
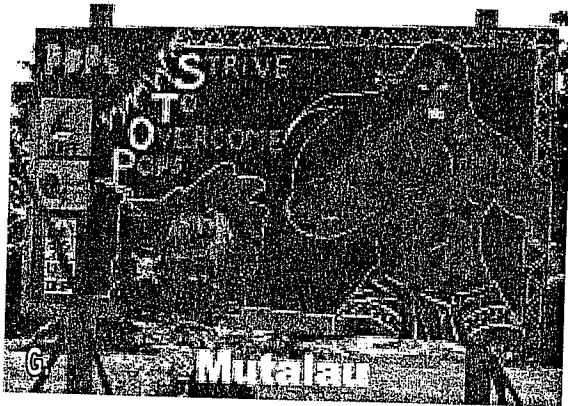
Detailed list of activities	Key Contributing Agencies	Timeline (duration)	Performance Indicators	Potential Sources of Financing	Cost Estimate (USD)	Resources needed
Objective 1: To develop a national reporting system within the first year of Niue becoming a Party to the Stockholm Convention.						
1. Develop an information collection procedure to be used on a regular basis.	POPs Steering Committee, DEn, HODs.	Months 1 to 2.	Agreement by all relevant Departments to provide data on a regular basis.	Internal	\$1000 (in kind)	Human/personnel
2. Establish a database to store information/data.	DEn,	Months 1 to 3.	Database established.	Internal	\$1000 (in kind)	Infrastructure, technical, Included with PCBs and Stockpiles.
3. Regularly maintain/update the database.	DEn	Ongoing	Information in the database is up-to-date.	Internal	\$1000 (in kind)	Human/personnel
4. Collate information and report as determined by the COP.	DEn	Ongoing	Report compiled and submitted.	Internal	\$5,000 (in kind)	Human/personnel

PICTURES OF POPS ACTIVITIES ON NIUE



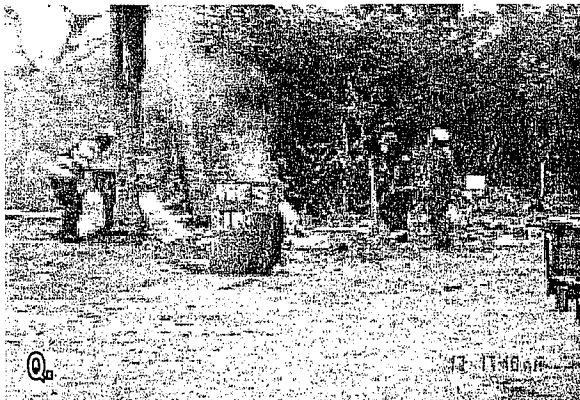
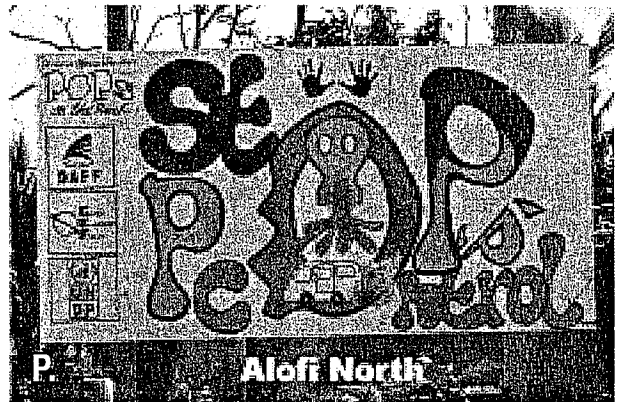
- A. Banner displayed on the launching of the Niue POPs Project in August 2003
- B. Niue POPs Project visits the Fuifuihega preschoolers of Avatele Village.
- C. Stakeholder Consultation to review and finalise NIP held in June 2005
- D. ECE students performing at the launching of the Niue POPs Project, August 2003.
- E. POPs banner promoting the Reduce, Re-use, Recycle message on World Food Day in October 2004.
- F. POPs Models created by the Niue Primary School students out of waste materials.

PICTURES OF POPs ACTIVITIES ON NIUE



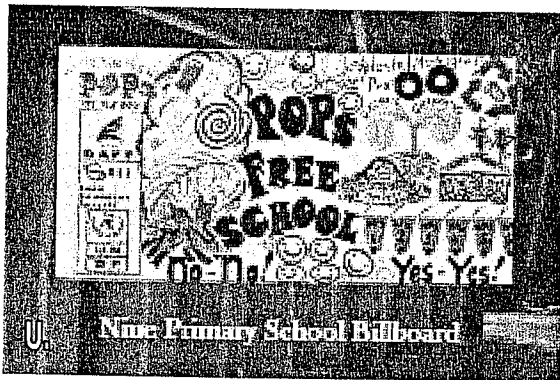
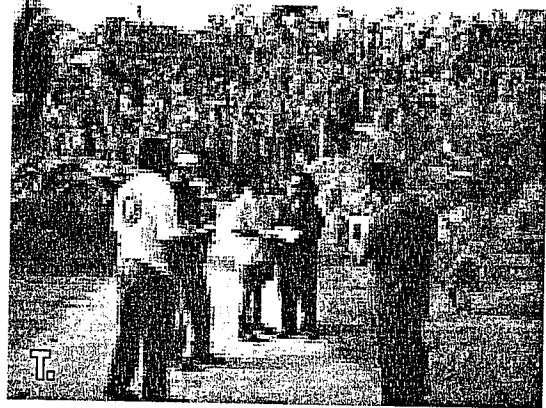
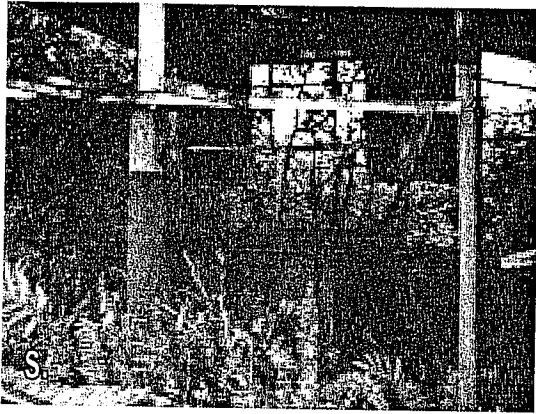
- G. POPs Billboard produced by the Youth of Mutalau Village
- H. Niue Primary school POPs creations, a table and seats made out of crushed cans and scrap steel bars from a building devastated by Cyclone Heta.
- I. Part of the adventure playground created out of re-used material by the students of Niue Primary School in September 2004.
- J. Participants of the POPs Priority and Objective settings workshop held in October 2005
- K. POPs Billboard produced by the Youth of Toi Village
- L. Model of a coconut crab created with cardboard boxes and plastic bottles. This was part of the POPs Model competition for Niue Primary and Niue High School in July 2003.

PICTURES OF POPs ACTIVITIES ON NIUE



- M. POPs fashion parade on World Food Day, October 2004.
- N. POPs in PICs repacking of POPs chemicals for transportation to Australia for disposal in March 2005
- O. POPs inventory collection of water samples for testing of POPs chemicals.
- P. POPs Billboard produced by Alofi Tokelau Youth
- Q. Temporary project assistants collecting data for the Dioxin and Furan inventory.
- R. Display of POPs models created by Niue High School and Niue Primary School students.

PICTURES OF POPs ACTIVITIES ON NIUE



- S. Abandoned timber treatment center on Vaia Farm identified as a potentially contaminated site.
- T. Workshop participants taking part in the assessment of potentially contaminated sites on Niue.
- U. POPs Billboard produced by the Niue Primary School students
- V. Compost making initiative to reduce the amount of waste that is burned.
- W. POPs Billboard produced by the Youth of Makefu Village.
- X. National Consultant Mrs Gaylene Tasmania conducting the Objective and Priority setting workshop , October 2004.

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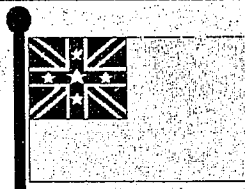
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GOVERNMENT OF NIUE 2005