

---

SAMOA's NATIONAL IMPLEMENTATION PLAN  
(NIP) for PERSISTENT ORGANIC POLLUTANTS  
(POPs)

## **Institutional Capacity Assessment**

---

**Prepared for:**  
**Planning and Urban Management Agency,  
Ministry of Natural Resources and Environment,  
Government of Samoa.**

**Prepared by:**  
**Pacific Environment Consultants Ltd (PECL)  
Apia.**

**March 2004**

## LIST OF ACRONYMS USED –

ASC	Agricultural Store Corporation
EPC	Electric Power Corporation
DDT	Dichloro-diphenyl-trichlorethane
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GHD	GHD Pty Ltd
INC	Intergovernmental Negotiating Committee
MAFFM	Ministry of Agriculture, Forests, Fisheries and Meteorology
MNRE	Ministry of Natural Resources and Environment
MoH	Ministry of Health
MWH	Montgomery Watson Harza
NIP	National Implementation Plan
NTT	National Task Team
ODS	Ozone Depleting Substances
PCB	Polychlorinate byphenols
PECL	Pacific Environment Consultants Ltd
PIC	Prior informed consent
POP	Persistent Organic Pollutants
PTC	Pesticides Technical Committee
PTS	Persistent Toxic Substances
PUMA	Planning and Urban Management Agency
SPREP	South Pacific Regional Environment Program
UNEP	United Nations Environment Program
UNDP	United Nations Development Program

---

**TABLE OF CONTENTS –**


---

A. Statement of Limitations	4
B. Background	4
C. Scope of Institutional and Capacity Assessment	5
D. Methodology and Approach	6
E. Setting the Scene	6
F. Review of existing legislation	8
G. Institutions, Agencies, Companies involved in POPs and PTS	20
H. International agreements relevant to POPs and PTS	28
I. Private sector initiatives and operations	37
J. Regional Activities involving Samoa	38
K. Essential information resources	39
L. Public awareness and understanding	42
M. Conclusions	43
Annexes 1 - References used	45
Annex 2 - List of People Consulted	46
Annex 3 - Analysis of Available PCB Destruction Technology	47
Annex 4 - Flow of Information for Pesticides Registration and Import License Application	48

## A. Statement of Limitations –

---

This study is largely a desk exercise with input from reports previously done on this subject matter and information gleaned from various sources, including Planning and Urban Management Agency (PUMA) of the Ministry of Natural Resources and Environment (MNRE), the POP's Project National Task Team (NTT) members, other individuals and experts.

Limited access to information inevitably constrained this exercise despite the earnest support and assistance from PUMA. The resulting over-reliance on the NTT proved itself to be limiting in the end – many NTT members are not as well placed within their respective organizations to access the right information and are limited in their knowledge of chemical issues to contribute substantively.

The review of existing legislation also took place at a time when several relevant laws were under review with bills still being debated in Parliament. The PUMA Bill has since been enacted into law, the review of the Food and Drugs Act continues while the fate of the MNRE Bill is not clear at this stage.

Finally, Samoa's NIP formulation exercise continues to be ahead of efforts by the Convention Secretariat to develop criteria, tools, guidelines and processes that are intended to assist parties. As a result, for several requirements of the NIP, the consultants have had to draw on their experiences in similar planning exercises for appropriate methods and approaches.

## B. Background -

---

Global efforts to eliminate persistent organic pollutants (POPs) and persistent toxic substances (PTS) are indicative of the serious threat posed by these groups of chemicals to human health and the environment. Recognizing that these chemicals are not only toxic and persistent but highly mobile means that even the remotest of Pacific Island is not spared. Everyone everywhere on the planet is at risk. Thus anything less than a concerted global effort is not adequate.

Global solidarity and resolution to address this issue effectively is embodied in the Stockholm Convention on Persistent Organic Pollutants negotiated over the period 1998 to 2001 and due to enter into force later on 17 May 2004. Samoa ratified the Convention in March 2003.

The POPs Convention targets 12 particularly toxic POPs for reduction and eventual elimination. More importantly, it sets up a system of tackling additional chemicals identified as unacceptably hazardous. It also recognizes that a special effort may sometimes be needed to phase out certain chemicals for certain uses and seek to ensure that this effort is made, as well as makes provisions for channeling resources to developing country parties to clean up existing stockpiles and dumps of POPs.

As a party, one of Samoa's first obligations is the compilation of an initial inventory and the formulation of a National Implementation Plan (NIP) for the proper management and eventual elimination of POPs. With GEF funding, the Planning and Urban Management Agency (PUMA) of the Ministry of Natural Resources and the Environment (MNRE) initiated the POPs project in January 2002 with several activities including the compilation of an initial inventory of POPs and PTS. The consulting firm of Montgomery Watson Harza (MWH) undertook this work under contract. A second contract to finalize the MWH inventory and to put together the National

Implementation Plan (NIP) was awarded to the Pacific Environment Consultants Ltd (PECL) in July 2003. One of the reports to be produced under this contract is an institutional capacity assessment.

The scope of this study was extended further to include PTS, in recognition of the significant threat of these chemicals to Samoa's health and environment.

## C. Scope of the institutional capacity assessment –

### C.1. Objectives of the Assessment –

The following objectives for institutional capacity assessment are defined by the draft UNEP 'Guidance for developing a National Implementation Plan for the Stockholm Convention'. These objectives are adopted in this assessment -

- To identify gaps in resources, capacity and knowledge which prevent the complete assessment of the status of POPs and PTS;
- To identify country needs in terms of technical expertise & other assistance to complete NIP
- To facilitate coordination and integration with national sustainable development, chemical management, pollution control policies
- To facilitate coordination with regional, sub-regional and international agreements.

In general, the requirement for institutional and capacity assessment for all parties covers both the formation and use of POPs and PTS and existing management systems. In the case of Samoa, with the exception of POPs and PTS that are unintentionally produced through combustion processes, formation is not an issue. Rather, regulating the importation of PTS<sup>1</sup>, their proper management and disposal is. As well, the disposal of POPs contained in closed applications such as used transformers and capacitors is an important part.

In the following section, the existing institutional arrangements and capacities involved in the importation, handling, storage, distribution, use and disposal of POPs and PTS is reviewed. Institutional arrangements are broadly defined to include the following -

- legislation, policies, formal and informal arrangements for the importation and management (including use and disposal) of POPs and PTS;
- agencies/institutions/companies both government and private sector operators etc. with involvement in importing, transportation, storage, use, distribution and disposal of chemicals;
- government and private initiatives in the chemical management area generally;
- regional and internationally funded and implemented activities, projects etc. having relevance to PTS management.

The word 'capacity' is interpreted broadly in this context to include the existing conditions that together will enable Samoa to develop an NIP and to implement it effectively. This includes existing skills and expertise, technologies, physical facilities, legal, policy and planning frameworks and institutional mechanisms for collaboration and coordinating work between key stakeholders. The extent of public understanding and awareness of the POPs and PTS issues is also gauged in this assessment as an essential part of the enabling environment within which planning and implementation will take place. Similarly, resources such as information, legal and technical

---

<sup>1</sup> Most of the 7 POPs found in Samoa were phased out and no longer imported since 1993.

assistances, technologies and others existing with the Secretariats of the various Conventions that Samoa is party to and which it can rightfully draw on is also included.

#### **D. Methodology and Approach –**

This report draws on previous studies conducted by SPREP, PUMA, MWH and reports of various activities that were implemented as part of the POPs Project. These sources are complemented by information accessed via the internet regarding the various international conventions of which Samoa is a party, information gathered during a half-day workshop with NTT members in December 2002, and information gathered informally by unstructured interviews with various officers of the Ministries of Agriculture, Forests, Fisheries and Meteorology (MAFFM), the Planning and Urban Management Agency (PUMA) of the Ministry of Natural Resources and the Environment (MNRE), members of the National Task Team, SPREP and other technical experts in this field. PECL's familiarity with the various local institutions and agencies that play key roles in the protection of Samoa's natural environment was also drawn on in analyzing the information collected.

The review looks at the following main areas of institutional capacity – legal, organizational, information, human and physical resources. Each are reviewed in terms of the objectives adopted in this report, and assessed qualitatively in terms of how effective they contribute to regulating the importation of POPs and PTS, investigating further what may already have been introduced into the country, and in planning and implementing remedial actions for their disposal or containment in sites wherein the level of contamination is deemed critical.

### **E. Setting the Scene**

#### **E.1. The extent of the Samoa's hazardous chemical problem**

The following table summarizes the extent of the POPs and PTS problem in Samoa.

**Table 1 : POPs and PTS in Samoa<sup>2</sup>**

Chemicals	Use	Amounts	Current status	Levels	Trends
Aldrin	Banana plantations	moderate	Non-consent for import since 1998	<ul style="list-style-type: none"> <li>- Widely used in banana plantation up to the 1970's</li> <li>- No known contamination or stockpile</li> </ul>	<ul style="list-style-type: none"> <li>- No new releases into the environment</li> <li>- Soil erosion could result in bioaccumulation – also following in aquatic and marine organisms</li> </ul>
Chlordane	Termite control	Low	Non-consent for import since 1993	<ul style="list-style-type: none"> <li>- Contamination in only two storage sites - ASC Vaitele and ISC Vaivase</li> </ul>	<ul style="list-style-type: none"> <li>- No new releases into the environment</li> <li>- Possible contamination at homes sprayed with chlordane</li> <li>- Localized contamination can be eliminated with clean up</li> </ul>
DDT	Banana plantation	Widely used in banana plantations	Non-consent for agricultural use since 1993	<ul style="list-style-type: none"> <li>- presence in one of the old banana plantations handling sites</li> <li>- Contamination at ASC Vaitele facility,</li> <li>- low level detection in pig fat, marine organisms tested</li> </ul>	<ul style="list-style-type: none"> <li>- No new releases into the environment found</li> <li>- Possible increase in food chain bioaccumulation from existing low levels in marine organisms from Vaiusu Bay and</li> </ul>

<sup>2</sup> Extracted from PECL. 2004. 'Persistent Organic Pollutants in Samoa' Report.

				- Very low levels of DDT humans possible from past use and imported food and other products	domesticated pigs - Decreasing levels of presence in humans due to the absence of any new releases
Dieldrin	Banana plantations	Widely used in banana plantations	Non-consent for import since 1998	<ul style="list-style-type: none"> <li>widely used for banana plantations</li> <li>Confined contamination in two confirmed sites</li> <li>Presences in marine organisms</li> </ul>	<ul style="list-style-type: none"> <li>No new releases into the environment</li> <li>Decrease of bioaccumulation in food chain</li> </ul>
Heptachlor	Termite control	Low	Non-consent for import since 1994	<ul style="list-style-type: none"> <li>very low and confined use for termite control</li> <li>contamination only at ASC Vaitele compound and ISC Vaivase</li> </ul>	<ul style="list-style-type: none"> <li>no new releases into the environment</li> <li>Possible contamination at homes sprayed with chlordane</li> </ul>
PCB	Electrical transformers	Low	Importing countries do not produce PCB transformers anymore	<ul style="list-style-type: none"> <li>unknown number of imported transformers with PCB</li> <li>three contaminated sites, (ECP Vaitele, Salelologa and TVC Asau)</li> </ul>	<ul style="list-style-type: none"> <li>no new imported transformers containing PCB's</li> <li>contaminated sites are sealed and planned for disposal, therefore pose limited risk to the future</li> </ul>
PCDD/PCDF	Produced from combustion processes and burning	moderate	Produced from combustion processes and burning with low levels from other processes	<ul style="list-style-type: none"> <li>emissions are low compared to other countries</li> <li>highest releases from biomass burning and incinerators</li> </ul>	<ul style="list-style-type: none"> <li>considerable decrease in future when new incinerators with good APC are installed</li> <li>implementation of waste management strategy</li> </ul>
<b>PTS:</b>					
TPH/PAH	Oil waste	low		<ul style="list-style-type: none"> <li>presence at the main bulk storage oil facility</li> <li>pos</li> </ul>	<ul style="list-style-type: none"> <li>possible contamination of marine sediments at Vaiusu Bay from leakage</li> <li>will be reduced when good oil management plans are installed for waste oil disposal</li> </ul>
TBT	Anti-fouling for boats	none	No anti-fouling done in the country	<ul style="list-style-type: none"> <li>presence in marine sediments from main Matautu Wharf</li> </ul>	<ul style="list-style-type: none"> <li>could continue to be present in the area due to high traffic use of the area, although no anti-fouling is done in country</li> </ul>
CCA/PCP	Timber treatment	moderate	not used anymore	<ul style="list-style-type: none"> <li>the TVC site in Asau is the only area that has presence which should be a priority contaminated site for clean up</li> </ul>	<ul style="list-style-type: none"> <li>clean up of TVC site will eliminate future contamination</li> </ul>
Lindane	For scabies	low	Non-consent for import since 2000 when alternative was identified	<ul style="list-style-type: none"> <li>no found</li> </ul>	<ul style="list-style-type: none"> <li>used in the past for medical purposes only</li> </ul>

## E.2. The nature of the needed capacity

Other than the unintentional releases of dioxins and furans, Samoa is not a producer of any of the POPs and PTS. Thus eliminating POPs and PTS suggest a need for capacity to implement measures to

- stop the importation of substances banned under the Stockholm Convention and related Multilateral Environmental Agreements (MEAs) e.g. Rotterdam Convention;
- dispose of existing stockpiles
- clean up hot spots (contaminated sites)

- monitor the presence, levels and trends of contamination of all suspected or potential PTS, and
- raise public awareness of the threat to public health and the environment.

This assessment is thus one of determining whether or not the capacity exists to effectively carry out these measures and where it is lacking, how best this capacity may be acquired and or developed

Measures to regulate the importation of hazardous substances hinges on the existence of an effective legal framework e.g. Pesticides Regulation 1990 that clearly defines what chemical substances can be imported or are banned, the approval process for obtaining import permits, conditions governing handling, use, transportation and disposal of imported chemicals, and clearly defined powers of enforcement and penalties for offending parties.

Measures to dispose of existing stockpiles calls for technology and expertise that are currently not available in Samoa. For instance, disposing of PCBs in electric transformers require the dismantling of these complex equipment, the removing of PCB oils from highly absorptive and porous components and their eventual incineration. A recent SPREP study (2002), recognizing the lack of capacity in Pacific Islands for the disposal of these types of wastes, concluded that used PCB-based transformers best be shipped to a disposal facility in Queensland Australia for destruction. A SPREP/AusAID's 'POPs in PICs' project has since engaged an Australian contractor (GHD) to undertake this work. At the time of writing, GHD's manifest of chemicals for disposal under the Waigani Convention for wastes expected in May 2004 was awaited.

The cleaning up of contaminated sites requires direct actions either to contain or closed-off an area, or to dig up and remove contaminated soil and other materials. Measures in this category are relatively easy to implement where the spread of contamination is limited to a small area and where contaminated sites can be fenced off from public access.

The raising of public awareness underscores the need to educate the public of the dangers involved if exposed to hazardous chemicals. Public support and participation in activities such as the collection of hazardous wastes e.g. used car batteries, used transmission oils etc. has been shown in the experiences of other countries to be an effective approach.

## F. Review of existing legislation –

### Introduction –

There is no single comprehensive chemicals legislation in Samoa. Instead, a number of separate pieces of legislation exist each targeting specific types of chemicals according to their use and effect. For example, there is legislation in relation to the management of pesticides, poisons, drugs and narcotics and ozone depleting substances. The following section reviews a select number of relevant statutes, including environment protection laws and the legislative and administrative mechanisms and arrangements for regulating the importation, handling, use and disposal of chemicals.

#### F.1. The Lands, Survey and Environment Act 1989

The Lands, Survey and Environment Act 1989 empowers the Division of Environment and Conservation under section 95 particularly subsection 95.e and 95.h in relation to pollution and public awareness. Under section 104, the Minister is empowered (particularly subsections 104.a, 104.b and 104.i.) in relation to capital funding support, land use and environmental management guidelines and powers in relation to the introduction of chemical or hazardous substances. Sections 106 and 107 also empowers “Conservation Officers” to search, arrest, seize and retain vehicles for 3 months etc, with penalties for non-compliance outlined in section 144.

The LSE Act 1989 also provides for regulation-making powers particularly in relation to regulating pollution and depositing of any substances of a dangerous, noxious or offensive nature (subsection 146.2(t), regulating or prohibiting the import of environmental pollutants (subsection 146.2(x), providing for the undertaking of EIAs as a prerequisite for development proposals (subsection 146.2(y) and prescribing offences against the regulations (subsection 146.2.(aa).

## F.2 Pesticides Regulation 1990

This regulation is particularly relevant to POPs pesticides. The Pesticides Regulation 1990 empowers the Minister of the Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM) to declare any substance as pesticide. Importation and use of pesticides is regulated by a framework that vets and decides pesticides to be registered, as well as a licensing system for controlling the importation of registered pesticides. POPs pesticides banned under the Stockholm Convention and PTS pesticides now being phased out have reportedly been banned in Samoa under this legislation. Similarly non-consents for the importation of the same chemicals (including DDT and chlordane) have been submitted to exporting countries as required under the Rotterdam Convention<sup>3</sup> which came into force 24 February 2004.

A Pesticides Technical Committee (PTC) is created under this legislation to review requests for the registration of new chemicals for use in Samoa, and to vet and approve/disapprove applications for the importation of registered pesticides.

The position of Pesticides Registrar is also created to service and administer the work of the Pesticides Technical Committee and to be the contact person for applications for pesticides registration and importation.

For monitoring and enforcement, the key requirements revolve around the arrangements between the Pesticides Registrar and the Comptroller of Customs. The Pesticides Registrar is required to provide the Comptroller of Customs with a list of all licensees and of registered pesticides. Customs Officers are also empowered to seize any pesticides imported without a license. The regulation also empowers inspectors to be appointed from officers of the MAFFM and the Ministry of Health (MOH) to enter and inspect any suspected premises and seize pesticides found. Conditions governing the safe use of pesticides are also prescribed.

## F.3 The Poisons Act 1968

The Poisons Act 1968 regulates poisons, poisonous substances, and toxic and prohibited substances. The term ‘toxic substances’ is defined as ‘ any substance, including any drug, which when swallowed, inhaled, injected into, or otherwise absorbed by the human body is likely to destroy life

---

<sup>3</sup> Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

or is likely to be injurious to health; and includes any acaricide, insecticide, fungicide, larvicide, nematocide, pesticide, and herbicide...’ The supporting Schedules 1 – 8 of the Act lists all poisons covered by the Act and include many chemicals that are known POPs and PTS.

The Poisons Act also regulates (Section 8) the importation, carriage, custody and sale of poisons and poisonous substances with the Minister of Health given powers (under S26) to prohibit the importation... of toxic substances.

For importation, a licensing system is prescribed. Steps for obtaining a license involving a written application to the Director of Health, who with prior written authority by the Minister of Health, issues license if certain requirements are satisfied. The Poisons Act also grant powers to import poisons to chemists, medical practitioners, dentists, a veterinary surgeon, government employees acting on behalf of Government.

Separate licenses are required before anyone can legally sell by wholesale, retail and to pack and label, with licenses obtainable through the same process as for importation.

For monitoring and enforcement, the Act requires licensees

- to display their license conspicuously,
- the Director of Health is required to keep at his office a register of all licenses issued by him; and
- every person who sells poisons to keep records for not less than 3 years;
- to permit any officer of DoH or a Police Officer to inspect and make copies and other information in his possession with respect to any dealings by him relating to poisons and poisonous substances.

The Act also seeks to regulate other toxic and prohibited substances (which has not been either imported into or manufactured or prepared in Samoa) by requiring persons with such intentions to notify the Director of Health first and in writing of his intentions, providing specified information. Of significance to this exercise, the power to prohibit the importation, sale or use of any toxic substances rests with the Minister.

Regarding enforcement and compliance, Section 30 (1) of the Act empowers any officer to mark, seal or otherwise secure any land or premises...if he has reason to suspect that it may have been contaminated by any poison or poisonous substance or toxic substance.

Regarding site remediation, S 30(2) stipulates that the officer or Director shall, as soon as practicable, take or cause to be taken all reasonable measures to have the land, premises, vessels, ...decontaminated or cleansed, as the circumstances of the case may require.

#### **F.4 Poisons Regulation 1969**

This regulation elaborates on the Poisons Act 1968 and makes, amongst others, clear conditions for the disposal of containers used, (by burning if combustible, or otherwise render it unusable and thereafter dispose of it in such manner as not to endanger any person or animal) and to avoid the contamination of water supply.

### F.5 Food and Drugs Act 1967

The Food and Drugs Act 1967 consolidates and amends the law relating to the sale of food and drugs. It regulates against the sale of adulterated foods and drugs, prescribes conditions for the importation of new drugs, exemptions for medical purposes and conditions for procuring of samples for analyses.

Of particular interest is the Act's definition of 'drugs' which includes 'any disinfectant, germicide, antiseptic or preservative used for any purpose'. It can be argued that by this definition, chemical wood preservatives that are persistent organic pollutants, particularly copper chrome arsenic (CCAs) formulations, are included.

The Act is administered by the Ministry of Health (MoH).

### F.6 Occupational Safety and Health Act 2002

This Act provides for the safety, health and welfare of people at work in Samoa and establishes procedures for the administration of these matters. It requires employers to identify and assess hazards and take appropriate steps to control, or eliminate them where they pose a threat to the safety, health or welfare of employees. It also requires employers to take actions to protect the environment, and persons in the environment from emissions, leakage or spillage in the course of the employers business or operation. Employers are also required to provide employees with appropriate information, instruction and training to protect health and to deal with emergencies and to provide protective gear and clothing.

### F.7 Planning and Urban Management Agency Act 2004

This recent enactment establishes the Planning and Urban Management Agency (PUMA) and provides the framework for planning the use, development, management and protection of land in Samoa.

PUMA's environmental protection (of natural and man-made resources and the maintenance of ecological processes and genetic diversity) and sustainable development planning functions empowers it to deal with issues concerning the reduction and elimination of POPs and PTS in so far as the impacts of these substances constitutes a threat to the environment. PUMA plays a central role in coordinating the planning and implementation of actions necessary for the disposal and containment of sites identified to be contaminated with POPs and PTS. PUMA will also be a relevant agency in the continuing monitoring and testing for POPs and PTS and the implementation of public awareness initiatives promoting these objectives.

A key tool introduced by the Act for ensuring sustainable development and environmental protection is the requirement for sustainable management plans. The Act allows for sustainable management plans that are comprehensive in content and scope and involve consultation on issues including land tenure, catchments and drainage, hazards and environmental capacity. In terms of POPs and PTS, provisions for the protection of the environment against contamination by hazardous chemicals and substances could be made a mandatory requirement.

The PUMA Act also includes the following -

- requirement for consultation and the provision to stakeholders of information on hazards (s18(1)(f));

- the power to approve development standards in relation to the emission of pollution and means for its prevention, control and mitigation (section 32(o));
- the requirement for an environmental impact assessment in relation to a proposed development (section 42);
- specific requirements for PUMA to consider in determining a development application including the potential environmental effects of any development proposal including any EIA which may have been prepared (s46(f))
- conditions which PUMA may include in a development consent as it thinks fit including a condition that a sustainable management plan requires be included in the development consent (section 48);
- PUMA's power to require an owner or occupier to remove or minimise a nuisance impacting on the amenity of an area (including fumes, vapours or waste materials - subsection 63(1)(f) and (g))
- power to make regulations which provide for the factors to be taken into account when consideration is being given to the likely impact of a development on the environment (section 105);

## **F.8 Forest Act 1967 –**

This legislation is relevant in respect to its provisions banning the indiscriminate causing of forest fires. Forest fires and the general burning of biomass are major sources of dioxins and furans. Part VI S.39 empowers the Minister of Forests to prohibit by public order the setting of fire of biomass generally under extreme fire hazard conditions. Section 40 makes it an offence the causing and spreading of fire on any forestland.

## **F.9 Other legal developments –**

### **F.9.1. The Ministry of Natural Resources and Environment (MNRE) Bill 2003**

The MNRE Bill 2003 is an bill to repeal certain provisions of the Lands, Surveys and Environment Act 1989, establish MNRE and provide for the exercise of MNRE's powers and responsibilities in relations to lands, surveys and the management of Samoa's environment and natural resources. Relevant sections include section 16.2g which assign to MNRE the function to regulate the introduction into Samoa of hazardous substances and (16.2d) the maintenance of air quality. The Ministry is also proposed to take appropriate action to protect, conserve and manage (s18.1b) soil and ground materials and (s18.1d) inland and marine waters. Taken together, these functions will make MNRE the leading agency for remediation actions required for the management of POPs and PTS contaminated sites.

The MNRE Bill (clause 17) also assigns MNRE the following roles with respect to the implementation of Samoa's obligations under international environmental agreements. These include –

1. Liaising with relevant government departments and agencies, and securing necessary approvals, to ensure Samoa's effective representation at meetings of the Parties of a Convention and other relevant meetings;
2. Liaising with relevant regional and international bodies to ensure that the representation of Samoa at any meeting concerning a Convention is informed and effective;
3. Managing or participating in any project, or part of a project, aimed at implementing any aspect of a Convention;

4. Preparing any necessary Report, and reporting on a regular basis to the Minister and Cabinet in relation to the implementation of any Convention;
5. Sharing information and otherwise providing such cooperation as is required by a Convention;
6. Recommending that any law be amended or enacted in order to effectively implement any requirement of a Convention; and
7. Doing any other act or thing (in conjunction with any other relevant government department or agency) to implement any obligation under a Convention.

The specific Multilateral Environmental Agreements (MEAs) to which this applies comprises of 12 conventions including the four conventions<sup>4</sup> for chemical management.

**Table 2 - Legislation and main purposes.**

Legislation	Importation	Storage	Transport, Distribution & Marketing	Use Handling	Disposal	Environmental Monitoring
Lands Surveys and Environment Act 1989					✓	✓
Poisons Act 1968	✓	✓	✓	✓	✓	
Pesticides Regulation 1990	✓	✓	✓	✓	✓	
Food and Drugs Act 1967	✓	✓	✓	✓		
Occupational Safety and Health Act 2002		✓	✓	✓	✓	✓
PUMA Act 2004					✓	✓

**Table 3: POPs/PTS vs Legislation and actions**

POPs/PTS	Relevant National Legislation	Specific powers
POPs pesticides (aldrin, dieldrin, chlordane, DDT, endrin, heptachlor, mirex, hexachlorobenzene, toxaphene).	Pesticides Regulation 1990	Non-consent for importation.
Dioxins and furans	Lands Survey & Environment Act 1989	Regulate air pollution.
	Forest Act 1967	Prohibit the causing of forest fires on any land
Polychlorinated byphenols (PCBs)	None	Regulate introduction of hazardous substances.
	EPC Act 1972	Allows the importation of electric transformers.
PTS	Lands, Survey & Environment Act 1989; Poisons Act 1968; Food and Drugs Act 1969	Regulate importation, use, disposal; discharging of pollutants, and air quality maintenance.

<sup>4</sup> Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989; Waigani Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Waste and to Control the Transboundary Movement and Management of Hazardous Waste within the South Pacific, 1995; Stockholm Convention on Persistent Organic Pollutants, 2001; Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998.

## F.10 Comments on the existing legal framework –

---

### F.10.1. No single chemical law -

There is no single comprehensive chemical law in Samoa. Legislative authority to manage hazardous chemicals is assigned to several agencies, with each agency dealing with a specific type of substance differentiated on the basis of intended purpose. Thus pesticides are dealt with separately from poisons, drugs, or petroleum etc..

This compartmentalized approach is inevitably going to have gaps and omissions.. In this case chemicals imported for a range of industrial use e.g. a range of adhesives, wood preservatives, bitumen, and others, do not clearly fall under any existing national legislation and are imported with effectively no restrictions based on any public health or environmental consideration.

### F.10.2. Importation of POPs pesticides, PTS and industrial chemicals -

The Pesticides Regulation 1990 provides an effective framework governing the importation of pesticides and is already used to ban the importation of POPs pesticides (aldrin, chlordane, dieldrin, DDT, and heptachlor) under the Stockholm Convention<sup>5</sup> and to issue non-consents for the same as required under the Rotterdam Convention. For other non-pesticides POPs and PTS, the Poisons Act 1968 empowers the Ministry of Health for regulating their importation.

The approach of the above legislation to protecting the environment and public health is to keep the threat of POPS and PTS contamination offshore by restricting importation with very strict port-of-entry control measures for those substances that are permitted. The Customs Department is well empowered to seize and withhold the release of any chemical or substance at the port of entry if there is no evidence of a proper approval, under the current frameworks. The critical proviso is that up-to-date information on licensees and registered pesticides are provided to the Comptroller of Customs by the Pesticides Registrar and for poisons, the Director of Health.

The Food and Drugs Act 1968 regulates the importation of a range of chemicals that fall under the definition of ‘drugs’.. The definition of ‘drugs’ is ambiguous with respect to preservatives and could be interpreted broadly to include copper-chrome-arsenic (CCA) formulations that are PTS. The same legislation also makes exemptions for the importation of a range of chemicals/drugs including some that are industrial in purpose. The ambiguity in the definition of drugs, coupled with the importation exemption constitute a potential loophole through which PTS may be brought into the country.

### F.10.3. Importation of POPs Polychlorinated Biphenals (PCBs) –

PCBs were universally used as transformer oils for electricity distribution until about 198five (John O’Grady, pers. commun. To Bill Cable, 2003). In Samoa, the Electric Power Corporation (EPC) and the former Samoa Forest Products Ltd (SFPL) were the sole importers of electric transformers. EPC in particular is authorized to do so under the EPC Act 1972 which states that it (EPC) provides... transformer stations.. and to install all necessary machinery and plant ...for the generation of electric power.

---

<sup>5</sup> No formal documentation of decisions by the Pesticides Technical Committee banning the importation of PTS and POPs referred to were sighted. The above statement is based on personal communications with the POPs Project Coordinator with reference to PIC Circulars giving these decisions.

Since the finalization of the Stockholm Convention, PCB-based transformers have been phased out in most developed countries and replaced with transformers using non-PCB substitutes. In Samoa, EPC is understood to have shifted to this new technology since around 1986 albeit as a result of market forces. And while there have been no recent reports of imported PCB transformers, there are also no definitive record of how much PCB-based transformers had been imported. There is also no formal policy banning the importation of PCB transformers by the Corporation.

#### **F.10.4. Generation of dioxins and furans and other unintentional by-products**

The levels of unintentional releases of dioxins and furans as a result of open-burning and waste incineration is estimated to be the highest amongst the POPs present in Samoa (PECL, 2004). Open burning includes the burning of biomass for land clearing, naturally occurring forest fires, burning for waste disposal, and cooking fires including the traditional method of heating stones on an open fire on which to cook ('umu').

Should the Samoa Government deem it necessary to regulate the level of burning to reduce the emission of dioxins and furans in compliance with the Stockholm Convention, or for any purpose for that matter, legal authority is provided under to the MAFFM under the Forest Act 1967 (Part IV) prohibiting the setting of fires under extreme fire hazard conditions (S.39), or the causing of fire at any time to any forest land (S.40).

#### **F.10.5. Monitoring the movement and use in-country of pesticides and poisons**

For pesticides, the Pesticides Regulation 1990 emphasizes good record keeping at the levels of the Pesticides Registrar and seller/retailers to facilitate subsequent monitoring. The Registrar in theory would have a list of sellers, and buyers and their locations. Thus the path a pesticide takes once it leaves Customs should be traceable to its eventual user and the site of application. The responsibility of sellers to maintain registers and to make this information available to the Pesticides Registrar is clearly defined in the Regulation. The onus however is on the Registrar to demand this information.

For poisons, a similar system of regulation and enforcement is set out in the Poisons Act 1968 and Poisons Regulation 1969. The regulation also specifically lists under its eight schedules all poisons of different categories that are allowed for use in Samoa, as well as prohibited substances.

In theory, therefore, a potentially hazardous chemical imported under the Poisons Act or pesticide permitted for importation under the Pesticides Regulation can be traced and monitored from when an application is made for its importation to when it comes under Customs scrutiny at the port of entry, and through to the seller, the final user and the site on which it will be applied. Any lapses in detecting the whereabouts of any hazardous pesticides or poison within this system can only therefore be the result of poor execution and or laxity in monitoring and enforcement on the part of the administering agencies.

#### **F.10.6. Enforcement -**

The Pesticides Regulation 1990 and the Poisons Act 1968 are very explicit and clear on responsibilities for enforcement and the extent of their powers to enter, search and remove any pesticides. The Pesticides Regulation 1990 s15 empowers Customs Officers to prevent the importation of any pesticides, with every pesticide imported to remain under the control of Customs unless a permit to import has been issued by the Registrar. Under s19, it makes provisions for the appointment of inspectors from officers of MAFFM and the MOH, and empowers them (s20) with

powers to enter, inspect and seize any pesticides imported or being sold contrary to the provisions of the regulations. Penalties prescribed for proven offenders is a fine not exceeding \$5,000 or to 12 months imprisonment or to both.

#### **F.10.7. Illegal importation, monitoring and enforcement -**

There are factual and anecdotal evidences of incidences of unregistered pesticides being imported and of registered pesticides being imported without licenses (Pimalolo Maiava, pers. com 2003).

The illegal activities do not point to any loopholes in the pesticide legislation but to corrupt practices combined with laxity in enforcement and monitoring. Several reported instances of ‘unlicensed’ importation detected by Customs were by people who were unaware of the requirements to apply for an import permit. The need for public awareness of the approval process for importation is obvious in these cases.

#### **F.10.8. Pesticides regulation and MAFFM –**

The Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM) administers and enforces the Pesticides Regulation on one hand, and is an importer of unregistered pesticides, mainly for research purposes on the other. Attempts to determine the fate of some of these revealed a lack of reporting and poor accountability regarding the outcomes of these researches. This situation highlights MAFFM’s dual roles as regulator and importer and raises the possibility of conflicting interests.

There do not seem to be any stringent reporting requirements on researchers to inform the Pesticides Registrar and Pesticides Technical Committee (PTC) regarding the results of experimentation involving imported ‘research’ pesticides. If there are, they do not seem to be strictly enforced. There may be ameliorating circumstances in the fact that quantities involved are ‘small’ (Asuao Pouono, pers. comm., Nov 2003). The fact remains however that this constitutes a potential loophole in the existing pesticides regulatory framework.

#### **F.10.9. Pesticides Registrar –**

This is a critical post in the current framework. The effective implementation of the Pesticides Regulation is dependent on the Registrar’s ability to deliver. The incumbent was recently appointed to the position and prior to his recruitment, his predecessor was working in an acting capacity for a considerable time – a uncertain situation that was not conducive to promoting professionalism and job commitment.

The emerging priority on the reduction and elimination of POPs and PTS pesticides now places considerable importance on the work of the Pesticides Registrar, and point to the need for this position to be well supported and resourced. Specialized training in database/information management and public education and awareness raising, as well as resources to support enforcement are needed to strengthening this position.

#### **F.10.10 Handling, distribution and storage –**

Minimizing or eliminating the risk to human health involved in the handling of hazardous chemicals and substances is an important part of sound chemical management. With respect to occupational health, the Occupational Safety and Health (OSH) Act 2002 is clear on health guidelines for ensuring safety in the workplace for those handling any hazardous substances. The OSH Act also stipulates the safe removal and disposal of areas of hazard to workers.

The handling of pesticides and other toxic substances once they are cleared with Customs is largely the responsibility of the importer. Other than the requirements of the OSH Act 2002 regarding safety precautions for workers involved, there are no specific requirements for how they may be carted. Proper routing of transporters of hazardous chemicals to avoid areas of high population densities wherever possible would minimize the risk of public injury. The Ministry of Works, Transport and Infrastructure (MWTI) is an important player in this connection.

#### F.10.11 Disposal –

Disposal is an essential part of sound chemical management. For pesticides, the disposal of old stockpiles is not dealt with directly in Pesticides Regulation 1990 except that inappropriate containers should be excluded from import and subsequent need for disposal due to high amount of breakage as found in two cases. It only implies this responsibility to lie with buyers and users.

At the Government level, ensuring the proper disposal of wastes and the discharge of pollutants is a function presently performed by PUMA.

The Poisons Act 1969 prescribes for the management of contaminated sites from poisons, poisonous substances or toxic substances by the Ministry of Health (MOH). The definition assigned to ‘toxic substances’ extends to pesticides. This legislation also prescribes for the sealing off of contaminated areas, and for all reasonable measures to be taken to decontaminate or cleanse them.

In practice, chemical (medical) wastes generated by MOH are stored for shipment to disposal sites outside Samoa in a concrete room on the Ministry’s premises (MOH NTT representative, 2003). MOH also operates two incineration facilities in Mato’otua and Tuasivi which on a daily basis dispose of a mixture of medical wastes. It was reported that no hazardous chemical waste is disposed in these facilities (ibid.).

The capacities for disposal hazardous wastes as POPs and PTS is a clear area of deficiency previously discussed elsewhere in this report. While existing stockpiles of POPs will be shipped out for destruction in Australia where facilities for this purpose existing, any stockpiles PTS to be collected henceforth will not be easily disposed of with existing capacities. This is a critical area for capacity building.

## F11. Findings and Recommendations Related to Legal Frameworks

---

### Importation -

1. The frameworks defined in the Pesticides Regulation 1990 for regulating the importation of pesticides and in the Poisons Act 1968 for poisons, poisonous substances and toxic substances are fundamentally robust and sound. The banning in Samoa of pesticides POPs as required of parties to the Stockholm Convention and Samoa’s non-consent to their importation as required under the Rotterdam Convention have already been executed under the authority of this regulation.
2. Isolated incidences of illegal importation of pesticides are more the result of corrupt practices and laxity in enforcement, and not due to any loophole in the legislation.
3. EPC is understood to have phased out since 1986 the importation of PCB transformers albeit as a result of market forces. The MNRE Bill would empower this agency to regulate the

importation of hazardous substances (S.16.2g) which would then enable it to advocate for a formal EPC ban on the importation of PCB transformers.

*Recommendation –*

Ensure the early enactment of the MNRE Bill.

Pending enactment of MNRE Bill, follow up with development of capacity for hazardous substances, i.e industrial chemicals.

**Ambiguities, overlaps and loopholes -**

4. There are areas of overlaps and ambiguities in the definitions assigned to key words such as ‘poisons’, ‘toxic substances’ and ‘drugs’ in the Poisons Act 1968 and Food and Drugs Act 1967. These need clarification and review.
5. Chemicals imported for a wide range of industrial purposes, either in enclosed use or in concentrated form are not regulated and are imported unrestricted in terms of either their potential environmental impacts.

*Recommendations –*

Undertake a comprehensive legal review to consider amongst several other issues, the definitional issues referred to above and the absence of any legal regulatory mechanism for chemicals imported for industrial use.

**Potential conflict of interest -**

6. The potential conflict of interest within MAFFM’s dual roles as importer and administering agency for the Pesticide Regulation 1990 is a cause for concern but one which can be managed within the present framework, pending the outcome of the legislative review proposed in 10 below.

*Recommendations –*

Clearly defined reporting responsibilities for research agencies/parties to the Pesticides Committee should be made mandatory as a requirement for researchers’ involving in the use of unregistered pesticides.

Strengthen enforcement and monitoring and ensure regular reporting to the Pesticides Committee of unregistered pesticides used for research purposes.

**Awareness raising -**

7. Awareness activities to raise public understanding of the approval process for the importation of all pesticides is severely lacking.
8. Public awareness raising activities on POPs and PTS is essential for public safety and the management of hotspots.
9. The Pesticides Registrar’s position should be strengthened with resources and equipment to improve information management and enforcement.

*Recommendations –*

Implement public awareness raising activities to improve public understanding of the approval process for pesticides/chemical importation, and to promote understanding of POPs and PTS.

Strengthen the Pesticides Registrar’s office with additional staff and resources to improve information gathering and management, and enforcement.

**Legal review -**

10. While this study looked at several legislation relevant to hazardous wastes, it is by no means an exhaustive review. An in-depth legal review of the existing frameworks regulating the importation and management of pesticides, poisons, and chemicals for all uses is recommended. The review should consider but not necessarily be restricted to the following issues - possible overlaps in the pesticides, and poisons and drugs legislation due to unclear definitions, the apparent absence of any mechanism for regulating the importation of chemicals for industrial use, the outcomes of the SPC pesticides legislation harmonization study, the potentially conflicting roles of MAFFM in pesticides regulation, and the option of a consolidated legislation for hazardous chemicals by which to coordinate Samoa's growing obligations under international conventions relating to hazardous wastes, substances and chemicals.

***Recommendation -***

Undertake a comprehensive legal review of all chemical-related legislation to consider amongst other issues, those defined in paragraph 10 above.

## F12. RECOMMENDATIONS AND PROPOSED IMPLEMENTING AGENCIES

Table 4 – Recommendations and Implementing agencies

#	Recommendations	Implementing Agencies
1	Ensure the early enactment of the MNRE Bill.	MNRE, PUMA, AG
2	Undertake a comprehensive legal review to consider amongst several other issues, the definitional issues referred to above and the absence of any legal regulatory mechanism for chemicals imported for industrial use.	MNRE, PUMA, AG, NTT
3	Clearly define reporting responsibilities for research agencies/parties to the Pesticides Committee as a requirement for researchers' involving in the use of unregistered pesticides.	MAFFM, Pesticides Technical Committee
4	Strengthen enforcement and monitoring and ensure regular reporting to the Pesticides Committee of unregistered pesticides used for research purposes.	Pesticides Technical Committee, MAFFM.
5	Implement public awareness raising activities to improve public understanding of the approval process for pesticides/chemical importation, and to promote understanding of POPs and PTS.	PUMA, NTT, MWCSO, MESC.
6	Strengthen the Pesticides Registrar's office with additional staff and resources to improve information gathering and management, and enforcement.	MAFFM, MOF
7	Undertake a comprehensive legal review of all chemical-related legislation to consider amongst other issues, those identified in this report.	AG, PUMA, MAFFM, NTT
8	Pending enactment of MNRE Bill, follow up with development of capacity for hazardous substances, ie industrial chemicals+	MNRE, PUMA, MOF

## G. Institutions, Agencies, Companies involved in POPs and PTS –

### G.1 Government agencies and Corporations

#### G.1.1 Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM) -

Responsible for the administration of the Pesticides Regulation 1990, MAFFM regulates the importation and use of pesticides within a framework involving the following entities –

- Minister of MAFFM
- Chief Executive Officer (CEO) of MAFFM
- Registrar for Pesticides
- Pesticides Technical Committee,
- Comptroller of Customs and Customs Officers
- Officers of MAFFM and
- Officers of the Department of Health.

The Minister has overall authority and acts on the advice of the Pesticides Committee and CEO-MAFFM on pesticides to register for use in the country. The Registrar provides technical and administration support to the work of the Pesticides Technical Committee who advises and recommends on matters of importation and pesticides registration.

The MAFFM is also a major importer of pesticides including unregistered pesticides brought in for research purposes. These roles are potentially conflicting and constitute an area of weakness in the current framework.

The Ministry is empowered to enforce the Pesticides Regulation with powers to enter any property and undertake appropriate searches for suspected activities. There is no record to date if these powers of enforcement have ever been exercised. To the contrary, there are indications of illegal importation of a range of unregistered and registered pesticides.

#### **G.1.2. Customs Department –**

The Pesticides Regulation empowers Customs Officers to seize all pesticides imported without license from the Registrar of Pesticides. The Pesticides Registrar is also required under the Pesticides Regulation to provide the Comptroller of Customs with a complete list of all licenses granted for the importation of pesticides, to assist with their monitoring and enforcement responsibility.

For enforcement, the regulation makes provisions for the appointment of officers of the MAFFM and MoH as inspectors with powers to enter, inspect and seize suspected items. Similar powers and responsibilities are given to Customs Officers by the Poisons Act 1967.

#### **G.1.3. Ministry of Health -**

The Ministry of Health (MOH) administers both the Poisons Act 1968 and Poisons Regulations 1969, as well as the Food and Drugs Act 1967. These legislations empower the Minister of Health to import poisons and drugs, the latter defined in terms that includes some chemicals for industrial applications. The MOH is also a major generator of medical wastes (some of which are hazardous) which are partly disposed of by incineration. The two incinerators at Matootua and Tuasivi Hospitals are amongst the sources of combustion that have been monitored for the unintentional release of dioxins and furans.

#### **G.1.4. Electric Power Corporation (EPC) –**

EPC's commitment to the importation of PCB-free transformers is essential to the elimination of PCBs in the country. Under its current legislation it is not obligated to do so. EPC's assistance in compiling accurate and comprehensive information on stockpiles of used and in-use transformers is equally vital. Reports of leaking transformers within EPC compounds underscores the importance of EPC cooperation in protecting public health and the environment within areas under their jurisdiction.

#### **G.1.5. Agricultural Store Corporation (ASC) –**

ASC is the largest importer of pesticides and other farming chemicals in Samoa and has been heavily involved in the importation of several POPs pesticides in the past. The Pesticides Regulation 1990 requires it to maintain a register of users/buyers that is critical to the monitoring of pesticides use. They also have old stocks of chemicals that are highly hazardous and toxic and requiring proper disposal. Efforts by PECL to obtain an inventory of existing stocks as part of this exercise triggered the compilation of a list which we have since received. That none existed before is indicative of poor management.

ASC was also directly involved in the past with the establishment and management of banana plantations in Tanumalala and Mulifanua and have information on possible contaminated sites wherein POPs chemicals such as DDT, chlordane, heptachlor, and PTS may have been used.

### G.1.6. Planning and Urban Management Agency (PUMA) –

PUMA is the agency of the Ministry of Natural Resources and Environment (MNRE) that is responsible for environmental protection. Its various functions have been discussed earlier under the PUMA Bill 2003. The agency presently coordinates the development of Samoa's National Implementation Plan for POPs and its subsequent implementation. It is also to be directly involved in all activities implemented to date in promoting chemicals awareness, and monitoring.

## G.2 Institutional capacity for environmental monitoring-

Monitoring is an essential activity in efforts to reduce or eliminate POPs and PTS. POPs and PTS which presence had been confirmed through previous studies need to be monitored closely for levels and trends of contamination. There are also suspected contaminated sites that need to be investigated. Similarly, PTS for which there are yet no specific import controls, organo-tin compounds for which there is little information but which use as anti-fouling coatings for ships and boats is expected to continue, need to be monitored in an on-going programme covering a range of sites and environmental media. Testing for dioxins and furans as part of air quality maintenance should be undertaken on a regular basis.

### G.2.1. PUMA -

PUMA's current technical capacity constitutes by far the largest aggregation of skilled personnel for hazardous substances management relative to other government agencies. There are fourteen (14) officers with tertiary level qualifications and training and eight (8) have attended short-term courses in various aspects of hazardous waste management. Information collected for this exercise indicated that several have received training in the management of hazardous wastes, formulation of NIP, safety measures related to the use of hazardous wastes and emergency responses procedures such as in combating oil spills. Several attended international meetings and conferences involving the negotiations of the Stockholm Convention or subsequent meetings dealing with the Conventions operational issues, and therefore have negotiations experience and an understanding of the background to some of the consensus decisions made at these meetings.

While many have had further short-term training in specific technical areas, limited field application means they lack in experience and thus need exposure and effective mentoring to build skills, confidence and experience. PUMA is well aware of these shortcomings and are making progress in overcoming them.

The POPs Project Coordinator, on the other hand, is highly trained and experience in the technical side of chemical management and monitoring. His knowledge base has also been updated and strengthened with recent participation in several short-term training and workshops related to the POPs Project implementation. This expertise needs to be transferred to younger and inexperienced new staff. A greater focus on this officer's role on staff training in various aspects of monitoring including field testing for PCBs, assessment of dioxins and furans emissions etc would contribute significantly to building PUMA's capacity in this area.

Table 5: Staff personnel & skills areas relevant to chemical management work<sup>6</sup>

Name of Agency or Institution	Staff with tertiary qualifications	Staff with specialized training in POPs and PTS	Comments/Areas of specialized training
PUMA	14	13	Skills areas 1. management of hazardous wastes; 2. planning (NIP) for POPs and PTS, 3. pesticides management incl. safe storage & use, 4. solid waste management; 5. awareness training; 6. implementation of Rotterdam Convention; 7. Oil waste management; 8. Safety & health hazards 9. Environmental audit 10. Oil spills response 11. Others – international negotiations
DEC	2	1	Skills areas – ▪ Hazardous waste management
MoH	1		1 Dioxins/ furans "Toolkit" and ecotoxicology
USP (Alafua)	2	2	No details provided
NUS	5	-	-
MTIW	1	1	Skills areas – ▪ Pollution control ▪ Waste management
MoF	2	-	Functions are mainly policy and macro-level planning and monitoring.
MAFFM	1	-	Pesticides Registrar – roles – technical assessment and monitoring of compliance against Pesticides Reg..
MOH	1		1 Dioxins/ furans "Toolkit" and ecotoxicology
MFAT	3	-	No technical skills. Deals with issues of trade and international negotiations, and focal points for other agencies.

In terms of physical facilities, PUMA does not have laboratories or any capacity for performing chemical analyses nor are there plans for such capacity to be developed. There are also no arrangements for access and use of such facilities of other local institutions and agencies. PUMA's physical resources for chemical analyses in support of its monitoring program is limited to PCB testing using Dexsil Chlor-N-Oil 50 or 20 test kit.

Agencies and institutions with facilities currently performing basic chemical analyses are the Ministry of Health, Samoa Water Authority (mainly water bacterial and chemical analyses), National University of Samoa (NUS) and University of the South Pacific (USP Alafua campus).

### G.2.2. National University of Samoa (NUS) –

The NUS Faculty of Science currently offers a science program leading to a Diploma in Environmental Studies and a Bachelor of Science degree with majors in Mathematics and Computing. The Diploma in Environmental Studies (currently proposed to the NUS Council to be renamed Diploma in Environmental Science) is a 10-course program with strong emphasis on biology<sup>7</sup> and chemistry (with concentration on environmental chemistry in year 3). All 10 courses in

<sup>6</sup> Based on responses to a questionnaire survey of NTT members and report of Project Coordinator POPs.

<sup>7</sup> Second and third year courses include – Ecosystems and Experimental Designs, Microbial Structures and Functions, Natural Resource Management, and Environmental Conservation.

the diploma program have a practical component consisting of laboratory exercises and/or fieldwork.

In addition, students pursuing Bachelor degrees in Science and Education can also minor in Environmental Science, with courses in both chemistry and biology comprising the requirements of this qualification. Further plans are in the pipeline pending approval by the University Council for a major in environmental science for the Bachelor of Science and Bachelor of Education degrees.

Another available option for formal education in environment-related topics is enrolment in individual courses on a non-award basis. PUMA staff, for instance, can enroll in one or more of these courses to extend their knowledge within the field of environment. Related courses such as Sociology and Nursing, and Geography are offered by other faculties and are also available for enrolment towards a non-degree program.

The program of study in environmental science is taught by a team of five full time lecturers<sup>8</sup> with varying qualifications including one Ph.D. (Chemistry), Masters in Civil and Environmental Engineering, and Bachelors degrees in chemistry, biology and or science generally. Staff members are suppose to split their time between teaching (40%), research (and development) (40%) and NUS/community work (20%). Expectedly, teaching and administration take up a disproportionately larger slice of staff time.

The Faculty does not offer short term skills-based training such as those offered by other faculties of the University but is known to have collaborated with other organizations in hosting seminars, for example, the recent (2003) collaboration with PABITRA on biodiversity monitoring.

In terms of research, there are no current research projects within the Faculty. A possible collaboration with the Chemistry Department of USP (Fiji) on ‘pesticides on produce’ was flagged and was discussed by the NTT (Cable/Sesega, pers. comm., 2004) but nothing has eventuated to date. However, the possibility for research exists and the Faculty is keen to explore possible collaborations with other organizations and institutions in joint research (J. Moreau/Sesega pers. comm., 2004).

Overall, the potential of NUS to contribute to Samoa’s capacity in hazardous chemical management is significant. The existing degree program in science provides a solid foundation in environmental chemistry and biology/ecology that is essential to hazardous waste management. A science degree with a major in Environmental Science as currently being considered will offer MNRE, other government agencies and the private sector, a ready source of well trained graduates to serve their increasing needs in this crucial area.

NUS’ Faculty of Science has the capacity to organize and run short term skills-based training around the skills areas of the existing staff but it is demand-driven and limited to a narrow window of time each year<sup>9</sup>. It is an area with growth potential if promoted for short-term training in a number of environmental management skills area including hazard chemical monitoring. The

---

<sup>8</sup> PhD (Chemistry) (1), Master Civil and Environmental Engineering (1), BA Chemistry & English (1), BSc. Chemistry and Biology (1) and BSc. (Maths and Chemistry).

<sup>9</sup> 6 weeks June to mid-July; 3 months November - January

possibility of collaboration in such short term training with MNRE-PUMA and SPREP has merits and advantages for all three parties and should be explored.

In environmental monitoring, NUS has functioning laboratories but would need additional funding for equipment and chemicals to be able to contribute to any initiatives in this area. An on-going chemical field monitoring program using science students and staff is an area of possible involvement that NUS should consider and where collaboration with PUMA can be of mutual advantage. The issue of upgrading NUS laboratory facilities is understood to have been addressed in a recent external review<sup>10</sup>.

### G.2.3. University of the South Pacific (USP) Alafua

Relevant capacity for chemical hazard management available at the US School of Agriculture (USP-SOA) pertains to the teaching program of the Department of Soil Science and Agricultural Engineering. This department offers formal courses in Fundamentals of Soil Science, Soil Fertility and Plant Nutrition and Soils, Water and Structures Engineering as part of the Diploma of Agriculture Program and bachelor, masters and PhD degrees in Agriculture. Close collaboration between USP and the Institute of Research and Training in Agriculture (IRETA) facilitates the transfer and dissemination of knowledge and information to users including technical field people, other scientists, policy makers, students and farmers.

Other departments of the School<sup>11</sup> offer courses that deal with issues related to the management of agricultural chemicals such as fertilizers and pesticides. These include Plant Protection, Pest and Disease Management.

Research at USP-SOA is limited in scope to key agricultural areas all of which are unrelated to POPs and PTS and largely confined to supervised research by students.

## G.3 Existing interagency mechanisms for coordination

The value of interagency mechanisms for collaboration and for coordinating the work of various agencies and organization to be involved in addressing issues that are multi-sectoral and multidisciplinary in nature is immeasurable. The reduction of POPs and PTS is clearly one such issue.

There are two mechanisms for interagency coordination currently operational - the Pesticides Technical Committee (PTS) and the National Task Team (NTT) for the Samoa NIP formulation Project. This section discussed each separately in terms of their respective functions and looks at the potential they offer to contribute to the overall issue of hazardous chemical management in Samoa.

### G.3.1. The Pesticides Technical Committee –

The Pesticides Technical Committee is a creation of the Pesticides Regulation 1990 and has the following membership –

- Director of the MAFFM (also Chairman);
- An officer of the Ministry of Health to be nominated by the Director of MOH;
- Officer of the Ministry of MNRE

<sup>10</sup> External Review of the Faculty of Science, NUS 2003

<sup>11</sup> Other Departments of the USP-SOA are Department of Agricultural , Economics, Extension and Education; Department of Animal Science and Department of Crop Science.

- One person who shall be an importer of pesticides, to be appointed by the Minister;
- An officer of the MAFFM, to be appointed by the Director MAFFM, and who shall also be the Registrar of Pesticides and Secretary of the Committee.

The PTC meets when required by the Minister, the Chair or any two members but in any event not less than twice a year.

Its functions and powers are defined under S.6 of the pesticides regulation and constitute the following –

- To assess and evaluate every application for registration of a pesticide;
- To determine in its discretion the conditions of use of any pesticides;
- To cancel in its discretion the registration of any pesticide;
- To promote the efficient, prudent and safe use of pesticides;
- To advise the Minister on matters relating to pesticides.

This Committee is active and last met in November 2003 (P Maiava, pers. comm. Nov 2003). How effective it has been in the execution of its functions cannot be determined within the limitations of information and time available to this study. Based on consultations with the previous Pesticides Registrar, it appears that the Committee have been both well informed and very decisive in acting on recommendations to ban several pesticides PTS and POPs as required under both the Stockholm Convention on POPs and the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (B Cable/Sesega, pers comm., 2003).

According to the new Pesticides Registrar, there is renewed interest in the work of the Committee following a brief period of inactivity partly as a result of several current activities including (1) the POPs Project and the raised profile it has given to POPs and PTS and (2) the SPC regional project on harmonizing pesticides legislation. Also the recent appointment of the new Pesticides Registrar has injected fresh energy and momentum to pesticides management and has since had an impact on several important issues that were in abeyance since the departure of the previous office holder.

### G.3.2. The National Task Team (NTT) for POPs

The NTT consists of representatives of 9 Government ministries<sup>12</sup> (with 2 members of the MAFFM (Crops and Quarantine representatives respectively), Agriculture Stores Corporation (ASC), EPC, O Le Siosiomaga Society Inc (OLSSI), Samoa Ports Authority and the USP. This Committee meets about monthly and has the following purposes –

- Provide overall advice and policy guidance to the project;
- Liaise with stakeholder groups to ensure their participation in the project;
- Monitor project progress by reviewing documentation at intervals;
- Sign off the NIP on behalf of their agencies for submission to Cabinet;
- Liaise with Government officials to ensure Government support for the project;
- Committee representatives to provide support and facilitate the sharing of information relevant to the POPs and project activities;'
- Make recommendations on measures to ensure the successful implementation of project activities;
- Review and assess reports produced by experts and the draft NIP periodically.

<sup>12</sup> MFAT, Min of Revenues, MAFFM (2), MCIL, MoF, MoH, MNRE (Legal Div), MWCS, MWTI.

The NTT was established within the first two months of the Project and has since met on a more or less monthly basis, largely to keep the participants informed of progress with the project. NTT members have also been involved with the tender review processes for consultancies and have contributed to POPs-related activities such as the National Chemical Awareness Day.

The extent to which the NTT is achieving its intended purposes is deserving of more thorough study than this exercise allows. Some indications however may be gauged from a recent UNDP Mid Term Review of the POPs Project (B Graham, Nov 2003). The report raised concerns about the effectiveness of the Committee and identified “...the need for a review of the current level of understanding of individual members of the NTT regarding the nature and scope of the Project, and the role of the NTT.” The same report noted the absence of representatives of key agencies including Education and Labour and the private sector. Several members of the NTT have also been attending regional workshops on POPs and PTS with project funding. PUMA has since expanded the NTT membership but poor and irregular attendance by some key organizations remains a problem.

Meetings of the NTT attended by the consultants noted the relatively technical nature of the many issues discussed and the general lack of active participation by members on these technical discussions. The meetings however are well attended indicating a lot of interest amongst the NTT members as well as support from their respective organizations. Awareness raising activities during the NCADs are noted for the active involvement and participation of NTT members.

The sustainability of the NTT is an issue given its dependence on POPs Project funding. It is clear that this mechanism plays a crucial coordination role amongst key stakeholders that is essential to the POPs NIP formulation project, and later, during implementation. For this purpose, funding and resources to support the NTT needs to be secured.

#### G.4 Recommendations Related to Institutions and Interagency Mechanisms –

Table 6 – Recommendations related to Institutions and Interagency Mechanisms

#	Recommendations	Proposed Implementing agencies
1	Assign a greater training role to the PUMA's POPs Project Coordinator in areas such as field testing for PCB contamination, dioxins and furans assessments, and other technical monitoring tasks for PUMA staff and other NTT members.	PUMA EPC, NTT, SAME
2	Plan and implement an on-going hazardous chemical monitoring program targeting specific POPs and PTS and covering a range of environmental media.	PUMA, MAFFM, MOH, NUS
3	Promote stronger collaboration amongst institutions and agencies with environmental monitoring capacity.	NTT, PUMA, SWA
4	Support the upgrading of NUS' physical laboratory facilities to better enable it to engage in a range of potential collaborative research and monitoring activities that are needed to support the long term management of hazardous chemicals in Samoa.	PUMA, NTT
5	Encourage greater emphasis and development of NUS' science	NTT, MNRE

	curriculum and courses in environmental science.	
6	Foster linkages between the Pesticides Technical Committee and NTT.	MAFFM, MNRE, PUMA
7	Strengthen further the NTT with the addition of representatives from the Ministry of Commerce, Industry and Labour, Trade and Industries, and the private sector.	NTT, PUMA, SAME
8	Secure resources to sustain the NTT beyond the life of the Samoa NIP POPs Project to continue to assist PUMA in coordinating NIP implementation.	PUMA, MOF

## H. International agreements

Samoa is a party to several international agreements relevant to the management of POPs and PTS. These conventions are discussed in the following section with emphasis in highlighting Party obligations relevant to Samoa.

### H.1. International Conventions

#### H.1.1. Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal

The Basel Convention deals with hazardous wastes. It is the response of the international community to the problems caused by the annual world-wide production of 400 million tones of wastes which are hazardous to people and the environment because they are toxic, poisonous, explosive, corrosive, flammable, ecotoxic or infectious. This Convention strictly regulates the transboundary movement of hazardous wastes and establishes obligations for its Parties to ensure that such wastes are managed and disposed of in an environmentally friendly manner.

The Convention has the following main principles –

- Transboundary movements of hazardous wastes should be reduced to a minimum consistent with their environmentally sound management;
- Hazardous waste generation should be reduced and minimized;
- Hazardous wastes should be treated as disposed of as close as possible to their source of generation; and
- Efforts should be made to assist developing countries (and countries with economies in transition) with the environmentally sound management of hazardous and other waste they generate.

*Major provisions –*

The Convention establishes the following responsibilities –

- Parties can decide to prohibit the import of hazardous and other wastes. They shall inform other Parties of the decision. These other Parties, once informed, shall not permit the export of hazardous wastes to those Parties that prohibited the import.
- Parties are to prohibit the export of hazardous and other wastes if the State of import does not consent in writing to the specific import. States of export shall not allow the generator of hazardous and other wastes to commence transboundary movement until they receive written confirmation of the consent.

- Parties are to prohibit all persons under their jurisdiction from transporting or disposing of hazardous or other wastes unless they are authorized or allowed to perform such types of operation.
- Parties are to designate competent authority(ies) as focal points to receive notifications.
- Parties are to cooperate with the objective of achieving the environmentally sound management of hazardous and other wastes.
- In case of an accident during the transboundary movement of hazardous or other wastes, or their disposal, that is likely to present risks to human health and the environment in other States, those States must be immediately informed.

### H.1.2. The Waigani Convention -

The Waigani Convention also deals with wastes but within the Pacific Islands region only. Besides recognizing the waste problem and the need to address it regionally, Pacific Island countries were also concerned with

- the dangers posed by radioactive wastes to the people and the environment of the Pacific;
- the threat resulting from the attempts made by numerous unscrupulous foreign wastes dealers for the importation into an disposal within the Pacific region of hazardous and radioactive wastes; and
- the lack of expertise and technology in Pacific Island countries to dispose such wastes in a sound and environmentally friendly manner.

The Waigani Convention aims at

- Reducing the transboundary movement of hazardous wastes to a minimum consistent with their environmentally sound management;
- Prevent and minimize their generation;
- Treat an disposing hazardous wastes as close as possible to their source of generation in an environmentally sound way;
- Actively promoting the transfer and use of cleaner technology.

### H.1.3 United Nations' Framework Convention on Climate Change (UNFCCC)<sup>13</sup>

The UNFCCC is the foundation of global efforts to combat global warming. Opened for signature in 1992 at the Rio Earth Summit, its ultimate objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [ human-induced] interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."

The Convention sets out some guiding principles.

- The 'precautionary principle' says that the lack of full scientific certainty should not be used as an excuse to postpone action when there is a threat of serious or irreversible damage.
- The principle of the "common but differentiated responsibilities" of states assigns the lead in combating climate change to developed countries.
- Other principles deal with the 'special needs of developing countries' and the importance of 'promoting sustainable development'.

---

<sup>13</sup> Extracted from <http://unfccc.int/>

Both developed and developing countries accept a number of general commitments.

- All Parties will develop and submit "national communications" containing inventories of greenhouse gas emissions by source and greenhouse gas removals by "sinks".
- They will adopt national programmes for mitigating climate change and develop strategies for adapting to its impacts.
- They will also promote technology transfer and the sustainable management, conservation, and enhancement of greenhouse gas sinks and "reservoirs" (such as forests and oceans).
- In addition, the Parties will take climate change into account in their relevant social, economic, and environmental policies; cooperate in scientific, technical, and educational matters; and promote education, public awareness, and the exchange of information related to climate change.

Industrialized countries undertake several specific commitments.

Countries collectively known as Annex I countries – committed themselves to adopting policies and measures aimed at returning their greenhouse gas emissions to 1990 levels by the year 2000 (emissions targets for the post-2000 period are addressed by the Kyoto Protocol). They must also submit national communications on a regular basis detailing their climate change strategies. Several states may together adopt a joint emissions target. The countries in transition to a market economy are granted a certain degree of flexibility in implementing their commitments.

The richest countries shall provide "new and additional financial resources" and facilitate technology transfer. These so-called Annex II countries (essentially the OECD) will fund the "agreed full cost" incurred by developing countries for submitting their national communications. These funds must be "new and additional" rather than redirected from existing development aid funds. Annex II Parties will also help finance certain other Convention-related projects, and they will promote and finance the transfer of, or access to, environmentally sound technologies, particularly for developing country Parties. The Convention recognizes that the extent to which developing country Parties implement their commitments will depend on financial and technical assistance from the developed countries.

The supreme body of the Convention is the Conference of the Parties (COP).

The COP comprises all the states that have ratified or acceded to the Convention (185 as of July 2001). Two other subsidiary bodies are created to provide technical advice (Subsidiary Body for Scientific and Technological Advice (SBSTA)) and the Subsidiary Body for Implementation (SBI). The SBI helps with the assessment and review of the Convention's implementation.

The COP's role is to promote and review the implementation of the Convention. It will periodically review existing commitments in light of the Convention's objective, new scientific findings, and the effectiveness of national climate change programmes. The COP can adopt new commitments through amendments and protocols to the Convention; in December 1997 it adopted the Kyoto Protocol containing binding emissions targets for developed countries.

A financial mechanism provides funds on a grant or concessional basis.

The Convention states that this mechanism shall be guided by, and be accountable to, the Conference of the Parties, which shall decide on its policies, programme priorities, and eligibility criteria. There should be an equitable and balanced representation of all Parties within a transparent system of governance. The operation of the financial mechanism may be entrusted to one or more

international entities. The Convention assigns this role to the Global Environment Facility (GEF) on an interim basis; in 1999 the COP decided to entrust the GEF with this responsibility on an on-going basis and to review the financial mechanism every four years. In 2001 the COP agreed on the need to establish two new funds under the Convention – a Special Climate Change Fund and a fund for least developed countries – to help developing countries adapt to climate change impacts, obtain clean technologies, and limit the growth in their emissions. These funds are to be managed within the GEF framework. (The COP also agreed to establish an Adaptation Fund under the 1997 Kyoto Protocol.) The COP and its subsidiary bodies are serviced by a secretariat. The interim secretariat that functioned during the negotiation of the Convention became the permanent secretariat in January 1996.

Samoa signed the UNFCCC during the Rio Earth Summit in June 1992 and ratified it on the 29 November 1994.

#### H.1.4. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

The objectives of the Convention are –

- To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; and
- To contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

The Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure. It builds on the existing voluntary PIC procedure, operated by FAO and UNEP since 1989, and takes into account experience gained during the implementation of the voluntary procedure (as set out in the London Guidelines for the Exchange of Information on Chemicals in International Trade and the FAO International Code of Conduct on the Distribution and Use of Pesticides).

##### *Major Provisions –*

The Convention establishes the principle that export of a chemical covered by the Convention can only take place with the prior informed consent of the importing party. The PIC procedure established under the Convention is the means for formally obtaining and disseminating the decisions of importing countries as to whether they wish to receive future shipments of specified chemicals and for ensuring compliance to the decisions by exporting countries.

The Convention also contains provisions for the exchange of information among Parties about potentially hazardous chemicals that may be exported and imported.

The Convention initially covers 22 pesticides and 5 industrial chemicals, with more expected to be added to this list. Most of the 12 POPs are also included in the PIC procedure.

For an importing country such as Samoa, with respect to the exchange of information, the Convention establishes

- the requirement for it to inform other Parties of each national ban or severe restriction of a chemical;
- the possibility for Samoa as a developing country to inform other countries that it is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory;
- the requirement for a Party that plans to export a chemical that is banned or severely restricted for use within its territory, to inform the importing Party that such export will take place, before the first shipment and annually thereafter;
- the requirement for an exporting Party, when exporting chemicals that are to be used for occupational purposes, to ensure that an up-to-date safety sheet is sent to the importer; and
- labelling requirements for exports of chemicals included in the PIC procedure, as well as for other chemicals that are banned or severely restricted in the exporting country.

#### H.1.5. Vienna Convention on the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer

The objectives of the Convention are –

- To protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer;
- To adopt agreed measures to control human activities found to have adverse effects on the ozone layer;
- To cooperate in scientific research and systematic observations;
- To exchange information in the legal, scientific and technical fields.

The basic goal of the Montreal Protocol is to protect the ozone layer by taking precautionary measures leading to total elimination of global emissions of ozone-depleting substances (ODS) on the basis of developments in scientific knowledge, taking into account technical and economic considerations and the needs of developing countries.

Major Provisions –

The Convention establishes the following responsibilities –

Parties to cooperate in research concerning substance and processes that modify the ozone layer and on human health and environmental effects of such modifications, and on alternative substances and technologies;

- Parties to cooperate in the systematic observation of the State of the Ozone Layer
- Parties to cooperate in the formulation and implementation of measures to control activities that cause adverse effects through modification of the ozone layer and, particularly in the development of protocols for such purposes;
- Parties to exchange scientific, technical, socio-economic, commercial and legal information relevant to the Convention, and cooperate in the development and transfer of technology and knowledge.

#### H.1.6. The Stockholm Convention on Persistent Organic Pollutants (POPs)

The Stockholm Convention is a global treaty to protect human health and the environment from persistent organic pollutants (POPs). POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. POPs circulate globally and can cause damage wherever they travel. In implementing the Convention, Governments will take measures to

eliminate or reduce the release of POPs into the environment. Samoa signed on 23 May 2001 and ratified it on 1 Feb 2002 and which was confirmed in New York on 12 March 2002.

This Convention has the following aims –

- Eliminate dangerous POPs, starting with the 12 worst
- Support the transition to safer alternatives
- Target additional POPs for action
- Clean-up old stockpiles and equipment containing POPs, and
- Work together for a POPs-free future

A number of obligations are required of parties but the following are especially relevant for Samoa

- Develop within two years, national plans for implementing the Convention and to designate national focal points for exchanging information on POPs and their alternatives.
- Develop and implement strategies for identifying stockpiles and products and articles containing POPs, and once identified, manage them in a safe, efficient and environmentally sound manner.
- Take steps to reduce the release of dioxins and furans, hexachlorobenzene, and PCBs as byproducts of combustion or industrial production with a goal of their continuing minimization and where feasible, ultimate elimination.
- Phase out by 2025 ‘in-place equipment’ such as electrical transformers and capacitors containing PCBs, as long as the equipment is maintained in a way that prevents leaks; and three years from date of Convention coming into force to destroy recovered PCBs;
- Register for country-specific exemptions permitting them to use existing stocks of aldrin, dieldrin, and heptachlor and limited production of other POPs.
- Increase public awareness of the dangers of POPs.

## H.2 Capacity issues related to Conventions –

The obligations that Samoa has accepted as a party to the Stockholm Convention and other various international agreements discussed above demand an appreciable level of capacity in the following five areas -

- development of national legislation to give effect to party obligations under international agreements;
- national reporting and communication;
- participation in international meetings and conferences related to conventions; and
- technical and managerial capacity to develop funding proposals, manage Conventions-funded activities and projects and
- monitoring and enforcement of obligations.

### H.2.1. National legislation

In terms of the Stockholm Convention, the following table summarizes the various POPs and PTS and the legal instruments that are applicable for their enforcement.

Table 7: POPs & PTS – Status, Applicable Legislation & Actions

<i>POPs/PTS</i>	<i>Presence</i>	<i>Status</i>	<i>Applicable legislation</i>	<i>Remedial actions/Options</i>
Aldrin	✓	Non-consent for import since 1998 under PIC	Pesticides Regulation 1990	
Chlordane	✓	Non-consent for	Pesticides Reg 1990	Alternative pesticide

		import since 1993		('Icon') imported. Disposal arrangements to be finalized. <sup>14</sup>
DDT	✓	Non-consent for agricultural use since 1993	Pesticides Reg 1990	Existing stockpiles to be shipped out under a SPREP/AusAID project; contaminated sites clean-up
Dieldrin	✓	Non-consent for import since 1998	Pesticides Reg 1990	Existing stocks to be shipped out; contaminated sites clean-up
Dioxins	✓	Unintentional release	LSE Act 1989 (burning on govt land only); Forest Act 1967 – regulate lighting of fires on all lands.	Reduction using BAT/BEP.
Furans	✓	Unintentional release	LSE Act 1989 (burning on govt land only); Forest Act 1967	Reduction using BAT/BEP.
Heptachlor	✓	Non-consent for imports since 1994	Pesticides Reg 1990	An alternative pesticide ('Icon') is imported. Any existing stock will be shipped out for disposal.
PCBs	✓	Non-consent for import since 1993. Phased out in exporting countries.	MNRE Bill 2003 s16.2g	Existing stocks to be shipped out; site contamination below international standards.
Other hazardous industrial 'industrial chemicals' (TBH/PAH, TBT, CCA/PCP etc).	✓	PCP in PIC, and for which TBT has 1 of 2 required regional nominations; PAH a PTS; TBH	MNRE Bill 2003	This is a weak area in the current legal framework. A thorough legal review is suggested to explore the best options for addressing this effectively.
Lindane	✓	Non-consent for agricultural use since 2000; exempted for pharmaceutical use	Pesticides Regulations 1990; Poisons Regulations 1969.	Phase out pharmaceutical use as 3 alternatives available.

Earlier in this report (Review of legislation), a proposal for a thorough review of the existing legislation to examine the best options available for addressing several legal issues raised is made. The same review should also include looking at the extent to which the current framework is providing for other obligations Samoa has taken on under other related conventions discussed above.

PUMA and MNRE have increasingly looked to expertise in the private sector to undertake work of this nature. This approach is expected to continue with this proposed review. MNRE has two legal officers amongst its staff who should play a key part in coordinating and managing this exercise.

<sup>14</sup> Chlordane disposal could require further stockholder discussion e.g. IPC, MAFFM, ASC et al (B. Cable, 2004).

### H.2.2. National reporting and communication –

Despite being a new agency, PUMA has established a public profile with its activities on POPs, waste management and through its sustainable development planning work. The agency is ably led and this leadership is evident in the proactive involvement in the POPs NIP, waste management, and in Samoa's active participation in the Stockholm Convention Working Group for the proposed Financial Mechanism.

PUMA is yet to be required to submit a national report but has been active in its communication to the Convention Secretariat on resolutions of the Intergovernmental Negotiations Committee (INC) (Cable/Sesega, pers comm., 2004). The expertise and experience in coordinating work on the compilation of national reports clearly exists within the agency, and for that matter within the Ministry, as demonstrated in national reports compiled and submitted in the recent past for other environmental conventions. Outsourcing these types of work to consultants is an option available to PUMA.

### H.2.3. Participation in Conventions-related meetings and conferences –

Samoa has consistently been actively represented at the appropriate level at Conferences of Parties, INCs, technical meetings and other technical working group meetings of the Convention. This would be the least of PUMAs or MNRE's concerns. Regional meeting and training workshops have been well-attended.

PUMA's willingness to extend the opportunity for participation in some of these technical training and meetings to representatives of other Ministries on the NTT shows a commitment to building capacity across other agencies and sectors.

### H.2.4. Technical and managerial capacity -

PUMA's capacity to effectively manage funded projects may be gauged from on-going projects including the Reduction of Waste Materials Project (JICA funded) and progress thus far made on the POPs NIP. Both projects engaged outside contractors and have progressed well to date with PUMA's effective coordination and guidance.

PUMA's in-house capacity is discussed under section G. Overall, PUMA's capacity needs strengthening in a number of key areas. There is considerable potential in its existing staff which will be realized fully with more hands-on experience, further short-term training and in-house mentoring. PUMA's close proximity to SPREP also presents an opportunity for short-term attachments to technical experts in that organization. Likewise, possible collaboration with NUS in environmental monitoring should be explored. There is also in-house experience in the management of contractors with lessons learned from recent reviews (UNDP, 2003) already showing its benefits in this area.

The ability of MAFFM is to follow through with the enforcement of pesticides related activities is noteworthy. The Ministry had issued several non-consents under the Rotterdam Convention for all POPs pesticides, and several PTS including 2,4,5-T. There is close cooperation with PUMA and the NTT with respect to pesticides registration, determination of non-consents and exemptions as well as provision on information on alternatives to banned pesticides.

### H.2.5. Monitoring and enforcement of Conventions obligations –

Enforcement of national legislation including those related to resource management and environmental protection is renowned region-wide for its laxity and ineffectualness. In Samoa, there have been noted successes with non-consents for a number of products and chemicals under the Pesticides Regulation 1990. But there are gaps in the regulation of imports that need plugging and which have been discussed elsewhere in this report. The MNRE Bill needs to be enacted as a matter of priority to provide PUMA with regulatory powers over a wide range of industrial chemicals that are hazardous. Similarly, the legal review proposed should provide options for strengthening other weaknesses in the existing legal framework.

### H.3 Capacities available through international conventions –

As party to several international conventions, Samoa has access to financial assistance for projects and funding to support country participation in technical experts meetings, training workshops and convention-related conferences. Access to convention-related scientific and technical information, planning guidelines, technology, tools, lists of experts and a range of other useful information is unlimited via the Internet. This information resource is indispensable to the NIP planning exercise.

Other information, tools etc includes model legislations that parties can adopt in total or in part to make amendments to national legislations, manuals for implementation, technical guidelines for planning, country reports on Convention implementation, information on alternative technologies, sources of alternative technologies, and so on.

The following table looks at the various international conventions in terms of the kinds of contributions and technical assistance available that Samoa can tap into –

Table 8: Conventions and technical assistance available

Name of Convention	Types of technical assistance available to Parties				
	Model legislation	Manuals for implementation	Technical guidelines	Training workshops	Internet based clearing house mechanisms
Stockholm Convention	?	?	✓	✓	proposed
Vienna Convention & Montreal Protocol	?	✓	✓	✓	✓
Basel Convention	✓	✓	✓	✓	✓
Waigani Convention	?	?	✓	✓	✓
Rotterdam Convention	?	?	✓	✓	✓
Convention on Biodiversity	✓	✓	✓	✓	✓

### H.4 Findings and Recommendations –

Table 9 - Recommendations

#	Recommendations	Implementing agencies
---	-----------------	-----------------------

1	Strengthen PUMA's middle level management capacity with short-term training and attachments.	PUMA, MNRE, MOF, PSC.
2	Explore possibility of short-term attachments to SPREP for PUMA staff.	PUMA, SPREP, MFAT
2	Improve direct access for all PUMA staff to internet-base information relevant to NIP and implementation.	PUMA
3	Outsource work to competent private contractors to augment PUMA's limited technical capacity.	PUMA
4	Promote the enactment of the MNRE Bill as a matter of priority, to strengthen PUMA's regulatory authority over hazardous substances.	AGO, MNRE, PUMA, NTT

## I. Private sector initiatives and operations

### I.1. Private importers, retailers, users of chemicals –

- Pest management operations
  - Pest Management Samoa
  - Island Pest Management
  - Other unregistered individuals are also engaged in pest management, apparently involving the treatment of several large manufacturing premises including Vailima Breweries.
- Agricultural and Cleaning chemical suppliers
  - Agricultural Stores Corporation – the major local supplier of agricultural chemicals, fishing and farming equipment and supplies. Partly government owned. Inventory of chemicals imported and sold is annexed. Inventory of old stocks of pesticides that needs disposing was covered under the 2003 SPREP project.
  - Farm Supplies – private company that specializes in supplying agricultural chemicals of a wide range. Inventory of chemicals retailed is annexed. Provides no training for the safe use of its chemicals other than make available to buyers' instructions for their proper use.
  - Arco Chemical – private outfit that specializes in supplying chemicals for cleaning services. A range of chemical products are imported in concentrated solution and mixed to client specifications at company storage facilities. ARCO also operates a pesticide control services for homes, offices, etc..
  - Southpac Cleaners – major user of cleaning chemicals. It is not known if they import directly although some of their chemical needs are supplied locally.

#### **Other operations –**

Well-sourced information received in the course of compiling this review point to several individuals operating unregistered pest control and cleaning services, and in some cases importing chemicals in bulk for these purposes. Attempts to trace these operations down were not successful.

## I.2 Findings and Recommendations -

**Table 10: Recommendations**

#	Recommendations	Implementing agencies
1	Engage the main importers of pesticides and other chemicals in the NIP planning process.	PUMA, NTT
2	Ascertain EPC's commitment to non-PCB transformers.	EPC, PUMA, NTT
3	Conduct inventories of all private operators involved in activities with significant chemical use. Obtaining details of their chemical inventories, methods of operation and sites treated.	PUMA, NTT, ASC, Farm Supplies, Arco Chemicals and others.

## J. Regional activities involving Samoa

### J.1. Regionally executed activities

#### J.1.1. SPREP-UNEP Collaboration

SPREP collaborates closely with UNEP in providing technical assistance and support to member countries in capacity building. Sub-regional workshops such as the 2001 workshop for developing NIPs for the Stockholm Convention (Nov 2001, Apia), the Nadi Fiji workshop on Toolkit estimation of Dioxins/ Furans and ecotoxicology, compilation of regional studies and reports such as the Pacific Island Countries Regional Report assessing PTS in the region (UNEP Dec 2002) and others. The latest workshop for developing NIPs held in Vanuatu in February 2004 included risk assessment that Samoa had suggested at the Nadi workshop and was presented by SPREP.

SPREP has on its professional staff one professional officer that coordinates the POPs project. The position provides technical advice for member countries on POPs and PTS related issues, and coordinates regional activities on SPREP's work program including those carried out in collaboration with UNEP.

#### J.1.2. SPREP/AusAID POPS in PICs Project

This regional project looked at the disposal of PCB stockpiles and obsolete pesticides. Phase I involved predominantly the assessment of stockpiles of wastes and obsolete chemicals and identification of contaminated sites in 13 PICs. Other phase I activities included education and awareness programmes in each country and a review of relevant legislation. Samoa was a participant in Phase I of this work.

Phase II involved the preparation of more detailed inventories and then the collecting, transporting and disposing of the wastes, to a suitable Australian facility. The first part of Phase II is largely completed with visits to Samoa to carry out detailed inventories, including testing of all stockpiled transformers.

A major finding of this project is the revision of the original estimated amount of PCB contaminated oils from 130 tonnes to only 12.5 tonnes. This has afforded PUMA to expand the scope of its project to include other chemicals.

Other areas of progress in this project is the completion of a full inventory of all pesticides and PCB contaminated oils in Nov 2002 and the appointment of GHD Pty Ltd as the Australian Management Contractor (AMC) to carry out the remaining activities. GHD will dispose of the waste at the BCDT/SRL Plasma plant in Narangba, north of Brisbane, Queensland.

### J.1.3. SPC's Regional Project on Pesticides Legislation

SPC is currently (Nov 2003) implementing a project aimed at promoting the harmonization of pesticide legislation in the region. The new legislation will align the countries with FAO's code of conduct and other conventions on pesticides. The initiative to harmonise pesticide legislation was requested by the countries of the region to SPC through its usual regional meetings.

The expected output is a model pesticide legislation that Pacific members of SPC will follow and legal/technical advice to countries in revising, amending etc of their pesticides laws. In October/November 2003, consultations took place with a number of country representatives in the three main countries involved i.e. Tonga, Cook Islands and Samoa. In Samoa, MAFFM, SPREP and FAO were the main parties consulted. The Project Leader commented that while Samoa already has a law, it needed to be revised, amended and updated. There is expectation that this update will follow the model legislation being developed. A report of this project is pending.

## J.2. Findings and Recommendations -

Table 11: Recommendations on Regional Activities

#	Recommendations	Implementing agencies
1	Actively participate in the AusAID/SPREP initiative for the stockpiling and shipment of existing stocks of hazardous wastes for disposing Samoa's stockpile of POPs and PTS.	PUMA, MFAT
2	Review the model law being developed as an output of SPC's regional project on pesticides legislation within the context of the broader legal review proposed elsewhere in this report for all chemical related legislation.	PUMA, MAFFM, AG
3	Collaborate closely with SPREP to easily access UNEP funded capacity building activities and to SPREP's own technical expertise and other resources in this area.	PUMA

## K. Essential Information Resources –

### K.1. Information availability

The availability of quality and up-to-date data and information is an important aspect of Samoa's capacity to plan and management POPs and PTS. Some of this information is generated locally while others are compiled and made available for Convention parties such as Samoa by Convention Secretariats and other international agencies. There is also a significant body of technical information that is severely lacking not only in Samoa but throughout the Pacific Islands region. A

lot of this technical information requires scientific expertise and a commitment to scientific research that Samoa does not have or can afford.

This section reviews some of the essential information that would be needed for NIP planning and implementation.

#### **K.1.1. Historical inventory of pesticides imported -**

An inventory of pesticides imported into Samoa for as far back as there are records would have given PUMA a valuable starting point in determining the likely presence or absence of POPs and PTS. An attempt made during this study to initiate this was unsuccessful. Historical records were largely destroyed during the two cyclones of the early 1990's.

#### **K.1.2. Register of Pesticides Approved by PTC**

The Pesticides Regulation 1990 requires the Registrar to maintain a register of pesticides approved by the PTC. He/She is also required to provide the Controller of Customs with this list to assist Customs Officers with border-control checks operations against illegal importation. A new register is currently being compiled by the new Pesticides Registrar.

#### **K.1.3. List of permits approved and granted by PTC -**

The Pesticides Regulation 1990 also requires of the Registrar to keep a register of all permits granted. Consultations done for this report showed incomplete information on permits. A new register is currently under compilation.

#### **K.1.4. Inventories of stocks by current registrants – ASC, Farm Supplies, Pest Management Samoa**

Inventories of imported pesticides and other chemicals by the Agricultural Stores Corporation, Farm Supplies and Scientific Pest Management Samoa were compiled and made available to PECL for this assessment.

#### **K.1.5 Schedule of Poisons under the Poisons Regulation;**

The Poisons Act 1968 and Pesticides Regulation 1969 has under its supporting Schedules 1 – 8 the complete list of poisons, poisonous substances, exemptions under this regulation, prescription poisons, and prohibited substances covered under this legislation. Listed on these schedules are many of the POPs and PTS targeted in this study.

#### **K.1.6. Inventory of POPs and PTS –**

An inventory of POPS and PTS has been compiled (PECL, 2004b).

#### **K.1.7. Emission estimates for dioxins and furans –**

Estimates are being calculated and presented as a part of the the Inventory (PECL, *ibid*) and NIP.

#### **K.1.8. Information on stockpiles and contaminated sites –**

Part of this information was compiled by SPREP and updated by GHD for disposal. More information to add to this has been generated as part of the PECL work (PECL, *ibid*).

#### **K.1.9. Environmental assessments of discharges from existing dump sites -**

This is another significant information gap that needs to be addressed.

#### **K.1.10. Inventory of used transformers**

A SPREP survey (Burns et al, 2000) identified stockpiles of old transformers and transformer oils throughout Samoa. The MWH POPs Project, GHD and PECL surveys done as part of the NIP exercise will add to this with further field counts.

#### K.1.11. Information on human toxicology and ecotoxicology of PTS –

This is a regionally lacking and reflects on the lack of expertise, funding and scientific research capacity.

Table 12: Critical Information Gaps -

Type of Information	Possible Source of Information	Status		
		Absent	Present	Under compilation or being updated
Historical inventory of pesticides	MAFFM	✓		
Register of Pesticides	MAFFM	?		✓
Register of importing licenses granted	MAFFM	✓		✓
Inventories of existing stocks of pesticides	Importers		✓	✓
Schedule of poisons approved	MoH		✓	
Initial inventory of POPs and PTS	MNRE		✓	✓
Emissions estimated for dioxins and furans	MNRE	✓		✓
Information on stockpiles and contaminated sites	MNRE		✓*	✓
Environmental assessments of discharges from existing dump sites	MNRE	✓		
Inventory of used transformers	SPREP	✓		✓*
Data on fate and transport of PTS in the region	SPREP	✓		
Detailed site descriptions of identified contaminated sites.	MNRE		✓*	✓
Information on human toxicology and ecotoxicology	SPREP?MNRE?	✓		
Lessons learned or best practices on PTS management in other PICs	SPREP	✓		

\* - partial/incomplete

#### K.2. Findings and recommendations regarding key information gaps

. #	Recommendations	Implementing agencies
1	Ensure the compilation of all registers required under the Pesticides Regulation 1990.	MAFFM, NTT
2	Support the continuing testing of used transformers for PCB.	EPC, PUMA
3	Encourage SPREP to support activities aimed at compiling data on the fate and transport of PTS around the region and to encourage research by appropriate institutions on toxicology and eco-toxicology of PTS in the region.	SPREP, PUMA

4	Compile data to address other information gaps identified in Table 12.	MAFFM, PUMA, NTT
---	--	------------------

## L. Public awareness and understanding of POPs and PTS

### L.1. Status Quo

The importance of public awareness and understanding of the threat to public health and the environment pose by POPs and PTS, or hazardous chemicals generally, is pivotal to all efforts aimed at regulating the importation, use and ultimately the elimination of POPs and PTS.

Raising public awareness is a key objective and a major component of the POPs Project implemented by PUMA. A number of activities specifically designed to promote awareness and targeting key stakeholders have been conducted over the last 2 years. More are also planned for implementation over the 2004.

The range of awareness activities implemented and their coverage is both diverse and wide-ranging. A quantitative assessment of their impact is not possible due to time and information constraints. However, a recent UNDP review (Bruce Graham, Oct 2003) of the POPs Project reported favorably on the high level of awareness already achieved. This report also noted the need for continuing awareness activities and a shift in focus to villages and local communities.

PUMA also evaluated students based on a questionnaire survey following two NCAD workshops and found a high percentage (21%) of students having learned of POPs for the first time through the Project awareness activities. The implication is that strategically targeted awareness and public education activities should continue as a priority.

A summary tabulation of awareness activities undertaken by PUMA over the last two years is presented in the table below.

Table13 : Awareness raising organized and implemented by PUMA - Activity	Target audience/participants	Comments
National Events – <ul style="list-style-type: none"> <li>o National Chemical Awareness Day 2002</li> <li>o National Chemical Awareness Day 2003</li> </ul>	Cabinet ministers, officials, schools, public in general	Nationally broadcasted and with TV coverage
Public workshop <ul style="list-style-type: none"> <li>o Tooa Hall, Apia</li> <li>o Tuasivi, Savaii</li> </ul>	General public, schools	In collaboration with EPC
Information Kit	Primary and secondary schools – national wide	

Public Displays	General public at venues	Displayed as part of NCAD
Paper presentation <ul style="list-style-type: none"> <li>o NUS Seminar (26/3/03)</li> <li>o IWP Workshop (Apolima)</li> <li>o IWP Workshop (Lepa)</li> <li>o Environment Forum (NUS) 2003</li> </ul>	Professionals, academics, villagers (Lepa & Apolima-tai)	Technical presentation at NUS;
Radio <ul style="list-style-type: none"> <li>o Recorded show (4x)</li> <li>o Live talk-back show</li> </ul>	General public	Radio 2AP 2002; 18 & 25/3/03
National Task Team meetings	Reps of government departments & corporations	For project coordination and monitoring purposes.
Newspaper <ul style="list-style-type: none"> <li>o articles</li> <li>o advertisements,</li> <li>o press releases</li> <li>o puzzles and quizzes</li> </ul>	General public	Samoa Observer newspaper
Other awareness activities – <ul style="list-style-type: none"> <li>o T-shirts</li> <li>o Support for students research</li> </ul>	National Task Team members; MNRE staff	

## L.2. Recommendations related to public awareness raising

#	Recommendations	Implementing agencies
1	Conduct appropriate public awareness and education activities of POPs and PTS as a matter of priority.	PUMA, NTT
2	Target local communities in public awareness activities.	PUMA, NTT
3	Promote the NIP nationally to raise awareness and obtain wide stakeholder support for its implementation.	PUMA, NTT
4	Ensure adequate public and sectoral participation and consultation in the formulation of the NIP.	PUMA, NTT
5	Promote public awareness of the various approval processes for obtaining importation permits for pesticides and other potentially hazardous chemicals.	MAFFM, MOH

## M. Conclusions

Within the constraints imposed on this review by the paucity of information and data, this report presents an objective assessment of the institutional capacity existing in Samoa that would be needed for the development of its National Implementation Plan (NIP) and its subsequent implementation. The review has analyzed existing legal frameworks, the capacities of various institutions, organizations and agencies, available information and the state of public readiness to embrace and contribute to NIP's formulation and implementation. The results of this assessment are presented in detailed in the various sections on 'findings and recommendations'.

To reiterate some of the key findings, the existing legal framework for regulating pesticides POPs and PTS importation and movement is well defined and robust. There is a need to clarify definitions

of related terms governing the scope of the various legislation (such as ‘toxic substances’, ‘drugs’, hazardous substances’ etc.) to address existing uncertainties and possible overlaps, and to tighten up on conditions for reporting on the fate of pesticides imported for research purposes. For non-pesticides POPs and PTS, the importation of chemicals for industrial use represents an apparent loophole that needs plugging. Enacting the MNRE Bill would help address this. A complete legal review of environmental related laws is also recommended to examine the larger issue of possibly consolidating the various laws related to hazardous substances and their management, and how best to legislate for Samoa’s growing list of obligations under an increasing number of international agreements and conventions.

A range of agencies, institutions and operators in the government and non-government sectors have varying capacities that, taken together, comprises the total capacity Samoa has for the formulation and implementation of its NIP. There are clearly aspects of hazardous waste management that are beyond the reach of this capacity, such as the disposal of highly toxic substances such as PCBs. Training in key skills areas, especially for PUMA is important. The compilation and management of certain critical information and raising public awareness are areas wherein some capacity exists. Further strengthening in these areas is needed.

The large number of organizations and agencies with the potential to contribute to NIP planning and implementation points to the need for an effective mechanism for multi-agency coordination. One exists in the form of the National Task Team (NTT). This can be further strengthened with the inclusion of some key agencies currently missing. It also needs resources to ensure its sustainability.

A clearly defined agency to lead this initiative is not lacking. PUMA has the mandate and the leadership to deliver on this responsibility. Its’ staff however needs support in a range of key areas as well as funding to effectively perform its range of functions. There are gains in efficiencies to be made with the continued use of private sector experts to augment its limited technical skills in a number of specialized areas.

Finally there are likely to be gaps and omissions in this review due to the paucity of information available. The report however is only one of several inputs from which to construct the final NIP. Thus the opportunities for finding and putting in place the missing pieces have not been exhausted.

\*\*\*\*\*

---

**Annex 1 – List of References used**

---

1. SPREP.2003. *SPREP Waigani Handbook* - provides interlinkages among Chemicals and Hazardous Waste related Conventions (Stockholm, Rotterdam, Basel and Waigani Convention). Available in CD-Rom and hard copy.
2. UNEP Chemicals. 2001. Proceedings – Sub-regional awareness raising workshop on Prior Informed Consent Procedure, Persistent Organic Pollutants and the Basel and Waigani Convention. 2-6 April, 2001, Cairns Australia. UNEP.
3. *Basel and Waigani Conventions – Interlinkages amongst Chemicals and Hazardous Waste-related Conventions*
4. UNEP. 2003. *Global Report 2003 – Regionally based Assessment of Persistent Toxic Substances*. United Nations/UNEP/GEF. 2003.
5. UNEP. 2002. *Pacific Islands Regional Report – Regionally based Assessment of Persistent Toxic Substances*. GEF/UN/UNEP.
6. PUMA. 2003 (internal report). POPs Enabling Activity –D2 Prepare initial inventory of POPs imports...; D3 – Prepare initial inventory of obsolete POPs ... . PUMA. Apia.
7. UNEP Chemicals. 2000. *Survey of Currently Available Non-incineration PCB Destruction Technologies*. UN/UNEP.
8. UNEP/World Bank. 2002. *Guidance for developing a National Implementation Plan for the Stockholm Convention (Draft Only)*.
9. USP. 2003. The University of the South Pacific – 2004 Calendar. USP Suva.
10. <http://unfccc.int/>
11. <http://www.deh.gov.au>
12. <http://www.unep.ch.ozone>
13. <http://www.unep.org>
14. <http://ww.sprep.org.ws/>

## Annex 2 - List of People Consulted

PUMA	Taulealeausumai Laavasa Malua, A/CEO; Fetolai Yandall-Alama, Project Manager – POPs; Pili Cable, Project Coordinator – POPs.
MNRE	Theresa Potoi-Vaai, Principal Legal Officer; Dhayani Yogesvaran, Senior Legal Officer; Lameko Tasimale Senior Capacity Building Officer
MAFFM	Pimalolo Maiava, Registrar of Pesticides; Asuao Kirifi Pouono, A/CEO Quarantine?; Tofa Siitia – ?Principal Quarantine Officer; Karryn Kwan, Legal Officer; Fata Alo Fania, Senior Crops Officer (NTT member)
Agricultural Stores Corporation	Toomata Aki Tuipea, General Manager; Taele Leuta Saifoloi, Farm Manager (Nu’u)
British American Tobacco	Tagaloa Elisara Gale
EPC	Sale Faletolu
Farm Supplies	Ms Loise Panoa Moala, General Manager
ARCO Chemicals	Ms Lolovai Leutele, Assistant Manager
SPREP	Dr Frank Griffin, POPs Adviser; Clark Peteru – Legal Officer
SPC	Dr Sada Nand Lal, Emtomologist, Suva Fiji
USP-Alafua	Daya Perera
Ministry of Health	Sinei Fili, NTT member; Paulo Pemitia Seuseu
Ministry of Foreign Affairs	Samantha Marfleet – NTT member;
Ministry of Finance	Lina Esera – NTT member;
Ministry for Revenues (Customs)	Faafetai Lautua – NTT member; Maui Alama Mose
Ministry of Transport, Public Works	Sione S Faitala – NTT member
Ministry of Education, Sports & Culture	Hofeni Ah Voa
Ministry of Women, Community and Social Development	Diana Roma
Samoa Ports Authority	Fagaloa Tufuga – NTT member; Legal Officer
Samoa Tourism Authority	Christina Leala
Faleula Farmers Association	Sevao Akeimo, Maugaalii Lafaele
Petroleum Products Supplies	Iopu Pua
Samoa Recycling Ltd/Samoa Association of Manufacturers and Exporters	Jeff Atoa
Others	Dr Bruce Graham – Graham Environmental Consulting Ltd, Auckland, NZ
	Arona Palamo (Private consultant);
	Faainu Latu – National University of Samoa;
	Cedric Schuster – Pacific Environment Consultants Ltd (PECL), Muliagatele Iosefatu Reti (PECL).

### **Annex 3 - Analysis of Available PCB Destruction Technologies –**

The following describes the type of available PCB destruction technologies that Samoa would need to obtain or develop should it opt for the local destruction of PCB-used transformers. As indicated in the report, a proposal for used PCB-dependent transformers to be shipped to Australia for destruction is endorsed. The intention of this annex is to provide readers with a simplified description of the optional technology.

The following is extracted from a UNEP report accessed via the Internet.

#### ***Non-dedicated elimination technologies***

Certain existing industrial equipment has been used to eliminate PCB contaminated materials, in particular waste oils. The most common example is that of cement manufacturing kilns. Fuels used for cement manufacture in kilns can usefully be combined with waste oils contaminated with PCBs, depending upon the chlorine content of the PCBs. The advantage is that the waste material contributes calorific value to the fuel, and is simultaneously destroyed. However, it is imperative that the incorporation of PCB oils to a cement kiln operation be accompanied by strict control of the gas scrubbing equipment, and thus of the possible extra dioxin and furan emissions.

Two other examples of the use of existing industrial equipment for the destruction of PCBs can be cited. Although believed to be used on only a limited scale, they are mentioned here because they represent valid, if non-conventional methods for PCB destruction:

1. Destruction of PCBs in the molten salts found at the base of black liquor recycling boilers in the pulp industry. Molten salts are known to de-chlorinate PCBs and good levels of decontamination can be obtained when the PCBs are introduced into this molten salt;
2. Injection of contaminated waste oils into blast furnaces. Here the combustion and oxidation conditions are favourable to PCB destruction and in addition the basic oxides present in the furnace can react with the by-products, e.g. hydrochloric acid, to neutralize them.

#### ***Process for decontaminating transformers –***

Presently-used technologies for decontaminating transformers can be placed into two main categories –

1. Draining of the PCB oil from the transformer, decontamination of this oil, and re-injection of the decontaminated product into the transformer for re-use. This is retrofilling.
2. Extraction of the PCB oil, solvent washing of the transformer, followed by dismantling and further decontamination of the components to allow recycling of the metal components.

In assessing the above technologies, it is important to consider to what extent the treatment processes are complete, that is to say, that they do not generate small amounts of difficult-to-eliminate residues. Such residues may in particular be the porous materials such as the wood and paper. Few companies cited above as using solvent cleaning carry out a complete decontamination; they are thus obliged to have recourse to incineration to dispose of these residues. This means that the proposed technology will only be applicable in countries where access to suitable incineration facilities exists. (UNEP, 2000 p. 14)

\*\*\*\*\*

**Annex 4 – Flow of information for pesticides registration and import license application**

