



BAHAMAS NATIONAL IMPLEMENTATION PLAN

Prepared by



SEV Consulting Group

The Bahamas National Implementation Plan for The Stockholm Convention on Persistent Organic Pollutants

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Acronyms

BEST	Bahamas Environment, Science and Technology Commission
CSD	Commission for Sustainable Development
DOA	Department of Agriculture
DEHS	Department of Environmental Health Services
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GPA	Global Plan of Action (of SAICM)
ICCM	International Conference on Chemicals Management
IFCS	Intergovernmental Forum on Chemical Safety
IHR	International Health Regulations
ILO	International Labour Office
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPCS	International Programme on Chemical Safety, a Programme of the World Health Organization
IPEN	International POPs Elimination Network
ISO	International Organization for Standardization
MDGs	Millennium Development Goals
MEA	Multilateral Environmental Agreement
NBSAP	National Biodiversity Strategy and Action Plan
NEMAP	National Environmental Management and Action Plan
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
POPs	Persistent Organic Pollutants
PRTR	Pollutant and Release Transfer Register
SAICM	Strategic Approach to International Chemicals Management
SDGs	Sustainable Development Goals
TEU	twenty-foot equivalent unit
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
UNITAR	United Nations Institute for Training and Research
WHO	World Health Organization
WTO	World Trade Organization
WSSD	World Summit on Sustainable Development

Foreword

Persistent Organic Pollutants (POPs) are chemical Substances that persist in the Environment, they can bio-accumulate through the food chain and they pose a continuous risk to human health and the environment. When The Bahamas started its National Implementation Plan (NIP) in 2013 there were only twelve main persistent organic pollutants. As of April 2020, there are now 22 named chemicals which are regulated under the Stockholm Convention. While The Bahamas is not a country which produces any of these chemicals, it is a country which is impacted by the unintentional production of these chemicals due to the burning of municipal and medical waste, as trace contaminants in certain herbicides, wood preservatives and in PCB mixtures. Under certain conditions POP chemicals have been documented to travel on typical windspeeds over distances ranging from 93 to 497 miles in two days (Scheringer, 2009).

While The Bahamas may consider itself a country in the middle of the Atlantic, the presence of POPs in water, soil and air make it a national and global threat. It is important for us to be aware and take the necessary precautions to control the entry of these chemicals, and products which contain these chemicals into the country, and whenever possible seek to use alternatives. The Bahamas' participation in the global action on this issue is therefore important not only from a national perspective but also as a member of the planet.

The Stockholm Convention is a global treaty that seeks to protect human health and the physical environment from these pollutants. The Bahamas signed The Stockholm Convention on March 20, 2002 and ratified it on October 3, 2005. By becoming a party to the convention, The Bahamas is eligible to benefit from funding through the Global Environment Facility, for the development of projects and programs which will aid its national efforts to protect the physical environment and its people from POP contaminants. Through the development of the NIP, The Bahamas now sets out actions that will help it meet its obligations under the convention.

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Executive Summary

Persistent organic pollutants (POPs) are organic chemical substances that 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
- Are toxic to both humans and wildlife.

It is vital that POPs be reduced or eliminated due to their environmental and health impacts. They can adversely impact ecosystems and biodiversity. POPs can cause health complications such as cancer and birth defects, even in low doses. They are potentially disrupting to immune and reproductive systems, and exposure can result in diminished intelligence in children.

The Stockholm Convention is a global treaty to protect human health and the environment from POPs by restricting and ultimately, eliminating their production, use, trade, release and storage. The Convention entered into force on 17 May 2004. As of May 2017, it has been ratified by 181 Parties. The Bahamas is a Party, having ratified the Stockholm Convention on 3rd October 2005. The Convention came into force for The Bahamas in 2006.

As a Party to the Stockholm Convention, The Bahamas has certain obligations which include to prepare the National Implementation Plan. The Bahamas has received funding from the Global Environment Facility (GEF) and technical assistance from UN Environment and BCRC (Trinidad and Tobago) to complete its first NIP, covering the POPs listed up to COP-8 inclusive. The Bahamas NIP consists of the following:

- Assessment of POPs issues – including POPs found in The Bahamas, information on stockpiles, wastes and contaminated sites, and existing technical infrastructure;
- Institutional, regulatory and policy frameworks;
- Technical and financial assistance needed;
- Priorities and actions;
- Public information, awareness and education; and
- Reporting.

The NIP has been developed under the guidance of the BEST Commission as the Official Contact Point for the Stockholm Convention and the National Chemicals Advisory Committee in consultation with stakeholders from the public, private and NGO sectors. The NIP includes

national activities for all POPs under the Stockholm Convention over a 10-year period. It is important to note that the inventory completed and referenced in this NIP only addresses the initial 12 POPs; therefore, subsequent national activities outlined in the NIP include completing inventories for the new POPs.

1.0 Introduction

1.1 Persistent Organic Pollutants

Persistent organic pollutants (POPs) are organic chemical substances that 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
- Are toxic to both humans and wildlife.

POPs are produced intentionally and non-intentionally. Intentional production means that POPs are specifically produced for use in various industries. Non- or unintentional production create POPs as by-products or unintentionally with POPs being released into the environment through processes such as combustion. Sources of unintentionally produced POPs include:

- Waste incinerators (municipal, hazardous, and medical waste, and sewage sludge);
- Cement kilns firing hazardous waste;
- Production of pulp using chlorine bleach; and
- Certain thermal processes in metallurgical industry (e.g. secondary copper production, sinter plants in iron and steel manufacture).

Figure 1 below shows examples of sources for both types of production. From Figure 1, organochlorines include Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Mirex and Toxaphene. PBDEs are polybrominated diphenyl ethers.

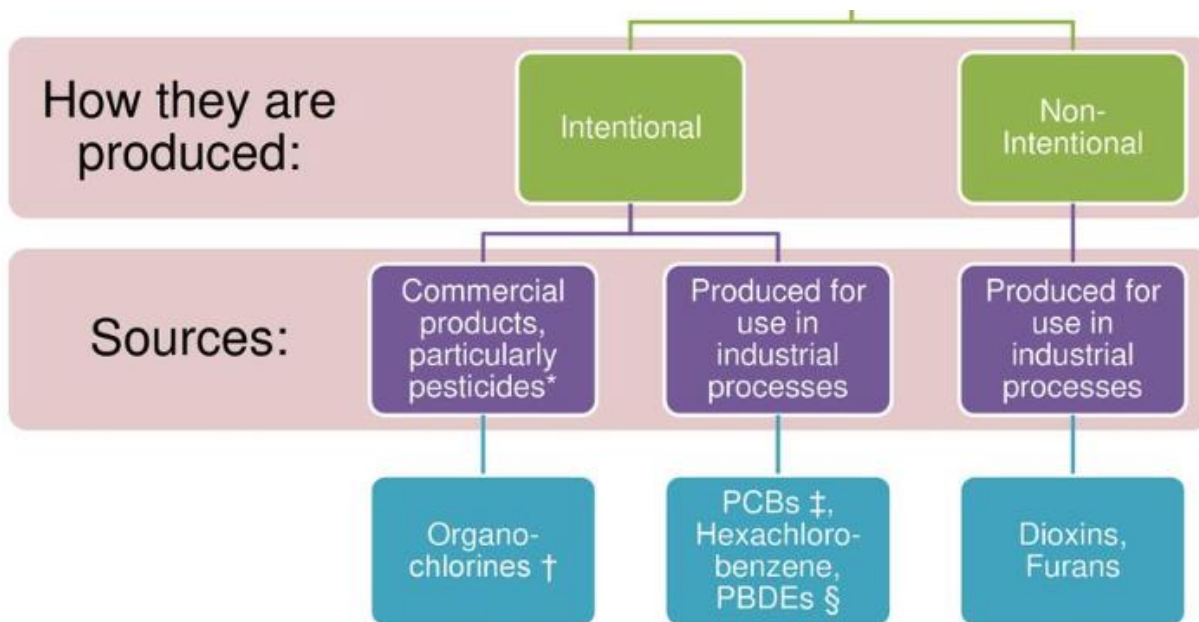


Figure 1: Production and sources of POPs¹

It is vital that POPs be reduced or eliminated due to their environmental and health impacts. They can adversely impact ecosystems and biodiversity. POPs can cause health complications such as cancer and birth defects, even in low doses. They are potentially disrupting to immune and reproductive systems, and exposure can result in diminished intelligence in children.

POPs can enter the human body through ingestion (e.g. breastfeeding), occupational exposure (e.g. agriculture), and consumer and medical products. Human populations most at risk include:

- Fishermen & consumers of fatty fish in contaminated areas
- Populations who rely on foods high on the food chain (e.g. Arctic Inuits feeding on marine mammals)
- Adults working with POPs (e.g. pesticides)
- Populations living near heavily polluted sites (e.g. POPs stockpiles) or where waste is burned

Figure 2 shows some of health impacts of both acute and chronic exposure to POPs.

¹ 2014. Children's Environmental Health Network.

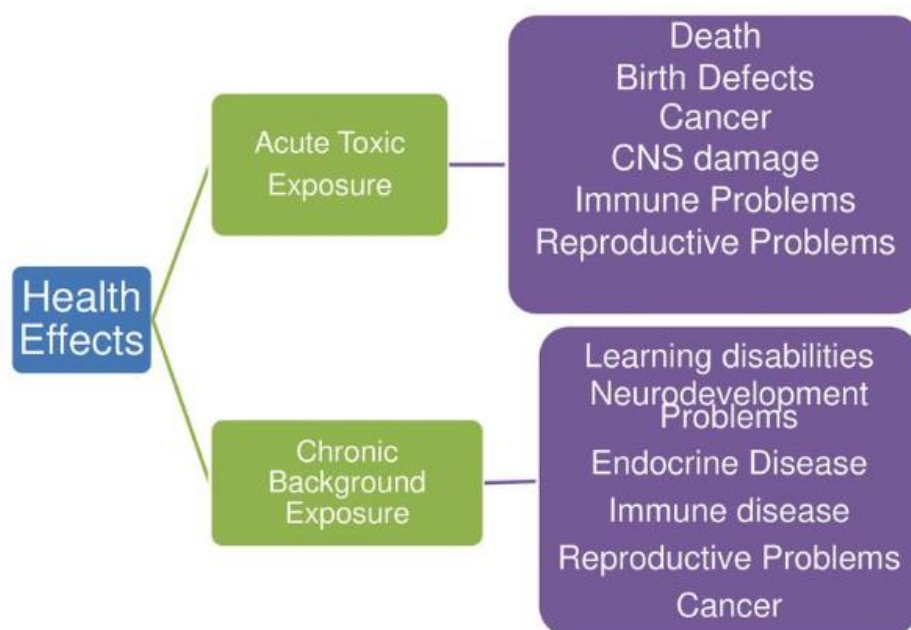


Figure 2: Health impacts of POPs²

Table 1 gives recommendations on how to prevent or reduce exposure to POPs through nutrition, in the home and in the workplace.

Table 1: Preventing or reducing POPs exposure

Nutrition	At Home	In the Workplace
1. Eat foods low in animal fats or remove fatty tissue before eating 2. Eat low on the food chain (e.g. fruits, vegetables, whole grains) 3. Wash outer skins of fruits and vegetables 4. Peel root and wax-coated vegetables 5. Eat fish from open sea, over farmed and closed lakes. Carefully consider the type of fish in relation	1. Dust frequently with moist cloth and vacuum with a HEPA filter vacuum to reduce dust loads and circulating PBDEs 2. Prevent small children from mouthing remote controls and other small electronic device casings that may contain PBDEs 3. Repair tears in upholstered furniture and cushions to ensure interior foam is enclosed	1. If you work with electronics recycling or in manufacture of products containing flame retardants – Avoid taking PBDE or other contaminated dust home by changing clothes and washing exposed skin and hair after work 2. Use PPE in the workplace to avoid contact with or inhalation of potential contaminants

² 2014 Children's Environmental Health Network.

Nutrition	At Home	In the Workplace
to potential bioaccumulation 6. Avoid consuming livestock reared or agriculture grown in potentially contaminated areas	4. Replace old and crumbling foam regardless of the covering 5. Avoid open burning of waste 6. Ensure proper disposal of potentially contaminated item in order to avoid landfilling and UPOPs emissions	3. Environmentally sound management of PCBs oil and contaminated equipment 4. Ensure proper disposal of potentially contaminated item in order to avoid landfilling and UPOPs emissions

1.2 Stockholm Convention

The Stockholm Convention is a global treaty to protect human health and the environment from POPs by restricting and ultimately, eliminating their production, use, trade, release and storage. The Convention entered into force on 17 May 2004. As of May 2017, it has been ratified by 181 Parties. The Bahamas is a Party, having ratified the Stockholm Convention on 3rd October 2005. The Convention came into force for The Bahamas in 2006.

There are regional centres for the Convention that provide assistance in capacity-building & technology transfer to Parties. The closest regional centre to The Bahamas is the Basel Convention Regional Centre (BCRC) in Trinidad and Tobago.

Partners to the Stockholm Convention include the Basel and Rotterdam Conventions which both address aspects of waste and chemicals management. The Basel Convention is on the transboundary movement of hazardous waste. The Rotterdam Convention is on the prior informed consent procedure for hazardous chemicals and pesticides in international trade.

As a Party to the Stockholm Convention, The Bahamas has certain obligations which include to:

1. Prohibit and/or eliminate production and use (as well as import and export) of intentionally produced POPs listed in Annex A.
2. Restrict production and use (as well as import and export) of intentionally produced POPs listed in Annex B.
3. Reduce or eliminate releases from unintentionally produced POPs listed in Annex C.
4. Ensure stockpiles and wastes consisting of, containing or contaminated with POPs are managed safely and in an environmentally sound manner.
5. Target additional POPs to be listed within the Convention.
6. Prepare and periodically update the National Implementation Plan (NIP).

7. Report on the measures taken for the implementation of the Convention obligations (Article 15).

Areas of focus of the Stockholm Convention include management of intentional and unintentional POPs, technical assistance, financial mechanism, effectiveness evaluation and global monitoring. In determining how POPs should be managed by Parties, the Convention has these chemicals arranged in various Annexes as follows:

- Annex A (Elimination) – Parties must take measures to eliminate the production and use of these chemicals
- Annex B (Restriction) – Parties must take measures to restrict the production and use of these chemicals
- Annex C (Unintentional production) – Parties must take measures to reduce and ultimately eliminate the unintentional releases of these chemicals

Table 2 provides a listing of POPs under the Stockholm Convention by type and Annex as of 2017.

Table 2: POPs in Stockholm Convention Annexes (listed as of 2017)

POP	Type	Annex
Aldrin	Pesticide	A
Chlordane	Pesticide	A
Chlordecone	Pesticide	A
Decabromodiphenyl ether	Industrial chemical	A
Dicofol	Industrial chemical	A
Dieldrin	Pesticide	A
Dichloro-diphenyl-trichlorethane (DDT)	Pesticide	B
Endrin	Pesticide	A
Heptachlor	Pesticide	A
Hexabromobiphenyl (HBB)	Industrial chemical	A
Hexabromocyclodecane (HBCDD)	Industrial chemical	A
Hexabromodiphenyl ether (HexaBDE)	Industrial chemical	A
Heptabromodiphenyl ether (heptaBDE)	Industrial chemical	A
Hexachlorobenzene (HCB)	Pesticide, Industrial chemical and by-product	A and C
Hexachlorobutadiene (HCBd)	Industrial chemical and by-product	A and C
Alpha hexachlorocyclohexane	Pesticide and by-product	A
Beta hexachlorocyclohexane	Pesticide and by-product	A
Lindane	Pesticide	A
Mirex	Pesticide	A
Commercial octabromodiphenyl ether	Industrial chemical	A

Commercial pentabromodiphenyl ether (PentaBDE)	Industrial chemical	A
Pentachlorobenzene	Pesticide, Industrial chemical and by-product	A and C
Pentachlorophenol, its salts and esters (PCP)	Pesticide	A
Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOS-F)	Industrial chemical	B
Polychlorinated biphenyls (PCBs)	Industrial chemicals	A and C
Polychlorinated dibenzo-p-dioxins (PCDD)	By-products	C
Polychlorinated dibenzofurans (PCDF)	By-products	C
Polychlorinated naphthalenes	Industrial chemical and by-product	A and C
Short-chain chlorinated paraffins (SCCPs)	Industrial chemical	A
Technical endosulfan and its related isomers	Pesticide	A
Tetrabromodiphenyl ether (TetraBDE)	Industrial chemical	A
Toxaphene	Pesticide	A

1.3 Development of a National Implementation Plan

Article 7 of the Stockholm Convention outlines the obligation for all Parties to develop National Implementation Plans (NIPs) for implementing the Convention. The Bahamas has received funding from the Global Environment Facility (GEF) and technical assistance from UN Environment and BCRC (Trinidad and Tobago) to complete its first NIP, covering the POPs listed up to COP-8 inclusive. The Bahamas NIP consists of the following:

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2.0 Country Profile

The Bahamas is an archipelagic nation comprised of thirteen major islands and several hundred smaller islands and cays. The islands are aligned in a northwest to southeast direction for more than 800 miles from the east coast of Florida in the United States to the southeast coast of Cuba. The islands cover approximately 100,000 square miles or 260,000 square kilometres of ocean between latitudes 21° and 27° North and longitudes 72° and 79° West. The total land area is only 5,382 mi² (13,940 km²). The archipelago stretches from the northwest tip of Grand Bahama Island to the southeast coast of Inagua Island approximately 550 miles (880 kilometres). The majority of the islands straddle the Little and Great Bahama Banks which run parallel to one another on the Bahama platform and are separated by the Tongue of the Ocean. The Bahamas Platform extends from the coast of Florida to the island of Hispaniola a distance of more than 840 miles (1,335 km).



Figure 3: Map of The Bahamas

2.1 Physical and Natural Environment

The name, Bahamas, is a derivative of *bajamar* which means shallow seas in Spanish and accurately describes the morphology of the archipelago. The islands of The Bahamas have generally low relief; around 80% of the land surface is within 1 meter of mean sea level. The

Bahama platform is partially covered by lithified Aeolian ridges, beach ridges, and areas of unconsolidated or partially consolidated sand. These formations contribute to the development of the islands, which form primarily on the eastern edges of the Little and Great Bahama Banks. The islands generally run northwest to southeast throughout the chain along the windward margins of the plateaus. Central ridges rising to up to 100 ft (31m) may be found on most islands, including New Providence, with a maximum height of 127 ft (39 m) above sea level on the island. Cat Island boasts the highest point in the archipelago at 206 ft (63 m). The highest point in Andros Island, the largest in The Bahamas is only 71 ft (21.6 m), and most of that island lies less than 20 ft (6m) above sea level. Throughout The Bahamas many rocks and sand banks are submerged at high tide and some connect larger islands at low tide. This low relief is evidence of sea level fluctuations, during the Pleistocene Epoch, which caused dune formation and the development of recessional beach ridge systems. These features then lithified due to the high level of calcium carbonate in the sands. Hearty and Kindler (1995) and Kindler and Hearty (1996) describe the carbonates of The Bahamas and the sea level changes that contributed to the islands' formation.

The limestone rock of which the islands are comprised formed due to wave action deposition of oolitic and skeletal sands from marine sources and cementation of these particles with calcium carbonate. Rainwater dissolves the calcium carbonate and penetrates even the microscopic pores between particles. The calcium carbonate may then precipitate out and cement nearby particles together. Conversely, rainwater may carve pathways through the rock as it dissolves away previous calcium carbonate deposits. The movement of water through the limestone rock may create holes and channels eventually carving subterranean tunnels, caves and chambers below the surface.

Housed below the land's surface are thin layers of fresh water. These thin destructible lenses float above the saline and brackish water below the islands' surfaces. Some of these lenses may be within a few feet of the island's surface and extend down to as much as 110 ft (40 m). The lens is considered to include not only the water enclosed in chambers within the rock, but all the water trapped in even the most minute pores and cracks in the rock. These lenses may be exposed to the surface in some areas and are called blue holes. Well drilling on residential properties and within developments exploits this resource throughout the islands.

The delicate nature of the freshwater lenses makes them prone to overexploitation or damage by salt intrusion in residential areas or within larger developments. Storm events and natural erosion within the limestone rock may also cause changes in the orientation, size or shape of the freshwater lenses in a given area (Cant 1986, Little et al 1971-1976). These factors provide for limited access to freshwater resources throughout The Bahamas. As population size increases throughout The Bahamas, access to potable freshwater resources

is becoming increasingly important and pollution of near surface lenses is a danger due to the use of septic tanks on most properties (Cant, 1996, 1997).

The Sub-tropical climate of The Bahamas lends itself to two distinct seasons. During the dry season from November to April, the islands may experience less than 10 rainy days per month (Sealey et al, 1994). Hurricane activity in any given year may increase rainfall in the month of November. Rain may fall 10 to 20 days per month during the wet season from May to October. The rainy months are considered the summer months in The Bahamas, when mean daily temperatures exceed 77°F (25°C).

Daily maximum temperatures may reach 96°F (36°C) and night time temperatures may fall as low as 41°F (5°C) during winter in northern islands. Mean daily temperatures generally lie between 60°F and 90°F (17°C and 32°C). Cool arctic air passing through the islands in the winter months may cause temporary drops in temperature called cold fronts from December to March and sometimes into April.

The Atlantic Hurricane Season (June 1 to November 30) produces several to many hurricanes each year near enough to The Bahamas to necessitate warnings and alerts. Forty-three hurricanes were reported in The Bahamas between the years 1900 and 1999. Hurricanes that were notoriously destructive in The Bahamas include Hurricane Andrew (1992) and Hurricane Floyd (1999). The large separation between islands allows for some islands to almost entirely escape damage while others may be devastated.

The distinct environment of The Bahamas gives rise to numerous irreplaceable habitats and species, including vast expanses of Caribbean pine forest, tidal flats with thriving bonefish populations, extensive barrier reefs, the highest concentration of blue holes in the Western Hemisphere, and critical fish nursery habitat believed to contribute significantly to fisheries stocks throughout the Caribbean region. The insularity and extensive carbonate shelf with productive coral reefs and other habitats, plus a large area of coastal wetlands, especially mangrove forests, contribute to the abundance and diversity of fish. Rare, critically endangered, and endemic species can also be found in The Bahamas including the Bahama parrot, several species of Rock iguana, Kirtland's warbler, West Indian flamingo, Hutia, Smalltooth sawfish, Queen conch, and Loggerhead, Hawksbill, and Green turtles.

2.2 Political and Demographic Context

The Bahamas gained its independence from England on July 10, 1973 and is now considered a small island state within the Commonwealth of Nations, formerly the British Empire.

Head of State

Her Majesty Queen Elizabeth II is Head of State and is represented by the Governor-General. Her Majesty appoints the Governor General on the advice of the Prime Minister and the Governor General can be legally removed by the Prime Minister. The Governor General signs bills into law after they are passed by the House of Assembly and the Senate.

Executive branch

The Executive branch of the government includes the Prime Minister, the Attorney-General and at least 7 other members. The Prime Minister and Minister of Finance must be members of the House of Assembly. The other Cabinet Ministers and Ministers of State are appointed from the House of Assembly and up to three senators may also be appointed as Ministers. The appointed Ministers and Ministers of State are responsible for running their Government ministries. Each ministry has a Permanent Secretary, a career public servant who is responsible for the day-to-day operation of the ministry.

Legislative branch

The Bahamas legislature is a two-chamber system based on the Westminster model, with a House of Assembly (Lower House) and a Senate (Upper House). First convened in 1972, the Bahamas House of Assembly is the fourth oldest parliament in the English-speaking world. The House of Assembly is comprised of at least 38 elected representatives of the Bahamian citizenry. There are currently 24 constituencies in Nassau and 15 in the Family Islands for a total of 39 House seats. The 16 members of the Senate are appointed as follows: nine members appointed by the Governor General on the advice of the Prime Minister, four on the advice of the Leader of the Opposition, and three on the advice of the Prime Minister after consultation with the Leader of the Opposition. This means that the Opposition will have at least four representatives in the Senate and may directly influence as many as seven.

Laws in The Bahamas begin as bills introduced in the House of Assembly. Each bill must be read three times, debated and passed. If passed, the bills then enter the Senate to be read three times and debated. If passed after debate by the Senate, the bill is then sent to the Governor General. Once signed, the bill becomes law.

Majority rule

Elections in The Bahamas are held every five years and voting is open to all Bahamian adults over 18 years of age and residing in The Bahamas. The major political parties are the Free National Movement (FNM), the Progressive Liberal Party (PLP) and the Democratic National

Alliance (DNA). The party winning the majority of seats (constituencies) in the election forms the government. The last general election was held on 10 May 2017 and was won by the FNM. The next general election must be held within 5 years (2022), but may be held before if the Governor General, on advice of the Prime Minister chooses to dissolve Parliament.

Local Government

In July 1996, the Local Government Act allowed 23 Family Island districts to hold elections. In the following month, elected officials assumed responsibility for their communities. Local Government was established to allow greater autonomy in Family Island communities and make Central Government more accountable to these communities. Local Government elections are held every 3 years and positions are open to certain public servants who can campaign without jeopardizing their current jobs, tenure or eligibility for promotion in the public service. New Providence is not included in the Local Government system though provisions in the Act allow for any part of the island to be added to the system by the responsible Minister. The 23 Local Government districts are listed below. Some Family Islands are divided into multiple districts while other Family Islands are grouped together to form one district. Having Local Government offices and officials in these districts allows government to more easily oversee and be held accountable for the regular operations of each district.

The Local Government districts are as follows:

North Abaco	South Eleuthera
Central Abaco	Exuma and Exuma Cays
South Abaco	The City of Freeport
Acklins, Crooked Island and Long Cay	East Grand Bahama
North Andros	West Grand Bahama
Central Andros	Inagua
South Andros	Long Island
Berry Islands	Mayaguana
Bimini and Cat Cay	Ragged Island
Cat Island	Rum Cay
North Eleuthera	San Salvador
Central Eleuthera	

Population statistics from the 2010 Census are provided below in Table 3.

Table 3: Bahamas Total Population by Sex and Age (2010 Census)

Age in years (last birthday)	Total	Sex	
		Male	Female
All ages	351,461	170,257	181,204
0 - 4	30,730	15,376	15,354
5 - 9	31,531	15,704	15,827
10 - 14	31,858	15,942	15,916
15 - 19	31,182	15,686	15,496
20 -24	26,499	13,140	13,359
25 - 29	26,466	12,627	13,839
30 - 34	27,183	13,102	14,081
35 - 39	29,055	13,935	15,120
40 - 44	26,238	12,629	13,609
45 - 49	24,988	12,038	12,950
50 -54	19,266	9,025	10,241
55 - 59	13,728	6,502	7,226
60 - 64	10,139	4,747	5,392
65 - 69	8,174	3,702	4,472
70 - 74	5,889	2,610	3,279
75 - 79	3,655	1,545	2,110
80 - 84	2,209	885	1,324
85 - 89	1,028	367	661
90 and over	674	183	491
Not stated	969	512	457

Population statistics by island are provided below in Table 4.

Table 4: Bahamas Population Separated by Island (2010 Census)

Island	Population		Land Area (square miles)	Population Density (per square mile)
	Male	Female		
All Bahamas	170,257	181,204	5,382³	65.3
New Providence	117,909	128,420	80	3,079.1
Grand Bahama	24,996	26,372	530	96.9
Abaco	8,902	8,322	649	26.5
Acklins	320	245	192	2.9
Andros	3,769	3,721	2,300	3.3
Berry Islands	461	346	12	67.3
Bimini	1,063	925	11	180.7
Cat Island	808	714	150	10.1
Crooked Island	168	162	84	3.9
Eleuthera	4,058	4,144	200 ⁴	57.6
Exuma & Cays	3,468	3,460	112	61.9
Harbour Island	873	889	-	-
Inagua	465	448	599	1.5
Long Island	1,535	1,559	230	13.5
Mayaguana	143	134	110	2.5
Ragged Island	44	28	14	5.1
Rum Cay	52	47	-	-
San Salvador	469	471	90 ⁵	11.5
Spanish Wells	754	797	-	-

The capital city of Nassau is located on New Providence and the second city, Freeport is located on Grand Bahama. Increased development, urbanization, and job availability on these islands account for high population densities when compared to other islands.

Other basic demographics from the World Health Organization in 2013 are provided below in Table 5.

³ Land area includes main islands as well as cays.

⁴ Land area and population density for Eleuthera includes Harbour Island and Spanish Wells.

⁵ Land area and population density for San Salvador includes Rum Cay.

Table 5: Demographic data for The Bahamas (WHO, 2013)⁶

Population living in urban areas (%)	84
Total fertility rate (per woman)	1.9
Life expectancy at birth (years for both sexes)	75
Life expectancy at age 60 (years for both sexes)	22
Under-five mortality rate (per 1000 live births for both sexes)	16
Male adult mortality rate (probability of dying between 15 and 60 years per 1,000 population)	190
Female adult mortality rate (probability of dying between 15 and 60 years per 1,000 population)	116
Maternal mortality ratio (per 100,000 live births)	47

2.3 Economic Sectors

Tourism is the mainstay of the Bahamian economy and the financial services sector is the second largest contributor to the gross domestic product (GDP). Agriculture and fisheries make a much smaller contribution to GDP on the national level, but may be very important in Family Island communities. The industrial sector is small but growing and stands to make increasing contributions to GDP in years to come as development continues. Government (utility) corporations and the public service currently employ more Bahamians than any other single employer. Government utilities include Bahamas Power and Light (BPL), the Bahamas Hotel Corporation, the Broadcasting Corporation of The Bahamas, Bahamasair Holdings (the national airline), and the Water and Sewerage Corporation. The former Government-owned utility Bahamas Telecommunications Company Limited (BTC, formerly Batelco) was privatized in 2011. In recent years, the Government of The Bahamas has made significant policy and legislative changes for the energy sector. The changes included the completion of the National Energy Policy 2013 – 2033, the introduction of the Electricity Reduction Bond Act 2015, and the revision of the Electricity Act 2015. In 2015, the Bahamas Power and Light Company Limited (BPL), a wholly owned subsidiary of the Bahamas Electricity Corporation (BEC), was incorporated pursuant to the Electricity Act 2015. BPL is responsible for the provision of safe and reliable electricity throughout the Bahamas.

Tourism

Tourism is now the driving economic engine for the country. It is estimated that tourism generates more than US\$1.5 billion annually in The Bahamas (Sealey, 2005, p.82). Tourism together with tourism-driven construction and manufacturing accounts for about 60% of

⁶ World Health Organization. (2013). Bahamas Health Profile 2013. Retrieved from http://www.who.int/gho/countries/bhs/country_profiles/en/.

GDP and directly or indirectly employs 50% of the country's labour force⁷. In 2012, there were 5,940,170 visitor arrivals to The Bahamas. Of this number, 79% of visitors were from the United States, 9% from Canada, 6% from Europe and the remaining 6% were from other countries. Average length of stay was 6.8 night. There are 277 hotels in the country with 14,693 rooms. Average occupancy in 2012 was 56%.

Agriculture

While small scale agriculture is commonplace throughout the archipelago, it remains a very small percentage of the national GDP. Backyard farming is gaining popularity due to community initiatives throughout the country and focus on a small number of native and introduced fruit and vegetable species, including mango, papaya, lime, banana, tomatoes, peppers and watermelon. Food crops grown on the subsistence level also include corn, cassava, sweet potatoes, beans and pigeon peas. The number of farmers involved in subsistence agriculture is now on the decline and the average age is increasing. Many farmers in Family Island communities also own goats, sheep or cattle for meat production, and there is significant egg and broiler production. Inputs for all agricultural products, such as feed and fertilizer, are imported.

The World Resources Institute (WRI) indicated in The Bahamas' Country Profile (2003) that the country produced an average of 1,000 metric tonnes of roots and tubers between 1996 and 1998, and 8,000 metric tonnes of meat during the same period. The total cropland in The Bahamas (1999) was estimated at 10,000 hectares (ha). From 1998 to 2000, The Bahamas imported roughly 98.1% of its total cereal consumption. Approximately 90% of food consumed in The Bahamas is imported, and includes all sugar, virtually all dairy products and most carbohydrate foods. Numerous bakeries operate in The Bahamas, but generally use imported ingredients. While there is room for growth in the agricultural sector, growth is seasonal and food import is necessary to meet high demand in the hotel and restaurant industries.

Fisheries

Marine resources, consisting of non-food and food resources, are important to the Bahamian economy. Non-food resources include shells, sea fans and coral collected as curios for sale to tourists. These items are also used in craft products, such as jewellery, picture frames and decorative accents. In recent years, the collection of coral has been banned due to its negative impact on coral ecosystem health, so any coral used in the tourist trade are either synthetic or bits of dead coral that have washed ashore.

⁷ Index Mundi. (2013). Bahamas, The Economy Profile 2013. Retrieved from http://www.indexmundi.com/the_bahamas/economy_profile.html.

Food resources include scalefish, shellfish, sportfish and other marine organisms, such as crabs. These resources are consumed locally and exported internationally. Export of marine food resources contributes significantly to the Bahamian economy. Even if fish is caught in other parts of The Bahamas, the largest processing plants and exporting companies are in New Providence. Between 1980 and 2001, exports of seafood generated more than US\$70 million for the Bahamian economy. Spiny lobster (*Panulirus argus*), also known as crawfish, is the greatest earner for the country and accounts for \$68 Million over the same period (i.e. 1980 – 2001).

Energy

The Bahamas currently does not participate in energy generation through the use of nuclear power. The primary source of energy for electricity generation, transportation and domestic use is the combustion of imported fossil fuels. These are also the primary sources of CO₂ emissions (65%) in the country (SENES 2005). No. 2 (automotive diesel oil) and No. 6 (bunker C) fuels are used for the generation of electricity. Gasoline and diesel oil are used for transportation while liquefied petroleum gas (LPG) is used for cooking. Heavy reliance on air conditioning and refrigeration results in the release of chlorofluorocarbons (CFC's) into the atmosphere due to poor maintenance or improper disposal. A small amount of biomass may be used in the production of charcoal or as fuel wood for cooking particularly in rural areas. While there are currently no facilities for the production of electricity from biomass, there are discussions underway about this occurring at the landfill in New Providence. Boating fishing, agriculture, and other commercial industries contribute insignificant amounts to carbon emissions.

The Bahamas is heavily dependent on the supply of fossil fuel, and all activities and investments in the country, including manufacturing, are sensitive to any fluctuations in prices in the international markets. The high cost of energy contributes to a high cost of living and of doing business in The Bahamas.

Industry

Brewing, distillation and furniture production represent the growing industrial sector in New Providence. The largest industrial centre in the country is located in Grand Bahama in the port area administered by the Grand Bahama Port Authority (GBPA). Large enterprises which operate in the area include the Hutchison Whampoa Container Port. The Container Port is one of the largest in the region, capable of handling 1.8 million TEU (twenty-foot equivalent unit)⁸ annually. A number of light manufacturing and other industries are also located in Grand Bahama, such as Bahama Rock Ltd. which provides materials to the

⁸ TEU stands for twenty-foot equivalent unit. It is an inexact unit of cargo capacity used to describe the capacity of container ships and container terminals. It is based on the volume of a 20-foot long container.

construction industries, the PharmaChem Technologies plant which produces pharmaceutical ingredients, Polymers International which manufactures polystyrene beads, and the Bahamas Oil Refining Company International Ltd. (BORCO), which operates one of the largest storage/bunkering facilities in the region⁹.

Several cottage industries produce and package food products such as fruit preserves and pepper sauces. Some small garment production operations exist in Nassau and Andros produces hand-batiked garments. The industry producing straw work is of traditional importance to the islands of The Bahamas; baskets, hats and accessories made by local artisans are popular souvenirs for tourists. There have also been recent developments in the jewellery industry, particularly with the use of conch shells. Morton Salt Company Limited manufactures salt, mainly for export, and has operated in The Bahamas since 1954. It was acquired in 1999 by Rohm and Haas Company Limited.

2.4 Policy, Regulatory and Institutional Framework

In The Bahamas, legal instruments related to sound management of chemicals can be characterized as international and national. There are currently no non-regulatory mechanisms in place in the country.

2.4.1 International

The Bahamas is signatory to the following multilateral environmental agreements (MEAs) on chemicals and related issues:

Stockholm Convention

Concluded: Stockholm, 22 May 2001

Depository: United Nations

Ratified: 3 October 2005

Details of the Stockholm Convention are provided in Section 1.2 above.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

Concluded: Basel, 22 March 1989

Depository: United Nations

Acceded: 12 August 1992

This Convention is the response of the international community to the problems caused by the annual world-wide production of hundreds of millions of tons of waste. These wastes are

⁹ ???. (2012). Doing Business in The Bahamas. *The Bahamas Investor*. P.GB5.

hazardous to people or the environment because they are toxic, poisonous, explosive, corrosive, flammable, eco-toxic, or infectious.

This global environmental treaty strictly regulates the transboundary movements of hazardous wastes and provides obligations to its Parties to ensure that such wastes are managed and disposed of in an environmentally sound manner. The main principles of the Basel Convention are:

- Transboundary movements of hazardous wastes should be reduced to a minimum consistent with their environmentally sound management.
- Hazardous wastes should be treated and disposed of as close as possible to their source of generation.
- Hazardous waste generation should be reduced and minimized at source.

Vienna Convention for the Protection of the Ozone Layer

Concluded: Vienna, 22 March 1985

Depository: United Nations

Acceded: 1 April 1993

The majority of the ozone depleting substances (ODS) are chemicals made by man. The most harmful ones are:

- a. Chlorofluorocarbons (CFCs)
- b. Hydrofluorocarbons (HCFCs)
- c. Carbon tetrachloride
- d. Methyl chloroforms
- e. Halons
- f. Methyl bromide.

Since the use of ODS has been widespread, the Vienna Convention for the Protection of the Ozone Layer was devised as an international consensus or agreement to protect the entire earth from these harmful substances. Parties to the Convention are obligated to adopt legislation or administrative measures to control, reduce or prevent human activities under their jurisdiction that are likely to have an adverse impact on the ozone layer. This includes the control or prevention of the use of ozone-depleting substances.

Montreal Protocol on Substances that Deplete the Ozone Layer

Concluded: Montreal, 16 September 1987

Depository: United Nations

Acceded: 4 May 1993

In January of 1989, the Montreal Protocol was fully implemented to control production, consumption and the use of ozone-depleting substances.

As of April 2000, there have been 173 developed and developing countries that have agreed to the policies outlined by the Protocol. The Montreal Protocol dictates that gradually all CFCs and halons will be banned. Specific time frames are set for developed and developing countries to completely phase out use of these substances. The time frame for developing countries is longer than that of developed.

United Nations Framework Convention on Climate Change (UNFCCC)

Concluded: New York, 9 May 1992

Depository: United Nations

Ratified: 22 August 2016

The objective of the UNFCCC is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human interference with climate systems of the planet. Achievement of such a level would allow ecosystems to naturally adapt to climate change, ensure that food production is not threatened, and enable economic development to proceed in a sustainable manner.

Kyoto Protocol to the United Nations Framework Convention on Climate Change

Concluded: Kyoto, 11 December 1997

Depository: United Nations

Acceded: 9 April 1999

This Protocol was developed under the UNFCCC. It provides for the reduction of greenhouse gas (GHG) emissions to protect the environment.

The Kyoto Protocol includes emissions targets and timetables for industrialized nations and market-based measures for meeting those targets. The Protocol sets binding emissions targets for developed nations. The specific limits vary from country to country, though those for the key industrial powers of the European Union, Japan, and the United States are similar -- 8% below 1990 emissions levels for the EU, 7% for the U.S., 6% for Japan.

Under the Protocol, the emissions targets for the developed countries would have to be achieved on average over the commitment period 2008 to 2012. The greenhouse gases covered by the Protocol are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

In Doha, Qatar on December 8, 2012, the Doha Amendment to the Kyoto Protocol was adopted. This amendment includes new commitments for Annex I Parties over a second commitment period of 2013 to 2020. The amendment also includes a revised list of GHGs. Parties to the amendment have committed to reduce GHG emissions by at least 18% below 1990 levels. The Doha Amendment is not yet in force and to date The Bahamas has not submitted its instrument of acceptance.

Paris Agreement on Climate Change (under the United Nations Framework Convention on Climate Change)

Concluded: Paris, 12 December 2015

Depository: United Nations

Ratified: 22 August 2016

This agreement sets forth a global action plan to combat climate change by limiting global warming to well below 2°C and to accelerate and intensify the actions and investments needed for a sustainable low carbon future. The agreement aims to increase the ability of countries to deal with the impacts of climate change, and at making finance flows consistent with a low GHG emissions and climate-resilient pathway. To reach these ambitious goals, appropriate mobilization and provision of financial resources, a new technology framework and enhanced capacity-building is to be put in place, thus supporting action by developing countries and the most vulnerable countries. The Agreement also provides for an enhanced transparency framework for action and support.

The Paris Agreement requires all Parties to put forward their best efforts through “nationally determined contributions” (NDCs). This includes requirements that all Parties report regularly on their emissions and on their implementation efforts. There will also be a global stocktaking exercise every 5 years to assess the collective progress towards achieving the purpose of the agreement and to inform further individual actions by Parties.

Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Area

Concluded: Cartagena, 24 March 1983

Depository: United Nations

Acceded: 24 June 2010

The Cartagena Convention was developed to promote regional cooperation for the protection and sustainable development of the Wider Caribbean Region in an area defined under the Convention to include the “marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of the 30 degree north latitude and within 200 nautical miles of the Atlantic coasts of the States referred to in

article 25 of the Convention”. Obligations under the Cartagena Convention include preventing pollution in this area and taking measures to protect and preserve fragile ecosystems and the habitat of endangered species.

Land-Based Sources (LBS) of Marine Pollution Protocol

Concluded: 6 October 1999

Depository: United Nations

Acceded: 24 June 2010

The objective of the LBS Protocol is to ensure Parties mitigate marine pollution to the area described under the Cartagena Convention from land-based sources of pollution, in particular domestic wastewater and agricultural non-point sources of pollution. The Protocol has four Annexes providing guidance to Parties. For example, Annex III established specific regional limitation for domestic sewage.

2.4.2 National

Environmental Health Services Act 1987

This Act promotes conservation and maintenance of the environment and also addresses the control of contaminants and pollutants that may adversely affect the environment and human health. The Act also outlines regulations with respect to water supplies, solid and liquid waste, beaches, seaports, harbours and marinas.

Environmental Health Services (Collection and Disposal of Waste) Regulations 2004

These regulations provide for the collection and disposal of domestic, commercial and construction waste. Commercial waste includes ashes, refuse and rubbish. Construction waste includes any waste materials from construction, renovation, repairs and demolition.

Health and Safety at Work Act 2002

This Act regulates the safety of employees in the workplace as well as the storage and use of dangerous substances, which includes chemicals.

Electricity Act 1956

This Act establishes the Bahamas Electricity Corporation (BEC) as the supplier of electricity in The Bahamas. The Corporation’s duties include to secure the supply of electricity at reasonable prices with its area of supply and to promote the use of electricity in various sectors, including domestic, agricultural, industrial and manufacturing.

Electricity Act 2015

The Act established the Bahamas Power and Light Company Limited (BPL) as a wholly owned subsidiary of BEC. BPL is responsible for the provision of safe and reliable electricity

throughout the Bahamas. The Electricity Act 2015 also established the Utilities Regulation and Competition Authority (URCA) as the regulator for the electricity sector. As the regulator, URCA is responsible for administering the licensing of electricity generation, transmission, distribution and supply activities.

Montreal Protocol (Controlled Substances) Act 2006

This Act gives effect to the Montreal Protocol on substances that deplete the ozone layer, such as CFCs and halons.

Petroleum Act 1971

This Act authorizes the Government to issue permits for exploratory surveys, licenses for exploration and leases for commercial mining and exploitation of petroleum. The Act contains some brief provisions on pollution.

Precursor Chemicals Act 2007

An Act to provide for the monitoring and control of precursor chemicals and other chemical substances used or capable of being used in any transaction involving narcotic drugs and psychotropic substances or other substances having a similar effect.

Agriculture and Fisheries Act 1964

This Act provides for the development and supervision of the agriculture and fisheries sectors; part of this might be viewed as chemicals used in these sectors though the Act does not specifically mention pesticides, herbicides or any other chemicals.

Bahamas Agriculture and Industrial Corporation Act 1982

This Act establishes the Bahamas Agriculture and Industrial Corporation (BAIC) and outlines its functions, including development of agriculture sector. There is no specific mention of chemicals management in this legislation, but this could be interpreted as being a part of agricultural development.

Standards Act 2006

This Act authorizes the establishment of a Standards Bureau and Standards Council. Though these agencies have not yet come into existence and the Act is not currently enforced, the Government is working to establish them. The mission of the Bureau will be to promote and encourage the maintenance of standardization in relation to commodities, processes, services and practices of which the chemicals sector can be a part.

Bahamas Agricultural Food Safety and Quality Act 2016

One of the principle objectives of this Act is risk assessments and science-based actions to establish standards for food safety for humans and animals. Establishing and developing labs

to test for chemicals residues on plants and meat products are major priorities. The Bahamas Agricultural Health and Food Safety Authority (BAHFSA) has been established to carry out this mandate.

2.4.3 Government Agencies Managing Chemicals

In the Bahamas, the Department of Environmental Health Services (DEHS) holds the authority to control the use, manufacture and disposal of hazardous chemicals. The DEHS is also responsible for hazardous waste management. The **Bahamas Environment, Science and Technology (BEST) Commission** is the principle body responsible for environmental management and coordinates all activities related to the environment. It implements Government policies and advocates for environmental concerns in national planning. The BEST Commission is pivotal to effective implementation of several environmental treaties and to provision of advice and recommendations, and the facilitation of inter-agency coordination and cooperation.¹⁰

Numerous Government agencies are involved in management of chemicals in The Bahamas. These agencies and their respective mandates are described below.

Bahamas Power and Light (subsidiary company of The Bahamas Electricity Corporation)

The Bahamas Electricity Corporation (BEC) was established in 1956 pursuant to the Electricity Act and currently operates under the Minister of Works. The mandate of the Bahamas Electricity Corporation (BEC) is to “secure the supply of electricity at reasonable prices within its area of supply”. Under the Electricity Act 1956, BEC was authorized to grant licenses to other electricity suppliers on the Family Islands. However, in 2015, the Government of The Bahamas revised the Electricity Act, under which the Bahamas Power and Light Company Limited (BPL) was established, as a wholly owned subsidiary of BEC. BPL is responsible for the provision of safe and reliable electricity throughout the Bahamas. Additionally, the Electricity Act 2015 established the Utilities Regulation and Competition Authority (URCA) as the regulator for the Electricity Sector. As the regulator, URCA is responsible for administering the licensing of electricity generation, transmission, distribution and supply activities.

While BPL is not a regulatory agency for chemicals management, it is a significant user of various fuels, oils, and other chemicals during its operations. As a result of chemical usage,

¹⁰ United Nations Environment Program (2000). *Multilateral Environmental Agreements Implementation in the Caribbean: Report and Guidelines*. Retrieved on February 9, 2012, from <http://www.pnuma.org/deramb/publicaciones/amafinal.pdf>

chemical waste is generated that must also be managed to minimize human health and environmental risks.

Bahamas Environment, Science and Technology (BEST) Commission

The BEST Commission is the lead agency in ensuring the Government implements its requirements under the various multilateral environmental agreements including those related to chemicals. In fulfilling this aspect of its mandate, BEST collaborates closely with other agencies responsible for environmental matters including DEHS and Department of Agriculture.

Department of Agriculture

With a mandate to promote agriculture in The Bahamas, the Department of Agriculture (DOA) may also assist farmers in accessing fertilizers, pesticides and herbicides. When it facilitates provision of these chemicals, the Department also provides training in safe handling for farmers. The services the Department offers with regard to agricultural chemicals varies greatly from island to island and there is a great need to coordinate activities and ensure they are complementary, particularly on the Family Islands where farmers can benefit greatly from support through extension services. DOA is joined in its support of farmers by the **Bahamas Agricultural and Industrial Corporation (BAIC)**. BAIC's mandate is to "stimulate and encourage the creation, expansion and promotion of small and medium-sized Bahamian businesses and to assist them in developing and enhancing profitable opportunities for domestic and international trade". The current administration is in the process of reorganizing DOA and BAIC and their mandates and responsibilities are expected to shift, though it has not been confirmed as yet exactly how.

Another agency recently established is the **Bahamas Agricultural Health and Food Safety Authority (BAHFSA)**. Created by the BAHFSA Act 2015, the Authority is also responsible for three other Acts – Food Safety and Quality Act 2015, Animal Health and Production Act 2015 and Plant Protection Act 2015. BAHFSA is mandated to take the lead in coordinating and harmonizing safety activities at all stages of the production, manufacture and distribution of food. The institution is responsible for establishing, maintaining and coordinating animal health and plant health services to protect agriculture and wildlife species and systems from the introduction and spread of exotic pests and diseases. With human exposure to POPs often occurring through nutrition, BAHFSA has an important role to play in food safety.

Department of Environmental Health Services

The mandate of the Department of Environmental Health Services (DEHS) is to promote and protect public health and ensure conservation and maintenance of the environment. In fulfillment of this mandate, DEHS tasks include regulation, monitoring and control of actual and likely contamination and pollution of the environment as well as the establishment of

minimum standards for a clean and healthy environment. Under the 2004 Environmental Health Services (Collection and Disposal of Waste) Regulations, DEHS is responsible for the collection and disposal of domestic, commercial and construction waste. These regulations would also cover disposal of chemical waste from any of these sectors. The Department also issues effluent discharge and emissions permits and evaluates the effectiveness of pollution control measures to protect the health and safety of workers and the natural environment.

Department of Labour

This Department is responsible for ensuring the occupational health and safety of all workers in the country. It is responsible for enforcing the 2002 Health and Safety at Work Act.

Bahamas Bureau of Standards and Quality

The Bahamas Bureau of Standards and Quality (BBSQ) primary function is the formulation and adoption of standards as national instruments of socio-economic development, in addition to offering metrology, inspection, testing and certification services, the latter three being collectively termed conformity assessment. The BBSQ also has a training and consulting mandate as well as regulatory responsibility for operation of a legal metrology and quality-related inspection service that it carries out via market surveillance on non-food products.

Ministry of Foreign Affairs

The Ministry provides oversight of the Chemical Weapons Convention (CWC).

2.4.4 Non-Government Organizations involved in Chemicals Management

A number of non-government organizations or agencies are involved in chemicals management. These are outlined below.

Bahamas Chamber of Commerce and Employers' Confederation (BCCEC)

The objectives of the BCCEC include:

- Driving effective change for the entire business community;
- Providing access, advice and advocacy to ensure economic growth, environmental stewardship and business development opportunities.

Members of BCCEC include companies that produce chemicals, utilize chemicals or manage waste. **Pesticide companies** are responsible for pest management in many sectors. They use various chemicals for pest control and some of the chemicals used in the past have been identified as POPs. **Waste management companies** are involved with handling of waste from various streams, which may include POPs and other hazardous chemicals. Bahamas

Waste Limited is currently the only waste management company known to have specific equipment for addressing hazardous waste through incineration and autoclave.

Grand Bahama Port Authority

The Grand Bahama Port Authority (GBPA) manages the city of Freeport on the island of Grand Bahama. The city is referred to as the Port Area under the Hawksbill Creek Agreement. Under the Agreement, the GBPA is responsible for the provision, management and administration of all infrastructure, municipal and community services, including waste management, commercial licensing and provision of electricity. The GBPA also has an Environmental Unit that is tasked with ensuring the sustainable development of the Port Area.

Inter-American Institute for Cooperation on Agriculture

The general objective of the technical cooperation agreement between Inter-American Institute for Cooperation on Agriculture (IICA) and the Ministry of Agriculture, Marine Resources and Local Government is to strengthen the institutional capacity of the BAIC to support increased food production, develop value chains and strengthen agricultural competitiveness in The Bahamas.

University of The Bahamas

The University of The Bahamas (UB) is the premier tertiary institution of higher learning in The Bahamas. UB has been actively involved with chemical management efforts for many years, but has not provided the technical support and research that should anchor the national chemicals management plan. Efforts must be made to engage UB beyond its current levels. Some of these are outlined in the National Implementation Plan strategy.

Other non-government organizations (NGOs) that are closest to the national chemical management agenda are those that are associated with environmental causes.

While the NGOs with interest in the environment are concerned with the impact of chemicals in the country, efforts must be made to foster a closer relationship with these groups. The many **labour unions** in The Bahamas are all active with regard to occupational health and safety. Representatives from the labour unions as well as representatives from the Department of Labour have participated in a few meetings of the ad hoc committee on chemicals management. In general, labour unions have considerable influence over their members so it follows that the unions can assist in the dissemination of information and training.

Some groups (e.g. Bahamas Association of Medical Technologists, Bahamas Society of Engineers, Bahamas National Trust) are not being engaged at a level commensurate with their capacity to ensure the success of chemical management in The Bahamas.

2.4.5 Coordinating Mechanisms

In 2012, the Project Steering Committee for the POPs project recommended the formation of a National Chemicals Advisory Committee (NCAC), Steering Committee and Chemicals Coordination Unit (CCU) as the national coordinating mechanism for chemicals management. In 2018, the NCAC was established. This Committee would serve as originally envisioned with the support of the CCU. A Steering Committee was no longer deemed feasible as it would duplicate effort and membership of the NCAC and CCU.

National Chemicals Advisory Committee (NCAC)

The National Chemicals Advisory Committee has been established and now serves as the Project Steering Committee. It consists of the following agencies:

1. Department of Environmental Health Services (Chair)
2. BEST Commission (Secretary)
3. Department of Agriculture (including Bahamas Agricultural Health and Food Safety Authority)
4. Bahamas Customs Department
5. Bahamas Power & Light
6. Department of Statistics
7. Grand Bahama Port Authority (Environment Division)
8. Ministry of Health
9. Royal Bahamas Police Force (Fire Unit)
10. University of The Bahamas
11. Bahamas Chamber of Commerce and Employers' Confederation

The NCAC will take the lead in the national strategic approach to chemicals management. It will serve as a forum for regulatory officials, industry representatives and civil society to find solutions to challenges facing the chemical industry and users of chemicals in The Bahamas.

Specific duties and responsibilities of the NCAC will include:

1. Provide assistance and support to personnel and experts involved in implementation of chemical project activities in the country.
2. Review and make necessary comments on all draft national chemicals-related documents.
3. Meet at least 4 times annually. When the NCAC does not meet, individual members may request input and support from colleagues on the Committee.

The NCAC shall operate on the basis of a two-thirds majority vote to decide issues. A quorum would also consist of two-thirds representation; the representation would have to be qualitative as well as quantitative with the Chair or Chairs deciding who would have to be present when a particular issue is being discussed (e.g. NEMA for disaster preparedness).

Issues addressed by the NCAC will include:

- a) National chemicals management systems, inclusive of improving national legislation, regulatory policies and practices
- b) Chemicals safety, inclusive of chemical product stewardship, safe use, sustainability, disposal and destruction
- c) Risk assessment and management strategies as well as risk reduction measures
- d) Public education and awareness about chemicals (more general) – ensuring public is updated on proper disposal protocols
- e) Development of a national information system or clearing house mechanism, inclusive of inventories, with security protocols and a public portal
- f) Chemical trade
- g) Research and development (inclusive of safer alternatives to chemicals of concern)
- h) Capacity building in the chemical sector, inclusive of capacity to respond to emergencies
- i) Fulfillment of international obligations under multilateral chemicals agreements, inclusive of national reporting and declarations.
- j) Evaluation and licensing to control what is coming in (inclusive of Pesticides Control Board and safer alternatives to chemicals of concern)
- k) Spills and emergency response
- l) Monitoring and enforcement

The TORs should include some type of glossary as an annex to clarify the purview of the NCAC, so persons are clear that chemicals include things such as pesticides.

Chemicals Coordination Unit (CCU) Duties

The Chemicals Coordination Unit will be supervised by the members of the NCAC. The CCU will assist with administration and logistics and ensure good linkages, coherence, communication and organization between all parties.

Specific duties will include:

1. Support to the National Chemicals Advisory Committee (NCAC) in implementing chemicals project activities efficiently and effectively.
2. Assist the NCAC with timely progress and financial reports.
3. Assist the NCAC with development of a national chemicals database.
4. Assist the NCAC with development of a national plan for chemicals management.

5. Provide support to the NCAC and other project personnel in preparing for meetings, workshops, visits, and project-related travel of project personnel and NCAC members.
6. Assist the NCAC to ensure timely communication and liaison between the projects and project stakeholders.
7. Maintain personnel, financial and other files related to the projects.
8. Maintain an inventory of all the assets of the projects.

There was discussion about the option to self-finance for the coordinating mechanism through tools such as licenses, permits, but it was noted that this could not result in 100% financing. It was also noted that self-financing will not kick in immediately, so it will initially need to be funded by Central Government with a deadline for when the Committee will achieve self-financing.

Any license or permit fees would be a form of taxation and this would be tabled in Parliament through the budgetary process. The Committee may have a problem when Government revenues are down in getting the funding.

A type of green environmental levy on revenue-generating business in the country could be utilized to fund activities like the operation of the NCAC. The recommended environmental levy could be, as an example, 0.1% of which 25% will go to the NCAC.

2.5 Chemicals Production, Import and Export

The Bahamas has gone through, and continues to go through, a period of rapid commercial and residential development. As a result, large quantities of chemicals, including pesticides, industrial chemicals and consumer chemicals are being imported into the country. Although the Bahamas neither manufactures nor exports any Persistent Organic Pollutants (POPs), in 2002, the United Nations (UN) Commission on Sustainable Development's Country Profile of the Bahamas stated "the principal threat to human health or the sustainable use of natural resources associated with industrial activity is the contamination of freshwater by agricultural chemicals, herbicides and pesticides (p. 43)."¹¹ Most of the factors contributing to the UN's 2002 report remain unchanged today.

Chemical cleaning agents, such as detergents, disinfectants, polishes and air fresheners have become indispensable for the tourism industry and in households. Products used for vector control activities to prevent dengue and malaria, such as pyrethroids and organophosphates, are widely used as larvicides and for mosquito control as well as in health care facilities. Other pesticides such as carbamates, organophosphates and organochlorides are prevalent

¹¹ United Nations (2002). *Bahamas Country Profile, 2002*. Retrieved on February 6, 2012, from <http://www.un.org/esa/agenda21/natlinfo/wssd/bahamas.pdf>

in the citrus industry and, while low by global standards, pesticides and chemical fertilizers are also used in other areas of the agriculture sector. Present-day agricultural practices include mixing of chemicals close to wells, open trench wells for irrigation as well as widespread application of fertilizers.¹² The Bahamas currently has approximately 1,896 industrial buildings engaged in the storage of pharmaceutical and hazardous chemical products. These buildings include the Bahamas Customs Warehouse and the Bahamas National Drug Agency (BNDA). The need for strengthening national capabilities to deal with the health risks associated with toxic chemicals is being increasingly felt with the growing realization by the government of the need to identify and mitigate health risks of chemical exposure.

2.6 Priority Concerns related to Chemicals Management

There are several concerns with use of chemicals and lack of proper management in The Bahamas:

- Improper use of pesticides and herbicides by farmers, which includes improper handling and disposal. This poses a risk to the health of these individuals as well as to that of other Bahamians and the environment;
- Lack of monitoring and reporting for some of the industries in Grand Bahama which employ and manufacture chemicals;
- Extremely limited options for disposal of hazardous chemical waste in the country, which makes enforcement of any regulations related to handling and disposal virtually impossible;
- Improper disposal of chemical waste at solid waste dumps sites and sanitary landfills; and
- Chemicals entering groundwater and the ocean posing hazards to plant and animal life in these systems.

The Bahamas has limited tools, safety measures and regulations to monitor control and regulate chemicals. No proper management framework or tracking system exists for chemicals being imported into the country, inclusive of proper handling, use and disposal of such materials. A provision exists under the Environmental Health Act (1987) for regulations governing the manufacture, disposal and use of toxic wastes. However, this provision remains in draft form. There is a regulatory mechanism under the First Schedule of the CMA 2011 that restricts and prohibits the import of listed chemical precursors and substances. This listing could be expanded to include POPs. A registration system for chemicals does not exist and there are no mechanisms in place to address the designation of restricted or

¹² Bahamas Ministry of the Environment & BEST Commission (2011). *Global Environment Facility: National Portfolio document for the Bahamas*. Retrieved on February 7, 2012, from <http://www.thegef.org/gef/sites/thegef.org/files/documents/document/Bahamas-NPFD.pdf>

prohibited chemicals. The Bahamas also has limited laboratory capacity to monitor selected persistent toxic substances.¹³

There is also a lack of facilities and awareness of mechanisms for appropriate disposal and recycling of chemicals. The country needs to develop and implement a public awareness plan to sensitize the public to the benefits of recycling and the proper disposal of chemicals. It should also create a national database to facilitate the free exchange and repurposing of laboratory chemicals of known viability and purity. Access to this exchange database will be restricted to entities that are licensed to trade in the chemicals being repurposed.

A procurement plan is also needed to acquire a critical mass of analytical equipment (e.g. GC, GC-MS, HPLC, IR, etc.) to support the activity of chemical management. These instruments should be housed in a laboratory at the College of The Bahamas so that they can be used to support research and to define baseline data as it relates to chemical management and environmental issues. This laboratory will provide training for the next generation of chemists in addition to providing support to Ministries and NGOs requiring chemical analytical services for chemical management and environmental projects.

Information Management, Access and Use

The only database in existence containing information on chemicals as of March 2014 is the database of goods managed by the Bahamas Customs Department. Import and export of chemicals are processed in a very general sense solely for the purpose of collecting customs tariffs. The database currently enables the Customs Department to pull out all chemicals and precursors in the harmonized tariff system, which includes POPs, in order to create specific headings to facilitate proper statistics and tracking.

There are significant gaps in the country's ability to collect, collate and communicate data relating to the production, import, export, use and disposal of chemicals and chemicals containing products/articles. In many instances, the data is collected at the source, but it is not available to support the national chemical management agenda.

A mechanism to coordinate the compilation of the collected data needs to be developed. This process could be integrated into the annual licensing process, but it must account for transactions across the chemical lifecycle. This implementation of this recommendation should be preceded by a workshop with primary sources (producers and importers) and secondary sources (e.g. National Insurance Board, Customs, DEHS, Grand Bahama Port Authority). One of the goals of the workshop should be to educate the primary and secondary

¹³ United Nations Environment Program (2002). *Regionally based assessment of persistent toxic chemicals: Central America and the Caribbean Regional Report*. Retrieved February 7, 2012, from <http://www.chem.unep.ch/pts/regreports/CAC.pdf>

education sources on the significance and value of the data collected. The workshop will also serve as a forum to hear the concerns of the primary source entities as it relates to the data collection process.

Through the POPs project, the intent is to develop a national database that will manage information initially on POPs and eventually on all chemicals produced or imported into The Bahamas. Information to be housed in the database is described in sections 3.2 and 3.3 below.

As such, those agencies tasked with chemicals management will have access to this information and be able to monitor their use and thus be able to respond, if necessary, to ensure their safe handling and disposal.

Technical Infrastructure

There is no Government laboratory in The Bahamas with the technical infrastructure to support national programmes and policies for chemicals management, and in particular the technical capacity for chemical analysis and monitoring. It is intended to include laboratory facilities that provide analytical chemistry capabilities which can, inter alia, help to ensure the quality of chemicals, conduct residue analyses, identify unknown substances, and monitor for possible adverse effects.

Governmental agencies are able to enlist the services of private chemical companies who have the requisite analytical equipment. However, the need to outsource such services makes routine national chemical management activities difficult.

Chemical Emergency Preparedness and Response

The National Emergency Management Agency (NEMA) was created to reduce the loss of life and property within The Bahamas by ensuring that adequate preparedness and mitigation measures and that response and recovery mechanisms are established to counteract the impact of natural, man-made and technological hazards. To date, NEMA's activities have focused on hurricane preparedness and response. There is a need to include NEMA in the coordinating mechanism for chemicals management and develop a chemicals emergency preparedness and response plan in collaboration with this agency.

Public Awareness, Training and Education

There are currently no nationally coordinated communication strategies for awareness, training and education as it relates to chemical management. All national efforts to raise awareness, educate and train workers and the public are promoted by individual entities in support of a treaty, a convention, or some other national chemical response.

3.0 National POPs Inventory

3.1 Historical information on POPs and their use

Most of the POPs historically found in The Bahamas were used as pesticides in environmental health and agricultural applications. Data obtained from the Department of Statistics reveal that from 2003 to 2014 approximately 6,546 metric tonnes of pesticides were imported into The Bahamas (see Table 6 below).

Table 6: Quantity of pesticides imported by type and year: 2003-2014

Unit: mT

Types of Pesticides	HSCODE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1. Insecticides ^a	38089100	617	605	663	575	686	393	182	161	314	336	169	17
2. Herbicides ^b	38089300	72	29	28	22	46	44	18	17	18	14	8	3
3. Fungicides, bactericides and seed Treatments ^c	38089200	61	38	78	56	27	15	8	9	8	10	2	1
4. Plant growth regulators ^d	38083090	34	30	54	65	39	27	(e)	(e)	(e)	(e)	(e)	(e)
5. Rodenticides ^d	38089920	15	16	32	95	72	7	25	20	18	29	8	1
	38089990												
	38085000												
6. Others (including mineral oils)	38089400	10	26	28	19	329	19	39	13	35	51	16	24
	38089910												
Total		809	744	883	832	1,199	505	272	220	393	440	203	46

Source: Department of Statistics External Trade Section

POPs were also used in power generation and are suspected to have been used in other industrial applications although limited data is available. Unintentional releases of POPs are not “uses”; however, they represent the presence of the chemical historically in the country and are therefore mentioned here.

Vector Control

Survey results indicated the historical use of dichloro-diphenyl-trichloroethane (DDT) in the control of female *Anopheles* mosquitoes, the principal vectors of the *Plasmodium* parasite, which causes malaria. DDT is listed under Annex B of the Stockholm Convention, with acceptable use for disease vector control. Two institutions were responsible for using DDT in this manner; The Bahamas Medical Research Council and the Department of Environmental Health Services. The use of DDT was likely expanded to other household pests, as well as agricultural pests. In 1999, a large stockpile of DDT was shipped to the United Kingdom for incineration. No information regarding total quantities of DDT used in The Bahamas or disposed of elsewhere were available during the survey.

Agriculture

Survey results indicated the use of Heptachlor, Endosulfan, and Kelthane (Dicofol) as insecticides to eliminate agricultural pests. Heptachlor and Endosulfan were discovered on the island of New Providence, while Kelthane (Dicofol) was recorded on the islands of Andros and New Providence. Heptachlor and Endosulfan are listed under Annex of The Stockholm Convention under Annex A of the Stockholm Convention which calls for their complete elimination and use. Dicofol, a chemical similar to DDT, was included in 2019 into the Stockholm Convention. No information regarding total quantities of Heptachlor, Endosulfan or Kelthane (Dicofol) used in The Bahamas were available during the survey.

Power Generation

Polychlorinated Biphenyls (PCBs) have been utilized in The Bahamas by power generation companies as a dielectric fluid in transformers and capacitors. PCBs are listed under Annex A with specific exemptions and under Annex C. No information regarding total quantities of PCBs historically used in The Bahamas were available during the survey.

Unintentional Releases

The incineration of medical, municipal and other hazardous waste in The Bahamas has been a major source of Polychlorinated Dibenzodioxins (Dioxins) and Polychlorinated dibenzofurans (Furans), which are listed under Annex C of the Stockholm Convention. The New Providence Landfill has had a documented history of frequent fires, and issues with illegal dumping of medical waste. Backyard burning has been a common practice on many of the family islands, which often lack proper landfill facilities. Automobile emissions have been another source of Dioxins and Furans in the country. No information regarding total quantities of dioxins and furans unintentionally released in The Bahamas from these sources were available during the survey.

Industrial Chemicals

Along with its use in power generation, PCBs are suspected to have been present in other products historically imported into The Bahamas such as hydraulic fluids, adhesives, carbonless copy paper, inks, paints and surface coatings. Similarly, hexachlorobenzene, a fungicide and industrial chemical, is suspected to have been imported in trace amounts as an impurity in Trichloroethylene and in pesticide formulations. However, no information regarding the specific ingredients or total quantities of industrial chemicals historically imported were available during the survey.

3.2 Current inventory

3.2.1 Methodology

As part of the requirements understanding, the team embarked on numerous site surveys in order to quantify which of the initial 12 POPs exist at business locations. Inventory data was captured in a form using both manual and electronic methods. The final results were tabulated in an excel sheet for calculating the quantity and volume of products which contained POPs at the various sites. A copy of the inventory can be found at Appendix 1 of the NIP.

3.2.2 Results

The consolidated results revealed the presence of POPs at 4 business locations located in New Providence and Andros. These include:

- Dioxins/Hexachlorobenzene
- Endosulfan
- DDT
- Heptachlor

3.3 POPs information system

3.3.1 Overview

The POPs Information System is a system used for reporting on chemicals and gaseous compounds classified as persistent organic pollutants (POPs).

According to the Stockholm Convention,

“Each Party shall provide to the Secretariat:

Statistical data on its total quantities of production, import and export of each of the chemicals listed in Annex A and Annex B or a reasonable estimate of such data”

(See

<http://chm.pops.int/Countries/Reporting/OverviewandMandate/tabid/746/Default.aspx>)

The system will track which chemicals which have been imported/exported from businesses within the Bahamas. Businesses will submit inventory reports to the reporting entity on a periodic basis. The inventory report will then be entered in the system by the POPs information system administration team for generating reports on the POPs found at each business location, their quantities, and suppliers.

3.3.2 Features

The POPs Information System contains numerous functionalities for the effective management of POPs.

Features include:

User Management

- Create user accounts for secure access
- Restrict access rights based on account type

Chemical Database

- A database of pesticides, fungicides, dioxins/furans, PCBs and other POP containing chemicals

Inventory Submission

- Chemical inventories can be submitted by site surveyors or local businesses

Regulatory Reporting

- List of Chemicals and Quantities by Vendor
- Export report for submission to Stockholm Convention
- Popular products imported with POPs

[3.3.3 Recommended roll out strategy](#)

POPs senior administrators at BEST will be trained on the use of the system. Senior administrators can then train additional administrative staff as required. The POPs administration team will ensure that the inventory reporting requirements are clearly defined and modify the reporting format as needed if changes to the Stockholm Convention reporting requirements arise.

With regards to Business chemical inventory submission, it is recommended that workshops be held in the various islands with key stakeholders to discuss the POPs information system and its use. A designated contact can be assigned at each business location that will be responsible for submitting inventory reports. Once received, these reports can be randomly sampled and validated by on the ground surveyors as well as through coordination with the Customs Department through the sharing of data on chemical imports.

It is vital that businesses are aware of their reporting obligations and inventory submissions are completed in a timely manner and kept up to date to ensure the integrity of the data submitted.

4.0 Assessment of POPs Issues in The Bahamas

4.1 POPs Pesticides

Based on the available data, Kelthane (Dicofol) and Heptachlor are the only POP pesticides being utilized in The Bahamas. They are all listed under Annex A of the Stockholm Convention and must be eliminated. It is unclear where these pesticides were purchased and when they were imported into the country. No PCP salts or esters were discovered at any of the targeted sites during the surveys.

Major issues surrounding POPs pesticides include their handling, storage and disposal. Reports of farmers inappropriately applying pesticides in their private wells point to a lack of education and training on the hazards they pose. In addition, farmers with inadequate personal protective equipment, particularly on the Family Islands, represent an exposure issue with dire consequences. Storage facilities on the islands are lacking or inadequate which can pose a hazard to nearby wildlife and cause soil contamination in the event of a natural disaster such as a hurricane. There is also no known management option for spent pesticide containers; they are disposed of at dumps on the Family Islands along with all other waste. There is no separation of these containers from other waste at the landfills on New Providence and Grand Bahama.

4.2 PCBs

The Bahamas Electricity Corporation (now Bahamas Power and Light) conducted exercises to remove all PCB containing equipment out of the country. There are no PCB containing transformers currently being utilized on any of the islands surveyed. Approximately 500 gallons of PCBs are currently stored on the island of Grand Bahama by Grand Bahama Power Company Limited along with transformer carcasses and capacitors that contained PCBs. A major challenge for The Bahamas is the use of PCBs in other applications such as paints, caulk, sealants, and even pesticides. These products are imported into The Bahamas on a regular basis, and in considerable quantities, therefore, they pose a formidable chemicals management issue for the country.

4.3 Industrial chemicals

Non-PCB industrial chemicals are imported into The Bahamas for a wide variety of uses including construction, electronics, fire protection, vehicular maintenance, cleaning, and manufacturing. Of the initial POPs, only hexachlorobenzene was discovered during a pesticide survey on the island of Andros, as an impurity of the pesticide chlorothalonil. No data was collected on new POPs, such as PBDEs, HBCD, PFOS or SCCPs. However, with regard to the new POPs, the presence of polybrominated diphenyl ethers (PBDEs), short-chain chlorinated paraffins, and perfluorooctane sulfonic acid (PFOS) are likely, particularly within the fire protection, construction, electronics, and automotive industries.

4.4 Unintentionally produced POPs (Dioxins and Furans, HCB and PCBs)

Dioxins and furans have continued to be released unintentionally in The Bahamas. The burning of medical, municipal and other hazardous waste persists throughout the islands. The Public Hospital Authority is a public corporation tasked with the management of medical waste generated by the nation's major hospitals and local clinics. They have contracted Bahamas Waste Management Limited to dispose of all medical waste via automated incineration at their facility on Gladstone Road. Municipal waste is treated at the New Providence Landfill located on Tonique Williams Darling Highway.

With regard to releases of Dioxins and Furans from motor vehicle exhausts, the proliferation of motor vehicles, especially on the island of New Providence has exacerbated the issue.

Efforts were made to be able to collect activity data for sources of unintentionally produced POPs, so that the *2013 UNEP Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs* could be utilized to develop quantitative estimates. Unfortunately, activity data was not available from key agencies that were sources, including the Department of Environmental Health Services, Bahamas Waste Management Limited, Public Hospital Authority, Road Traffic Department and Department of Statistics, so using the UNEP Toolkit was not feasible. Therefore, the current NIP can only document the sources of unintentionally produced POPs. A priority for the National Implementation Strategy is that a more comprehensive inventory of unintentionally produced POPs be completed to address this gap.

4.5 Stockpiles, waste and contaminated sites

Stockpiles of hazardous chemicals have been identified at various places in The Bahamas. On the island of New Providence, the landfill has an unknown quantity of hazardous chemicals in storage. Stockpiles of hazardous chemicals have also been recorded at Bahamas Power and Light sites, such as the Clifton Pier B site and on Baillou Hill Road. Additional stockpiles can be found at Tropical Exterminators in Centerville, Gladstone Road Research Center, and the Fish and Farms Store on Potters Cay. Enviroscope reported a stockpile of pesticides stored in a forty-foot container on their grounds. A stockpile of unknown hazardous material was confirmed to exist at West Side Car Repair in an unidentified area of the island.

In Grand Bahama, temporary stockpiles of PCB transformer oil and associated equipment were identified at Grand Bahama Power facilities; these are exported biennially or on an as needed basis. Bahamas Agriculture and Marine Science Institute (BAMSI) reported a stockpile of pesticides that are stored in forty-foot containers on their property.

4.6 Future production, use and releases of POPs

With regard to unintentional production and releases of POPs, it is anticipated that as the Bahamian population continues to grow, the increase in health care services provided, municipal and hazardous waste generated, and vehicle imports, will result in higher concentrations of Dioxins and Furans in the environment, if left unmitigated.

Similarly, the increase in population is anticipated to create higher demand in the agriculture, home construction, and energy industries, resulting in greater imports of POPs pesticides, and industrial POPs, such as flame retardants (PBDEs) and Hexabromocyclododecane (HBCDD). Safer alternatives to many of these chemicals exist and are available. A concerted effort should be made to reach out to Bahamian businesses early on to discuss phasing out of any currently used POPs and retraining or recertification for alternatives. An exemption policy for certain POPs may be initiated, however, the guidelines for such a policy should be established with the consultation of all stakeholders.

4.7 Monitoring of releases and environmental and human health impacts

There is currently no ongoing monitoring of POPs releases in The Bahamas. Incineration facilities, dumpsites, landfills and storage facilities are all examples of sites where releases of POPs can take place. In terms of environmental impacts, no current framework exists to assess the effects, short term or long-term, of POPs on Bahamian flora or fauna. With regard to human health impacts, survey data indicates that only qualitative analytical methods exist to determine impacts as a result of exposure to certain POPs such as PCBs.

4.8 Technical infrastructure for POPs assessment, measurement and analysis

Based on available survey data, there is no national laboratory capable of POPs detection measurement, or analysis. One confirmed Gas Chromatograph/Mass Spectrometer is present in The Bahamas, at the Royal Bahamas Police Force Forensic Laboratory.

4.9 Systems for the assessment and regulation of POPs

At present, no system exists to regulate the manufacture, import, storage, use, or disposal of POPs in The Bahamas. No licensing infrastructure exists for businesses that import and use POPs. There is no registration of imported hazardous chemicals and only limited tracking of them from import to disposal. No mandatory health and safety training with respect to handling of POPs is required by law in The Bahamas for POPs importers. Legislation exists to regulate the use of hazardous chemicals, but not POPs specifically. POPs-specific legislation has been drafted, but not implemented. Lack of enforcement of current legislation persists, and lack of political will in addressing POPs and chemicals management in general is an issue.

5.0 National Implementation Plan

5.1 Overview

The Government of The Bahamas is committed to meeting its obligations under the Stockholm Convention. Its plan for meeting those obligations over the next 10 years is outlined in the National Implementation Plan.

The National Implementation Plan (NIP) will serve as a guidance document to the country in implementation of the Stockholm Convention. It should be updated every 5 years as progress is made on various aspects of the Plan and capacity is increased in the country for chemicals management.

5.2 Institutional Framework

The current institutional framework includes the National Chemicals Advisory Committee (NCAC) as described in section 2.4.5. The Chemicals Coordination Unit (CCU) will need to be established to carry out day-to-day activities and support the NCAC.

5.3 Regulatory and Policy Framework

Initial activities need to occur to ensure this framework enables sound management of POPs and other chemicals. These activities include a gap analysis of legislation with respect to chemicals regulation within the country followed by development of draft legislation or amendments to fill any legislative or regulatory gaps identified.

5.4 Technical and Financial Assistance

Technical and financial assistance is required for the following priority areas:

1. Strengthening and/or development of the policy and regulatory framework for chemicals management, including POPs management;
2. Conducting in-depth inventories of POPs pesticides, industrial chemicals and unintentionally produced POPs;
3. Management and disposal of POPs stockpiles and wastes;
4. Promotion of the implementation of Best Available Techniques (BAT) and Best Environmental Practices (BEP) for industrial chemicals still in use or in wastes and unintentionally produced POPs;
5. Training and capacity-building for persons and agencies involved in the management and regulation of POPs as well as private sector organizations;
6. Pursuit of bilateral, regional and multilateral funding for implementation of the NIP;
7. Technology and knowledge transfer opportunities (North-South and South-South);
8. Data management;
9. Public information, awareness and education; and
10. Private sector engagement.

5.5 Public Information, Awareness and Education (Article 10)

This priority area involves all sectors of society in The Bahamas from school-aged children to political leaders. Education on safe handling of hazardous chemicals in particular is paramount.

Translation of any PIAE materials to Creole will need to be done to reach all residents. This is particularly important for the agricultural sector where most farm workers are Haitians. There also needs to be consideration for production of graphics and other audio or visual materials for those members of the population that are illiterate.

5.6 Reporting (Art 15)

National reporting will occur every four (4) years and include the following:

- Measures taken to implement the Convention and effectiveness of such measures
- Statistical data on its total quantities of production import and export of Annex A and B POPs or a reasonable estimate
- List of States from which it has imported each substance and the States to which it has exported each substance

The Bahamas will utilize the Stockholm Convention Electronic Reporting System (SC-ERS) and aim to submit its National Report by the end of 2019.

5.7 National Priorities for Chemicals Management

Table 7 includes priority areas for the Bahamas NIP as identified through stakeholder consultations along with other priorities identified in other national plans and strategies. The table also shows how these priorities link to priorities identified under the Sustainable Development Goals (SDGs) and the Strategic Approach to International Chemicals Management (SAICM). The 2017 draft National Development Plan (Vision 2040) includes Priority 6 – a sustainable and resilient environment. The priority areas for the NIP all align with Priority 6. The NIP priority areas also align with goals under the National Development Plan (NDP), namely:

- Goal 11. 3 - Sustainably manage and use natural resources while guarding against anthropogenic influences, unsustainable practices and invasive species which undermine terrestrial and marine ecosystems; and
- Goal 11.4 - Successfully implement a modern waste management strategy that includes public education and new services to sustainably manage waste.

National plans and strategies referenced in the table include:

- 1999 National Biodiversity Strategy and Action Plan (NBSAP)

- 2005 National Environmental Management and Action Plan (NEMAP)

Table 7: Bahamas Chemicals Management Priorities

	Stakeholder Priorities	Other National Priorities	Linkages to	
			SDGs	SAICM
1	Policy and regulatory framework	NEMAP priority on chemical management and safety regulations	SDG 5, Target 5.c	Activities 12, 15, 45, 64, 74, 121, 164, 166, 168, 170, 173, 174, 178, 193, 194, 196, 197, 204, 205
2	Inventories			Activity 33, 68, 77, 124, 126
3	Management and disposal of POPs stockpiles and wastes	NBSAP Recommendation 4.3.5 on waste disposal facilities NBSAP Recommendation 4.6.2 on waste and pollution	SDG 3, Target 3.9 SDG 6, Targets 6.3 and 6b SDG 11, Target 11.6 SDG 12, Targets 12.4 and 12.5 SDG 14, Target 14.1	
4	Promotion of BAT and BEP	NBSAP Recommendation 4.3.2 on sustainable agriculture	SDG 2, Target 2.4 SDG 6, Targets 6.3 and 6b SDG 7, Targets 7.a and 7.b SDG 9, Target 9.4	Activities 26, 27, 30, 43, 44, 54, 70, 122, 160
5	Training & capacity building	NEMAP priority on training	SDG 9, Target 9.5 SDG 11, Target 11.6 SDG 17, Target 17.9	Activity 5, 41, 51, 135, 137, 155, 181, 188, 208, 209, 213, 215, 217, 218, 221, 223, 229 – 234, 238, 240, 243, 249, 251, 254, 255, 258 – 261, 270
6	Funding	NEMAP priority on financial resources	SDG 9, Target 9.a SDG 10, Target 10.b	Activity 212, 213, 222, 234, 243, 250
7	Technology transfer		SDG 4, Target 4.b SDG 7, Target 7.a SDG 9, Target 9.a SDG 17, Targets 17.6 and 17.7	Activity 212, 226, 242, 243

8	Data management	NEMAP priority on information management	SDG 17, Target 17.8	Activity 35, 36, 77, 94, 99, 103, 127, 210, 227, 256
9	Public information, awareness & education (PIAE)	NBSAP Recommendation 4.5 on public education and awareness	SDG 4, Target 4.7 SDG 12, Target 12.8	Activity 36, 72, 90, 105, 107, 108, 109, 110, 111, 112, 114, 116, 146, 150, 154, 161, 163, 179
10	Private sector engagement		SDG 8, Target 8.4 SDG 9, Targets 9.2 and 9.4 SDG 12, Target 12.6	Activity 30, 88, 89, 92, 98, 106, 115, 140, 142, 145, 147, 148, 185, 186, 190, 192, 224, 236

5.8 Implementation Strategy

The Implementation Strategy details those actions that The Bahamas will take over the next 10 years (2020 – 2029) to meet its obligations under the Stockholm Convention. Indicators are included in the Implementation Strategy as monitoring is an important aspect to track successful completion of NIP activities or actions.

Table 8: National Implementation Strategy

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
1. Institutional and regulatory strengthening measures	1a. Training and capacity building for public sector agencies tasked with management and regulation of POPs.	NCAC in cooperation with UB and BTVI	2020 - 2024	Minimum of 10 persons trained in POPs management and regulation	25,000
	1b. Training and capacity building for private sector organizations involved in POPs use and management.	NCAC in cooperation with UB and BTVI	2021 -2024	Minimum of 10 persons trained in POPs management and regulation	25,000
	1c. Ensure representation of private sector on NCAC.	NCAC	2019	At least 1 private sector representative on NCAC	-
	1d. Commence tracking of POPs using Global Harmonized System.	Bahamas Customs Department	2019	POPs being tracked using GHS	-
	1e. Budgetary allocation for procurement of analytical equipment as well as priority activities identified in the NIP on an annual basis.	Ministry of Finance	2020 - 2024	Budget line item established in budgets for relevant agencies	2,500,000
	1f. Access to technology and knowledge transfer through business partnerships between public and private sectors.	NCAC and BCCEC	2020 - 2024	At least 1 public-private partnership established in 5-year period	-
	1g. Identification and coordination of national opportunities for technology and knowledge transfer.	NCAC	2020	At least 1 opportunity annually	5,000

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	1h. Inclusion of chemical emergency preparedness in national plans and strategies developed by NEMA.	NCAC and NEMA	2020	National plans and strategies include chemical emergency preparedness	3,500
	1i. Gap analysis of legislation with respect to chemicals and waste management.	Consultant and AG's Office	2020	Gap analysis completed	45,000
	1j. Develop draft legislation or amendments to fill identified gaps.	Consultant and AG's Office	2021 - 2022	Draft bill and amendments completed and enacted	90,000
				<i>Subtotal for Priority 1</i>	<i>2,693,000</i>
2. Measure to reduce or eliminate releases from intentional production and use	2a. Training for relevant stakeholders in conducting in-depth inventories of POPs pesticides, industrial chemicals, dioxins and furans, PCB-containing equipment (in use and out of use, e.g. transformers, capacitors, switches) and unintentional produced POPs.	NCAC and BEST	2020 - 2021	Minimum of 10 persons trained in conducting in-depth inventories	25,000
	2b. Conduct in-depth inventories of POPs pesticides, industrial chemicals, dioxins and furans, PCB-containing equipment (in use and out of use, e.g. transformers, capacitors, switches) and unintentional produced POPs.	NCAC, BEST, DOA, DEHS and UB along with trained local data collectors	2021 - 2022	In-depth inventories completed for POPs identified	130,000
	2c. Identification and promotion of application of BAT for sectors which are main sources of POPs in use or to be disposed.	NCAC	2021 - 2024	BAT applied with at least 1 example for each sector targeted	120,000
	2d. Identification and promotion of introduction of BEP for sectors which are main sources of POPs in use or to be disposed.	BEST	2021 - 2024	BEP applied with at least 1 example for each sector targeted	-
	2e. Implement control and monitoring systems for POPs sources.	BEST and DEHS	2021	Control and monitoring systems established	150,000
	2f. Participate in regional/global studies for monitoring POPs pesticides.	BEST, DOA and DEHS		Bahamas participation documented in studies	-

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	2g. Impose reporting obligations and punitive measures for non-compliance.	BEST and DEHS	2022	Documentation of measures being imposed	5,000
				<i>Subtotal for Priority 2</i>	<i>430,000</i>
3. Production, import and export, use, stockpiles and wastes of Annex A POPs pesticides	3a. Develop national system for tracking Annex A POPs pesticides imported, exported, in use or stockpiles/disposed.	NCAC	2020 - 2021	Expansion of POPs information system capacity to cover Annex A pesticides	20,000
	3b. Promote the sustainable use of pesticides and where feasible, the use of alternatives, including Integrated Pest Management and organic agriculture.	DOA	2020 - 2024	At least 3 awareness sessions as well as outreach activities to farmers on 13 major islands	53,500
	3c. Environmentally sound management of stockpiles, waste stocks and empty containers of POPs pesticides.	DOA and DEHS	2021 - 2024	ESM occurring with at least 2 examples on 2 different islands	10,000
				<i>Subtotal for Priority 3</i>	<i>83,500</i>
4. Import and export, use, identification, labelling, removal, storage and disposal of PCBs/PCNs in closed and open applications	4a. Assess past use of PCBs/PCNs in open applications (e.g. sealants, paints, rubber, chloroprene, plastic additive, industrial oils, waste oils) and develop an inventory accordingly.	NCAC, BEST, DEHS and UB along with trained local data collectors	2020 - 2021	Inventory completed	65,000
	4b. Develop national system for tracking PCBs/PCNs imported, in use, stockpiled or awaiting disposal in closed and open applications.	NCAC	2021	Expansion of POPs information system capacity to cover PCBs/PCNs	-
	4c. Environmentally sound management of in use, stockpiles and waste of PCB/PCN in closed and open applications	DOA, DEHS and power providers on all islands	2021 - 2024	ESM occurring with at least 2 examples on 2 different islands	10,000
	4d. Promotion of most sustainable alternatives in closed applications considering chemical and energy aspects	MOW, BPL, BEST and private sector companies	2021 - 2024	Sustainable alternatives being employed by at least 2 organizations	120,000

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	4e. Promotion of the most sustainable alternatives in (former) open applications of PCBs/PCNs	MOW, BPL, BEST and private sector companies	2021 - 2024	Sustainable alternatives being employed by at least 2 organizations	-
	4f. Prepare a progressive elimination plan of the PCB/PCN containing equipment and articles.	NCAC	2022	Elimination plan completed	-
	4g. Develop an environmentally sound management strategy for the phase out of equipment, articles and waste containing or contaminated with PCBs, PCNs and SCCPs.	NCAC in conjunction with all agencies and companies with such equipment, articles and waste	2026	ESM strategy completed	-
	4h. Disposal of PCB-containing equipment and waste	DEHS in conjunction with all agencies and companies with this equipment and waste	2027	All equipment and waste identified is properly disposed of with documentation	200,000
				<i>Subtotal for Priority 4</i>	<i>395,000</i>
5. Import and export, use, stockpiles and wastes of POP-PBDEs and HBCD	5a. Develop national system for tracking POP-PBDEs and HBCD in products/articles imported, in use, stockpiled or awaiting disposal.	NCAC	2020 - 2021	Expansion of POPs information system capacity to cover POP-PBDEs and HBCD	-
	5b. Promote the most sustainable alternatives for substituting HBCD.	BEST, MOW, Bahamas Contractors' Association, BCCEC and Department of Consumer Affairs	2025	Sustainable alternatives being employed by at least 2 organizations	-
	5c. Environmental sound management of WEEE, end-of-life vehicles, construction and demolition wastes containing POP-PBDEs and HBCD.	BEST, DEHS, MOW, Bahamas Contractors' Association and BCCEC	2026 - 2029	ESM occurring with at least 2 examples on 2 different islands	10,000
				<i>Subtotal for Priority 5</i>	<i>10,000</i>
	6a. Develop national system for tracking PFOS, its salts and PFOSF in products/articles	NCAC	2020 - 2021	Expansion of POPs information system capacity	-

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
6. Import and export, use, stockpiles and wastes of PFOS, its salts and PFOSF	imported, in use, stockpiled or awaiting disposal.			to cover PFOS, its salts and PFOSF	
	6b. Promote the most sustainable alternatives for substituting PFOS, its salts and PFOSF.	BEST, MOW, RBPF Fire Unit, Bahamas Contractors' Association, BCCEC and Department of Consumer Affairs	2025	Sustainable alternatives being employed by at least 2 organizations	-
	6c. Environmentally sound management of PFOS, its salts and PFOSF containing products/articles in use, stockpiles and waste.	BEST, DEHS, MOW, RBPF Fire Unit, Bahamas Contractors' Association and BCCEC	2026 - 2029	ESM occurring with at least 2 examples on 2 different islands	10,000
				<i>Subtotal for Priority 6</i>	<i>10,000</i>
7. Import and export, use, stockpiles and wastes of DDT	7a. Develop national system for tracking DDT in use, imported, exported or stockpiled/disposed.	NCAC	2020 - 2021	Expansion of POPs information system capacity to cover DDT	-
	7b. Assessing and controlling illegal imports of pesticides including DDT	Bahamas Customs Department and DOA	2021 - 2024	Report on assessment and control mechanisms	32,500
	7c. Environmentally sound management of DDT	DOA and DEHS	2021 - 2024	ESM occurring with at least 2 examples on 2 different islands	5,000
				<i>Subtotal for Priority 7</i>	<i>37,500</i>
8. Register of specific exemptions and the continuing need for exemptions (Art. 4)	8a. Organize stakeholder consultations to establish criteria for assessment and selection of specific exemptions and/or acceptable purposes for chemicals listed under Annex A or B.	BEST with guidance from NCAC	2019 - 2020	Report of stakeholder consultations. Specific exemptions and/or acceptable purposes communicated to Secretariat of the Stockholm Convention	10,000
	8b. Register for specific exemption for DDT and for any other POPs for which specific exemptions and/or acceptable purposes have been identified. During this process, review	BEST with guidance from NCAC	2020	Register shared with Secretariat of the Stockholm Convention	-

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	whether DDT is still needed in the country (BCRC).				
	8c. Periodic assessment of the need for continued use of specific exemptions and/or acceptable purposes	BEST with guidance from NCAC	2022 and 2024	Report of stakeholder consultations. Specific exemptions and/or acceptable purposes communicated to Secretariat of the Stockholm Convention	10,000
				<i>Subtotal for Priority 8</i>	<i>20,000</i>
9. Measures to reduce releases from unintentional production (Art. 5)	9a. Identification and promotion of application of BAT for sectors which are main sources of unintentionally produced POPs.	NCAC	2020	BAT applied with at least 1 example for each sector targeted	-
	9b. Identification and promotion of introduction of BEP for sectors which are main sources of unintentionally produced POPs.	BEST	2020	BEP applied with at least 1 example for each sector targeted	-
	9c. Implement control and monitoring system for main sources.	BEST and DEHS	2021	Control and monitoring systems established	150,000
	9d. Impose reporting obligations and punitive measures for non-compliance.	BEST and DEHS	2022	Documentation of measures being imposed	5,000
				<i>Subtotal for Priority 9</i>	<i>155,000</i>
10. Measures to reduce releases from stockpiles and wastes (Art. 6)	10a. Design of mechanism to manage and dispose of stockpiles and wastes in an environmentally sound manner. Steps in designing the mechanism should include: Assessment of Bahamas' capacity to manage hazardous waste (options/limitations) for the destruction and management of POPs;	Hazardous waste - DEHS for Family Islands and settlements outside of Freeport, GBPA for Freeport, and private waste management company for New Providence landfill MOH for poison centre	2020 - 2021	Assessment report completed. Upgrade completed and facility functional. POPs information system expanded to track stockpiles. Poison centre established by MOH with technical support	110,000

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	- Management – Upgrade existing hazardous waste facility in New Providence for the confiscation of hazardous goods and a database to track stockpiles (POPs information system) - Establish a poison centre (options include formal agreement with Trinidad and Tobago poison centre as well as establishment of a local desk and hotline)			from Trinidad and Tobago poison centre.	
	10b. Identification and management of stockpiles in New Providence and Grand Bahama.	BPL, DOA, DEHS, GBPC and other power providers on all islands	2020 - 2024	Report on stockpiles identified. Management systems in place for both islands.	57,500
	10c. Identification and management of waste sources in New Providence and Grand Bahama.	DEHS	2020 - 2024	Report on waste sources identified. Management systems in place for both islands.	153,000
	10d. Identification and management of stockpiles on Family Islands.	BPL, DOA, DEHS, GBPC and other power providers on all islands	2021-2024	Report on stockpiles identified. Management systems in place for all islands.	137,500
	10e. Identification and management of waste sources on Family Islands.	DEHS	2021-2024	Report on waste sources identified. Management systems in place for all islands.	231,000
	10f. Promote sound management of hazardous household products (HHPs) and chemicals of national concern.	NCAC, BEST, DEHS, Ministry of Education, Department of Consumer Affairs	2027 - 2029	Sound management guidance documents and other awareness materials (e.g. video, social media)	25,000

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
				<i>Subtotal for Priority 10</i>	<i>714,000</i>
11. Identification of contaminated sites (Annex A, B and C chemicals) and remediation in an environmentally sound manner (Art. 6)	11a. Identify sites on New Providence and Grand Bahama.	BEST and DEHS	2020	Report of contaminated sites identified.	-
	11b. Develop and implement remediation program for New Providence and Grand Bahama inclusive of responsible agency, timeline, remediation methodology and cost.	BEST and DEHS	2021 - 2022	Documentation of remediation program. Documentation confirming site remediation for each identified site.	250,000
	11c. Identify sites on Family Islands.	BEST and DEHS	2021	Report of contaminated sites identified.	-
	11d. Develop remediation program for Family Islands inclusive of responsible agency, timeline, remediation methodology and cost.	BEST and DEHS	2022 - 2023	Documentation of remediation program. Documentation confirming site remediation for each identified site.	250,000
				<i>Subtotal for Priority 11</i>	<i>500,000</i>
12. Facilitate or undertake information exchange and stakeholder involvement	12a. Establishment of POPs information system with exploration of regional initiatives to participate where feasible.	BEST	2019	Recommendations on regional initiatives to engage in. Engagement with feasible options.	-
	12b. Create a national database to facilitate the free exchange and repurposing of laboratory chemicals.	DEHS, RBPF Forensic Lab, Ministry of Health and Ministry of Education	2020	Database established and documentation of chemicals being repurposed.	5,000
	12c. Expand POPs information system to include other hazardous chemicals.	BEST	2021	Information system includes data on other hazardous chemicals of priority for The Bahamas	65,000

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	12d. Organize and host innovation competitions for SMEs.	OPM and BCCEC	2022 - 2024	Report of competition including information on winning entry.	33,000
	12e. Use existing platforms to promote participation in chemicals management (e.g. BCCEC meetings).	NCAC	2020	Report on platforms and numbers engaged	5,000
				<i>Subtotal for Priority 12</i>	<i>108,000</i>
13. Public awareness, information and education (Art. 10) – Materials to be produced in English and Creole	13a. Ensure POPs information system has a public access portal. This will also involve collaboration with regional awareness initiatives.	BEST	2019	Public access portal available and shared with regional awareness initiatives	-
	13b. Produce PIAE materials on chemical safety (including handling and storage).	BEST, NCAC and Ministry of Education	2020	Posters and teachers' resource materials produced as well as educational short videos	75,000
	13c. Produce PIAE materials on benefits of recycling.	BEST, NCAC and Ministry of Education	2020	Posters and teachers' resource materials produced	10,000
	13d. Produce PIAE materials on proper disposal of chemicals.	BEST, NCAC and Ministry of Education	2020	Posters and teachers' resource materials produced	10,000
	13e. Produce PIAE materials on chemical emergency preparedness.	BEST, NCAC, NEMA and Ministry of Education	2020	Posters and teachers' resource materials produced	10,000
	13f. Strengthen education curricula on chemical safety and management.	BEST, NCAC and Ministry of Education	2021 - 2022	MOEd national curricula (primary and secondary) expanded to include chemical safety and management	-
				<i>Subtotal for Priority 13</i>	<i>105,000</i>

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
14. Effectiveness evaluation (Art. 16)	14a. Participate in regional and international arrangements for effectiveness evaluation with respect to comparing monitoring data on presence of POPs as well as their regional and international transport.	BEST, NCAC and Ministry of Foreign Affairs	2020 - 2024	Documentation of Bahamas participation in regional or international arrangements	15,000
				<i>Subtotal for Priority 14</i>	<i>15,000</i>
15. Reporting	15a. Completion and submission of Fourth National Report.	BEST and NCAC	2020	Fourth National Report completed and submitted to Secretariat of Stockholm Convention	-
	15b. Establish mechanisms for Article 15 reporting.	BEST and NCAC	2020	Mechanism established and documented.	3,000
	15c. Establish responsibilities for data compilation and filling in the reporting form.	BEST and NCAC	2020	Responsibilities established and documented	-
	15d. Provide periodic training on the reporting requirements and format, including on Electronic Reporting System of the Stockholm Convention.	BEST and NCAC	2020, 2022 and 2024	At least 10 persons trained at each session	15,000
	15e. Completion and submission of Fifth National Report	BEST and NCAC	2022	Fifth National Report completed and submitted to Secretariat of Stockholm Convention	10,000
				<i>Subtotal for Priority 15</i>	<i>28,000</i>
16. Research, development and monitoring (Art. 11)	16a. Conduct research on sources and releases of POPs into the environment.	UB and DEHS	2020 - 2024	Research completed. Peer-reviewed journal article published within 1 year of research completion.	60,000

Stockholm Convention Obligations	Activity/Action	Responsible agency	Timeline	Indicators of effectiveness	Cost estimate (B\$)
	16b. Conduct research on presence, levels and trends for POPs in humans and the environment.	UB and DEHS	2020 - 2024	Research completed. Peer-reviewed journal article published within 1 year of research completion.	300,000
	16c. Pursue grant funding for research on POPs, including POPs alternatives.	UB and DEHS	2020 - 2024	3 grant proposals completed and submitted for funding. Report on participation of UB and DEHS in development of proposals.	10,000
				<i>Subtotal for Priority 16</i>	<i>370,000</i>
17. Technical and financial assistance (Art. 12 and 13)	17a. Development of procurement plan for analytical equipment.	NCAC and Ministry of Finance	2020	Procurement plan completed	-
	17b. Pursuit of external funding sources (i.e. bilateral, regional and multilateral) to complement Government budgetary allocation for NIP implementation.	NCAC in cooperation with all chemical management agencies	2020 - 2024	3 grant proposals completed and submitted for funding. Workshop reports.	40,000
	17c. Identification and coordination of South-South opportunities for technology and knowledge transfer.	NCAC and Ministry of Foreign Affairs	2020 - 2024	Report on opportunity detailing technology and knowledge transfer	25,000
	17d. Identification and coordination of North-South opportunities for technology and knowledge transfer.	NCAC and Ministry of Foreign Affairs	2020 - 2024	Report on opportunity detailing technology and knowledge transfer	25,000
				<i>Subtotal for Priority 17</i>	<i>90,000</i>
				GRAND TOTAL	5,764,500

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Appendix 1: 2013 POPs Inventory

Vendor Name	Island	Chemical Name	Trade Name	CAS Number	Quantity	Units	POPs or Other Hazardous Substance
Atlantis	Paradise Island	Chlorothalonil	Daconil Zn Fungicide	1897-45-6	5	pound	POP - Dioxins/Hexachlorobenzene
Lucayan Tropical Produce	New Providence	Endosulfan	Endosulfan	115-29-7			POP - Endosulfan
Proscape	New Providence	Chlorothalonil	Daconil	1897-45-6	1	gal	POP - Dioxins/Hexachlorobenzene
North Andros Farmers Association	Andros	Chlorothalonil	Bravo Weather	1897-45-6			POP - Dioxins/Hexachlorobenzene
North Andros Farmers Association	Andros	2,2,2-trichloro-1,1-bis(y-chlorophenyl)-1,1-dichloroethane	Dicofol 4E	115-32-2	2.5	gal	Suspected POP - DDT
North Andros Farmers Association	Andros	2,2,2-trichloro-1,1-bis(y-chlorophenyl)-1,1-dichloroethane	Kelthane	115-32-2	2.81	gal	Suspected POP - DDT
Lucayan Tropical Produce	New Providence	4 chloro-alpha-4-chlorophenyl-alpha-chloroethane	Kelthane	N/A			Suspected POP - Heptachlor
Tropical Exterminators Ltd.	New Providence	N/A	Heptachlor	62-73-7			Hazardous - Highly
Lucayan Tropical Produce	New Providence	4 chloro-alpha-4-chlorophenyl-alpha-chloroethane	Dichlorvos	137-26-8			Hazardous - Moderately
Lucayan Tropical Produce	New Providence	dimethylcarbamothioylsulfanyl N,N-dimethyl-2,2-dichloroethane	Thiram	300-76-5			Hazardous - Moderately
Lucayan Tropical Produce	New Providence	1,2-dibromo-2,2-dichloroethyl dimethylphosphorothioate	Naled	52645-53-1			Hazardous - Moderately
Lucayan Tropical Produce	New Providence	Permethrin	Pounce	2155-70-6			
Bradford Marine	Grand Bahama	N/A	*Tributyltin Methacrylat*	85-00-7	4	gal	Hazardous - Moderately
North Andros Farmers Association	Andros	6,7-Dihydrodipyrido[1,2-a:2',1'-c]pyrazine	Diquat	52645-53-1	0.25	gal	Hazardous - Moderately
North Andros Farmers Association	Andros	Permethrin	Pounce	63-25-2	0	n/a	Hazardous - Moderately
North Andros Farmers Association	Andros	1-naphthyl methylcarbamate	Carbaryl	68085-85-8	15	gal	Hazardous - Moderately
North Andros Farmers Association	Andros	3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2-methyl-6-methylpyridine	Cyhalothrin	4685-14-7	5	gal	Hazardous - Moderately
North Andros Farmers Association	Andros	Paraquat	Grammaxone	4685-14-7	62.5	gal	Hazardous - Moderately
Mennonite Farm	Andros	Paraquat	Grammaxone	2921-88-2	37.5	gal	Hazardous - Moderately
Mennonite Farm	Andros	O,O-Diethyl O-3,5,6-trichloropyridin-2-yl phosphorothioate	Chlorpyrifos	105827-78-9	2.5	gal	Hazardous - Moderately
Careful Pest Management	New Providence	Imidacloprid	Max Force Fly Spot Bait	82657-04-3	1	lb	Hazardous - Moderately
Careful Pest Management	New Providence	Bifenthrin	TalStar Profession	121-21-1	0.75	gal	Hazardous - Moderately
Careful Pest Management	New Providence	Pyrethrin	Piperonyl Butoxide (VLD BP-50 and 500)	82-66-6	1.11	gal	Hazardous - Extremely
Careful Pest Management	New Providence	Diphacinone	JT Eaton Bait Block	121-21-1	9	lb	Hazardous - Moderately
Careful Pest Management	New Providence	Pyrethrin	Oatmeal Conditioning	121-21-1	0.14	gal	Hazardous - Moderately
Careful Pest Management	New Providence	Pyrethrin	Petcor Flea Spray	121-21-1	0.125	gal	Hazardous - Moderately
Careful Pest Management	New Providence	Pyrethrin	Pyganic Pro	52645-53-1	0.125	gal	Hazardous - Moderately
Caribbean Landscape	New Providence	Permethrin	Permethrin	1912-24-9	0.94	gal	Hazardous - Moderately
Caribbean Landscape	New Providence	1-Chloro-3-ethylamino-5-isopropyl-2-methylpyridine	*Atrazine*	63-25-2	0.25	gal	Hazardous - Moderately
Caribbean Landscape	New Providence	Carbaryl	Bonide Fruit Tree Spray	105827-78-9	2.5	gal	Hazardous - Moderately
						Total POPs	6.31 gal
							1 lb
						Total Other Hazardous Chemical	128.69 gal
							10 lb

Appendix 2: Key Individuals and Organizations in Chemicals Management

Individual	Organization	Contact information
Mrs. Rochelle Newbold Official Contact Point for Stockholm Convention	BEST Commission	Tel: 242-322-4546 Email: rwnewbold@best.gov.bs
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Gammell Deal NCAC member	BEST Commission	Tel: 242-322-4546 Email: GDeal@best.gov.bs

Appendix 3: Stakeholder Consultations

Meeting/Workshop	Date	Outcomes	Number of Participants
First National Coordinating Committee Meeting	26 August 2013	Overview of the POPs project to NCC members. Introduction of NCC members.	11
Stakeholder Workshop on Chemicals Management in The Bahamas – New Providence	18 September 2013	Overview of the POPs project. Recommendations on structure and responsibilities of National Chemicals Advisory Committee (NCAC).	40
Stakeholder Workshop on Chemicals Management in The Bahamas – Grand Bahama	20 September 2013	Overview of the POPs project. Recommendations on structure and responsibilities of National Chemicals Advisory Committee (NCAC).	51
POPs Inventory and National Profile Workshop		Presentation of POPs Inventory and draft National Profile. Endorsement of the POPs Inventory. Agreement to provide comments/edits for draft National Profile.	16
National Chemicals Advisory Committee Meeting	11 April 2019	First meeting of NCAC since project restarted. Overview of activities already completed and workplan for completion of project.	
National Chemicals Advisory Committee Meeting	13 June 2019	Update on project activities. Feedback from Committee members on chemicals survey design and potential sources of information. Reminder of NIP workshop scheduled for 18 July 2019	4
Stakeholder Workshop on NIP Development	18 July 2019	Overview of POPs, their significance and uses as well as history in The Bahamas. Presentation of Country Profile	30

		Outline of the NIP and information it will contain as well as discussion for options in developing the NIP and associated implementation strategy.	
NIP Validation Workshop	27 September 2019	Presentation on the draft NIP which was previously circulated to stakeholders for their review and comment. Validation of the information included in the NIP.	15

Appendix 4: Public Information Materials

To be added once completed by public relations consulting firm