Saint Christopher (St. Kitts) and Nevis

National Implementation Plan for the Management of Persistent Organic Pollutants

Contents

LIST OF ACRONYMS

Abbreviation	Name
ACP	African, Caribbean and Pacific
BAT	Best Available Techniques
BEP	Best Environmental Practices
CGPC	Coordinating Group of Pesticides Control Boards of the Caribbean
DPPE	Department of Physical Planning and Environment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
MEA	Multilateral Environmental Agreement
NAS	National Adaptation Strategy
NIP	National Implementation Plan
OECS	Organisation of Eastern Caribbean States
PAHO	Pan American Health Organisation
POP	Persistent Organic Pollutant
SIDS	Small Island Developing States
SKN	Saint Christopher (St. Kitts) and Nevis
SKNBS	St. Kitts and Nevis Bureau of Standards
SWMC	Solid Waste Management Corporation (St. Kitts)
UNEP	United Nations Environment Programme
WTO	World Trade Organization
XCD	Eastern Caribbean Dollars

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Executive Summary

The Saint Christopher (St. Kitts) and Nevis (SKN) Persistent Organic Pollutants (POPs) National Implementation Plan (NIP) is an all-inclusive, strategic policy document, the purpose of which is to construct an effective POPs management system through the application of a sustainable policy to protect human health and secure environmental protection as defined in the Stockholm Convention. The implementation of the NIP strategies will be coordinated by the Ministry of Sustainable Development. Presently, twelve (12) POPs pesticides are being controlled by the Convention commonly referred to as the *dirty dozen*, these are: aldrin, chlordane, dichlorodiphenyltrichloroethane, dieldrin, endrin, heptachlor, hexachlorobezene, mirex, toxaphene, polychlorinated biphenyls, polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

The Stockholm Convention's aim is to provide the required technical and financial resources to assist countries to take action to reduce and eliminate the releases of these chemicals, identifying that:

1. POPs pose significant threats to human health and the environment in St. Kitts and Nevis (SKN).
2. St. Kitts and Nevis is a Small Island Developing State (SIDS) that does not manufacture any of the group of POPs and other toxic chemicals under control by the Stockholm Convention but may be unintentionally producing POPs.
3. It is possible that SKN may be utilizing POPs and other toxic chemicals of this nature and equipment containing POPs.

As a party to the Stockholm Convention on Persistent Organic Pollutants, there are specific obligations which must be met, and thus, several actions must be taken. Table 1 below summarizes the national priorities and key issues for St. Kitts and Nevis' implementation of the Stockholm Convention.

Table 1. Summary of Priorities and Actions for the

National Implementation of the Stockholm Convention

NATIONAL PRIORITY	ACTION	Responsible Agencies	Time Frame	Cost ($ XCD)
Institutional and Regulatory mechanisms	1. Increase stakeholder involvement in the management of POPs and chemicals 2. Review and amend existing Legal Instruments for POPs and chemicals 3. Strengthen institutional framework for investigation of POPs and chemicals	Bureau of Standards, Ministry of Justice and Legal Affairs, Pesticides and Toxic Chemicals Boards Control	1 year 6 months 1 year	-
Article 3 Measures to reduce or eliminate releases from intentional production and use				
POPs	Increase the health and environmental knowledge of POPs and chemicals targeted by the Convention, including hazards associated with the control of these substances.	Ministry of health, Pesticides and Toxic Chemicals Control Board , SKNBS	Ongoing	-
Take legal actions to eliminate the production, use, import and export of POPs pesticides, with the allowance of export for environmentally sound disposal	1. Submit a recommendation to the Chair of the Pesticides Control Board and the Ministry of Legal Affairs which requests the addition of Annex A and B chemicals that are not presently banned to the list of banned and severely restricted pesticides. 2. For each new POPs pesticide added to Annexes A or B, submission to the Chair of the Pesticides Control Board copies of the proposal, risk profile and risk management profile prepared in respect of that chemical, along with a copy of the decision of the Conference of Parties to include it in the Convention, and a recommendation that the chemical should be formally banned, if such action has not already been taken. 3. Circulation to members of the Board of relevant information documents about POPs pesticides, followed by action by the Pesticides Control Board to ban/severely restrict the chemical(s) in question. 4. Issuance of public notices that the chemical/pesticides in question have been banned/severely restricted.	SKNBS and Department of Environment	6 months Continual 6 months Continual	-

NATIONAL PRIORITY	ACTION	Responsible Agencies	Time Frame	Cost ($ XCD)
Take administrative measures to prohibit the import and export of PCBs and PCB-containing equipment	1. Preparation of a submission to the Director of the Department of Commerce and Consumer Affairs proposing that PCBs should be put on licence and presenting the reasons why import and export of these substances should be prohibited, with specific reference to the associated human and environmental health considerations and the requirements of the Stockholm Convention. 2. Preparation and submission of a Paper to Cabinet for a decision on whether or not PCBs should be added to the list of commodities on license. 3. Requirement, for all PCBs exported for disposal, that notification in writing be submitted regarding the exportation, transportation and environmentally sound disposal of the wastes, as required by the Basel Convention.	Pesticides and Toxic Chemicals Control Board , SKNBS, Department of Environment	6 months 6 months Continual	-
Article 5 Measures to reduce or eliminate unintentional releases				
Promote the use of BAT and BEP for existing waste incinerators to reduce or eliminate UPOPs	1. Performance of environmental audits at municipal solid waste and medical waste incinerators. This activity would also contribute to the upgrading of subsequent national inventories of UPOPs. 2. Implement BAT and BEP awareness and training among personnel at waste incinerators, and also regulatory personnel. This activity should be preceded by on-site assessments of the techniques and practices in use at the targeted facilities. 3. Implement alternate disposal methods for hospital and other medical waste.	Pesticides and Toxic Chemicals Control Board , SKNBS, Department of Environment	2 years 3 years 2 years	$80,000.00
Require the use of BAT and BEP for new source facilities	Submission of proposal of implementation of BAT and BEP to the Physical Planning Unit to consider for new developments in the above and other relevant source categories.	Pesticides and Toxic Chemicals Control Board , SKNBS, Department of Environment	6 months	-
Develop and maintain source inventories and release estimates	1. Identify, in conjunction with stakeholders, measures to address data gaps and requirements for sound management of UPOPs 2. Development of a system to update the dioxins and furans inventory.	Pesticides and Toxic Chemicals Control Board , SKNBS, Department of Environment	1 year 1 year	$250,000.00

NATIONAL PRIORITY	ACTION	Responsible Agencies	Time Frame	Cost ($ XCD)
	3. Implement air quality monitoring assessment plan to determine release estimates/ quantification of HCB and PCBs with appropriate guidance.		2 years	
Review the effectiveness of the measures taken to reduce releases of UPOPs	Review and evaluation of measures for reducing UPOPs releases to determine effectiveness.	Pesticides and Toxic Chemicals Control Board, SKNBS, Department of Environment	4 years	-
Article 6. Measures to reduce or eliminate releases from stockpiles				
To take measures so that wastes are disposed of in an environmentally sound manner	1. Establish a secure storage site for POPs pesticides and other unwanted pesticides 2. Screening of potentially PCB-containing equipment to determine the presence and concentration of PCBs. 3. Analysis and confirmation of preliminary identification of pesticides' waste as Endrin (organochloride) 4. Environmentally sound disposal of POPs pesticides waste. 5. Confirmation of all PCB-containing equipment.	SWMC, Pesticides and Toxic Chemicals Control Board, SKNBS, Department of Environment	2 years 2 years 2 years 3 years 2 years	$475,000.00
To identify stockpiles, products and articles in use and waste consisting of, containing or contaminated by POPs chemicals	1. Risk assessment of contaminated sites 2. Regular updating of inventory. This is to be done every 5 years. The next inventory of obsolete pesticides and industrial chemicals should take place in 2015 3. Submission of pesticide storage and stock management regulations to the Pesticides and Toxic Chemicals Control Board with recommendation to be included within the draft for the Pesticides and Toxic Chemical Bill. 4. Provide training in good pesticides stock management, including storage, record-keeping and stock taking and the use of adequate personal safety measures for personnel in the relevant fields.	Pesticides and Toxic Chemicals Control Board, SKNBS, Department of Environment	6 months Continual 1 year 2 years	$100,000.00
To ensure the management and remediation of stockpiles/waste products in an environmentally sound manner	1. Management of contaminated sites. Development of guidelines for the management of PCB containing equipment. 2. Development and implementation of a routine equipment inspection programme.	Pesticides and Toxic Chemicals Control Board, SKNBS, Department of Environment	1 year 2 years	$20,000.00

NATIONAL PRIORITY	ACTION	Responsible Agencies	Time Frame	Cost ($ XCD)
Article 10 Public Information, awareness and education				
To increase awareness of the public on POPs	1. Preparation of information and training manuals 2. Training courses and seminars for public and private sector personnel involved in POPs management. 3. Integration of POPs information into the formal education system 4. Establish a network for scientific and technical information on UPOPs 5. Encouragement of voluntary reporting of POPs products, stockpiles and wastes.	Pesticides and Toxic Chemicals Control Board, SKNBS, Department of Environment	1 year 1 year 2 years 3 years Continual	$250,000.00
Article 11 Research, development and monitoring				
Monitoring	1. Develop research, development and monitoring capabilities in Saint Kitts and Nevis 2. Upgrade laboratories for testing and analysis 3. Develop a monitoring and analysis plan to investigate levels of POPs and chemicals		3 years 2 years 1 year	$250,000.00
Article 15 Reporting				
Reporting	1. Regular reporting on implementation of action plans and strategies identified in the NIP 2. Incorporate the above mention reporting on POPs into the Environmental Protection Department's annual report.		5 years 1 month	$200,000.00

Introduction

Purpose/Objective of the NIP

The St. Kitts and Nevis (SKN) Persistent Organic Pollutants (POPs) National Implementation Plan (NIP) for 2014-2024 is a comprehensive document outlining the effective management of POPs in the Federation of St. Christopher and Nevis. Being a party to the Stockholm Convention, SKN is required to prepare a plan on how they are going to implement the obligations under the Convention and make efforts to put such plan into operation.

The NIP is not a standalone plan but forms part of and is guided by the strategies for economic diversification and social development as articulated in the National Adaptation Strategy (NAS) in Response to the New EU Sugar Regime 2006-2017 (NAS).

The plan is structured along the lines recommended in the World Bank/United Nations Environment Programme (UNEP) guidelines for the preparation of the National Implementation Plan[1].

Overview of the Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants was adopted by the Conference of Plenipotentiaries on May 22, 2001 in Stockholm, Sweden. The Convention entered into force on May 17, 2004. St. Kitts and Nevis acceded to the Stockholm Convention on May 21, 2004.

The Stockholm Convention on Persistent Organic Pollutants (POPs) is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.

Overview of POPs

What are POPs?

Persistent Organic Pollutants (POPs) are organic chemical substances (i.e. carbon-based) that persist in the environment, bioaccumulate through the food web and pose a risk of causing adverse effects to human health and the environment. POPs possess a particular combination of physical and chemical properties such that, once released into the environment, they:

- remain intact for exceptionally long periods of time (many years);
- become widely distributed throughout the environment as a result of natural processes involving soil, water and, most notably, air;
- accumulate in the fatty tissue of living organisms including humans, and are found at higher concentrations at higher levels in the food chain; and

[1] Guidance for developing a national implementation plan for the Stockholm Convention, Revised, May 2005

- are toxic to both humans and wildlife.

As a result of releases to the environment over the past several decades due especially to human activities, POPs are now widely distributed over large regions (including those where POPs have never been used) and, in some cases; they are found around the globe. This extensive contamination of environmental media and living organisms includes many foodstuffs and has resulted in the sustained exposure of many species, including humans, for periods of time that span generations, resulting in both acute and chronic toxic effects.

Though not soluble in water, POPs are readily absorbed in fatty tissue, where concentrations can become magnified by up to 70,000 times the background levels. Fish, predatory birds, mammals, and humans are high up the food chain and so absorb the greatest concentrations. When they travel, the POPs travel with them. As a result of these two processes, POPs can be found in people and animals living in regions such as the Arctic, thousands of kilometres from any major POPs source.

Specific effects of POPs can include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorders, and disruption of the immune system. Some POPs are also considered to be endocrine disrupters, which, by altering the hormonal system, can damage the reproductive and immune systems of exposed individuals as well as their offspring; they can also have developmental and carcinogenic effects[2].

The 12 initial POPs under the Stockholm Convention

Initially 12 organic chemical substances, known as the "dirty dozen", were identified under the Stockholm Convention. These chemicals are listed in three annexes to the Convention:

- Annex A – chemicals to be eliminated
- Annex B – chemicals which have restricted use
- Annex C – unintentionally produced chemicals

The 12 initial POPs are classified under 3 categories, as follows:

1. ***Pesticides:***

Aldrin *Listed under Annex A*

[2] What are POPs? – Stockholm Convention Official Website

A pesticide applied to soils to kill termites, grasshoppers, soil and other insect pests.

Chlordane *Listed under Annex A*

Used extensively to control termites and as a broad-spectrum insecticide on a range of agricultural crops.

Dichlorodiphenyltrichloroethane (DDT) *Listed under Annex B with acceptable purpose for disease vector control*

Perhaps the best known of the POPs, DDT was widely used during World War II to protect soldiers and civilians from malaria, typhus, and other diseases spread by insects. It continues to be applied against mosquitoes in several countries to control malaria.

Dieldrin *Listed under Annex A*

Used principally to control termites and textile pests, dieldrin has also been used to control insect-borne diseases and insects living in agricultural soils.

Endrin *Listed under Annex A*

This insecticide is sprayed on the leaves of crops such as cotton and grains. It is also used to control mice, voles and other rodents.

Heptachlor *Listed under Annex A*

Primarily employed to kill soil insects and termites, heptachlor has also been used more widely to kill cotton insects, grasshoppers, other crop pests, and malaria- carrying mosquitoes.

Hexachlorobenzene (HCB) *Listed under Annex A and Annex C*

HCB kills fungi that affect food crops. HCB is also an industrial chemical and can be released as an unintentional by-product of combustion processes. HCB is also used in the production of rubber, aluminium, munitions and dyes and in wood preservation and other manufacturing.

Mirex *Listed under Annex A*

This insecticide is applied mainly to soils to kill fire ants and other types of ants and termites. This chemical is also used as a fire retardant in plastics, rubber, and electrical goods.

Toxaphene *Listed under Annex A*

This insecticide, also called camphechlor, is applied to cotton, cereal grains, fruits, nuts, and vegetables. It has also been used to control ticks and mites in livestock.

2. ***Industrial Chemicals:***

Polychlorinated Biphenyls (PCBs) *Listed under Annex A with specific exemptions and under Annex C*

These compounds are employed in industry as heat exchange fluids, in electric transformers and capacitors, and as additives in paint, carbonless copy paper, sealants and plastics. They are also released as an unintentional by-product of combustion processes.

The aforementioned HCB and Mirex are also classified as industrial chemicals.

3. ***Unintentionally Produced POPs:***

Polychlorinated dibenzo-p-dioxins *Listed under Annex C*

Often referred to as PCDDs, these chemicals are produced unintentionally due to incomplete combustion, as well as during the manufacture of certain pesticides and other chemicals. It was an unfortunate contaminant in some of the herbicide, Agent Orange, used in the Vietnam War. In addition, certain kinds of metal recycling and pulp and paper bleaching can release dioxins. Dioxins have also been found in automobile exhaust, tobacco smoke and wood and coal smoke.

Polychlorinated dibenzofurans *Listed under Annex C*

These compounds are often referred to as PCDFs and are produced unintentionally from the same processes that release dioxins. They are also found in commercial mixtures of PCBs.

The aforementioned HCB and PCBs are also classified as Unintentionally Produced POPs.

In addition to the twelve (12) POPs listed above, at the fourth meeting in 2009, the Conference of Parties decided to amend Annexes A, B, and C of the Convention by adding the following nine (9) new POPs:

Table 2. The new POPs under the Stockholm Convention

Chemical	Annex	Specific exemptions / Acceptable purposes
Alpha hexachlorocyclohexane ● ■	A	Production: None Use: None
Beta hexachlorocyclohexane ● ■	A	Production: None Use: None
Chlordecone ●	A	Production: None Use: None
Hexabromobiphenyl ▲	A	Production: None Use: None
Hexabromodiphenyl ether and heptabromodiphenyl ether (commercial octabromodiphenyl ether) ▲	A	Production: None Use: Articles in accordance with the provisions of Part IV of Annex A
Lindane ●	A	Production: None Use: Human health pharmaceutical for control of head lice and scabies as second line treatment
Pentachlorobenzene ● ▲ ■	A and C	Production: None Use: None
Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride ▲	B	Production: For the use below Use: Acceptable purposes and specific exemptions in accordance with Part III of Annex B
Technical endosulfan and its related isomers ●	A	Production: As allowed for the parties listed in the Register of specific exemptions Use: Crop-pest complexes as listed in accordance with the provisions of part VI of Annex A
Tetrabromodiphenyl ether and pentabromodiphenyl ether (commercial pentabromodiphenyl ether) ▲	A	Production: None Use: Articles in accordance with the provisions of Part IV of Annex A
Pesticide ●	**Industrial chemical** ▲	**Unintentionally produced** ■

Source: http://chm.pops.int/ "The new POPs under the Stockholm Convention"

Profile of St. Kitts and Nevis

Geographical Context

The twin island Federation of St. Kitts and Nevis (SKN) consists of two islands located in the northern part of the Lesser Antilles chain of islands in the Eastern Caribbean. St. Kitts is located at latitude 17^{o} 15' north and longitude 62^{o} 45' west and Nevis is located two miles (3 km) to the south-east, at 17^{o} 10' north and longitude 62^{o} 35' west.

The Federation of SKN has a land area of 269 sq. km. (104 sq. miles). The larger of the two islands, St. Kitts is 176 sq. km. (68 sq. mi.) in area. It is approximately 36.8 km (23 mi) long and is roughly oval in shape with a narrow neck of land extending like a handle from the southeastern end. Nevis has an area of 93 sq. km. (36 sq. mi), with a length of 12.3 km (7.64 mi) and a width of 9.6 km (5.96 mi) at its widest point.

Both islands are volcanic in origin, with central mountain ranges that dominate the landscape and radiate downward to the coasts. A large proportion of the flat lands are located near the coast therefore most urban and agricultural developments are established in that geographical area.

Social Development Context

The Federation of SKN has a population of approximately 46,000, with 35,000 persons (76%) residing on St. Kitts and the remaining 11,000 persons (24%) on Nevis. The majority of the population resides in the main towns; Basseterre (and its environs) on St. Kitts and Charlestown on Nevis. The United Nations Development Programme (UNDP) Human Development Index ranked SKN at 72 in 2012.

The Government of St. Kitts and Nevis (GSKN) has been committed to social protection as a key component of national poverty reduction for a long time. Social assistance programmes have been implemented since the 1960's and social assistance legislation from 1977. Other legislation giving social protection (social welfare, labour market policies to vulnerable groups - women, youth and children) has been in place since the 1880's.

Over the years the social protection has been extended both horizontally (the benefits offered and vulnerabilities covered) and vertically (the levels of coverage). However, the system is not adequately

serving the current needs and is inadequate for future needs. Two Country Poverty Assessments have been conducted in St. Kitts and Nevis, one in year 1999/2000 and another in 2007/2008. They show that during the 7-year interval, significant gains were made in respect of poverty reduction in the Federation. Still, the poverty rate under the later survey is 23.7% for St. Kitts and 15.9% for Nevis.

The national overarching poverty reduction framework prioritises social protection strengthening as key to poverty reduction and equitable social development:

- The **National Adaptation Strategy (NAS) (2006 to 2017)** highlights the important function social protection plays in establishing equitable social development; and

- The **National Poverty Reduction Strategy (NPRS) (2011 to 2015)** has two of its five priority areas focusing on social protection. Priority area 4 is concerned with strengthening social safety net systems and Priority area 5 covers risk reduction and social protection.

To effect this social protection strengthening GSKN has embarked on social protection reform. The reform is guided by the findings and recommendations of two key reports:

- The **Social Safety Net Assessment 2009 (SSNA)**, which assessed the social protection framework focussing on non-contributory programmes. It catalogued the existing social assistance benefits and schemes and identified the gaps and weaknesses in the framework. It made recommendations for reform of the social assistance framework, some of which are relevant to social protection programmes generally. It also highlighted the need for greater policy coherence between contributory and non-contributory sectors. It concludes that a good safety net system evolves over time and the time is ripe in St. Kitts and Nevis for a rethinking of the safety net; that the reforms recommended in the SSNA will require considerable commitment and resolve from GSKN.

- The **National Social Protection Strategy and Plan of Action, 2012 (NSPS).** The purpose of the NSPS is to set the main priorities for social protection strengthening, and guide the establishment of a sustainable, comprehensive and integrated Social Protection System. The NSPS was prepared under the leadership of the Ministry of Social Services, Community Development, Culture and Gender with support from the United Nations Children's Fund (UNICEF) and the United Nations Entity for Gender Equality and the Empowerment of Women

(UNWOMEN). It takes into consideration the findings and recommendations of the SSNA, and critically analyses the social protection landscape in St. Kitts and Nevis, including its international obligations under human rights treaties, and the legislative framework under national legislation. It highlights key weaknesses, and presents a vision and goals for social protection, and a roadmap for social protection reform in two phases:

- Phase 1 (2012–2015): aimed at consolidating and strengthening the social safety net programmes for improved efficiency and effectiveness; and

- Phase 2 (2016–2017): aimed at wider reforms for establishing a coherent and integrated social protection system.

The NSPS includes an action plan to achieve those goals. The priority actions for Phase 1 include the legislative review and reform of the Social Development Assistance Act to modernise the institutional and administrative arrangements for social assistance programming and policy making. The parameters for the social protection reform are also influenced regionally and internationally.

Economic Development Context

The Government of St. Kitts and Nevis (GSKN) launched the National Adaptation Strategy 2006-2013 (NAS) in 2006 which was developed in response to major changes to the European Union Sugar Protocol and the resultant closure of the sugar industry on St. Kitts. In light of the limited inflows received as a result of the global economic slowdown which hampered the advancement of actions outlined as part of the NAS, the GSKN in July 2013 decided to extend the period of implementation for the NAS from 2006-2013 to 2006-2017. This is the seventh annual Report documenting the progress of implementation of the NAS. The Report references the macroeconomic circumstance that influenced NAS implementation and highlights some of the recent and ongoing developments in terms of key policy issues and objectives targeting social development and the strategic sectors identified as the main pillars (tourism, agriculture, information and communication technology and financial services) for economic transformation.

A number of NAS related activities were pursued in 2013 with varying success rates as the GSKN continued to exert great effort to stabilise macroeconomic conditions. By the end of 2013, GSKN successfully initiated action on approximately ninety (90) percent of the 340 actions identified for

implementation with fifteen (15) percent fully completed and requiring no further actions based on the original plans. The successes achieved to date were made possible through careful coordination and prudent management of technical and financial assistance provided by valued donor partners who continue to support NAS implementation in 2013. Further, the GSKN continued to refine its home grown stabilisation programme in 2013 which was fully supported by the International Monetary Fund (IMF) Stand-By Arrangement (SBA). The main elements of the Programme include debt management; enhancing tax revenue; maintenance of control over expenditure and identification of actionable contingency measures.

After four consecutive years of negative growth due primarily to the protracted effects of the global economic and financial crisis, St. Kitts and Nevis recorded a positive GDP growth of 3.8% in 2013. This performance can be attributed to expansions in the construction (12.2%), agriculture (12.2%), distributive trade (5.0%) and tourism (3.6%) sectors. The increase in the construction sector can be attributed to the advancement of works on a number of major private sector development projects such as Silver Reef Phase III, Kittitian Hill and Manor by the Sea in St. Kitts and the Tamarind Cove Development in Nevis while the expansion in the agriculture sector can be accredited to an upturn in the crop and livestock sub-sectors. The distributive trade sector recorded an expansion as a result of a general increase in consumption in the hotel and restaurant and construction sectors. Whereas, the expansion in the performance of the tourism sector is attributable primarily to an increase in stay-over arrivals from major source markets including the United Kingdom, the United States of America and the Caribbean.

Amidst the challenges, the GSKN remains committed to the implementation of the NAS and therefore concentrated efforts on priority actions which are critical to creating a conducive environment to facilitate economic and social transformation. Significant strides have been made towards strengthening institutional capacity and the legal, regulatory and strategy framework across several sectors. During 2013 numerous training initiatives were undertaken to build capacity which would be further articulated in this report, regulations were finalised for the Procurement and Contracts Administration Act (2012) and the Pension Act (2012) and an Aquaculture Development Strategy (2013), Agriculture Development Strategy (2013-2016) and Multi-annual Debt Strategy (2013-2015) were approved.

GSKN anticipates continued support for the implementation of the NAS from our valued donor partners. The single largest commitment of resources is expected from the European Union under the Accompanying Measures for Sugar Protocol countries (AMSP) utilising the General Budget Support (GBS) modality. The GBS continues to be a critical source of financial support for the implementation of the NAS and maintenance of the economic stabilisation programme. Other important sources of support for the GSKN transformation programme include resources provided by the Caribbean Development Bank (CDB), Canadian International Development Agency (CIDA), World Bank, Global Environment Facility (GEF), United States Agency for International Development (USAID), Food and Agriculture Organisation (FAO) and a number of bilateral partnerships.

Assessment of POPs in St. Kitts and Nevis

Management and Use of Toxic Chemicals (including POPs)

National Policy and Legal Framework for Toxic Chemicals Management

The production of POPs has never taken place in SKN and no future production is anticipated. Presently, there is no official statement with regards to a national policy for the management of toxic chemicals. However, SKN has adopted a national strategy for the management of the environment.

Existing legal framework for management of toxic chemicals

At present SKN has no legislation specifically dealing with management of POPs. The following sections provide information on existing legislation and regulations which deal with various classes of toxic chemicals.

Pesticides and Toxic Chemical Control Act Cap 9.18 of 2009

Pesticide use is currently regulated by the Pesticides and Toxic Chemicals Control Act Cap 9.18 of 2009, which is described as “an Act to provide for the regulation and control of the importation, storage, manufacture, sale, transportation, disposal, and use of pesticides and toxic chemicals”. Under the Act, a Pesticides Control Board has been established.

Pesticides and Toxic Chemicals Control Board

There are provisions in the Pesticides and Toxic Chemicals Control Act of 1999 which would oversee the abovementioned regulations for and control of pesticides and toxic chemicals as it relates to the functions of the Pesticides and Toxic Chemicals Control Board.

The functions of the Board are to:

a. determine any application submitted to it for: i. Registration, ii. Licenses, iii. Research Permits;
b. grant or cancel any registration, license or permit in accordance with the provisions of the Act;
c. advise the Minister on matters relevant to the making of Regulations under the Act;
d. monitor the implementation of Regulations made under the Act and
e. furnish such information, reports and returns that the Minister may, from time to time, require.

Membership

The Pesticides and Toxic Chemicals Control Board comprises of 10 members from varying interest groups. Persons appointed as members of the Pesticides and Toxic Chemicals Control Board are from such interest groups as the Minister may deem fit, interest groups which include the following:

a. medical and health services
b. government chemist
c. agricultural services
d. environment
e. trade and customs services
f. non-governmental organizations

Recent Achievements (2012-2013)

- Greater control on importation of controlled products (pesticides and toxic chemicals) through revised registration and licensing system since the re-activation of the Pesticides and Toxic Chemicals Control Board (2012-2013).

- Accession to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade: 14 August, 2012 (entry into force 12 November, 2012). The Pesticides and Toxic Chemicals Control Board, along with the Department of Agriculture serve as the Designated National Authorities for this convention.

Issues from other chemicals conventions (Basel Convention and Stockholm Convention) are discussed at the Board level as all three convention contact points happen to sit on the Board. This is critically important as there is a thrust internationally for these three conventions to work synergistically together as they have overlapping goals concerning human and environmental safety.

- Pesticides Awareness Week theme 2012: "Protect health & the environment through pesticides container management": 24th-28th September, 2012 (Public Awareness-Learning activities for high school level students, press releases, media interviews; Communication material-"Triple rinse" technique video, flyers, brochures; Meeting with stakeholders re: registration and licensing process).

- Pesticides Awareness Week theme 2013: "Pesticides-Store wise. Save lives!": 22nd-27th September (Public Awareness- Minister of Agriculture's Address, Premier of Registration & Licensing Requirements Informational Video; Training-Workshop on Pesticide Use and Storage for Stakeholders; Communication Material-Distribution of Pesticide Storage tips to stakeholders, Screening of Global Environment Facility (GEF) Documentary Film "Mission: Planet Detox" and Panel Discussion)

- Attendance at annual meetings of the Coordinating Group of Pesticides Control Boards of the Caribbean (CGPC): June 2012 and June 2013.

  The Coordinating Group of Pesticides Control Boards of the Caribbean (CGPC) is a regional body that seeks to promote the effective use of pesticides and toxic chemicals and minimize risks to human health and the environment. The member countries include: Anguilla, Antigua and Barbuda, the Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago. The CGPC is a mechanism for collaboration and cooperation amongst Pesticides Control Boards in the Caribbean region whereby information and technology are shared for a harmonized approach to the sound management of pesticides and toxic chemicals.

- Participation in the Food and Agriculture Organization of the United Nations (FAO) led European Commission funded project: "Capacity Building related to Multilateral Environmental

Agreements (MEAs) in African, Caribbean and Pacific (ACP) countries-Clean-up of Obsolete Pesticides, Pesticides Management and Sustainable Pest Management". Through this project, the Federation has been able to complete a detailed inventory of the obsolete pesticides stocks and complementary environmental risk assessment (2010-2011). The project is on-going as Caribbean countries (through FAO) are trying to access funding through GEF for the safeguarding and disposal of the obsolete stocks (2012-2013).

- FAO has been supporting the work of the CGPC by funding regional meetings of the CGPC and providing training in areas of sound pesticides management. Areas prioritized for action under this project include the inventory of obsolete pesticides, safeguarding and disposal of the obsolete stocks, strengthening of pesticide registration systems, provision of tools for communication on pesticide related matters, implementation of chemical related conventions and promotion of integrated pest management approaches to crop protection.

Biosafety Act No. 14 of 2012

The Biosafety Act No. 14 of 2012, is described as, "an Act to provide for the movement, transit, handling and use of genetically modified organisms resulting from modern biotechnology that may have adverse effects on conservation and sustainable use of biological diversity, taking also into account risks to human health." Under the Act, the Biosafety Board has been established. The Act makes no direct mention of POPs toxic chemicals, but deals with management of general health matters and public nuisances.

The National Conservation and Environment Protection Act No. 5 of 1987

The National Conservation and Environment Protection Act (No. 5) of 1987, is described as an " Act to provide for the better management and development of the natural and historic resources of Saint Christopher and Nevis for purposes of conservation: the establishment of national parks, historic and archaeological sites and other protected areas of natural or cultural importance including the Brimstone Hill Fortress National Park; the establishment of a Conservation Commission; and for other matters connected thereto."

Under the NCEPA, the Department of Physical Planning and Environment (DPPE) for purposes of conservation and environmental protection in Saint Christopher and Nevis was established. The Act

allows the Minister to make any regulations in relation to any matter pertaining to environmental protection and conservation. These include:

(i) to initiate, oversee, co-ordinate, integrate, regulate, facilitate and monitor environmental protection and conservation strategies and measures in Saint Christopher and Nevis;
(ii) to initiate and implement environmental policies, programmes and projects in order to achieve sustainable development in Saint Christopher and Nevis;
(iii) to oversee environmental policies, programmes and projects undertaken by other departments and ministries of the Government of Saint Christopher and Nevis;
(iv) to negotiate environmental treaties initiated by regional and international inter-governmental organizations;
(v) to provide information, data statistics and reports to several inter-governmental organizations and non-governmental organizations; and
(vi) to work in close collaboration with non-governmental organizations with a view to ensuring their support for conservation and environmental protection in Saint Christopher and Nevis.

Pollution is described as any direct or indirect alteration of the physical, thermal, chemical, biological or radioactive properties of any part of the environment by the discharge, emission, or the deposit of wastes so as to affect any beneficial use adversely or to cause a condition which is hazardous to public health, safety or welfare, or to animals, birds, wildlife, marine life or to plants of every description.

The Act prohibits any offence which has caused significant deterioration, damage or destruction of trees, shrubs, grass planted or laid out, mangroves, coral reefs, beaches, bays or pollution of any part of the coastal zone.

National Disaster Management Act of St Christopher and Nevis No.5 of 1998

The Natural Disaster Management Act of St. Christopher and Nevis, No.5 of 1998 is described as an "An Act to provide for the effective management and control of disasters, and to provide for related or incidental matters." In the Act, 'disaster management' is defined to encompass "all aspects of preparedness, prevention, mitigation, planning, control, response and recovery as they relate to natural and technological disasters." There is provision made for the establishment of a National Disaster Management Agency, a corporate body for coordinating the general policy of the Government of the

Federation of St. Kitts and Nevis in relation to disaster management. The Agency is governed by a Board of Directors {no more than nine (9) members}, all of whom are appointed by the Prime Minister of St. Kitts and Nevis.

Solid Waste Management Act No. 11 of 2009

The Solid Waste Management Act No. 11 of 2009 is described as an "An Act to provide for the management of solid waste in conformity with the best environmental practices; and to provide for related or incidental matters." It is currently the legal instrument governing the management of solid waste in Saint Kitts and Nevis

The Act redefined the functions of the Solid Waste Management Corporation (SWMC). The SWMC shall, among other things, undertake and complete an inventory and characterizations of solid waste generated in Saint Christopher and Nevis and prepare a National Waste Management Strategy. The SWMC shall also designate a list of activities for which the grant of a permission of the planning authority and an environmental impact assessment is required. The Act defines duties and liabilities of waste management licence holders in relation with emergencies and disasters. The SWMC shall be capable of holding, purchasing and otherwise acquiring and disposing of any property, movable or immovable, for the purpose of carrying out its duties under this Act.

The SWMC shall generally be responsible for overseeing the management of the solid waste collection and disposal systems in the islands of Saint Christopher and Nevis, and without prejudice to the generality of the foregoing the SWMC shall, in particular,

a) provide storage facilities for solid waste;
b) procure equipment for the collection, transportation and disposal of solid waste;
c) provide collection and storage facilities at ports, harbours, and anchorages for the reception of ship-generated waste before transportation to the final disposal sites;
d) procure equipment necessary for the transportation of ship-generate waste to the final disposal sites;
e) convert existing dumps into sanitary landfills;
f) develop and manage new sanitary landfill sites and other disposal methods;
g) provide facilities for the treatment and disposal of medical and hazardous waste;

h) introduce measures aimed at encouraging recovery of recyclable items from solid waste;
i) introduce cost recovery methods for services provided by the SWMC;
j) prepare plans and programmes to address the problems of solid waste management in Saint Christopher and Nevis;
k) mange and direct the implementation of the OECS Waste Management Project and any other approved regional and international activities

The SWMC shall ensure the broadest consultation in the preparation of the National Waste Management Strategy, and in particular, but without prejudice to the generality of the foregoing, shall consult with the Scheduled agencies and the waste management policy stakeholders to the extent that their interests are, in the opinion of the SWMC, likely to be affected.

Solid Waste Management Corporation (SWMC)

The Solid Waste Management Corporation (SWMC), created under the act of Parliament on July 24, 1996, took responsibility for solid waste management on St. Kitts (OECS Ship and Waste Management, 2003). According to the SWMC, St. Kitts produces approximately 35,000 tonnes of solid waste annually (2013). With a population of approximately 40,000 individuals on St. Kitts, the number of disposed solid waste material is quite high; the slightly higher rate in St. Kitts than Nevis may be due to the greater influence of long-term tourism (PAHO, 2004).

In the past, the island of St. Kitts used what is now the Conaree Landfill as an open dump and burned the solid waste. Due to its close proximity to the island's main road and international airport, the smoke from the burning waste would usually affect traffic safety and visibility. Additionally, there was a substantial number of cases of respiratory problems which could be directly associated with living downwind from the old Conaree landfill on St. Kitts (PAHO, 2004). According to the St. Kitts SWMC (2013), the Conaree site was formally turned into a sanitary landfill in 2002. The changes to the final disposal system (i.e. sanitary landfill) in St. Kitts resulted in the elimination of fire, smoke and odours to the previous "open dump" system.

The type of waste disposed at the Conaree landfill is similar to that of any other municipal landfill globally. According to the information from SWMC, the following *Table 1* shows a rough estimate of the

percentage in solid waste type currently being accepted into the landfill. Additionally, there are some materials being separated at the landfill site for composting and recycling. They include food waste, metals, timbers/wood, and plastics.

Table 3. Percent Composition of Solid Waste from Local Sources

Type of Waste	Percentage Composition of Solid Waste (by weight %)
Hospital	0 - 5%
Municipal/Household	> 50%
Hazardous	0 - 5%
Industrial	5 - 15%

Source: St. Kitts Solid Waste Management Corporation

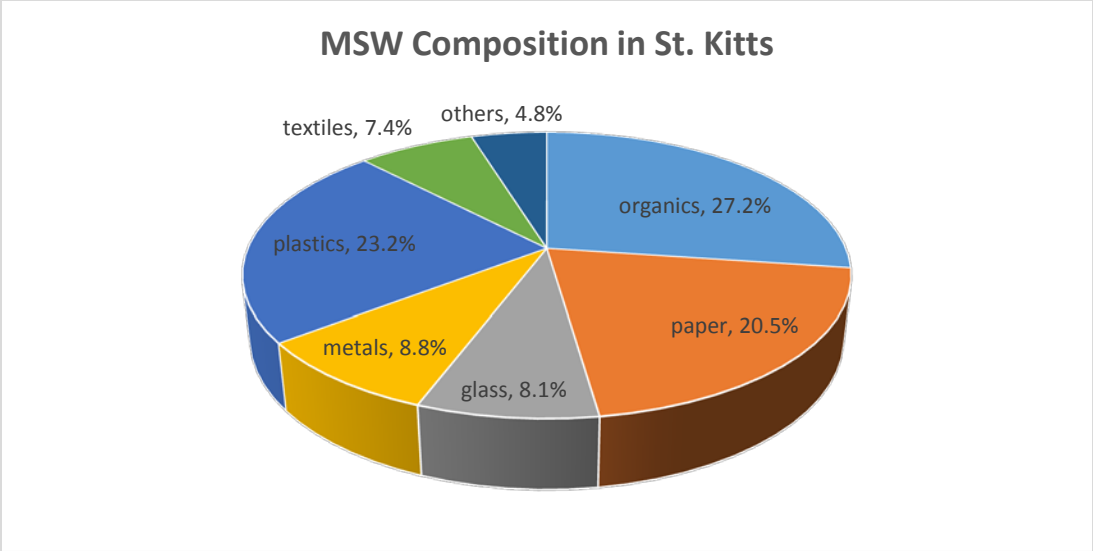
According to an analytical report of Saint Kitts and Nevis published in February 2004 (PAHO, 2004), the per capita waste generation rate for Saint Kitts is 2.08 kg/person/day based on a population of 46,100. Compared to current data, the island produces 700-800 tonnes/week of solid waste (SWMC, 2013). The waste generation rate for Nevis is slightly less, but it is probably due to a somewhat higher long-term tourism presence in Saint Kitts.

An analytical report (PAHO, 2004) indicates that solid waste collection and disposal covers 100% of the island. Private collection services account for industrial, commercial, and institutional waste collection in Saint Kitts. Currently, there are three (3) private enterprises that collect solid waste in addition to the government; while the government's aim is to landfill and compost the waste in the Federation, the private entities' aim is to recycle the waste.

The Conaree landfill has surpassed its maximum capacity and measures are now being taken to rectify the problem. The cost of constructing a new landfill site would be about USD $14 million. Solid waste is still being deposited in the SWMC landfill but not in the current cell. For now, the organization is using a baling technique to wrap the garbage and store it for the next two years. In addition to the baling process, the landfill has now incorporated composting into its practices. Grass and other vegetation that is sent to the landfill are mostly used with the inclusion of food waste from restaurants and supermarkets. This practice has yielded favourable results.

The graphical representation (*Figure 1*) below details the municipal solid waste (MSW) composition for the island of St. Kitts. The limitations to the graphical representation below is, it does not indicate the percentage of hazardous materials/waste entering the landfill site, instead, a section of 'Other' is listed as 4.8 percent. However, the SWMC does have some success with the separation of automobile batteries from the rest of the solid waste.

Figure 1. Graphical Representation of the Municipal Solid Waste (MSW) Composition for St. Kitts



Source: Cuba *et al* (2008)
Figure 1: Graphical Representation of MSW Composition

Plant Protection (Cap 14.09) Act of 2002

The Plant Protection Act (Cap 14.09) of 2002 is described as an "Act to make provision for the protection of plants against certain diseases; and to provide for related or incidental matter." In the control of the spread of pests, various pesticides may have to be used to effect said control and as such, the Act has implications for the use of measures to eradicate diseases and pests, which may include the use of fumigants, some of which may be POPs-like.

The Animals (International Movement and Diseases) Act No. 1 of 1987

The Animals (International Movement and Diseases) Act No. 1 of 1987, is described as an "Act to control the importation into Saint Christopher and Nevis and to regulate the movement from Saint Christopher

and Nevis of animals, birds, fish, insect and reptile and of animal carcasses, parts and meats, veterinary biological products, litter and fodder for the purposes of preventing the introduction of disease into Saint Christopher and Nevis and into other Member States of the Caribbean Community and of providing for the safe and humane movement of animals from Saint Christopher and Nevis and for other matter related thereto or connected therewith." The Act does not make any special provisions to animal and meat contamination by substances, the provision is made for regulations to be made on the declaration of additional pests and diseases of animals which may be of concern and could have some impact on the management of POPs as it relates to animals.

Fire and Rescue Services

Roles and Functions of the Fire Dept. on Persistent Organic Pollutants (POPs):

1. Educate the general public on the effects, symptoms and toxicity of pollutants.
2. Training of general public on personal protections against an emergency involving POP.
3. Create a specialized task force to respond to and provide assistance in the event of a POP related emergency.
4. Have the capabilities to effectively extinguish any fire involving POP using the most updated skills and techniques with modern equipment. This would also include identifying and using the proper extinguishing media.
5. Identify probable high risk area (s) that is/are susceptible to dangerous exposure in the event of an incident or accident involving POP.
6. Enacting/recommending policies and regulations for the storing, handling and transportation of toxic chemicals.
7. Establishing Standing Operating procedures (SOP) for POP emergencies.
8. Identifying possible evacuation routes and areas for high risk areas.
9. Implementing an efficient alert system for the general public if a/sectorial or mass evacuation is to be mandated.
10. Conducting periodical drills with other stakeholders for POP related emergencies.
11. Policing of regulation via inspection based on stated regulated time frame.
12. Posting of chemical air monitors in areas as recommended and mandated by law (if may) of the state.

St. Kitts and Nevis Oil Spill Response Arrangements 2009

Response Arrangements

St. Kitts and Nevis National Oil Spill Contingency Plan is currently under revision and forms a part of the St. Kitts and Nevis National Disaster Plan.

The lead agency for government control during an oil spill is the St. Kitts and Nevis Coast Guard, part of the Ministry of Home Affairs. The Coast Guard provides overall control of spill response and designates an On Scene Commander (OSC), who chairs an Oil Spill Coordination Team. This is composed of representatives of interested parties including the Ministry of Health (which provides environmental advice), the Office of Disaster Preparedness of the National Emergency Management Agency, the Department of Maritime Affairs, Ministry of Public Works, St. Kitts and Nevis Police, St. Kitts and Nevis Port Authority and shipping associations.

In practice, the government would call upon oil industry resources as a first tier of response, after which assistance would be sought from adjacent Caribbean island states using alerting procedures identified in the Caribbean Island OPRC Plan.

Response Policy

St. Kitts and Nevis adopts the approach of containment/recovery and manual shoreline clean-up. There is no defined policy on dispersant use, but there are no dispersant or application equipment locally available.

Small or moderate volumes of oily beach material could be disposed of at the local public refuse tip (possibly with the additional requirement of quicklime stabilisation), but larger volumes and bulk liquid oily wastes would probably have to be exported for final treatment and disposal.

Equipment

Government

The government has no specialised equipment. However, the Department of Public Works is responsible for locating local labour and mechanical earthmoving equipment.

Private

Only limited resources for oil spill response, held by the Sol Group., are on the islands. In addition, three tankers on long term charter to Shell carry on board oil pollution response equipment for use by shore side personnel. Texaco West Indies Ltd. is a member of Clean Caribbean & Americas (CCA), based in Florida, and has access to the resources held by them. No specialist oil spill clean-up contractors are locally available.

Very few vessels, other than small fishing boats, are available for at sea response. Helicopter for air surveillance are not available in St. Kitts, but are available from nearby island states. Fixed wing charter aircraft are available from local firms at the Robert L Bradshaw International Airport. Salvage, heavy powered tug boats are available at St. Eustatius.

Previous Spill Experience

Minor spills from commercial vessel traffic have occurred. The sinking of the barge VISTA BELLA (1991) resulted in a large spill which contaminated many shores. The main tourist beaches were cleaned manually, and the wastes disposed of to landfill at the public refuse site.

The Institutional Framework for Management of Toxic Chemicals

A number of institutions have been given legal mandates at varying levels to manage and/or regulate toxic chemicals including POPs within Federation. The roles and responsibilities of ministries, agencies and other governmental institutions involved in management of toxic chemicals are described in the following sections.

Status of Infrastructure for Chemicals Management

The Ministry of Sustainable Development has the overall mandate for environmental management in Saint Kitts and the Department of Physical Planning, Natural Resources and Environment in Nevis.

Nonetheless, environmental management is not limited to control solely by government ministries/departments. There are other agencies including governmental, non-governmental and community-based organizations that also contribute to this role. However management of POPs and other chemicals is satisfactory but there is a need to improve the efficiency of such. This is partly due to concerns with the lack of infrastructure for chemical management.

The status of St. Kitts and Nevis infrastructure for chemicals management is as follows:

- **Improper and inadequate disposal of chemicals and containers:** Disposal provisions for hazardous wastes and spent chemicals are insufficient and limited to deep burial and containment.
- **Insufficient data for chemical management:** There is a lack of data for a comprehensive inventory of POPs and toxic chemicals in St. Kitts and Nevis.
- **Lack of evacuation plan for communities:** Though communities have disaster management plans and implement those plans under the National Emergency Management Agency (NEMA), the plans do not address industrial disaster management.
- **Research:** There is a lack of research in chemical residue in the environment and chemical related activities, the level of exposure to and bioaccumulation in living systems.

St. Kitts and Nevis Customs and Excise Department

The Customs and Excise Department is a Government agency with the responsibility of protecting the country from potential risks arising from international trade and travel, while facilitating the legitimate movement of people and goods across the border.

As the nation's gatekeepers, the Department uses intelligence and risk assessment to select and target our physical checks of containers, vessels or travellers. The Department also conducts investigations and audits, and prosecutes offenders who breach Customs Laws and other Government regulations. Customs also exercises controls over restricted and prohibited imports, including pornography, drugs, firearms and harmful substances, such as hazardous waste and ozone-depleting products.

St. Kitts and Nevis Bureau of Standards

The Saint Kitts and Nevis Bureau of Standards was officially established on the 8th day of March 1999 and has the major responsibility of protecting the environment, health and safety of consumers. Its activities also focus on preparing, promoting and generally adopting standards on a national, regional or international basis relating to structures, commodities, materials, articles and other things offered to the public commercially, hence promoting standardization, quality assurance and simplification in industry and commerce.

Present Use of Toxic Chemicals

Power generation and distribution agencies

Electrical power is generated in St. Kitts by the St. Kitts Electricity Company (SKELEC) and in Nevis by the Nevis Electricity Company (NEVLEC) by diesel-fuelled generators. Both companies are solely responsible for the transmission and distribution of electricity to their consumers on the respective islands. To provide the electrical power from the generators to the consumers involves raising the voltage of the supplied current after generation to high voltages via long distance transmission lines and subsequently reducing the voltage at the electrical substations located around the country for distribution into the communities. A further reduction in voltage is required in the distribution lines that supply individual houses. The generating stations and the sub-stations use a relatively small number of large transformers on the ground. These can be serviced regularly and the cooling oils are checked and replaced when necessary. The last stage in the distribution system SKELEC and NEVLEC uses involves approximately eight hundred (800) smaller transformers located on the utility poles of the supply lines. The power supply system produces significant quantities of used cooling oils removed from the transformers, which undergo a recycling process. However, there are still about forty five (45) defunct transformers at the SKELEC and NEVLEC facilities with used cooling oils containing polychlorinated biphenyls (PCBs) to be disposed of.

In the 1970s, transformers used in electrical power generation, transmission and distribution were supplied with cooling oils containing polychlorinated biphenyls (PCBs) as additives to improve performance. Use of these compounds in new transformers has been discontinued and substituted with mineral oil. However, approximately twenty transformers still in use in St. Kitts contain cooling oils contaminated with these chemicals, particularly the smaller transformers on poles in the distribution system.

Other Users

Toxic chemicals are used in a number of industrial and commercial processes in small amounts which have generally not been accounted for in the toxic chemical assessments. The dry cleaning establishments use perchloroethylene, commonly referred to as “Perc”. Even though it is not classified as a POP, this substance can be considered to be a Persistent Toxic Substance and has many similar characteristics to the “official” POPs.

Large quantities of insecticides and rodenticides are purchased for use in domestic and commercial buildings for control of ants, roaches, mosquitoes, and rats as well as other insects and spiders by household and commercial establishments. Synthetic pyrethroids are the major class of insecticides used in these formulations, which are of low toxicity to humans, usually not very persistent and biodegrade quickly in the environment. The imported red fire ant which has been a problem insect in households in some areas of the country requested a somewhat more toxic and persistent pesticides.

Suppliers of Toxic Chemicals

There is currently no manufacture of toxic chemicals in SKN and taking into account our normal market considerations this situation is unlikely to change in the near future. All toxic chemicals in use are therefore imported from overseas. The Pesticides Control Board keeps a record of pesticide importers obtained from Customs import records, however, other toxic chemicals are not included in this list.

Toxic Chemicals Presently in Use

The quantities for other importers of the individual pesticides are a rather important omission as amounts imported would provide a good indication of the relative importance of a particular active ingredient.

The insecticides currently in use in agriculture or for domestic and commercial pest control are mostly confined to chemicals belonging to the following chemical groups: synthetic pyrethroids, organo-phosphates, carbamates and other chemicals such as insect growth regulators, botanicals, and other biopesticides.

Generally, heavy metals such as lead and mercury (found in batteries and other electrical equipment) as well as heavy metal containing products (such as paints used for antifouling protection on yachts and

ships and some wood preservatives), other organic compounds (such as solvents used in dry cleaning), drugs and toxins used in medicine, including strychnine, are other toxic chemicals that are currently in use in the Federation.

National Inventory of Obsolete Pesticides

St. Kitts-Nevis Obsolete Pesticides Inventory and Environmental Risk Assessment Report

Introduction

Sound pest and pesticide management plays an integral role in maintaining sanitary and phytosanitary measures as well as agricultural health and food safety. The project for "*Obsolete Pesticides Inventory and Environmental Risk Assessment*" was therefore quite timely and necessary in keeping with the Stockholm and Basel Conventions to which the Federation has accessed.

Background

The Pesticides Programme of the Food and Agriculture Organization of the United Nations (FAO) works with developing countries and countries with economies in transition to help them eliminate stocks of obsolete pesticides and prevent recurrence of similar problems in the future through sound pest and pesticide management as mandated by the Stockholm and Basel Conventions to which the Federation of St. Kitts and Nevis has accessed. The European Commission funded project "*Capacity Building Related to Multilateral Environmental Agreements in African, Caribbean and Pacific (ACP) countries- Clean-up of Obsolete Pesticides, Pesticides Management and Sustainable Pest Management*" is currently being executed through the Pesticides Programme of the FAO. In relation to this project a number of activities have been prioritized for action by pesticide management specialists in the Caribbean region. Some of these activities include inventory, safeguarding and eventual elimination of obsolete pesticide stocks from the countries. The first step in the elimination of obsolete pesticide stocks is the implementation of a detailed national inventory of obsolete pesticides and associated contamination.

To this end a workshop entitled "*Training of Trainers Workshop for Obsolete Pesticides Inventory and Environmental Risk Assessment*" was held in Suriname from June 7-18, 2010 for the Caribbean region. A

similar workshop was replicated in St. Kitts for St. Kitts and Nevis stakeholders from September 22-23, 2010. The workshop targeted various stakeholder groups including: Ministries of Agriculture, Health, Environment, Public Works; Customs and Excise Department; Port Authority; Fire Department; S.S.M.C; Solid Waste Management Corporation, farmers; pest control operators; importers and distributors of pesticides and agricultural enterprises (e. g. nursery owners). The Pesticides and Toxic Chemicals Control Board of St. Kitts-Nevis through the Department of Agriculture was the lead executing agency of this project. The estimated budget for the project was EC $1655, while the actual total cost spent on the project was EC $1313.50. The Government of St. Kitts and Nevis through the Department of Agriculture facilitated this project on the local level with assistance from FAO in the form of personal protective equipment (PPE) and training for one national. The project activities included: stakeholder identification, resource mobilization, training of a national team, inventory (data collection), data transmission and report generation.

Objective

The goal of the project was to conduct a detailed inventory of obsolete pesticides and risk assessment of the environment in St. Kitts and Nevis and to learn whether there were any remaining sources of POPs or PTCs existing in the Federation and, if so, to determine their location, status and contents.

Results

Various stakeholders were contacted on both islands including: agricultural enterprises (e.g. nursery owners), hotels, pest control operators, pesticide importers and distributors, farmers, private institutions, hospitals, ports and various ministries.

St. Kitts

The Obsolete Pesticides Inventory and Environmental Risk Assessment were conducted during the period October, 18th to November, 5th 2010. During this period five institutions were documented as containing obsolete stocks. Table 4 shows the stocks and quantities found.

The environmental risk assessment included information on store conditions and safety and environmental conditions affecting the store, human settlements, water, soil and agricultural activities. Both S.S.M.C sites (Agronomy Station and Buckley's Estate) were found to be posing serious risks to the environment. These two sites were the most contaminated with serious leakage of the obsolete pesticides both inside the store room and outside where some of the chemicals were being stored. The other sites (T.D.C, Fahies Outreach Centre, Tabernacle Outreach Centre and Department of Agriculture) were found to be of low to moderate risk to the environment as there was not as much contamination at these sites.

Nevis

The Obsolete Pesticides Inventory and Environmental Risk Assessment were conducted during the period October, 21st to November, 3rd 2010. During this period twenty institutions were inspected of which four (4) were found to have obsolete stocks. Table 5 shows the stocks and quantities found.

The environmental risk assessment showed that all the documented stores were found to be dirty and contaminated, therefore posing serious threat to the environment.

Table 4. Stocks and Quantities of Obsolete Pesticides Found in St. Kitts

Location	Name of Pesticide	Size of Container	Quantity
Fahies Outreach Centre	Pirate 24 SC	100 mL	1
Tabernacle Outreach Centre	Pirate 24 SC	100 mL	1
	Dipel 2X	0.5 kg	1
	Acrobat MZ 69 WP	300 g	1
	Bee Scent	500 mL	1
T.D.C Ltd	Raft 400 SC	5 L	19
	Anvil 55SC	1 L	3
	Karmex 80 XP	400 g	11
S.S.M.C-Agronomy Station	Mospilan	500 g	1
	Caparol 4 L	2.5 gallon	1
	Evergreen	1 L	1
	Basudine 600 EC	45 gallons	1
	Asulox 40	45 gallon	33
	Ethokem	300 L	1
	Actril DS	45 gallons	14
	Trifluralina	20 L	18
	Trimiltox Forte 41.5 WP	500 g	38

Location	Name of Pesticide	Size of Container	Quantity
	Ethokem	25 L	56
	Velpar DF	4 lbs	608
	Krismat DG	5 kg	4
	Actara	13 g	30
	Diuron 80 WP	5 lbs	3
	Gesapax 80 WG	10 kg	85
	Trigard 75 WP	50 g	10
	Arsenal	500 mL	1
	Neem-X	1 L	72
	Pjsilade 2000	1 L	1
	Safer	200 mL	1
	Vibasic BL	1.7 kg	1
	Buctril Gel	2.5 L	1
	Captan 50 WP	5 lbs	1
	Magnesium Oxide Light	500 g	2
	Mankocide	1 kg	3
	Merlin 75 WDG	140 g	2910
	Asulox 80 SG	1 kg	1
	Gesapx 500	20 L	1
	Newfol-CA	1 L	1
	Oxytril CM	5 L	917
	Karmex DF	25 lbs	2
S.S.M.C-Buckley's Estate	Asulox 40	200 L	2
	Gesapax 80 WG	10 kg	13
	Asulox 80	255 kg	1
	Oxytril	5 L	752
	Oxytril CM	5 L	120
	Merlin	140 g	270
	Actril DS	200 L	4
	Igran 500 SC	20 L	3
	Veneno	20 L	2
	Buctril	45 gallons	40
	Gesapax 500 SC	20 L	595
Department of Agriculture	Herbadox 40 EC	500 mL	2
	Vertimec 018 EC	200 mL	1
	pH plus	1 L	1
	Newfol-CA	500 mL	2
	Phyton	1 L	1
	Actellic 50 EC	1 L	1
	Protek	1 L	1
	MVP	500 mL	1
	Exit	250 mL	1
	Nocu-Gro	500 mL	1
	Arse	300 mL	1

Location	Name of Pesticide	Size of Container	Quantity
	Rootone	2 oz.	1
	Vapam	1 quart	1
	Hostathion	500 mL	2
	Nu-film-17	300 mL	1
	Azadirachtin 4.5 EC	500mL	1
	Danitol	500 mL	1
	Dipel 2X	0.5 kg	1
	Bellis 38 WG	50 g	1
	Agaclin 15 WG	100 g	1
	Pirate 24 SC	100 mL	2
	Universal Essence	1 L	1
	New BT 2X	500 g	1
	Bee Scent	500 mL	1
	Neem-O	1 L	1
	Neem-X	500 mL	1
	Lorox DF	10 lbs	1
	Benlate	125 g	1
	Acrobat MZ 69 WP	300 g	1
	Frigate	500 mL	6
	Peltar	1 kg	2
	Newfol-Plus	250 g	6
	Prefar 4 E	475 mL	16
	Aza-Direct 1.2 EC	60 mL	5
	New BT 8 L	1 L	1
	Admiral	250 mL	1
	Caparol	2.5 gallons	1
	Cadre	1 gallon	2
	Orion-Mg	500 mL	1
	Dipel 4 L	1 quart	1
	Cascade 10 DC	250 mL	2
	Pronto 35 SC	250 mL	2
	Jupiter 120 EC	100 mL	16
	Phyton-27	1 L	1

Table 5. Stocks and Quantities of Obsolete Pesticides Found in Nevis

Location	Name of Pesticide	Size of Container	Quantity
Solid Waste Landfill	ULV Perimetrina 50 GR/LTR	55 gallon	1
	Unknown	55 gallon	1
	Unknown	45 gallon	2
New River Estate-Dept. of Agriculture	ULV Perimetrina 50 GR/LTR	55 gallon	1
	ULV Perimetrina 50	45 gallon	1

Location	Name of Pesticide	Size of Container	Quantity
	GR/LTR		
	ULV Perimetrina 50 GR/LTR	15 L	1
	ULV Perimetrina 50 GR/LTR	10 gallon	25
	Unknown	15 gallon	1
	Unknown	45 gallon	1
	Unknown	55 gallon	1
Prospect Propagation Station-Dept. of Agriculture	Benlate	2 lbs	1
	Safer	1 gallon	1
	Oxidate	2.5 gallons	1
	Triazicide	10 lbs	1
	Unknown	500 L	1
	Dacthal	4 lbs	1
	Frigate	500 mL	1
	Dicofol	475 mL	1
	Mr Pepe Insecticide	2.5 gallons	1
	Perimetrina 50 GR/LTR	55 gallon	1
T.D.C	Elsan	1 L	8
	Superfast Weed and Grass Killer	32 fl. oz.	27
	Unknown	1 gallon	10
	Aliette	unknown	9
	Ortho Clean up Grass and Weed Killer	0.5 gallon	1
	Safer Insect Killer	24 fl. oz.	8
	Anvil 55 SC	1 L	4
	Garden Fungicide (Safer)	0.25 gallon	3
	Florel Brand Fruit Eliminator	0.25 gallon	2
	Vapam	1 quart	1

National Inventory of POPs Chemicals

The information stated previously, provided a general picture of the toxic chemicals imported and use in the Federation, hence providing an important background to any discussion of management issues specific to POPs. The following sections provide further specific information that has been recently acquired, specifically focused on the status of POPs importation and use, storage conditions and presence of stockpiles as well as some preliminary investigation of residues and contamination of the environment caused by prior use of POPs. It will also look at what information is available regarding the present sources and levels of unintentional release of POPs chemicals into the environment.

Prenatal Exposure to Persistent Organic Pollutants

Prenatal exposure to Persistent Organic Pollutants (POPs), Pesticides, and Heavy Metals in the CARICOM Region

Background

As part of the Caribbean EcoHealth Programme (CEHP) research program, the POPs research study was conducted in Belize to determine prenatal exposures to persistent organic pollutants, pesticides, two heavy metals–mercury and lead–and zoonotic infections. This report presents the findings for POPs, mercury, lead, and select pesticides commonly used in the Caribbean region.

Rationale

Throughout the Caribbean region, POPs have been extensively used in agriculture and vector control programs as well as for other purposes. A UNEP (2002) survey of POPs pesticides usage in the Caribbean region found that while most countries have formally banned the use of legacy POPs, several CARICOM countries acknowledge past use of several POPs chemical, in particular legacy POPs such as dieldrin, DDT, toxaphene, and aldrin.

There is considerable evidence that POPs circulate globally and have been detected in people from biological samples taken in different parts of the world. It is thus quite likely that people in the Caribbean have been exposed to these chemicals. Further, because POPs are very persistent in the environment, biota, and humans, concentrations of these compounds will decrease only slowly in populations that have been exposed over many years. Significant concentrations can persist in the environment that may cause local foods to be contaminated for long periods of time.

The capacity and capability of Caribbean countries to evaluate the nature and extent of exposures to POPs among its people is either non-existent or very limited. This is due in part to significant deficiencies in laboratory infrastructures within the Caribbean for carrying out health surveillance and environmental monitoring, as well as a shortage of qualified personal to gather, collate, analyze, and interpret the data. Furthermore, in general, environmental health problems are insufficiently documented thus limiting efforts at effective interventions.

The Caribbean EcoHealth Programme's (CEHP's) POPs Study research program is the first to undertake a systematic program of research geared at determining levels of human exposure to POPs and other toxicants such as mercury and lead and pesticide metabolites in the CARICOM region. As such, it fills a major gap in the region's current knowledge with regard to the level, scope, and nature of human exposures to these toxic compounds. Additionally, the CEHP POPs Study program addresses a key priority for the Caribbean region as outlined by the UNEP (2002) Regional Workshop report on the Reduction/Elimination and Management of Pesticides in the Context of the Stockholm Convention on POPs and the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal.

The objectives of the POPs Study research program were as follows:

1. To collect blood concentration level information for all legacy POPs from maternal blood samples of initially four but then expanded to an additional six CARICOM countries;
2. To collect blood concentration level information on mercury and lead in maternal blood samples of initially four but then expanded to an additional six CARICOM countries;
3. To evaluate exposure of pregnant women to other non-POPs pesticides such as pyrethroids, carbamates, and organophosphates by measuring metabolites in urine samples;
4. To undertake a full screening of 60 compounds on pooled blood samples from all 15 CARICOM countries;
5. To work with national and regional health authorities to undertake the research program and analyze and interpret the results;
6. To determine key pollutants of concern at a national and regional level;
7. To provide training and capacity building to national and regional research coordinators, laboratory technicians, and ministerial staff in the CARICOM region;

8. To effectively communicate risk to Caribbean decision-makers in cooperation with national and regional health authorities.

A summary of the key results found in this study is presented in **Table 6**. The results of the study indicated that mothers from St. Kitts and Nevis are exposed to very low quantities of POPs. Three congeners of PCB (138, 153, and 180) were present in all women. DDE, the major metabolite of DDT, was detected in 39% of women whereas DDT was detected only in 11% of study subjects. For this 11%, the DDE/DDT ratio was calculated and found to be low, which is an indication of recent exposures.

For St. Kitts and Nevis, exposures to modern pesticides such as pyrethroids and organophosphates (OPs) were found at levels typically seen in tropical environments. This is because pyrethroids, especially deltamethrin, are used for many usages ranging from agricultural use to home pest control. It is also one of the primary ingredients in ant chalk. For organophosphates where acute toxicity is the primary concern, little is known on the long term chronic effects of low dose during pregnancy. Concentrations found in urine of mothers from St. Kitts and Nevis were in the low range.

Table 6. Summary of POPs Study Findings for St. Kitts and Nevis with Comparison Data from Canada and the U.S.A

Indicator	SKN	Canada	U.S.A
Heavy Metals	***(N=44)***		
Mercury (µg/L)	1.85	0.70	0.83
Mercury (% detected)	93		
Lead detected *n* out of N (%)	0		
Lead (µg/dL) in *n* detected	0	0.89	1.22
Pyrethroids (µg/L)	***(N=15)***		
cis-DBCA*	0.13	0.07	1.5
cis-DCCA	0.24	0.08	N/A
trans-DCCA	0.58	0.2	N/A

Indicator	SKN	Canada	U.S.A
3-PBA	0.64	0.25	0.32
4-F-3-PBA*	0.04	0.08	N/A
Persistent Organic Pollutants (POPs)	***(N=44)***		
PCB 118 (µg/L)	0.02	N/A	N/A
PCB 138 (µg/L)	0.03	N/A	N/A
PCB 153 (µg/L)	0.07	0.11	0.15
PCB 156 (µg/L)	N/A	N/A	N/A
PCB 170 (µg/L)	0.02	0.03	0.04
PCB 180 (µg/L)	0.04	0.09	0.12
Hexachlorobenzene (µg/L)	0.05	0.05	0.1
p,p'-DDE (µg/L)	0.04	0.91	1.69
p,p'-DDT (µg/L)	0.01	N/A	N/A
Ratio p,p'-DDE/p,p'-DDT	3.0	N/A	N/A
ß-HCH (µg/L)	N/A	0.04	0.05
trans-Nonachlor (µg/L)	0.01	0.04	0.11
Dioxin (pg/g lipid)	4.50	8.9	N/A
Organophosphates, carbamates, and phenoxy metabolites (µg/L)	***(N=15)***		
Diethylphosphate (DEP)	2.51	2.3	N/A
Dimethylphosphate (DMP)	3.17	2.96	N/A
Dimethylthiophosphate (DMTP)	1.39	2.03	2.1
2,4-D	0.15	N/A	N/A
2,4-Dichlorophenol	1.07	N/A	N/A
2,5-Dichlorophenol	5	N/A	N/A
Polybrominated flame retardants (PBDEs)	***(N=10)***		
PBB 153 (µg/kg lipid)	0.0013	N/A	2.72

Indicator	SKN	Canada	U.S.A
PBDE 100 (µg/kg lipid)	0.0027	N/A	3.77
PBDE 153 (µg/kg lipid)	0.0026	N/A	N/A
PBDE 17 (µg/kg lipid)	0.0020	N/A	N/A
PBDE 47 (µg/kg lipid)	0.0083	N/A	N/A
PBDE 99 (µg/kg lipid)	0.0027	N/A	N/A

St. Kitts and Nevis' Obligations to the Stockholm Convention

St. Kitts and Nevis have accompanied 113 other nations in Stockholm as a signatory to the Stockholm Convention 2002 and was followed by ratification of the Convention on 19th August 2004. This Convention, a global agreement under the United Nations Environment Programme (UNEP), is intended to reduce or eliminate emissions of persistent organic pollutants.

The Convention:

- sets out obligations for countries covering the production, use, import, export, release and disposal of persistent organic pollutants (POPs);
- requires countries to promote, and in some cases require, the use of the best available techniques (BAT) and best environmental practices (BEP) to reduce and/or eliminate emissions of unintentionally produced POPs from certain combustion and chemical processes; and
- includes provisions aimed at preventing the introduction of new POPs and for adding other POPs to the Convention in the future.

Because the Convention includes obligations related to hazardous wastes and their transboundary movements, it is closely linked with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

Having ratified the Convention, St. Kitts and Nevis has agreed to the management and control of 12 chemicals – the POPs (known as the "dirty dozen") – and to a formal process to consider adding additional substances to the Convention. These 12 POPs that were included when the Convention came into force fall into three broad categories: pesticides, industrial chemicals and unintentionally produced POPs. The following description of the three broad categories is based upon UNEP's *Ridding the World*

of POPs: A Guide to the Stockholm Convention on Persistent Organic Pollutants (2002) and provides a list of the substances and a summary of the key uses for each chemical.

THE NATIONAL IMPLEMENTATION PLAN

St. Kitts and Nevis' commitment to eliminating the use of POPs and chemicals is evident by the Federation becoming a Party of the Stockholm Convention on POPs. The National Implementation Plan, as necessary by Article 7 of the Stockholm Convention is expected to outline how Parties plan to achieve the obligations of the Convention. The formulation of an NIP permits countries to develop compliance strategies that are suitable to and consistent with the national framework. The action strategies and measures included in the NIP ought to reflect and respond to the national conditions in which the Plan was developed. This National Implementation Plan for the Stockholm Convention is envisioned to fulfill the requirement for St. Kitts and Nevis, as a Party to the Convention, to develop action plans and policies for the implementation of relevant Convention obligations. The SKN NIP will also have the goal of establishing a system for the environmentally-sound management of Persistent Organic Pollutants and other hazardous materials and hazardous wastes, pesticides and related substances, various industrial chemical substances, ozone-depleting substances and chemical weapons.

The NIP is designed for a five year period from October 2014 to December 2019. The plan is scheduled for review in 2018 and an amended and updated plan is to be developed for the period commencing January 2020.

The activities are summarized in Table 1 with detailed information provided below. Each of the activities identified has a cost associated with it. It is not likely that St. Kitts and Nevis had the capacity to implement this programme alone, hence, regional and international effort to deliver technical and financial assistance is needed.

MEASURES TO REDUCE OR ELIMINATE RELEASES FROM INTENTIONAL PRODUCTION AND USE (ARTICLE 3)

Article 3 of the Stockholm Convention requires Parties to take legal and administrative measures to regulate, with the goal of eliminating, the production, use, import and export of the chemicals listed in Annexes A and B of the Convention. Under the Convention, import and export of Annex A and B chemicals are allowed only for specific listed uses and purposes or for environmentally sound disposal. Any import or export of Annex A and B chemicals should be carried out in compliance with the provisions of existing international prior informed consent instruments, such as the Rotterdam Convention.

In addition to exercising regulatory control over import, export, production and use, Parties with regulatory and assessment schemes for new or existing pesticides or industrial chemicals are required to include in these schemes consideration of a number of screening criteria listed in Annex D of the Convention.

The national priorities established in relation to achieving compliance with Article 3 of the Stockholm Convention are to:

- Take legal measures to prohibit the production, use, import and export of POPs pesticides, with the exception of export for environmentally sound disposal;
- Take administrative measures to prohibit the import and export of PCBs and PCB-containing equipment.

Take legal measures to prohibit the production, use, import and export of POPs pesticides, with the exception of export for environmentally sound disposal

There are no facilities for the manufacture of any of the POPs on St. Kitts and Nevis or use of any of the POPs to manufacture other products; all products are imported. The objective of this action is to reinforce the surveillance system in order to prevent the import, use, storage and wastes from POPs, pesticides and other toxic chemicals in the country. In practice, the current Pesticide and Toxic Chemicals Control Act and Regulations effectively ban import and use of all but some the most recently added POPs chemicals and the activity essentially involves the addition of these to the lists of banned or restricted chemicals under the regulations. It would extend bans on import and use to products containing all Annex A POPs chemicals (except PCBs). This activity is intended to make the required regulatory adjustments to existing Pesticide and Toxic Chemical Control Regulations to formalize the restricted and acceptable use as allowed under the Convention.

In order to meet these goals, the necessary interventions are required:

1. Submission of a recommendation to the Chair of the Pesticides Control Board that, based on the associated human and health hazards, Annex A or B pesticides that are not currently banned should be added to the list of banned and severely restricted pesticides.

2. For each new POPs pesticide added to Annexes A or B, submission to the Chair of the Pesticides Control Board copies of the proposal, risk profile and risk management profile prepared in respect of that chemical, along with a copy of the decision of the Conference of Parties to include it in the Convention, and a recommendation that the chemical should be formally banned, if such action has not already been taken.
3. Circulation to members of the Board of relevant information documents about POPs pesticides, followed by action by the Pesticides Control Board to ban/severely restrict the chemical(s) in question.
4. Issuance of public notices that the pesticides in question have been banned/severely restricted.

There is no cost associated with the implementation of these measures.

Take administrative measures to prohibit the import and export of PCBs and PCB-containing equipment

There is no manufacture of PCBs in St. Kitts and Nevis but there exists a Pesticide and Toxic Chemicals Control Board (PTCCB) which monitors import and export of PCBs (and other hazardous materials). As it is possible that there remains the potential (although negligible) for importing dielectric fluid and transformers that contain PCBs, security measures should be implemented to require the import of PCB-free transformers and other electrical equipment and dielectric fluids. Moreover, a strategy on hazardous substances management, which proposes a regime for the legal and regulatory control of chemicals, including pesticides, in all aspects of their life cycle, has been developed by the PTCCB. At present, there is currently a regulatory system in place in St. Kitts and Nevis to control the production, import, export and use of industrial chemicals such as PCBs.

Necessary interventions are outlined below:

1. Preparation of a submission to the Director of the Bureau of Standards proposing that PCBs should be put on licence and providing the reasons why import and export of these substances

should be prohibited, with detailed reference to the associated human and environmental health considerations and the requirements of the Stockholm Convention.

2. Preparation and submission of a Paper to Cabinet for a decision on whether or not PCBs should be added to the list of commodities on license.
3. Requirement, for all PCBs exported for disposal, that notification in writing be submitted regarding the exportation, transportation and environmentally sound management of the wastes via standards, requirements for selecting temporary storage site, safety requirements, and maintenance of records up to disposal as required by the Basel Convention.

There is no cost associated with the implementation of these measures.

MEASURES TO REDUCE OR ELIMINATE RELEASES FROM UNINTENTIONAL PRODUCTION (ARTICLE 5)

Under Article 5 Parties are obligated to undertake methods to decrease releases from anthropogenic sources of each of the chemicals indicated in Annex C of the Convention, with the goal of continued minimization and, elimination where possible.

The chemicals indicated in Annex C of the Convention are as follows:

- Polychlorinated dibenzo-p-dioxins (PCDD)
- Polychlorinated dibenzofurans (PCDF)
- Polychlorinated biphenyls (PCB)
- Hexachlorobenzene (HCB)
- Pentachlorobenzene (PCB)

Recognition of the significant potential for unintentional release of POPs chemicals, and the limitations of the present regulatory framework to address such releases, has made this activity another high importance within the NIP Action Plan.

A measure that is required by Article 5 is to construct and implement an action plan that is designed to identify, characterize and address the release of the chemicals indicated in Annex C and thus included under the NIP.

Among other measures required by Article 5, Parties are required to promote the application of measures to reduce unintentional release and the development, where appropriate, require the use of

modified materials to prevent unintentional production and release. Furthermore, Parties require national action to promote awareness, train and encourage personnel to adopt best available techniques and best environmental practices.

The unintentional production and release of POPs from burning of waste was identified by the POPs inventory as the greatest contributor of highly toxic chemicals in Saint Kitts and Nevis. The awareness of these toxic pollutants is not well known and thus burning of waste is quite common and not performed with the use of the best possible techniques. These unintentional pollutants are released on day to day activities, hence the concern to remediate this problem.

The national priorities for achieving compliance with Article 5 of the Stockholm Convention are to:

- Promote the use of BAT and BEP for existing waste incinerators to reduce or eliminate UPOPs
- Require the use of BAT and BEP for new source facilities
- Develop and maintain source inventories and release estimates
- Review the effectiveness of the measures taken to reduce releases of UPOPs

Promote the use of BAT and BEP for existing waste incinerators

There has not been an official inventory specific to existing sources that contribute to unintentional release of POPs, and thus, general sources are targeted, such as solid waste and medical waste incinerators and the burning of agricultural waste. Therefore, actions to reduce releases from these existing sources are focused but not limited to this category as more research will be done to acquire an updated inventory of existing sources.

In efforts to encourage and ensure the use of BAT and BEP in waste incineration, the following actions are required:

1. Performance of environmental audits at municipal solid waste and medical waste incinerators. Also, survey assessment and environmental monitoring done throughout communities as it is common to burn household and agricultural waste. This activity would also contribute to the upgrading of subsequent national inventories of UPOPs.
2. Community awareness of the possible toxic chemicals released when household and agricultural waste are burned. Implement and encourage BAT and BEP among personnel at waste

incinerators, and also regulatory personnel. This activity should be preceded by on-site assessments of the techniques and practices in use at the targeted facilities.

3. Propose alternate disposal methods for hospital and other medical waste.

The estimated cost of these activities is XCD $80,000.00

Require the use of BAT and BEP for new source facilities

The Stockholm Convention requires each Party to phase-in requirements for BAT to be used for new sources within 4 years of the entry into force of the Convention for that Party. Parties are also required in accordance with its action plan, to incorporate the use of BAT and BEP for all new sources. Saint Kitts and Nevis is expected to complete this phase-in by December 2018.

The Department of Physical Planning and Environment (DPPE) within the Ministry of Sustainable Development is responsible for control of environmental impacts of new developments, and as such perform environmental impact assessments (EIAs).

Accordingly, provisions should be taken to require/encourage the use of BAT and BEP by means of the following interventions:

1. Liaison with the DPPE regarding the importance of BAT and BEP and propose that these techniques and practices be considered for future developments in related source categories.
2. Incorporation of BAT and BEP considerations as part of environmental impart assessments for future developments in the pertinent source categories.

There is no cost associated with the implementation of these measures.

Develop and maintain source inventories and release estimates

In order to meet the requirements of Article 5, St. Kitts and Nevis must recognize and categorize unintentional releases of POPs and correspondingly, develop, update and maintain source inventories and release estimates. These inventories would inform the development of national priorities and measures to attend to these releases, and thus allow the success of the strategies to be assessed to determine effectiveness.

The Obsolete Pesticides Inventory and Environmental Risk Assessment were conducted during the year 2010 and the measures to reduce or eliminate unintentional releases developed based on the results of that inventory. There is a need to implement actions to refine the inventory to ensure quality of data is assured. The following interventions have been identified:

1. Identify, in conjunction with stakeholders, measures to address data gaps and requirements for sound management of UPOPs
2. Development of a system to update the dioxins and furans inventory
3. Implement air quality monitoring assessment plan to determine release estimates/ quantification of HCB and PCBs with appropriate guidance

It is proposed that these actions are incorporated into the activities of air quality assessments of the DPPE.

The cost of these activities is XCD $250,000.00.

Review the effectiveness of the measures taken to reduce releases of UPOPs

A specific requirement under Article 5 is that there should be a review of the strategies to reduce UPOPs releases and their success evaluated every five years. The results of such reviews are to be included in reports submitted pursuant to Article 15 of the Convention. The specific reporting requirement for this Article is the review and evaluation of measures for reducing UPOPs releases to determine effectiveness.

There is no cost associated with the implementation of these measures.

MEASURES TO REDUCE OR ELIMINATE RELEASES FROM STOCKPILES (ARTICLE 6)

Under Article 6 Parties are obligated to undertake measures to manage releases from stockpiles and wastes consisting of or containing chemicals listed in Annex A or Annex B wastes in an environmentally sound manner. A stockpile may be defined as a pile or storage location of POPs chemicals or equipment or materials containing or contaminated with POPs for which there are still allowed uses in a country according to the register of specific exemptions and the list of acceptable purposes in Annexes A and B of the Convention. A stock is considered to be waste if that stock no longer has permitted use under the terms of Annex A or Annex B.

Article 6 of the Stockholm Convention requires parties to develop appropriate strategies to identify stockpiles consisting of or containing chemicals listed in Annex A, B or C. When identified, Parties are responsible for the implementation of strategies for environmentally sound management of the stockpiles. Parties should also endeavour to construct a plan of suitable strategies for identifying sites contaminated by chemicals listed in Annex A, B or C. The Convention does not require remediation of these sites, but remediation of any possible sites should be done in an environmentally sound manner. Any retrieval, recycling reclamation or reuse of POPs is not allowed. Wastes should not be transported across international boundaries without taking into account relevant international rules, standards and guidelines, such as those of the Basel Convention.

The national priorities for achieving compliance with Article 6 of the Stockholm Convention are to:

- To take measures so that wastes are disposed of in an environmentally sound manner
- To identify stockpiles, products and articles in use and waste consisting of, containing or contaminated by POPs chemicals
- To ensure the management and remediation of stockpiles/waste products in an environmentally sound manner

To take measures so that wastes are disposed of in an environmentally sound manner

A priority recognized by stakeholders during the Convention impact appraisal was that these wastes should be disposed of safely at the earliest possible opportunity. Unfortunately, SKN has neither the infrastructure or the capacity for disposal of POPs waste or other hazardous chemical waste in an environmentally sound manner. Consequently, hazardous waste is stored at a sanitary landfill.

Accordingly, provisions should be taken to ensure that wastes are disposed in an environmentally sound manner:

1. Establish a secure storage site for POPs pesticides and other unwanted pesticides
2. Screening of potentially PCB-containing equipment to determine the presence and concentration of PCBs.
3. Analysis and confirmation of preliminary identification of pesticides waste as Endrin (Organochloride)
4. Environmentally sound disposal of POPs pesticides waste.
5. Confirmation of all PCB-containing equipment.

The cost of these activities is estimated at XCD $475,000.00.

To identify stockpiles, products and articles in use and waste consisting of, containing or contaminated by POPs chemicals

The aforementioned Obsolete Pesticides Inventory was done in 2010 and thus requires updating as new POPs are included in the Stockholm Convention. It will be necessary to develop/revise inventories to identify products in use and wastes consisting of, or contaminated with, such new POPs. Also, identification and classification of sites contaminated with POPs should be included as the inventory does not provide any information regarding this issue.

In order to address this priority, the following interventions are required:

1. Risk assessment of contaminated sites.
2. Regular updating of inventory. This is to be done every 5 years. The next inventory of POPs pesticides and industrial chemicals should take place in 2015.
3. Submission of pesticide storage and stock management regulations to the Pesticides and Toxic Chemicals Control Board with recommendation to be included within the draft for the Pesticides and Toxic Chemical Bill.
4. Provide training in good pesticides stock management, including storage, record-keeping and stock taking and the use of adequate personal safety measures for personnel in the relevant fields.

The cost of these activities is estimated at XCD $100,000.00.

To ensure the management and remediation of stockpiles/waste products in an environmentally sound manner

In parallel with Articles 3 and 5, this action represents the highest level of importance in the NIP Action Plan. Its focus is addressing the POPs and related chemical wastes in SKN and ensures that the strategies are implemented to guarantee effective management of future chemical waste generation, including

POPs wastes. This involves a programme to collect and provide secure consolidated storage for POPs that would not otherwise be afforded an adequate level of care and custody.

In this regard the following interventions are necessary:

1. Development of a suitable management plan for contaminated sites.
2. Management of contaminated sites.
3. Construction of a plan to improve the capacity of data collection and analysis and monitoring of releases.
4. Development and implementation remediation strategies for contaminated sites.
5. Development and implementation of a routine equipment inspection programme.

The cost of these activities is estimated at XCD $20,000.00

PUBLIC INFORMATION, AWARENESS AND EDUCATION (ARTICLE 10)

Under Article 10 Parties are required to promote and facilitate awareness, information dissemination and training among various groups, including workers, scientists, educators, technical and managerial personnel, youth and the public. Parties are also requested to encourage stakeholders, such as industry and professional users, to promote and facilitate the provision of information on POPs.

There has not been any targeted awareness programmes related to POPs undertaken in SKN, prior to the initiation of the NIP preparation work. It is recommended that other governmental and non-governmental organizations, for example the Ministry of Agriculture and the Labour Department, be closely involved in the delivery of such awareness programmes.

Considering the requirements of the Stockholm Convention and the recommendations of the Impact Appraisal, the following priority has been identified:

- To increase awareness of the policy and decision makers and public on POPs

To increase awareness of the policy and decision makers and the public on POPs

The parties, as well as key stakeholders from public and private sectors involved in implementing the action plan, will have information concerning the level of awareness of key stakeholders and the general public. Also, risk groups and the general public should be provided with education and awareness raising programs on POPs.

At the level of the households many SKN residents are not aware of the health impacts of household chemicals. There is a clear need to educate the public about the hazards associated with POPs pesticides, and with the inappropriate use of pesticides in general.

In order to address this priority, the following interventions are necessary:

1. Preparation of information and training manuals
2. Training courses and seminars for public and private sector personnel involved in POPs management
3. Integration of POPs information into the formal education system
4. Establish a network for scientific and technical information on UPOPs
5. Encouragement of voluntary reporting of POPs products, stockpiles and wastes

The cost of these activities is estimated at XCD $250,000.00

RESEARCH, DEVELOPMENT AND MONITORING (ARTICLE 11)

The Stockholm Convention requires in Article 11, encouragement and undertaking of appropriate research, development, monitoring and cooperation pertaining to POPs. There is need for an investigative monitoring program to determine the levels of POPs in the environment of St. Kitts and Nevis. The objectives of such a program could be as follows:

1. Upgrade laboratories for testing and analysis
2. Develop a monitoring and analysis plan to investigate levels of POPs and chemicals. Also, implementation of a database to record the actions taken and to monitor the established indicators
3. follow up on the preliminary findings of potentially PCB contaminated sites
4. Monitoring health of agricultural and industry workers exposed to POPs and chemicals, and equipment containing POPs and chemicals
5. Access technical assistance from countries with well-established POPs monitoring and analysis programmes
    a. Identify countries with experience in POPs monitoring and analysis
    b. Mobilize financial and technical assistance to enable monitoring POPs

No specific research and development activities for developing POPs destruction technologies or for alternate pesticides (to DDT) are proposed. Consequently, the research activities are limited to environmental monitoring.

The cost of these activities is estimated at XCD $250,000.00.

REPORTING (ARTICLE 15)

St. Kitts and Nevis has sought to improve its mechanisms for collecting, compiling and managing data, as well as providing the statistical information needed to comply with Article 15 of the Stockholm Convention, in which it states that each Party has the responsibility to inform the Conference of the Parties of the measures adopted to enforce the provisions of the Convention, as well as the effectiveness of said measures.

The national priorities for achieving compliance with Article 15 of the Stockholm Convention are:

1. Incorporate local, regional and international reporting obligations under the Stockholm Convention into agency reporting framework
2. Establishment of National information exchange system to facilitate data collection and analysis
3. Incorporate reporting on POPs into the Environmental Protection Department's annual report
4. Regular reporting on implementation of action plans and strategies identified in the NIP

The cost of these activities is estimated at XCD $200,000.00.

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