OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

2014

National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants

Philippines

National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs)

2014

Republic of the Philippines
Department of Environment and Natural Resources
Visayas Avenue, Diliman, Quezon City, 1100
Tel. Nos. 929-6626 to 29; 929-6633 to 35
926-7041 to 43; 929-6252; 929-1669
Website: http://www.denr.gov.ph / E-mail: Web@denrgov.ph

MESSAGE

It is my honor and priviledge to transmit and endorse our Reviewed and Updated National Implementation Plan (NIP) for the Stockholm Convention on Persistent Organic Pollutants to the Conference of Parties (COP).

This updated NIP not only reflects the commitment of the Philippines to its obligation to the Stockholm Convention but more importantly, its commitment to the protection of human health and the environment through the reduction and elimination of Persistent Organic Pollutants (POPs)

This document contains the current scenario on the status of implementation of the action plans identified in the original NIP. The implementation of these action plans is a collaborative effort between different government agencies, the private sector, the academe and non-government organizations to effectively manage and control POPs. With the inclusion of ten (10) new POPs on the Stockholm Convention's list of monitored POPs, the Philippines included in its plan the initial inventory and assessment of this new POPs. Gaps were identified in terms of policy, information campaign, monitoring and management. This was translated into action plans committed to be implemented by different government agencies and NGOs.

Addressing the issues on POPs is a continuous process of improving its management in its entire life cycle including the use alternative chemicals which is safer and more friendly to the environment. We are one with other nations in the fight to reduce and eliminate POPs to build a "greener tomorrow" for future generations.

Mabuhay!

RAMON J. P. PAJE
Secretary, DENR

ACKNOWLEDGEMENT

The Department of Environment and Natural Resources Environmental Management Bureau (DENR-EMB) wishes to extend its gratitude to the Global Environment Facility (GEF) for the funding support for this project. It also acknowledges the following persons and organizations for their contributions to the updating of the National Implementation Plan (NIP) for Persistent Organic Pollutants (POPs)

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES	
Atty. Jonas R. Leones	DENR Undersecretary for Environment and International Environmental Affairs
Atty. Juan Miguel T. Cuna	DENR Assistant Secretary and concurrent EMB Director / National Project Director
Dr. Eva Ocfemia	Assistant Director / Assistant National Project Director
Mr. Renato T. Cruz	Chief, Environmental Quality Management Division
Ms. Angelita Brabante†	Chief, Chemical Management Section
Ms. Emmanuelita Mendoza	
Mr. Geri Geronimo-Sañez	Chief, Hazardous Waste Management Section
Engr. Jean Rosete	Chief, Air Quality Management Section
Engr. Marcelino Rivera Jr.	Chief, Water Quality Management Section
Ms. Elenida Basug	EMB- Chief, Environmental Education and Information Division
Ms. Ella Deocadiz	Chief, Research and Development Division
Ms. Editha Leonardo	Chief, Environmental Policy and Planning Division

Engr. Edwin Romel Navaluna	EMB Chemical Management Section
Engr. Jose Joel Maleon	EMB Chemical Management Section
Ms. Angelica Gallego	EMB Chemical Management Section
Mr. Gilbert Maximo	EMB Chemical Management Section
Engr. Roland Omar Tamani	EMB Chemical Management Section
Ms. Josephine Monilla	EMB Chemical Management Section
Ms. Almira Alvia	EMB Chemical Management Section
Ms. Anne Catherine Pama	EMB Chemical Management Section
Ms. Tracy Bernadette Vidad	EMB Chemical Management Section
Engr. Leonie Lynn Ruiz	EMB Hazardous Waste Management Section
Engr. Teresita Peralta	EMB-Air Quality Management Section
Mr. Samuel Fabro	EMB Water Quality Management Section
Ms. Fatima Molina	EMB Research and Development Division
Mr. Janus Alpaño	EMB Environmental Policy and Planning Division
Ms. Cristina Francisco	EMB Environmental Education and Information Division
Mr. Curtiss Lim	EMB Environmental Education and Information Division

NATIONAL STEERING COMMITTEE MEMBERS	
Dr. Norlito Gicana	Fertilizer and Pesticide Authority
Dr. Irma Asuncion	Department of Health
Dr. Kenneth Y. Hartigan-Go	Food and Drug Administration DOH

Dr. Ma. Teresita S. Cucueco	Occupational Safety and Health Center
Dr. Ma. Imelda Santos	Bureau of Working Condition DOLE
Maj. Nicomedes Enad	Bureau of Customs DOF
Dr. Nuna Almanzor	Industrial Technology Development Institute - DOST
Dr. Jean Tayag	Commission on Higher Education
Mr. Luis Catibayan	Bureau of Import Services - DTI
Ms. Shirlene Mananquil	United Nations and International Organizations - DFA
Mr. Roberto Batungbacal Mr. Jose Marcalain	Samahan sa Pilipinas ng mga Industriyang Kimika
Mr. Jesus Reyes	Philippine Chamber of Commerce and Industry
Ms. Sonia Mendoza	EcoWaste Coalition

TECHNICAL WORKING GROUP	
Engr. Ana Trinidad Rivera	Department of Health
Engr. Nelia Granadillos	Occupational Health and Safety Center
Dr. Marco Antonio Valeros	Bureau of Working Condition
Ms. Jerolet Sahagun Mr. Angelo Bugarin	Fertilizer and Pesticide Authority
Mr. Celton Clyde Saa	Commission on Higher Education
Dr. Ma. Theresa Gutierrez Ms. Thelma Perez	Food and Drug Administration
Mr. Rey Esguerra Ms. Emelda Ongo	Industrial Technology Development Institute

Engr. Gretchen Fontejon-Enarle Mr. Jonathan Chong Ms. Cynthia Reyes	Samahan sa Pilipinas ng mga Industriyang Kimika
Mr. Manny Calonzo	IPEN
Mr. Thony Dizon Mr. Rey Palacio	EcoWaste Coalition
Dr. Evelyn Laurito	University of Sto. Tomas
Dr. Florencio Balesteros	University of the Philippines

EMB REGIONAL OFFICES	
Ms. Vizminda Osorio	NCR
Mr. Oscar Cabanayan†	CAR
Mr. Joel Salvador	Region 1
Engr. Cesar Siador	Region 2
Engr. Lormelyn Claudio	Region 3
Mr. Carlos Magno	Region 4A
Mr. Allan Leuterio	Region 4B
Engr. Roberto Sheen	Region 5
Atty. Jonathan Bulos	Region 6
Mr. Fernando Quililan	Region 7
Ms. Letecia Maceda	Region 8
Ms. Jacqueline Caancan	Region 9
Mr. Sabdullah Abubacar	Region 10
Ms. Ester Olavides	Region 11
Ms. Ma. Socorro Lanto	Region 12

Engr. Metodio Turbella	Region 13

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZTION	
Dr. Suresh Raj	Mr. Fakhruddin Azizi
Dr. Carmela Centeno	Engr. Leah Texon
Engr. Teddy Monroy	Ms. Jillian Revadulla-Bondoc
Mr. Jimmy Neil Kang	Ms. Hang Su

PROJECT TASK TEAMS	
Dr. Susan Gallardo	National Project Coordinator
Engr. Jurex Gallo	Assistant National Project Coordinator
Dr. Leonila Abella	POPS Management Specialist
Dr. Carl Renan Estrellan	POPS Management Specialist
Dr. Josephine Borja	POPS Management Specialist
Dr. Maricar Prudente	POPS Management Specialist
Dr. Michael Promentilla	POPS Management Specialist
Dr. Evangeline Santiago	Consultant
Engr. Denvert Pangayao	Consultant
Dr. Raymund Sison	Consultant
Dr. Jo Mangahis	Consultant
Dr. Socorro Aguja	Consultant
Dr. Joseph Auresenia	Consultant
Dr. Manuel Bienvenido Biona	Consultant

Mr. Marlon Era	Consultant
Atty. Christopher Cruz	Consultant
Dr. George William Hong	Consultant
Dr. Azucena Puertollanno	Consultant
Engr. Jess Trillana	Project Assistant
Mr. Gian Bernardo	Project Assistant
Ms. Kathrina Tan	Project Assistant
Mr. Jovito Anito	Project Assistant
Ms. Charmaine Ang	Project Assistant
Engr. Elvira Ongy	Project Assistant
Ms. Joanne Panglinawan	Project Assistant

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Philippines became a party to the Convention on February 27, 2004. On May 27, 2004, the Convention entered into force in the Philippines.

As part of its commitment to the Convention, the Philippine government drafted a National Implementation Plan in 2006 that outlines its programs to meet its obligations under the Convention. Specifically, the National Implementation Plan aims to:

- Outline the country's National Objectives for the reduction and elimination of POPs production, importation, use, and releases
- Define the country's priorities and position to reduce and eliminate POPs releases
- Design programs to remove barriers to the effective implementation of POPs phase out and release reduction measures under the Convention
- Plan programs for information exchange, public education, communication, and awareness raising
- Enhance capacity through capability building as required, including institutional strengthening, training, equipment, legal and regulatory measures, enforcement, monitoring, etc.
- Design programs to identify the need for any country-specific exemptions and, if necessary, prepare a report to the Convention justifying this need
- Outline the needs for transfer of technology and know-how and/or enhanced use and development of indigenous knowledge and alternatives and the estimated costs of needed investments

To achieve these objectives, the Philippines submitted in the NIP 2006 specific goals and action plans for the initial 12 POPs.

Between 2009 and 2011, 10 new POPs were listed in the Stockholm Convention. To comply with the country's obligation under Article 7 of the Stockholm Convention, it is necessary to review the progress of the goals and programs for the old POPs in the NIP in 2006 and to update the NIP to include action plans for the new POPs.

The updated NIP of 2013 was finalized by the Department of Environment and Natural Resources (DENR)-Environmental Management Bureau (EMB) with the guidance of the multi sectoral National Steering Committee (NSC). The objectives of the NIP 2013 are aligned with the objectives of the NIP 2006 and with EMB's environmental policies in chemical management. The specific goals and programs of the country to comply with the SC obligation on the initial and new POPs are based on the results of GEF grant on the Review and Update of NIP implemented by UNIDO. These activities include the conduct of a study by a consultant group on the assessment of the implementation of the action plans for the 12 initial POPs, the review of the usage and inventory of the new POPs pesticides and the industrial chemicals PFOS and PBDEs, and the prioritization of the goals and action plans for the updated NIP.

Review of Action Plans in NIP 2006

With the implementation of action plans for the initial twelve POPs, the country partly achieved the goals set for the POPs pesticides, PCBs and Unintentionally Released POPs (UPOPs). The most important activities for each category of POPs that contributed to the attainment of the goals are the following:

Review of Action Plans in NIP 2006

With the implementation of action plans for the initial twelve POPs, the country partly achieved the goals set for the POPs pesticides, PCBs and Unintentionally Released POPs (UPOPs). The most important activities for each category of POPs that contributed to the attainment of the goals are the following:

1. POPs Pesticides

- FPA has banned Aldrin, Endrin, Dieldrin, Heptachlor Toxaphene and Chlordane since 1999. FPA has banned DDT in 2005 at the request of the Department of Health (DOH).
- There are no importation data for the 9 initial POPs pesticides from 2004 to the present.
- The identified stockpiles for the POPs pesticides in the 2006 NIP (2 L of Aldrin, 116 L of Chlordane were disposed in 2008. The 1,116 kg of DDT stockpile identified at DOH in the 2006 NIP and tracked in an unverified report to be under the jurisdiction of the Administrative Region in Muslim Mindanao (ARMM) is being verified by the DOH.

2. PCBs

- The inventory of the transformer units from the CCO registration in 2010 indicated a total of 11900 transformers against the 7840 units from the initial inventory in the NIP 2006. In the 2010 inventory, 98% (117,091 units) are PCB free and Non-PCB transformers while 2% (1991 units) contained PCB oil or contaminated with PCB oil.
- The progress in the implementation of the CCO for PCBs on the registration of PCB owners indicated that complete inventory will be achieved much later than 2014
- The completion of the National Inventory of PCBs is being conducted under the World Bank assisted project Integrated POPs Management (IPOPs). There is an on-going updating of the database for PCB under the IPOPs Project. The target number of companies to be inventoried is 800. The PCB owners are being trained in conducting the inventory. EMB Regional Offices are also being trained on data handling and updating the data base.
- Pursuant to the Chemical Control Order (CCO) for PCB of the DENR-EMB, the importation of PCB or equipments containing PCBs have been banned since March 19, 2004. The Bureau of Customs monitors incoming equipments such as transformers and ensures that they are PCB free (< 2 ppm) as defined in the CCO.
- PCB owners have been trained on the implementation of environmentally sound management plan of PCBs. The (IPOPs) project provides technical assistance to the PCB owners to implement their PCB management plan.
- A non-burn technology PCB treatment facility is available locally for disposal of PCB oil. The facility was constructed under the GEF/UNIDO/DENR-EMB/PNOC-AFC cooperation. The technology applied for destruction (sodium dechlorination) is capable of reducing PCB oil down to 2 ppm concentration as required by local regulation. The PCB destruction facility is still on trial commissioning stage; the facility is not yet on commercial operation but is expected to be fully operational in 2015.

3. UPOPs (Dioxins and Furan)

- The consolidated Dioxins and Furans inventory in 2013 based on the UNEP toolkit showed a total release at 779.529 gTEQ/a from all the sources. Open burning accounted for 59% (433.54 gTEQ/a) followed by disposal/landfill at 33% (255.06 g/TEQ/a). The ferrous and non ferrous production and power generation contributed a combined 7% of the total release (55.81 gTEQ/a).
- The Integrated POPs (IPOPs) Management Project "Reduction of Releases of Unintentionally Produced Persistent Organic Pollutants" provides on-going capacity building for inventory of dioxins and furans.
- BAT/BEP capacity building activities under UNIDO or World Bank assisted projects have been done to achieve reduction of releases of Dioxins and Furans in different sectors. Demonstration activities and trainings have been organized to reduce releases from open burning, fuel fired utilities and industrial boilers, solid waste and several specific industrial and agricultural sources. The UNIDO project also included activities to implement safe closure of open dumpsites and rehabilitation of controlled dumpsites pursuant to Department Administrative Order 09 Series of 2006.

Notwithstanding the progress that has been made in the action plans for the twelve initial POPs, the following are specific issues that need to be addressed:

1. Survey among farmers indicated the use of some of the banned POPs pesticides. Although the known POPs pesticide stockpiles collected by FPA were disposed of safely, more efforts have to be done to obtain a more comprehensive national inventory of stockpiles of initial POPs pesticides in the municipal levels.

2. The updated inventory of dioxins and furans indicated high contributions from open burning, manufacturing facilities and power plants. The development of the technical capability to verify dioxins and furans in these facilities is necessary to validate the inventory and to establish a more defined legal regulatory framework for dioxins and furan.

3. There are many potential contaminated sites with dioxins and furans including open dumpsites and landfills. A more comprehensive identification of contaminated sites with dioxins and furans is necessary to prioritize activities on awareness and education, environmental and health monitoring and BAT/BEP interventions.

4. The training activities under the IPOPs project, have contributed to the greater awareness of PCB owners of the regulations of the Chemical Control Order (CCO) for PCBs. There is a need to put in place an efficient system for monitoring of the implementation of the CCO for PCBs.

Assessment of the Issues on the Ten New POPs

The updated NIP of 2013 provided information on the initial assessment of the issues of new POPs in the country and identified the goals and action plans for the POPs pesticides, PFOS, PBDEs and the UPOPs

With respect to the ten new POPs, the following issues are identified:

1. The initial inventory of PFOS based on importation data maybe overestimated. A better system of labeling of products and substances containing new POPs within the GHS framework is necessary to obtain a more accurate initial inventory of imported POPs.

2. A regulatory action to ban the use of the new POPs pesticides Lindane, and Endosulfan for all purposes is not yet done.

3. Verified reports on the availability of Endosulfan through illegal entry to the country calls for strengthening of border controls and surveillance.

4. The present awareness of PFOS and PBDEs as hazardous substances and the knowledge of the articles that may contain these chemicals are very low even for the industrial sector. Greater cooperation and coordination in the exchange of information between manufacturers, suppliers, importers, customs officials and end users should be facilitated by the SC.

5. The development of the technical capability in the country to identify PFOS in articles and contaminated sites is necessary to obtain a more accurate inventory of PFOS that will aid in the legal and regulatory action on the importation, use and disposal of articles with PFOS.

6. The efficient implementation of the regulations on the disposal of electronic waste is needed to safely dispose electronic parts that my contain PFOS and PBDEs.

7. Activities on environmental and health monitoring of POPs remain in the non-government and academic sectors. The EMB, as the regulatory body for POPs, has started acquiring the equipment for analysis of PFOS and Dioxins and Furans. A more regular monitoring of the environment and health impacts of POPs pesticides, PCBs, UPOPs and PFOs and PBDEs has yet to be organized.

Goals and Action Plans for the listed chemicals in the NIP 2014

For the POPs Pesticides, the total elimination of the listed POPs pesticides remains the goal, thus the prohibition of importation and the disposal of stockpiles are the major measures to comply with the obligation to the SC. The important measures in the action plan are:

1. Immediately dispose the remaining known stockpiles of DDT and Endosulfan
2. Develop a policy recommendation for FPA to officially ban the importation, production, distribution, and use of Endosulfan, and Lindane in the country.
3. Implement improvement in the monitoring and control of the reported illegal entry and use of the listed pesticides.

The immediate goal for PFOS is to achieve an effective and environmentally sound strategy to manage and control the use of PFOS-containing products and wastes, The main obstacle to achieve the set goal is the lack of knowledge on the articles or products containing PFOS by the stakeholders in industry as well as by the public. A comprehensive inventory of PFOS in the articles used or produced in the country is necessary before any sound strategy to control or manage the chemical and its waste can be developed. The following activities are identified to obtain a comprehensive inventory of PFOs in the country:

1. Develop measures to strengthen policy on proper labelling of products/substances containing

PFOS and related chemicals within the GHS (Global Harmonized System for Classification and Labelling of Chemical) framework.
2. Training of personnel in the conduct of inventory of PFOS in key industry sectors.
3. Develop the capability to analyze PFOS in different products to validate the inventory.
4. Develop policy recommendations to enforce the disclosure of information relevant to the inventory of PFOS from the industrial sector.

The immediate goal for PBDEs is to achieve an effective and environmentally sound strategy to manage the elimination of PBDE-containing products and wastes and control the entry of PBDE-containing products in the country. The action plan for PBDEs includes the following;

1. Prepare a comprehensive inventory of c octaBDEs and c pentaBDEs.
2. Develop a policy recommendation to regulate the reuse and recycling of articles containing brominated diphenyl ethers.
3. Develop and implement monitoring and evaluation programs for handling, storage, and disposal of Waste Electronics and Electrical Equipment (WEEEs) and End of Life Vehicles (ELVs) .

The effective and environmentally sound strategy to manage the total elimination and destruction of PCB-containing products, equipment, and wastes remains the goal for PCBs. The following measures are part of the action plan for PCBs.

1. Update the profile of potential sources of PCBs in the country consisting of PCB owners, treatment, storage, and disposal facilities, and servicing facilities.
2. Complete the registration of PCB owners and PCB service facilities.
3. Update the list of laboratories for sampling and analysis of PCBs.
4. Conduct additional training for operators, owners of PCB-containing equipment on PCB storage and disposal.
5. Monitor the safe disposal of PCB oil, PCB contaminated equipment and PCB waste through the implementation of the CCO for PCBs.
6. Develop and implement incentives as part of the regulatory activity for electric utilities to comply with the phase-out of PCB.

For UPOPs, the goal remains to achieve progressive reductions and continuous monitoring in the releases of dioxins and furans, and other unintentional POPs (e.g., PeCBs) based on scientific knowledge. The action plan for this goal includes the following:

1. Create a publicly available updated catalogue and a database of information on the sources of release of UPOPs, and emission factors significant in the country.
2. Sustain seminar workshops to LGUs (officials, farmers and households and women groups) to assist in promoting the implementation of BAT/BEP for unintentional POPs particularly in minimizing the release of dioxins/furans from open burning.
3. Establish a dioxin laboratory to support the enforcement of the provision on dioxins/furans in the Clean Air Act (RA 8749).
4. Implement BAT/BEP in minimizing the release of/dioxins and furans in major sources of release.

A comprehensive identification of all contaminated and potentially contaminated sites and the corresponding management strategies to protect public health and environment remains the goal for

contaminated sites. EMB shall be the lead agency in implementing the activities and actions addressing the national priorities for managing the POPs contaminated sites. The measures to achieve this goal include:

1. Review and update the criteria or guidelines to include sites potentially contaminated with newly identified POPs of concern such as endosulfan, PBDE and PFOS.
2. Strengthen the infrastructure (facilities and instrumentation) needed for the analysis of new POPs such as PFOS and PFOS-related substances and PBDE.
3. Develop a harmonized transparent and science-based risk assessment, risk management and risk communication procedure to manage contaminated sites
4. Conduct site-specific risk assessment on identified hotspots to prioritize sites for remediation.

Activities to increase the awareness level of POPs in different sectors of the population have been incorporated in the enabling activities under the WB- IPOPs and UNIDO projects. However, there is still a need to intensify information dissemination to local government units, households, farmers and women groups about the listed pesticides and uncontrolled emissions of dioxins and furans. To achieve a high level of awareness and knowledge across all sectors on POPs management to support the implementation of the updated National Implementation Plan, the following measures among other media activities are identified:

1. Develop and maintain an on-line portal for dissemination of IEC materials that include documented testimonials, popularized technical reports, and risk studies.
2. Sustain a series of seminars and lectures to various organizations for both formal and non-formal organizations.
3. Sustain the participation in local, national, and international forums on POPs, including presentations during regular meetings of business associations.
4. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs in general and make them available as public information.
5. Develop policy recommendation to incorporate explicitly the topic of POPs in the implementing rules and regulation (IRR) of RA 9512 (an act to promote environmental awareness through environmental education).
6. Prepare training module of POPs for potential trainers among teachers and student leaders.

Socio Economic Assessment of POPs and the National Implementation Plan

The socio-economic assessment presented in this NIP is a simplistic analysis of the existing status of POPs, the known risks to the most vulnerable sectors and cost of risk reduction associated with the action plans to manage the POPs in the country.

POPs have been linked to many health problems including endocrine disruption, reproductive and neurological effects and cancer. The most vulnerable sector to the adverse effects of POPs pesticides includes the farmers who apply these pesticides and child bearing mothers exposed to the pesticides at a critical period of formation of the fetus. The identified sectors that handle majority of the PFOS articles and other PFOS-related substances are industries with metal plating processes, electronics and semiconductor industries, textiles and carpets, paper and packaging industries, and fire-fighting substances. The most vulnerable sectors of society exposed to the hazards of PBDEs are those involved in recycling of electronic wastes and scavenging in dumpsites especially in the informal sector. The most vulnerable sector exposed to the hazards of PCBs are those working in electric utilities with transformers filled or contaminated with PCB oil and those in the business of retrofilling old transformers with dielectric fluid. Dioxins and Furans

are the most toxic among the POPs listed in the Convention. These compounds are not produced commercially for any industrial use but can be formed as a result of burning of organic matter especially plastics and other substances with chlorine compounds. Since burning is a popular option in disposal of waste in households and in farms in the Philippines, an intensive education of the population most specially housewives and farmers on the adverse health effects of dioxins and furans could be the most effective way to reduce the production of UPOPs.

All humans and wildlife could be exposed to these chemicals through contaminated drinking water, food and air. The most important socio-economic benefit of POPs phase out is the protection of human health from the adverse effects of POPs. The phase out of POPs would result to a healthy environment and well being of the population. Wild life will be healthy and natural biodiversity will be preserved. Water bodies and the atmosphere will be less contaminated and will promote the health of all living things in the environment.

The National Implementation Plan is the country's strategy to mitigate the health impacts of POPs. The projected defensive investment required over a 5-year period designed to reduce or eliminate POPs in the country is estimated at US$ 36.74 million. The cost estimates cover six basic types of cost items to effectively implement the action plans: (1) human resources, (2) facilities, (3) equipment, (4) services, (5) materials, and (6) miscellaneous costs. The cost estimates are based on the following key assumptions: a) the currency exchange rate is USD 1.00 to PhP 43.00 b) sixteen (16) regions in the Philippines are included in the regional plans and c) contingency factor of 20% is assumed for all costs.

CHAPTER 1 INTRODUCTION

1.1. THE STOCKHOLM CONVENTION

The Stockholm Convention (also referred to as the Convention) was adopted on 22 May 2001 and entered into force globally on 17 May 2004. Its main objective is to protect human health and the environment from POPs.

The Convention focuses initially on the following twelve chemicals that are grouped into three categories, namely:

- Pesticides aldrin, chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, endrin, heptachlor, mirex, toxaphene, and hexachlorobenzene (HCB)
- Industrial chemicals - Polychlorinated biphenyls (PCBs), HCB, and mirex
- Unintended by-products dioxins and furans, PCBs, and HCB

The Convention requires its Parties to take measures to reduce or eliminate releases from intentional and unintentional production and use of these chemicals. These measures include the development and implementation of action plans to be able to fulfill the Party's obligations to the Convention. In summary, Parties to the Convention are obligated to:

- Immediately ban production and use of all POPs pesticides except DDT
- Restrict the use of DDT for vector control and aim to phase it out over time
- Ban production and use of PCBs and hexachlorobenzene
- Phase out existing PCBs over the next 25 years
- Dispose stockpiles of unwanted POPs
- Reduce, with the ultimate aim of eliminating, unintentional POPs by-products (dioxins, furans, PCBs, hexachlorobenzene)
- Identify and manage contaminated sites.

In 2009 and 2011 new chemicals are covered by the Stockholm Convention. The Convention requires parties to comply with the SC obligations specified in Table 1.

Table 1.1a. Annexes to chemicals covered by the Stockholm Convention

2001			2009			2011
Annex A for Elimination	**Annex B for Restriction**	**Annex C Unintentional Production For Reduction**	**Annex A for Elimination**	**Annex B for Restriction**	**Annex C Unintentional Production For Reduction**	**Annex A for Elimination**
Aldrin	DDT	Polychlorinated dibenzo-p-dioxins and dibenzo furans	Alpha hexachloro-cyclohexane (a HCH) Beta hexacholo Cyclohexane (β HCH)	Perfluoro octane sulfonic acid, its salt (PFOA) and perfluoro octanesulfonyl fluoride (PFOS)	Penta chlorobenzene (PeCB)	Endosulfan

Chlordane		Hexachloro Benzene (HCB)	Chlordecone			
Dieldrin		Polychlorinated Biphenyls (PCBs)	Hexabromo biphenyl			
Endrin			Hexabromo diphenyl ether and haptabromo diphenyl ether (commercial octa PBDE)			
Heptachlor			Lindane			
Hexachloro benzene			Pentachloro benzene			
Toxaphene			Perfluorooctane sulfonic acid, its salts (PFOA) and Perfluoro-octanesulfonyl fluoride (PFOS)			
Polychlorinated Biphenyls			Tetrabromo diphenyl ether and pentabromo diphenyl ether (commercial penta PBDE)			

Parties to the Convention are obligated to adopt additional measures to include the development and implementation of action plans to:

- Immediately ban production and use of all the new POPs pesticides in 2009 Annex A.
- Immediately ban production and use of PFOS and PFOA, Hexabromobiphenyl, Hexabromodiphenyl ether and haptabromodiphenyl ether (commercial octa PBDE) and Tetrabromodiphenyl ether and pentabromodiphenyl ether (commercial pentabromodiphenyl ether) in 2009 Annex A.
- Restrict the use PFOS and PFOA in 2009 Annex B
- Reduce, with the ultimate aim of eliminating, unintentional POPs pentachlorobenzene in 2009 Annex C

- Identify and manage contaminated sites

Parties are also obliged to share information, promote information dissemination and awareness, and undertake research, monitoring and surveillance of future POPs.

The Convention recognizes that many Parties will need technical and financial assistance to meet their obligations. Parties will establish appropriate arrangements to provide technical assistance and promote the transfer of technology to developing country Parties and Parties with economy in transition to assist them in fulfilling their obligations.

1.2. PURPOSE OF THE NATIONAL IMPLEMENTATION PLAN

As a party to the Stockholm Convention on Persistent Organic Pollutants, the Philippines has prepared this updated National Implementation Plan that outlines the Government's programs to meet its obligations under the Convention, as well as to address the specific issues on POPs in the country. Specifically, the National Implementation Plan aims to:

- Outline the country's National Objectives for the reduction and elimination of POPs production, importation, use, and releases
- Define the country's priorities and position to reduce and eliminate POPs releases
- Design programs to remove barriers to the effective implementation of POPs phase out and release reduction measures under the Convention
- Plan programs for information exchange, public education, communication, and awareness raising
- Enhance capacity through capability building as required, including institutional strengthening, training, equipment, legal and regulatory measures, enforcement, monitoring, etc.
- Design programs to identify the need for any country-specific exemptions and, if necessary, prepare a report to the Convention justifying this need
- Outline the needs for transfer of technology and know-how and/or enhanced use and development of indigenous knowledge and alternatives and the estimated costs of needed investments

With the assistance of the Global Environment Facility (GEF) and the United Nations Industrial Development Organization (UNIDO), the Philippines, through the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR), implemented enabling activity projects to assist the country to identify the programs and measures the country can adopt to comply with its obligations to the Stockholm Convention.

1.3. THE RATIONALE OF THE NIP REVIEW AND UPDATE

Between 2009 and 2011, 10 new POPs were listed in the Stockholm Convention. To comply with the country's obligation under Article 7 of the Stockholm Convention, it is necessary to review the progress of the goals and programs for the old POPs in the NIP in 2006 and to update the NIP to include action plans for the new POPs.

1.4 . METHODOLOGY IN FORMULATING THE NATIONAL IMPLEMENTATION PLAN

Building upon the results of several POPs projects being implemented in the Philippines, the Updated National Implementation Plan was prepared taking into consideration the various aspects of Philippine environmental laws including gender sensitivity issues, other commitments in global environmental protocols and the priority needs in addressing POPs issues in the country.

To facilitate the update of the NIP, the Philippine government, through the DENR- EMB, implemented the following activities:

1. Engaged the services of a consultant group under the UNIDO POPs program to:
   a) assess the implementation of the action plans in the NIP of 2006 and identify gaps and priority areas of concern
   b) survey the historical and current use of the new POPs pesticides
   c) conduct an initial inventory of PFOS and PBDEs using the UNEP guidelines and to identify issues to address to make a more complete inventory
   d) survey public awareness of the new POPs
   e) identify areas of concern for the management of new POPs and identify priority action plans for management of the new POPs

2. Created the multi sectoral National Steering Committee (NSC) through S.O. No. 030 for the drafting of the final Updated NIP with members composed of government organizations, industry organizations and the academe. The members of the NSC include the Bureau of Import Services (DTI), the United Nations and International Organization (DFA), the Fertilizer and Pesticide Authority (DA), the Food and Drug Administration (DOH), the Environmental Protection Unit of Customs (BOC), the Industrial Technology Development Institute (DOST), the Commission on Higher Education, the Bureau of Working Condition (DOLE), the Philippine Chamber of Commerce and Industry (industry sector), the Samahan sa Pilipinas ng mga Industriya ng Kimika (SPIK) (industry sector) and the UP Natural Sciences Research Institute (academe).

3. Convened a series of NSC meetings to discuss the results of the activities of the consultant as the study was in progress

4. Convened the NSC to discuss the final draft of the updated NIP.

5. Finalized the updated NIP.

1.5. SUMMARY OF ISSUES ON POPs

In the NIP 2006, the following are identified as the most important issues on POPs:

- Completion of the inventory of POPs including stockpiles and wastes
- Identification and management of POPs-contaminated sites
- Monitoring and surveillance of health status relevant to potential impacts of POPs
- Screening, enforcement, and monitoring of present and potential POPs chemicals
- Management and disposal of POPs-contaminated equipment (PCBs)
- Enforcement of existing laws relative to dioxin and furan emissions
- Lack of understanding and knowledge on POPs
- Limited capacity to monitor dioxins and furans releases

These issues are attributed to weak enforcement of the existing policy and legal requirements, thereby resulting in a lack of compliance by the regulated communities. Weak enforcement has been attributed to lack of resources, namely: sufficient, knowledgeable, and skilled manpower, physical infrastructures, and most importantly financial resources. The low level of compliance, on the other hand, is rooted to the lack of awareness, knowledge, and competence of the regulated communities.

The most pressing issues identified in the NIP 2006 are the inventory and safe destruction of PCBs in the electric sector, the inventory of UPOPs and the low level of awareness of POPs of the general population and the concerned electric sector. The Integrated Management of Persistent Organic Pollutants (IPOPs) project was undertaken with the assistance of the World Bank to address these concerns.

At present, the country still faces most of the issues identified in NIP 2006.

With respect to the twelve initial POPs, the following are specific issues that need to be addressed:

1. Survey among farmers indicated the use of some of the banned POPs pesticides. Although the known POPs pesticide stockpiles collected by FPA were disposed of safely, more efforts have to be done to obtain a more comprehensive national inventory of stockpiles of initial POPs pesticides in the municipal levels.

2. The updated inventory of dioxins and furans indicated high contributions from open burning, manufacturing facilities and power plants. The development of the technical capability to verify dioxins and furans in these facilities is necessary to validate the inventory and to establish a more defined legal regulatory framework for dioxins and furan.

3. There are many potential contaminated sites with dioxins and furans including open dumpsites and landfills. A more comprehensive identification of contaminated sites with dioxins and furans is necessary to prioritize activities on awareness and education, environmental and health monitoring and BAT/BEP interventions.

4. The training activities under the IPOPs and UNIDO projects, have contributed to the greater awareness of PCB owners of the regulations of the Chemical Control Order (CCO) for PCBs. There is a need to put in place an efficient system for registration and monitoring of the

implementation of the CCO for PCBs.

With respect to the ten new POPs. The following issues are identified:

1. The initial inventory of PFOS based on importation data maybe overestimated because the system of labeling for imported categories of products identified by the UNEP Guidance on PFOS inventory that may contain PFOs, is not specific for articles in the same category that actually contain PFOS. A better system of labeling of products and substances containing new POPs within the GHS framework is necessary to obtain a more accurate initial inventory of imported POPs.

2. A regulatory action to ban the use of new POPs pesticides Lindane, Chlordecone and Endosulfan for all purposes is not yet done.

3. Verified reports on the availability of Endosulfan through illegal entry to the country calls for strengthening of border controls and surveillance.

4. The present awareness of PFOS and PBDEs as hazardous substances and the knowledge of the articles that may contain these chemicals are very low even for the industrial sector. Greater cooperation and coordination in the exchange of information between manufacturers, suppliers, importers, customs officials and end users should be facilitated by the SC.

5. The development of the technical capability in the country to identify PFOS in articles and contaminated sites is necessary to obtain a more accurate inventory of PFOS that will aid in the legal and regulatory action on the importation, use and disposal of articles with PFOS.

6. The efficient implementation of the regulations on the disposal of electronic waste is needed to safely dispose electronic parts that may contain PFOS and PBDEs.

Activities to increase the awareness level of POPs in different sectors of the population have been incorporated in the enabling activities under the IPOPs and UNIDO projects. However, there is still a need to intensify information dissemination to local government units, households and farmers about the listed pesticides and uncontrolled emissions of dioxins and furans.

Activities on environmental monitoring of POPs remain in the non-government and academic sectors. The EMB, as the regulatory body for POPs, has started acquiring the equipment for analysis of PFOS and Dioxins and Furans. A more regular monitoring of the environment and health impacts of POPs pesticides, PCBs, UPOPs and PFOs and PBDEs has yet to be organized.

1.6. STRUCTURE OF THE NATIONAL IMPLEMENTATION PLAN

The NIP document is divided into four parts:

Chapter 1 -- Introduction, which provides information about the commitment of the Philippines to the Convention.

Chapter 2 -- Country Baseline, which describes the profile of the Philippines and the present situation in the country with regard to POPs

Chapter 3 -- Goals and Action Plans of the National Implementation Plan

Chapter 4 -- Economic and Social Impacts of POPs and the National Implementation Plan

CHAPTER 2 COUNTRY BASELINE AND ASSESSMENT OF POPs ISSUES

2.1. COUNTRY BASELINE

2.1.1. COUNTRY PROFILE

The Philippines is an independent republic in the southeast rim of Asia with a land area of 300,400 sq. km. It is an archipelago lying about 966 km off the southern coast of Asia with over 7,000 islands, of which only 400 are permanently inhabited,. The archipelago is bounded by West Philippine Sea, Pacific Ocean, Sulu Sea, and Celebes Sea.

Fig.2.1.1a Map of the Philippines

The islands are grouped into three geographic regions, namely: Luzon, Visayas, and Mindanao. Figure 2.1.1a shows the map of the Philippines.

The Philippines has the longest discontinuous coastline in the world around 34,600 km. Marine life and coral reefs are abundant in the waters around the Philippines, supporting a major fishing industry in the coastal waters. There are 132 rivers and 59 lakes, which serve as valuable sources of fish, transportation, and irrigation water.

The population in 2010 is 92, 337,852 with an average growth rate of 1.9%

2.1.2. POLITICAL AND ECONOMIC PROFILE

The three geographic regions of the country are Luzon in the north, Visayas in the central region, and Mindanao in the south. It has 17 political regions, 79 provinces, 115 cities, 1,495 municipalities, and 41,956 barangays or villages.

Executive authority is vested on the President of the Philippines. Legislative authority is vested on the Congress of the Philippines, which consists of the Senate and the House of Representatives, except to the extent reserved to the people by the provision on initiative and referendum. The Senate is composed of 24 members elected nationwide and limited to two consecutive six-year terms while the House of

Representatives consists of 195 elected members and 17 sectoral representatives. They are limited to three consecutive three-year terms. Judicial authority is vested on the Supreme Court and such lower courts as may be established by law. The barangays, municipalities, cities and provinces are the official components of the country's local government units (LGUs). The governance and administration of the LGUs are provided with local autonomy. Most national programs are implemented by the LGUs by virtue of decentralization of services as provided by Republic Act 7160, otherwise known as the Local Government Code of the Philippines.

The Philippines is still a developing economy and an emerging market. Agriculture, Industries and Services are the major contributors to the economy with 12.4%, 31.3% and 56.4% respectively. Table 2.1.2a shows some economic indicators for the Philippines (NSO, 2013) and Table 2-1-2b shows the growth rate of the important economic activities in 2012 and 2013.

Table 2.1.2a. Economic indicators for the Philippines

INDICATOR	3Q 2013	3Q2012
Gross National Income, % Growth	7.8	7.3
Gross Domestic Product, % Growth	7.0	7.3
Export, US$ millions	4292	3611
Imports, US$ millions	4824	5277
Headline Inflation Rate, %	4.1	3.0
Core Inflation Rate, %	3.2	2.9
Underemployment Rate, %	17.9	19.0
Unemployment Rate, %	6.5	6.8

Table 2.1.2b. Growth rate of important economic activities in 2012-2013

Industry	Annual Growth Rate	
	2011-12	2012-13
1. AGRI., HUNTING, FORESTRY AND FISHING	**2.8**	**1.1**
a. Agriculture and forestry	3.6	1.2
Crops as rice, corn, coconut, and sugar, vegetables and fruits		
Poultry and livestock		
b. Fishing	-0.4	0.7
2. INDUSTRY SECTOR	**7.3**	**9.3**
a. Mining & Quarrying	2.2	1.2
b. Manufacturing	5.4	10.3
Food and beverage		
Wearing Apparel and footwear		
Handicrafts & Furniture		
Machinery		
Petroleum products and coal for power generation		
Chemicals for drugs and personal care		

Electronics, including semi-conductors		
Iron and steel		
c. Construction	18.2	9.6
d. Electricity, Gas and Water Supply	5.3	4.9
3. SERVICE SECTOR	**7.4**	**7.2**
a. Transport, Storage & Communication	8.1	5.6
b. Trade and Repair of Motor Vehicles, Motorcycles, Personal and Household Goods	7.6	5.7
c. Financial Intermediation	8.2	12.6
d. R. Estate, Renting & Business Activities	6.4	8.7
e. Public Administration & Defense; Compulsory Social Security	5.7	3.8
f. Tourism and Other Services	7.6	7.1
GROSS DOMESTIC PRODUCT	**6.8**	**7.2**
GROSS NATIONAL INCOME	**6.4**	**7.5**

2.2. EXISTING LEGISLATIONS AND REGULATIONS ADDRESSING POPs

The Philippines became a party to the Convention on February 27, 2004. On May 27, 2004, the Convention entered into force in the Philippines.

There are a number of legal and regulatory issuances that address POPs. These are:

1. **Presidential Decree 1144 - Creating the Fertilizer and Pesticide Authority and Abolishing the Fertilizer Industry Authority**
   Included in the mandate of FPA is to regulate and monitor production, importation, distribution and use of pesticides and other agricultural chemicals in the country.

2. **Republic Act 6969 or The Toxic Substances and Hazardous and Nuclear Wastes Control Act**
   This law regulates, restricts, or prohibits the importation, manufacture, processing, sale, distribution, use, and disposal of chemical substances and mixtures that present unreasonable risk and/or injury to health or the environment; prohibits the entry, even in transit, of hazardous and nuclear wastes and their disposal into Philippine territorial limits for whatever purpose.

3. The Department of Environment and Natural Resources issued Administrative Order 29, Series of 1992, which covers the Implementing Rules and Regulations of Republic Act 6969. Under this order, the Priority Chemical List requires registration of chemicals that pose unreasonable risk to public health, workplace, and the environment. Of the 12 initial POPs chemicals, three are included in the Priority Chemicals List and these are PCB, Mirex, and Hexachlorobenzene.

4. The Chemical Control Order (CCO) for PCB which took effect on March 2004. The CCO for PCBs provides guidelines for the phase out of PCBs and PCB-containing materials. It aims to reduce and eliminate the importation, manufacture, sale, transfer, distribution, and use of PCBs, PCB equipment,

PCB-contaminated equipment, non-PCB equipment, PCB articles, and PCB packaging and to regulate the transport, treatment, and disposal of PCBs and PCB wastes, to protect human health and the environment. The CCO for PCB establishes requirements, procedures, and limitations for the importation, manufacture, use, and proper treatment, storage, and disposal of PCBs, PCB equipment, PCB-contaminated equipment, non-PCB equipment, PCB articles and PCB packaging, and subsequent release of PCBs and PCB wastes. It also requires the establishment of a compliance monitoring program to enforce the provisions of the Order.

5. Republic Act 8749 or The Philippine Clean Air Act of 1999

The only regulation which has explicit provisions on the reduction and measurement of dioxins and furans releases into the environment from various sources. It sets the standard concentration limit in air for the emission of dioxins and furans at 0.1 nanogram per normal cubic meter (ng/Nm3) for treatment facilities using non-burn technologies.

6. Republic Act 9003 or The Ecological Solid Waste Management Act of the Philippines

Through Section 48 of the Prohibited Acts of Republic Act 9003, open burning of solid wastes is strictly prohibited. Segregation and sorting of solid wastes will result in the recycling and re-use of materials that are precursors in the formation of unintentional POPs (like plastics and other chlorine-containing materials). The common practice of open burning of household wastes and agricultural residues contribute greatly to the releases of dioxins and furans in all environmental media. Industries under the Act are encouraged to adopt pollution prevention/cleaner production measures, which should also assist to reduce or eliminate releases of unintentional POPs.

2.3. ROLES AND RESPONSIBILITIES GOVERNMENTAL INSTITUTIONS INVOLVED IN POPs MANAGEMENT

The two agencies that are mandated to address intentional and unintentional POPs are the Environmental Management Bureau (EMB) and the Fertilizer and Pesticide Authority (FPA). Brief summaries of their functions are presented below:

Environmental Management Bureau of the Department of Environment and Natural Resources

- Most of the environment laws are implemented by the EMB as a line bureau, and enforcement and compliance monitoring are being executed by its Regional Offices in 16 Regions of the country.

- Under Republic Act 8749, the EMB is tasked to establish the inventory of all POPs sources in the country and develop short-term and long-term national government programs for its reduction and elimination, particularly the unintentional POPs

Fertilizer and Pesticide Authority of the Department of Agriculture

- Through Presidential Decree 1144, the FPA is mandated to regulate and monitor production, importation and use of pesticides and other agricultural chemicals in the country.

- FPA is mandated to register and issue licenses to pesticide importers, formulators, and reformulators.

2.4. POPs PROJECTS IN THE PHILIPPINES

The Philippines availed of the funding assistance provided by the Global Environment Facility for capacity building on the regulatory framework, monitoring and phase out of POPs. The country also participated in regional initiatives to enhance its technical capability to generate environmental data on POPs. Table 2.4.1 lists the foreign-assisted POPs projects in the Philippines.

Table 2.4.1. List of foreign assisted POPs projects in the Philippines

Funding Agency Name of Project/ Implementing Agency Date of Implementation	Objective(s)	Project Activities	Current Status	Planned Activities until the end of Project
1. GEF- World Bank Integrated POPs Management EMB (2010-2017)	To reduce Dioxins/ Furans, and to phase-out PCBs, and Contaminated Sites To conduct research/study on POPs and contribute to chemical management policies.	The IPOPs project is comprised of Components 1-4 that deal with programs on D/F, PCBs and Contaminated Sites and of Component 5 that deals with the management of the implementation of the project (enumerated below)	Capacity building activities for effective management of POPs and for policy formulations related to POPs are on-going	Restructuring is being proposed as part of the Medium Term Review (MTR) to adopt and address the current gaps and to effectively implement the target objectives and deliverables. Sustainability Plan shall be required for each of the Components' deliverables and for the project as a whole.
Component 1 Strengthening Regulatory Framework and Capacity Building for POPs Monitoring	To strengthen the regulatory and monitoring capacity for phasing out POPs use and for reducing POPs exposure and releases.	Development of an Executive Order (E.O.) for POPs The completed Draft Guidelines from each Components 2-4 will be endorsed to Component 1 for possible EO.	The revised CCO for PCBs with updated schedule of PCB phase out in December 31, 2019 has been recommended. Guidelines for Contaminated Site Identification, Remediation and Site Control have been drafted for approval of EMB. The capacity of EMB to monitor POPs to support the regulatory	EMB is planning to set up a laboratory for D/F PFOS/PFOA to support its own monitoring activities to strengthen its regulatory function. A national health monitoring program is being organized under this project.

			framework is being strengthened. One EMB technical personnel has undergone training for analysis of D/F in Woodshole Laboratory in the U.S. The EMB central laboratory is to provide space and equipment for POPs analysis.	
Component 2 Reduction of Releases of Unintentionally Produced POPs	To improve the understanding of UPOPs products of industrial processes or incomplete burning To demonstrate how such releases from open burning of solid waste can be reduced.	Update the National Inventory of Dioxins and Furans. Demonstration of application of BAP/BEP in reducing dioxins and furans in dumpsites and open burning.	Completed the 3rd National Inventory for Dioxins and Furans using the latest UNEP Toolkit. The Inventory is targeted for publication by August 2014. The target activity of establishing local emission factors was not pursued. Depending on compliance with the Social Development Plan (SDP) requirement of the project, the LGUs of Legazpi, Cabanatuan, Butuan, Bacolod, and General Santos may receive funding to apply BAP/BEP to stop and prevent combustion of solid wastes at their identified dumpsites (100% level) and at source communities (25% level)	Under this component, new proposals are being prepared to replace the activity and objective on Establishment of Emission Factor

Component 3 Management of Polychlorinated Biphenyls (PCB)	To assist 800 PCB owners in phasing out PCBs in an environmentally safe manner To strengthen the DENR oversight function of the on-site management practices of PCB owners.	Training of PCB owners on the following: - Registration in the EMB database - Identification and inventory of PCB equipment - Environmentally safe management of PCBs - Requirements and schedule of complete treatment of PCBs and PCB waste according to the revised CCO for PCBs. Training of EMB staff on the validation of the management reports submitted by PCB owners in compliance with the CCO for PCBs.	PCBs Trainors Training for 40 multi stakeholders' representative was held in Subic Bay. These trainors conducted the training of PCB owners. Nineteen (19) trainings were conducted to PCB owners on registration, inventory of PCB equipment environmentally safe management of PCBs and the requirements of the revised CCO for PCBs. Around 230 PCB owners have registered in the new database and have submitted inventory of PCB equipment. Training for Enforcers (EMB CO & Ros) of the CCO for PCBs that will focus on monitoring of PCB inventory and PCB Management Plan of PCB owners will be done this September, 2014.	Submission and implementation of their management plans. Sustain the validation of the reports of the PCB owners on inventory and PCB management towards the achievement of complete phase out of PCBs.
Component 4 Identification and Remediation of POPs Contaminated Sites	To strengthen the country's enabling capacity to reduce the risks posed by environmental POPs contamination by identifying contaminated sites; establishing a strategic	Formulate a guideline for identifying POPs contaminated sites Formulate a guideline for site remediation and site control	The guideline for the conduct of national inventory of contaminated sites was drafted. The guideline for the Site Remediation and Site Control was drafted	The project plans to demonstrate Site Control Measures in two selected contaminated sites. Site remediation will be done at Wagner Aviation, Subic Bay Freeport Zone under the administration of Subic Bay Management Authority (SBMA)

	framework, technical guidelines, and professional capacity to help address them; and building public knowledge and awareness		Ten contaminated sites have been identified as contaminated sites and are potential sites for remediation.	
2. GEF-UNIDO Non Com Project UNIDO and EMB 2009 2014	To deploy a commercially available, proven non-combustion technology to address 1,500 tons of PCBs (PCB-contaminated oil and PCB-containing equipment).	Build and commission the non combustion sodium based de-chlorination technology of Kinetrics, Inc., a Canadian-based company Conduct Pre-project activities on: a. Environmental monitoring for trace metals, VOCs, SVOCs in sites around and within the facility b. Inventory of PCB equipment and oil for potential treatment in the facility c. IEC campaign for awareness of POPs, and support for the operation of the facility	In November 2011, the commissioning of the Non-Com POPs Facility started, and until March 2014, the following have already been treated in the facility: - 51.75 tons of low level PCBs ranging from (40-10,000 mg/kg) were treated to less than 2 ppm - 128-kg of high level PCB (Askarel, 450,000 mg/kg Aroclor 1260) was treated to less than 2 ppm - 208.6-kg of pure PCBs were treated to less than 2 ppm - Decontamination of 5.4 tons of PCBs-containing equipment to less than 10U g/100 cm2	The facility will accept PCBs from PCB owners for destruction
3. GEF-UNIDO Best Available Techniques and Best Environmental Practices (BAT/ BEP) in fossil fuel-fired utilities and industrial boilers in	To reduce POPs releases by building capacity toward the implementation of BAT/BEP measures for fossil fuel-fired utilities and industrial boilers.	Pilot demonstrated BAT/BEP in a coal-fired power plant in Zambales Pilot-tested a newly developed boiler technology curriculum for engineering students of the	Submitted for publication Study on Market and Trends on the Use of Wood and Biomass as Boiler Fuels in the Philippines On going efficiency	Training to be conducted on future trainers and the academe (i.e. teachers, professors) on "Green Boiler" technology

response to the Stockholm Convention on POPs UNIDO/EMB 2011-2014 Project Extension up to 2015		University of Sto. Tomas. Training on Safe Operation and Maintenance of Boilers for Boiler Operators	monitoring of the Pilot site's boilers	
4. GEF-UNIDO NIP Review an Update Project EMB/UNIDO/ De La Salle University 2012-2014	To update and review the National Implementation Plan (NIP), and have it endorsed and submitted by the Government to the COP of the Stockholm Convention.	Review the 2006 NIP Prepare the Initial Inventory of the New POPs Conduct the priority setting of the action plans for the updated NIP	The first draft of the updated NIP has been reviewed by the National Steering Committee (NSC) for Updating the NIP The draft is undergoing a second review by the NSC.	Action Plans cited in the Updated NIP for the next 5 years will be monitored and part of the work and financial plan (WFP) of the Chemical Management Section (CMS).
4. MINISTRY OF ENVIRONMENT OF JAPAN Monitoring POPs in Air in SEA EMB/UP/SRI-Research and Analytical Services Laboratory (continuing from since 2005)	To enhance the capacity of the country to monitor POPs in air To generate data on POPs in air in the background sampling site and to contribute to the regional data for the Global Monitoring obligation to the SC	Training of the staff of EMB and UP NSRI on sampling POPs in ambient air Analysis of air samples in Japan Environmental and Sanitation Center.	Monitored Organochlorine Pesticides in Mount Sto Tomas in Benguet in 2006 and 2011 and submitted the data to the East Asia regional monitoring network. Monitoring of OCPs in background air is on going in other countries assigned to generate data for this year and additional monitoring for dioxins and furans for some members with the capacity to analyze D/F	As part of the regional network the country is tasked to initiate the development of the analytical method for PFOS/ PFOA in air. The participating countries are encouraged to develop the testing capability for POPs in air and are expected to be able to do the sampling and monitoring of POPs in air independently; to be able to continue contributing to the Global Monitoring Program of the SC.

6. UNITED NATIONS UNIVERSITY (TOKYO) UNU Regional Monitoring of POPs in East Asian Hydrosphere UP/NSRI-Research and Analytical Service Laboratory (continuing since 1999)	To enhance the capacity of the country to monitor POPs in the coastal hydrosphere To generate data on POPs in water, sediments and biota and contribute to the regional data on POPs in the hydrosphere	Training of the staff of UP NSRI on the analysis of OCPs in water, sediments and biota, PCBs in water, PBDEs in sediments and PFOS in water using analytical methods that are harmonized for the region. Contribute POPs environmental data to the regional data base at UNU.	The Philippines has contributed environmental data on POPs to the UNU since 1999. The most recent data submitted were on PFOs/ PFOA in industrial effluents and river water in 2014.	The regional network continues to meet annually to discuss the results of the monitoring project of the year and to plan for the monitoring project for the next year. The network decides on what analysis to monitor depending on the demand for the capacity building based on the chemicals listed by the SC. The capability gained by the project is available to other groups interested to conduct the POPs analysis by training or consultation. The data generated by the project is shared to EMB (Focal Person of the SC) as possible tool to help manage POPs in the country.

2.5. ASSESSMENT OF THE POPS ISSUE IN THE PHILIPPINES

This section provides information on the present status and progress of compliance of the country to its obligation to the SC.

2.5.1. Present Status (2013) of the Nine Initial Pesticides

a. Regulatory Enforcement

· Through a number of Fertilizer and Pesticide Authority circulars, six of the nine POPs pesticides were already banned, Aldrin, Endrin, Dieldrin, Heptachlor Toxaphene were banned in 1989 and Chlordane was banned in 1999.

· In 2005, DDT was officially banned by FPA at the request of the Department of Health.

· Mirex and hexachlorobenzene have yet to be officially banned.

b. Stockpiles

The NIP 2006 reported the pesticides stockpile in Table 2.5.1a

Table 2.5.1a. Stockpile of initial pesticides in NIP 2006

Pesticide	Storage Area	Quantity
Aldrin	FPA Central Office	2 L
Chlordane	FPA Central Office	58 L
Chlordane	Zuellig Warehouse	58 L
Other pesticide mixture	Various FPA Warehouses	21,457 L
DDT	DOH Regional Office	1,116 L

· In August 2008 all confiscated banned, unregistered and fake pesticides were transported to the Integrated Waste Management, Inc. in Trece Martirez, Cavite for disposal through high thermal combustion (FPA Report). Included in this disposal are the stockpiles of POPs Aldrin and Chlordane under the care of the FPA office and the 58 liters of Chlordane at Zuellig warehouse. All the identified stockpiles for the POPs pesticides in the 2006 NIP except for DDT have been disposed.

· The 1,116 kg of DDT stockpile identified at DOH in the 2006 NIP is tracked in an unverified report to be under the jurisdiction of the Administrative Region in Muslim Mindanao (ARMM). There is no available information if this stockpile has been disposed.

c. Importation

· There are no importation data for the 9 initial POPs pesticides from 2004 to the present. Several POPs pesticides are recorded with the same AHTN Code. Aldrin, Chlordane and Heptachlor were listed under same code of 2903.82.00; DDT and Hexachlorobenzene were listed with same code of 2903.92.00. The system of coding makes it difficult to track the importation of individual POPs through the Bureau of Customs (BOC) records.

· The capacity of the BOC and the Philippine Coast Guard to check and regulate the entry of prohibited goods is limited. Interviews indicate that illegal chemicals are also smuggled into the country through identified "backdoors" such as Zamboanga, Tawi-Tawi, Ilocos Region, and Batanes. Pesticides entered through the backdoors, if any, are stored in small distributor warehouses in the provinces. It is not clear whether these distributors are FPA- registered.

d. Use

· Surveys among farmers conducted in 2006 revealed that DDT, dieldrin, endrin and chlordane were still used even after they were banned.

· A report from fishpond communities by the NGO Fisherfolk Toxics in July 2005 to April 2006 indicated that aldrin and heptachlor were still occasionally used and were still sold openly and discreetly.

e. Environmental Monitoring

· Information on contamination of various environmental matrices with the banned POPs pesticides was obtained from monitoring studies conducted by various researchers.

· Traces of DDT (0.53± 0.28 ng/g) and chlordane (0.26± 0.28ng/g) were detected in sediments in Manila Bay (Carvalhoe et al, 1999. Arch Environ Contam Toxicol, 57, 348358). Monitoring of sediments in Laguna rivers between 2003-2005 showed endrin and metabolites at 89-155 ng/g and dieldrin at 6-7 ng/g. In the same study, sediments in Pangasinan rivers showed gamma BHC at 20-39 ng/g and endrin and metabolites at 11-24 ng/g (Santiago, E. Landbase, UNU data base on Monitoring of POPs in the East Asian Hydrosphere, report from the Philippines).

·The environmental baseline survey for the Non Combustion Facility detected in marine sediments the OCPs alpha chlordane (0.07 µg/g), heptachlor (0.041 µg/g) and heptachlor epoxide (0.091µg/g) at the PNOC outfall, gamma BHC (lindane ? µg/g) and heptachlor epoxide (0.0100µg/g) at the mouth of Lamao River, beta-BHC (0.005µg/g), delta-BHC (0.021µg/g), alpha chlordane (0.006µg/g), heptachlor (0.104µg/g), heptachlor epoxide (0.016µg/g) at the Resettlement Area and delta BHC (0.007µg/g) and Heptachlor Epoxide (0.007µg/g) near the Jetty area. The concentrations of OCPs in groundwater measured in resettlement area, Batangas II and resettlement spring were 0.16 µg/L, 0.59 µg/L and 0.37 µg/L respectively. (Ref: Report on Environmental Sampling for the Non Combustion Facility)

· Recent surveys of rivers in Davao (Quijano et al, 2012, Interface Development Interventions) showed high concentrations of some OCPs in water: aldrin (7.71 ng/L) DDT and metabolites (1-52 ng/L), dieldrin (12-31ng/L), heptachlor/heptachlor epoxide (0.86-1.0 ng/L) and endosulfan sulphate (24 ng/L).

· Survey of organochlorine pesticides in air in Davao in 2012 (Quijano et al, 2012, Interface Development Interventions) reported concentrations for aldrin (27 ng/m3), gamma chlordane (24 ng/m3), dieldrin (58-89 ng/m3), endrin ketone (85-115 ng/m3), heptachlor /heptachlor epoxide (42-137 ng/m3), and DDT and metabolites (40-138 ng/m3). On the other hand, a survey of organochlorine pesticides in air in Mt Sto Tomas, Baguio, considered the background site of the country for pollution studies, detected trans chlordane (6.5 ng/m3), cis chlordane (3.96 ng/m3), trans nonachlor (3.11 ng/m3), heptachlor (2.23 ng/m3), dieldrin (0.97 ng/m3) and DDT and metabolites (0.03-0.82 ng/m3) (Santiago, E. 2011. POPs in Air in East Asia Country report from the Philippines). This survey also detected a very high concentration of hexachlorobenzene (104 ng/m3) which could be attributed to unintentional release possibly from other sources since this is not registered in the country as a pesticide.

· The traces of pesticides found may be remnants of usage prior to banning, considering that these pesticides are persistent. Nonetheless, the possibility cannot be discounted that banned pesticides are still being used.

2.5.2. Present Status of PCBs (2013)

a. Regulatory Enforcement

- The CCO for PCBs is the main regulatory enforcement framework to comply with the country's obligation to PCBs in the Stockholm Convention. The CCO on PCBs set and reiterate the phase-out of PCB equipment by 2014.

- A Memorandum Circular for PCBs, Supplemental Guidelines for the Chemical Control Order (CCO) for Polychlorinated Biphenyls (PCB) was already drafted and for approval.

- The DENR, through EMB issued an administrative order DAO 2013-22, *"Revised Procedures and Standards for the Management of Hazardous Waste (Revising DAO 2004-36)"*. This procedural manual applies to management of PCBs wastes.

- The *"Code of Practice on the Management of PCBs"*. was published in November 2008 by DENR as part of the support component of the Non Com POPs Project to serve as a guide to the identification, removal, handling, storage, treatment and disposal of PCB wastes, including tools and strategies to manage the environmental and health impacts associated with these wastes.

- The DENR-EMB is undertaking the World Bank-assisted Integrated POPs Management Project to achieve the country's goals for PCBs, This project would speed up the completion of the national inventory of PCBs, assist the PCB owners in the environmentally sound management (ESM) and disposal of PCBs, and strengthen EMB's capability to validate the reports submitted by the PCB owners and enforce the CCO.

b. Stockpile

- The NIP 2006 reported an inventory of 7,840 units of transformers with 84.1 % coming from electric utilities (Table 2.5.2a). In this report, 12.9 % are in servicing facilities for decontamination. The initial inventory indicated that a total of 2,400,560 kg PCB oil were present from different industrial sectors. (Table 2.5.2b)

- The NIP 2006 reported a total of 2,401 tons of PCB oil and 4,479 tons of PCB equipment (dry weight). The bulk of PCB equipment is with the electric utilities, comprising of 1,309 tons PCB oil and 2,788 tons of equipment (dry weight). About 95.0 % of the PCB oil accounted for this industry is assumed PCB while 5.0% of the oil was positively identified as PCBs. Approximately 19% of the assumed PCB oil from the electric utilities is stored in drums. This stockpile is based on survey/projection.

Table 2.5.2a. Transformer equipment in the initial survey in NIP 2006

Source Category	In Use		Out of Service		For Decontamination		Total	
	Units	%	Units	%	Units	%	Units	%
Electric Utilities	6,484	97.4	118	66.0			6,602	84.1
Commercial Buildings	13	0.2	12	6.7			25	0.3
Industrial Establishments/ Manufacturing Plants	150	2.3	35	19.6			185	2.4
Military Camps and Bases	6	0.1	5	2.8			11	0.1
Servicing Facilities					1,017	100	1,017	12.9

Table 2.5.2b. Stockpile of PCBs in the initial survey in NIP 2006

Industry Categories	PCB Oil (kg)	Equipment Dry Weight, kg	Total Weight, kg
Electric Utilities and Cooperatives	1,620,310	2,788,040	4,408,350
Commercial Buildings	34,723	83,454	118,177
Industrial Establishments/ Manufacturing Plants	525,399	1,098,726	1,624,125
Military Camps and Bases	3,516	8,204	11,720
Servicing Facilities	191,397	445,121	636,518
Hospitals	25,215	55,191	80.406
Total	2,400,560	4,478,736	6,879,296

Table 2.5.2c. Summary of PCB inventory for all companies/entities in 2010

Source Category	No. of Equipment Containing PCB	No. of Non-PCB Equipment	No. of Free-PCB Equipment	No. of Equipment with Unknown PCB Concentration	Total Weight of Equipment Containing PCB Oil (kg)	Total Quantity of PCB Wastes Generated (kg)
Manufacturing	17	1,859	1,872	7	17,404.00	1,290.24
Power Generation	25	2,069	2,093	24	71,611.73	130,812.60

Electric Distribution	948	52,917	53,865	940	160,694.63	222.00
Sale/ Distribution of Electrical Rquipment	0	71	71	0	0.00	0.00
Retrofilling/ Retrofitting of Transformer	0	0	0	0	0.00	0.00
Waste Storage/ Treatment/ Disposal	0	6	6	0	0.00	0.00
Waste Transport	0	6	6	0	0.00	0.00
Commercial Buildings	1	2	3	1	0.00	0.00
Others	15	2,483	2,493	15	0.00	129,676.60
Total*	1,005	58,048	59,043	986	249,710.36	262,001.40

- Based on the registration of PCB owners submitted as compliance to CCO, the inventory of PCBs in 2010 showed that the electric sector contributes to 64% of the total weight of equipment containing PCB oil followed by the power plants at 29% and the manufacturing sector at 7 % (Table 2.5.2c). The partial registration indicated that the biggest contributors to PCBs come from electric distribution, power plants and manufacturing plants.

- The inventory of the transformer units from the Cco registration in 2010 indicated a total of 11,900 transformers against the 7,840 units from the initial inventory in the NIP 2006. In the 2010 inventory, 98% (117,091 units) are PCB free and Non-PCB transformers while 2% (1991 units) contained PCB oil or contaminated with PCB oil.

- The information in the registration for CCO compliance is being updated to reflect the classification of the transformer equipment according to its PCB content; whether it is a PCB equipment (PCB>500 ppm, PCB containing equipment (50 ppm < PCB < 500 ppm), non PCB equipment (2 ppm = PCB < 50 ppm), or PCB-free equipment (PCB < 2 ppm) determined by testing.

- From the partial CCO registration in 2010, there were 249,710.36 kg of transformers with PCB oil and 249,710 kg of PCB wastes. The registration data are raw, as submitted by industry. Some of the data have yet to be validated (part of the WB-IPOPs project is to train the Regional Offices to validate the data being submitted by industries). The low registration of equipment may be due to the following reasons

  a. Suspected PCB equipment were not considered;
  b. Not all transformers or equipment were disclosed by industry due to lack of awareness;

c. Some of the old transformers could not be accounted for.

- The completion of the National Inventory of PCBs is being conducted under the World Bank assisted project Integrated POPs Management (IPOPs). There is an on-going updating of the database for PCB under the IPOPs Project. The target number of companies to be inventoried is 800. The PCB owners are being trained on data handling to update the database.

- The PCB stockpile of 1700 MT was generated in 2010 by the Haz-Waste section of EMB to provide a basis for feasibility of establishing the non combustion PCB treatment facility. This stockpile was based on reports from 20 PCB owners and other CCO registrations where the presence of PCBs was validated with testing.

- A non burn technology PCB treatment facility is available locally for disposal of PCB oil. The facility (Fig. 2.5.2-1) was constructed under the GEF/UNIDO/DENR-EMB/PNOC-AFC cooperation. The technology applied for destruction (sodium dechlorination) is capable of reducing the concentration of PCB oil down to 2 ppm concentration as required by local regulation. The PCB destruction facility is still on trial commissioning stage; the facility is not yet on commercial operation but is expected to be fully operational in 2014.

Fig. 2.5.2-1. The Non-Combustion PCB destruction facility in Mariveles, Bataan

c. Importation

- Pursuant to the Chemical Control Order (CCO) for PCB of the DENR-EMB, importation of PCB or equipment containing PCBs are already banned since March 19, 2004. The Bureau of Customs monitors incoming equipments such as transformers and ensures that they are PCB free as defined in the CCO.

d. Use

- The partial registration of PCB owners in 2010 through the CCO for PCBs showed that 1991 equipment are contaminated with PCBs. The extent of the use of equipment with PCBs is expected to increase as the inventory becomes more expanded.

e. Environmental Monitoring

- A survey of the PCB concentrations in water from selected sites in Pasig River and Laguna Lake showed that the total concentrations of PCBs from all the sampling sites increased during the second sampling. In Pasig River, the concentrations increased from a range of 0.9-12.2 ng/L in the samples collected in August, 2009 to 2.5-32.8 ng/L in the samples collected in November. The same trend was observed in Laguna Lake where the concentration range increased from 0.1-0.9 ng/L to 2.0-10.9 ng/L. The increase in the PCBs concentrations in water was attributed to the inundation of the soil of most part of the Greater Manila Area by the big flood event in September, 2009 (Santiago E. Polychlorinated Biphenyls in Selected Sites in Pasig River and Laguna Lake in the Philippines Before and After a Big Flood Event Investigated under the UNU East Asia Regional POPs .Bull Environ Contam Toxicol (2012) 89:407411)

- The 2011-2012 environmental monitoring of the communities around the PCB Non Combustion treatment facility showed that PCBs were not detected in soil, surface water and groundwater in all the sampling sites. DENR-EMB measured the concentrations of PCBs in marine sediments at 0.2 ìg/g, 0.36 ìg/g, 1.08 ìg/g and 0.30 ìg/g for the Jetty Area, mouth of Lamao River, PNOC outfall and the resettlement area respectively. (Ref: Report on Environmental Baseline sampling for the Non Combustion Facility)

Fig.2.5.2-2. Sampling teams collecting samples of sediments and water for the baseline environmental analysis for the Non Combustion Facility

2.5.3. Present Status of Dioxins and Furans (2013)

· A survey of economic sectors that could contribute to unintentional releases of POPs reported in the NIP 2006 indicated that there are 4,610,000 farm lands all over the country, a total of 203 paper and paper products manufacturing facilities, 2,821 fuel burning facilities, 99% of which are industrial manufacturing facilities, 23 cement factories, 68 registered hazardous waste facilities, 734 open dump sites and 262 controlled dumpsites.

· As of March 2014, 602 open dumpsites and 321 controlled dump facilities were identified.

a. Regulatory Enforcement

- The policy regulation on dioxins/furans is included in the Clean Air Act (RA 8749). The law provides that the emission of dioxins/furans into the air shall be reduced by the most progressive

techniques: Provided, further, that all average of dioxins and furans measured over the sample period of a minimum of 5 hours and maximum of 8 hours must not exceed the limit value of 0.1 ng/m^3

- To enforce this regulation, adequate personnel and hardware capacity should be set up. As part of the plan to build up the capacity to monitor dioxins and furans to support its regulatory function, one member of the laboratory staff was sent for training on dioxin analysis under the GEF/UNIDO/DENR-EMB Project

b. Inventory

- The consolidated dioxins and furans inventory conducted using the UNEP Toolkit in 2003(Table 2.5.3a) yielded 534.06 g toxic equivalent per annum (TEQ/a) as total annual releases to all environmental compartments. Uncontrolled combustion processes emitted the highest levels with 187.05 g TEQ/a or 35 % of the total annual releases. This is followed by power generation and cooking (157.23 g TEQ/a), and production of chemicals and consumer goods at 91.56 g TEQ/a.

- Uncontrolled combustion processes was found to be contributing to releases to three environmental media, namely, air, land, and residues.

- The consolidated Dioxins and Furans inventory in 2013 (Table 2.5.3b) showed an increase in the total release at 779.529 gTEQ/a from all the sources. Open burning accounted for 59% (438.54 gTEQ/a) followed by disposal/landfill at 33% (255.06 g/TEQ/a).

- The biggest release is in the air with total of 431.996 gTEQ/a; 87% from open burning 4% from ferrous and non-ferrous metal production and 3% from power generation and heating.

Table 2.5.3a. National inventory of Dioxins and Furans in 2003

Group No.	Source Groups	Annual Releases (g TEQ/a)					
		Air	Water	Land	Product	Residue	Total
1	Waste Incineration	37.830	0.000	0.000	0.000	3.7188	41.5508
2	Ferrous & Non-ferrous Metal Production	8.664	0.000	0.000	0.000	1.8884	10.5525
3	Power Generation and Heating	142.84	0.000	0.000	0.000	14.3892	157.23
4	Mineral Products	2.5345	0.000	0.000	0.000	0.0377	2.5722
5	Transportation	0.1158	0.000	0.000	0.000	0.000	0.1158
6	Open Burning	135.45	46.858	0.000	0.000	4.7303	187.085
7	Product & Use of Chemicals & Consumer Goods	0	0.5995	0.000	77.640	13.225	91.562

8	Miscellaneous	0.2301	0.000	0.000	0.000	0.0007	0.2308
9	Disposal/Landfill	0.000	43.202	0.000	0.000	0.0000	43.202
10	Contaminated Sites and Hot-Spots				0.000		0.000
Total		327.675	43.801	46.858	77.640	38.087	534.061

- The D/F inventory of 2013 shows that the major sources of dioxins and furans in the Philippines at present are uncontrolled combustion or open burning of wastes and disposal and landfill facilities. The ferrous and non ferrous production and power generation contributed a combined 7% of the total release (55.81 gTEQ/a).

Table 2.5.3b. National inventory of Dioxins and Furans in 2013

Group No.	Source Groups	Annual Releases (g TEQ/a)					
		Air	Water	Land	Product	Residue	Total
1	Waste Incineration	0.009	0.000	0.000	0.000	0.315	0.324
2	Ferrous & Non-ferrous Metal Production	17.696	0.088	0.000	0.000	13.514	31.298
3	Power Generation and Heating	14.912	0.000	0.000	0.000	9.598	24.510
4	Mineral Products	9.657	0.000	0.000	0.000	0.033	9.690
5	Transportation	3.241	0.000	0.000	0.000	0.000	3.241
6	Open Burning	373.817	0.000	64.724	0.000	0.000	438.541
7	Product & Use of Chemicals & Consumer Goods	12.512	0.054	0.000	3.305	0.044	15.915
8	Miscellaneous	0.512	0.000	0.000	0.268	0.533	1.563
9	Disposal/Landfill	0.000	1.982	0.000	10.206	242.869	255.057
10	Contaminated Sites and Hot-Spots				0.000		0.000
Total		**431.996**	**2.124**	**64.724**	**13.779**	**266.906**	**779.529**

c. BAT/BEP activities

- BAT/BEP capacity building activities under UNIDO or World Bank assisted projects have been done to achieve reduction of releases of Dioxins and Furans in different sectors. Demonstration activities and training have been organized to reduce releases from open burning, fuel fired utilities and industrial boilers, the solid waste sector and several specific industry and

agricultural sources. The project also included activities to implement safe closure of open dumpsites and rehabilitation of controlled dumpsites pursuant to Department Administrative Order 09 Series of 2006.

(a) (b)

Fig.2.5.3c-1. Signing of Terms of Cooperation with Pilot Demonstration Site (a) and with Green Technology in the Chemical Engineering Program of the University of Santo Tomas (b)

(a) (b)

Fig 2.5.3.c-2. Training on BAT/BEP for industrial boilers in Davao (a) and in Cebu (b)

yet to be done

- The toolkit for inventory of Dioxins and Furans in 2013 indicated high releases from uncontrolled burning, open dumpsites and landfill sites. All open dumpsites and landfill sites in the country are potential contaminated sites for Dioxins and Furans. With the lack of capability to analyze dioxins and furans in air, water and soil, validation that these are contaminated sites has not been done.

- Criteria have been set up to identify contaminated sites, training on the use of the guidelines is on-going. The inventory of contaminated sites using the identification criteria has started. The policy on the management of the contaminated sites has been drafted.

2.5.5 Initial Assessment of the Five New POPs Pesticides (2013)

There are five (5) new POPs pesticides namely alpha- and beta- hexachlorocyclohexane, (HCH), gamma HCH (lindane), chlordecone, and endosulfan that are listed by the Stockholm Convention. The alpha- and beta- HCH isomers are by-products of the manufacture of lindane.

a. Regulation on Lindane, Endosulfan and Chlordecone

- Lindane, has been restricted for use in pineapple plantations by soil pre-plant application since 1989 both by FPA and Sustainable Agricultural Network (SAN).

- The registration of Lindane for agricultural use expired in February 22, 2003 and since then, there was no renewal of registration nor approval of importation.

- Endosulfan was temporarily banned for all uses since 2009, FPA has yet to make an official ban.

- Chlordecone is not registered at FPA.

b. Stockpile of NEW POPs Pesticides

- The only known stockpile among the new POPs pesticides is the 10 MT of Endosulfan which was recovered from the capsized ferry MV Princess of the Stars carrying the pesticide. This is stored in three container vans in a private warehouse in Region III. Inspection done by FPA-Region III in 2011 revealed that two (2) of the drums made of carton material became wet and were transferred to metal drums.

c. Importation of New POPs Pesticides

- There are no importations of Alpha- and Beta-hexachlorocyclohexane, Lindane, and Chlordecone from 2004 to present.

- The last importation of Lindane was in 1999 amounting to 10,000 L of Lindane as 75% flowable.

- Importation of Endosulfan, from 2003 to 2008 amounted to 100 MT (94% purity). In 2006-2008, Endosulfan was imported from Israel, the last importation was in 2008 amounting to 10 MT. This 10 MT of Endosulfan was carried by the ferry MV Princess of the Stars which capsized.

This was recovered and is currently stored as a stockpile.

d. History of Use of Lindane and Endosulfan in the Philippines

- A report indicated that there were about 200 agricultural pesticide companies in the Philippines, including around 30 formulation plants.

- Endosulfan has been applied by aerial spraying on large plantations or manual spraying in smaller plantations. Production of crops such as rice, corn, coconut, sugarcane, banana and pineapple depended on Endosulfan for adequate growth.

- Endosulfan is considered as the most widely used organochlorine pesticide for over three decades before its use was restricted. In 1993, FPA issued Board resolution No. 01, s. 1993 restricting Endosulfan formulation to 5% emulsifiable concentrate (EC) or lower.

- In 1994, pesticide distributors and dealers were required to withdraw the disallowed formulation of Endosulfan from the display/sale centre and surrender the same voluntarily to FPA Regional or Provincial Coordinators (FPA MS 09, s. 1994). In the same year, all pesticide manufacturing companies were instructed to transfer the banned formulation of Endosulfan (35% emulsified concentrate Ec35) from provincial/regional manufacturing company's warehouse to the main office warehouse of plant incinerator (FPA Mc10, s. 1994).

- In 1995 two companies requested the FPA Board to allow them to use Endosulfan with concentration of 5% until they can come up with a viable alternative or replacement to control pink disease in their pineapple plantations. This was approved by the Board on a yearly basis. In 2005, the request of these two companies as institutional user of Endosulfan was granted for a period of three (3) years from January 1, 2006 to December 31, 2008, instead of a yearly approval (FPA Board Resolution No. 03, s. 2005). After this period FPA did not issue any permit to use Endosulfan.

- There are no registered pharmaceutical products that contain Lindane as active ingredient in shampoos, lotion, and other topical preparations in the Philippines. There is no application for registration for use in pharmaceutical products.

- Surveys indicated that Endosulfan and Lindane were still used in Regions VIII and XI. No physical evidence was obtained for Lindane in all regions surveyed; but Endosulfan was available in Regions VIII and XI under the name Thiodan (Fig. 2.4.5a). Samples obtained on May 23, 2013 from these regions tested positive for Endosulfan in laboratory analysis.

Fig. 2.5.5a. Thiodan used by vegetable farmers in a village in Region XI

a. Environmental Monitoring

· Monitoring of the Panigan-Tamuhan and Talomo-Lipadas Watersheds in Davao from 2006 to 2007 showed Endosulfan at concentrations of 5-12 ng/L in four of the ten river sampling sites, exceeding the USEPA standard of 0.22 ng/L (Interface Development Interventions, Inc. 2008. Survey on the Level of Pesticide Contaminants in Panigan Tamugan and Talomo Lipadas Watersheds Towards the Protection of Critical Water Resource Areas in Davao City. Ateneo de Davao University, 15-50).

· In Benguet (CAR), the highest concentration of technical Endosulfan in soil was detected at 0.025 mg/kg. Endosulfan sulfate was found at 0.015 mg/kg. There was no report on the presence of Endosulfan in water（Lu, J. L. (2010). Arch Environ Contam Toxicol., 59,175181).

· Monitoring of vegetables by the Bureau of Plant Industries done from 2008-2012 in six regions (CAR, I, VII, X, XI, XII) indicated the presence of trace amounts of Endosulfan from as low as 0.001 to 0.229 mg/kg. The recorded amounts are below the ASEAN Harmonised Maximum Residue Limits (MRLs).

2.5.6 Initial Assessment of Pentachlorobenzene (2013)

·The only known process that forms pentachlorobenzene as major by-product is the production of quintozene, a kind of pesticide. If there is no quintozene production in the country, PeCB emissions could be estimated through a correlation with available emission factors such as those with D/F or HCB, whichever is available. Quintozene is not produced in the Philippines.

· Table 2.5.6a shows the correlation ratios between D/F or HCB and PeCB emissions. The initial inventory of pentachlorobenzene (PeCB), as unintentionally-produced POP among the eleven new POPs can be obtained from the results of D/F inventory.

Table 2.5.6a. Correlation ratios of PeCB and Dioxin/Furan for selected emission sources (Hogendoorn, 2009)

Activity	PeCB: Dioxin/Furan Ratio (w:w)
Backyard burningof household waste	10
Municipal waste incineration	5
Hazardous waste incineration	50

- For coal burning furnaces, the correlation ratio of PeCB with hexachlorobenzene (HCB), 0.2 (w/w) can be used if HCB emission data is available.

- As source categories of PeCB are generally identical with those of dioxins/furans, the action plans listed for dioxins/furans can be used to address the management of PeCB.

2.5.7 Initial Assessment of PBDEs (2013)

There are three types of commercial PBDE products commercial Pentabromodiphenyl ether (c-pentaBDE), commercial Octabromodiphenyl ether (c-octaBDE), and commercial Decabromodiphenyl ether (c-decaBDE). Commercial PetaBDE (c-pentaBDE), the homologues "tetrabromodiphenyl ether and pentabromodiphenyl ether" as well as c-octaBDE, "hexabromodiphenyl ether and heptabromodiphenyl ether" are listed under the Stockholm Convention on Persistent Organic Pollutants (POPs).

Estimates of the amount of PBDEs present in the country were obtained using data from the National Statistics Office (NSO) on the population rate and from UNComtrade importation data on the CRT household penetration rates, and from Land Transportation Office (LTO) on vehicle registration.

a. Existing Regulations relevant to PBDEs

1. Regulations for control of importation

· Monitoring of the importation of articles containing c-PBDEs would be a challenge to the regulator at this point. Since there is no more production of c-PBDEs, new products will most likely not contain c-PBDEs. However, there are still importation of used electronics and used vehicles in the country which may possibly contain c-PBDEs **(Fig 2.5.7a)**.

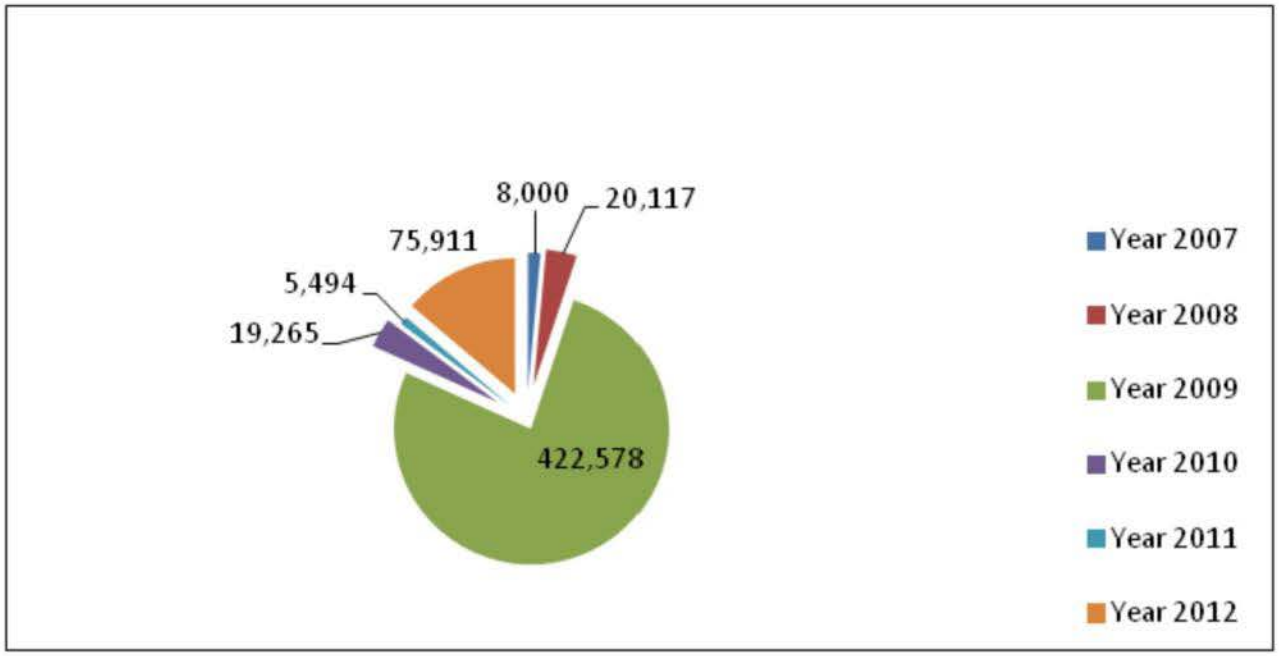

Fig. 2.5.7a. Quantity of imported second hand EEEs with DENR-EMB clearance for the period 2007-2012 (units)

·For the importation of used electrical and electronic equipments, the existing criteria for allowing its importation is based on environmental documentary requirements such as ECC, management plan etc. but not on whether it contains POPs or not. Likewise, the importation of used vehicles does not provide for any provision for its POPs contents.

· Importers must declare prior to approval of clearance the physical and chemical characteristics, justification for the import, methods for handling including collection, packaging, labeling, transportation, and route which must conform with internationally accepted standards, listing of personnel who will be responsible for supervising the collection, transport and unpacking of the recyclable materials and their respective qualifications.

2. Regulations on Disposal of EEEs

· Wastes electrical and electronic equipment (WEEE) that contain hazardous components such as lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers (PBDEs) are listed under DENR Administrative Order (AO) No. 22, Series 2013, as hazardous wastes. All generators of WEEEs are required by law to properly manage these hazardous wastes from the time they are generated until they are rendered non-hazardous as certified by EMB-accredited hazardous waste treater or recycler (DENR AO 13-22). This means that prior to being landfilled, these hazardous wastes should have been certified as treated by the recycler or treater. WEEEs can be disposed in a landfill or recycled or converted to other materials for reuse **(Fig. 2.5.7b)**

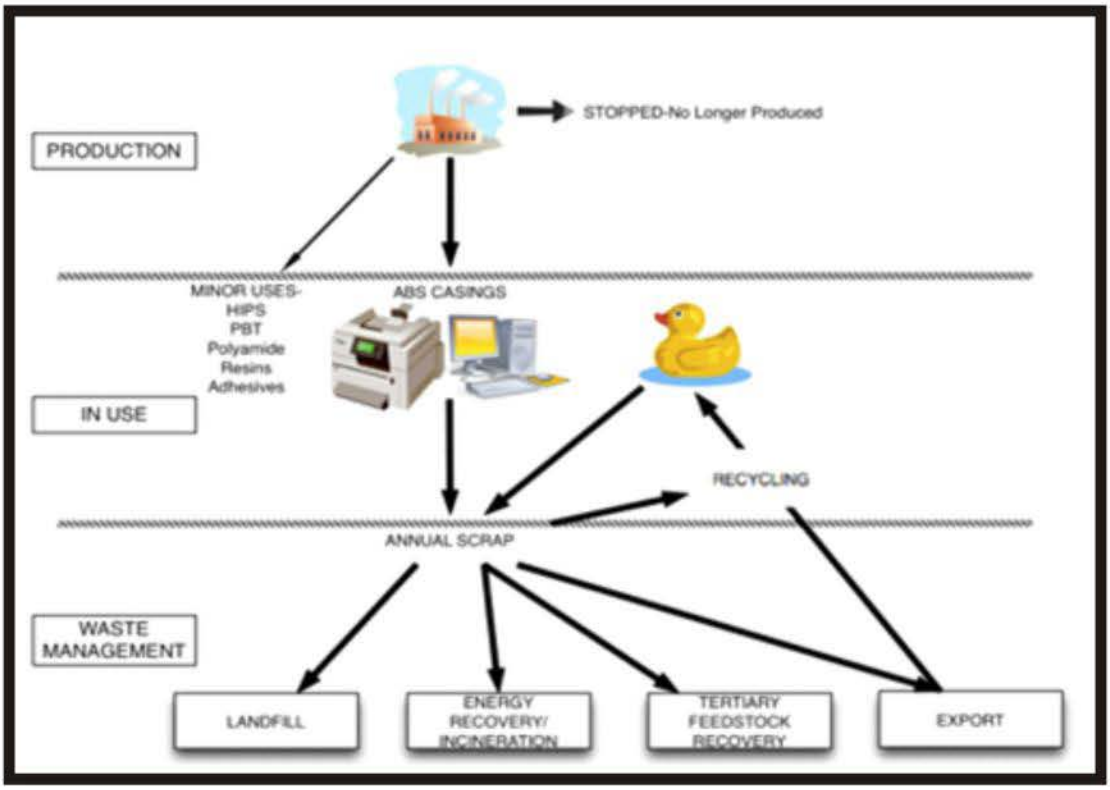

Fig.2.5.7b. Schematic diagram of the life cycle of c-OctaBDE (adapted from Alcock et al., 2003; UNEP, 2010a; 2010b)

3. Regulations on Disposal of ELVs

· The disposal of products /articles containing PBDEs such as PUR is not covered by RA6969. Regulating the disposal of products and articles containing c-PBDEs would be a big challenge especially when the waste generator is not from industrial sector but from private and residential sector.

4. Challenges in elimination of PBDEs by regulatory action

· The initial assessment of PBDEs was taken from secondary information and projected, based on formula provided in the guidance document. Local manufacturing industries were not assessed if they still have PBDEs in the product they manufacture or stockpiles of products containing PBDEs. With the acquisition of the XRF, the EMB may be able to conduct testing and sampling to obtain more data on products or even waste which may contain PBDEs. This way, all sources and stockpiles and products may be identified and monitored.

· The elimination of PBDEs will be dependent on the following factors which should be considered before any regulation is implemented:

· The elimination of PBDEs will be dependent on the following factors which should be considered before any regulation is implemented:

a. Accreditation of transporters and TSDs and method of acceptable disposal must be in place.

b. IEC of industry on PBDE management.

c. Training of government personnel in monitoring (e.g. desktop review of SMRs, use of XRF for testing, identification of products possibly containing PBDEs).

d. Collaboration between government and industry on identifying possible alternatives to PBDEs (that is, if it is still being used in the manufacturing sector).

b. Production and Use

- The Philippines does not produce POP-PBDEs. However, data on initial assessment reveals huge markets for commodities containing POP-PBDEs in the country.

- A prliminary inventory using the UNEP PBDE Guidance of 2013 document on c-octaBDE in acrylonitrile-butadiene-styrene (ABS) polymers used in housings/casings of electrical and electronic equipment (EEE), particularly for cathode ray tube (CRT) housings and on c-pentaBDE in polyurethane (PUR) foam used in automotive and upholstery applications provided as assessment of the use of PBDE's in the country.

1. Preliminary Inventory of POP-PBDES in Electrical and Electronics Equipment (EEE)

- (EEE) are the largest material flows containing c-octaBDE (UNEP PBDE Inventory Guidance 2013). The inventory of EEEs based on the country's population and penetration rate (no. of CRTs per capita) gave an estimated total weight of CRTs in the Philippines from 1990 to 2004 (Appendix i x 1). Using the UNEP Guidance equations (UNEP PBDE Inventory Guidance 2013), the estimated cumulative total weight of CRT of 11, 019,789 kg from population and penetration rate from 1990 to 2004, converted to 93,400 kg of c octaPBDEs comprising of 43% hepta BDE (40,197.05 kg) and 11% hexaBDE (10,283 kg).

- Using the same UNEP PBDE Inventory Guidance, the amount of c octa PBDEs estimated from importation of 222,897,420 kg of CRTs from 1997 to 2004 (Appendix 2) was 61,543 kg.

- Used EEEs imported to the Philippines for reuse could be sources of c octa PBDEs. The Philippines imported 551,365 units of TVs and CRTs from 2007 to 2012.

2. Preliminary Inventory of POP-PBDEs in the Transport Sector

- A large proportion of c-pentaBDE use has been within the transport sector; the major use was for treatment of flexible Polyurethane (PUR) foams (automotive seating, head rests, car ceilings, acoustic management systems, etc.) and a minor use was in back-coating of textiles used on car seats. c-octaBDE has also been used in plastics vehicle parts (steering wheels, dashboards, door panels, etc.).

- Only a portion of the cars produced between 1975 and 2005 worldwide have been treated with c-pentaBDE. Cars and other vehicles (trucks and buses) are the major portion of the transport sector containing the largest volume of POP-PBDEs.

1. POP-PBDEs from Vehicle Registration

Using the formula provided by UNEP Guidance on PDBE, the amount of POP-PBDEs in PUR foam of vehicles registered at the LTO from 1990 to 2004 was calculated. The cumulative registered vehicles in 2004 from 1975 were estimated at about 4.9 million (Appendix 3). This figure translates to about 22,000 kg of c-pentaBDE from impacted vehicles at the end of 2004.

2. POP-PBDEs in End-of-Life Vehicles (ELVs)

From the estimated cumulative disposed number of vehicles based on LTO data, (Appendix 4) there were 226,170 disposed cars/trucks/buses in 2012 which can be considered as ELVs. This number is equivalent to about 2003 kg of c-pentaBDE using the formula provided by UNEP Guidance on PDBE. From the estimated total amount of c-pentaBDE, the homologues tetraBDE, pentaBDE, hexaBDE and heptaBDE were likewise calculated as 661.26 kg, 1162.22 kg, 160.30 kg and 10.02 kg respectively.

c. Environmental Monitoring

- A survey of the PBDEs in leachates from two dumping sites in Metro Manila showed a range of 0.414-27.7 ng/L penta BDEs, 0.11-13.3 ng/L hexa BDEs, < LOD -6.7 ng/L hepta BDEs, 0.505-15.4 ng/L octa BDEs and 0.686-11.8 ng/L nona BDEs. (Kwan, C, et al, PBDEs in leachates from municipal solid waste dumping sites in tropical Asian countries: phase distribution and debromination. Environ Sci Poll Res, 2013. 20:4188-4204).

- A survey of total PBDEs (23 PBDE congeners) in sediments in canals and tributaries of Pasig River showed high concentrations of total PBDEs at 60 -3140 ng/g dry weight. The sampling site at Manila Bay nearest to the outflow of Pasig River showed 170 ng/g dry weight total PBDEs (Kwan, C, et al, Sedimentary PBDEs in urban areas of tropical countries. Mar Poll Bull, 2013.76, 95-105).

2.5.8 Initial Assessment of PFCs (PFOS and PFOA) (2013)

Perfluorinated compounds (PFCs) have been detected in human breast milk across Asian countries, such as Japan, Malaysia, the Philippines, Indonesia, Vietnam, Cambodia and India, where among the PFCs, PFOS was predominant, followed by PFHxS and then by PFOA. A study of PFCs in human breast milk among these countries showed that the lowest PFOS median concentration of 39.4 pg/ml was obtained from samples in India while the highest median concentration of 196 pg/ml was from Japan. Malaysia had the second highest median concentration of 111 pg/ml followed by the Philippines with a concentration of 104 pg/ml (Tao, et. al, Perfluorinated compounds in human breast milk from several Asian countries, and in infant formula and dairy milk from the United States. Envi Sci and Tech. 2008, 42 (22), 8597-8602).

a. Initial Inventory of PFOs

1. Initial Inventory of PFOS from importation data

1. Initial Inventory of PFOS from importation data

- The Philippines does not produce PFOS but imports products that may contain PFOS. The UNEOP PFOS Inventory Guidance Documents categorized the products containing PFOS and their PFOS content.

- The data on the volumes of imported articles for industries related to the possible open application of PFOS from 2008 to 2012 provided the estimated maximum inventory of PFOS based on these imported articles. Table 2.5.8a shows the volume of imported articles and their estimated PFOS content based on the UNEP PFOS Inventory Guidance. Figure 2.5.8a shows the estimated percentage of the total weight of PFOS attributed to the imported article.

Table 2.5.8a. Inventory of PFOS from imported articles

Article Imported	Total weight of imported article, kg	Equivalent total weight of PFOS, kg
synthetic carpets and fire resistant textile	2.94×10^7 kg	1.47×10^5 kg
chrome metal-plating pigments and preparation	6.90×10^5 kg	3.45×10^5 kg
greaseproof and food paper	6.73×10^6 kg	3.36×10^4 kg
fire-fighting substances and preparations	1.63×10^6 kg	2.45×10^4 kg

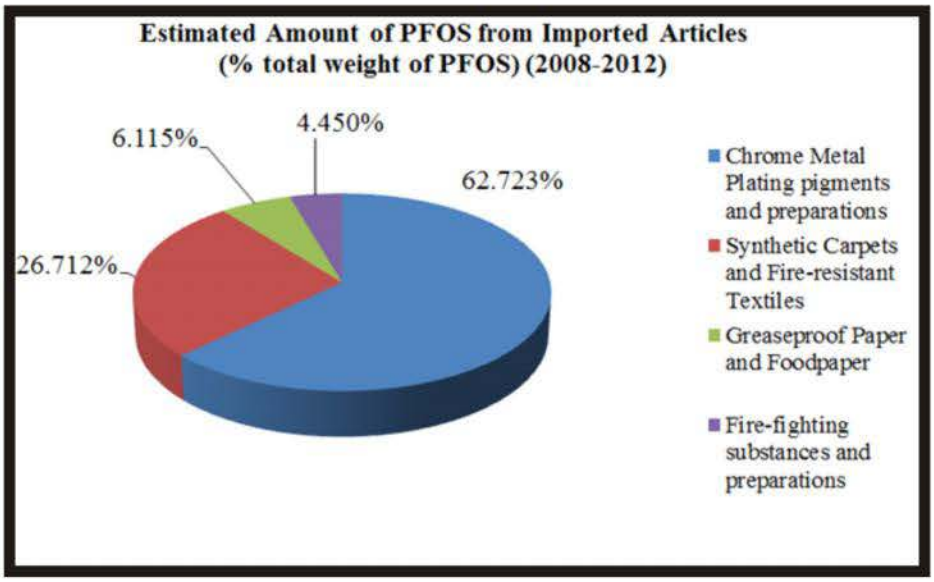

Fig 2. 5. 8a. Percentage of total weight of PFOS from categories of imported articles in 2008-2012

- No importation data for perfluorinated insecticides, hydraulic fluids, brake fluids and anti-freeze fluids were reported from BOC for the period 2008-2012

- There are no oil-drilling industries in the Philippines. The mining industry was not identified as a sector that handles PFOS and PFOS-related substances in the UNEP Guidance PFOS Inventory since the use of PFOS is banned for mining industries.

- The use of PFOS in metal-plating as an acceptable purpose is classified under the Stockholm Convention "for restriction" (UNEP Guidance PFOS Inventory, 2012). The majority of the metal-plating process classifications in literature are considered to be closed-loop application of PFOS. There is a possibility that PFOS-containing stockpiles and sewage sludge are present, as indicated in the life-cycle impact of PFOS and its related substances.

2. Inventory from surveys of relevant industrial sectors

- Using the survey instrument provided by the UNEP PFOS Inventory Guidance, information on the use of PFOS in the identified sectors were obtained as follows:

Table 2.5.8b. Inventory of PFOS based on UNEP survey instrument

Industry Sector	Use of PFOS in the Sector
Metal-Plating Industries	PFOS is not used as surfactant
Fire-fighting Industries	1. A cement industry in Mindanao reported that they had AFFFs in stock 2. Representatives from fire departments in some AFFF, as am additive to water (3% AFFF) to extinguish fires from combustion of liquid substances, such as chemicals, oil and fuel. 3. Non-obsolete stocks were documented amounting to approximately 1,520 L of Ansulites. The last importation was in 2009.
Aviation Industries	1. Skydrol®, a product which is known and declared to contain PFOS is used (about 2 liters per month) in aircrafts as a hydraulic fluid to inhibit corrosion and reduce the risk of aircraft fires. 2. Skydrol® is imported from the United States under the regulation of the Federal Aviation Administration (FAA), but no BOC importation data Skydrol has been reported. 3. Used hydraulic fluids are collected by a third party for disposal or treatment. 4. Approximately 12 L of Skydrol® on-stock
Semiconductor and Electronics Industries	1. PFOS and PFOS-related substances are likely used in the semiconductor industry, in the coating of printed circuit boards and electronic wafer fabrication 2. Majority of the activities in the electronic industries are centered on the assembly and testing of electronic parts and equipment. The parts (such as the printed circuit boards) are pre-made and imported. 3. No additional coatings are applied to the printed circuit boards prior to assembly and testing.

Metal Fabrication and Recycling Industries	1. Scrap metals are sources of raw materials for metal fabrication. The articles handled as a source of scrap metal may have been treated with PFOS, such as dismantled combustion engines, transmission parts, brake discs, steel pipes and iron bars. 2. Material handling of scrap metals involves smelting at high temperatures, i.e. 1200-C for iron products this destroys and gasifies all volatile and organic components, thus eliminating PFOS from the products.

Challenges identified regarding the Inventory of PFOS

- The inventory of PFOS and its related substances was limited to the importation data provided by the Bureau of Customs. This was mainly caused by the lack of data and information, monitoring and control of PFOS as one of the new POPs. In effect, the inventory conducted serves as a precursor to future in-depth inventories, i.e. when relevant legislation has been passed pursuant to this NIP on the regulation, control and monitoring of PFOS in the country.

Some of the gaps in obtaining a more accurate inventory and potential challenges are:

1. potential overestimation of the volumes of imported PFOS and PFOS-related substances based solely on the importation data

2. lack of knowledge and information on the specific products which contain PFOS and difficulty in identifying which of the imported articles and products contain PFOS these may be addressed by legislation requiring the declaration of the use of PFOS in both the raw materials and the final articles and products;

3. identification, monitoring and analysis of products, articles and sites possibly contaminated with PFOS this may be addressed by legislation and budget realignment by the government pursuant to this NIP.

CHAPTER 3 GOALS AND ACTION PLANS

3.1. REVIEW OF ACTION PLANS FOR THE 12 INITIAL POPS

The action plans for the initial twelve POPs and the action plans for the contaminated sites and educational awareness are reviewed as shown in the following Tables:

- Review of action plan addressing the twelve initial POPs pesticides including DDT (Table 3.1a)
- Review of action plan addressing PCBs (Table 3.1a)
- Review of action plan addressing Dioxins and Furans (Table 3.1c)
- Review of action plan addressing contaminated sites (Table 3.1d)
- Review of action plan addressing information, education and public awareness of POPs (Table 3.1e)

Table 3.1a. Review of action plan for the initial pesticides (Aldrin, Chlordane, Dieldrin, DDT, Endrin, Heptachlor, Hexachlorobenzene, Toxaphene and Mirex)

INITIAL PESTICIDES		
Goal: Ensure that all current and future uses of POPs pesticides (legal or otherwise) are accurately identified, properly controlled, and ultimately eliminated; including the environmentally sound disposal of any unwanted and obsolete stocks and the continuous monitoring of the impacts to health and environment		
Objectives	Action Plans in NIP 2006	Assessment of the Implementation
1.Complete a review of the most appropriate and effective ways for improving monitoring and enforcement of the existing regulatory controls on POPs pesticides by the end of the 2nd year	The review which aims to address the current deficiencies in monitoring and enforcement of the controls on POPs pesticides, could preferably be done by external consultants rather than FPA alone to allow consideration of a much wider range of views and is more likely to lead to solutions acceptable to all stakeholders.	Though inspection is part of the regular activity of FPA, there is still a need to strengthen this by providing additional manpower to the agency per region doing the inspection and monitoring of all agricultural chemicals.
2.Implement a programme that will inspect, retrieve, and properly dispose of POPs pesticides from year 1 up to the 2nd year	The Fertilizer and Pesticide Authority must undertake actions to manage and dispose stockpiles in a cost-effective and environmentally sound manner. The FPA could consider to relocate all stockpiles to a central storage facility and select the most suitable disposal method	A program for POPs disposal was implemented. The stockpiles brought to FPA warehouses were disposed by an EMB registered waste treatment facility within one year. The reported stockpile of DDT in Mindanao was not verified to have been disposed of properly. A verification letter was sent by DOH to the ARMM DOH Office regarding the reported stockpile.
	FPA to identify other stockpiles that are currently not known to the Fertilizer and Pesticide Authority through a combination of awareness activities (for both the general public and industry) and the enhanced inspection activities carried out by staff of the Fertilizer and	To date, FPA has no existing stockpile of POPs pesticides in the dirty dozen list. Also, there has been no reported incident of distribution and use of such in the inspection carried out by the field personnel of FPA.

	Pesticide Authority	
3.Develop and implement continuous environmental and health monitoring program from year 1 Onwards	Options: 1.Continue encouraging various sectors to do their own monitoring. 2. Second is have one sole agency that will develop and implement an integrated monitoring program to avoid duplication and sometimes misrepresentation of monitoring results. 3. A multi partite monitoring group coming from the inter agency consultative committee to implement the task but the technical inputs can be provided by the academe.	To arm the DOH personnel with the capability to implement continuous environmental and health monitoring, the Integrated Vector Management training had been conducted among regional entomologists in 2010 which encompassed the concept of Integrated Vector Management (IVM), policy and institutional framework, planning and implementation (epidemiological assessment, vector assessment, selection of vector control methods, evidence-based strategy), organization and management (within the health sector, partnership with other sectors, linkages, etc.) and transition of IVM. Recently, a series of workshops had been conducted involving malaria, filarial and dengue health staff and vector surveillance has been tackled. Monitoring of the environment is still done by independent researchers as research projects The continuous environmental and health monitoring program was not implemented as planned.
4.Complete an assessment of the effectiveness of current practices for the control of malaria in the Philippines, and options for improvements including the use of Integrated Vector Management strategies, and the need for DDT by the end of the 2nd year	Proactively investigate the efficacy of current malaria control measures and hence establish the need for DDT either now or in the future	DOH has found an effective substitute (pyrethroids) for DDT. DOH decided that DDT was no longer necessary for vector control and requested FPA to ban DDT in 2003. FPA banned DDT in 2005.
5.Initiate all actions (as required under all relevant regulations) by the end of year 1, with a view to ban mirex and hexachlorobenzene	Consider the initial operational measure to establish the current status of mirex or hexachlorobenzene use in the country. This will allow an assessment of any potential impacts on the users, prior to imposition of a ban.	Mirex and hexachlorobenzene were never registered at FPA. Thus, importation, distribution and use of any of these pesticides in the country are not allowed.

Table 3.1b. Review of action plan for PCBs

PCBs		
Goal: Achieve an effective and environmentally sound strategy to manage the total elimination and destruction of PCB-equipment, PCB-containing products, and wastes.		
Objectives	Action Plans in NIP 2006	Assessment of the Implementation
1. Prepare a comprehensive and complete national inventory of PCBs, PCB containing materials, and PCB wastes from year 0 to year 2 of the National Implementation Plan (NIP)	Conduct the PCB inventory through the regulatory reporting procedure outlined in the Chemical Control Order (CCO) wherein specific requirements for annual reporting and inventory of PCBs are included.	This had been partially achieved by the initial inventory through regulatory registration and reporting, which was required from PCB owners particularly power distributors and electric cooperatives under the Chemical Control Order (CCO on PCBs. The registration of PCB owners is being improved through strengthening of the regional implementation of the CCO for PCBs. The PCB owners are likewise being trained to the proper conduct of the inventory and reporting to the EMB The inventory of the HazWaste section of EMB in 2010 from sources with PCBs verified by field visit and testing was 1700 MT of PCBs.
	Strengthen the registration of TSDs and servicing facilities Engaged in the decontamination and repair of equipment. Develop a code of practice and mechanism for the accreditation of servicing facilities and initiate a plan for industry self-regulation towards improving compliance with the CCO on PCBs.	The recommended Memorandum Circular for PCBs includes provisions for registration of TSDs and servicing facilities engaged in decommissioning and decontamination of transformers. A technical guidance on safe handling, storage and disposal of PCBs is being prepared to help PCB owners to comply with the CCO and Memorandum Circular requirements.
	Strengthen the resources for testing and monitoring of PCBs	Memorandum Circular 2014-007, "Guidelines for the Registration of Laboratories to Perform Analysis of Polychlorinated Biphenyls (PCBs) in Transformer Oil, Waste Oil and Non-Porous Surface Materials" has been approved and signed.
2. Establish and implement a program on safe handling, storage, and transport of PCBs, PCB containing materials and PCB wastes from year 1 to year 3	Formulate guidelines on the management of PCBs as a means of improving the knowledge and awareness of users on the methodologies and processes that need	In November 2009, the Code of Practice on the Management of PCBs was published by DENR-EMB with support from GEF and UNIDO. This document is intended to serve as a

	need to be undertaken for the safe handling, storage, and transport of PCBs. The guidelines would be distributed and disseminated to users of PCBs during the inventory process.	guide to the identification, removal, handling, storage, treatment and disposal of PCB wastes, including tools and strategies to manage the environmental and health impacts associated with these wastes. The IPOPs Management Project conducted training for PCB owners on the implementation of environmentally sound management (ESM) plan of PCBs. The project provides technical assistance to the PCB owenrs to implement the PCB management plan.
3.Develop and implement continuous integrated environmental and health monitoring program from year 1 onwards.	Options: 1.Continue encouraging various sectors to do their own monitoring. 2. One sole agency that will develop and implement an integrated monitoring program to avoid duplication and sometimes misrepresentation of monitoring results. 3. A multi partite monitoring group coming from the inter agency consultative committee to implement the task but the leadership is through the academe.	The National Health Survey and Monitoring is being planned as part of the IPOPs Management Project.
4. Eliminate and destroy all PCBs, PCB-containing materials, and PCB wastes as soon as possible	Develop strategies for the total elimination of PCBs in the country. The availability of treatment and disposal technologies will be presented as a support to PCB waste generators in complying with the CCO	The GEF/UNIDO/DENR-EMB/PNOC-AFC Non-Combustion POPs Project have constructed the sodium dechlorination PCB oil treatment facility which is now in the commissioning stage and will accept PCB oil and waste for treatment in 2014 The IPOPs Management Project training for PCB owners has included the information on effective implementation of the inventory, safe PCB management and how to avail of the PCB destruction facility.

Table 3.1c. Review of action plan for Dioxins and Furans

DIOXINS AND FURANS		
Goal: Progressive reductions and continuous monitoring in the releases of dioxins and furans and other unintentional POPs in the Philippines, based on scientific knowledge		
Objectives	Action Plans in NIP 2006	Assessment of the Implementation
1.Prepare an updated inventory of dioxin and furan releases for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors within three years from the approval of the National Implementation Plan	Gap analysis will be performed to know which areas need reconciliation in the Toolkit's data requirement and actual available data reported in the country. Validating the emission factors under local conditions will further strengthen the results of the previous inventory.	An updated and most recent 3rd National Inventory of Dioxins/Furans (2013) shows open burning, landfill/disposal, ferrous and non-ferrous metal production, and power generation and heating as among the most significant sources. The World Bank-GEF assisted DENR-EMB Integrated POPs (IPOPs) Management Project: Reduction of Releases of Unintentionally Produced Persistent Organic Pollutants provides capacity building for inventory of dioxins and furans.
2. Develop and implement BAT/BEP promotion, adoption and monitoring programmes within three years across the most significant dioxin and furan source categories (based on updated inventory)	Implement BAP/BEP in landfill sites. Strengthen the institutional capability to support the promotion, adoption, and monitoring of BAT/BEP. BAT/BEP information, education, and communication materials have to be developed and implemented for public release. In addition, BAT/BEP will be integrated in the curricula and extracurricular activities of secondary and college educational levels.	GEF, UNIDO, and DENR-EMB are jointly implementing the project "Demonstration of BAT/BEP in Open Burning Activities in Response to the Stockholm Convention on POPs" which aims to achieve sustainable release reduction of unintentionally produced-POPs (UP-POPs) in the open burning sector through the introduction of BAT and BEP. The inception workshop of this regional project involving five countries (Cambodia, Lao PDR, Mongolia, Philippines, and Vietnam) was held in Manila, Philippines in September 2013. The GEF/UNIDO/DENR-EMB Project on BAT/BEP Application to Fossil Fuel-fired Utility and Industrial Boilers. The project includes activities that are geared towards the attainment of reducing dioxins and furans in coal fired power plants, offering "Green Boiler Technology Course" to engineering students, and coordination with BWC-DOLE on the inclusion of BAT/BEP in the Boiler Rule of the Philippines.

		The WB-assisted DENR-EMB IPOPs Project: Reduction of Releases of Unintentionally Produced Persistent Organic Pollutants has included BAT/BEP Demonstration for the Solid Waste Sector, giving technical assistance on the preparation of BAT/BEP for selected source categories, and training, demonstration and information dissemination on BAT/BEP.
	Sampling and analysis capability for dioxins and furans have to be developed through the establishment of a sampling and analytical laboratory. Due to the high cost of setting up this type of facility, a needs assessment will first be conducted to determine the viability of the facility.	An initial feasibility study of setting up a dioxin laboratory at another government agency which could be self sustaining did not prove to be feasible. EMB is starting to develop its capability to analyze dioxins and furans as a support to its regulatory function. One member of the laboratory staff was sent for training on dioxin analysis under the GEF/UNIDO/DENR-EMB Project
3.Formulate by the end of year 3 and continuously enforce thereafter appropriate policies and regulations to control dioxins and furans releases	Review the most appropriate management options that will address the need for specific actions in the following areas:	Policy regulation on dioxins/furans is included in the Clean Air Act (RA 8749). *The law provides that the emission of dioxins/furans into the air shall be reduced by the most progressive techniques: Provided, further, that all average dioxins and furans measured over the sample period of a minimum of 5 hours and maximum of 8 hours must not exceed the limit value of 0.1 ng/m3".* To enforce this regulation, adequate personnel and hardware capacity should be set up One initiative supporting the achievement of this objective is the training of DENR-EMB Research and Developement Division on dioxin analysis and the setting-up of a dioxin laboratory at Wadsworth Institute, Albany, New York, USA through the GEF/UNIDO/DENR-EMB BAT/BEP on Boilers Project.

4.Develop and implement a programme for information on the prevention of environmental and health effects of dioxin and furan by then end of year 2.	Conduct of lectures, seminars, and training , develop information, education, and communication materials on the environmental and health effects of dioxins and furans and implement for public release Integrate environmental and health effects of dioxins and furans in the curricula and extracurricular activities of secondary and college educational levels.	The "Green Boiler Technology Course" offered to engineering students at the University of Santo Tomas under the GEF/UNIDO/DENR-EMB BAT/BEP on Boilers Project, includes a section on the adverse effects of dioxins/furans to health and the environment, Information and education materials on the impacts of dioxins/furans, like brochures and flyers, and posters printed by the EMB-DENR are disseminated to the public.

Table 3.1d. Review of action plan for contaminated sites

CONTAMINATED SITES		
Goal: Complete identification of all contaminated sites and hotspots with corresponding appropriate management strategies to protect public health and the environment		
Objectives	Action Plans in NIP 2006	Assessment of the Implementation
Establish criteria for the identification of contaminated sites by the end of year 1	Develop a draft criteria (based on reviews of criteria used in other countries and/or published by international agencies) Review of draft criteria by technical working group Issue Department of Environment and Natural Resources Administrative Order on identification of POPs contaminated sites	Under IPOPs Management project, the criteria for identification of contaminated sites have been drafted. The draft criteria is being reviewed for approval by DENR
Establish a group and a pool of trained personnel by the end of year 1, with the appropriate mandate for the identification, assessment, and management of contaminated sites	Identification of training needs Capacity building for identification and management of contaminated sites (through intensive field and desk-based training) Provision of necessary equipment and other resource	Training and capacity building for identification and management of contaminated sites are ongoing activities under the IPOPs Management Project.
Identify potentially contaminated sites throughout the Philippines based on historical information, including an initial ranking of possible priorities for assessment from year 1 to year 3	Identification and mapping out of POPs contaminated sites including ecological burdens through secondary data assessment Conduct of on-site assessment and testing of suspected sites for possible contamination of POPs	The preliminary inventory of contaminated sites has been started.

Complete expedited assessment (at least 100 priority sites) by the end of year 5, and come up with recommendations to manage these contaminated sites	Establishment of procedures and policies for the clean-up and management of contaminated sites Conduct of environmental risk assessment of identified hotspots to evaluate the need for decontamination, develop ranking criteria, and ranking of the hotspots according to degree of risk Development of clean-up and management plans for hotspots, including Information Management Program (for the affected receptors including setting up of information center) Development and implementation (as funds allow) of clean-up, destruction, and management plans for identified contaminated sites	Clean-up and management policy guidelines for contaminated site have been drafted.

Table 3.1e. Review of action plan for awareness and knowledge of POPs

AWARENESS AND KNOWLEDGE OF POPS		
Goal: Full awareness and high level of knowledge across all sectors on POPs and whole support to the implementation of the National Implementation Plan		
Objectives	Action Plans in NIP 2006	Assessment of the Implementation
Develop and implement a program to sustain awareness and understanding of the health, environmental risks, and economic impact of POPs from year 0 to year 5	Setting up of databank/library on POPs that would be the source of information for the continuous public dissemination. Production and dissemination of Information, Education, and Communication materials based on documented testimonials and popularized technical reports and risk studies. Conduct of series of seminars and lectures to various organizations both formal and non formal organizations	IEC materials were produced by EMB and disseminated to different government agencies Each enabling project on POPs has incorporated seminars on POPs to formal and non formal organizations as well as target stakeholders.

	Sustain media coverage through: regular news releases regular press conference Radio-television guestings by government officials etc	The IEC component of the Non Combustion Facility is a comprehensive information campaign which provided the public not only awareness of PCBs and its health effects but harnessed the participation of various NGOs and other public sectors to support the operation and implementation of the NonCom PCB destruction facility as a viable means of safely phasing out PCBs in the country. (*Details of the IEC program is described below this table*).
Create and implement educational programs on POPs in all levels from year 1 onwards.	Coordination with the Department of Education and the Commission on Higher Education (CHED) to integrate POPs in the curricula and/or extracurricular activities Conduct of National Orientation seminar and training of potential trainors among teachers and student leaders from different schools nationwide. Working with the national television networks to include POPs as one topic in their regular morning educational TV shows for kids (Batibot, ATBP, Hiraya Manawari, etc.)	A representative from CHED has been a part of the National Steering Committee for the updating of NIP and in this way has been oriented with POPs and the need to enhance the education of the public on POPs. R.A. 9512, National Environmental Awareness and Education Act of 2008 was approved on 12 December 2008. It is an Act to Promote Environmental Awareness..Through Environmental Education and for Other Purposes. This Law is implemented by DepEd, CHED, TESDA, DOST, DENR and other relevant agencies. It covers the implementation of public education and awareness programs on environmental protection and conservation through capacity-building programs through trainings, seminars, workshops. Development and production of environmental education materials, teacher-education courses and related livelihood programs. Although this Law does not focus only on POPs, the environmental and health effects of POPs are part of the bigger picture on environmental issues being faced by the country. Part of the output of UNIDO's project on BAT/BEP on fossil fuel fired boilers is the integration of Green Boiler Technology as one of the offered elective in the Chemical Engineering Department of the University of Sto. Tomas.

		Although a curriculum centered on POPs has not yet been institutionalized in the Philippines, major universities have already incorporated POPs as topic of interest in their researches.
Develop and implement political lobbying programs to sustain POPs reduction and elimination as a public health priority, environmental issue, and priority action agenda.	Identification of target political groups and development of specific/key messages and delivery methods per group Conduct of series of lobbying activities for legislative and budgetary support for the reduction & elimination of POPs Integration of POPs reduction and elimination in agency's plans, programs, services, and resource allocation and be able to present effectively during regular Congress/Senate hearings on government program and budget allocations Establishment and maintenance of an intra-agency and Local Government Unit reporting/ information exchange system Enlistment of journalists, media agencies and associations and environment- friendly journalist associations (e.g., Philippine Center for Investigative Journalism, Philippine Center for Photo Journalism, Philippine Agricultural Journalists, Environmental Broadcasters Circle) in committees or task forces	There is not much development in this area since there is still relatively low awareness on POPs, specifically in the provinces on the local government unit level. Public awareness is crucial in lobbying for legislation, programs and fundings for POPs to gain support from legislators and politicians. Documented cases of POPs contamination and health problems arising from improper handling, use or disposal of POPs are reported but not given much highlight in the different media to get the attention of legislators and politician or to create a sense of urgency that POPs are not just local issues but a global problem that need to be addressed.
Build and sustain network for information exchange and communication on POPs and the National Implementation Plan from year 1 onwards	Survey of partner stakeholders to establish common interest and preferred communication mechanisms Set schedule for regular coordinative meetings, including reporting on POPs updates and the activities under the National Implementation Plan Development and maintenance of information clearing house that would serve as the focal center for POPs information such as BAT/BEP	Regular coordinative meeting is being conducted through the different projects on POPs being implemented. Meetings like TWGs, Inter-Agency meetings, stakeholders consultative meetings are regularly conducted to assess project outputs and implementation status on POPs action plans.

	practices, results of environment and health monitoring, international updates on POPs, and POPs issues, etc Participation in local, national, and international forums on POPs Presentations during regular meetings of business associations	Several websites have been put up. The websites serve as an information center on the updates of POPs activities. It also serves as repository for surveys done on industry and stakeholders. Documentary outputs such as draft policies, POPs inventory, Assessments and others are uploaded in these websites for public comments and information.

From 6 July 2010 to 4 November 2011, the Eco-Waste Coalition, an association of Civil Society Organizations with advocacy of environmental protection, performed educational activities themed "***Working Together for PCBs Free Philippines"*** for the general public as well as to the Non Com stakeholder communities to improve public awareness and support for the Non Com Project. Among the outputs of the IEC are:

- It produced an audio visual documentary on the project development and implementation in 500 Cds which were distributed to major stakeholders of the project.
- It produced a poster and a flyer in English, and in two major dialects (Tagalog and Visayan) on the safety of the facility operation and transportation of PCB waste to the facility, and disseminated 2000 copies for each material.
- Organized at least five seminars, six focus group discussions and one community assembly on the project objectives and implementation, benefits as well as on issues of public concern regarding the project.
- Issued at least six press releases and published in major broadsheets
- Mobilized NGOs to participate in the project monitoring and evaluation and in other project activities like project meetings and awareness campaigns.
- Launched the ***Bantay PCBs*** initiative to monitor illegal handling and recycling of PCBs.

Fig. 3.1e-1. Poster showing the theme of the IEC campaign for PCBs

Fig3.1e-2. The launching of the *Bantay PCB* project of Civil Society Organizations

3.2. ACTION PLANS FOR THE TWELVE INITIAL POPs AND THE NEW TEN POPs

The following Action Plans define the goal, objectives, and key strategies and activities proposed for the Philippines Implementation Plan:

- Action Plan addressing POPs pesticides including DDT, Lindane and Endosulfan (Table 3.2.1)
- Action Plan addressing PFOS and related chemicals (Table 3.2.2.)
- Action Plan addressing PBDE and related chemicals (Table 3.2.3.)
- Action Plan addressing PCBs (Table 3.2.4.)
- Action Plan addressing Unintentional POPs (Table 3.2.5.)
- Action Plan addressing POPs contaminated sites (Table 3.2.6)
- Action Plan addressing information, education and public awareness of POPs (Table 3.2.7)

The goals and objectives for the pesticides and the industrial POPs are aligned to the goals and objectives for the chemicals of the same categories of POPs in the NIP 2006. Gender sensitivity is considered in the action plans as part of the program of EMB on Gender and Development.

3.2.1. GOALS AND ACTION PLAN FOR MANAGING POPS PESTICIDES INCLUDING DDT AND ENDOSULFAN

Goal

Ensure that all current and future uses of POPs Pesticides are accurately identified, properly controlled, and ultimately eliminated; any unwanted and obsolete stocks go through an environmentally sound disposal system; impacts to health and environment are continuously monitored and sustainable agriculture is promoted.

Objectives

1. Strengthen the monitoring activities and improve the strategies for controlling the entry of POPs pesticides in the country.
2. Strengthen programs/infrastructure for inspection, retrieval and proper disposal of POPs pesticides.
3. Strengthen the policy and regulatory framework on control of POPs pesticides import, export, use, distribution and disposal.
4. Implement continuous environmental and health monitoring program to assess the risk from exposure to POPs pesticides.
5. Promote sustainable agriculture practices and other national intervention programs that reduce the risk associated with pesticides in general.

Table 3.2.1 Action plan addressing POPs Pesticides

Objective 1	**Strengthen the monitoring activities and improve the strategies for controlling the entry of POPs pesticides in the country.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Provide adequate staffing of FPA Offices in provincial, regional, and national levels and create a surveillance team to routinely monitor and verify the availability, usage of POPs pesticides in the municipal level.	FPA-lead agency	5	Surveillance teams formed Routine inspection schedule, protocols for monitoring and reporting established
2. Conduct and sustain training of customs authorities, FPA, PCG, PPA, and PNP/DILG personnel on the detection and better monitoring of POPs Pesticides.	FPA-lead agency, BOC, PCG, PPA, PNP-DILG, DOLE	2	Number of trained personnel
3. Intensify multipartite monitoring and detection of POPs pesticides at the municipal level	FPA-lead agency, DA, LGU, NGO, Academe	5	JAO, MOA

4. Strengthen enforcement of current regulatory policies to penalize those who are involved in the illegal entry, use and distribution of POPs pesticides.	FPA-lead agency, BOC	5	Monitoring Report
5. Review and enforce customs control mechanisms, and sustain training of customs authorities for compliance with Stockholm, Basel and Rotterdam Convention and additional national regulations.	FPA-lead agency, EMB, BOC	2	Number of trained customs Authorities
Objective 2	**Strengthen programs/infrastructure for inspection, retrieval and proper disposal of POPs pesticides**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Enhance monitoring and inspection to include programs on the illegal distribution of POPs pesticides by permitted dealers.	FPA-lead agency, EMB	2	Assessment Report
2. Verify the location of old stockpiles of POPs pesticides (e.g., DDT) and develop management plan for its safe retrieval, storage and disposal of old stockpiles.	DOH-lead agency, FPA, EMB, LGU	2	Verification report and management plan
3. Ensure an environmentally sound treatment, infrastructure for storage and disposal facilities for confiscated POPs Pesticides applying polluters-pay principle (e.g., endosulfan).	FPA-lead agency, EMB, LGU	5	Management plan and monitoring report
4. Implement extended producer responsibility principle for used packaging material for pesticides.	FPA-lead agency, EMB, LGU, DA	5	Report

Objective 3	**Strengthen the policy and regulatory framework on control of POPs pesticides import, export, use, distribution and disposal.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Develop policy recommendation for FPA to officially ban the importation, production, distribution, and use of Endosulfan, and Lindane in the country.	FPA, PPTAC	2	Board Resolution
2. Sustain the training of customs authorities for compliance with Stockholm, Basel and Rotterdam Conventions.	FPA, EMB, BOC	5	Number of trained customs authorities
3. Update government websites and maintain database for POPs pesticides with information of AHTN and HS Codes and provide separate AHTN code for DDT and for Hexachlorobenzene, and all POPs pesticides with combined AHTN Code.	Tariff Commission-lead agency, Bureau of Customs (BOC), National Statistics Office (NSO), Bureau of Import Services (BIS), FPA, EMB	5	Updated website and separate AHTN code for each POP
4. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of POPs pesticides within government agencies.	FPA, BOC, EMB	1	Report Coordinate with BOC
5. Update the Pesticide Regulatory Policies and Implementing Guidelines (Green Book) to review and report the status of POPs pesticides.	FPA (Agricultural pesticides), FDA (Household pesticides)	2	Updated Green Book

Objective 4	**Implement continuous environmental and health monitoring program to assess the risk from exposure to POPs pesticides**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Assess existing health and environmental monitoring program implemented by various agencies pertaining to POPs pesticides including their capacity to diagnose POPs related cases.	DOH, EMB, FPA, OSHC, NGO, UP-NSRI, academe	2	Assessment report
2. Assess POPs exposures of agricultural workers including the women and children in the families of agricultural workers and other population possibly exposed to POPs pesticides	DOH, OSHC, EMB, FPA, academe	2	Assessment report
3. Capacity building / training in the assessment of occupational exposures of agricultural workers and other population possibly exposed to POPs pesticides	EMB, DOH, DOLE-OSHC	2	Number of trained personnel
4. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs pesticides and make them available as public information. Disseminate the information in seminars to various groups including women associations	DOH, OSHC, EMB, FPA,academe	5	Monitoring report
Objective 5	**Promote sustainable agriculture practices and other national intervention programs that reduce the risk associated with pesticides in general**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Conduct studies on alternatives to pesticides and understanding of the factors influencing the adoption of sustainable agricultural practices by conventional farmers to address the gaps of the current dissemination strategy and improve the adoption level of the farmers towards organic	FPA, Agricultural Training Institute (ATI), LGU, NGOs, DOST, Research Institutions	2	Report

Farming, ICM and IPM.			
2. Review and assess the intervention programs implemented by the government on sustainable agriculture practices.	FPA, Agricultural Training Institute (ATI), LGU, NGOs, EMB	2	Report
3. Conduct cost-benefit analysis on the alternatives of pesticide including best agricultural practices (BAP).	FPA	1	Completed Cost benefit study
4. Promote the adoption and implementation/compliance of the FAO International Code of Conduct on the Distribution and Use of	FPA	5	Promotional and monitoring programme

3.2-2. GOAL AND ACTION PLAN FOR MANAGING PERFLUOROOCTANE SULFONATE (PFOS) AND RELATED CHEMICALS

Goal

Achieve an effective and environmentally sound strategy to manage and control the use of PFOS-containing products, wastes and processes where PFOS is used in the country.

Objectives

1. Provide a comprehensive and complete national inventory of PFOS in the country.

2. Identify and promote safe alternatives of PFOS in all uses.

3. Manage and regulate the entry of PFOS and PFOS-containing products in the country.

4. Develop strategies for phasing-out the use of PFOS and for implementing environmentally sound management of stockpiles and wastes containing PFOS.

5. Establish and implement environmental and health-monitoring programs.

Table 3.2.2. Action plan addressing PFOS

Objective 1	**Provide a comprehensive and complete national inventory of PFOS in the country.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**

1. Develop policy recommendations to enforce the disclosure of information relevant to the inventory of PFOS from the industrial sector. - Include PFOS and related chemicals in updating of the Philippine Inventory of Chemicals and Chemical Substances (PICCS) and Priority Chemicals Lists (PCL).	EMB, Industry Associations, DTI, DOH-FDA	1	DAO
2. Conduct a comprehensive inventory of PFOS specifically on key industry sectors including the training of personnel on how to conduct inventory of PFOS. Key industry sectors include chromium plating industry and producers/users of fire-fighting foams, aviation hydraulic fluids and synthetic carpets	EMB, DTI, FDA-DOH	5	Inventory report
3. Conduct in-depth material flow analysis for open and closed application of PFOS and PFOS containing products and some alternatives.	EMB, Academe, research institutions, DOST	3	Material Flow Analysis Report
4. Provide the needed facilities and instrumentation for the detection and quantification of PFOS and PFOS-related substances from articles, stockpiles, landfills, treatment facility and possible contaminated sites for a more comprehensive inventory of PFOS in the country.	EMB, DOST, DOH	2	Needs assessment report
Objective 2	**Identify and promote safe alternatives of PFOS in all uses.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review the available alternatives for PFOS currently used by other countries and the activity of POPRC and Secretariat including also their toxicity information.	EMB, DOST, DOH, Industry	1	Review report

2. Initiate and undertake multi-stakeholder consultation dialogue to develop criteria in the identification of safe alternatives to PFOS.	EMB, NGO, Industry	1	List of criteria to identify safe alternatives to PFOS
3. Prepare a complete list of alternatives to PFOS that will be used in the country and establish a database of substances that are suitable as safe alternatives to PFOS.	EMB, Industry, DOST Associations,	1	Complete list of alternatives
4. Review reports on health and risk assessment of the available alternatives for PFOS	EMB, DOH, DOST, Research institutions	2	Risk assessment report
5. Promote and encourage research on finding cost-effective alternatives for PFOS use in line with cleaner production in the industry, and conduct cost-benefit analysis of the available alternatives for PFOS	EMB, Industry Associations, NGO, DOST, Academe	2	Cost benefit analysis report
Objective 3	**Manage and regulate PFOS and PFOS-containing products within the country as well as their import/export.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Secure specific exemption and notify the SC Secretariat of acceptable purposes (e.g., aviation industry) and review the need for specific exemption.	EMB	1	Letter of recommendation
2. Strengthen policy on proper labelling of products/substances containing PFOS and related chemicals within the GHS (Global Harmonized System for Classification and Labelling of Chemical) framework.	EMB, BOC, DTI, IACEH, IATAC, DOH, National Coordinating Council for GHS	2	Policy guidelines /Joint AO 2009-1
3. Promote the implementation of BAT/BEP guidance documents specific to PFOS and related chemicals	EMB, DOST, Research Institutions	4	BAT/BEP demo projects

4. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of PFOS and PFOS-containing products within government agencies.	EMB, BOC, Tariff Commission	1	Review report
5. Review and enforce customs control mechanisms, and train custom authorities for compliance with Stockholm, Basel and Rotterdam Convention.	EMB, BOC	2	Number of trained custom authorities
6. Train customs authorities in monitoring the entry of products and articles containing POPs in general and hazardous chemicals including PFOS and related chemicals.	EMB, BOC	2	Number of trained custom authorities
Objective 4	**Develop strategies for phasing-out the use of PFOS and for implementing environmentally sound management of stockpiles and wastes containing PFOS.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Require industry (e.g., PFOS-containing hydraulic fluids in aviation industry) to provide pollution prevention and mitigation plans - a) To prevent release and manage the waste of PFOS and related substances b) To outline their plans and progress on phasing out the use of these substances within the 5-year exemption.	EMB, Industry, IATAC	1	Registration permit
2. Review and update international guidelines and other sources (e.g., Basel Convention guideline on PFOS management) for the storage and safe handling including transport of wastes containing PFOS.	EMB and industry Associations	1	Report

3. Assess the capacity (facilities) of the country to adopt BAT/BEP for the disposal and destruction of stockpiles (e.g., **fire-fighting foams, synthetic carpets,** and PFOS-based AFFF) wastes containing PFOS)	EMB, DOST, Industry Associations	2	Assessment report
4. Develop and implement monitoring and evaluation program of the relevant facilities with respect to safe handling, storage and transport of PFOS and related wastes.	EMB, Industry Associations	5	Monitoring program of facilities
Objective 5	**Establish and implement environmental and health monitoring programs to assess the risk associated from exposure to PFOS and related chemicals.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Conduct environmental monitoring studies for PFOS in air, soil and water near facilities (e.g., airport) that have used or currently use PFOS-containing products.	EMB, DOST, Industry Associations, DOTC-CAAP, Research Institutions	5	Report
2. Conduct environmental monitoring studies for PFOS in landfill leachate and sludge/bio-solids in wastewater treatment facilities.	EMB, DOST, Industry Associations, Research Institutions, LGUs, NGOs	5	Report
3. Assess occupational exposures of workers in facilities where articles and wastes potentially containing PFOS are used, stored, treated, or disposed.	EMB, OSHC, IACEH, DOH, DOLE-OSHA	5	Assessment report
4. Recognize and incorporate the requirement of BAT/BEP in occupational health and safety standards.	EMB, OSHC, IACEH, DOH, DOLE	5	Report
5. Conduct monitoring studies on indoor air and dust as well other routes of exposure of PFOS to humans including consumer products used at homes where	EMB, IACEH, DOH, Academe	5	Report

women and children may be exposed.			
6. Implement, update, and periodically report the results of the health and environmental monitoring program of PFOS.	EMB and Industry associations and women associations	5	Database

3.2.3. GOAL AND ACTION PLAN FOR MANAGING POLYBROMINATED DIPHENYL ETHERS (PBDE) AND RELATED CHEMICALS

Goal

Achieve an effective and environmentally sound strategy to manage the elimination of PBDE-containing products and wastes and control the entry of PBDE-containing products in the country.

Objectives

1. Provide a comprehensive and complete national inventory of PBDE in the country.

2. Establish and implement national strategies on the proper management of storage, treatment, and disposal of PBDE-containing wastes such as WEEEs and ELVs.

3. Eliminate PBDE from the recycling streams.

4. Establish a baseline conditions that could be used for risk assessment in evaluating the effectiveness of the action plans and other efforts to reduce the environmental and health risk associated with PBDE in the country.

Table 3.2.3 Action plan addressing PBDE management

Objective 1	**Provide a comprehensive and complete national inventory of PBDE in the country.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Prepare a list of knowledge resources and expertise on management of PBDE-containing materials including related researches in and out of the country. -Compile and review international	EMB, Academe, DOST, Industry	1	Database of knowledge resources and expertise, Report Comprehensive list of articles that contain c octaBDEs and C pentaBDEs

Studies conducted pertaining to inventory and monitoring of PBDE.			
2. Identify and prepare a list of recyclers, junkshops as well as treatment and disposal facilities of the products possibly containing POP-PBDE.	EMB, NSWMC	1	Database of recyclers, junkshops as well as treatment and disposal facilities
3. Conduct inventory on recyclers of polyurethane foam containing brominated flame retardants and evaluate the presence of PBDE in polyurethane foam in the country.	EMB/DOST, DOTC-LTO/LTFRB	1 (inventory) 1.0 (screening)	Inventory report
4. Conduct material flow analysis of articles containing PBDE in households and private and government institutions with the inclusion of minor uses of PBDE in all inventory procedures.	EMB, DOH-FDA, Academe	2	MFA report
5. Update the existing database of second-hand EEEs and link to the National e-waste inventory	EMB, BOC, NSO, BIS, DOTC, DTI-BETP/BTRCP	5	Database Database should be updated to contain information on the type , date of manufacture of the second hand EEEs
6. Update the existing database to include second-hand vehicles and link to the transport sector inventory.	BOC, NSO, BIS, DOTC, DTI	5	Database should be updated to contain information on the type , date of manufacture of the second hand vehicles
7. Purchase additional portable equipment (e.g., XRF) to detect bromine as an indication for PBDEs in samples and products including adequate training to personnel on the inventory analysis and use of equipment.	EMB, BOC, DOST	2	Purchased XRF, training guidelines/ procedures, and trained personnel
8. Conduct sampling and analysis to monitor products known/suspected to contain PBDE and other brominated flame retardant such as HBCD.	EMB, DOST, other research institutions	1	Report

9. Adopt standard protocols for sampling and test methods and conduct sampling and testing of PBDE presence in imported brand new and second hand EEEs and vehicles.	EMB, DOST	1	AO, Standardized procedures
10. Adopt standard protocols for sampling and test methods, and conduct sampling and testing of PBDE presence in products used in buildings and in construction industries (e.g. tapes, insulation, and fire retardants).	EMB, DOST	1	AO, Standardized procedures
11. Identify or include the inventory of foam manufacturers recycling their own scrap foams (and turning them into rebounded foams for reselling).	EMB, DOST	1	Inventory report including list of foam manufacturers
12. Enforce custom control mechanisms, and train customs authorities for compliance with Stockholm, Basel and Rotterdam Convention.	EMB, BOC, DOH-FDA	2	Assessment and Monitoring Report
13. Hire and train customs authorities in monitoring the entry of products and articles containing POPs in general and hazardous chemicals including PBDE and related chemicals.	EMB, BOC, DOH-FDA	2	Number of hired and trained customs authorities
14. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of PBDE-containing materials within government agencies.	EMB, BOC	1	Report
Objective 2	**Establish and implement national strategies on the proper management of storage, treatment, and disposal of PBDE-containing wastes such as WEEEs and ELVs.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**

1. Review the SMRs to include the management plan (storage, treatment, and disposal) of WEEEs and ELVs internationally and in the country. -Develop and implement monitoring and evaluation programs for handling, storage, and disposal of WEEEs and ELVs.	EMB, DTI-BIS, Accredited TSDs	1	Report , Memorandum Circular
2. Strengthen the regulatory framework and practical implementation for the waste management of PBDE and HBCD-containing WEEE and end of live vehicles (ELV).	EMB, IATAC, IACEH	3	DAO or MC
3. Develop policy recommendations to stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention.	EMB, IATAC, IACEH	3	Policy recommendation
4. Develop policy recommendation to regulate the reuse and recycling of articles containing brominated diphenyl ethers (in particular to sensitive uses).	EMB, IATAC	3	DAO
Objective 3	**Eliminate PBDE from the recycling streams.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review the PBDE BAT/BEP guidelines and possibly further techniques employed by other countries in eliminating PBDE from the recycling streams.	EMB, DOST, other research institutions	2	Report consisting of the different techniques employed by other countries
2. Develop strategies allowing waste separation in the recycling streams	EMB, DOST	5	Guidelines/plan and monitoring report
3. Implement effective screening and separation techniques to separate materials containing the substances in the recycling.	EMB, DOST	5	Report

Objective 4	**Establish baseline conditions that could be used for risk assessment in evaluating the effectiveness of the action plans and other efforts to reduce the environmental and health risk associated with PBDE in the country.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Conduct a nationwide survey of PBDE in selected waste streams in the country.	EMB, other research institutions	5	Survey report
2. Conduct biota monitoring studies on the presence of PBDE in air, land, and water streams to determine the level of contamination.	EMB, other research institutions	5	Environmental monitoring report
3. Identify the list of industries that use PBDE and assess occupational exposures of workers in facilities where articles and wastes potentially containing PBDEs are stored, sorted, treated, recycled, recovered or disposed.	EMB, OSHC, DOH, DOLE	5	Assessment report
4. Conduct monitoring on indoor air and dust as well other routes of exposure of PBDE to humans including consumer products at home where women and children maybe exposed	EMB, OSHC, DOH	5	Monitoring report
5. Determine the need to implement any remedial actions of sites contaminated or stockpiles containing PBDEs	EMB, DOST, DOH	5	Report
6. Make an analysis of polymer scrap produced in the WEEE recycling facility for PBDE content	EMB	2	Report
7. Conduct an environmental monitoring and evaluation for PBDE in waste streams	EMB	5	Report

8. Implement, update, and periodically report the results of the health and environmental monitoring program of PBDE. Disseminate the information to different social groups including women associations.	EMB, DOH	5	Database

3.2.4. GOAL AND ACTION PLAN FOR MANAGING POLYCHLORINATED BIPHENYLS (PCBS)

Goal

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

Objectives

1. Prepare a comprehensive and complete national inventory of PCBs, PCB containing materials, and PCB wastes.
2. Strengthen and implement programs on safe handling, storage, and transport of PCBs, PCB-containing materials and PCB wastes.
3. Strengthen and implement continuous integrated environmental and health monitoring program.
4. Eliminate and destroy all PCBs, PCB-containing materials, and PCB wastes not later than 2025.

Table 3.2.4. Action plan addressing PCBs

Objective 1	**Prepare a comprehensive and complete national inventory of PCBs, PCB containing materials, and PCB wastes.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP including description on the current situation of the project and further activities planned.	EMB and IATAC	1	Report
2. Update the list of knowledge resources and expertise on PCB management and related research	EMB, Research Institutions (UP-NSRI, DLSU-ARRPET)	1	List of resources and expertise

3. Update the profile of potential sources of PCBs in the country consisting of PCB owners, treatment, storage, and disposal facilities, and servicing facilities.	EMB and IATAC	1	Updated database
4. Update the list of laboratories for sampling and analysis of PCBs	EMB	1	AO, list of accredited laboratories
Objective 2	**Strengthen and implement programs on safe handling, storage, and transport of PCBs, PCB-containing materials and PCB wastes.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review the guidelines (including the CCO) for the safe handling, labelling, storage, treatment and disposal requirements, spill prevention and clean-up requirements, and develop recommendation to address gaps identified and possibly update guidelines with information from the most recent international guidelines on PCB management.	EMB and IATAC	1	Revised CCO
2. Review the current guidelines on the stringent regulation for PCB-free (<2ppm) and the prohibitive cost of transportation and treatment of PCB equipment carcass.	EMB and IATAC	1	Revised CCO
3. Develop an environmentally sound management plan for equipment containing oils of less than 50ppm to be decontaminated and allowed to be retro-filled and reused by owners, instead of decommissioning for disposal.	EMB and IATAC	2	Revised CCO
4. Conduct additional training for operators, owners of PCB-containing equipment on storage and disposal facilities	EMB, NEA and Research Institutions (UP-NSRI, DLSU ARRPET, etc.	2	Number of trainings conducted

Objective 3	**Strengthen and implement continuous integrated environmental and health monitoring program with respect to PCB**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1.Review and conduct gap analysis of existing projects or programs derived from the action plans which were developed from the initial NIP.	EMB and NEA	1	Report
2. Assess and provide adequate staffing of EMB Offices in provincial, regional, and national levels to sustain the existing health and environmental monitoring program implemented by various agencies pertaining to PCBs	EMB, DOH, NEA	2	Assessment report and Memorandum circular
3. Formalize and institutionalize a multi-sectoral participation of NGOs, EMB and the academe in the health and environmental monitoring program.	EMB, Academe, NGO, Industry Associations	2	Memorandum circular
4. Implement, update, and periodically report the results of the health and environmental monitoring program and make them available as public information subject to the terms of CBI.	EMB, DOH	5	Monitoring report, Database
Objective 4	**Eliminate and destroy all PCBs, PCB-containing materials, and PCB wastes not later than 2025**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review and monitor the progress of projects (e.g., POPs Destruction Facility Project) derived from the action plans which were developed from the initial NIP.	EMB, PAFC-PNOC	4	Monitoring report
2. Develop and implement incentives as part of the regulatory activity for electric utilities to comply with the phase-out of PCB.	EMB, IATAC, DOE, NEA	5	Memorandum Circular, Revised CCO

3.2.5. GOAL AND ACTION PLAN FOR MANAGEMENT OF UNINTENTIONALLY PRODUCED POPS

Goal

Achieve progressive reductions and continuous monitoring in the releases of dioxins and furans, and other unintentional POPs (e.g., PeCBs) in the Philippines, based on scientific knowledge.

Objectives

1. Prepare an updated inventory of dioxin and furan and possibly other UPOP releases for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors.

2. Strengthen and implement programs on BAT/BEP promotion, adoption and monitoring across the most significant dioxin and furan source categories.

3. Strengthen the infrastructure to monitor and control dioxins and furans and other UPOP releases including information on the prevention of environmental and health effects of UPOPs.

Table 3.2.5 Action plan addressing Unintentional POPs (U-POPs)

Objective 1	**Prepare an updated inventory of dioxin and furan and possibly other UPOP releases for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Create publicly available catalogue and a database of information on emission factors significant in the country as regards the nature and quantity of releases of unintentional POPs (D/F) based on the updated inventory.	EMB, NSC	2	Database
Objective 2	**Strengthen and implement policies/programs on BAT/BEP promotion, adoption and monitoring across the most significant dioxin and furan source categories.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1.Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP.	EMB and DOST	1	Report

2. Create publicly available catalogue and a database of information on emission factors significant in the country as regards the nature and quantity of releases of unintentional POPs (D/F) based on the updated inventory.	EMB, NSC	3	Number of trainings/workshops and number of participants
3. Sustain seminar workshops to LGUs (officials, farmers and households and women associations) to assist in promoting the implementation of BAT/BEP for unintentional POPs particularly in minimizing the release of dioxins/furans from open burning.	EMB, NSC	3	Number of trainings/workshops and number of participants
4. Promote and encourage the availment of financing programs (soft loan) and incentives for industries/LGUs that adopt BAT/BEP.	EMB, NSC	2	Number of industries availed in the financing program
5. Conduct studies on feasible POPs reduction linked with technologies on air pollution control device.	DOST, EMB, DOE, Research Institutions	3	Reports
6. Conduct studies on feasible POPs reduction linked with sustainable production and consumption.	EMB, DOST, DTI	5	Reports
7. Conduct studies on feasible POPs reduction linked with waste utilization.	EMB, DOST, Research institution	5	Reports
Objective 3	**Strengthen the infrastructure to monitor and control dioxins and furans and other UPOP releases including information on the prevention of environmental and health effects of UPOPs**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1.Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP.	EMB and DOST	1	Report

2. Strengthen the enforcement and monitoring compliance by increasing manpower and enhancing the technical capacity of LGUs.	EMB, LGUs	2	Report
3. Provide adequate number of personnel of EMB laboratories in regional and central offices with training on sampling and analysis to monitor UPOPs.	EMB	3	Number of trained personnel
4. Establish a dioxin laboratory to support the enforcement of the provision on dioxins/furans in the Clean Air Act (RA 8749).	EMB	2	Dioxin laboratory
5. Conduct health and risk assessment based on the major sources of dioxins/furans and other UPOPs identified from the updated third National Inventory.	EMB, DOH, NGO, Academe	1	Report
6. Implement, update, and periodically report the results of the health and environmental monitoring of UPOPs and make them available as public information. Disseminate the information to barangay health workers and women associations.	EMB, DOH, Academe	3	Database
7. Integrate in the curricula and/or extra-curricular activities the environmental and health impacts of dioxins and furans.	CHED, PATLEPAM, EMB, DepEd,	5	Curricula and/or extracurricular activities integrated with environmental and health impacts of dioxins and furans

3.2.6. GOAL AND ACTION PLAN FOR MANAGEMENT OF POPS CONTAMINATED SITES

Goal

Obtain a comprehensive identification of all contaminated and potentially contaminated sites with corresponding management strategies to protect public health and environment.

Objectives

1. Establish criteria or guidelines for the identification of contaminated sites.

2. Establish a group and a pool of trained personnel and local experts with the appropriate mandate for the identification and prioritization, assessment, and management of contaminated sites.

3. Identify potential POPs- and newly identified POPs-contaminated sites throughout the Philippines based on historical information, including an initial ranking of priorities for assessment.

4. Develop risk management, communication and prioritized clean-up plans for remediation of POPs contaminated sites that includes the newly identified POPs.

Action Plan Implementation Strategy

The Environmental Management Bureau of the Department of Environment and Natural Resources shall be the lead agency in implementing the activities and actions addressing the national priorities for managing the POPs contaminated sites. To ensure that national priorities are addressed, the Technical Working Group shall be tasked to monitor the activities under each objective to effectively manage the POPs contaminated sites.

Table 3.2.6 Action plan addressing POPs contaminated sites

Objective 1	**Establish criteria or guidelines for the identification of contaminated sites**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review and evaluate the progress of implemented and on-going projects derived from the action plans which were developed from the initial NIP (2006).	EMB	1	Report
2. Review and update the criteria or guidelines to include sites potentially contaminated with newly identified POPs of concern such as endosulfan, PBDE and PFOS.	EMB	2	Report
Objective 1	**Establish a group and a pool of trained personnel and local experts with the appropriate mandate for the identification and prioritization, assessment, and management of contaminated sites.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review and evaluate the progress of implemented and on-going projects derived from the action plans which were developed from the initial NIP, including the	EMB	1	Report

Identification of training needs, capacity-building for identification and management of contaminated sites (through intensive field and desk-based training), and provision of necessary equipment and other resources.			
2. Strengthen the infrastructure (facilities and instrumentation) needed for the analysis of new POPS such as PFOS and PFOS-related substances and PBDE.	EMB, FPA, NSC	5	Monitoring report
3. Train personnel on the use of the new equipment to identify and quantify contamination levels of suspected hotpots for new POPS such as endosulfan, PFOS and PBDE.	EMB, FPA, NSC, DOST	2	Number of trained personnel
Objective 3	**Identify potentially POPS and newly identified POPs contaminated sites throughout the country based on historical information, including an initial ranking of possible priorities for assessment.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review and evaluate the progress of implemented and on-going activities identified or contained in the initial NIP (2006).	EMB	1	Report
2. Identify, map out and create a database for new POPs-contaminated sites in the country.	EMB	1	List of identified POPs contaminated sites in the country
3. Update the guidelines and procedures to include the newly identified POPs in prioritizing sites for assessment.	EMB, FPA, DOST, DOH	1	Established guidelines/procedures
4. Identify priority sites and conduct on-site assessment and environmental monitoring of suspected sites for possible contamination of POPs pesticides, PFOS, PBDE and related chemical (e.g., practice areas and areas of (former) fire events where PFOS-	EMB, Academe, LGU	5	List of identified priority sites and assessment and monitoring report

Containing fire-fighting foams were used).			
Objective 4	**Develop risk management, communication and prioritized clean-up plans for remediation of POPs contaminated sites that includes the newly identified POPs.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Review and evaluate implemented and on-going projects on the remediation of POPs-contaminated sites.	EMB, DOST	1	Report
2. Develop a harmonized transparent and science-based risk assessment, risk management and risk communication procedure to manage contaminated sites.	EMB, Academe, IACEH, IATAC, PPTAC	2	Established guidelines/procedures
3. Conduct site-specific risk assessment on identified hotspots to prioritize sites for remediation.	EMB, FPA, Academe. DOH	2	Report
4. Develop clean-up and management plans for hotspots, including Information Management Program (for the affected receptors including setting-up of information center).	EMB, FPA, Academe, LGU	3	Plans/programmes
5. Monitor the clean-up, destruction, and management plans for prioritized contaminated sites.	EMB, LGU	5	Monitoring report

3.2.7. GOAL AND ACTION PLAN FOR PUBLIC AWARENESS, INFORMATION, AND EDUCATION (IEC) OF POPS

Goal

Achieve high level of awareness and knowledge across all sectors on POPs management to support the implementation of the updated National Implementation Plan

Objectives

1.Strengthen the current program to sustain awareness and understanding of the health, environmental risks, and economic and social impacts of POPs.

2.Create and implement educational programs on POPs in all levels.

3.Strengthen the political lobbying programs to sustain POPs reduction and elimination as a public health priority, environmental issue, and priority action agenda.

4.Strengthen and sustain the network for information exchange and communication on POPs and the National Implementation Plan.

Table 3.2.7. Action plan addressing information, education and communication (IEC) relevant to POPs management

Goal	**Achieve high level of awareness and knowledge across all sectors on POPs management to support the implementation of the updated National Implementation Plan**		
Objective 1	**Strengthen the current program to sustain awareness and understanding of the health, environmental risks, economic and social impact of POPs.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Develop and maintain an on-line portal for dissemination of IEC materials that include documented testimonials, popularized technical reports, and risk studies.	EMB, FPA, DOH, NSC	5	Publicly accessible on-line portal
2. Capability building programs for DOLE-BWC, OSHC and Labor Law Compliance Officers	DOLE	2 years	Trained DOLE personnel in the risk assessment and enforcement in POPs management
3. Sustain a series of seminars and lectures to various organizations for both formal and non-formal organization.	EMB, FPA, DOH, Academe, CHED, DOST, DOLE	5	Number of seminars/lectures and participants
4. Write a monograph for POPs	EMB, Academe, DOST	5	Monograph

5. Develop strategies to sustain media coverage on POPs - Identify gaps on IEC programs - Develop a policy recommendation or program that coordinates and utilizes the existing government resources to effectively reach and disseminate the information on POPs and its environmental, health, and economic impacts. - Create programs in raising public awareness and education that involve multi-sectoral participation of government agencies, LGUs and NGOs.	EMB, PIA, Academe, CHED, LGU, DepEd	3	Report
6. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs in general and make them available as public information. Encourage the participation of women groups in disseminating the information in the community.	EMB, DOH	5	Survey report
Objective 2	**Create and implement educational programs on POPs at all levels.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Develop policy recommendation to incorporate explicitly the topic of POPs in the implementing rules and regulation (IRR) of RA 9512 (an act to promote environmental awareness through environmental education).	EMB, FPA, CHED, DOST, DepEd	2	Amendment on RA 9512
2. Prepare training module of POPs for potential trainers among teachers and student leaders	EMB, DepEd, CHED, DOST, PATLEPAM, Academe	3	Number of training modules
3. Conduct National Orientation seminar and training of potential trainers among teachers and student leaders from different schools nationwide.	EMB, FPA, CHED, DOST, DepEd, PATLEPAM	5	Number of National orientation seminar/ trainings and number of trained teachers and students

4. Provide research grant for faculty and students involved in POPs-related research work.	CHED, DOST	5	Number of graduates, researches/paper presentation/output, and publications
5. Provide incentive mechanism for schools implementing outreach programs / extension services including POPs management as one of the topics	CHED, DepEd, DOST	5	Number of schools that conduct orientation seminars of the environmental and health effects of POPs in their respective communities
6. Involve national television networks in the advocacy to include POPs as one topic in their educational TV shows.	EMB, PIA, NSC, local media networks	5	Number of media coverage
7. Work with Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM) in the promotion of environmental awareness through environmental education.	CHED, PATLEPAM, NSC	5	MOA between EMB and PATLEPAM promoting POPs awareness through environmental education
	EMB, DepED, CHED, DOST	5	Number of curricula which integrates POPs education
Objective 3	**Strengthen the political advocacy or lobbying programs to sustain POPs reduction and elimination as a public health priority, environmental issue, and priority action agenda.**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Identify target advocacy groups and develop specific/key messages and delivery methods per group	EMB, FPA, NSC	1	List of identified advocacy groups and list strategies per group
2. Conduct series of lobbying activities for legislative and budgetary support for the reduction & elimination of POPs.	EMB, FPA, NSC	5	Number of activities supporting the reduction and elimination of POPs for legislative and budgetary support, bills/resolutions that will be pushed through with the legislative bodies

3. Integrate POPs reduction and elimination in agency's plans, programs, services, and resource allocation and present these effectively during regular Congress/Senate hearings on government program and budget allocations.	EMB, FPA, NSC, Senate, Congress	3	Memorandum Circular, National Agencies Programme/plan integrating POPs reduction and elimination
4. Enlist journalists, media agencies and associations and environment-friendly journalist associations in committees or task forces.	EMB, FPA, PIA, NSC, local media networks, PCIJ, PCPJ	3	Number of journalist and media association involved in POPs-related committees or task force
Objective 4	**Strengthen and sustain the network for information exchange and communication on POPs and the National Implementation Plan**		
Strategies/Activities	**Implementing Partner/Agency**	**Time frame (No. Of Years)**	**Performance Indicators**
1. Make a survey of partner stakeholders to establish common interest and preferred communication mechanisms.	EMB, FPA, NSC, Industry organizations, women organizations	2	Survey report
2. Sustain regular coordination meetings, including reporting on POPs updates and the activities under the National Implementation Plan (NIP), and support the country's participation to COP.	EMB, FPA, NSC	1	Memorandum Circular, minutes of meetings
3. Organize national conferences and symposia as regards POPs	CHED, DOST, PATLEPAM-EMB, Academe		Number of conferences/symposia and participants
4. Develop and maintain information clearing house that would serve as the focal center for POPs information such as BAT/BEP practices, results of environment and health monitoring, international updates on POPs, and POPs issues, etc.	EMB, FPA, DOST, NSC	5	Established clearing house and monitoring report

5. Sustain the participation in local, national, and international forums on POPs, including presentations during regular meetings of business associations.	EMB, FPA, NSC, Academe	5	Number of forums attended
6. Establish and maintain an intra-agency and Local Government Unit reporting/ information exchange system under the National Single Window (NSW) system.	EEMB, FPA, NSC	3	Functional NSW

CHAPTER 4 SOCIO-ECONOMIC IMPACTS OF POPS AND THE NATIONAL IMPLEMENTATION PLAN

4.1. SOCIO-ECONOMIC IMPACTS OF POPs

The UNEP/World Bank Interim Guidance for Developing a National Implementation Plan for the Stockholm Convention enumerates several activities that should be undertaken in the socio-economic assessment of the environmental impacts of persistent organic pollutants:

- Determine the nature and characteristics of the risks of concern;
- Determine the types of regulatory and non-regulatory measures or instruments that could be adopted to reduce or mitigate damage;
- Assess the costs of risk reduction and their distribution, where this includes costs to industry, consumers, regulators, and society more generally;
- Asses the benefits of risk reduction and their distribution, where these may relate to environmental and human health gains or to increased technical or product innovation;
- Assess the wider trade, competition, and economic development implications of adopting a change in policy where feasible.

The data and resources to conduct a comprehensive socio-economic assessment of the impacts of POPs are not available at the time of writing of this report, thus, the socio-economic assessment being presented is a simplistic analysis of the existing status of POPs, the known risks to the most vulnerable sectors and cost of risk reduction associated with the action plans to manage the POPs in the country.

Sound estimates of the economic value of damage to the environment and the cost of investments that would mitigate such damage, to improve the design of policies and projects, and to arrive at environmentally sound investment decisions; were generated during various consultations and focused group discussions with concerned government agencies, industry representatives and the non-government (NGOs) and peoples' organizations (Pos).

4.1.1. PERSISTENT ORGANIC PESTICIDES

POPs Pesticides have been linked to many health problems including endocrine disruption, reproductive and neurological effects and cancer. POPs pesticides are distributed in all the environment media. The most vulnerable sector to the adverse effects of POPs pesticides are the farmers who apply these pesticides. In the Philippines, most farmers prepare and apply pesticide solutions without appropriate personal protection equipment (**Fig.4.1.1a**). The lack of awareness on the health effects of POPs pesticides and on the safe storage and handling of these pesticides in their homes, expose not only the farmers but their families as well to the adverse health effects of POPs. Reproductive defects were observed in offsprings of women exposed to POPs pesticides at the critical period of the fetus formation. However, all humans and wildlife could be exposed to these chemicals through contaminated drinking water, food and air.

Fig.4.1.1. Unsafe application of pesticides commonly occurring in farms

To date, the most of the listed initial POPs pesticides in the SC are banned, some are not registered for any use. More efforts have to be done to phase out the remaining stockpiles of DDT and endosulfan and to institute regulatory action to ban the use of endosulfan.

4.1.2. PFOS AND OTHER RELATED CHEMICALS

PFOS and its related compounds have been linked to reproductive defects such as lower sperm count in men and delayed pregnancy in women. Developmental defects such as reduced weight and size at birth and neurological effects such as Attention Deficit Hyperactivity Disorder (ADHD) have been associated with higher serum levels of PFOS.

The identified sectors that handle majority of the PFOS articles and other PFOS-related substances are industries with metal plating processes, electronics and semiconductor industries, paper and packaging industries, and fire-fighting substances. In the conduct of inventory, the findings suggest that there are still gaps in the awareness of the use of PFOS among members of the industrial sectors. The quantity of articles based on importation data handled by the industries with metal-plating processes and paper and packaging industries and the nature of the processes involved in the manufacture of their products suggest considerable volumes of sewage sludge that could contain PFOS. Sampling and testing would determine whether or not these sectors possess contaminated sites or are involved in other environmentally unsound practices. In addition to these, the quantity of articles being handled implies the need to apply for exemption for specific purposes in the use of PFOS until an economically and environmentally sound alternative substance for PFOS is available. A more comprehensive inventory of PFOS should include consumer items like carpets and household utensils which may contain PFOS and which could expose women and children at home.

4.1.3 POLYBROMINATED DIPHENYL ETHERS (PBDES)

PBDEs are a class of brominated flame retardants that are used as additives in many polymers for manufacture of consumer products such as electrical and electronic equipment, textiles, upholsteries and in many plastics to reduce their flammability. However, the benefits derived from using PBDEs are

outweighed by their negative impacts on the environment and wildlife due to their persistence, potential to bioaccumulate, and toxicity. PBDEs have been linked to neurological disorders and delay in development of babies. The most vulnerable sectors of society exposed to the hazards of PBDEs are those involved in recycling of electronic wastes and scavenging in dumpsites especially in the informal sector.

Although the Philippines does not produce PBDE, data reveals a staggering amount of importation and application in commodities found in the country's consumer market. The inventory of PBDE under the Enabling Activity only covered the electronics and transportation applications of POP-PBDE. The main challenge in efforts to eliminate POP-PBDEs is the identification of potential contaminated sites, existing stockpiles, POP-PBDE-containing articles still being used by consumers, and their disposal practices at their end-of-life.

4.1.4 POLYCHLORINATED BIPHENYLS (PCBS)

In studies on humans exposed to PCBs, effects on sperm motility, fetal growth rate (lower birth weight, smaller head circumference) and development (shorter gestational age, neuromuscular immaturity) neurological functions of the offspring (impaired autonomic function, increased number of abnormally weak reflexes, reduced memory capacity, lower IQ scores, and attention deficit) have been observed. Epidemiological studies suggest exposure-related increases in cancers of the digestive system, especially liver cancer, and malignant melanoma.

The most vulnerable sector exposed to the hazards of PCBs are those working in electric utilities with transformers filled or contaminated with PCB oil. However, all humans and wildlife can be exposed to PCBs through the food chain and air.

The inventory of the stockpile of PCBs and the environmentally safe disposal of these stockpiles before 2020 remains the priority of the government in its efforts to manage POPs. **Fig.4.1.4** is a common sight found during field inspections of PCB storage areas. There is a need to strengthen the existing program on safe handling, storage and transport of PCB-containing material. These issues are being considered in the updating and revision of the CCO for PCBs.

Fig. 4.1.4. Unsafe handling of PCB transformers and PCB oils.

4.1.5 UNINTENTIONALLY PRODUCED POPs

Dioxins and Furans are the most toxic among the POPs listed in the Convention. They cause multiple adverse health effects such as malformations of the reproductive organs of offsprings of parents exposed to these chemicals, neurological and behavioural problems of children, endocrine related problems and various types of cancer. These compounds are not produced commercially for any industrial use but can be formed as a result of burning of organic matter especially plastics and other substances with chlorine compounds. Since burning is a popular option in disposal of waste in households and in farms in the Philippines, an intensive education of the population on the adverse health effects of dioxins and furans could be the most effective way to reduce the production of UPOPs.

The third National Inventory has been completed and there are on-going projects that have addressed some issues relevant to dioxins and furan. Significant progress has also been achieved in the information, education, and communication campaigns to increase the understanding of these UP-POPs as regards environmental and health impacts. However, there is still a need to strengthen the programs on BAT/BEP promotion and adoption, and the infrastructure to monitor and control dioxins and furans releases.

4.1.6. POPs CONTAMINATED SITES

To protect the population from exposure to POPs, a comprehensive identification of all contaminated and potentially contaminated sites with POPs and the subsequent remediation or control of access to these sites should be done.

POP-PBDEs could have contaminated sites where products and industrial goods suspected to contain PBDE are used. Landfills are the ultimate destination of many POP-PBDEs-containing materials due to their widespread application in a multitude of consumer and industrial goods. There have been no studies conducted yet for PFOS contamination. However, landfill and dumpsites are potential sites of PFOS contamination as literature shows that PFOS is found at the parts-per-billion (ppb) level in landfill leachate.

4.1.7. PUBLIC AWARENESS, INFORMATION, AND EDUCATION (IEC) OF POPS

The cooperation of the general public on the efforts of the country to phase out POPs and reduce the unintentionally produced POPs can only be attained if there is a clear understanding of the adverse health effects of POPs and the awareness of the importance to phase out the POPs in the environment across all sectors of the society. National and local government officials, farmers, households and industrial sectors must all be reached out to create a high level of public awareness on the health effects of POPs and the country's efforts to eliminate POPs in the environment. Women associations in the LGUs are important partners in the POPs education campaign not only because they are most vulnerable to the adverse effects of POPs but because they are the most empowered in managing POPs containing waste in the home environment.

4.2. SOCIO- ECONOMIC BENEFITS OF POPs PHASE-OUT

The most important socio-economic benefit of POPs phase out is the protection of human health from the adverse effects of POPs. The weight of scientific evidence strongly suggests that overexposure to certain POPs can cause serious immune and metabolic effects, neurological defects, reproductive anomalies, cancer, and other abnormalities in both humans and animals.

The improved health of the population is a critical factor in an atmosphere of high industrial productivity. Keeping the workforce and society healthy would eliminate income losses due to sickness and medical expenses. A healthy workforce would promote labor productivity and encourage investments in the various sectors of the economy like industry, manufacturing, services, infrastructure, and tourism.

The phase out of POPs would result to a healthy environment. Wild life will be healthy and natural biodiversity will be preserved. Water bodies and the atmosphere will be less contaminated and will promote the health of all living things in the environment.

4.3. SUMMARY ESTIMATES OF 5-YEAR DEFENSIVE EXPENDITURES TO SUPPORT THE NIP

Table 4.1 summarizes the projected defensive expenditures required over a 5-year period designed to reduce or eliminate POPs in the country. For all the identified POPs sources, the total amount of US$ 36.74 million will be needed to implement all the identified defensive or abatement programs and activities. Compared to the 2006 NIP total budget of US$ 34.76 million, a 5.7% increase was estimated in this updated NIP.

The cost estimates cover six basic types of cost items to effectively implement the action plans: (1) human resources, (2) facilities, (3) equipment, (4) services, (5) materials, and (6) miscellaneous costs. The cost estimates are based on the following key assumptions:

The currency exchange rate is USD 1.00 to PhP 43.00.

- Sixteen (16) regions in the Philippines are included in the regional plans.
- Contingency factor of 20% is assumed for all costs.
- According to resource requirement allotment by sector, the cost of strategies and action plan addressing POPs pesticides including DDT and Endosulfan accounts for 20 percent of the total cost across all sectors; PFOS and related chemicals account for 13 percent; PBDE and related chemicals account for 15 percent; PCBs account for 17 percent; Unintentional POPs account for 15 percent; POPs contaminated sites and information for 10%, education and public awareness of POPs both account for 10 percent of total cost across all sectors.
- The details of the action plans and corresponding resource and cost requirements to address the POPs pesticides the industrial chemicals PFOS, PBDEs, PCBs, the UPOPs, the contaminated sites and the IEC are listed in Appendix 5.

Table 4.3a. Summary of Five Year Defensive Expenditures to Support the NIP

Task / Activities	Proposed Schedule of Resources in Percentage (%) of allocation						Project Cost (US$ 1000)	Proposed Schedule of Cost (US$ 1000)				
	Total	Year 1	Year 1	Year 1	Year 1	Year 1	Total	Year 1	Year 1	Year 1	Year 1	Year 1
Goal 1-7	100	12	31	24	17	16	36,737	4,981	7,860	9,307	8,453	6,136
1. POPs	100	12	31	24	17	16	7,395	880	2,262	1,756	1,289	1,208
2. PFOS	100	18	24	25	19	14	4,853	855	1,178	1,205	932	683
3. PBDE	100	19	18	29	20	14	5,656	1,098	1,028	1,614	1,124	791
4. PCBs	100	10	23	25	22	20	6,123	628	1,386	1,557	1,343	1,209
5. UPOPs	100	6	8	23	43	20	5,551	337	457	1,283	2,361	1,113
6. Contaminated Sites	100	13	24	30	19	13	3,667	492	882	1,105	700	487
7. IEC	100	20	19	23	20	18	3,492	690	666	788	705	643

APPENDICES

Appendix 1 Details on estimation of c-OctaBDEs from TVs and CRTs

Table 2.5.7a. Estimated amount of c-OctaBDEs in the Philippines

Inventory. Year	Estimated amount of PBDE in TVs (kg)	Estimated amount of PBDE in PCs (kg)	Total PBDE in CRTs (kg)	heptaBDE (43%)	hexaBDE (11%)
1990	42,509	1,415	43,924	18,887.37	4,832
1991	43,504	1,448	44,952	19,329.33	4,945
1992	44,522	1,482	46,004	19,781.64	5,060
1993	45,563	1,517	47,080	20,244.53	5,179
1994	46,630	1,552	48,182	20,718.25	5,300
1995	47,721	1,589	49,309	21,203.06	5,424
1996	48,837	1,626	50,463	21,699.21	5,551
1997	49,980	1,664	51,644	22,206.97	5,681
1998	51,150	1,703	52,853	22,726.61	5,814
1999	52,347	1,743	54,089	23,258.42	5,950
2000	76,345	10,357	86,702	37,281.85	9,537
2001	77,796	10,553	88,349	37,990.20	9,718
2002	79,274	10,754	90,028	38,712.02	9,903
2003	80,780	10,958	91,738	39,447.54	10,091
2004	82,315	11,166	93,482	40,197.05	10,283

Appendix 2. Details of the estimation of c-octaBDE from importation of CRTs

Table 2.5.7b. Estimated amount of c-octaBDE from importation of CRTs (UNComtrade) in the Philippines

Inventory Year	Amount of Imported TV (kg)	Amount of Imported PC (kg)	Total Amount of imported CRT devices (kg)	Amount of PBDE from Imported TV (kg)	Amount of PBDE from Imported PC (kg)	Total Amount of PBDE from Imported CRTs (kg)	Amount of heptaBDE (kg)	Amount of hexa BDE (kg)
1996	16,183,322	163,468	16,346,790	4,224	125	4,348	1,870	478
1997	19,861,703	200,623	20,062,326	5,184	153	5,337	2,295	587
1998	13,642,586	137,804	13,780,390	3,561	105	3,666	1,576	403
1999	22,780,020	230,101	23,010,121	5,946	175	6,121	2,632	673
2000	21,884,255	911,844	22,796,099	5,712	695	6,407	2,755	705
2001	17,256,988	719,041	17,976,029	4,504	548	5,052	2,172	556
2002	38,860,521	1,619,188	40,479,709	10,143	1,234	11,376	4,892	1,251
2003	29,445,207	1,226,884	30,672,091	7,685	935	8,620	3,707	948
2004	36,262,910	1,510,955	37,773,865	9,465	1,151	10,616	4,565	1,168
TOTAL by the end of 2004		6,719,908	222,897,420	52,198	5,121	61,543	26,463	6,770

Appendix 3. Details on the vehicle registration to estimate c-pentaBDE

Table 2.5.7c. Estimated amount of c-pentaBDE motor vehicle registration

Year	Registered Vehicles	Estimated Cars/Trucks	Amount of c-pentaBDE (kg)	Estimated Bus Population	Amount of c-pentaBDE (kg)
2004	4,872,854	2,597,263	20,778.10	28,225	1,411.25

Appendix 4. Details on the estimation of c-pentaBDEfrom disposed vehicles

Table 2.5.7d. Estimated amount of c-pentaBDE from disposal of vehicles

Year	Estimated Disposed Cars/Trucks	Estimated Amount of c-pentaBDE	Estimated Disposed Buses	Estimated Amount of c-pentaBDE
1990	46,622	372.98	974	48.70
1991	50,818	406.54	1,062	53.10
1992	55,391	443.13	1,158	57.90
1993	60,376	483.01	1,262	63.10
1994	65,810	526.48	1,375	68.75
1995	71,733	573.86	1,499	74.95
1996	78,189	625.51	1,634	81.70
1997	85,226	681.81	1,781	89.05
1998	92,897	743.18	1,942	97.10
1999	101,257	810.06	2,116	105.80
2000	110,370	882.96	2,307	115.35
2001	117,545	940.36	2,457	122.85
2002	125,185	1,001.48	2,616	130.80
2003	133,322	1,066.58	2,786	139.30
2004	141,988	1,135.90	2,967	148.35
2005	151,217	1,209.74	3,160	158.00
2006	157,348	1,258.78	3,680	184.00
2007	156,955	1,255.64	3,257	162.85
2008	158,159	1,265.27	3,064	153.20
2009	155,931	1,247.45	3,171	158.55
2010	193,330	1,546.64	4,041	202.05
2011	208,018	1,664.14	4,347	217.35
2012	221,540	1,772.32	4,630	231.50

Appendix 5. Details of Resource and Cost estimates for the action plans in the NIP

Table 4.3b. RESOURCE SCHEDULE TABLE 1. Strategies and Action Plan addressing POPs pesticides including DDT and endosulfan									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 1: Ensure that all current and future uses of POPs Pesticides are accurately identified, properly controlled, and ultimately eliminated, including the environmentally sound disposal of any unwanted and obsolete stocks, continuous monitoring of the impacts to health and environment, and promoting sustainable agriculture.									
	Total for Goal	**7,395**	**100%**	**12%**	**31%**	**24%**	**17%**	**16%**	
Objective 1: Strengthen the monitoring activities and improvement of strategies in controlling the entry of POPs pesticides in the country.									
	Subtotal for Objective	**3,420**	**100%**	**9%**	**22%**	**23%**	**23%**	**23%**	
1. Provide adequate staffing of FPA Offices in provincial, regional, and national levels and create a surveillance team to routinely monitor and verify the availability, usage of POPs pesticides in the municipal level.	FPA-lead agency	1,859	100%	2%	25%	25%	25%	25%	Number of FPA personnel in provincial, regional, and national levels/offices
2. Conduct and sustain training of customs authorities, FPA, PCG, PPA, and PNP/DILG personnel on the detection and improved and better monitoring of POPs Pesticides.	FPA-lead agency, BOC, PCG, PPA, PNP-DILG, DOLE	225	100%	50%	50%	0%	0%	0%	Number of trained personnel
3. Intensify multipartite monitoring and detection of POPs pesticides at the municipal level.	FPA-lead agency, DA, LGU, NGO, Academe	209	100%	20%	20%	20%	20%	20%	JAO, MOA
4. Strengthen enforcement of current regulatory policies to penalize those who are involved in the illegal entry, use and distribution of POPs pesticides.	FPA-lead agency, BOC	1,020	100%	7%	7%	28%	28%	28%	Monitoring report
5. Review and enforce customs control mechanisms, and sustain training of customs authorities for compliance with Stockholm, Basel and Rotterdam Convention and additional national regulations.	FPA-lead agency, EMB, BOC	107	100%	50%	50%	0%	0%	0%	Number of trained customs authorities

Objective 2: Strengthen programs/infrastructure for inspection, retrieval and proper disposal of POPs pesticides									
	Subtotal for Objective	**2,638**	**100%**	**11%**	**46%**	**27%**	**8%**	**8%**	
1. Enhance monitoring and inspection to include programs on the illegal distribution of POPs pesticides by permitted dealers.	FPA-lead agency, EMB	598	100%	13%	87%	0%	0%	0%	Assessment report
2. Verify the location of old stockpiles of POPs pesticides (e.g., DDT) and develop management plan for its safe retrieval, storage and disposal of old stockpiles.	DOH-lead agency, FPA, EMB, LGU	44	100%	0%	50%	50%	0%	0%	Verification report and management plan
3. Ensure an environmentally sound treatment, infrastructure for storage and disposal facilities for confiscated POPs Pesticides applying polluters pay principle (e.g., endosulfan).	FPA-lead agency, EMB, LGU	1,141	100%	3%	44%	45%	4%	4%	Management plan and monitoring report
4. Implement extended producer responsibility principle for used packaging material for pesticides.	FPA-lead agency, EMB, LGU, DA	855	100%	20%	20%	20%	20%	20%	Report
Objective 3: Strengthen the policy and regulatory framework on control of POPs pesticides import, export, use, distribution and disposal.									
	Subtotal for Objective	**700**	**100%**	**19%**	**25%**	**19%**	**19%**	**17%**	
1. Develop policy recommendation for FPA to officially ban the importation, production, distribution, and use of Endosulfan, Mirex, Hexachlorobenzene, Chlordecone and Lindane in the country.	FPA, PPTAC	35	100%	50%	50%	0%	0%	0%	Board resolution
2. Sustain the training of customs authorities for compliance with Stockholm, Basel and Rotterdam Convention.	FPA, EMB, BOC	310	100%	20%	20%	20%	20%	20%	Number of trained customs authorities

3. Update government websites and maintain database for POPs pesticides with information of AHTN and HS Codes and provide separate AHTN code for DDT and for Hexachlorobenzene, and all POPs pesticides with combined AHTN Code.	Tariff Commission-lead agency, Bureau of Customs (BOC), National Statistics Office (NSO), Bureau of Import Services (BIS), FPA, EMB	285	100%	20%	20%	20%	20%	20%	Updated website and separate AHTN code for each POP
4. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of POPs pesticides within government agencies.	FPA, BOC, EMB	35	100%	0%	100%	0%	0%	0%	Report
5. Update the Pesticide Regulatory Policies and Implementing Guidelines (Green Book) to review and report the status of POPs pesticides.	FPA	35	100%	0%	0%	50%	50%	0%	Updated Green Book
Objective 4: Implement continuous environmental and health monitoring program to assess risk from exposure to POPs pesticides									
	Subtotal for Objective	**188**	**100%**	**22%**	**22%**	**22%**	**22%**	**11%**	
1. Assess existing health and environmental monitoring program implemented by various agencies pertaining to POPs pesticides including their capacity to diagnose POPs related cases.	DOH, EMB, FPA, OSHC, NGO, UP-NSRI	42	100%	50%	50%	0%	0%	0%	Assessment report
2. Assess occupational exposures of agricultural workers and other population possibly exposed to POPs pesticides including vulnerable sector such as children and women.	DOH, OSHC, EMB, FPA	42	100%	0%	0%	50%	50%	0%	Assessment report
3. Capacity building / training in the assessment of occupational exposures of agricultural workers and other population possibly exposed to POPs pesticides	EMB, DOH, DOLE-OSHC	42	100%	0%	0%	50%	50%	0%	

3. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs pesticides and make them available as public information. Disseminate the information in seminars to various groups including women associations	DOH, OSHC, EMB, FPA	72	100%	20%	20%	20%	20%	20%	Monitoring report
Objective 5: Promote sustainable agriculture practices and other national intervention programs that reduce the risk associated with pesticides in general									
	Subtotal for Objective	**448**	**100%**	**21%**	**21%**	**19%**	**24%**	**15%**	
1. Conduct studies on alternatives to pesticides and understanding the factors influencing the adoption of sustainable agricultural practices by conventional farmers to address the gaps of the current dissemination strategy and improve the adoption level of the farmers towards organic farming, ICM and IPM.	FPA, Agricultural Training Institute (ATI), LGU, NGOs, EMB, DOST, Research Institutions	59	100%	50%	50%	0%	0%	0%	Report
2. Review and assess the intervention programs implemented by the government on sustainable agriculture practices.	FPA, Agricultural Training Institute (ATI), LGU, NGOs, EMB	42	100%	0%	0%	50%	50%	0%	Report
3. Conduct cost-benefit analysis on the alternatives of pesticide including best agricultural practices (BAP).	FPA	21	100%	0%	0%	0%	100%	0%	Completed Cost benefit study
4. Promote the adoption and implementation/compliance of the FAO International Code of Conduct on the Distribution and Use of Pesticides including the adoption of FAO PSMS (Pesticide Stock Management System).	FPA, EMB	327	100%	20%	20%	20%	20%	20%	Promotional and monitoring programme

Table 4.3.c. RESOURCE SCHEDULE TABLE 2. Strategies and Action Plan for Managing PerfluorooctaneSulfonate (PFOS) and related chemicals									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 2: Achieve an effective and environmentally sound strategy to manage and control the use of PFOS-containing products, wastes and processes where PFOS is used in the country.									
	Total for Goal	**4,853**	**100%**	**18%**	**24%**	**25%**	**19%**	**14%**	
Objective 1: Provide a comprehensive and complete national inventory of PFOS in the country.									
	Subtotal for Objective	**628**	**100%**	**10%**	**32%**	**32%**	**19%**	**7%**	
1. Develop policy recommendations to enforce the disclosure of information relevant to the inventory of PFOS from the industrial sector. - Include PFOS and related chemicals in updating of the Philippine Inventory of Chemicals and Chemical Substances (PICCS) and Priority Chemicals Lists (PCL).	EMB, Industry Associations, DTI, DOH-FDA	24	100%	100%	0%	0%	0%	0%	DAO
2. Conduct a comprehensive inventory of PFOS specifically on key industry sectors including the training of personnel on how to conduct inventory of PFOS. Key industry sectors include chromium plating industry and producers/users of fire-fighting foams, aviation hydraulic fluids and synthetic carpets	EMB	207	100%	20%	20%	20%	20%	20%	Inventory report
3. Conduct in-depth material flow analysis for open and closed application of PFOS and PFOS containing products and some alternatives.	EMB, Academe, research institutions, DOST	234	100%	0%	33%	33%	33%	0%	Material Flow Analysis Report

4. Assessment of the need and availability of facilities and instrumentation for the detection and quantification of PFOS and PFOS-related substances from articles, stockpiles, landfills, treatment facility and possible contaminated sites for a more comprehensive inventory of PFOS in the country.	EMB, DOST, DOH	163	100%	0%	50%	50%	0%	0%	Needs assessment report
Objective 2: Identify and promote safe alternatives of PFOS in all uses.									
	Subtotal for Objective	**401**	**100%**	**20%**	**20%**	**35%**	**25%**	**0%**	
1. Review the available alternatives for PFOS currently used by other countries and the activity of POPRC and Secretariat including also their toxicity information.	EMB, DOST, DOH	79	100%	100%	0%	0%	0%	0%	Review report
2. Initiate and undertake multi-stakeholder consultation dialogue to develop criteria in the identification of safe alternatives to PFOS.	EMB, NGO, Industry Associations,	82	100%	0%	100%	0%	0%	0%	List of criteria to identify safe alternatives to PFOS
3. Prepare a complete list of alternatives to PFOS that will be used in the country and establish a database of substances that are suitable as safe alternatives to PFOS.	EMB	43	100%	0%	0%	100%	0%	0%	Complete list of alternatives
4. Conduct health and risk assessment of the available alternatives for PFOS	EMB, DOH, DOST, Research institutions	99	100%	0%	0%	50%	50%	0%	Risk assessment report
5. Promote and encourage research on finding cost-effective alternatives for PFOS use in line with cleaner production in the industry, and conduct cost-benefit analysis of the available alternatives for PFOS	EMB, Industry Associations, NGO, DOST, Academe	99	100%	0%	0%	50%	50%	0%	Cost benefit analysis report
Objective 3: Manage and regulate PFOS and PFOS-containing products within the country as well as their import/export.									
	Subtotal for Objective	**545**	**100%**	**8%**	**30%**	**33%**	**21%**	**8%**	

1. Secure specific exemption and notify the SC Secretariat of acceptable purposes (e.g., aviation industry) and review the need for specific exemption.	EMB	43	100%	100%	0%	0%	0%	0%	Letter of recommendation
2. Strengthen policy on proper labelling of products/substances containing PFOS and related chemicals within the GHS (Global Harmonized System for Classification and Labelling of Chemical) framework.	EMB, BOC, DTI, IACEH, IATAC, National Coordinating Council for GHS	85	100%	0%	50%	50%	0%	0%	Policy guidelines /Joint AO 2009-1
3. Promote the implementation of BAT/BEP guidance documents specific to PFOS and related chemicals	EMB, DOST, Research Institutions	219	100%	0%	30%	30%	20%	20%	BAT/BEP demo projects
4. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of PFOS and PFOS-containing products within government agencies.	EMB, BOC, Tariff Commission	56	100%	0%	100%	0%	0%	0%	Review report
5. Review and enforce customs control mechanisms, and train custom authorities for compliance with Stockholm, Basel and Rotterdam Convention.	EMB, BOC	71	100%	0%	0%	100%	0%	0%	Number of trained custom authorities
6. Training of customs authorities in monitoring the entry of products and articles containing POPs in general and hazardous chemicals including PFOS and related chemicals.	EMB, BOC	71	100%	0%	0%	0%	100%	0%	Number of trained custom authorities
Objective 4: Develop strategies for the phasing out of the use of PFOS and for the environmentally sound management of stockpiles and wastes containing PFOS.									
	Subtotal for Objective	**566**	**100%**	**22%**	**33%**	**25%**	**10%**	**10%**	

1. Require industry (e.g., PFOS-containing hydraulic fluids in aviation industry) to provide pollution prevention and mitigation plans. a) To prevent release and manage the waste of PFOS and related substances; b) To outline their plans and progress on phasing out the use of these substances within the 5-year exemption.	EMB, Industry, IATAC	69	100%	100%	0%	0%	0%	0%	Registration permit
2. Review and update international guidelines and other sources (e.g., Basel Convention guideline on PFOS management) for the storage and safe handling including transport of wastes containing PFOS.	EMB	49	100%	0%	100%	0%	0%	0%	Report
3. Assess the capacity (facilities) of the country to adopt BAT/BEP for the disposal and destruction of stockpiles (e.g., firefighting foams, synthetic carpets, and PFOS-based AFFF) wastes containing PFOS)	EMB, DOST, Industry Associations	164	100%	0%	50%	50%	0%	0%	Assessment Report
4. Develop and implement monitoring and evaluation program of the relevant facilities with respect to safe handling, storage and transport of PFOS and related wastes.	EMB, Industry Associations	285	100%	20%	20%	20%	20%	20%	Monitoring program of facilities
Objective 5: Establish and implement environmental and health monitoring programs to assess the risk associated from exposure to PFOS and related chemicals.									
	Subtotal for Objective	**2,713**	**100%**	**20%**	**20%**	**20%**	**20%**	**20%**	
1. Conduct environmental monitoring studies for PFOS in air, soil and water near facilities (e.g., airport) that have used or uses PFOS-containing products.	EMB, DOST, Industry Associations, DOTC-CAAP, Research Institutions	469	100%	20%	20%	20%	20%	20%	Report
2. Conduct environmental monitoring studies for PFOS in landfill leachate and sludge/biosolids in wastewater treatment facilities.	EMB, DOST, Industry Associations, Research Institutions, LGUs, NGOs	469	100%	20%	20%	20%	20%	20%	Report

3. Assess occupational exposures of workers in facilities where articles and wastes potentially containing PFOS are used, stored, treated, or disposed.	EMB, OSHC, IACEH, DOH, DOLE-OSHA	519	100%	20%	20%	20%	20%	20%	Assessment report
4. Recognize and incorporate the requirement of BAT/BEP in occupational health and safety standards.	EMB, OSHC, IACEH, DOH, DOLE	519	100%	20%	20%	20%	20%	20%	Report
5. Conduct monitoring studies on indoor air and dust as well other routes of exposure of PFOS to humans including consumer products used at homes where women and children may be exposed	EMB, IACEH, DOH	419	100%	20%	20%	20%	20%	20%	Report
6. Implement, update, and periodically report the results of the health and environmental monitoring program of PFOS.	EMB and Industry associations and women associations	318	100%	20%	20%	20%	20%	20%	Database

Table 4.3.d. RESOURCE SCHEDULE TABLE 3. Strategies and Action Plan for Managing PolybrominatedDiphenyl Ethers (PBDE) and related chemicals									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 3: Achieve an effective and environmentally sound strategy to manage the elimination of PBDE-containing products and wastes and control the entry of PBDE-containing products in the country. (include DOH-FDA in all activities)									
	Total for Goal	**5,656**	**100%**	**19%**	**18%**	**29%**	**20%**	**14%**	
Objective 1: Provide a comprehensive and complete national inventory of PBDE in the country.									
	Subtotal for Objective	**1,925**	**100%**	**16%**	**14%**	**42%**	**20%**	**8%**	
1. Prepare a list of knowledge resources and expertise on management of PBDE-containing materials including related researches in and out of the country. Compile and review international studies conducted pertaining to inventory and monitoring of PBDE.	EMB, Academe, DOST, Industry	84	100%	100%	0%	0%	0%	0%	Database of knowledge resources and expertise, Report
2. Identify and prepare a list of recyclers, junkshops as well as treatment and disposal facilities of the products possibly containing POP-PBDE.	EMB	84	100%	100%	0%	0%	0%	0%	Database of recyclers, junkshops as well as treatment and disposal facilities
3. Conduct inventory on recyclers of polyurethane foam containing brominated flame retardants and evaluate the presence of PBDE in polyurethane foam in the country.	EMB/DOST, DOTC-LTO/LTFRB	139	100%	0%	40%	60%	0%	0%	Inventory report
4. Conduct material flow analysis of articles containing PBDE in households and private and government institutions with the inclusion of minor uses of PBDE in all inventory procedures.	EMB, DOH-FDA, Academe	167	100%	0%	0%	50%	50%	0%	MFA Report
5. Update the existing database of second hand EEEs and link to the National e-waste inventory	EMB, BOC, NSO, BIS, DOTC, DTI-BETP/BTRCP	368	100%	20%	20%	20%	20%	20%	Database

6. Update the existing database to include second hand vehicles and link to the transport sector inventory.	BOC, NSO, BIS, DOTC, DTI	368	100%	20%	20%	20%	20%	20%	0
7. Purchase additional portable equipment (e.g., XRF) to detect bromine as an indication for PBDEs in samples and products including adequate training to personnel on the inventory analysis and use of equipment.	EMB, BOC, DOST	110	100%	0%	9%	91%	0%	0%	Purchased XRF, training guidelines/ procedures, and trained personnel
8. Conduct sampling and analytical methods to monitor products known/suspected to contain PBDE and other brominated flame retardant such as HBCD .	EMB, DOST, other research institutions	74	100%	0%	0%	100%	0%	0%	Report
9. Adopt standard protocols for sampling and test methods and conduct sampling and testing of PBDE presence in imported brand new and second hand EEEs and vehicles.	EMB, DOST	74	100%	0%	0%	100%	0%	0%	AO, Standardized procedures
10. Adopt standard protocols for sampling and test methods, and conduct sampling and testing of PBDE presence in products used in buildings and in construction industries (e.g. tapes, insulation, and fire retardants).	EMB, DOST	74	100%	0%	0%	100%	0%	0%	AO, Standardized procedures
11. Identify or include the inventory of foam manufacturers recycling their own scrap foams (and turning it into rebounded foam and resell).	EMB, DOST	74	100%	0%	0%	0%	100%	0%	Inventory report including list of foam manufacturers
12. Enforce custom control mechanisms, and train customs authorities for compliance with Stockholm, Basel and Rotterdam Convention.	EMB, BOC, DOH-FDA	85	100%	0%	0%	100%	0%	0%	Assessment and Monitoring Report
13. Hiring and training of customs authorities in monitoring the entry of products and articles containing POPs in general and hazardous chemicals including PBDE and related chemicals.	EMB, BOC, DOH-FDA	170	100%	0%	0%	50%	50%	0%	Number of hired and trained customs authorities
14. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of PBDE-containing materials within government agencies.	EMB, BOC	56	100%	0%	100%	0%	0%	0%	Report

Objective 2: Establish and implement national strategies on the proper management of storage, treatment, and disposal of PBDE-containing wastes such as WEEEs and ELVs.									
	Subtotal for Objective	**464**	**100%**	**28%**	**23%**	**29%**	**13%**	**6%**	
1. Review the SMRs to include the management plan (storage, treatment, and disposal) of WEEEs and ELVs internationally and in the country. -Develop and implement monitoring and evaluation programs for handling, storage, and disposal of WEEEs and ELVs.	EMB, DTI-BIS, Accredited TSDs	57	100%	100%	0%	0%	0%	0%	Report , Memorandum Circular
2. Strengthen the regulatory framework and practical implementation for the waste management of PBDE and HBCD-containing WEEE and end of live vehicles (ELV).	EMB, IATAC, IACEH	221	100%	33%	33%	33%	0%	0%	DAO or MC
3. Develop policy recommendations to stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention.	EMB, IATAC, IACEH	100	100%	0%	33%	33%	33%	0%	Policy recommendation
4. Develop policy recommendation to regulate the recycling of articles containing brominated diphenyl ethers (in particular to sensitive uses).	EMB, IATAC	85	100%	0%	0%	33%	33%	33%	DAO
Objective 3: Eliminate PBDE from the recycling streams.									
	Subtotal for Objective	**825**	**100%**	**23%**	**23%**	**18%**	**18%**	**18%**	
1. Review the PBDE BAT/BEP guidelines and possibly further techniques employed by other countries in eliminating PBDE from the recycling streams.	EMB, DOST, other research institutions	114	100%	50%	50%	0%	0%	0%	Report consisting of the different techniques employed by other countries
2. Develop strategies allowing waste separation in the recycling streams	EMB, DOST	301	100%	22%	22%	19%	19%	19%	Guidelines/plan and monitoring report

3. Implement effective screening and separation techniques to separate materials containing the substances in the recycling.	EMB, DOST	410	100%	16%	16%	23%	23%	23%	Report
Objective 4: Establish a baseline conditions that could be used for risk assessment in evaluating the effectiveness of the action plans and other efforts to reduce the environmental and health risk associated with PBDE in the country.									
	Subtotal for Objective	**2,441**	**100%**	**19%**	**19%**	**21%**	**21%**	**19%**	
1. Conduct a nationwide survey of PBDE in selected waste streams in the country.	EMB, other research institutions	335	100%	20%	20%	20%	20%	20%	Survey Report
2. Conduct environmental monitoring studies on the presence of PBDE in air, land, and water streams to determine the level of contamination.	EMB, other research institutions	368	100%	20%	20%	20%	20%	20%	Environmental monitoring report
3. Identify the list of industries that use PBDE and assess occupational exposures of workers in facilities where articles and wastes potentially containing PBDEs are stored, sorted, treated, recycled, recovered or disposed.	EMB, OSHC, DOH, DOLE	335	100%	20%	20%	20%	20%	20%	Assessment report
4. Conduct monitoring on indoor air and dust as well other routes of exposure of PBDE to humans including consumer products at home where women and children maybe exposed	EMB, OSHC, DOH	368	100%	20%	20%	20%	20%	20%	Monitoring report
5.Determine the need to implement any remedial actions of sites contaminated or stockpiles containing PBDEs	EMB, DOST, DOH	318	100%	20%	20%	20%	20%	20%	Report
6. Analysis of polymer scrap produced in the WEEE recycling facility for PBDE content	EMB	114	100%	0%	0%	50%	50%	0%	Report
7. Conduct an environmental monitoring and evaluation for PBDE in waste streams	EMB	335	100%	20%	20%	20%	20%	20%	Report

8. Implement, update, and periodically report the results of the health and environmental monitoring program of PBDE. Disseminate the information to different social groups including women associations.	EMB, DOH	268	100%	20%	20%	20%	20%	20%	Database

Table 4.3.e. RESOURCE SCHEDULE TABLE 4. Strategies and action plans addressing PCBs.									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 4. Achieve an effective and environmentally sound strategy to manage the total elimination and destruction of PCB-containing products, equipment, and wastes.									
	Total for Goal	**6,123**	**100%**	**10%**	**23%**	**25%**	**22%**	**20%**	
Objective 1. Prepare a comprehensive and complete national inventory of PCBs, PCB containing materials, and PCB wastes.									
	Subtotal for Objective	**218**	**100%**	**12%**	**29%**	**58%**	**0%**	**0%**	
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP including description on the current situation of the project and further activities planned.	EMB	27	100%	100%	0%	0%	0%	0%	Report
2.Update the list of knowledge resources and expertise on PCB management and related research	EMB, Research Institutions (UP-NSRI, DLSU-ARRPET)	64	100%	0%	100%	0%	0%	0%	List of resources and expertise
3. Update the profile of potential sources of PCBs in the country consisting of PCB owners , treatment, storage, and disposal facilities, and servicing facilities.	EMB	64	100%	0%	0%	100%	0%	0%	Updated database
4. Update the list of laboratories for sampling and analysis of PCBs	EMB	64	100%	0%	0%	100%	0%	0%	AO, list of accredited laboratories
Objective 2: Strengthen and implement programs on safe handling, storage, and transport of PCBs, PCB-containing materials and PCB wastes.									
	Subtotal for Objective	**321**	**100%**	**8%**	**8%**	**42%**	**42%**	**0%**	

1. Review the guidelines (including the CCO) for the safe handling, labelling, storage, treatment and disposal requirements, spill prevention and clean-up requirements, and develop recommendation to address gaps identified and possibly update guidelines with information from the most recent international guidelines on PCB management.	EMB	27	100%	100%	0%	0%	0%	0%	Revised CCO
2. Review the current guidelines on the stringent regulation for PCB-free (<2ppm) and the prohibitive cost of transportation and treatment of PCB equipment carcass.	EMB	27	100%	0%	100%	0%	0%	0%	Revised CCO
3. Develop an environmentally sound management plan for equipment containing oils of less than 50ppm to be decontaminated and allowed to be retro-filled and reused by owners, instead of decommissioning for disposal.	EMB	107	100%	0%	0%	50%	50%	0%	Revised CCO
4. Conduct additional training for operators, owners of PCB-containing equipment on storage and disposal facilities.	EMB	161	100%	0%	0%	50%	50%	0%	Number of trainings conducted
Objective 3: Strengthen and implement continuous integrated environmental and health monitoring program with respect to PCB									
	Subtotal for Objective	**2,994**	**100%**	**15%**	**23%**	**23%**	**20%**	**20%**	
1. Review and conduct gap analysis of existing projects or programs derived from the action plans which were developed from the initial NIP.	EMB	27	100%	100%	0%	0%	0%	0%	Report
2. Assess and provide adequate staffing of EMB Offices in provincial, regional, and national levels to sustain the existing health and environmental monitoring programimplemented by various agencies pertaining to PCBs	EMB, DOH, NEA	851	100%	3%	24%	24%	24%	24%	Assessment report and Memorandum circular

3. Formalize and institutionalize a multi-sectoral participation of NGOs, EMB and the academe in the health and environmental monitoring program.	EMB, Academe, NGO, Industry Associations	174	100%	0%	50%	50%	0%	0%	Memorandum circular
4. Implement, update, and periodically report the results of the health and environmental monitoring program and make them available as public information subject to the terms of CBI.	EMB, DOH	1,942	100%	20%	20%	20%	20%	20%	Monitoring report, Database
Objective 4: Elimination and destruction of all PCBs, PCB-containing materials, and PCB wastes not later than 2025									
	Subtotal for Objective	**2,590**	**100%**	**5%**	**24%**	**24%**	**24%**	**24%**	
1. Review and monitor the progress of projects (e.g., POPs Destruction Facility Project) derived from the action plans which were developed from the initial NIP.	EMB, PAFC-PNOC	1,929	100%	0%	25%	25%	25%	25%	Monitoring report
2. Develop and implement incentives as part of the regulatory activity for electric utilities to comply with the phase-out of PCB.	EMB, IATAC, DOE, NEA	661	100%	20%	20%	20%	20%	20%	Memorandum Circular, Revised CCO

Table 4.3.f. RESOURCE SCHEDULE TABLE 5. Strategies and action plans addressing Unintentional POPs (U-POPs).									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 5: Achieve progressive reductions and continuous monitoring in the releases of dioxins and furans and other unintentional POPs in the Philippines based on scientific knowledge.									
	Total for Goal	**5,551**	**100%**	**6%**	**8%**	**23%**	**43%**	**20%**	
Objective 1: Prepare an updated inventory of dioxin and furan and possibly other UPOP releases for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors.									
	Subtotal for Objective	**276**	**100%**	**29%**	**29%**	**14%**	**14%**	**14%**	
1. Create publicly available catalogue and a database of information on emission factors significant in the country as regard to the nature and quantity of releases of unintentional POPs (D/F) based on the updated inventory.	EMB, NSC	276	100%	29%	29%	14%	14%	14%	Database
Objective 2: Strengthen and implement policies/programs on BAT/BEP promotion, adoption and monitoring across the most significant dioxin and furan source categories.									
	Subtotal for Objective	**1,954**	**100%**	**9%**	**13%**	**29%**	**29%**	**20%**	
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP.	EMB	27	100%	100%	0%	0%	0%	0%	Report
2. Conduct training workshops nationwide to increase the level of awareness and promote BAT/BEP implementation in reducing UPOPs releases from specific industrial and agricultural sources.	EMB, NSC	306	100%	0%	33%	33%	33%	0%	Number of trainings/workshops and number of participants

3. Sustain seminar workshops to LGUs (officials, farmers and households and women associations) and assist in promoting the implementation of BAT/BEP for unintentional POPs particularly in minimizing the release of dioxins/furans from open burning.	EMB, NSC	548	100%	0%	0%	33%	33%	33%	Number of seminar/workshops and number of participants
4. Promote and encourage the availment of financing programs (soft loan) and incentives for industries/LGUs that adopt BAT/BEP.	EMB, NSC	137	100%	0%	0%	50%	50%	0%	Number of industries availed in the financing program
5. Conduct studies where feasible POPs reduction linked with technologies on air pollution control device.	DOST, EMB, DOE, Research Institutions	216	100%	0%	0%	33%	33%	33%	Reports
6. Conduct studies on feasible POPs reduction linked with sustainable production and consumption.	EMB, DOST, DTI	360	100%	20%	20%	20%	20%	20%	Report
7. Conduct studies on feasible POPs reduction linked with waste utilization.	EMB, DOST, Research institution	360	100%	20%	20%	20%	20%	20%	Report
Objective 3: Strengthen the infrastructure to monitor and control dioxins and furans and other UPOP releases including information on the prevention of environmental and health effects of UPOPs									
	Subtotal for Objective	**3,320**	**100%**	**3%**	**4%**	**20%**	**53%**	**20%**	
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP.	EMB	27	100%	100%	0%	0%	0%	0%	Report
2. Strengthen the enforcement and monitoring compliance by increasing manpower and enhancing the technical capacity of LGUs.	EMB, LGUs	725	100%	0%	10%	30%	30%	30%	Report
3. Provide adequate number of personnel of EMB laboratories in regional and central offices with training on sampling and analysis to monitor UPOPs.	EMB	809	100%	0%	0%	21%	39%	39%	Number of trained personnel

4. Establish dioxin laboratory to support the enforcement of the provision on dioxins/furans in the Clean Air Act (RA 8749).	EMB	1,149	100%	0%	0%	6%	94%	0%	Dioxin laboratory
5. Conduct health and risk assessment based on the major sources of dioxins/furans and other UPOPs identified from the updated third National Inventory.	EMB, DOH, NGO, Academe	72	100%	0%	0%	100%	0%	0%	Report
6. Implement, update, and periodically report the results of the health and environmental monitoring of UPOPs and make them available as public information. Disseminate the information to barangay health workers and women associations.	EMB, DOH	246	100%	0%	0%	33%	33%	33%	Database
7. Integrate in the curricula and/or extra-curricular activities the environmental and health impacts of dioxins and furans.	CHED, PATLEPAM, EMB, DepEd,	293	100%	20%	20%	20%	20%	20%	Curricula and/or extracurricular activities integrated with environmental and health impacts of dioxins and furans

Table 4.3.g. RESOURCE SCHEDULE TABLE 6. Strategies and action plans addressing POPs contaminated sites.									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 6: Obtain a comprehensive identification of all contaminated sites and potentially contaminated sites with corresponding management strategies to protect public health and environment.									
	Total for Goal	**3,667**	**100%**	**13%**	**24%**	**30%**	**19%**	**13%**	
Objective 1. Establish criteria or guidelines for the identification of contaminated sites									
	Subtotal for Objective	**62**	**100%**	**43%**	**57%**	**0%**	**0%**	**0%**	
1. Review and evaluate the progress of implemented and on-going projects derived from the action plans which were developed from the initial NIP (2006).	EMB	27	100%	100%	0%	0%	0%	0%	Report
2. Review and update the criteria or guidelines to include sites potentially contaminated with newly identified POPs of concern such as endosulfan, PBDE and PFOS.	EMB	35	100%	0%	100%	0%	0%	0%	Report
Objective 2: Establish a group and a pool of trained personnel and local experts with the appropriate mandate for the identification and prioritization, assessment, and management of contaminated sites.									
	Subtotal for Objective	**1,063**	**100%**	**10%**	**34%**	**34%**	**15%**	**7%**	

1. Review and evaluate the progress of implemented and on-going projects derived from the action plans which were developed from the initial NIP, including the identification of training needs, capacity building for identification and management of contaminated sites (through intensive field and desk-based training), and provision of necessary equipment and other resources.	EMB	35	100%	100%	0%	0%	0%	0%	Report
2. Strengthen the infrastructure (facilities and instrumentation) needed for the analysis of new POPS such as PFOS and PFOS-related substances and PBDE.	EMB, FPA, NSC	620	100%	12%	25%	25%	25%	12%	Monitoring report
3. Train personnel on the use of the new equipment to identify and quantify contamination levels of suspected hotpots for new POPS such as endosulfan, PFOS and PBDE.	EMB, FPA, NSC, DOST	409	100%	0%	50%	50%	0%	0%	Number of trained personnel
Objective 3: Identify potentially POPS and newly identified POPs contaminated sites throughout the country based on historical information, including an initial ranking of possible priorities for assessment.									
	Subtotal for Objective	**881**	**100%**	**20%**	**25%**	**25%**	**16%**	**16%**	
1. Review and evaluate the progress of implemented and on-going activities identified or contained in the initial NIP (2006).	EMB	35	100%	100%	0%	0%	0%	0%	Report
2. Identify, map out and create a database for new POPs contaminated sites in the country.	EMB	79	100%	0%	100%	0%	0%	0%	List of identified POPs contaminated sites in the country
3. Update the guidelines and procedures to include the newly identified POPs in prioritizing sites for assessment.	EMB, FPA	80	100%	0%	0%	100%	0%	0%	Established guidelines/procedures

4. Identify priority sites and conduct on-site assessment and environmental monitoring of suspected sites for possible contamination of POPs pesticides, PFOS, PBDE and related chemical (e.g., practice areas and areas of (former) fire events where PFOS-containing fire-fighting foams were used).	EMB, Academe, LGU	687	100%	20%	20%	20%	20%	20%	List of identified priority sites and assessment and monitoring report
Objective 4: Develop risk management, communication and prioritized clean-up plans for remediation of POPs contaminated sites that includes the newly identified POPs.									
	Subtotal for Objective	**1,661**	**100%**	**11%**	**16%**	**32%**	**24%**	**17%**	
1. Review and evaluate implemented and on-going projects on the remediation of POPs-contaminated sites.	EMB	35	100%	100%	0%	0%	0%	0%	Report
2. Develop a harmonized transparent and science-based risk assessment, risk management and risk communication procedure to manage contaminated sites.	EMB, Academe, IACEH, IATAC, PPTAC	241	100%	0%	50%	50%	0%	0%	Established guidelines/procedures
3. Conduct site-specific risk assessment on identified hotspots to prioritize sites for remediation.	EMB, FPA, Academe	258	100%	0%	0%	50%	50%	0%	Report
4. Develop clean-up and management plans for hotspots, includingInformation Management Program (for the affected receptors including setting-up of information center).	EMB, FPA, Academe, LGU	382	100%	0%	0%	33%	33%	33%	Plans/programmes
5. Monitor the clean-up, destruction, and management plans for prioritized contaminated sites.	EMB, LGU	745	100%	20%	20%	20%	20%	20%	Monitoring report

Table 4.3.h. RESOURCE SCHEDULE TABLE 7. Strategies and action plans addressing information, education and communication (IEC) relevant to POPs management.									
Task / Activities	**Key Implementing Agencies**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs in percentage (%) of allocation**						**Key Performance Indicators**
		Total	**Total**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
GOAL 7: Achieve high level of awareness and knowledge across all sectors on POPs management in support to the implementation of the updated National Implementation Plan									
	Total for Goal	**3,492**	**100%**	**20%**	**19%**	**23%**	**20%**	**18%**	
Objective 1: Strengthen the current program to sustain awareness and understanding of the health, environmental risks, economic and social impact of POPs.									
	Subtotal for Objective	**995**	**100%**	**18%**	**14%**	**23%**	**23%**	**23%**	
1. Develop and maintain an on-line portal for dissemination of IEC materials that include documented testimonials, popularized technical reports, and risk studies.	EMB, FPA, DOH, NSC	194	100%	38%	16%	16%	16%	16%	Publicly accessible on-line portal
2. Capability building programs for DOLE-BWC, OSHC and Labor Law Compliance Officers	DOLE	70	100%	38%	16%	16%	16%	16%	
3. Sustain a series of seminars and lectures to various organizations for both formal and non-formal organization.	EMB, FPA, DOH, Academe, CHED, DOST, DOLE	180	100%	16%	16%	23%	23%	23%	Number of seminars/lectures and participants
4. Write a monograph for POPs	EMB, Academe, DOST	90	100%	17%	17%	22%	22%	22%	Monograph
5. Develop strategies to sustain media coverage on POPs - Identify gaps on IEC programs; - Develop a policy recommendation or program that coordinates and utilizes the existing government resources to effectively reach and disseminate the information on POPs and its environmental, health, and economic impacts; - Create programs in raising public awareness and education that involve multi-sectoral participation of government agencies, LGUs and NGOs.	EMB, PIA, Academe, CHED, LGU, DepEd	178	100%	0%	0%	33%	33%	33%	Report

6. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs in general and make them available as public information. .Encourage the participation of women groups in disseminating the information in the community.	EMB, DOH	281	100%	18%	18%	21%	21%	21%	Survey report
Objective 2: Create and implement educational programs on POPs at all levels.									
	Subtotal for Objective	**1,620**	**100%**	**21%**	**23%**	**22%**	**18%**	**16%**	
1. Develop policy recommendation to incorporate explicitly the topic of POPs in the implementing rules and regulation (IRR) of RA 9512 (an act to promote environmental awareness through environmental education).	EMB, FPA, CHED, DOST, DepEd	34	100%	50%	50%	0%	0%	0%	Amendment on RA 9512
2. Prepare training module of POPs for potential trainers among teachers and student leaders	EMB, DepEd, CHED, DOST, PATLEPAM, Academe	67	100%	0%	33%	33%	33%	0%	Number of training modules
3. Conduct of National Orientation seminar and training of potential trainers among teachers and student leaders from different schools nationwide.	EMB, FPA, CHED, DOST, DepEd, PATLEPAM	195	100%	33%	33%	33%	0%	0%	Number of National orientation seminar/ trainings and number of trained teachers and students
4. Provide research grant for faculty and students involved in POPs-related research work.	CHED, DOST	343	100%	20%	20%	20%	20%	20%	Number of graduates, researches/paper presentation/output, and publications
5. Provide incentive mechanism for schools implementing outreach programs including POPs management as one of the topics	CHED, DepEd, DOST	343	100%	20%	20%	20%	20%	20%	Number of schools that conduct orientation seminars of the environmental and health effects of POPs in their respective communities
6. Involve national television networks in the advocacy to include POPs as one topic in their educational TV shows.	EMB, PIA, NSC, local media networks	350	100%	20%	20%	20%	20%	20%	Number of media coverage

7. Work with Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM) in promoting environmental awareness through environmental education.	CHED, PATLEPAM, NSC	175	100%	20%	20%	20%	20%	20%	MOA between EMB and PATLEPAM promoting POPs awareness through environmental education
8. Link POPs education to general activities on the awareness of hazardous chemicals and general education on sustainable production and consumption particularly on topics on selection of POPs alternatives.	EMB, DepED, CHED, DOST	114	100%	20%	20%	20%	20%	20%	Number of curricula which integrates POPs education
Objective 3: Strengthen the political advocacy or lobbying programs to sustain POPs reduction and elimination as a public health priority, environmental issue, and priority action agenda.									
	Subtotal for Objective	**302**	**100%**	**28%**	**17%**	**24%**	**15%**	**15%**	
1. Identify target advocacy groups and develop specific/key messages and delivery methods per group	EMB, FPA, NSC	32	100%	100%	0%	0%	0%	0%	List of identified advocacy groups and list strategies per group
2. Conduct series of lobbying activities for legislative and budgetary support for the reduction & elimination of POPs.	EMB, FPA, NSC	130	100%	20%	20%	20%	20%	20%	Number of activities supporting the reduction and elimination of POPs for legislative and budgetary support, bills/resolutions that will be pushed through with the legislative bodies
3. Integrate POPs reduction and elimination in agency's plans, programs, services, and resource allocation and present these effectively during regular Congress/Senate hearings on government program and budget allocations.	EMB, FPA, NSC, Senate, Congress	80	100%	33%	33%	33%	0%	0%	Memorandum Circular, National Agencies Programme/plan integrating POPs reduction and elimination

4. Enlist journalists, media agencies and associations and environment-friendly journalist associations in committees or task forces.	EMB, FPA, PIA, NSC, local media networks, PCIJ, PCPJ	60	100%	0%	0%	33%	33%	33%	Number of journalist and media association involved in POPs-related committees or task force
Objective 4: Strengthen and sustain the network for information exchange and communication on POPs and the National Implementation Plan									
	Subtotal for Objective	**575**	**100%**	**14%**	**19%**	**24%**	**25%**	**18%**	
1. Survey of partner stakeholders to establish common interest and preferred communication mechanisms.	EMB, FPA, NSC, Industry organizations	40	100%	50%	50%	0%	0%	0%	Survey report
2. Sustain regular coordination meetings, including reporting on POPs updates and the activities under the National Implementation Plan (NIP), and support the country's participation to COP.	EMB, FPA, NSC	20	100%	0%	100%	0%	0%	0%	Memorandum Circular, minutes of meetings
3. Organize national conferences and symposia as regard to POPs	CHED, DOST, PATLEPAM-EMB, Academe	80	100%	0%	0%	50%	50%	0%	Number of conferences/symposia and participants
4. Develop and maintain information clearing house that would serve as the focal center for POPs information such as BAT/BEP practices, results of environment and health monitoring, international updates on POPs, and POPs issues, etc.	EMB, FPA, DOST, NSC	193	100%	17%	21%	21%	21%	21%	Established clearing house and monitoring report
5. Sustain the participation in local, national, and international forums on POPs and presentation during regular meetings of business associations.	EMB, FPA, NSC, Academe	140	100%	20%	20%	20%	20%	20%	Number of forums attended
6. Establish and maintain an intra-agency and Local Government Unit reporting/ information exchange system under the National Single Window (NSW) system.	EMB, FPA, NSC	102	100%	0%	0%	28%	36%	36%	Functional NSW

Table 4.3.i. COST SCHEDULE TABLE 1. Strategies and Action Plan addressing POPs pesticides including DDT and endosulfan							
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 1: Ensure that all current and future uses of POPs Pesticides are accurately identified, properly controlled, and ultimately eliminated, including the environmentally sound disposal of any unwanted and obsolete stocks, continuous monitoring of the impacts to health and environment, and promoting sustainable agriculture.							
	Total for Goal	**7,395**	**880**	**2,262**	**1,756**	**1,289**	**1,208**
Objective 1: Strengthen the monitoring activities and improvement of strategies in controlling the entry of POPs pesticides in the country.							
	Subtotal for Objective	**3,420**	**320**	**739**	**787**	**787**	**787**
1. Provide adequate staffing of FPA Offices in provincial, regional, and national levels and create a surveillance team to routinely monitor and verify the availability, usage of POPs pesticides in the municipal level.	Human Resources	**1,859**	**37**	**455**	**455**	**455**	**455**
2. Conduct and sustain training of customs authorities, FPA, PCG, PPA, and PNP/DILG personnel on the detection and improved and better monitoring of POPs Pesticides.	Training team and workshop requirements	**225**	**113**	**113**	-	-	-
3. Intensify multipartite monitoring and detection of POPs pesticides at the municipal level.	Human resources and support services	**209**	**42**	**42**	**42**	**42**	**42**
4. Strengthen enforcement of current regulatory policies to penalize those who are involved in the illegal entry, use and distribution of POPs pesticides.	Human resources and support services	**1,020**	**75**	**75**	**290**	**290**	**290**
5. Review and enforce customs control mechanisms, and sustain training of customs authorities for compliance with Stockholm, Basel and Rotterdam Convention and additional national regulations.	Human resources and support services	**107**	**54**	**54**	-	-	-

Objective 2: Strengthen programs/infrastructure for inspection, retrieval and proper disposal of POPs pesticides							
	Subtotal for Objective	**2,638**	**287**	**1,215**	**704**	**216**	**216**
1. Enhance monitoring and inspection to include programs on the illegal distribution of POPs pesticides by permitted dealers.	Human Resources, Facilities, Equipment, Materials, and Others.	**598**	**79**	**519**	**-**	**-**	**-**
2. Verify the location of old stockpiles of POPs pesticides (e.g., DDT) and develop management plan for its safe retrieval, storage and disposal of old stockpiles.	Human resources and services	**44**	**-**	**22**	**22**	**-**	**-**
3. Ensure an environmentally sound treatment, infrastructure for storage and disposal facilities for confiscated POPs Pesticides applying polluters pay principle (e.g., endosulfan).	Human Resources, Facilities, Equipment, Services, Materials, and Others.	**1,141**	**37**	**503**	**511**	**45**	**45**
4. Implement extended producer responsibility principle for used packaging material for pesticides.	Human resources and services	**855**	**171**	**171**	**171**	**171**	**171**
Objective 3: Strengthen the policy and regulatory framework on control of POPs pesticides import, export, use, distribution and disposal.							
	Subtotal for Objective	**700**	**136**	**172**	**136**	**136**	**119**
1. Develop policy recommendation for FPA to officially ban the importation, production, distribution, and use of Endosulfan, Mirex, Hexachlorobenzene, Chlordecone and Lindane in the country.	Human resources and services	**35**	**18**	**18**	**-**	**-**	**-**
2. Sustain the training of customs authorities for compliance with Stockholm, Basel and Rotterdam Convention.	Human Resources, Facilities, Services, Materials, and Others.	**310**	**62**	**62**	**62**	**62**	**62**
3. Update government websites and maintain database for POPs pesticides with information of AHTN and HS Codes and provide separate AHTN code for DDT and for Hexachlorobenzene, and all POPs pesticides with combined AHTN Code.	Human Resources, Facilities, Services, Materials, and Others.	**285**	**57**	**57**	**57**	**57**	**57**

4. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of POPs pesticides within government agencies.	Human resources and materials	**35**	-	**35**	-	-	-
5. Update the Pesticide Regulatory Policies and Implementing Guidelines (Green Book) to review and report the status of POPs pesticides.	Human resources and materials	**35**	-	-	**18**	**18**	-
Objective 4: Implement continuous environmental and health monitoring program to assess risk from exposure to POPs pesticides							
	Subtotal for Objective	**188**	**42**	**42**	**42**	**42**	**21**
1. Assess existing health and environmental monitoring program implemented by various agencies pertaining to POPs pesticides including their capacity to diagnose POPs related cases.	Human resources and materials	**42**	**21**	**21**	-	-	-
2. Assess occupational exposures of agricultural workers and other population possibly exposed to POPs pesticides including vulnerable sector such as children and women.	Human resources and materials	**42**	-	-	**21**	**21**	-
3. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs pesticides and make them available as public information.	Human resources and materials	**105**	**21**	**21**	**21**	**21**	**21**
Objective 5: Promote sustainable agriculture practices and other national intervention programs that reduce the risk associated with pesticides in general							
	Subtotal for Objective	**448**	**95**	**95**	**86**	**107**	**65**
1. Conduct studies on alternatives to pesticides and understanding the factors influencing the adoption of sustainable agricultural practices by conventional farmers to address the gaps of the current dissemination strategy and improve the adoption level of the farmers towards organic farming, ICM and IPM.	Human Resources, Equipment, Services, Materials, and Others.	**59**	**29**	**29**	-	-	-

2. Review and assess the intervention programs implemented by the government on sustainable agriculture practices.	Human resources and materials	**42**	**-**	**-**	**21**	**21**	**-**
3. Conduct cost-benefit analysis on the alternatives of pesticide including best agricultural practices (BAP).	Human resources and materials	**21**	**-**	**-**	**-**	**21**	**-**
4. Promote the adoption and implementation/compliance of the FAO International Code of Conduct on the Distribution and Use of Pesticides including the adoption of FAO PSMS (Pesticide Stock Management System).	Human resources and materials	**327**	**65**	**65**	**65**	**65**	**65**

Table 4.3.j. COST SCHEDULE TABLE	2. Strategies and Action Plan for Managing PerfluorooctaneSulfonate (PFOS) and related chemicals						
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 2: Achieve an effective and environmentally sound strategy to manage and control the use of PFOS-containing products, wastes and processes where PFOS is used in the country.							
	Total for Goal	**4,853**	**855**	**1,178**	**1,205**	**932**	**683**
Objective 1: Provide a comprehensive and complete national inventory of PFOS in the country.							
	Subtotal for Objective	**628**	**66**	**201**	**201**	**119**	**41**
1. Develop policy recommendations to enforce the disclosure of information relevant to the inventory of PFOS from the industrial sector. - Include PFOS and related chemicals in updating of the Philippine Inventory of Chemicals and Chemical Substances (PICCS) and Priority Chemicals Lists (PCL).	Human Resources and services	24	24	-	-	-	-
2. Conduct a comprehensive inventory of PFOS specifically on key industry sectors including the training of personnel on how to conduct inventory of PFOS. Key industry sectors include chromium plating industry and producers/users of fire-fighting foams, aviation hydraulic fluids and synthetic carpets	Humar resources, materials, and services	207	41	41	41	41	41
3. Conduct in-depth material flow analysis for open and closed application of PFOS and PFOS containing products and some alternatives.	Human Resources, equipment and services	234	-	78	78	78	-

4. Assessment of the need and availability of facilities and instrumentation for the detection and quantification of PFOS and PFOS-related substances from articles, stockpiles, landfills, treatment facility and possible contaminated sites for a more comprehensive inventory of PFOS in the country.	Human Resources, materials, and services	163	-	81	81	-	-
Objective 2: Identify and promote safe alternatives of PFOS in all uses.							
	Subtotal for Objective	**401**	**79**	**82**	**141**	**99**	**-**
1. Review the available alternatives for PFOS currently used by other countries and the activity of POPRC and Secretariat including also their toxicity information.	Human Resources and services	79	79	-	-	-	-
2. Initiate and undertake multi-stakeholder consultation dialogue to develop criteria in the identification of safe alternatives to PFOS.	Human Resources and services	82	-	82	-	-	-
3. Prepare a complete list of alternatives to PFOS that will be used in the country and establish a database of substances that are suitable as safe alternatives to PFOS.	Human Resources, equipment and services	43	-	-	43	-	-
4. Conduct health and risk assessment of the available alternatives for PFOS	Human Resources, equipment and services	99	-	-	49	49	-
5. Promote and encourage research on finding cost-effective alternatives for PFOS use in line with cleaner production in the industry, and conduct cost-benefit analysis of the available alternatives for PFOS	Human Resources, materials, and services	99	-	-	49	49	-
Objective 3: Manage and regulate PFOS and PFOS-containing products within the country as well as their import/export.							
	Subtotal for Objective	**545**	**43**	**165**	**181**	**114**	**43**

1. Secure specific exemption and notify the SC Secretariat of acceptable purposes (e.g., aviation industry) and review the need for specific exemption.	Human Resources and services	43	43	-	-	-	-
2. Strengthen policy on proper labelling of products/substances containing PFOS and related chemicals within the GHS (Global Harmonized System for Classification and Labelling of Chemical) framework.	Human Resources and services	85	-	43	43	-	-
3. Promote the implementation of BAT/BEP guidance documents specific to PFOS and related chemicals	Human Resources, Facilities, Equipment, Services, Materials, and Others.	219	-	67	67	43	43
4. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of PFOS and PFOS-containing products within government agencies.	Human Resources, materials, and services	56	-	56	-	-	-
5. Review and enforce customs control mechanisms, and train custom authorities for compliance with Stockholm, Basel and Rotterdam Convention.	Human Resources, equipment and services	71	-	-	71	-	-
6. Training of customs authorities in monitoring the entry of products and articles containing POPs in general and hazardous chemicals including PFOS and related chemicals.	Human Resources, equipment and services	71	-	-	-	71	-
Objective 4: Develop strategies for the phasing out of the use of PFOS and for the environmentally sound management of stockpiles and wastes containing PFOS.							
	Subtotal for Objective	**566**	**126**	**188**	**139**	**57**	**57**
1. Require industry (e.g., PFOS-containing hydraulic fluids in aviation industry) to provide pollution prevention and mitigation plans. a) To prevent release and manage the waste of PFOS and related substances; b) To outline their plans and progress on phasing out the use of these substances within the 5-year	Human Resources and services	69	69	-	-	-	-

exemption.							
2. Review and update international guidelines and other sources (e.g., Basel Convention guideline on PFOS management) for the storage and safe handling including transport of wastes containing PFOS.	Human Resources and services	49	-	49	-	-	-
3. Assess the capacity (facilities) of the country to adopt BAT/BEP for the disposal and destruction of stockpiles (e.g., firefighting foams, synthetic carpets, and PFOS-based AFFF) wastes containing PFOS)	Human Resources, Facilities, Equipment, Services, Materials, and Others.	164	-	82	82	-	-
4. Develop and implement monitoring and evaluation program of the relevant facilities with respect to safe handling, storage and transport of PFOS and related wastes.	Human Resources, equipment and services	285	57	57	57	57	57
Objective 5: Establish and implement environmental and health monitoring programs to assess the risk associated from exposure to PFOS and related chemicals.							
	Subtotal for Objective	**2,713**	**543**	**543**	**543**	**543**	**543**
1. Conduct environmental monitoring studies for PFOS in air, soil and water near facilities (e.g., airport) that have used or uses PFOS-containing products.	Human Resources, equipment and services	469	94	94	94	94	94
2. Conduct environmental monitoring studies for PFOS in landfill leachate and sludge/biosolids in wastewater treatment facilities.	Human Resources, equipment and services	469	94	94	94	94	94
3. Assess occupational exposures of workers in facilities where articles and wastes potentially containing PFOS are used, stored, treated, or disposed.	Human Resources, equipment and services	519	104	104	104	104	104

4. Recognize and incorporate the requirement of BAT/BEP in occupational health and safety standards.	Human Resources, equipment and services	519	104	104	104	104	104
5. Conduct monitoring studies on indoor air and dust as well other routes of exposure of PFOS to humans particularly children and other vulnerable populations.	Human Resources, equipment and services	419	84	84	84	84	84
6. Implement, update, and periodically report the results of the health and environmental monitoring program of PFOS.	Human Resources, equipment and services	318	64	64	64	64	64

Table 4.3.k. COST SCHEDULE TABLE	3. Strategies and Action Plan for Managing PolybrominatedDiphenyl Ethers (PBDE) and related chemicals						
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 3: Achieve an effective and environmentally sound strategy to manage the elimination of PBDE-containing products and wastes and control the entry of PBDE-containing products in the country. (include DOH-FDA in all activities)							
	Total for Goal	**5,656**	**1,098**	**1,028**	**1,614**	**1,124**	**791**
Objective 1: Provide a comprehensive and complete national inventory of PBDE in the country.							
	Subtotal for Objective	**1,925**	**315**	**268**	**806**	**390**	**147**
1. Prepare a list of knowledge resources and expertise on management of PBDE-containing materials including related researches in and out of the country. Compile and review international studies conducted pertaining to inventory and monitoring of PBDE.	Human Resources, Equipment, Services	84	84	-	-	-	-
2. Identify and prepare a list of recyclers, junkshops as well as treatment and disposal facilities of the products possibly containing POP-PBDE.	Human Resources, Equipment, Services	84	84	-	-	-	-
3. Conduct inventory on recyclers of polyurethane foam containing brominated flame retardants and evaluate the presence of PBDE in polyurethane foam in the country.	Human Resources, Facilities, and Services	139	-	55	84	-	-
4. Conduct material flow analysis of articles containing PBDE in households and private and government institutions with the inclusion of minor uses of PBDE in all inventory procedures.	Human Resources, Equipment, Services	167	-	-	84	84	-
5. Update the existing database of second hand EEEs and link to the National e-waste inventory	Human Resources, Equipment, Services	368	74	74	74	74	74

6. Update the existing database to include second hand vehicles and link to the transport sector inventory.	Human Resources, Equipment, Services	368	74	74	74	74	74
7. Purchase additional portable equipment (e.g., XRF) to detect bromine as an indication for PBDEs in samples and products including adequate training to personnel on the inventory analysis and use of equipment.	XRF equipment and related services	110	-	10	100	-	-
8. Conduct sampling and analytical methods to monitor products known/suspected to contain PBDE and other brominated flame retardant such as HBCD .	Human Resources, Equipment, Services	74	-	-	74	-	-
9. Adopt standard protocols for sampling and test methods and conduct sampling and testing of PBDE presence in imported brand new and second hand EEEs and vehicles.	Human Resources, Equipment, Services	74	-	-	74	-	-
10. Adopt standard protocols for sampling and test methods, and conduct sampling and testing of PBDE presence in products used in buildings and in construction industries (e.g. tapes, insulation, and fire retardants).	Human Resources, Equipment, Services	74	-	-	74	-	-
11. Identify or include the inventory of foam manufacturers recycling their own scrap foams (and turning it into rebounded foam and resell).	Human Resources, Equipment, Services	74	-	-	-	74	-
12. Enforce custom control mechanisms, and train customs authorities for compliance with Stockholm, Basel and Rotterdam Convention.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	85	-	-	85	-	-
13. Hiring and training of customs authorities in monitoring the entry of products and articles containing POPs in general and hazardous chemicals including PBDE and related chemicals.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	170	-	-	85	85	-
14. Review the functionality of the National Single Window System (NSW) of the country in enhancing information exchange of PBDE-containing materials within government agencies.	Human Resources, Equipment, Services	56	-	56	-	-	-

Objective 2: Establish and implement national strategies on the proper management of storage, treatment, and disposal of PBDE-containing wastes such as WEEEs and ELVs.							
	Subtotal for Objective	**464**	**131**	**107**	**136**	**62**	**28**
1. Review the SMRs to include the management plan (storage, treatment, and disposal) of WEEEs and ELVs internationally and in the country. -Develop and implement monitoring and evaluation programs for handling, storage, and disposal of WEEEs and ELVs.	Human Resources, and Services	57	57	-	-	-	-
2. Strengthen the regulatory framework and practical implementation for the waste management of PBDE and HBCD-containing WEEE and end of live vehicles (ELV).	Human Resources, Facilities, Equipment, Services, Materials, and Others.	221	74	74	74	-	-
3. Develop policy recommendations to stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention.	Human Resources, and Services	100	-	33	33	33	-
4. Develop policy recommendation to regulate the recycling of articles containing brominated diphenyl ethers (in particular to sensitive uses).	Human Resources, and Services	85	-	-	28	28	28
Objective 3: Eliminate PBDE from the recycling streams.							
	Subtotal for Objective	**825**	**188**	**188**	**150**	**150**	**150**
1. Review the PBDE BAT/BEP guidelines and possibly further techniques employed by other countries in eliminating PBDE from the recycling streams.	Human Resources, and Services	114	57	57	-	-	-
2. Develop strategies allowing waste separation in the recycling streams	Human Resources, Facilities, Equipment, Services, Materials, and Others.	301	65	65	57	57	57

3. Implement effective screening and separation techniques to separate materials containing the substances in the recycling.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	410	65	65	93	93	93
Objective 4: Establish a baseline conditions that could be used for risk assessment in evaluating the effectiveness of the action plans and other efforts to reduce the environmental and health risk associated with PBDE in the country.							
	Subtotal for Objective	**2,441**	**465**	**465**	**522**	**522**	**465**
1. Conduct a nationwide survey of PBDE in selected waste streams in the country.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	335	67	67	67	67	67
2. Conduct environmental monitoring studies on the presence of PBDE in air, land, and water streams to determine the level of contamination.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	368	74	74	74	74	74
3. Identify the list of industries that use PBDE and assess occupational exposures of workers in facilities where articles and wastes potentially containing PBDEs are stored, sorted, treated, recycled, recovered or disposed.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	335	67	67	67	67	67
4. Conduct monitoring on indoor air and dust as well other routes of exposure of PBDE to humans particularly children and the vulnerable populations.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	368	74	74	74	74	74
5.Determine the need to implement any remedial actions of sites contaminated or stockpiles containing PBDEs	Human Resources, Facilities, Equipment, Services, Materials, and Others.	318	64	64	64	64	64
6. Analysis of polymer scrap produced in the WEEE recycling facility for PBDE content	Human Resources, Facilities, Equipment, Services, Materials, and Others.	114	-	-	57	57	-
7. Conduct an environmental monitoring and evaluation for PBDE in waste streams	Human Resources, Facilities, Equipment, Services, Materials, and Others.	335	67	67	67	67	67

8. Implement, update, and periodically report the results of the health and environmental monitoring program of PBDE.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	268	54	54	54	54	54
Table 4.3.l. COST SCHEDULE TABLE	**4. Strategies and action plans addressing PCBs.**						
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 4. Achieve an effective and environmentally sound strategy to manage the total elimination and destruction of PCB-containing products, equipment, and wastes.							
	Total for Goal	**6,123**	**628**	**1,386**	**1,557**	**1,343**	**1,209**
Objective 1. Prepare a comprehensive and complete national inventory of PCBs, PCB containing materials, and PCB wastes.							
	Subtotal for Objective	**218**	**27**	**64**	**127**	**-**	**-**
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP including description on the current situation of the project and further activities planned.	Human Resources, and Services	27	27	-	-	-	-
2.Update the list of knowledge resources and expertise on PCB management and related research	Human Resources, and Services	64	-	64	-	-	-
3. Update the profile of potential sources of PCBs in the country consisting of PCB owners , treatment, storage, and disposal facilities, and servicing facilities.	Human Resources, and Services	64	-	-	64	-	-
4. Update the list of laboratories for sampling and analysis of PCBs	Human Resources, and Services	64	-	-	64	-	-
Objective 2: Strengthen and implement programs on safe handling, storage, and transport of PCBs, PCB-containing materials and PCB wastes.							
	Subtotal for Objective	**321**	**27**	**27**	**134**	**134**	**-**

1. Review the guidelines (including the CCO) for the safe handling, labelling, storage, treatment and disposal requirements, spill prevention and clean-up requirements, and develop recommendation to address gaps identified and possibly update guidelines with information from the most recent international guidelines on PCB management.	Human Resources, and Services	27	27	-	-	-	-
2. Review the current guidelines on the stringent regulation for PCB-free (<2ppm) and the prohibitive cost of transportation and treatment of PCB equipment carcass.	Human Resources, and Services	27	-	27	-	-	-
3. Develop an environmentally sound management plan for equipment containing oils of less than 50ppm to be decontaminated and allowed to be retro-filled and reused by owners, instead of decommissioning for disposal.	Human Resources, and Services	107	-	-	54	54	-
4. Conduct additional training for operators, owners of PCB-containing equipment on storage and disposal facilities.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	161	-	-	80	80	-
Objective 3: Strengthen and implement continuous integrated environmental and health monitoring program with respect to PCB							
	Subtotal for Objective	**2,994**	**442**	**681**	**681**	**594**	**594**
1. Review and conduct gap analysis of existing projects or programs derived from the action plans which were developed from the initial NIP.	Human Resources, and Services	27	27	-	-	-	-
2. Assess and provide adequate staffing of EMB Offices in provincial, regional, and national levels to sustain the existing health and environmental monitoring programimplemented by various agencies pertaining to PCBs	Human Resources, and Services	851	27	206	206	206	206

3. Formalize and institutionalize a multi-sectoral participation of NGOs, EMB and the academe in the health and environmental monitoring program.	Human Resources, and Services	174	-	87	87	-	-
4. Implement, update, and periodically report the results of the health and environmental monitoring program and make them available as public information subject to the terms of CBI.	Human Resources, facilities, and Services	1,942	388	388	388	388	388
Objective 4: Elimination and destruction of all PCBs, PCB-containing materials, and PCB wastes not later than 2025							
	Subtotal for Objective	**2,590**	**132**	**615**	**615**	**615**	**615**
1. Review and monitor the progress of projects (e.g., POPs Destruction Facility Project) derived from the action plans which were developed from the initial NIP.	Human Resources, and Services	1,929	-	482	482	482	482
2. Develop and implement incentives as part of the regulatory activity for electric utilities to comply with the phase-out of PCB.	Human Resources, Services, and monetary incentives	661	132	132	132	132	132

Table 4.3.m. COST SCHEDULE TABLE 5. Strategies and action plans addressing Unintentional POPs (U-POPs).							
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 5: Achieve progressive reductions and continuous monitoring in the releases of dioxins and furans and other unintentional POPs in the Philippines based on scientific knowledge.							
	Total for Goal	**5,551**	**337**	**457**	**1,283**	**2,361**	**1,113**
Objective 1: Prepare an updated inventory of dioxin and furan and possibly other UPOP releases for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors.							
	Subtotal for Objective	**276**	**80**	**80**	**39**	**39**	**39**
1. Create publicly available catalogue and a database of information on emission factors significant in the country as regard to the nature and quantity of releases of unintentional POPs (D/F) based on the updated inventory.	Human Resources, equipment, and services	276	80	80	39	39	39
Objective 2: Strengthen and implement policies/programs on BAT/BEP promotion, adoption and monitoring across the most significant dioxin and furan source categories.							
	Subtotal for Objective	**1,954**	**171**	**246**	**569**	**569**	**399**
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP.	Human Resources and services	27	27	-	-	-	-
2. Conduct training workshops nationwide to increase the level of awareness and promote BAT/BEP implementation in reducing UPOPs releases from specific industrial and agricultural sources.	Human Resources, facilities, and services	306	-	102	102	102	-

3. Sustain seminar workshops to LGUs and assist in promoting the implementation of BAT/BEP for unintentional POPs particularly in minimizing the release of dioxins/furans from open burning.	Human Resources, facilities, and services	548	-	-	183	183	183
4. Promote and encourage the availment of financing programs (soft loan) and incentives for industries/LGUs that adopt BAT/BEP.	Human Resources, facilities, and services	137	-	-	69	69	-
5. Conduct studies where feasible POPs reduction linked with technologies on air pollution control device.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	216	-	-	72	72	72
6. Conduct studies on feasible POPs reduction linked with sustainable production and consumption.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	360	72	72	72	72	72
7. Conduct studies on feasible POPs reduction linked with waste utilization.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	360	72	72	72	72	72
Objective 3: Strengthen the infrastructure to monitor and control dioxins and furans and other UPOP releases including information on the prevention of environmental and health effects of UPOPs							
	Subtotal for Objective	**3,320**	**85**	**131**	**675**	**1,753**	**676**
1. Review and conduct gap analysis of projects derived from the action plans which were developed from the initial NIP.	Human Resources and services	27	27	-	-	-	-
2. Strengthen the enforcement and monitoring compliance by increasing manpower and enhancing the technical capacity of LGUs.	Human Resources, equipment, and services	725	-	72	218	218	218
3. Provide adequate number of personnel of EMB laboratories in regional and central offices with training on sampling and analysis to monitor UPOPs.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	809	-	-	172	318	318

4. Establish dioxin laboratory to support the enforcement of the provision on dioxins/furans in the Clean Air Act (RA 8749).	Human Resources, Facilities, Equipment, Services, Materials, and Others.	1,149	-	-	72	1,077	-
5. Conduct health and risk assessment based on the major sources of dioxins/furans and other UPOPs identified from the updated third National Inventory.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	72	-	-	72	-	-
6. Implement, update, and periodically report the results of the health and environmental monitoring of UPOPs and make them available as public information.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	246	-	-	82	82	82
7. Integrate in the curricula and/or extra-curricular activities the environmental and health impacts of dioxins and furans.	Human Resources, equipment, and services	293	59	59	59	59	59

Table 4.3n. COST SCHEDULE TABLE 6. Strategies and action plans addressing POPs contaminated sites.							
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 6: Obtain a comprehensive identification of all contaminated sites and potentially contaminated sites with corresponding management strategies to protect public health and environment.							
	Total for Goal	**3,667**	**492**	**882**	**1,105**	**700**	**487**
Objective 1. Establish criteria or guidelines for the identification of contaminated sites							
	Subtotal for Objective	**62**	**27**	**35**	**-**	**-**	**-**
1. Review and evaluate the progress of implemented and on-going projects derived from the action plans which were developed from the initial NIP (2006).	Human Resources and services	27	27	-	-	-	-
2. Review and update the criteria or guidelines to include sites potentially contaminated with newly identified POPs of concern such as endosulfan, PBDE and PFOS.	Human Resources and services	35	-	35	-	-	-
Objective 2: Establish a group and a pool of trained personnel and local experts with the appropriate mandate for the identification and prioritization, assessment, and management of contaminated sites.							
	Subtotal for Objective	**1,063**	**109**	**362**	**362**	**157**	**74**
1. Review and evaluate the progress of implemented and on-going projects derived from the action plans which were developed from the initial NIP, including the identification of training needs, capacity building for identification and management of contaminated sites (through intensive field and desk-based training), and provision of necessary equipment and other resources.	Human Resources and services	35	35	-	-	-	-

2. Strengthen the infrastructure (facilities and instrumentation) needed for the analysis of new POPS such as PFOS and PFOS-related substances and PBDE.	Human Resources, equipment, and services	620	74	157	157	157	74
3. Train personnel on the use of the new equipment to identify and quantify contamination levels of suspected hotpots for new POPS such as endosulfan, PFOS and PBDE.	Human Resources, facilities, and services	409	-	204	204	-	-
Objective 3: Identify potentially POPS and newly identified POPs contaminated sites throughout the country based on historical information, including an initial ranking of possible priorities for assessment.							
	Subtotal for Objective	**881**	**172**	**216**	**218**	**137**	**137**
1. Review and evaluate the progress of implemented and on-going activities identified or contained in the initial NIP (2006).	Human Resources and services	35	35	-	-	-	-
2. Identify, map out and create a database for new POPs contaminated sites in the country.	Human Resources, equipment, and services	79	-	79	-	-	-
3. Update the guidelines and procedures to include the newly identified POPs in prioritizing sites for assessment.	Human Resources and services	80	-	-	80	-	-
4. Identify priority sites and conduct on-site assessment and environmental monitoring of suspected sites for possible contamination of POPs pesticides, PFOS, PBDE and related chemical (e.g., practice areas and areas of (former) fire events where PFOS-containing fire-fighting foams were used).	Human Resources, Facilities, Equipment, Services, Materials, and Others.	687	137	137	137	137	137
Objective 4: Develop risk management, communication and prioritized clean-up plans for remediation of POPs contaminated sites that includes the newly identified POPs.							
	Subtotal for Objective	**1,661**	**184**	**270**	**526**	**405**	**276**
1. Review and evaluate implemented and on-going projects on the remediation of POPs-contaminated sites.	Human Resources and services	35	35	-	-	-	-

2. Develop a harmonized transparent and science-based risk assessment, risk management and risk communication procedure to manage contaminated sites.	Human Resources, facilities, and services	241	-	121	121	-	-
3. Conduct site-specific risk assessment on identified hotspots to prioritize sites for remediation.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	258	-	-	129	129	-
4. Develop clean-up and management plans for hotspots, includingInformation Management Program (for the affected receptors including setting-up of information center).	Human Resources and services	382	-	-	127	127	127
5. Monitor the clean-up, destruction, and management plans for prioritized contaminated sites.	Human Resources, equipment, and services	745	149	149	149	149	149

Table 4.3.o. COST SCHEDULE TABLE 7. Strategies and action plans addressing information, education and communication (IEC) relevant to POPs management.							
Task / Activities	**Resource Requirements**	**Project Cost (US$ 1,000)**	**Proposed Schedule of Costs (US$ 1,000)**				
		Total	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
GOAL 7: Achieve high level of awareness and knowledge across all sectors on POPs management in support to the implementation of the updated National Implementation Plan							
	Total for Goal	**3,492**	**690**	**666**	**788**	**705**	**643**
Objective 1: Strengthen the current program to sustain awareness and understanding of the health, environmental risks, economic and social impact of POPs.							
	Subtotal for Objective	**995**	**179**	**136**	**227**	**227**	**227**
1. Develop and maintain an on-line portal for dissemination of IEC materials that include documented testimonials, popularized technical reports, and risk studies.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	194	74	30	30	30	30
2. Sustain a series of seminars and lectures to various organizations for both formal and non-formal organization.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	251	40	40	57	57	57
3. Write a monograph for POPs	Human Resources, Facilities, Equipment, Services, Materials, and Others.	90	15	15	20	20	20
4. Develop strategies to sustain media coverage on POPs - Identify gaps on IEC programs; - Develop a policy recommendation or program that coordinates and utilizes the existing government resources to effectively reach and disseminate the information on POPs and its environmental, health, and economic impacts; - Create programs in raising public awareness and education that involve multi-sectoral participation of government agencies, LGUs and NGOs.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	178	-	-	59	59	59

5. Implement, update, and periodically report the results of the health and environmental monitoring program of POPs in general and make them available as public information.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	281	50	50	60	60	60
Objective 2: Create and implement educational programs on POPs at all levels.							
	Subtotal for Objective	**1,620**	**347**	**369**	**352**	**287**	**265**
1. Develop policy recommendation to incorporate explicitly the topic of POPs in the implementing rules and regulation (IRR) of RA 9512 (an act to promote environmental awareness through environmental education).	Human Resources, Facilities, Equipment, Services, Materials, and Others.	34	17	17	-	-	-
2. Prepare training module of POPs for potential trainers among teachers and student leaders	Human Resources, Facilities, Services, Materials, and Others.	67	-	22	22	22	-
3. Conduct of National Orientation seminar and training of potential trainers among teachers and student leaders from different schools nationwide.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	195	65	65	65	-	-
4. Provide research grant for faculty and students involved in POPs-related research work.	Human Resources, Facilities, services, and study grant	343	69	69	69	69	69
5. Provide incentive mechanism for schools implementing outreach programs including POPs management as one of the topics	Human Resources, Facilities, Equipment, Services and financial incentive	343	69	69	69	69	69
6. Involve national television networks in the advocacy to include POPs as one topic in their educational TV shows.	Human Resources, Facilities, Equipment, Services and publicity funds	350	70	70	70	70	70

7. Work with Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM) in promoting environmental awareness through environmental education.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	175	35	35	35	35	35
8. Link POPs education to general activities on the awareness of hazardous chemicals and general education on sustainable production and consumption particularly on topics on selection of POPs alternatives.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	114	23	23	23	23	23
Objective 3: Strengthen the political advocacy or lobbying programs to sustain POPs reduction and elimination as a public health priority, environmental issue, and priority action agenda.							
	Subtotal for Objective	**302**	**85**	**53**	**73**	**46**	**46**
1. Identify target advocacy groups and develop specific/key messages and delivery methods per group	Human Resources and services	32	32	-	-	-	-
2. Conduct series of lobbying activities for legislative and budgetary support for the reduction & elimination of POPs.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	130	26	26	26	26	26
3. Integrate POPs reduction and elimination in agency's plans, programs, services, and resource allocation and present these effectively during regular Congress/Senate hearings on government program and budget allocations.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	80	27	27	27	-	-
4. Enlist journalists, media agencies and associations and environment-friendly journalist associations in committees or task forces.	Human Resources and services	60	-	-	20	20	20

Objective 4: Strengthen and sustain the network for information exchange and communication on POPs and the National Implementation Plan							
	Subtotal for Objective	**575**	**80**	**108**	**137**	**145**	**105**
1. Survey of partner stakeholders to establish common interest and preferred communication mechanisms.	Human Resources and services	40	20	20	-	-	-
2. Sustain regular coordination meetings, including reporting on POPs updates and the activities under the National Implementation Plan (NIP), and support the country's participation to COP.	Facilities and services	20	-	20	-	-	-
3. Organize national conferences and symposia as regard to POPs	Human Resources, Facilities, Equipment, Services, Materials, and Others.	80	-	-	40	40	-
4. Develop and maintain information clearing house that would serve as the focal center for POPs information such as BAT/BEP practices, results of environment and health monitoring, international updates on POPs, and POPs issues, etc.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	193	32	40	40	40	40
5. Sustain the participation in local, national, and international forums on POPs and presentation during regular meetings of business associations.	Funding for services	140	28	28	28	28	28
6. Establish and maintain an intra-agency and Local Government Unit reporting/ information exchange system under the National Single Window (NSW) system.	Human Resources, Facilities, Equipment, Services, Materials, and Others.	102	-	-	28	37	37

Republic of the Philippines
Department of Environment and Natural Resources
Environmental Management Bureau
CHEMICAL MANAGEMENT SECTION
AQMTC Bldg., DENR Compound, Diliman Quezon City
Telephone No.: +632 928-8892 Telefax No.: +632 920-2263
Website: www.emb.gov.ph/pops