National Plan for Implementation of the Stockholm Convention on Persistent Organic Pollutants in Fiji Islands

June 2005

List of Abbreviations

AA	atomic absorption (spectrophotometer)
AGO	Attorney General Office
AusAID	Australian Agency for International Development
BAT/BEP	best available techniques/best environmental practices
BHC	benzene hexachloride
CAS	Chemical Abstracts Service
CCG	Central Coordinating Group
CCOF	Consumer Council of Fiji
CFCs	chlorofluorocarbons
DDT	1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane
DoA	Department of Agriculture
DoE	Department of Environment
DoEH	Department of Environmental Health
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organisation
FBoS	Fiji Bureau of Statistics
FCA	Fiji College of Agriculture
FEA	Fiji Electricity Authority
FICRA	Fiji Islands Customs and Revenue Authority
FMC	Fiji Media Council
ForSec	Forum Secretariat
FSC	Fiji Sugar Corporation
GC	gas chromatograph
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	geographic information systems
HPLC	high-pressure liquid chromatograph
IFCS	Inter-governmental Forum on Chemical Safety
ILO	International Labour Organisation
IMO	International Maritime Organisation
IPM	Integrated Pest Management
ISIC	International Standard Industrial Classification (of economic activities)
ISO	International Standards Organisation
LLEE	Live and Learn Environmental Education
LMC	Landfill Management Company
LTA	Land Transport Authority
MALSR	Ministry of Agriculture, Sugar and Land Resettlement
MC	Municipal Councils
MFAET	Ministry of Foreign Affairs and External Trade
MFF	Ministry of Fisheries and Forests
MLGHSSE	Ministry of Local Government, Housing, Squatter Settlement and Environment
MLIRP	Ministry of Labour, Industrial Relations and Productivity
MLMR	Ministry of Lands and Mineral Resources
MoE	Ministry of Education
MoF	Ministry of Finance
MoH	Ministry of Health
MPAF	Maritime & Ports Authority of Fiji
MPD	Ministry of Provincial Development
MSDS	Material Safety Data Sheets
MTCA	Ministry of Transport and Civil Aviation
MWE	Ministry of Works and Energy
NFU	National Farmers Union
NGOs	Non-Governmental Organisations
NOHS	National Occupational Health & Safety
ODS	ozone-depleting substances
OECD	Organisation for Economic Cooperation and Development
OHS	occupational health and safety
PCBs	polychlorinated biphenyls
PCDDs	polychlorinated dibenzo-p-dioxins
PCDFs	polychlorinated dibenzofurans
PCRC	Pacific Concerns Resource Centre
PIC	prior informed consent
PICs	Pacific Island Countries
PMWC	Private Municipal Waste Collectors
POPs	Persistent Organic Pollutants
SITC	Standard International Trade Classifications
SOPAC	South Pacific Applied Geoscience Commission
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SCGC	Sugar Cane Growers Council
TPAF	Training & Productivity Authority of Fiji
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNITAR	United Nations Training and Research Organisation
USP	University of the South Pacific
WHO	World Health Organisation
WTO	World Trade Organisation

Executive Summary

Background

This document presents a national plan for the implementation of the Stockholm Convention on Persistent Organic Pollutants in the Republic of the Fiji Islands. Fiji was the second country in the world to ratify the Stockholm Convention, having done so on 20 June 2001. The Convention entered into force on 17 May, 2004.

The objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants (POPs). The convention currently covers the following twelve chemicals: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene, hexachlorobenzene (HCB), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*p*-dioxins, and polychlorinated dibenzofurans. The first nine of these are pesticides. HCB is also classed as an industrial chemical, as are PCBs, while the dioxins and furans are formed as unintentional by-products in combustion processes and some industrial activities. These chemicals are to be controlled through various actions, including prohibiting future production and use of most of the pesticides and industrial chemicals, and the application of a range of measures for the reduction of releases of the unintentional POPs.

This Plan was developed with financial assistance from the Global Environment Facility, with the United Nations Environment Programme as Implementing Agency. The funds were provided for an enabling activity project to cover a range of activities which were broadly aimed at creating sustainable capacity and ownership in Fiji in relation to the Stockholm Convention, including preparation of a National Implementation Plan. The work for the project was guided by a National Coordinating Committee, which included representation from central government, non-governmental organisations, education and research institutions, and the private sector. Consultation with stakeholders was an important element in the preparation of the National Implementation Plan. This was achieved through a combination of one-on-one consultations, presentations and a number of national workshops.

Persistent Organic Pollutants in Fiji

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

POPs Pesticides

There is no evidence of any current trade by Fiji in POPs chemicals. The POPs pesticides BHC, chlordane, dieldrin and DDT were previously approved for use in Fiji but these registrations were withdrawn some years ago, and the pesticides were formally banned in 1995. None of the other five POPs pesticides have ever been registered for use in Fiji, although they are not formally banned.

Recent surveys of pesticide users, along with a limited amount of evidence of environmental contamination, indicate a need for much better monitoring and enforcement of the current controls over POPs and other pesticides. This would include capacity building for the Customs agency, for better enforcement of import restrictions and detection of illegal imports.

PCBs

As with most other countries, PCBs were used in the past in Fiji, especially as transformer oils. However, there is no "hard" data available on the extent of this use. It is believed that most PCBs in transformer oils were removed from Fiji some years ago, although there is no documentation available to confirm that this was the case. Recent field testing on a limited number of transformers showed no evidence of PCB contamination. A survey of Fiji trade statistics showed recent significant imports of waste oil containing PCBs, which indicates a significant shortcoming

in border control, because imports of PCBs have been banned under the Health and Safety Act. No specific regulatory actions have been taken in Fiji for the removal and disposal of old electrical equipment containing PCBs, such as the capacitors used in fluorescent lighting ballasts. PCBs have been detected in samples of marine sediments, and low but measurable quantities of PCBs were reported in a 2002 analysis of breast milk samples.

Unintentional POPs (Dioxins and Furans)

An initial estimate of dioxin and furan releases for Fiji has been prepared using the Standardised Toolkit, which was developed by UNEP Chemicals. The major releases of dioxins and furans to air are believed to be from waste incineration (including medical wastes), power generation and the burning of wood for cooking. Domestic rubbish burning and scrub clearing may also be significant contributors, while landfills may be a significant reservoir source. However, given the limitations of the toolkit, these conclusions may need to be confirmed through additional studies.

There are currently no specific regulatory controls on the release of dioxins and furans in Fiji, although the potential now exists for these controls to be introduced under the new Environment Management Act. This also allows for the licensing of specific industrial sources, and the development of environmental standards.

Stockpiles and Contaminated Sites

There are significant stockpiles of obsolete and unwanted chemicals in Fiji, including a small amount of POPs. Most of the stockpiles are being stored under relatively unsafe conditions, awaiting action on disposal. Some of the stockpiles, mainly obsolete pesticides, will be exported to Australia by mid-2005, for disposal under an AusAID/SPREP project. The University of the South Pacific has also taken action on the disposal of some of its stocks of obsolete chemicals, by shipping to a facility in New Zealand. However, there are no other initiatives currently in place to address the remaining wastes.

There is believed to be a significant issue in Fiji with contaminated sites, although the extent of the problem has not yet been determined. There are a number of sites around the country where pesticides were disposed by burial. However, there are no accurate records available on the quantities and types of pesticides involved. It is essential that these sites be identified, investigated and the appropriate remedial action taken.

Public Awareness, Information and Education

The Environment, Health, Education and Labour Ministries all have well-established roles in education and awareness activities relevant to their particular mandates, and this includes activities directed at POPs chemicals. The Department of Environment has been especially active in raising awareness in the chemicals area over the last 2 years, in support of the POPs Enabling Activity project. These were based on a survey of chemical awareness in Fiji which showed that there are significant concerns about practices for chemical storage, handling and use, both at work and in homes. There is also clear evidence of the need for improving the current knowledge and understanding of personnel in these key agencies.

Research, Development and Monitoring

The technical infrastructure for POPs monitoring and research in Fiji is very limited. The only laboratory with capabilities in this area is the Institute of Applied Science at the University of the South Pacific, and these are currently restricted to the monitoring and analysis of POPs pesticides and PCBs.

Implementation Plan

The National Implementation Plan is based around a number of specific action plans, which are given in section 3.3. The goals and objectives of each action plan reflect the requirements of the Stockholm Convention, but are intended to address the specific issues identified as being most relevant for Fiji.

The plans are as follows:

- Action Plan to address Annex A, Part I, POPs and other pesticides (Article 3)
- Action Plan to address Annex A, Part II, POPs (PCBs, Article 3)
- Action Plan to address Unintentional Releases of POPs (Dioxins and Furans, Article 5)
- Action Plan for Chemical Stockpiles and Contaminated Sites (Article 6)
- Action Plan for Public Awareness, Information and Education (Articles 9 and 10)
- Action Plan for Research, Development and Monitoring (Article 11)

The action plans were developed based on the outcomes of the National Priority Setting Workshop for the Implementation of the Stockholm Convention in Fiji. Recommendations considered at that workshop came out of the various major consultancy reports that were prepared for different aspects of the project. Much of the work is intended to be carried out by local personnel with assistance from international experts as and when required. This approach is intended to assist in developing local capacity for POPs management and implementation of the Convention. The plans include the following specific proposals for capacity building:

POPs Pesticides

- Staff training for effective control over imports and use of pesticides
- Staff training for regulation and management of pesticides, including enforcement of the Pesticides Act
- Education and awareness to improve practices for pesticide handling, storage, use and disposal

PCBs

- Upgrading of laboratory facilities for PCB analysis
- Training in identification and sampling
- Development of guidelines for the storage and safe handling of PCB wastes
- Staff training for effective control of PCB imports

Unintentional POPs

- Review and strengthening of monitoring systems for all possible sources
- Development of BAT/BEP information, education and awareness programmes
- Establish sampling capabilities for dioxins and furans
- Education and awareness programmes for specific target groups relevant to the specific sources of unintentional POPs (waste operators, health-care and vehicle maintenance personnel)

Stockpiles and Contaminated Sites

- Training programmes for the assessment and management of contaminated sites
- Training programmes for the safe management of obsolete and unwanted chemicals
- Training programmes in safe storage, handling and use of hazardous chemicals

Research and Development

- Upgrading of existing laboratory facilities and staff training for POPs analysis.

The timetable for implementation of these plans is included in a detailed matrix of activities given in Annex 5. Most of the activities are intended to be carried out over the next three years, although some involve on-going commitments which will continue on for many years into the future.

The total estimated cost for implementing all of the planned activities is US$1,573,500, of which US$28,000 will be met from within existing resources and the remainder will need to be funded externally.

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1. Introduction

1.1 The Stockholm Convention on Persistent Organic Pollutants

This document presents a national plan for the implementation of the Stockholm Convention on Persistent Organic Pollutants in the Republic of the Fiji Islands. Fiji was the second country in the world to ratify the Stockholm Convention, having done so on 20 June 2001. The Convention entered into force on 17 May, 2004.

The objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants (POPs). The term POPs refers to a group of chemicals having the specific characteristics of high toxicity, persistence and mobility, and the potential for bioaccumulation. The convention currently covers twelve chemicals, although there is provision for others to be added in future. The current list of POPs is as follows: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene, hexachlorobenzene (HCB), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*p*-dioxins, and polychlorinated dibenzofurans. The first nine of these are pesticides. HCB is also classed as an industrial chemical, as are PCBs, while the dioxins and furans[a] are formed as unintentional by-products in combustion processes and some industrial activities. HCB and PCBs can also be formed in this way. Further information on the properties and uses of these chemicals and their potential health and environmental effects is summarised in Annex 1.

The chemicals covered under the Convention are to be controlled through various actions, including prohibiting future production and use of most of the pesticides and industrial chemicals, and the application of a range of measures for the reduction of releases of the unintentional POPs. A summary of the key obligations under the Convention is given in Annex 2.

1.2 Purpose and Structure of the Implementation Plan

Article 7 of the Convention requires that:

> *1. Each Party shall:*
>
> *(a) Develop and attempt to implement a plan for the implementation of its obligations under this Convention*
>
> *(b) Transmit its implementation plan to the Conference of the Parties within two years of the date on which this Convention enters into force for it: and*
>
> *(c) Review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.*

The Convention also requires Parties to develop strategies, measures, and action plans to address specific issues, namely:

- Intentional production and use of POPs (Article 3 and 4, Annexes A and B);
- Unintentional production of POPs (Article 5 and Annex C Parts I, II and III);
- Stockpiles and wastes (Article 6); and
- Measures related to information exchange (Article 9), public information, awareness and education (Article 10), research, development and monitoring (Articles 11) and reporting (Article 15).

A number of action plans have been developed to address these requirements, and these form the main body of the Implementation Plan, as presented in Section 3. This also includes an overall framework for Plan implementation, capacity building proposals and priorities, and an indication of resource requirements. The background information that was used in developing these proposals is given in Section 2, including the current situation and state of knowledge in the country on POPs issues and the institutional and other capacity available to address these.

[a] The term dioxins and furans is used throughout this document to describe the two classes of chemicals which are more correctly referred to as polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs).

1.3 Development of the Implementation Plan

This Plan was developed by the Government of the Republic of the Fiji Islands with financial assistance from the Global Environment Facility (GEF). These funds were provided for an enabling activity project to assist the country in meeting its obligations under the Stockholm Convention. The Ministry of Local Government, Housing, Squatter Settlement and Environment was the lead government agency for the project, and the United Nations Environment Programme (UNEP) was the GEF Implementing Agency. The implementation activities were broadly aimed at creating sustainable capacity and ownership in Fiji to assist in meeting its obligations under the Stockholm Convention, including preparation of a National Implementation Plan (NIP). The project had the following components:

i) Determination of coordinating mechanisms and organisation of process, public awareness-raising on POPs and other related hazardous substances;
ii) Assessment and strengthening of national infrastructure and capacity, adaptation of national legislation for Stockholm Convention implementation and establishment of a POPs inventory;
iii) Setting of priorities and determination of objectives;
iv) Formulation of a National Implementation Plan and specific Action Plans; and
v) Endorsement of the National Implementation Plan by stakeholders.

The work for this project was guided by a National Coordinating Committee (NCC), which included representation from central government, non-governmental organisations, education and research institutions, and the private sector. The membership of the NCC is given in Annex 3.

Consultation with stakeholders was an important element in the preparation of the National Implementation Plan. This was achieved through a combination of one-on-one consultations, presentations and a number of national workshops. A list of the people directly involved in the process is also given in Annex 3. In summary, the key contributors were as follows:

Government Ministries and Departments: Agriculture, Sugar & Land Resettlement; Customs; Education; Fisheries and Forests; Foreign Affairs; Health (Public Health, Government Pharmacy, Colonial War Memorial Hospital); Labour, Industrial Relations and Productivity; Lands and Mineral Resources, Local Government, Housing, Squatter Settlement and Environment; Land Transport Authority, Solicitor/Attorney Generals Office.

Tertiary Institutions: Fiji Institute of Technology; Fiji School of Medicine; University of the South Pacific.

Private Sector/Industry representatives: AgChem Ltd; Emperor Gold Mines; Fiji Sugar Corporation; Mobil Oil; Nestle Trading; Shell Oil.

Intergovernmental Agencies: Secretariat of the Pacific Community, South Pacific Applied Geoscience Commission

Environmental NGOs: Greenpeace; Live and Learn; Pacific Concerns Resource Centre.

2. Country Baseline

This section provides background information on Fiji Islands, and the more specific information that was used in developing the proposals is given in Sections 2.2 and 2.3. This includes the current situation and state of knowledge in the country on POPs issues and the institutional and other capacity available to address these. Much of the information given in these sections has been reported previously in the Fiji National Chemical Profile[b].

2.1 Country Profile

2.1.1 Geography and Population

The Republic of the Fiji Islands is an archipelagic nation, made up of 332 islands which are scattered over 1.3 million km^2 of the South Pacific Ocean. The total land area is 18,333 km^2 and the islands lie between latitudes 15° and 22ºS and longitudes 175°E to 178°W. A map of Fiji is given in Annex 4.

The largest island, Viti Levu (10,429sq.km) is the most developed of all the islands in the Fiji group, in terms of both infrastructure and population. About 75% of the total population reside on this island. The capital city, Suva is located on the eastern side of Viti Levu. Most of the major travel centers like Nadi International Airport and the ports of Suva and Lautoka are located on Viti Levu, along with most of the primary and secondary industrial developments and a large part of the tourism infrastructure. The second largest island is Vanua Levu (5,556 km^2), where the main economic activities centre on the sugar industry, logging, copra, fishing and tourism.

Fiji is a multi-racial nation, with two major ethnic groups - Fijians and Indo-Fijians. The total population at December 2000 was estimated as 810,421, comprising 52.6% indigenous Fijians, and 41.0% Indo Fijians. The balance was made up of Rotumans, Chinese, Part-Europeans, and other Pacific Islanders. About 55.6% of the population live in rural areas, and 44.4% in urban locations. English is the official language, while Fijian and Hindi are widely used in education, media and general communication.

Fiji has a comparatively high level of human resource development. The average life expectancy at birth is 66.9 years, and the infant mortality rate and the child mortality rate are 22 and 5 deaths per thousand, respectively. The total population of working age citizens (ie. 15-60 years old) is 496,620 with a median age of 31 years. In 1999, 23% of these people were in paid employment, of which 66.4% were males and 33.6% were females.

2.1.2 Political and Economic Profile

Government

The original people of Fiji are believed to have arrived on the islands several thousand years ago. Fiji became a British Crown Colony in 1874. It gained independence on October 10, 1970 and joined the British Commonwealth. Coups in 1987 and 2000 have seen times of relatively troubled relationships both within the country and externally with the Commonwealth. Fiji was declared a Republic soon after the 1987 coup.

Fiji's amended 1990 Constitution provides for a bicameral Parliament, comprising the President, and elected House of Representatives, and a nominated Senate. The President is the Head of State with the Prime Minister as the Head of the Government. The Bose Levu Vakaturaga (BLV or Great Council of Chiefs) appoints the President who serves a five-year term.

The Republic of the Fiji Islands is divided into four districts and 15 provinces for administrative purposes, and there are 12 municipal councils. These city and town councils generally administer urban affairs, and have powers to levy rates for operating costs and capital developments. An elected Mayor and Councillors head each of the Councils.

[b] Dept of Environment, 2005. Fiji National Profile of Chemical Management Infrastructure.

International Linkages
Fiji's international relations policy recognises the important role small island developing states like Fiji play in the international political/economic arena and seeks to build upon the positive relationships which Fiji enjoys with a wide range of nations in the world. It also testifies to the political, cultural and economic values Fiji attaches to the political relations it is now forging with Asia in its Look North Policy and the traditional relationship it has enjoyed with the Pacific Forum States, North America, ACP/European Union and the British Commonwealth.

The Republic of the Fiji Islands is a member of the United Nations and its specialised agencies such as the ILO, FAO, WHO, UNDP, UNEP and WMO. It is also a member of a number of international and regional organisations such as the Pacific Community, the Pacific Island Forum, the South Pacific Applied Geoscience Commission, the Pacific Regional Environmental Programme and the African, Caribbean and Pacific (ACP) Group, WTO, WCO, and the IMF. The Ministry of Foreign Affairs and Trade is responsible for the overall co-ordination of Fiji's membership of these organisations and of its participation in the appropriate international fora.

Economy
Fiji has a well-developed economy with tourism, sugar and garment exports being the main sources of income. In 2003 the national GDP was US$5800 per capita, with a growth rate of 4.8%. Tourism is leading this growth with strong contributions from the wholesale and retail sector and the building and construction sectors.

The poltical disturbances in 1987 and 2000 impacted greatly on Fiji's economy. For this reason, the maintenance of law and justice, and good governance are considered central to the building of a stable economy. Fiji sees its major challenge over the medium term as the rebuilding of the economy and the development of alternative agricultural crops to replace loss of export earnings from the sugar industry. Investment in 2003 amounted to 14% of GDP, an improvement on previous levels, but still lower than targeted. The external migration that accompanied the political instability and economic downturn slowed in the last year, but migration of skilled labour remains a concern.

Foreign exchange reserves were FJ$731 million[c] at the end of June 2004, sufficient to cover around 3.2 months of imports. Reserves have fallen over the past year, with the Reserve Bank of Fiji attributing this to strong demand for imports as economic activity increases. Remittances from Fiji Islanders living in other countries have quadrupled since 1994 to amount to FJ$232 million in 2002, and are now Fiji's fourth largest source of foreign exchange. Fiji Islanders work overseas as soldiers, nurses, rugby players, and in many other professions.

2.1.3 Profiles of Economic Sectors

Agriculture, Fisheries and Forestry
Agriculture is one of the mainstays of Fiji, in terms of foreign exchange earnings, employment, and overall economic activity. In 2002, the agricultural sector, including fisheries and forestry, accounted for some 19.4% of the Gross Domestic Product (GDP). In 2002 the value of agricultural exports was FJ$365million, or 35.6% of the total export earnings. The major crops produced in the Agriculture sector are as follows:

Temporary crops: cassava, dalo, yaqona, ginger, rice, maize, eggplant, and okra.

Permanent crops: sugar cane, coconut, banana, pawpaw/papaya, and pineapple.

Although still a significant part of the economy, Fiji's sugar industry has been in decline for several years. Sugar production declined to 2.6 million tonnes in 2003 from 3.4 million tonnes in 2002 because of the prolonged drought and the ongoing non-renewal of leases and mill breakdowns. Much of Fiji's sugar is exported to the European Union (EU) under the Cotonou Agreement which typically provides prices for sugar imports from African-Caribbean-Pacific (ACP) countries 2-3 times that of

[c] In mid-2005 the Fiji dollar is worth approximately 0.6 US dollars, 0.8 Australian, and 0.85 New Zealand.

world market prices. The EU-ACP Council has obtained a WTO waiver for the EU to continue to provide preferential access for ACP countries until the end of 2007. However, the EU has publicly stated that the price it pays for sugar will fall in the future.

Planned diversification into products such as copra, ginger, dalo, and tropical fruits has resulted in increasing quantities exported to customers in Australia, New Zealand, Japan, the United States and Europe. Fiji also has well-established overseas markets for fish, particularly tuna, and other marine products such as seaweed. Exports of fisheries products in 2002 were around FJ$90m.

The forestry sector in Fiji is a fast growing industry with the beginning of new entities and marketing of the extensive mahogany plantations in 2000. With 50,000 hectares of mahogany, this industry has the potential to contribute quite considerably to the economy of Fiji. Overall, the forestry sector contributes approximately 2.5% of GDP and has earnings of around FJ$100million (domestic and export). An average of 250,000 cubic meters of timber is harvested annually. In total there are 415,000 ha of land available for timber production, of which 270,000 ha are indigenous forests and 145,000 ha are plantations.

Minerals are the fourth largest export earner, largely through gold, which was worth FJ$78million in 2002. The mining and exploration administrative system in Fiji is an open one whereby the government does not require any equity participation in projects or any involvement of the state.

Tourism
Tourism is Fiji's main foreign exchange earner and an important basis of the economy, contributing around 20% of GDP. Tourism recovered well from the massive decline in visitor arrivals after May 2000, with 430,800 arrivals in 2003, an 8% increase over 2002. An even greater increase occurred in 2004, with 500,000 arrivals.

Manufacturing
The key activities within the manufacturing sector are textiles, clothing, footwear, food and beverages. Manufacturing activities, particularly the garment industry, experienced a significant decline after the events of 2000 and have not fully recovered. The garment industry still accounts for a workforce of some 13,000, down from a peak of 18,000. The industry relies heavily on exports under the South Pacific and Regional Trade Agreement (SPARTECA), which enables Fiji-produced goods to be sold in Australia and New Zealand duty-free, and on a quota for the US market. However, these preferential relationships are also under threat.

Industry
The only heavy industries of note in Fiji are a cement plant and a secondary steel mill, both located in or near Suva. In addition, there are a significant number of smaller plants associated with the milling and processing of sugar, and timber milling, including timber preservation plants.

Chemicals and Petroleum
The only significant chemical production in Fiji is at the cement plant noted above. Formulation and packaging is limited to a plant for the blending of fertiliser, using imported raw materials, and a number of facilities for the packaging of household and industrial chemical products, some of which are exported to other Pacific Island countries. The two most significant items here are soap (~5,000 t/yr) and paint (~3,000 litres/yr).

Petroleum products account for by far the largest quantities of chemical imports and exports, the latter because Fiji acts as a distribution base for supplies to other countries in the Pacific sub-region. The cement industry is also a significant exporter. Other significant chemical imports are as follows:

- Explosives, mainly for use in mining.
- Dyes, tanning agents, brighteners, paint pigments, resins and fillers, for use in the paint, printing and garment industries.

- Sulphur, mainly for use in fertilisers.
- Industrial gases including argon, oxygen, nitrogen, and ammonia.
- Chlorine gas, hypochlorites, copper sulphate, alum and aluminium sulphate for water treatment and other uses.
- Various organic chemicals, including toluene and xylene, chlorinated hydrocarbons, hydrochlorofluorocarbons (HCFCs), acetone, acetic acid, and quaternary ammonium salts.
- Metal cleaners and plating compounds.
- Cyanides, mainly for use in gold extraction.
- Acids and alkalis.
- Personal products, including essential oils, perfumes, cosmetics, shampoos, lacquers, dental and shaving preparations, and deodorants.
- Household cleaners, including soaps, surfactants, cleaners, lubricants, waxes, polishes, and scouring powders.

The total value of chemical imports in 2002 was around FJ$400million, of which 75% ($300m) were petroleum products. Other significant groupings included pesticides ($4.4m), fertilisers ($13.8m), industrial chemicals ($28.8m), and consumer chemicals ($42.2m).

2.1.4 Environmental Overview

The two main islands of Fiji compromise about 87% of the total land area. Both are relatively mountainous, and only the land around the coastal areas is being utilized for extensive developments. The islands are susceptible to earthquakes and landslides and have only limited arable soils capable of supporting intensive agriculture (19% of the land area). A further 10.5% is considered marginal for agriculture. The coastal zone in these two islands is of vital importance in Fiji. It brings together a unique assemblage of resources such as reefs, mangroves, water, agriculture, seafood and high quality landscapes. Yet it is also the location of every significant town in Fiji, most villages and the vast majority of the population together with industry and commerce.

Fiji Islands has a mild tropical maritime climate with plentiful rain, which dominates the conditions. However, it is subject to potentially catastrophic climate events such as cyclones, earthquakes, flooding and multiple landslides, which can have a major impact on the economy and infrastructure. There is a relative abundance of annual rainfall, perennial rivers, good surface drainage and numerous springs that generally ensure good supplies of water on the larger islands. By comparison, fresh water is a much scarcer resource on the low lying, small and outer islands. During El Nino periods such areas and the drier western side of the two main islands can suffer from serious drought.

A general framework for environmental management in Fiji was introduced in 1993 through the National Environment Strategy (NES). The NES was supported by a State of the Environment Report, which involved an extensive assessment of all natural resources in Fiji, their utilisation and development, and the associated problems, such as pollution and land degradation. The NES identified the following six environmental issues as being of major significance:

- The inability of Government to manage national resources on a sustainable basis because of inadequate policies, legislation, forward planning and administration;
- Pollution is effectively uncontrolled and emerging as a serious issue;
- Municipal waste management is a conspicuous national dilemma;
- Serious soils degradation is becoming prevalent in the marginal hill lands which are Fiji's agricultural resource base of the future;
- Deficiencies in physical planning are being compounded by significant urban drift resulting in widespread informal development in semi-urban areas which host environmental and social problems;

- Heritage and biodiversity values are inadequately appreciated while losses are increasing through ill directed development activities and lack of management and knowledge.

2.2 Institutional, Policy and Regulatory Framework

This section describes the overall institutional, policy and regulatory framework within which the NIP will be implemented.

2.2.1 Environmental Policy and General Legislative Framework

Fiji's National Environmental Strategy declares that *"(the) maintenance of Fiji's healthy environment through protection and conservation of its unique features, and the judicious utilisation of its resources form an integral part of development*" This is further reflected in the Strategic Development Plan for 2003-2005, which states that "*the proper management of the environment and sustainable use of natural resources are critical for the sustainable development of Fiji's largely natural resource based economy*". The Fiji government has also committed to the Millennium Development Goals.

While these policies and principles have been acknowledged for many years, until recently there has been no specific legislation to address most of Fiji's environmental problems. However, this has now been addressed through the Environment Management Act, which was officially adopted in February 2005. The Act establishes a broad framework for the protection of natural resources in Fiji, for the control and management of developments, and for waste management and pollution control.

The Environment Management Act fits into an overall framework of legislation which is summarised in Table 1 below. This shows all of the key laws with a specific focus on the protection of human health and the environment, along with those related to some of the more general aspects of chemicals management. Some of the laws shown are very general ones, such as the Customs Act, and mainly applicable to chemicals in the same way as they apply to all other goods and commodities. Others, such as Occupational Health & Safety and the Public Health Acts, are applicable to all chemicals, to the extent that they might pose hazards to people or the environment. And then there are others directed at very specific groups of chemicals, such as pesticides and poisons.

Table 1: Summary of Key Legislation Relating to Protection of Human Health and Environment, and the Sound Management of Chemicals

Legal Instrument	Responsible Agency	Objectives of Legislation
Customs Act 1986	Customs (FICRA)	Control of imports and exports and the collection of duties
Environment Management Act 2005	Environment (MLGHSSE)	Protection of natural resources, control of developments and pollution control
Explosives Act	Minerals (MLMR)	Management and use of explosives
Food Safety Bill 2003	Health (MoH)	To ensure the safety of food
Forest Decree 1992	Forests (MFF)	Approval, handling & use of timber preservatives
Health and Safety at Work Act 1996	Labour (MLIRP)	The protection of workers and others affected by work
Land Transport Act 1998	Transport (MTCA, LTA)	To control the transport of Dangerous Goods
Mining Act 1986	Minerals (MLMR)	Control of mining and exploration activities
Ozone Depleting Substance Act 1998	Environment (MLGHSSE)	Controls on the import, export and use of ozone depleting substances
Pesticides Act 1971	Agriculture (MASLR)	To regulate the registration and sale of pesticides
Petroleum Act	Minerals (MLMR)	Controls on quality and composition of petroleum products
Pharmacy and Poisons Act 1985	Health (MoH)	Control the practice of pharmacy, sale and distribution of drugs and poisons
Public Health Act 1937	Health (MoH)	Protection of the public health

(FICRA = Fiji Islands Customs and Revenue Authority, LTA = Land Transport Authority, MASLR – Ministry of Agriculture, Sugar and Land Resettlement, MFF = Ministry of Forests and Fisheries, MLGHSSE = Ministry of Local Government, Housing, Squatter Settlement and Environment, MLIRP = Ministry of Labour, Industrial Relations and Productivity, MLMR = Ministry of Lands and Mineral Resources, MTCA – Ministry of Transport and Civil Aviation.)

2.2.2 Roles and Responsibilities of Government Agencies

The government agencies responsible for specific aspects of legislation are indicated in Table 1 above. Further information on those agencies with significant activities relevant to environmental management or chemical safety is given below.

Ministry of Agriculture, Sugar and Land Resettlement (MASLR)

MASLR plays a pivotal role in the Fiji economy because of the overall dominance of this sector in export earnings, contribution to GDP and employment. The primary chemical management role of the Ministry is in the provision of advice and recommendations on the use of agricultural chemicals, efficacy trials on pest control methods, and administration of the Pesticides Act. The position of Registrar of Pesticides is essentially a part-time one, and is normally filled by the Principle Plant Protection Officer, from the Koronivia Research Station in Suva.

The Koronivia Research Station carries out research across a variety of agricultural areas including soil science, entomology, agronomy and weed control. The facilities include a chemical laboratory, which is equipped with a variety of analytical instruments, including GC, HPLC and AA. This allows it to do a limited amount of testing for pesticide residues, and it also provides some support to other government agencies such as those working in the public health and forensic areas.

Ministry of Local Government, Housing, Squatter Settlement and Environment (MLGHSSE)

The Ministry's functions are categorised into the following programme areas: General Administration, Local Government, Department of Town and Country Planning, Department of Environment, and Squatter Resettlement. The activities within the Department of Environment include implementation, monitoring and enforcement of the new Environment Management Act, and the development of policies on waste management, environment impact assessment and land and marine resources. It is the executive agency for the management of ozone depleting substances in Fiji, and also has major projects in the areas of climate change and the National Biodiversity Strategy and Action Plan. The Environment Department was the lead agency for the GEF enabling activity project on Persistent Organic Pollutants, which lead to the preparation of this National Implementation Plan.

Ministry of Labour, Industrial Relations and Productivity (MLIRP)

The broad objective of this Ministry is to cover all activities in the elaboration, implementation, control and evaluation of policies on labour relations, labour and safety standards and employment. The main sections of the Ministry are as follows: Permanent Arbitrator, Occupational Health and Safety, Legal and Training.

The Occupational Health and Safety (OHS) Service is tasked with the effective administration of the legislation and other standards relating to occupational health and safety and the promotion of a high standard of health and safety in all places of work. The activities of this group in the chemical area have been developed significantly over the last few years after it was recognised that chemicals were a high risk area for worker health and safety. This has lead to the drafting of the Health and Safety at Work (Control of Hazardous Substance) Regulations 2004, which are expected to have a significant impact on future working conditions in chemical-related industries.

Ministry of Health (MoH)

The Ministry of Health is responsible for the provision of general medical services in Fiji, including drug and other supplies, associated with patient care in public hospitals and health centres. It also carries out research in relation to virus and vector control, filariasis and the surveillance of AIDS. Public Health activities are targeted at maternal/child health, communicable disease prevention, family planning, pollution control and rural health services.

The Government Pharmacy Division, based in Suva, is the main centre for procurement and supply of pharmaceuticals in Fiji, and is looking to provide regional services to other countries as well. This group is responsible for administration of the Pharmacy and Poisons Act, although most of the staff have qualifications in pharmacy, rather than toxicology or other chemical disciplines. A start has been

made on setting up a National Poisons Centre for Fiji, although additional expertise in chemical toxicology will be needed if the Centre is to provide a comprehensive service.

The Division of Environmental Health (DoEH) has a wide-ranging mandate, with responsibilities across all levels of national, local and rural government in Fiji. There are about 130 Environmental Health Officers in the country, most of whom have tertiary qualifications in this area. Their work ranges across areas such as water supply and sanitation, food safety, vector control, health quarantine, waste management (including medical wastes) and pollution control. The Division is supported in its work by three laboratories. The two hospital laboratories in Suva and Lautoka carry out routine microbiological testing of food and water samples, while chemical analyses are delivered through the National Water Quality Laboratory.

2.2.3 Relevant International Commitments and Obligations

Fiji membership in international organisations is summarised in Table 2 below, followed by information on participation in relevant international agreements in Table 3. The Ministry of Foreign Affairs is often the official Focal Point for many of these organisations. However, the agencies shown in Table 2 are those with most involvement at an operational level. Four of the international agencies shown in the table have offices in Fiji; ie. ADB, ILO, UNDP and WHO. Two of the regional agencies (SOPAC and SPC) are also there, while FAO and SPREP have offices in neighbouring Samoa.

Table 2: Membership in Relevant International Organisations, Programmes and Bodies

Organisation*	National Contact	Related National Activities/Programmes
FAO	Agriculture (MASLR)	Pesticide legislation, IPM practices, agricultural production
IFCS	Environment (MLNSE)	National Profile, chemical information networks
ILO	Labour (MLIRP)	General support for OHS development
IPCS	Environment (MLGHSSE)	Supply of Environmental Health Criteria documents, etc
UNEP	Environment (MLGHSSE)	POPs project, training in ODS management
UNDP	Finance & National Planning	Adaptation to climate change, environmental vulnerability, National Capacity Assessment, sustainable development
WHO	Health (MoH)	Health sector training, primary care, health promotion, disease surveillance, water quality, medical waste, food safety
SOPAC	Mineral Resources	Wastewater, renewable energy, disaster management, GIS
SPC	Agriculture, Health	Pesticide legislation, IPM practices, agricultural production
SPREP	Environment	POPs disposal,

(*see list of abbreviations at the front of this document)

Table 3: Participation in International Agreements/Procedures Related to Chemicals Management

Agreement	Fiji Status	Implementation Activities
Agenda 21 – Commission for Sustainable Development	Endorsed	Development of Environment Management Act and national waste strategy (+ many other broader actions)
Basel Convention	Not a Party	See Waigani Convention below
Chemical Weapons Convention	Party	No specific activities
ILO Convention 170 (Chemicals)	Not a Party	Principles incorporated into OHS Act and regulations
London (dumping) Convention	Not a Party	Fiji is a member of IMO
Rotterdam Convention (PIC)	Not a Party	Principles recognised in proposed new Pesticides Bill
Stockholm Convention (POPs)	Party	Development of National Implementation Plan
Montreal Protocol (ODS)	Party	ODS Act and national implementation programme
SPREP Convention (Environment)	Party	Coastal management, waste management, climate change and other environmental management activities
Waigani Convention (Hazardous Waste)	Party	Development of national waste management strategy, participation in POPs disposal project.

2.2.4 Existing Legislation and Regulations Addressing POPs Chemicals

There are two sets of legislation in Fiji that have the potential to provide controls across the full life cycle for POPs and other chemicals, including import and production, storage, handling and use, and final disposal. These are the Environment Management Act and the Occupational Health and Safety Act. The major elements of both of these acts are discussed below, along with comments on other relevant legislation.

Environment Management Act

This Act was promulgated in March 2005, and represents a major step forward for environmental management in Fiji. The Act sets out to establish a broad framework for the protection of natural resources in Fiji, for the control and management of developments, and for waste management and pollution control. Implementation of the Act is guided by a National Environment Council, which includes representation from all relevant Ministries and other government agencies, the Native Land Trust Board; the Fiji Islands Trade and Investment Bureau; the Local Government Association; and representatives of NGOs, the general business community, manufacturing industries, and the academic community.

The Act establishes a formal process of environmental impact assessment (EIA) for any development proposals considered to have the potential for significant environmental or resource management impacts. A system of permits is also proposed and these will be required for any facilities involved in the handling, storage or use of hazardous substances; and the production and/or discharge of any waste, pollutant or hazardous substance. There is also provision for the development of a National Chemical Management Infrastructure for Fiji, which is to be based on the recommendations of the National Chemical Profile.

A variety of enforcement measures are also set out in the Act, including the specific powers of Officers to take samples and other evidence and to issue enforcement or cessation notices. The penalties for non-compliance with the Act range up to $100,000 and/or a 5-year prison sentence for individuals, and up to 10 times those limits for a body corporate. There is also provision for the setting of environmental standards, which could include limits for chemical contaminants in air, water and soil.

Health and Safety at Work Act 1996

This Act provides for the protection of the health and safety of workers and others affected by work. It specifies the duties of employers, employees, manufacturers, importers, suppliers and installers. Implementation of the Act is guided by a National Occupational Health and Safety Advisory Board (NOHSAB) which has a tripartite composition, made up of Government, Employee and Worker (Union) representatives. There is provision for the appointment of Health and Safety Inspectors, whose functions include the provision of advice and assistance, monitoring and collection of information on workplace illnesses or injuries, and enforcement. The maximum penalties for failure to comply with the requirements of the Act are $100,000 for a body corporate and $10,000 for anybody else.

One of the most relevant provisions under this Act is a system for the assessment and control of chemicals. A Fiji Chemical Inventory is specified under s53 of the Act and the operation and management of the chemical inventory has been set out in the Health and Safety at Work (Control of Hazardous Substance) Regulations 2004. Other matters covered by the Regulations include the classification of hazardous substances, the provision of Material Safety Data Sheets (MSDS), and workplace monitoring and surveillance.

The operation of the Fiji Chemical Inventory system is very similar to the Australian National Industrial Chemicals Notification and Assessment Scheme[d], and is based around the registration of all industrial chemicals. All employers or persons in control of a workplace are required to register all

[d] See www.nicnas.gov.au.

industrial chemicals with the Chief Health and Safety Inspector, on an annual basis. If a chemical is included in the Inventory, it may be imported into or manufactured in Fiji. Any new chemicals are subject to the preparation of an Assessment Report, the specifications for which include information on health, safety and environmental effects, packaging, storage, handling and use controls, emergency measures, and methods for disposal. Existing chemicals may also require an Assessment Report, if they are deemed to be a Priority Chemical under s54 of the Act.

The importation of all POPs pesticides and PCBs, was banned in 2003 by a regulation under the OHS Act[e], although this ban only applies to imports of chemicals intended for use in a workplace.

Pesticides Act 1971

The Pesticides Act covers the regulation and sale of pesticides. No pesticide may be offered for sale or use within Fiji unless it is first registered with the Registrar of Pesticides. The requirements for the types of data to be submitted in support of registration, and labelling specifications are covered in the accompanying Regulations.

The Pesticides Act is relatively old legislation and a proposed new Pesticides Bill is currently under consideration. Some of the problems with the old legislation include the vesting of authority in a single person (the Registrar), the lack of an Inspectorate, outdated labelling requirements, and no requirements for product quality testing. Also, the provisions for penalties under the Act are now quite trivial, with a maximum fine of $200, and an additional sum of $10 per day for a continuing offence.

The registration of specific pesticides can be cancelled by the Registrar under s7 of the Act, and this has been done for a variety of substances, including most of the POPs pesticides. These chemicals can also be prohibited by a Regulation passed under s11, and this was done for most of the de-registered pesticides in 1995[f]. The following agricultural chemicals have been banned from use in Fiji by regulation under the Pesticides Act.

2,4,5-T	Arsenic pentoxide
BHC	Captafol
Captan	Chlordane
DDT	Deet (N, N-diethyl-m-toluamide)
Dichlorvos	Dieldrin
Lindane (HCH)	Pentachlorophenol
PMA (phenylmercury acetate)	Sodium chlorate

Public Health Act 1937

The Public Health Act provides a general framework for the management of all matters relating to public health, food and water supply, sanitation and waste disposal. However, as will be apparent from the date, it is seriously lacking in aspects such as enforcement powers, and any specific controls relating to the management of hazardous chemicals and/or environmental pollution. The Act is currently being reviewed, although this process is still at a relatively early stage.

The Act establishes a Central Board of Health (CBH), which is chaired by the Permanent Secretary for Health and has six members appointed by the Minister of Health. The Chief Health Inspector acts as Secretary to the Board, and the overall administration and programme delivery under the Act is provided by a national team of Environmental Health Officers (EHOs) and other professional staff, within the Department of Environmental Health.

The CBH exercises general powers of supervision over environmental health matters in cities, towns and rural local authorities, all of which are staffed by qualified EHOs having statutory powers under

[e] Fiji Government, 2003. Fiji Republic Gazette, nos. 782 and 972, 2003.

[f] Fiji Government, 1995. Notice of Banned Agricultural Chemicals. Fiji Republic Gazette, v9, no. 7 [131], 3 February 1995.

the Act. There are around 130 EHOs throughout Fiji, with most (~80%) employed directly through the Ministry of Health and the remainder in city and town Councils. A new Public Health Act is being drafted.

Pharmacy and Poisons Act 1985
This Act covers the registration of pharmacists, control of the practice of pharmacy, and the distribution and sale of pharmaceuticals and poisons. The chemicals covered by the term "poisons" are given in a Schedule to the Act, and cover a wide variety of different substances, including pesticides. The Act is administered by the staff of the Government Pharmacist, through a Pharmacy and Poisons Board. No Inspectors have been appointed under the Act, and the primary focus of the current staff is on pharmaceuticals. Licences are required for the importing of poisons, and all information is recorded in a Register of Receipts and Issues. There are significant overlaps between this Act and those covering Pesticides and Occupational Health and Safety. A new Pharmacy Act is being drafted.

2.2.5 Key Approaches and Procedures for Management of POPs Chemicals

The primary mechanisms for controls on the imports and use of POPs chemicals are through the Pesticides Act, and the Health and Safety at Work Act. Imports of PCBs and most of the POPs pesticides have been banned under one or both of these acts. Monitoring and enforcement of these bans depends initially on the Customs agency, although the various field officers in Agriculture and Labour will also have a part to play in identifying any illegal uses.

There is currently no formal system for the control of exports of POPs chemicals, except when these are to be exported as wastes. In that case the approval procedures associated with the Waigani Convention (the regional equivalent of the Basel Convention) would come into play, and these are administered by the Department of Environment (DoE).

Releases of unintentional POPs can potentially be managed through the Environment Act, which includes provisions for licensing of industrial activities and the development of environmental standards. Planning for waste management activities and the development of strategies for sources such as motor vehicles would also come under the auspices of this Act.

A summary of the chemical management resources available in the key agencies is given in the table below. It should be stressed that this relates to only those people **directly** involved with chemical management in the key agencies. There are staff in other agencies with relevant functions, but these are usually delivered as part of a much broader range of control activities (eg. Customs Officers, Agriculture Extension Officers, Medical Officers of Health, Public Health Nurses, Health Inspectors, Factory Inspectors).

Table 4: Key Resources Available in Government Ministries/Institutions

Agency	No. of Professional Staff	Activities and Expertise
Agriculture	2 Plant Protection Officers	Pesticide trials and registration, qualifications in science, and especially entomology
Environment	8 Project Officers	POPs Project, ODS, waste management, qualifications in science/environmental science
Health	15 Senior EHOs	Public Health activities; qualifications in science and/or Environmental Health
Occupational Health & Safety	5 Technical Officers	Technical advice, monitoring, standards development, engineering/science degrees plus specialised OHS training

As indicated in the table, the resources available for chemical management are currently very limited, especially in the area of enforcement. The implementation of both the Environment Act and the Health and Safety Act, is still at an early stage of development. Much work remains to be done in the preparation of guidelines and standards, and in developing a much wider knowledge and understanding throughout the population, of the obligations under these Acts. There is also a need for

significant additional efforts in the area of monitoring, enforcement and advisory activities, both in these areas and also in support of the Pesticides Act.

2.3 Assessment of the POPs Issue in Fiji

Section 2.3 provides a summary of the current state of knowledge about POPs chemicals in Fiji. It is based on the various studies carried out during the background information collection stage of the Enabling Activity project, most of which has been previously reported in a number of project documents, which are referenced as appropriate in the text below.

2.3.1 Assessment with Respect to Annex A, Part I Chemicals (POPs Pesticides)

Fiji is a moderately significant user of pesticides, with total annual imports of around 800 to 900 tonnes/yr, at a cost of FJ$4million[g]. There is no significant manufacturing of pesticides in Fiji, with the exception of small amounts of some natural products, such as insecticides based on the seeds of the Neem plant *(Azadirachtica indica)*. One local company is registered to formulate pesticides in Fiji, although nowadays most of the products are imported ready for use.

There are 576 different products registered for use as pesticides in Fiji, and these are based on 98 active ingredients. The most common insecticides include acephate, *Bacillus thuringiensis*, cabaryl, deltamethrin, diazinon, imidaclorprid, lufenuron, malathion, nitofol, and permethrin/pirimphos methyl. The commonly available herbicides, which are used mainly in sugarcane fields for site preparation and inter-row weed control in taro, ginger and rice, are 2,4-D, asulam, atrazine, dicamba, diuron, glyphosate, linuron, MCPA, paraquat, and propanil. Fungicides commonly used for control of fungal diseases in vegetables and cocoa include antracol, benomyl, chlorothalonil, dimethirimol, iprodione mancozeb, maneb, metalaxyl, sundomil and triadimefon. Some of the registered pesticides are also distributed widely for domestic use and in commercial premises.

There is no evidence of any current trade by Fiji in POPs chemicals. The POPs pesticides BHC, chlordane, dieldrin and DDT were previously approved for use in Fiji but there is no information available on the quantities that were used in the past. These registrations were withdrawn some years ago, and the pesticides were formally banned in 1995[f]. None of the other five POPs pesticides (aldrin, endrin, heptachlor, mirex and toxaphene) have ever been registered for use in Fiji, although they are not formally banned.

The 2004 survey of POPs and other agriculture chemicals in Fiji noted the following concerns:

- Concerns about the quality of some formulated products
- Diluting and decanting (rebottling) of formulated products
- Unknown imports, including smuggled pesticides
- Unregistered and/or unlabelled pesticides available in the market
- Incorrect labelling and packaging
- Improper storage and disposal facilities at both the supplier and distributor levels
- Poor handling practices at the supplier, distributor and user levels
- Inadequate enforcement of OHS Regulations
- Lack of technical training at all levels
- Inappropriate or inadequate information in Material Safety Data Sheets
- Poor post-registration surveillance.

The above issues were also reflected in a recent survey of chemical awareness levels[h], which found that there were significant concerns about practices for chemical storage, handling and use, including at work, on farms and in homes. There is also a small but significant problem with misuse of pesticides, including attempted suicides[b].

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[g] Lal, S H, et al, 2004. Chemical Inventory for the Agricultural Sector, Including Household Agricultural Chemicals, Secretariat of the Pacific Community, Suva

[h] Tapuaiga, E, 2005. Chemical Awareness Survey Report, University of the South Pacific, Suva.

The available information on environmental distribution and fate of POPs pesticides in Fiji is extremely limited. However, a 1996 report by Morrison *et al*.[i] indicated detectable levels of seven of the POPs pesticides in samples of marine sediments and four of the POPs in shellfish. These results included aldrin, endrin, and heptachlor, which have never been approved for use in Fiji. This finding would support the concerns noted above relating to inadequate monitoring and enforcement of the Pesticide registration system.

More recently, in 2002, the Institute of Applied Science (USP) and the National Food and Nutrition Centre collected breast milk samples to be analysed for POPs in a WHO identified laboratory[j]. Samples were donated from ten women in the Suva area and ten from the more rural Nausori area to see if there were significant differences. Breast milk samples were monitored because they give an idea of the cumulative intake of people from all sources. The results showed low but detectable levels of dieldrin, chlordane and HCB, but with no significant differences between the urban and rural samples.

Clearly, there is no need for Fiji to register for any of the possible exemptions under the Stockholm Convention, for continuing use of Annex A, Part I POPs pesticides. Imports of four of the pesticides have been banned under the Pesticides Act. There are no known requirements for any of the remaining five pesticides, so a ban should be considered for these as well. Imports of all nine of the pesticides have already been prohibited under the Health and Safety Act, but this does not cover all possible use situations.

The various surveys noted above, along with the limited environmental data, indicate a need for much better monitoring and enforcement of the current controls over POPs and other pesticides. This would include capacity building for the Customs agency, for better enforcement of import restrictions and detection of illegal imports.

2.3.2 Assessment with Respect to Annex A, Part II Chemicals (PCBs)

As with most other countries, PCBs were used in the past in Fiji, especially as transformer oils. However, there is no "hard" data available on the extent of this use. Nor is there any information available on other possible uses, although this would almost certainly have included their presence in capacitors, and possibly lubricating and cutting oils.

It is believed that most PCBs in transformer oils were removed from Fiji some years ago[k], although there is no documentation available to confirm that this was the case. Recent field testing on a limited number of transformers held in storage by the Fiji Electricity Authority[l] showed no evidence of PCB contamination. A survey of Fiji trade statistics showed recent significant imports of waste oil containing PCBs[m]. This data relates to imports of waste oil, which were "accidentally" contaminated with PCBs. This clearly indicates a significant shortcoming in border control, because imports of PCBs have been banned under the Health and Safety Act.

No specific regulatory actions have been taken in Fiji for the removal and disposal of old electrical equipment containing PCBs, such as the capacitors used in fluorescent lighting ballasts. There is no data available on the extent of this possible source, although recent results from the neighbouring country of Niue indicate that about 30% of the capacitors in existing installations are likely to contain PCBs[n].

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[i] Morrison, R J, Harrison, N and Gangaiya, P, 1966. Organochlorine Contaminants in the Estuarine and Coastal Marine Environment of the Fiji Islands. Environmental Pollution, v83(2), p159-167.

[j] Aalbersberg, W, 2003. Recent Chemical Analyses of Foods at IAS. IAS Technical report No. 2003/09. University of the South Pacific, Suva, Fiji.

[k] Burns, T, et al, 2000. Management of Persistent Organic Pollutants in Pacific Island Countries: Waste and Obsolete Chemicals and Chemical Contaminated Sites. SPREP, Apia.

[l] O'Grady, J and Mataki, M, 2001. Personal Communication, South Pacific Regional Environment Programme, Apia, Samoa

[m] Limalevu, L, 2004. Industrial Chemical Inventory. SKM Consultants, Suva.

[n] Toneo, N, 2005. Personal Communication, Dept of Agriculture and Fisheries, Niue.

The 1996 study Morrison *et al.*[i], reported detectable levels of PCBs in samples of marine sediments, in most cases at significantly higher levels than those found for the POPs pesticides. Similarly, low but measurable quantities of PCBs were reported in the 2002 analysis of breast milk samples[j].

The main issue that Fiji needs to address in relation to Annex A, Part II chemicals is the development of a system for the identification and environmentally sound management and disposal of capacitors and other small items of electrical equipment potentially contaminated with PCBs. There is a need for strengthening of the Customs agency to ensure that future imports of PCBs, if any, are identified and stopped at the border. A system for export controls may also be required, given that any PCBs found in the future may need to be exported for disposal.

2.3.3 Assessment with Respect to Annex B Chemicals (DDT)

DDT was used in Fiji in the past for public health purposes, such as vector (mosquito) control for Dengue fever. However this is no longer the case, with DDT having been replaced by other pesticides such as malathion and temphos[o]. Imports of DDT were banned in 1995.

The 1996 report noted above by Morrison *et al.*[i], reported detectable levels of DDT in samples of marine sediments and samples, in most cases at significantly higher levels than those found for the other POPs pesticides. Similarly, low but measurable quantities of DDT were reported in the 2002 analysis of breast milk samples[j].

Fiji has no known requirements for any future use of DDT, and therefore no need for an exemption under Annex B, Part II of the Convention. The only significant activities required are essentially the same as those already noted under s2.3.1 above, for strengthening of the monitoring and enforcement of the existing controls on pesticides generally.

2.3.4 Assessment of Unintentional Production of Annex C Chemicals (Dioxins, Furans, HCBs and PCBs)

An initial estimate of dioxin and furan releases for Fiji has been prepared using the Standardised Toolkit, which was developed by UNEP Chemicals[p]. The Toolkit is designed to produce a simple and standardised methodology and accompanying database to enable assembly of consistent national and regional dioxin and furan inventories. It may be appropriate to carry out additional work on particular sources at some future date as further information or resources become available. The use of default emission factors side-by-side with local measured data would also help to refine and improve the Toolkit for use in Fiji.

The results from the initial assessment for Fiji were presented in a report by the Department of Environment[q], and are summarised below. The major releases of dioxins and furans to air in Fiji are believed to be from waste incineration, power generation and the burning of wood for cooking. Landfills may also be a significant reservoir source (as shown under "products" above). However, given the limitations of the toolkit, these conclusions may need to be confirmed through additional source-specific studies.

The levels of dioxins and furans found in the 2002 breast milk survey[j] were reported to be 3.17 and 3.51 pg(TEQ)/g[r], for the urban and rural samples, respectively. The results are relatively low compared to many other countries[s], but quite comparable with those reported for New Zealand[t].

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o Prakash, G, et al, 2001. DF/DHF and its Control in Fiji. Dengue Bulletin, v25, p21-27.

p UNEP Chemicals, 2003. Standardised Toolkit for Identification and Quantification of Dioxin and Furan Releases. United Nations Environment Programme, Geneva.

q Naidu, V and Zariff, R, 2005. Fiji National Inventory of Dioxin and Furan Releases, Dept of Environment, Suva.

r pg(TEQ)/g = picograms (10^{-12}) toxic equivalents, per gram of milk fat.

s UNEP Chemicals, 2003. Regionally Based Assessment of Persistent Toxic Substances, Global Report. Geneva.

t Bates, M, Thomson, B and Garret, N, 2001. Investigation of Organochlorine Contaminants in the Milk of New Zealand Women. New Zealand Ministry of Health, Wellington.

Table 5: Estimated Releases of Dioxins and Furans

Source Categories	Annual Releases (g TEQ/a)*				
	Air	Water	Land	Products	Residue
Waste Incineration	9.5	0.000	0.000	0.000	0.1
Ferrous and Non-Ferrous Metal Production	0.110	0.000	0.000	0.000	0.3
Power Generation and Heating	1.097	0.000	0.000	0.000	0.0
Production of Mineral Products	0.275	0.000	0.000	0.000	0.1
Transportation	0.078	0.000	0.000	0.000	0.0
Uncontrolled Combustion Processes	0.092	0.000	0.000	0.000	0.1
Production of Chemicals & Consumer Goods	0.000	0.000	0.000	0.000	0.0
Miscellaneous	0.011	0.000	0.000	0.000	0.0
Disposal/Landfilling	0.000	0.123	0.000	7.305	0.0
Total Releases	**11.2**	**0.1**	**0.0**	**7.3**	**0.6**

(*TEQ = toxic equivalents)

There are currently no specific regulatory controls on the release of dioxins and furans in Fiji, although the potential now exists for these to be introduced under the new Environment Management Act. This also allows for the licensing of specific industrial sources, and the development of environmental standards.

A programme for reducing the releases of dioxins and furans in Fiji will require a variety of different activities across the range of possible sources. Some of the key areas for action will be as follows:

- Solid waste management. The Department of Environment is already working on a national strategy in this area, which should see the development of programmes for waste minimisation, recycling and improved disposal methods. This should lead to a significant reduction in the amount of waste being disposed by incineration and open burning.
- Motor vehicle emissions. A national action plan has already been developed for activities in this area, which should eventually lead, indirectly, to reduced emissions of dioxins and furans, and other hazardous air pollutants.
- Waste incineration. The Ministry of Health has developed an action plan for upgrading the management of healthcare wastes, including the possible use of non-incineration technologies for waste disposal. Other sources such as quarantine waste incinerators should also be reviewed with a view to adoption of best available techniques and best environmental practices (BAT/BEP).
- Other industrial sources, such as metal production and mineral processing should also be reviewed to identify opportunities for adopting BAT/BEP.
- Biomass sources, including scrub clearing and sugar cane burning, should be assessed for the potential for emission reductions. Any programmes would most likely involve a significant public education component.
- Discharges from landfills and municipal wastewater facilities (sewage) should also be assessed for their contribution to dioxin/furan releases.

2.3.5 Assessment with Respect to Stockpiles, Wastes and Contaminated Sites (Article 6)

Stockpiles and Wastes

There are significant stockpiles of obsolete and unwanted chemicals in Fiji, as summarised in Table 6 below[u]. Most of the stockpiles of chemicals are being stored under relatively unsafe conditions, awaiting action on disposal. The stockpiles of obsolete chemicals include a very small amount of POPs, specifically 11 kg of DDT and 3 kg of chlordane. In addition, there are some 270 kg of contaminated material (soil and ashes) which may include traces of dioxins and furans. This material was left after the disposal of large amounts of pesticides by burning.

[u] Togamana, C *et al*, 2004. National Chemical Profile for Educational Institutes and Government Laboratories, Fiji. University of the South Pacific, Suva.

Table 6: Stockpiles of Obsolete and Unwanted Chemicals

Source and Type of Chemical	Stockpile Quantity
Agriculture – pesticides	> 17 tonnes
Agriculture – fertilisers and other wastes	> 4.5 tonnes
Health sector wastes	several tonnes
Government laboratory chemicals	~ 0.4 tonnes
Tertiary education – laboratory chemicals	~ 2 tonnes
School laboratory chemicals	~ 3.5 tonnes

Most of the obsolete pesticides will be exported to Australia by mid-2005, for disposal under an AusAID/SPREP project. This disposal operation is the final phase of a project that was first started in 1997. Funded by AusAID and implemented by SPREP, this has identified stockpiles of POPs and other hazardous wastes in 13 Pacific Island countries and provided training and other assistance directed at upgrading the management of hazardous wastes and contaminated site in these countries[k]. The disposal phase of the project involves collection and packaging of the stockpiles, and shipping to Australia, where they will be treated and destroyed, using a Plasma Arc destruction facility.

The University of the South Pacific has also taken action on the disposal of some of its stocks of obsolete chemicals, by shipping to a facility in New Zealand. However, there are no other initiatives currently in place to address the remaining wastes.

The export of these chemicals as wastes is controlled under the Waigani Convention (the regional equivalent of the Basel Convention). The approval procedures associated with this are administered by the Department of Environment (DoE). The DoE is also responsible for monitoring and enforcing the requirements for management of hazardous wastes, although the country is currently lacking any dedicated facilities for the treatment and disposal of these wastes. As indicated by the data in Table 6, there is also a need for significant improvements in the area of chemical inventory management.

Contaminated Sites

There is believed to be a significant issue in Fiji with contaminated sites, although the extent of the problem has not yet been determined[k]. There are known to be a number of sites around the country where pesticides were disposed by burial. However, there are no accurate records available on the quantities and types of pesticides involved. It is essential that these sites be investigated and the appropriate remedial action taken.

At a more general level, there is a limited amount of monitoring data to indicate the presence of chemical contaminants in some estuarine sediments, especially those downstream of significant industrial and commercial activities and/or rubbish dumps[v]. There is also a limited amount of data for chemical contaminants in some foods and drinking water. However, beyond that, there is currently insufficient information to indicate the extent and magnitude of environmental contamination around the country, as a result of agricultural, industrial and domestic uses of chemicals and the disposal of associated wastes.

The Department of Environment has the necessary authority under the Environment Management Act, to initiate work on identification and management of contaminated sites. However, it currently lacks the necessary expertise and resources (technical and personnel) to undertake these activities.

[v] UNEP Chemicals, 2002. Regionally Based Assessment of Persistent Toxic Substances, Pacific Islands Regional Report. Geneva.

2.3.6 Overview of Technical Capacity and Infrastructure for POPs Management

The extent of technical resources available within government agencies for the management of POPs and other chemicals was summarised previously in Table 4 (see s2.2.5). However, it should be recognised that this is simply an indication of the **potential** resources, as most of these people would have numerous other duties as well.

There are a number of other institutions and organisations in Fiji with expertise relevant to POPs management. This includes several national tertiary institutes, such as the Fiji College of Agriculture, Fiji Institute of Technology and Fiji School of Medicine. In addition, Fiji is host to the University of the South Pacific, which was established in 1968 as a regional centre for education and research. Other regional organisations with relevant expertise are SPREP, SOPAC and SPC (see s2.2.3).

Technical expertise within the industrial sector is limited to personnel at the Emperor gold mine, a cement plant, a secondary steel mill, a pesticide formulation plant, and a range of companies involved in the importing, formulation, distribution and sales of various consumer products. There are also a number of environmental consulting companies in Fiji, although very few of these have specific expertise in chemical management.

The technical infrastructure for POPs management in Fiji is very limited. There are no specialised facilities for the handling, storage and transportation of hazardous materials, and none for the treatment and disposal of hazardous wastes. The only laboratory with the capability for POPs monitoring and analysis (pesticides and PCBs) is the Institute of Applied Science at the University of the South Pacific.

2.3.7 Current Levels of Information, Awareness and Education

Information relating to the potential hazards of pesticides and industrial chemicals is routinely collected as part of the requirements under the Pesticides Act and the Health and Safety at Work Act, respectively (see s2.2.4). The key government agencies also have reasonable access to the relevant international databases and publications. However, there are no formal systems in place for the exchange of chemical information and data between Ministries or other agencies.

The Environment, Education, Health and Labour Ministries all have well-established roles in education and awareness activities relevant to their particular mandates, and this includes activities directed at POPs chemicals. The Department of Environment has been especially active in raising awareness in the chemicals area over the last 2 years, in support of the POPs Enabling Activity project.

The Education Department, especially through its Curriculum Development Unit, regularly updates secondary school syllabi to include emerging topics such as toxic chemicals and also trains teachers in topics such as chemical and management and safety.

A recent survey of chemical awareness in Fiji[h] has shown that there are significant concerns about practices for chemical storage, handling and use, both at work and in homes. And these occur despite the fact that people appear to understand that chemicals are potentially hazardous. This would suggest that greater emphasis in future programmes should be given to the promotion of safe practices, rather than just the potential hazards.

2.3.8 Relevant Activities of Non-Governmental Stakeholders

There are several public interest groups in Fiji with activities relevant to POPs and/or chemical management generally. The most significant of these are as noted below.

The Fiji office of Greenpeace Australia Pacific has been active for many years in raising the issues of obsolete stockpiles and hazardous wastes in the Pacific region, and was also involved in awareness raising activities in the lead-up to the adoption of the Stockholm Convention. Recent work in this area has been directed at encouraging and assisting Pacific Island countries to ratify the Convention, and

investigating options for national legislation relevant to Stockholm and other international chemical conventions.

Live and Learn Environmental Education is a non-profit, non-governmental organisation, which promotes greater understanding and action toward human and environmental sustainability through education and dialogue building. Their work involves curriculum development, teacher workshops, environmental education programmes and the development of educational materials such as pamphlets for use in schools. Current activities in Fiji include Help Our Planet (HOPE), a Green Schools project, the Discovery Learning initiative, and a River-Care project.

The Pacific Concerns Resource Centre Inc. has been involved in public awareness and advocacy campaigns, as well as in facilitating civil society participation in national, regional and international policy discussions. They recently implemented a regional NGO awareness raising programme on POPs, with assistance from UNEP Chemicals.

Partners in Community Development, Fiji, is a subsidiary of the Foundation of the Peoples of the South Pacific International. There are no specific activities in Fiji related to chemical management, but the FSP offices in some other Pacific countries have previously been active in this area.

Tertiary institutions such as the Fiji School of Medicine and University of the South Pacific also have student placements and community outreach projects which include aspects of waste management and environmental awareness.

A number of other NGOs, such as the World Wildlife Fund and the Worldwide Fund for Nature, are also represented in Fiji, but are currently not active in the chemicals area.

2.3.9 Systems for the Assessment and Regulation of New or Existing Chemicals

The only systems in Fiji for the assessment and regulation of new or existing chemicals are those available under the Pesticides Act and the Health and Safety at Work Act (see s2.2.4). Under the Pesticides Act, no pesticide may be offered for sale or use within Fiji unless it is first registered with the Registrar of Pesticides. The requirements for the types of data to be submitted in support of registration, and labelling specifications are covered in the accompanying Regulations. The registration of specific pesticides can be cancelled by the Registrar under s7 of the Act.

In the case of the Health and Safety at Work Act, all employers or persons in control of a workplace are required to register all industrial chemicals with the Chief Health and Safety Inspector, on an annual basis. Any new chemicals are subject to the preparation of an Assessment Report, the specifications for which include information on health, safety and environmental effects, packaging, storage, handling and use controls, emergency measures, and methods for disposal. Existing chemicals may also require an Assessment Report, if they are deemed to be a Priority Chemical under s54 of the Act.

An alternative process for assessment of new chemicals has been proposed in the Fiji National Chemical Profile[b]. This is similar to the system under the Health and Safety at Work Act, but is intended to apply to all chemicals, rather than just those intended for industrial use.

3. Strategy and Action Plan Elements of the National Implementation Plan

3.1 Policy Statement

The Government of the Republic of Fiji Islands is committed to ensuring a safe environment for its people and their future generations and has committed itself to protecting its unique environment and its biological diversity. Environmental sustainability is one of the Guiding Principles for economic and social development in Fiji[w], and the Government has demonstrated its commitment to this principle through actions such as the adoption of the Environment Management Act 2005.

The Stockholm Convention on Persistent Organic Pollutants (POPs) is one of many avenues by which the Government believes Fiji can benefit in improved quality of life and protection of human health and the environment. Therefore, the Government of Fiji and its people commit themselves to this National Implementation Plan for the Stockholm Convention, and will take all necessary measures to ensure its effective and timely implementation.

3.2 Implementation Strategy

A general framework for NIP implementation is shown in Figure 1 below.

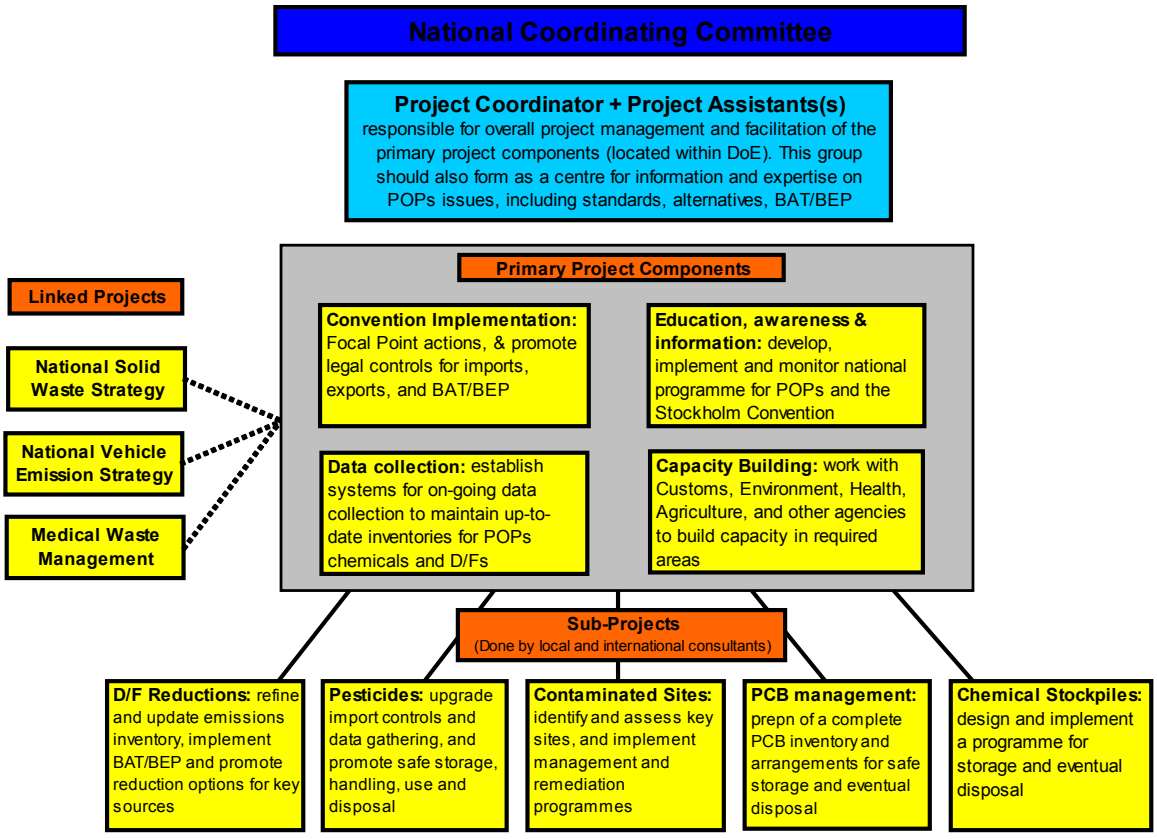


Figure 1: Framework for NIP Implementation

As indicated, the implementation of the programme will be directed through a National Coordinating Committee, in much the same way as applied in the development of this NIP. The work will be managed through a Project Coordination team, and this group will also be responsible for delivery of some of the key activities required in support of the Convention. The more specialised and targeted projects will be carried out as sub-contracted activities.

[w] Fiji Government, 2003. Strategic Development Plan, 2003-2005.

The implementation strategy shown in Figure 1, also points to some important linkages with other initiatives in Fiji; namely the national strategies for Waste Management, Motor Vehicle Emissions, and Medical Wastes. These are quite separate from the National Implementation Plan although the latter includes in a number of activities which are intended to augment and support these other programmes.

3.3 Activities, Strategies and Action Plans

The National Implementation Plan is based around a number of specific action plans. The goals and objectives of each action plan reflect the requirements of the Stockholm Convention, but are intended to address the specific issues identified as being most relevant for Fiji. The plans are as follows:

- Action Plan to address Annex A, Part I, POPs and other pesticides (Article 3)
- Action Plan to address Annex A, Part II, POPs (PCBs, Article 3)
- Action Plan to address Unintentional Releases of POPs (Dioxins and Furans, Article 5)
- Action Plan for Chemical Stockpiles and Contaminated Sites (Article 6)
- Action Plan for Public Awareness, Information and Education (Articles 9 and 10)
- Action Plan for Research, Development and Monitoring (Article 11)

The details of each of the action plan components are presented in the following sub-sections, while some of the key elements overall are summarised in sections 3.4 to 3.6. Comprehensive lists of activities, timeframes and resource needs are given in the detailed matrices presented in Annex 5.

3.3.1 ACTION PLAN TO ADDRESS ANNEX A, PART I, AND ANNEX B POPS AND OTHER PESTICIDES (ARTICLE 3)

Context and Analysis of Issue

Under Article 3 of the Convention, Parties are required to:

Prohibit and/or take legal and administrative action necessary to eliminate production and use of Annex A, Part I, chemicals (POPs pesticides), and restrict production and use of Annex B chemicals (DDT); and
Regulate any trade in these POPs with both Parties and Non-parties

There is no evidence of any current trade by Fiji in POPs chemicals. The POPs pesticides BHC, chlordane, dieldrin and DDT were previously approved for use in Fiji but these registrations were withdrawn some years ago, and the pesticides were formally banned in 1995. None of the other five POPs pesticides have ever been registered for use in Fiji, although they are not formally banned.

Recent surveys of pesticide users, along with a limited amount of evidence of environmental contamination, indicate a need for much better monitoring and enforcement of the current controls over POPs and other pesticides. This would include capacity building for the Customs agency, for better enforcement of import restrictions and detection of illegal imports.

Goal

To ensure that the current controls on the importation and use of all pesticides, including POPs, are effectively enforced and all use of POPs pesticides ultimately eliminated.

Objectives

1. To develop by the end of 2006 (and then implement) the most effective strategies to ensure control of the import and use of all pesticides, including POPs, including capacity building for personnel in the Department of Agriculture and the Revenue & Customs Authority.
2. To develop by the end of 2006 (and then implement) a program to build capacity in the Department of Agriculture for the regulation and management of pesticides, including POPs, and enforcement of the Pesticide Act.
3. To develop by the end of 2006 an ongoing national program to improve practices for pesticide handling, storage, use and disposal through training, education and awareness of user groups.
4. To improve by 2006 the level of information available on pesticide imports.

Management Options

The existing controls on the importation and use of pesticides in Fiji are quite adequate for their intended purpose. However they currently suffer from a lack of resources for effective implementation and enforcement. In addition, the operational personnel within the key agencies of Customs and Agriculture, lack the necessary training to allow them to effectively fulfil their roles in this area.

This action plan is therefore based around improvement of the operational practices involved in effective regulation and control, including the development of effective control systems, capacity building within the key agencies, and an on-going programme for improving practices at the user level.

Implementation Strategy

Lead Agencies: The lead agencies for this Action Plan will be the Department of Agriculture and the Customs & Revenue Authority, with assistance from the Department of Environment.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 (*strategies to ensure control of the import and use of all pesticides, and capacity building for key departments)*

- ❖ Assess and agree on the most effective strategies for the control of POPs pesticides
- ❖ Determine which staff in which sections of government need training
- ❖ Determine the most effective training methods and materials
- ❖ Determine ongoing local delivery option and ensure its competence
- ❖ Identify the most effective way of monitoring compliance
- ❖ Identify best mechanism whereby FIRCA and the Pesticide Registrar can control importation of POPs pesticides

- ❖ Progress the implementation of the improved pesticide legislation (a draft was prepared by SPC/FAO consultant in 2002)

Objective 2 ***(build capacity for the regulation and management of pesticides, including enforcement of the Pesticide Act)***

- ❖ Determine which staff positions in Department of Agriculture require training
- ❖ Determine the best training materials and approaches
- ❖ Determine best ongoing local delivery option and ensure its competence
- ❖ Enhance procedures in Department of Agriculture to implement Pesticide Act
- ❖ Develop an annual external review mechanism for effectiveness of pesticide management

Objective 3 ***(programme to improve practices for pesticide handling, storage use and disposal)***

- ❖ Determine target audiences
- ❖ Determine communication strategy (messages and media)
- ❖ Collate and translate into local languages appropriate materials
- ❖ Make materials readily available for stakeholders
- ❖ Develop and implement training programmes, including identification and training of local trainers

Objective 4 ***(improve the level of information available on pesticide imports)***

- ❖ Identify existing system(s) in use in Fiji
- ❖ Hold a stakeholder workshop to learn about existing databases and if they meet current and future needs
- ❖ Develop the most appropriate database and determine who can best manage it
- ❖ Determine how such information can be made readily available to decision makers
- ❖ Implement the proposed system

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$1,000	$20,000	$21,000	1 year
2	$ -	$21,000	$21,000	2 years
3	$300	$36,000	$36,300	2 years
4	$2,000	$17,000	$19,000	3 years
TOTALS	**$3,300**	**$94,000**	**$97,300**	

3.3.2 ACTION PLAN TO ADDRESS ANNEX A, PART II, POPS (PCBS) (ARTICLE 3)

Context and Analysis of Issue

Under Article 3 and Annex A, Part II, of the Convention, Parties are required to take the following actions:

Prohibit and/or take legal and administrative action necessary to eliminate production and use of Annex A, Part II, chemicals (PCBs);

PCBs in existing equipment, such as transformers and capacitors, is to be eliminated by 2025 and until then is permitted only in a manner that prevents or minimises human exposure and release into the environment;

Prohibit the import and export of PCBs, except for the purpose of environmentally sound waste management; and

Work towards the environmentally sound management of PCB wastes as soon as possible but no later than 2028.

As with most other countries, PCBs were used in the past in Fiji, especially as transformer oils. However, there is no "hard" data available on the extent of this use. It is believed that most PCBs in transformer oils were removed from Fiji some years ago, although there is no documentation available to confirm that this was the case. Recent field testing on a limited number of transformers held in storage by the Fiji Electricity Authority showed no evidence of PCB contamination. A survey of Fiji trade statistics showed recent significant imports of waste oil containing PCBs, which indicates a significant shortcoming in border control, because imports of PCBs have been banned under the Health and Safety Act. No specific regulatory actions have been taken in Fiji for the removal and disposal of old electrical equipment containing PCBs, such as the capacitors used in fluorescent lighting ballasts. PCBs have been detected in samples of marine sediments, and low but measurable quantities of PCBs were reported in a 2002 analysis of breast milk samples.

The main issue that Fiji needs to address in relation to PCBs is the development of a system for the identification and environmentally sound management and disposal of capacitors and other small items of electrical equipment potentially contaminated with PCBs. There is a need for strengthening of the Customs agency to ensure that future imports of PCBs, if any, are identified and stopped at the border.

Goal

Achieve an effective and environmentally sound strategy to manage the total elimination and removal of PCB-containing products, equipment and wastes.

Objectives

1. Prepare a comprehensive national inventory of PCBs, PCB containing materials and PCB wastes in the next two years (by end of 2007).
2. Establish and implement a system of safe handling, storage and transport of PCBs, PCB-containing materials and PCB wastes within three years (by end of 2008).
3. Ensure no further import or use of PCBs by the end of 2006.
4. Eliminate and destroy all PCBs (except as needed for laboratory analyses) PCB-containing materials and PCB waste not later than 2028.

Management Options

The goal and objectives for this action plan can generally be achieved within the existing regulatory and management systems. The main requirements are the development of operational procedures and systems for preparation of a national inventory, the development of systems for safe handling, storage and transportation, and the assessment of disposal options. These would need to be supported by education and awareness programmes to ensure optimum take-up by the target groups. There is also a need for strengthening of the existing import control systems to ensure future compliance with the convention requirements.

Implementation Strategy

Lead Agencies: The lead agency for this Action Plan will be the Department of Environment, working in close cooperation with the Ministry of Works and Energy, the Fiji Electricity Authority and NOHS.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 ***(preparation of a national inventory of PCBs)***

- ❖ Prepare a list of resources and expertise on PCB management and related research

- ❖ Prepare a comprehensive profile of potential sources of PCBs in the country
- ❖ Develop and publish inventory protocol and guidelines
- ❖ Upgrade and recognise laboratories that will analyse PCB
- ❖ Conduct training on identification and sampling for electric utilities, servicing facilities, and DoE staff
- ❖ Develop a PCB information database
- ❖ Conduct inventory of PCB materials and wastes
- ❖ Conduct information, education campaign on health issues and technology for PCB management

Objective 2 ***(system for safe handling, storage and transport of PCB, and PCB wastes)***

- ❖ Enhance guidelines for the storage and safe handling including transport and dismantling of PCB waste or contaminated material
- ❖ Develop monitoring and evaluation program for handling and storage
- ❖ Improve safe transportation rules and regulations for PCBs to include: transport vehicle standards, guidelines for preparation of waste shipments, emergency response capability along transportations routes, provisions for authorising qualified carriers and labelling/placarding requirements for vehicles and containers, as needed
- ❖ Develop guidelines/checklist for the evaluation of potential contaminated sites

Objective 3 ***(ensure no further import or use of PCBs)***

- ❖ Review existing regulations, especially under the Occupational Health and Safety Act, to ensure PCB-containing products are banned (eg. declared a priority existing chemical for FIRCA notification)
- ❖ Develop and implement legislation as necessary
- ❖ Develop capacity in Customs Department on all potential PCB-containing products

Objective 4 ***(Eliminate and destroy all PCBs and PCB waste)***

- ❖ Analyse options for PCB waste collection and disposal
- ❖ Evaluate existing environmental financing support facilities to support disposal of PCB waste
- ❖ Assess, document and report results, including proposals for implementation
- ❖ Implement the proposed programme

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$500	$39,000	$39,500	2 years
2	$ -	$15,000	$15,000	2 years
3	$5,000	$8,000	$13,000	2 years
4	$ -	$8,000	$8,000	1 year
TOTALS	**$5,500**	**$70,000**	**$75,500**	

3.3.3 ACTION PLAN TO ADDRESS UNINTENTIONAL RELEASES OF POPS (DIOXINS AND FURANS, ARTICLE 5)

Context and Analysis of Issue

Under Article 5, and Annex C, Parts I, II, and III of the Convention, Parties are required to take measures for continuous minimisation of releases of unintentionally produced POPs (PCBs, HCBs, Dioxins and Furans) and where possible, eliminate their releases. The primary source categories are detailed in Annex C of the Convention, and the key requirements for action are as follows:

- Establish and finalise an action plan within 2 years after entry into force;
- Require the use of are Best Available Techniques (BAT) for new sources or substantially modified plants as soon as possible but not later than four years after entry into force (for those sources listed in Annex C, Part II);
- Promote the application of BAT and Best Environmental Practices (BEP) for all other sources; and
- Report on the success of proposed strategies every five years

An initial estimate of dioxin and furan releases for Fiji has been prepared using the Standardised Toolkit, which was developed by UNEP Chemicals. The major releases of dioxins and furans to air are believed to be from waste incineration, power generation and the burning of wood for cooking. Domestic rubbish burning and scrub clearing may also be significant contributors, while landfills may be a significant reservoir source. However, given the limitations of the toolkit, these conclusions may need to be confirmed through additional studies.

There are currently no specific regulatory controls on the release of dioxins and furans in Fiji, although the potential now exists for these controls to be introduced under the new Environment Management Act. This also allows for the licensing of specific industrial sources, and the development of environmental standards.

Goal

Progressive reductions in the releases of dioxins and furans and other unintentional POPs in Fiji, based on best environmental practices.

Objectives

1. Prepare an updated inventory of dioxin and furan releases within three years for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors
2. Develop and implement BAT/BEP promotion, adoption and monitoring programmes within three years across at least four of the significant dioxin and furan source categories
3. Formulate and enforce appropriate policies and regulations by the end of 2007
4. Develop and implement a program for information on the prevention of environmental and health effects of dioxins and furans by the end of 2005
5. Develop and implement a strategy to reduce releases from burning of rubbish, fields/forests and medical waste by the end of 2006
6. Develop and implement a strategy to reduce releases from vehicles by the end of 2005

Management Options

There are a number of initiatives already under way in Fiji which will be reflected in the development of this action plan; namely the National Solid Waste Management Strategy, the Vehicle Emissions Action Plan, and a programme for upgrading the management and disposal of medical wastes. The activities proposed below are intended to build on and supplement these existing programmes, while at the same time ensuring that the specific requirements under the Convention are adequately addressed.

The first objective under this action plan is intended to address a basic operational need, in the development of better quality information on the current releases of unintentional POPs. This is also important from a policy point of view, in clearly identifying the most important source categories to be targeted for future actions.

One of the primary requirements for reductions of unintentional POPs under the Convention is the application of BAT/BEP and this will be addressed through the operational and regulatory measures covered under objectives 2 and 3. These are best based around a progressive approach involving assessment of the most appropriate control measures, development of education and awareness programmes for the relevant sectors, and finally, the adoption of appropriate regulations and systems for monitoring and enforcement. This approach has been further developed under objectives 5 and 6, for some of the more significant sources in Fiji.

The programme proposed under objective 4 recognises the fact that dioxins and furans are a relatively new issue for Fiji and there is a need for considerable effort in providing information and technical assistance to regulators and other relevant agencies.

Implementation Strategy

Lead Agencies: The lead agency for this Action Plan will be the Department of Environment, although the work will require significant inputs from other agencies, including Health, Agriculture, and Transport.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 (*updated inventory of dioxin and furan releases)*

- Review of activity data collection methods
- Review and strengthen the monitoring system for industrial and household sources
- Review and develop monitoring system for agricultural, commercial, and other sources
- Review and develop Fiji emission factors
- Data collection for the updated inventory
- Inventory reporting, data analysis and program review

Objective 2 ***(BAT/BEP promotion, adoption and monitoring programmes)***

- Identify BAT/BEP appropriate to the four significant dioxin and furan sources and set performance criteria for each BAT/BEP
- Develop and implement BAT/BEP information, education and communication programmes
- Assist local government units to issue resolution and/or enact ordinances to promote BAT/BEP for unintentional POPs
- Coordinate with the Department of Education to integrate BAP/BEP in the curricula and extra-curricular activities
- Develop incentives/rewards system for dioxin and furan sources adopting BAT/BEP
- Develop and adopt financing programmes for sources adopting BAT/BEP
- Develop performance evaluation of the application of BAT/BEP

Objective 3 ***(Formulate and enforce appropriate policies and regulations)***

- Review existing local and international regulations and policies pertaining to unintentional POPs
- Investigate opportunities to apply BAT/BEP under the Environmental Impact Statement system
- Establish sampling capability for dioxins and furans
- Establish ambient baseline levels of dioxins and furans
- Conduct life cycle analysis and risk assessment based on the four major sources of dioxins and furans
- Set ambient criteria and standards for emissions for BAT/BEP
- Enforce and monitor compliance

Objective 4 ***(information programme on the environmental and health effects of dioxins and furans)***

- Identify, review and develop environmental, health and safety programmes appropriate to the four significant dioxin and furan sources
- Assist local government units to issue resolution and/or enact ordinances to promote environmental, health and safety for dioxins and furans
- Coordinate with the Department of Education to integrate in the curricula and/or extra curricula activities the environmental and health impacts of dioxins and furans

Objective 5 ***(strategy to reduce releases from burning of rubbish, fields/forests and medical waste)***

- Develop awareness materials on national situation on POPs for public and schools
- Conduct awareness surveys on awareness on effects of rubbish and field burning and alternatives
- Develop and implement program on village consultation for awareness and alternatives to burning
- Implementation of solid waste strategy for landfill material (based on draft Fiji strategy)
- Training of rubbish collectors and landfill management on waste management
- Complete collection of information on quarantine and medical waste volumes and management options
- Finalise system in Health Department to consider best environmental practice for medical waste in Fiji
- Source new technologies needed and obtain necessary funds
- Training and awareness on new technologies
- Monitor systems
- Obtain safety gear as necessary
- Develop system for ash disposal from incineration
- Review operation of incinerators at least every two years

Objective 6 ***(strategy to reduce releases from vehicles)***

- Work with Land Transport Authority to develop, implement systems for checking of vehicle exhaust based on national motor vehicle strategy
- Install hot line to report smoking vehicles
- Public awareness of economic and environmental costs of poor burning of vehicle fuel
- Monitoring of effects of policies by dust monitoring at bus stand and areas of heavy vehicle use
- Hold meetings with taxi and bus owner associations to share and help implement ideas
- Review policy on second-hand vehicle import to determine effects on unintentional POPs production

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$3,000	$29,000	$32,000	3 years
2	$7,000	$38,000	$45,000	3 years
3	$1,000	$55,000	$56,000	3 years
4	$ -	$19,000	$19,000	1 year
5	$3,000	$257,000	$260,000	3 years
6	$ -	$32,000	$32,000	1 year
TOTALS	**$14,000**	**$430,000**	**$444,000**	

3.3.4 ACTION PLAN FOR CHEMICAL STOCKPILES AND CONTAMINATED SITES (ARTICLE 6)

Context and Analysis of Issue

The primary requirements for stockpiles and wastes, as detailed in Article 6 of the Convention, are as follows:

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

There are significant stockpiles of obsolete and unwanted chemicals in Fiji, including a small amount of POPs. Most of the stockpiles are being stored under relatively unsafe conditions, awaiting action on disposal. Some of the stockpiles, mainly obsolete pesticides, will be exported to Australia by mid-2005, for disposal under an AusAID/SPREP project. The University of the South Pacific has also taken action on the disposal of some of its stocks of obsolete chemicals, by shipping to a facility New Zealand. However, there are no other initiatives currently in place to address the remaining wastes. The Department of Environment is responsible for monitoring and enforcing the requirements for management of hazardous wastes in Fiji, although the country is currently lacking any dedicated facilities for the treatment and disposal of these wastes.

There is believed to be a significant issue in Fiji with contaminated sites, although the extent of the problem has not yet been determined. There are a number of sites around the country where pesticides were disposed by burial. However, there are no accurate records available on the quantities and types of pesticides involved. It is essential that these sites be investigated and the appropriate remedial action taken. At a more general level, there is a limited amount of monitoring data to indicate the presence of chemical contaminants in some estuarine sediments, especially those downstream of significant industrial and commercial activities and/or rubbish dumps.

The Department of Environment has the necessary authority under the Environment Management Act, to initiate work on identification and management of contaminated sites. However, it currently lacks the necessary expertise and resources (technical and personnel) to undertake these activities.

Goal

Human health and the environment protected from contaminated sites and stockpiles of obsolete chemicals by complete identification of such sites by 2008 and development of appropriate management strategies and remedial actions.

Objectives

1. To conduct detailed assessments of potentially contaminated sites in Fiji by 2008 and develop remedial action for such sites as necessary.
2. To have a system in place for the sound management of obsolete and unwanted chemicals by the year 2008.

Management Options

The existing regulatory and management systems in Fiji are generally quite adequate for addressing the goal and objectives for this action plan. The main requirements are to develop the knowledge and capacities within DoE and other relevant agencies, and the operational measures required for implementing these programmes. There is also a need for significant infrastructure development in the form of a secure storage facility.

Implementation Strategy

Lead Agencies: The lead agency for this Action Plan will be the Department of Environment, but significant inputs will also be required from the Departments of Agriculture, Health and Education.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 (assessment and management of contaminated sites*)*

- ❖ Establish criteria for classification of contaminated sites by the end of 2006
- ❖ Establish local capacity for the identification and management of contaminated sites, via classroom and field training by end of 2006
- ❖ Further assessment of potential contaminated sites identified by SPREP POPs in PICs report by 2006

- Signing and fencing of seriously contaminated sites by 2006
- Obtain necessary safety equipment by end of 2006
- Develop management plan for at least 5 most seriously contaminated sites by end of 2006
- Develop cost estimates and obtain funds by mid-2007
- Remediation of at least 5 sites by end of 2007
- Public awareness to help identify additional contaminated sites

Objective 2 ***(sound management of obsolete and unwanted chemicals)***

- Identify location for central obsolete chemical storage facilit(ies) and carry out permitting process by end of 2006
- Design and construction of storage facility by end of 2007
- Development of capacity for management of sites and safe transport and handling of chemicals by 2007
- Government to identify responsible authority and legislation that may need to be enacted for facility by end of 2006
- Obtain necessary safety equipment as soon as possible
- Develop system for recording waste stockpiles and their monitoring by end of 2007
- Build on list of chemicals to be stored determined during NIP studies
- Develop an action plan to dispose of waste
- Develop a training programme for managers of places where chemicals are held on site
- Consider ways to minimise the future occurrence of obsolete and unwanted chemicals

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$ -	$495,000	$495,000	3 years
2	$1,500	$310,000	$311.500	3 years
TOTALS	**$1,500**	**$805,000**	**$806,500**	

3.3.5 ACTION PLAN FOR PUBLIC AWARENESS, INFORMATION AND EDUCATION (ARTICLES 9 AND 10)

Context and Analysis of Issue

The requirements under Articles 9 and 10 of the Stockholm Convention include the following:

- Facilitate or undertake the exchange of information detailed in paragraph 1 of Article 9. This information should be exchanged directly or through the Convention Secretariat.
- Designate a national focal point for the exchange of such information.
- Promote and facilitate public information, awareness and education, as detailed in Article 10. This includes awareness among policy and decision makers, the provision of information to the public, and the development of educational and public awareness programmes on POPs, especially for women, children and the least educated.
- Arrangements for training of workers, scientists, educators, and technical and managerial personnel.

The Environment, Health and Labour Ministries all have well-established roles in education and awareness activities relevant to their particular mandates, and this includes activities directed at POPs chemicals. The Department of Environment has been especially active in raising awareness in the chemicals area over the last 2 years, in support of the POPs Enabling Activity project. Despite the above activities, a recent survey of chemical awareness in Fiji has shown that there are significant concerns about practices for chemical storage, handling and use, both at work and in homes. There is also clear evidence of the need for improving the current knowledge and understanding of personnel in these key agencies.

Goal

Full awareness and a high level of knowledge on POPs and related hazardous chemicals among all stakeholders and united support for the implementation of the NIP.

Objectives

1. Create widespread awareness and understanding of POPs and related hazardous chemicals and the NIP by the end of 2006, including understanding of the potential health, environmental and economic impacts
2. Develop awareness and understanding of specific agency roles and responsibilities in implementing the NIP and build and strengthen partnership/networks to carry them out by the end of 2006

Management Options

Achievement of the goal and objectives for this action plan mainly requires a number of operational measures directed at the development and implementation of communication strategies and education and awareness campaigns. However, there is also an important coordination and management measure under objective 2, in the development of a shared understanding on the roles of all stakeholders and a mechanism for periodic sharing of activities and experiences in implementing the programme.

Implementation Strategy

Lead Agencies: The lead agency for this Action Plan will be the Department of Environment, but it will be important to also work closely with all other key stakeholders.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 (create widespread awareness and understanding of POPs and the NIP*)*

- ❖ Determine optimal communication strategy for POPs awareness
- ❖ Develop necessary awareness and education materials
- ❖ Develop central library/database on POPs information
- ❖ Support a wide variety of awareness programmes as detailed in communication strategy
- ❖ Provide information support to main chemical users including secondary schools and tertiary institutions, and encourage including units of chemical management especially related to POPs in the curricula
- ❖ Establish a system to communicate information on the NIPs and outcome of COPs to government officials and general public
- ❖ Special awareness sessions for media
- ❖ Investigate optimal role for local chemical industry in awareness programme
- ❖ Monitor the effectiveness of activities carried out

Objective 2 ***(develop awareness and understanding of specific agency roles and responsibilities)***

- ❖ Hold awareness presentation for senior interagency meetings of government officials and other relevant stakeholders
- ❖ Hold participatory workshop of relevant stakeholders to identify roles and how needed activities can fit in to existing and future sectoral strategic plans
- ❖ Verify these roles with senior management of relevant organisations
- ❖ Hold regular (annual) meeting of stakeholders to review progress and set objectives and activities for the following year

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$500	$47,000	$47,500	3 years
2	$1,000	$8,000	$9,000	1 year
TOTALS	**$1,500**	**$55,000**	**$56,500**	

3.3.6 ACTION PLAN FOR RESEARCH, DEVELOPMENT AND MONITORING (ARTICLE 11)

Context and Analysis of Issue
Under Article 11 of the Convention, Parties are required to encourage and /or undertake appropriate research, development, monitoring and cooperation, pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants.

The technical infrastructure for POPs monitoring and research in Fiji is very limited. The only laboratory with capabilities in this area is the Institute of Applied Science at the University of the South Pacific, and these are currently restricted to the monitoring and analysis of POPs pesticides and PCBs.

Goal
Ability to determine effectiveness of interventions undertaken under the Stockholm Convention to help ensure most efficient use of resources

Objectives
1. To develop as fully as possible local capacity in POPs monitoring by the end of 2006
2. To develop a cost-effective program for POPs monitoring by the end of 2006

Management Options
The implementation of this action plan requires and appropriate mechanism for coordination and management of the activities, along with a moderate amount of capacity building (training and resources) and operational measures in support of the on-going activities.

Implementation Strategy
Lead Agencies: The lead agency for this Action Plan will be the Department of Environment, although other key stakeholders such as Agriculture and Health should also be involved. Obviously, the programme could not be implemented without the full participation of USP and other potential service providers.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 (*develop local capacity in POPs monitoring)*
- ❖ Identify laboratory(ies) most capable of doing POPs analyses
- ❖ Support laboratory with training and appropriate resource allocation

Objective 2 ***(develop a cost-effective programme for POPs monitoring)***
- ❖ Prepare POPs monitoring plan for Fiji as part of workshop on sectoral implementation responsibilities
- ❖ Source finances to support the program
- ❖ Implement monitoring and reporting with periodic review of monitoring plan and effectiveness of NIP activities that have been carried out

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$ -	$53,000	$53,000	2 years
2	$2,000	$24,000	$26,000	3 years
TOTALS	**$2,000**	**$77,000**	**$79,000**	

3.3.7 ACTION PLAN FOR REPORTING (ARTICLE 15)

Context and Analysis of Issue
Under Article 15 of the Convention, Parties are required to report to the Conference of the Parties on the measures they have taken to implement the provisions of the Convention and on the effectiveness of such measures in meeting the objectives of the Convention. Such reporting is to be at periodic intervals and in a format to be decided by the Conference of the Parties at its first meeting.

There are other related obligations under the Convention, such as reporting progress in reducing releases of unintentional POPs, which should also be addressed through this action plan.

Goal
Activities undertaken under the NIP are well coordinated and reported upon

Objectives
1. To ensure effective gathering of information on the implementation of the NIP by the end of 2006
2. To ensure that information on NIP activities are shared both nationally and internationally by the end of 2006

Management Options
The action plan simply requires an initial management activity to establish the national focal point, and a number of operational measures to ensure that the necessary information gathering and reporting systems are established and maintained.

Implementation Strategy
Lead Agencies: The lead agency for this Action Plan will be the Department of Environment.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1 (*effective information gathering)*
- ❖ Determine national focal point
- ❖ Determine preferred mechanism for information gathering
- ❖ Establish a database to store information and responsibility to regularly update it

Objective 2 sharing of *(information on NIP activities)*
- ❖ Develop strategy to ensure national dissemination of data and responsibility to carry it out
- ❖ Report on activities as determined by COP

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Objective	Internal Costs (US$)	External Costs (US$)	Total Costs (US$)	Duration
1	$700	$5,000	$5,700	1 year
2	$ -	$9,000	$9,000	1 year
TOTALS	**$700**	**$14,000**	**$14,700**	

3.4 Development and Capacity Building Proposals

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

The plans include the following specific proposals for capacity building:

POPs Pesticides

- Staff training for effective control over imports and use of pesticides
- Staff training for regulation and management of pesticides, including enforcement of the Pesticides Act
- Education and awareness to improve practices for pesticide handling, storage, use and disposal

PCBs

- Upgrading of laboratory facilities for PCB analysis
- Training in identification and sampling
- Development of guidelines for the storage and safe handling of PCB wastes
- Staff training for effective control of PCB imports

Unintentional POPs

- Review and strengthening of monitoring systems for all possible sources
- Development of BAT/BEP information, education and awareness programmes
- Establish sampling capabilities for dioxins and furans
- Education and awareness programmes for specific target groups relevant to the specific sources of unintentional POPs (waste operators, health-care and vehicle maintenance personnel)

Stockpiles and Contaminated Sites

- Training programmes for the assessment and management of contaminated sites
- Training programmes for the safe management of obsolete and unwanted chemicals
- Training programmes in safe storage, handling and use of hazardous chemicals

Research and Development

- Upgrading of existing laboratory facilities and staff training for POPs analysis.

3.5 Timetable for Plan Implementation and Measures of Success

The timetable for implementation of these plans is included in the detailed matrix of activities given in Annex 5. Most of the activities are intended to be carried out over the next three years, although some involve on-going commitments which will continue on for many years into the future.

The measures of success are indicated in the performance indicator columns within the matrices in Annex 5.

3.6 Resource Requirements

The total estimated cost for implementing all of the planned activities is US$1,573,500. The breakdown of these costs against each of the action plans is shown in the table below. This also gives an indication of those costs which are intended to be met from within existing resources (internal) and those for which additional funding will be required (external).

Table 7: Summary of Resource Requirements for Implementation of the Action Plans

No.	Action Plan	Cost Estimates (US dollars)		
		Internal	**External**	**Total**
1	Action Plan for POPs and Other Pesticides	$3,300	$94,000	$97,300
2	Action Plan for PCBs	$5,500	$70,000	$75,000
3	Action Plan for Unintentional POPs	$14,000	$430,000	$444,000
4	Action Plan for Stockpiles and Contaminated Sites	$1,500	$805,000	$806,500
5	Public Awareness, Information and Education	$1,500	$55,000	$56,500
6	Research, Development and Monitoring	$2,000	$77,000	$79,000
7	Action Plan for Reporting	$700	$14,000	$14,700
	TOTALS	**$28,500**	**$1,545,000**	**$1,573,500**

Annex 1: Technical Information on Persistent Organic Pollutants

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

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

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

Chlordane and Heptachlor
Technical grade chlordane is a mixture of at least 120 compounds. In the past, chlordane was released into the environment primarily from its application as an insecticide and for seed dressings and coatings. In the USA, it was used extensively before 1983, and from 1983 to 1988, it was registered for termite control. It was cancelled for this use in 1988. Heptachlor has a similar use profile and is of particular interest since its oxidation product, heptachlor epoxide, is carcinogenic, and has been found in the Arctic abiotic and biotic environments.

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

Toxaphene
Toxaphene is produced by the chlorination of technical camphene or γ-pinene and can consist of over 300 congeners, mainly bornanes and camphenes substituted with 6-10 chlorines, with an average composition of $C_{10}H_{10}C_{l8}$. Analysis has been difficult because of the mixture's complexity, and because of lack of standards for individual components. Analytical standards for some chlorinated bornanes have recently become available. Nevertheless, the levels and effects of toxaphene are not well studied even though it is a significant contaminant in some regions.

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

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

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

There are 209 chlorinated biphenyl congeners, with different chlorine substitutions on the biphenyl ring. Most PCB congeners, particularly those lacking adjacent unsubstituted positions on the biphenyl rings (e.g., 2,4,5-, 2,3,5- or 2,3,6-substituted on both rings) are extremely persistent in the environment. They are estimated to have half-lives ranging from three weeks to two years in air and, with the exception of mono- and di-chlorobiphenyls, are essentially non-biodegradable in aerobic soils or sediments. Highly chlorinated PCBs have been shown to be dechlorinated in anaerobic sediments, but only where present at relatively high concentrations (>10 g/g dw). PCBs also have extremely long half-lives in adult fish.

Polychlorinated dibenzo-p-dioxins and furans (PCDD/Fs)
Polychlorinated dibenzo-p-dioxins and furans (PCDD/Fs) enter the environment as by-products of industrial processes. The most significant sources are low-temperature, incomplete incineration of wastes, and especially chlorine-containing materials such as plastics. Other major sources include thermal processes, such as motor vehicle fuel combustion in countries where leaded petrol is still used, and metallurgical industries. Pulp and paper mills using chlorine in the bleaching process have been important sources, although discharges have been significantly reduced in recent years because of the substitution of molecular chlorine by other bleaching agents. PCDD/Fs are also trace contaminants in chlorophenoxy herbicides, PCB formulations, and chlorophenol wood preservatives.

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

Annex 2: Key Obligations Under the Stockholm Convention

(Note: This listing is simply provided as a guide to the Convention and should not be taken as a legal interpretation)

The Stockholm Convention includes a number of major provisions that obligate its Parties to:

- Prohibit and/or take legal and administrative action necessary to eliminate production and use of Annex A chemicals (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene and PCBs) – Article 3.1(a);
- Restrict production and use of Annex B Chemicals (DDT) - Article 3.1(b);
- Ensure that chemicals listed in Annex A or Annex B are imported only for the purpose of environmentally sound disposal or for a use permitted for the Party under either annex – Article 3.2(a);
- Ensure that chemicals listed in Annex A or Annex B are exported only for the purpose of environmentally sound disposal, to a Party that has a permitted use of the chemical under either of the annexes or to a non-Party that certifies that it is committed to comply with certain provisions of the Stockholm Convention – Article 3.2(b);
- Take measures under existing regulatory and assessment schemes to prevent the production and use of new pesticides and industrial chemicals exhibiting the characteristics of POPs and take the criteria for identification of POPs into consideration in such schemes - Article 3.3, Article 3.4
- Register specific exemptions to Annex A or Annex B if needed and upon becoming a Party and, if an extension to such a registration is to be requested, provide a suitable justification report for the extension - Article 4.3, Article 4.6;
- Develop and implement an action plan on a national, sub-regional or regional basis, as appropriate, for the reduction of total releases of Annex C chemicals (PCDD, PCDF, HCB, PCB) from anthropogenic sources within two years of becoming a Party – Article 5;
- Manage POPs stockpiles and wastes in a manner protective of human health and the environment including developing strategies for their identification, and application of environmentally sound handling, collection, transport and disposal measures - Article 6.1;
- Develop appropriate strategies for identifying sites contaminated by POPs chemicals – Article 6.1(e);
- Prohibit disposal of POPs stockpiles and wastes involving or leading to recovery, recycling, reclamation, direct use or alternative use - Article 6.1 (d) (iii);
- Regulate transboundary movement of POPs stockpiles and waste POPs in accordance with international rules, standards and guidelines - Article 6.1 (d) (iv)
- Submit a national implementation plan to the Conference of the Parties within two years of becoming a Party and review the plan on a periodic basis - Article 7.1;
- Designate a national focal point for exchange of information on POPs - Article 9;
- Exchange information with other Parties related to reduction or elimination of production, use and release of POPs and alternatives to POPs - Article 9;
- Provide the public with access to current information on POPs including information relating to health and safety of humans and the environment - Article 10.2.
- Provide technical assistance, if a developed country, to developing country Parties and Parties with economies in transition - Article 12.1, Article 12.2;
- Provide financial support and incentives for national activities intended to achieve the objective of the Convention - Article 13.1;
- Provide financial support, if a developed country, to developing country Parties and Parties with economies in transition for agreed incremental costs associated with meeting their obligations under the Convention - Article 13.2;
- Provide periodic reports to the Secretariat on implementation of Convention provisions including statistical data on production, import and export of Annex A and Annex B chemicals - Article 15.1, Article 15.2**.**

Annex 3: List of People and Organisations Involved in the Preparation of the National Implementation Plan

1. Membership of the National Coordinating Committee

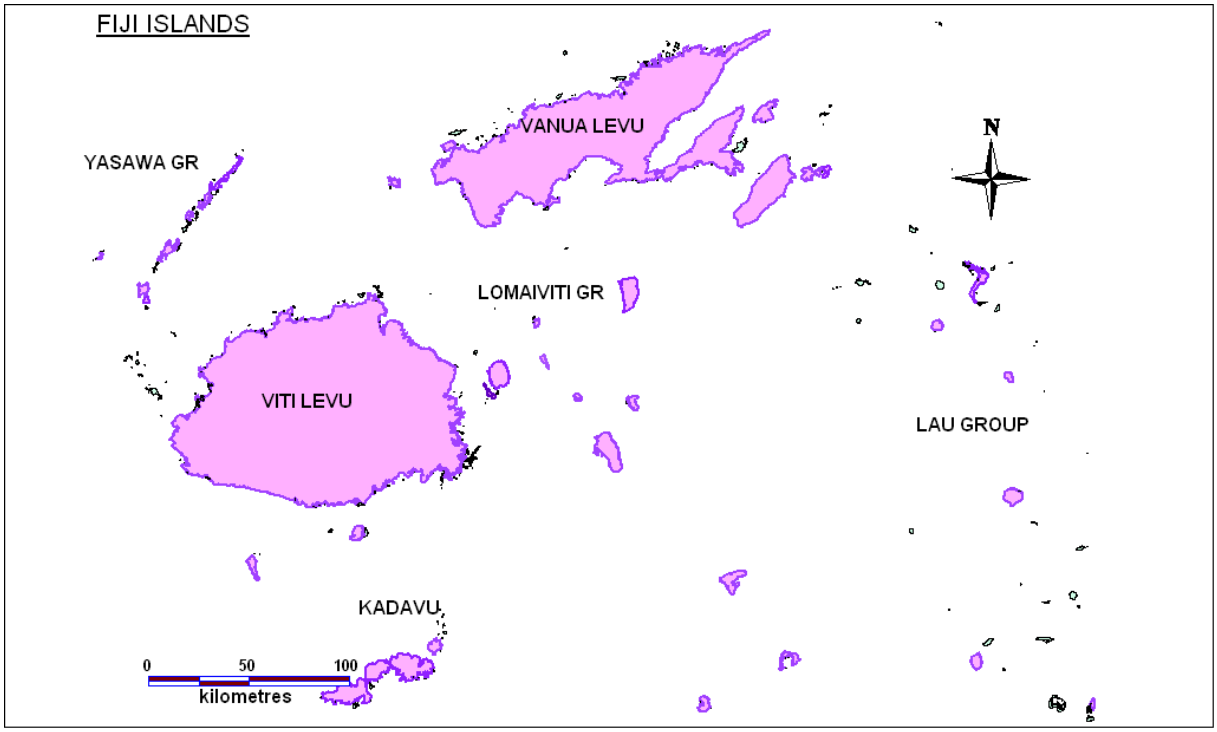
Agchem Ltd
Colonial War Memorial Hospital
Fiji Institute of Technology
Fiji Islands Revenue & Customs Authority
Fiji School of Medicine
Government Pharmacy
Greenpeace
Institute of Applied Sciences, USP
Land Transport Authority
Live & Learn
Ministry of Agriculture
Ministry of Education
Ministry of Health
Ministry of Women
Occupational Health and Safety
Pacific Concerns Resources Center
Solicitor Generals Office
South Pacific Applied Geoscience Commission
World Wildlife Fund

2. Other People and/or Organisations Consulted

Organisation	Person/Position
Agchem Limited	Ben Nand, General Manager
BP Oil	
Colonial War Memorial Hospital	Parmod Kumar, Laboratory Superintendent, plus Reginald Chandra and Uria Rabuatoka
Curriculum Development, Unit, MoE	Apisalome Movonu, Science Officer
Department of Energy, MWE	Intiaz Khan
Dept of Environmental Health, MoH	Timoci Young, Senior Health Inspector
Department of Environment, MLGHSSE	Premila Kumar and Vandana Naidu
Department of Mineral Resources	Raijeli and Sandhia
Douglas Pharmaceuticals	
Emperor Gold Mines	Jone Feresi
Fiji Customs and Revenue Authority	Jagat Narayan and Rishi Deo
Fiji Foods	
Fiji Government Supply Office	Sevuloli Tavuweweri, Purchasing Officer
Fiji Industries	Neeraj Chand
Fiji Institute of Technology	Winifereti Nainoca, Head of General Studies, and Chandra K Nair
Fiji Maritime Safety	Koresi Toaisi
Fiji School of Agriculture	Kan Naidu
Fiji School of Medicine (School of Public Health & Primary Care)	Navitalai Litidamu, Head, SairusiTinacovu, Lecturer and Adrieu Naduva
Fiji Sugar Corporation	Irami Ului and Anal Prasad
Fisheries Department, MFF	Ben Saqata
Forestry Office, MFF	Shoba Kumar, Research Officer
Goodman Fielder	
Government Pharmacist	Mr Khumuldev, Deputy Government Pharmacist
Greenpeace Australia Pacific	Koin Etuati, Toxics Campaigner
GREM Chemicals	Roy Sharma
Institute of Applied Science, USP	Prof. Bill Aalbersberg, Director

Organisation	Person/Position
Koronivia Research Station, MASLR	Jainend Kumar, Director, Research Division, and Anjali Sharma
Land Transport Authority	Taniela Tora, Coordinator, Technical Enforcement
Live & Learn Environmental Education	Archana Narayan, Field Trainer
Ministry of Foreign Affairs & Trade	Mr Buniaro, Deputy Secretary
Ministry of Women	Merewalesi Bale and Preeti
Mobil Oil	Shusendra Singh
National Food & Nutrition Centre	Mrs Chand, Director
Nestle Fiji Ltd	Avinash Sami
Occupational Health & Safety	Samu Namosimalua, Head-Chemical Unit and Venita Lal, Chemical Engineer, and Yvonne Kafoa
Office of the Solicitor General	Eliesa Tuiloma
ORICA Chemicals	David Leong
Pacific Centre for Environment & Sustainable Development, USP	Melchior Mataki
Pacific Concerns Resource Centre	Neil Netaf
Secretariat of the Pacific Community	Sada Nand
Shell Fiji Ltd	Sophie Yee
SOPAC	Jonathan Mitchell
Suva Water Supply and Sewage Section	Mr Baba
University of the South Pacific	Dr Philomena Gangaiya, Head of Chemistry

Annex 4: Map of Fiji Islands



Annex 5: Detailed Action Plans

Action Plan 3.3.1: Detailed Workplan for POPs and Other Pesticides (Articles 3, Annexes A and B)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: To develop by the end of 2006 (and then implement) the most effective strategies to ensure control of the import and use of all POPs pesticides, including capacity building for personnel in the Department of Agriculture and the Revenue & Customs Authority **Lead Agencies:** DoA and FIRCA					
Assess and agree on the most effective strategies for the control of POPs pesticides	DoE* DoA* USP FIRCA* TPAF CCG AGO	Months 1-3	Strategies developed	Internal: $500	Consultative meeting costs (venue, refreshments, stationery)
Determine which staff in which sections of the government need training (also covering objective 2 below)		Months 4-5	Staff identified	External: $2000	Consultancy
Determine the most effective training methods and materials		Months 6-8	Effective training methods and materials identified	External: $7000	Consultancy Training materials
Determine on-going local delivery option and ensure its competence		Months 9-10	Method of delivery identified and tested	External: $8000	Training Facilitator/s Training materials, training costs (venue, refreshments, stationery)
Identify the most effective way of monitoring compliance		Months 11-12	Effective way of monitoring compliance identified and tested	External: $1500	Consultancy
Identify best mechanism whereby FIRCA and the Pesticide registrar can control importation of POPs pesticides	DoA FICRA	Months 11-12	Agreement on best mechanism	External: $1500	Consultancy
Progress the implementation of the improved pesticide legislation	DoA	Months 1-24	Legislation adopted	Internal: $500	Meeting costs
Objective 2: To develop by the end of 2006 (and then implement) a program to build capacity in the Department of Agriculture for the regulation and management of all pesticides, including POPs (including enforcement of the Pesticide Act) **Lead Agencies:** DoA					
Determine the best training materials and approaches	DoA TPAF	Months 13-14	Best training methods and materials determined	External: $7000	Consultancy Training materials

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Determine best ongoing local delivery option and ensure its competence	USP	Months 15-16	On-going delivery method identified	External: $8000	Training Facilitator/s Training materials, training costs (venue, refreshments, stationery)
Enhance the procedure in DoA to implement the Pesticide Act		Months 17-18	Manual produced	External: $4000	Legal Drafter (AGO) costs of printing Manual
Develop an annual external review mechanism for the effectiveness of pesticide management		Month 19-20	Review mechanism developed	External: $2000	Consultancy
Objective 3: To develop by the end of 2006 an ongoing national program to improve practices for pesticide handling, storage, use and disposal through training, education and awareness of user groups **Lead Agencies:** DoA and DoE					
Determine target audiences	DoA* DoE* FMC CCG* NFU SCGC USP TPAF	Months 11-12	Target audience identified	Internal: $300	Consultative meeting costs (venue, refreshments)
Determine Communication Strategy		Months 13-14	Communication Strategy developed	External: $3000	Consultancy
Collate and translate into local languages appropriate materials (toolkit)		Months 15-16	Toolkit of materials prepared	External $8000	Local language translators Printing and Audio/Visual preparation
Make materials readily available to all stakeholders		Months 17-18	Toolkit distributed at relevant gatherings, televised and radio broadcast	External $10000	Cost of mass-producing the Toolkit Postage costs
Develop and implement training programmes, including identification and training of local trainers		Months 19-24	Training programmes developed, 2 work-shops implemented	External $15000	Training facilitators Training costs (venue, refreshments, stationery)
Objective 4: To improve by 2006, the level of information available on pesticide imports **Lead Agencies:** DoA and FIRCA					
Identify existing system(s) used in Fiji to provide information on pesticide imports	DoA* FIRCA* CCG* FBoS NOHS DoE*	Months 7-8	Existing system(s) identified	External: $2000	Consultancy
Hold a stakeholder workshop to learn about existing databases and current and future needs		Months 7-8	Workshop implemented	Internal: $2000	Workshop costs (venue, refreshments, stationery)
Develop the most appropriate database who can best manage it		Months 9-10	Home-base of database identified, database developed	External: $7000	IT Officer (3 Months) Office space IT supplies

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Determine how such information can be made readily available to decision makers		Months 11-12	Information products identified	External: $3000	Communications Officer
Implement the proposed system		Months 13-36	System developed and implemented	External: $5000	Office space

Action Plan 3.3.2: Detailed Workplan for PCBs (Article 3, Annex A, Part II)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: Prepare a comprehensive national inventory of PCBs, PCB containing materials and PCB wastes in the next two years (by end of 2007) **Lead Agency:** DoE					
Prepare a list of resources and expertise on PCB Management and related research	DoE* MWE* FEA USP*	Months 1-2	List of resources, expertise and research endorsed by CCG	Internal: $500	DoE Officer
Prepare a comprehensive profile of potential sources of PCBs in the country		Months 3-5	Profile completed and endorsed by CCG	External: $2000	Consultancy
Develop and publish inventory protocol and guidelines		Months 6-7	Inventory protocol, guidelines completed and endorsed	External: $3000	Consultancy
Upgrade and recognize laboratories that will analyze for PCBs		Months 1-18	Labs upgraded & recognized	External: $10000	Finance (partial contribution to accreditation), Lab-supplies
Conduct training on identification and sampling for electric utilities, servicing facilities, and DoE staff		Months 9-11	Training conducted	External: $5000	Training costs (venue, refreshments, materials and stationery)
Develop a PCB information database		Months 9-15	Database developed	External: $7000	IT Officer, Office space IT supplies
Conduct inventory of PCB materials and wastes		Months 12-18	Inventory completed and endorsed by CCG	External: $6000	Consultancy
Conduct information, education campaign on health issues and technology for PCB management		Months15-20	Campaign conducted nationally	External $6000	Cost of printing & Audio/Visual material preparation

Objective 2: Establish and implement a system of safe handling, storage and transport of PCBs, PCB-containing materials and PCB wastes within three years (by end of 2008) **Lead Agency:** DoE					
Enhance guidelines for the storage and safe handling including transport and dismantling of PCB waste or contaminated material	DoE* MWE FEA LTA M&PAF	Months 18-26	Guidelines developed and endorsed by CCG	External: $4000	Consultancy
Develop monitoring and evaluation program for handling and storage		Months 24-25	Monitoring and Evaluation Program developed	External: $1000	Consultancy
Improve safe transportation rules and regulations for PCBs to include: transport vehicle standards, guidelines for preparation of waste shipments, emergency response capability along transportation routes, provisions for authorizing qualified carriers and labeling/placarding requirements for vehicles and containers, as needed		Months 21-25	Improved transportation rules and regulations for PCB developed and endorsed by all stakeholders	External: $6000	Consultative meeting costs (venue, stationery, refreshments) Legal Drafter (AGO)
Develop guidelines/checklist for the evaluation of potential PCBs contaminated sites (in conjunction with Action Plan 4)		Months 1-6	Guidelines/check-list developed and tested	External: $4000	Consultancy Cost of printing the checklist and conversion to CD-ROM
Objective 3: Ensure no further import or use of PCBs by the end of 2006 **Lead Agencies:** FIRCA & NOHS					
Review existing regulations, especially Occupational Health and Safety Act, to ensure PCB-containing products are banned (e. g. declared a priority existing chemical for FIRCA notification)	DoE* NOHS* MWE FEA FIRCA*	Months 1-5	PCB-containing products banned as per Occupational Health and Safety Act	Internal: $1000	Consultancy
Develop and implement legislation as necessary		Months 1-24	Legislation developed	Internal: $4000	Consultancy Legal Drafter (AGO)
Develop capacity in Customs Department on all potential PCB-containing products		Months 6-9	Training workshop organized and implemented in Suva and Lautoka	External $8000	Training workshop costs (venue, refreshments, stationery) Facilitators

Objective 4: Eliminate and destroy all PCBs (except as needed for laboratory analyses) PCB-containing materials and PCB waste not later than 2028 **Lead Agency:** DoE					
Analyze options for PCB waste collection and disposal	DoE* FEA MWE*	Months 21-25	Options identified and evaluated	External: $2000	Consultancy
Evaluate existing environmental financing support facilities to support disposal of PCB waste		Months 21-26	Environmental financing support facilities evaluated	External: $2000	Consultancy
Assess, document and report results, including proposals for implementation		Months 27-30	Report results and proposals developed ready for submission	External: $4000	Consultancy
Implement the proposed programme		On-going	Programme implemented	External: Depends on Proposals	Finances Project Officers

Action Plan 3.3.3: Detailed Workplan for Unintentional POPs (Dioxins and Furans, Article 5).

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: Prepare an updated inventory of dioxin and furan releases within three years for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors **Lead Agencies:** DoE					
Review of activity data collection methods	DoE* MoH* LTA* MC* DoA FSC NFU SCGC FIT USP CCG*	Months 1-3	Review completed	Internal:$1000	Consultancy
Review and strengthen the monitoring system for industrial and household sources		Months 4-15	Monitoring system reviewed and strengthened	External:$3000	Consultancy
Review and develop monitoring system for agricultural, commercial, and other sources		Months 4-15	Monitoring system developed and endorsed CCG	External: $7000	Consultancy meeting costs for CCG (x 3)
Review and develop Fiji emission factors		Months 1-12	Emission factors developed	External: $10000	Consultancy Consultative meeting costs (venue, refreshments, stationery)
Data collection for the updated inventory		Months 13-24	Inventory updated	External $9000 Internal: $1000	IT Officer Research Assistant Office space IT supplies
Inventory reporting, data analysis and program review		Months 25-30	Inventory reported and program reviewed	Internal $1000	Routine operational costs
Objective 2: Develop and implement BAT/BEP promotion, adoption and monitoring programmes within three years across at least four of the significant dioxin and furan source categories **Lead Agencies:** DoE					
Identify BAT/BEP appropriate to the four significant dioxin and furan sources and set performance criteria for each BAT/BEP	DoE* FMC DoW AGO* MoE CCG*	Months 13-15	Appropriate BAT/BEP identified and endorsed by CCG	External: $2000	Consultancy meeting costs for CCG
Develop and implement BAT/BEP information, education and communication programmes		Months 13-22	BAT/BEP information and educational toolkit developed, tested and implemented	External: $15000	Consultancy Toolkit mass production

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Assist local government units to issue resolution and/or enact ordinances to promote BAT/BEP for unintentional POPs		Months 13-36	Resolution developed and enacted	External: $5000	Consultancy Legal Drafters (AGO)
Coordinate with the MoE to integrate BAP/BEP in the curricula and extra-curricular activities		Months 13-36	Aspects of BAT/BEP incorporated into curricula and extra curricula	External: $10000	Curriculum Expert costs of Consultative meetings
Develop incentives/rewards system for dioxin and furan sources adopting BAT/BEP		Months 13-36	Incentives and Reward systems developed and enacted	Internal: $5000	Consultancy Consultative meeting costs (venue, refreshments, stationery) Legal Drafter (AGO)
Develop and adopt financing programmes for sources adopting BAT/BEP		Months 13-36	Financial programmes developed and adopted	External: $6000	Consultancy Consultative meeting costs (venue, refreshments, stationery)
Develop performance evaluation of the application of BAT/BEP		Months 13-36	Evaluation program developed	Internal: $2000	
Objective 3: Formulate and enforce appropriate policies and regulations by the end of 2007 **Lead Agencies:** DoE and AGO					
Review existing local and international regulations and policies pertaining to unintentional POPs	DoE* AGO* MWE USP MWE MPD MoH	Months 15-16	Local and international regulations and polices reviewed	Internal: $1000	Consultancy
Investigate opportunities to adopt BAT/BEP under the Environmental Impact Assessment system		Months 16-18	Opportunities identified	External: $3000	Consultancy
Establish sampling capability for dioxins and furans		Months 8-12	Sampling capacity for dioxins and furans established	External: $10000	Sampling equipment
Establish ambient baseline levels of dioxins and furans		Months 13-17	Ambient baseline levels established	External: $27000	Sampling and analysis costs
Conduct life cycle analysis and risk assessment based on the four major sources of dioxins and furans		Months 18-24	LCA and risk assessment completed	External: $3000	Consultancy
Set ambient criteria and standards for emissions for BAT/BEP		Months 18-20	Standards developed	External: $4000	Consultancy

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Enforce and monitor compliance		Months 24-36	Enforcement mechanisms developed and implemented	External: $8000	Allowances for Enforcement Officers
Objective 4: Develop and implement a program for information on the prevention of environmental and health effects of dioxins and furans by the end of 2006 **Lead Agency:** MoH					
Identify, review and develop environmental, health and safety programmes appropriate to the four significant dioxin and furan sources	DoE* MC CCG* MPD MoH	Months 7-12	Appropriate EHSP programmes identified and developed	External: $10000	Consultancy
Assist local government units to issue resolution and/or enact ordinances to promote environmental, health and safety for dioxins and furans		Months 14-18	At least 5 local units are assisted	External: $9000	Consultancy Legal Drafters (AGO)
Objective 5: Develop and implement a strategy to reduce releases from burning of rubbish, fields/forests and medical waste by the end of 2006 **Lead Agencies:** DoE and MoH					
Develop awareness materials on national situation on POPs for public and schools	DoE* MoE MPD* PMWC LMC MC MoH*	Months 1-4	Awareness toolkit developed and distributed to schools	External: $12000	Consultancy Engagement of full time officer
Conduct awareness surveys on awareness on effects of rubbish and field burning and alternatives		Months 3-5	Awareness surveys completed	External: $6000	Awareness campaign costs (travel, allowances)
Develop and implement program on village consultation for awareness and alternatives to burning		Months 6-8	National consultations at least at two locations per division	External: $5000	Cost of meetings (allowances, travel, refreshments)
Implementation of National solid waste strategy for landfill material (based on draft Fiji strategy)		On-going after National Solid waste Strategy is approved	National solid waste strategy implemented	External: Depending on Proposals	Finances Project Officers
Training of rubbish collectors and landfill management on waste management		Months 6-8	Training completed	External: $10000	Training facilitator/s Training costs (venue, refreshments, transport)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Complete collection of information on quarantine and medical waste volumes and management options	DoE* MoE MPD PMWC* LMC* MC MoH*	Months 1-3	Information collection completed (collated and homogenized)	External: $4000	Consultancy
Finalize system in Health Department to consider best environmental practice for medical waste in Fiji situation		Months 1-8	Best Practices for medical waste finalized	External: $3000	Consultancy
Source new technologies needed and obtain necessary funds		Months 1-24	New technologies sourced and tested in 2 major hospitals	External:$200000	New technology Facility (space) Set-up costs
Training and awareness on new technologies		Months 25-28	Training completed	External: $10000	Training Facilitator/s Training costs (venue, refreshments, stationery)
Monitor systems		Months 25-30	System monitored	Internal: $2000	Allowances for Monitors
Obtain safety gear as necessary		Months 1-6	Safety gear acquired	External: $3000	Cost of equipment Storage room Freight charges
Develop system for ash disposal from incineration		Months 1-8	System for ash disposal developed	External:$4000	Consultancy
Review operation of incinerators at least every two years		On-Going	Review Reports	Internal:$1000	DoE or MoH Officer
Objective 6: Develop and implement a strategy to reduce releases from vehicles by the end of 2005 **Lead Agencies:** LTA and DoE					
Work with LTA to develop, implement systems for checking of vehicle exhaust based on national motor vehicle strategy	LTA* DoE* CCG Relevant NGOs	Months 1-6	Current LTA Programme supplemented	External: $4000	None (on-going activities)
Install hot line to report smoking vehicles		Months 1-6	Sustain Hotline for another 12 Months	External: $5000	
Public awareness of economic and environmental costs of poor burning of vehicle fuel		Months 1-6	Increased awareness	External: $2000	Resource materials Advertising costs

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Monitoring of effects of policies by dust monitoring at bus stand and areas of heavy vehicle use		Months 1-12	Reduction in level of dust/smoke at bus stand in 3 major urban centres (Suva, Lautoka, Labasa)	External: $6000	Monitor's allowances Analysis costs
Hold meetings with taxi and bus owner associations to share and help implement ideas		Months 1-6	At least 3 Consultative meetings with Bus operators and Taxi Union (in different parts of Fiji)	External: $6000	Consultancy Consultative meetings costs (venue, refreshments, travel) meeting facilitators
Review policy on second-hand vehicle import to determine effects on unintentional POPs production		Months 5-8	Effect of imported second hand vehicles on unintentional POPs determined	External: $9000	Consultancy Consultative meetings costs (venue, refreshments, travel)

Action Plan 3.3.4: Detailed Workplan for Chemical Stockpiles and Contaminated Sites (Article 6)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: To conduct detailed assessments of potentially contaminated sites in Fiji by 2007 and develop remedial action for such sites as necessary **Lead Agency:** DoE					
Establish criteria and mechanism for classification of contaminated sites by the end of 2006	DOE* TPAF* USP PWD DoA* MPD Relevant NGOs	Months 1-6	Criteria and mechanism established	External: $8000	Consultancy meetings costs (venue, refreshments)
Establish local capacity for the identification and management of contaminated sites, via classroom and field training by end of 2006		Months 1-12	Local capacity identified and given training	External:$30000	Training Facilitator/s Training costs (venue, refreshments, travel)
Further assessment of potential contaminated sites identified by SPREP POPs in PICs report by 2006		Months 2-6	All 19 potentially contaminated sites assessed	External:$20000	Consultancy Report Preparation
Signing and fencing of seriously contaminated sites by 2006 and public awareness		Months 7-12	At least 5 sites fenced and public awareness implemented	External: $60000	Contractor Public awareness campaign costs
Obtain necessary safety equipment as soon as possible		Months 1-2	Safety equipment acquired	External: $6000	Cost of equipment Freight, storage room
Develop management plan for the 5 most seriously contaminated sites by end of 2006		Months 7-12	Management Plan developed	External: $10000	Consultancy, meeting costs (venue, refreshments, stationery)
Develop cost estimates and obtain funds by mid-2007		Months 13-18	costs estimate prepared	External:$3000	Consultancy
Remediation of at least 5 sites by end of 2008		Months 19-30	5 sites remediated	External: $350000	Consultancy, site remediation Repatriation to overseas
Public awareness to help identify additional contaminated sites		Months 7-12	Public awareness carried out nationally and at communities adjacent to contaminated sites	External: $8000	Public awareness campaign costs

Objective 2: To have a system in place for the sound management of obsolete and unwanted chemicals by the year 2007 **Lead Agency:** DoE					
Identify location for central obsolete chemical storage facility(s) and carry out permitting process by end of 2006	DOE* TPAF* USP DoA* PWD MPD Relevant NGOs MoF	Months 1-12	Location of site identified and permitting process completed	External: $10000	Consultancy EIA Consultative meetings costs (authorities & communities)
Design and construction of storage facility by end of 2007		Months 12-24	Storage Facility built	External: $250000	Contractor Safety and operating equipment
Development of capacity for management of site and safe transport and handling of chemicals by 2007		Months 20-30	Capacity of chemical Managers and transporters enhanced	External: $10000	Training Facilitators Training costs (venue, refreshments)
Government to identify responsible authority and legislation that may need to be enacted for facility by end of 2006		Months 1-12	Government authority identified and legislation enacted	Internal: $500	Legal Drafter (AGO) Consultative meeting costs (refreshment)
Obtain necessary safety equipment as soon as possible		Months 1-5	Safety equipment acquired	External: $6000	Cost of equipment Freight Storage room
Develop system for recording waste stockpiles and their monitoring by end of 2007		Months 12-18	System for recording waste stockpile developed	Internal: $1000	DoE Officer
Build on list of chemicals to be stored determined during NIP studies		Months 9-12	List of chemicals prepared from the NIP studies enhanced and updated	External: $12000	Consultancy
Develop an action plan to dispose of waste		Months 24-30	Action Plan developed	External: $8000	Consultancy
Develop a training programme for managers of places where chemicals are held on site		Months 6-12	Programme implemented	External $10000	Training facilitators Training costs
Consider ways to minimize the future occurrence of obsolete and unwanted chemicals		Months 12-16	Ways of minimizing obsolete and unwanted chemicals identified distributed to major entities dealing with chemicals	External: $4000	Consultancy

Action Plan 3.3.5: Detailed Work Plan for Public Awareness, Information and Education (Articles 9 and 10)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: Create widespread national awareness and understanding of POPs and related hazardous chemicals and the NIP by the end of 2006, including an understanding of the health, environmental and economic impacts **Lead Agency:** DoE					
Determine optimal communication strategy for POPs awareness	DoE* Relevant NGOs* MoE CCG* NFU SCGC DoA LCS	Months 1-4	Optimal Strategy determined	External:$3000	Consultative meeting costs (venue, refreshments) x 3
Develop necessary awareness materials		Months 4-9	Awareness materials developed	External: $10000	Consultancy Cost of developing the materials
Develop central library/database on POPs information		Months 1-6	Database developed and operational	External: $7000	IT Officer, Office space, IT supplies, Research Assistants (2)
Support a wide variety of awareness programmes as detailed in communication strategy		Months 10-30	No. of programmes supported	External: $15000	Awareness Team Leader (24 months part time)
Provide information support to main chemical users including secondary and tertiary schools and encourage including units of chemical management especially related to POPs in curricula		Months 7-36	Info. provided to all main users	External: $3000	Postage and delivery costs
Establish a system to communicate information on the NIPs and outcome of COPs to government officials and general public		Months 7-12	System established	Internal: $200	Consultative meeting costs
Special awareness sessions for media		Months 7-36	Awareness sessions for media implemented	External: $4000	Workshop costs (venue, refreshments, materials)
Investigate optimal role for local chemical industry in awareness programme		Months 1-6	Role identified and made known to them	Internal: $300	Consultative meeting costs
Monitor the effectiveness of activities carried out		Months 18 & 30	Report prepared	External: $5000	Consultancy meeting costs for CCG x 2

Objective 2: Develop awareness and understanding of specific agency roles and responsibilities in implementing the NIP and build and strengthen partnership/networks to carry them out by the end of 2006 **Lead Agency:** DoE					
Hold awareness presentation for senior interagency meetings of government officials and other relevant stakeholders	DoE* Relevant NGOs* MoE CCG* DoA	Months 3-4	At least two awareness presentations (workshop) held	External: $2000	Workshop costs (venue, materials, refreshments)
Hold participatory workshop of relevant stakeholders to identify roles and how needed activities can fit in to existing and future sectoral strategic plans		Months 4-5	At least two workshops held	External: $6000	Workshop costs (venue, refreshments)
Verify these roles with senior management of relevant organisations		Months 6-7	Roles verified and accepted by senior management	Internal: $500	
Hold regular (annual) meeting of stakeholders to review progress and set objectives and activities for the following year		On-Going Annual basis	1 meeting held	Internal: $500	meeting costs (venue, refreshments)

Action Plan 3.3.6: Detailed Work Plan for Research, Development and Monitoring (Article 11)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: To develop as fully as possible local capacity in POPs monitoring by the end of 2006 **Lead Agency:** DoE					
Identify laboratory(ies) most capable of doing POPs analyses	DoE* DoA* USP* TPAF	Months 1-2	Laboratory/ies identified	External: $3000	Consultancy
Support laboratory with training and appropriate resource allocation		Months 3-18	Training Support and Technical support	External: $50000	Support for overseas training of 2 personnel Training attachments 5 Govt. lab technicians
Objective 2: To develop a cost-effective programme for POPs monitoring by the end of 2006 **Lead Agency:** DoE and CCG					
Prepare POPs monitoring plan for Fiji as part of workshop on sectoral implementation responsibilities	DoE* DoA* CCG* USP TPAF	Months 1-2	Monitoring Plan developed	External: $4000	Consultancy
Source finances to support the program		Months 1-12	Funding proposal developed and funds acquired	Internal: $2000 (proposal preparation)	Consultancy
Implement monitoring and reporting with periodic review of monitoring plan and effectiveness of NIP activities that have been carried out		Months 1-30	Monitoring reports prepared and accepted by CCG	External: $20000	Consultancy

Action Plan 3.3.7: Detailed Work Plan for Reporting (Article 15)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate USD) & Source	Resources Needed
Objective 1: To ensure effective gathering of information on the implementation of the NIP by the end of 2006 **Lead Agency:** DoE					
Determine national focal point	DoE* CCG*	Months 1-2	Focal Point identified	Internal: $200	Consultative meeting costs
Determine preferred mechanism for information gathering		Months 3-6	Mechanism determined	Internal: $500	Consultative meeting costs
Establish a database to store information and responsibility to regularly update it		Months 2-3	Database established and assigned	External: $5000	IT Officer IT supplies Office space
Objective 2: To ensure that information on NIP activities are shared both nationally and internationally by the end of 2006 **Lead Agency:** DoE					
Develop strategy to ensure national dissemination of data and responsibility to carry it out	DoE* CCG*	Months 1-4	Strategy developed and assigned	External: $3000	Consultancy Consultative meetings (venue, refreshments)
Report on activities as determined by COP		On-going as prescribed by COP	Reports prepared and submitted	External:$6000	Consultancy