International POPs Elimination Project

Fostering Active and Efficient Civil Society Participation in Preparation for Implementation of the Stockholm Convention

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Country Profile on Pesticide POPs in the Philippines

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About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN http://www.ipen.org) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;

- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;

- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see http://www.ipen.org

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WHAT ARE POPS?

Persistent Organic Pollutants (POPs): A class of toxic chemical substances that persist in the environment, accumulate in high concentrations in fatty tissues, bio-magnify through the food chain, and have potential for long range transport thus widespread contamination.

Twelve initial POPs have been identified for action under the Stockholm Convention on POPs:

Pesticide POPs:

1. Aldrin
2. Dieldrin
3. Endrin
4. Chlordane
5. Heptachlor
6. 1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane (DDT)
7. Toxaphene
8. Mirex

Industrial POPs:

9. Hexachlorobenzene (HCB)*
10. Polychlorinated Biphenyls (PCBs)
11. Polychlorinated dibenzo-p-dioxins (PCDD or Dioxins)
12. Polychlorinated dibenzofurans (PCDF or Furans)

* also a pesticide

Unintended by-products:

Polychlorinated dibenzo-p-dioxins (PCDD or Dioxins)
Polychlorinated dibenzofurans (PCDF or Furans)
Polychlorinated biphenyls (PCBs)
Hexachlorobenzene (HCB)

SOURCES OF POPS IN THE PHILIPPINES

Background

The Philippines and POPs

The Philippines, home to an estimated 82.3 million Filipinos (as of 2003), is an archipelago of over 7,000 islands located less than 1,000 km off the southern coast of Asia. There are three main island groups, namely: Luzon, Visayas, and Mindanao.

The Agricultural Sector and POPs

The Philippine economy is agriculture-based. Around 13 million hectares of the total land area of 30 million hectares constitutes agricultural land. The country's vast farmlands, scattered across the provinces from Luzon to Mindanao, are planted with such staples as rice and corn. Other major crops include coconut, sugar and other commercial crops like banana, pineapple, coffee, tomato, and root crops, vegetables like garlic and onion, and mangoes.

The agricultural sector contributes an average of 20 percent to the national income. The agriculture, fishery and forestry sector employs more than half of the total labor force. Most farmers till small parcels of land, using non-mechanized methods of farming. Over 79% of farmlands cover less than 3 hectares (Bureau of Agricultural Statistics, 1991). Plantations usually run by multinational corporations (MNCs), take up less than 10% of agricultural lands.

Rice, corn, and other cereals account for about a fourth of the agricultural sector's output. Plantation crops like coconut, sugarcane, banana and pineapple contribute about 15 %. The cultivation of the latter three plantation crops, along with cereals, is heavily dependent on the use of fertilizers and pesticides. The use of both chemical fertilizers and pesticides has increased in recent years. Total fertilizer use grew 50% in just four years: from 2.1 million metric tons in 1993 to 3.1 million metric tons in 1997. Similarly, total pesticide use has increased, particularly since 1991. In 1998, the volume of sales for pesticides reached ₱4,798 million or $120 million.

The improper use of pesticides and fertilizers can contaminate water, affect human health and induce resistance in pests. On large plantations, pesticides are applied through aerial spraying, often endangering not only plantation workers but also surrounding communities. The subsistence farmers who use pesticides apply them manually by using spray cans mounted on their backs, with minimal use of personal protective equipment. Most farmers are not well-informed of the health hazards posed by the use of pesticides.

Most POPs pesticides (endrin, aldrin, dieldrin, heptachlor and toxaphene) have been banned since 1989. Subsequently, chlordane was likewise banned (1999), and the use of DDT for malaria control was cancelled by the Department of Health (1992). Yet, according to a study conducted by the Environmental Management Bureau of the Department of Environment and Natural Resources (EMB-DENR) in April 2004, chlordane is still reportedly being sold in hardware stores in some provinces. Due to the lack of stringent monitoring and regulation of the import and sale of banned or restricted pesticides, it is possible that stockpiles of other POPs pesticides still exist in the country. Regulatory bodies have no information on the status of stocks imported prior to the banning.

Results of the IPEP project "Participatory Action Research on POPS Pesticides in a Philippine Rural Community" done by a coalition of farmers and advocates (RESIST)

from July 2005, to April, 2006, in a farming village in Tunkong Mangga, San Jose del Monte, Bulacan indicated that some POPs pesticides such as DDT, Dieldrin, Endrin and Chlordane are still being used in the area despite the fact that these POPs pesticides have been banned in the country. Information was collected mainly by household survey, focus group discussions and key informant interviews. However, the research team was not able to obtain actual physical evidence (unused pesticide, containers) of POPs pesticides. No laboratory analysis was done to confirm the presence of POPs pesticides in the area.

A similar study done by Fisherfolk Against Toxics in fishpond communities in Hagonoy and Malolos, Bulacan, involving 115 respondents also indicated that POPs pesticides are still being used in these communities. Twenty six per cent (26%) of those interviewed said banned pesticides such as *Aldrin* and *Heptachlor* are still occasionally used by fishpond workers, and that they are still available in the market, where selling and distribution are done either openly or discreetly. The rest said they are not aware since they are now contented with the use of *Malathion* pesticide. According to some respondents, *Chlordane, DDT, Dieldrin, Endrin* still existed and proliferated some years back prior to the conversion of rice lands to fishponds. About 34 interviewees said they had direct knowledge that these banned and restricted pesticides are still being used in farming areas. Twenty three respondents (20 %) said they admitted that they had retried to use these banned pesticides in some occasions due to lack of supply of *Malathion*. Local government officials said the ban on these pesticides continues but they cannot comment on the reports by villagers that banned pesticides are still being used in their respective areas. Unfortunately, however, no physical evidence was obtained to confirm the presence of these banned pesticides. Despite solicitations and offer for payment, no one has submitted any left-over or even an empty container for testing.

Again, in a limited survey done in Davao del Sur, Southern Mindanao by LAKABA and CAUSE-DS in a banana plantation area, some key informants indicated that POPs pesticides are still being used in their areas, particularly Lindane and endosulfan. The banana workers who were interviewed, however, did not mention any POPs pesticides in their responses to the survey. Again, no physical evidence was obtained by the research group and no laboratory analysis has been done despite the original plan to have some environmental samples submitted for laboratory analysis.

POPs Pesticides inventory

Under the enabling activity project of the government, an attempt was made to get a picture of the quantity of POPs that are still present in the country. A listing of companies engaged in the handling of POPs pesticides in the Philippines was gathered from various sources that included manufacturers and distributors, pest control services, and hardware stores. Survey forms were fielded out to these companies and some were visited for verification. Through the Focus Group Discussions (FGD), the presence of POPs pesticides in the country and their entry (including the possibility of illegal importation) were assessed.

Based on the survey forms returned and site visits conducted, companies claimed that POPs pesticides are no longer manufactured or used as active ingredients. Company respondents admitted that they produced some of the POPs pesticides before they were banned. According to them, when FPA released the circulars banning the POPs pesticides, they immediately stopped production and disposed the products within the phase-out period of 15 days.

Except for DDT and chlordane, all POPs pesticides were banned before the 1990s. DDT was restricted for vector control, primary for Malaria but in 1992, the Department of health issued an administrative order stopping the use of DDT for Malaria control.

Chlordane was a popular chemical for termite control until 1999 when the Fertilizer and Pesticide Authority (FPA) issued an administrative order banning the use of chlordane even for termite control. However, a few of the pest control operators interviewed disclosed that there are some registered exterminators that still treat homes and soil with chlordane. Chlordane was found in various hardware stores in the 5 regions visited by the project team posing as project contractors. Out of the 12 hardware stores visited, 7 stores offered the chlordane pesticides in packages of 250 ml, 500 ml, and 1 liter bottles. Chlordane was also claimed to be available in 1-gallon packages. However, when asked where the supply came from, no further information was revealed. The finding by the enabling activity project team that chlordane is still being sold despite the issuance of a ban order is consistent with the reports gathered from the farmers and fisherfolk under the International POPs Elimination Project of IPEN. According to the FPA, the chlordane found in hardware stores was fake or imitations of the real chemical but there was no proof offered to support this conclusion. Actual collection of samples from the hardware stores and chemical analysis would have to be done to determine whether indeed the chlordane being sold is fake. In several workshops under the enabling activity project, the acting director of the FPA claimed that all the chlordane in the market had been retrieved and there was only 50 liters in their inventory.

Interviews also indicated that illegal chemicals are also smuggled into the country through identified “backdoors” such as Zamboanga, Tawi-Tawi, Ilocos Region, and Batanes. The FPA itself admitted that their personnel had monitored some POPs pesticides entering the country illegally through the southern backdoor. However, no POPs pesticides that had been illegally imported have been confiscated by government authorities.

Results of the Enabling Activity Inventory Project on POPs Pesticides

TABLE 0.1 PESTICIDES SELF-REPORTING METHOD STATISTICS

Region	Sent out	Returned			
		With reply	%	Return-to-Sender	%
NCR	178	16	9.0	24	9.6
Region III	23	1	4.3	No data	No data
Region IV	48	3	6.3	No data	No data
Region VII	41	7	17.1	No data	No data
Region XI	54	30	55.6	No data	No data
Other Regions	No data	1	No data	No data	No data
TOTAL	**344**	**58**	**16.9**	**24**	**7.0**

The task team conducted 67 physical inspections and site visits for the pesticides inventory as summarized in Table 1.2. Pesticide manufacturers and distributors were inspected. Pest control service providers were also called on for interviews. Hardware stores were also investigated for the presence of banned POPs pesticides.

TABLE 0.2 PESTICIDE FACILITIES VISITED

Facility	NCR	Region 3	Region 4	Region 7	Region 11	Total
Manufacturing Plants	-	1	2	2	-	**5**
Hardware Stores	10	-	12	1	32	**55**
Pest Control Companies	-	-	2	4	-	**6**
Plantations	-	-	-	-	1	**1**
Total	**10**	**1**	**16**	**7**	**33**	**67**

Based on the survey forms returned and site visits conducted, POPs pesticides are no longer manufactured or used as active ingredients because of FPA regulations banning or restricting these pesticides. The information was affirmed through a listing of trade names and active ingredients of products that the companies manufacture. Annex H presents the list of pesticides currently registered in the Philippines.

Some company respondents of the inventory admitted they produced some of the POPs pesticides before they were banned. When FPA released the circulars, they immediately stopped production. POPs pesticides that were found after the banning were confiscated by FPA.

Exterminators and pest control services registered with FPA claim that they do not use POPs pesticides in their operations anymore. However, a few of those interviewed disclosed that there are some registered exterminators that still treat homes and soil

with chlordane, although these pest control services stocked on the chemicals before the prohibition, and are just offering it to their clients as means of disposing them.

Properties, health and environmental impacts, and history (local distribution and importation) and status of use of POPs pesticides in the Philippines

Aldrin

Aldrin is a white and odorless crystal when pure. Technical grades are tan to dark brown with a mild chemical odor. Aldrin is readily metabolized to dieldrin by both plants and animals. As a result, aldrin residues are rarely found in foods and animals, and then only in small amounts. It binds strongly to soil particles and is very resistant to leaching into groundwater. Due to its persistent nature and hydrophobicity, aldrin is known to bioconcentrate, mainly as its conversion products. Aldrin is stable to heat, alkali and dilute acids. This insecticide was mainly used against soil insects like termites.

In conjunction with dieldrin and endrin, occupational exposure to aldrin was associated with a significant increase in liver and biliary cancer. Health effects due to acute exposure include headaches, dizziness, nausea, general malaise and vomiting, muscle twitching, myoclonic jerks and convulsions. Effects due to chronic exposure include accumulation in the human placental tissues and blood.

According to FPA, Shell Chemical Company (Philippines) distributed aldrin locally in 1980. Among the trade names of aldrin were *Aldrex 2*, *Aldrex 4*, and Aldrex 40 % WP. Shell Chemical Company also distributed a combination of aldrin and pentachlorophenol marketed with the brand name *Aldrite*. In 1994, Shell Chemical Company (Philippines) Incorporated ceased its operations. According to interviews conducted, obsolete stocks of pesticides were exported to the United Kingdom for disposal in 1997 through 1999.

The insecticide was likewise imported from other countries. Table 1.3 provides for the importation data for aldrin. It is unknown whether aldrin was continuously imported after 1986 as no information was obtained for the succeeding years.

TABLE 0.3 IMPORT DATA FOR ALDRIN

Trade Name	1980	1981	1982	1983	1984	1985	1986	Total
	Weight (MT)							
Aldrin Tech	31.0	44.0	43.0	76.0	32.4	-	17.0	243.4
Aldrin 40 WP	2.28	3.58	1.63	-	-	-	-	7.49

Source: FPA, 1987

Aldrin has been banned since 1989 by virtue of FPA Pesticide Circular No. 4, Series of 1989. Survey forms returned and site visits conducted showed no legitimate stocks of aldrin left in the market.

There are alternatives to aldrin as prescribed by the United Nations Environment Programme (UNEP). Annex I provides a listing of the alternatives, as well as their local trade names and local distributors.

Chlordane

Chlordane is colorless to yellowish-brown viscous liquid with an aromatic pungent odor similar to chlorine. This chemical has been used to control ants, termites, grasshoppers, and other soil insects. Chlordane is degraded to less toxic compounds in the environment and the reaction is rapid in the presence of an alkali.

Chlordane is a convulsant and potent central nervous system toxin. The fatal human dose of chlordane is estimated to range from 6 to 60 grams (g), and convulsive symptoms have occurred after ingestion of as little as 2.25 g. Chlordane is rapidly absorbed through the skin. Case reports have linked exposure with the development of neuroblastoma, aplastic anemia, and acute leukemia. Inhalation and skin absorption of chlordane have caused blurred vision, cough, confusion, muscular incoordination and delirium in workers. Ingestion of chlordane causes mouth burns, abdominal pain, nausea, vomiting and diarrhea. Severe intoxication has caused blurred vision, irritability, tremor, staggering, convulsions, psychoses, central nervous system depression, bronchopneumonia, anuria and death. Prolonged exposure has been linked with neuroblastoma and acute leukemia.

Chlordane was distributed locally according to FPA data in 1980 and survey forms returned. Table 1.4 lists previous distributors of chlordane and its trade name.

TABLE 0.4 LOCAL DISTRIBUTORS OF CHLORDANE

Trade Name	Local Distributor
Chlordane 75 EC	Planters Products, Incorporated
Chlordane 75 EC	Marsman and Company, Incorporated
Planters Chlordane	Planters Products, Incorporated
-	Diversified Agrochemicals Trading
-	Pest Control Services Incorporated.

Source: FPA, 1980

Chlordane was imported from other countries, as summarized in Table 1.5. It is unknown whether chlordane was continuously imported after 1986 as no information was obtained for the succeeding years.

TABLE 0.5 IMPORTATION DATA OF CHLORDANE

Trade Name	1980	1981	1982	1983	1984	1985	1986	Total
	Weight (MT)							
Chlordane Tech	45.0	69.0	48.0	42.0	34.664	36.9	22.364	297.928

Source: FPA, 1987

POPs pesticides contamination

In 1979, a study by Barril and Orillo revealed the presence of organochlorine POPs pesticides residues in 18 commercial milk samples and one human milk sample. POPs residues included aldrin, Lindane, chlordane, DDT, heptachlor, and heptachlor epoxide. The total organochlorine insecticide residue levels ranged from 1.6 to 7.9 parts per million (ppm) on a fat basis and all milk samples contained DDT and/or its metabolites, DDE and DDD, with total levels ranging from 0.6 to 5.9 ppm on a fat basis. These values generally exceeded the permissible level of 1.25 ppm for total DDT in cow's milk as recommended by the WHO. In general, commercial whole milk samples contained the greater number of residues as compared to human milk. However, the lone human milk sample contained the highest level of total DDT residues (5.9 ppm on fat basis).

In 1997, a soil and water baseline study conducted by Weston International for the Clark Development Corporation showed that dieldrin was detected in four of the 15 operational wells sampled at levels which were above the WHO standards Dieldrin was also found to be above standards in two of the three sampled back-up wells. The wells found contaminated with dieldrin were all near the golf course. Soil analysis showed aldrin and alpha-BHC levels exceeding USEPA criteria by 10 times and dieldrin exceeding industrial soil criteria by three times in the Mabalacat Landfill.

Aldrin and Lindane were also found in soil at concentrations 100 and 10 times greater, respectively, than the residential criteria. In the Civil Engineering Entomology site, dieldrin exceeded the industrial criteria by over five times. In the California Bus Line Motor Pool area, aldrin was detected at 15 times the industrial criteria. Lastly, chlordane was detected in the Philippine Area Exchange Motor Pool site, at 140 mg/kg soil, compared to residential criteria of 0.49 mg/kg. Aldrin, dieldrin, heptachlor, and heptachlor epoxide exceeded the RBC criteria by 4 to 10 times at the same site.

Dr. Evangeline C. Santiago of the Natural Sciences Research Institute, University of the Philippines conducted a monitoring study of POPs and other pesticides on the river systems of two important fish- producing and agricultural provinces in the Philippines from 2002-2005. The monitoring detected significant levels of organochlorine pesticides in the river waters and sediments that could potentially contaminate the fish produced in the provinces. The first year monitoring in Laguna rivers detected traces of BHC, aldrin, trans and cis chlordane, dieldrin, DDT and endrin aldehyde in water samples during the first sampling and significant levels of dieldrin (0.03-0.13 ppb)

during the second sampling. Aldrin was detected in most Pangasinan Rivers at 0.063 ppb.

During the second sampling, dieldrin was most significant (0.04-0.09 ppb) in all Pangasinan sites and endrin aldehyde (0.27 ppb) in one site. Endrin, endrin aldehyde, and endrin ketone were present in highest concentrations at 89-155ng/g and gamma BHC at 13-18ng/g, methoxychlor at 26-41 ng/g, and dieldrin at 6-7 ng/g, in the sediments in Laguna Rivers.

In Pangasinan river sediments, Gamma BHC (20-39 ng/g), endrin (12-14 ng/g), endrin ketone (11-24 ng/g) and Methoxychlor (7 ng/g) were detected in high concentrations. The sediments in Calasiao, Sta Barbara, Embarcadero and Bued rivers were most contaminated. The second year monitoring showed only traces of trans and cis chlordane in most river waters from both provinces during the first sampling. Traces of dieldrin, p,p'DDT and trans-nonachlor were detected during the second sampling in addition to the chlordanes. However, the concentrations detected were all below the MDLs.

Using the UNU method for sediment analysis (extraction of dried sediments by sonication), the first sampling sediments for Laguna province showed much less OCPs in the sediments than the concentration obtained the previous year. The third year monitoring showed that both water and sediments collected during the two sampling periods indicated significant contamination with trans and cis chlordanes in both Laguna/Rizal and in Pangasinan river systems. In some rivers where dieldrin, endrin , p,p' DDT and HCB were detected in water, the sediments also showed contamination of these POPs pesticides. Others (endosulfan1, endosulfan2, transnonachlor and endrin ketones) were detected in water and sediment samples. In Laguna, the rivers in Bay, Victoria , Mabitac and Pililia showed the most number of POPs residues in the sediments. In Pangasinan, the rivers in Calasiao and Mapandan showed the highest contamination of POPs and other pesticides.

Ostrea et.al. (2002), conducted exposure analysis to environmental toxins by meconium analysis in 426 infants from the nurseries of five hospitals in Manila. The study found several pesticides, including POPs, contaminating the infants meconium with the corresponding exposure rates and median concentration levels: chlordane (12.7% exposure rate and 22.48 µg/ml median concentration), DDT (26.5% and 12.56 µg/ml), Lindane (73.5% and 2.0 µg/ml), malathion (53.0% and 6.80 µg/ml), parathion (32.0% and 2.30 µg/ml) and pentachlorophenol (16.1% and 90 µg/ml).

Stockpiles

FPA conducted a study to determine the inventory of obsolete, unwanted, and/or banned pesticide stocks in the Philippines in March 2001. The results of the study showed a total of 21,584 liters of obsolete pesticides in the country. However, these figures covered both POPs and non-POPs pesticides *(Proceedings of Training Workshop on Inventory Taking of POPs: Pesticides, 2003)*. The FPA inventory

showed a total of two (2) liters of aldrin (with the trade name *Aldrex*) and 116 liters of chlordane. The stock of aldrin and half of the amount of chlordane are stored at the FPA Central Office while the rest of the chlordane is at the Zuellig Warehouse in Metro Manila. One respondent in the survey revealed a stockpile of DDT in a regional office of DOH, amounting to 1,116 kg. The respondent also stated that an unknown amount of DDT was disposed of by burial.

Damage caused by POPs pesticides

In the Philippines, there are only a few studies conducted to determine the damage caused by POPs pesticides to humans and the environment.

One such study is by M.E.Loevinsohn (1987) entitled "Estimating the Impact of Poisoning: Changing Patterns in Mortality in Central Luzon, Philippines in Relation to Pesticide Use". The study showed that between 1966 and 1979, insecticide applications on rice rose more than 500 percent and with the rise in insecticide use, particularly endrin, the death rate attributed to stroke also rose by 291 percent and 144 percent for age classes 15 to 34 years and 35 to 54 years, respectively. After the FPA banned the use of endrin in 1982, mortality decreased by 62 percent (15-34 years) and 13 percent (35-54 years). The study concludes that approximately 600 more deaths per year can be attributed to exposure to pesticides. Endrin, a POPs pesticide, was particularly mentioned as a likely cause of increased mortality observed.

In a report entitled "Presence of Hazardous Chemicals Known as Endocrine Disrupting Substances (EDCs) in the Philippines" presented at a seminar on endocrine disruptors at the University of the Philippines UP Los Banos in 2000, cases of human reproductive and developmental deformities or impairments were linked to exposure to POPs. Incidents of human impairments included severe hypospadia and cryptorchidism, hermaphroditism, "breast buds" in males, and deformed sperms in humans exposed to pesticides in farming and consumption of crops and fish catch in plantations and water bodies which were found to be contaminated with DDT, PCBs, Lindane, heptachlor, chlordane, dieldrin, mercury (Hg), copper (Cu), and cadmium (Cd). The report also mentioned the use of mirex by farmers even though the chemical is not registered by the FPA.

Another study (Quijano and Quijano, 2000) entitled "Health Impact of Pesticides on Former IRRI Workers", done on former IRRI (International Rice Research Institute) workers, also linked exposure to various pesticides, including POPs pesticides like endrin and endosulfan, to various types of ailments that were found to have afflicted the former IRRI workers and their families. Results of the study showed:

- the former IRRI workers were not given adequate training and/or orientation with regards to safety precautions
- safety gadgets such as mask, respirator, eye goggles, gloves, etc., were not adequately provided for by IRRI

- IRRI used highly toxic pesticides, including POPs pesticides, even at a time when their extremely toxic properties were already known and developed countries had already begun to disallow their use
- IRRI had been using a pesticide (butachlor) which was not registered for use in its country of origin (US)
- The majority (62.5%) of the respondents indicated various signs and symptoms that they frequently experienced during their work at IRRI which they attributed to pesticide exposure
- 65.9% of the respondents revealed that they had suffered serious illnesses during the course of their employment at IRRI
- 23% of the respondents revealed having children born with abnormalities

The various community pesticide action monitoring projects done in Southern Mindanao, Philippines also revealed that community residents exposed to various kinds of pesticides, including POPs pesticides, had a high incidence of a variety of illnesses which are known to occur as a consequence to pesticides exposure such as: congenital abnormalities, learning impairment in children, reproductive abnormalities, endocrine abnormalities, skin diseases, and many other diseases. In banana plantation areas and pineapple plantation areas, highly persistent organochlorine pesticides such as endrin, dieldrin, DBCP, and DDT, were reported to have been used heavily from the 1970s until the 1990s. Endosulfan and Lindane, were also used heavily in the past and are still being used reportedly up to the present. Several illnesses were also reported to have occurred as a result of exposure to these pesticides.

Legal and Policy Framework

The policy framework for the regulation of POPs is provided for by Republic Act 6969, Republic Act 8749, Republic Act 9003, their respective implementing rules and regulations, and administrative orders and circulars issued in pursuance of these Acts.

POPs Pesticides:

The Fertilizer and Pesticide Authority is the main agency tasked to manage pesticides from importation, use, reformulation, manufacture, and distribution. The Environmental Management Bureau provides the necessary enforcement for the management of hazardous wastes generated in pesticides manufacturing facilities, including reformulators, as well as large scale end-users of pesticides (large farms/plantations).

Other agencies provide the necessary enforcement support, such as:
Bureau of Customs – Enforce border controls in regulating the entry of banned pesticides
or chemicals in general

Bureau of Plant Industry – Monitor residual pesticides and evaluate pesticide application practices to ensure acceptable level of residues in agricultural products

Research and Development Division of the Environmental Management Bureau – Environmental monitoring of POPs pesticides (fish and shellfish) in selected areas of the country

Interagency Committee on Environmental Health, Department of Health – Coordinates and monitors various activities of different agencies related to environmental health, including chemical safety.

The Fertilizers and Pesticides Authority (FPA), as mandated, issued circulars restricting or prohibiting the production, use and distribution of pesticides that pose unreasonable threat to human health and the environment. Table 2 summarizes these circulars in chronological order.

Table 2: Regulations Restricting or Prohibiting the Importation, Production, Distribution and Use of POPs Pesticides

Regulation	Content
FPA Pesticide Circular No. 11, series of 1978	Restricted the importation and use of DDT for malaria vector control by the Department of Health (DOH)
FPA Pesticide Circular No. 5, series of 1983	Prohibited the importation, production and use of Endrin
FPA Pesticide Circular No. 4, series of 1989	Prohibited the importation, production and use of the following pesticides: Aldrin Dieldrin Heptachlor Toxaphene
Department of Health Circular No. 1, 1992	DOH Secretary ordered the cancellation of use of DDT in malaria control, and shifted to the use of permethroids
FPA Pesticide Resolution No. 01, series of 1999	Prohibited the importation, production and use of chlordane

The POPs Pesticides are included in the Priority Chemicals List, but the government has yet to issue a CCO on POPs Pesticides.

The basic policy framework addressing contaminated sites is the Republic Act 6969. However, the Act and its implementing rules and regulations (DAO96-26) do not include specific guidelines for the identification, classification, containment, and rehabilitation of contaminated sites, and as such could not be enforced. Although the manufacturer/importer is held accountable for managing hazardous wastes "from cradle

to grave", implementing procedures are not provided. At present, there is a pending bill in the House of Representatives, seeking to amend the Republic Act 6969 to provide more specific guidelines on hazardous wastes management, particularly with regards to disposal of hazardous wastes and management of contaminated sites. Under Section 32, a policy guideline was set for the Environmental Management Bureau of the Department of Environment and Natural Resources to establish an inventory list of all sources of POPs in the country. It also includes the development of short- and long-term national government programs on the reduction and elimination of POPs.

The Action Plan addressing POPs Pesticides includes the following in its objectives:
(1) to inspect, retrieve, and properly dispose of POPs pesticides over the years 2006-2007,
(2) to initiate all actions (review of regulations) by the end of 2005, with a view to ban Hexachlorobenzene and Mirex use in the country, and
(3) to complete an assessment by the end of 2006 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 (IVM) strategies, and the need for DDT.

In pursuit of these objectives, the EMB-DENR proposes to conduct training and capability building activities and inspection programs, to establish and manage warehouses for the storage of confiscated pesticides, and to establish an inventory of POPs pesticides manufactured or imported into the country, and their use and distribution. The proper disposal of POPs is targeted for July 2007.

With regards to the assessment of the status of Hexachlorobenzene and Mirex, the following activities are to be implemented by December 2005:
- Review of all regulations and industrial practices that involve mirex and hexachlorobenzene
- Identify and assess possible sources
- Devise reduction strategy, if required

The initiation of a regulatory process to officially ban importation and use of mirex and hexachlorobenzene is planned for 2006.

National Legislation Mandating Substitution of POPs Chemicals

The Department of Agriculture (DA) and Department of Health (DOH) are currently promoting integrated pest management (IPM) and integrated vector management (IVM), respectively. DA and DOH expanded the coverage of these management schemes to highlight the reduction in usage and release of POPs.

National Implementation Plan

As a Party to the Stockholm Convention, the EMB-DENR, through its POPs Management Office, has drawn up a National Implementation Plan for the Philippines. Specifically, the NIP 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 enable termination of country-specific exemptions (if any), if not prepare reports justifying the continuing need for such exemptions
- 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

In preparation for the drafting of the NIP, the EMB-DENR conducted three preparatory activities, namely: (a) Initial Inventory of POPs, (b) Capacity and Needs Assessment for the Implementation of the Convention on POPs, and (c) Public Awareness Campaign Program for the Convention on POPs.

As documented in the report on the Capacity and Needs Assessment, there is a general inability to address most POPs issues, such as the following:

- Incomplete inventories of POPs (import, transport, use and disposal)
- Need to identify and manage POPs-contaminated sites
- Lack of monitoring and surveillance of population health status with regards to potential impacts of POPs
- Insufficient legislation for dioxins and furans
- Inadequate management and disposal of PCB-contaminated equipment
- Lack of understanding and knowledge regarding unintentional POPs

Weak enforcement of existing policies and a lack of awareness and knowledge of the public and on the part of policy makers, etc. contribute to the aforementioned issues.

Objectives and Priority Issues: Pesticides

General Objective

"To limit human exposure to POPs pesticides through improved management practices and continuous monitoring of POPs pesticides, POPs pesticide wastes and POPs contaminated wastes."

The specific objectives identified are as follows:

- Complete the POPs pesticides inventory by 2006
- Establish a management system for POPs pesticides wastes and POPs contaminated wastes by 2009
- Strengthen capacity for screening, enforcement, and monitoring of present and future POPs pesticide controls and use by 2007
- Decide on the Regulatory status of DDT by 2007
- Promulgate a ban on import and use of HCB and Mirex by 2007

Issues considered as **top priority** are:

- Need to complete POPs pesticide inventory regardless of whether the product is fake or genuine
- Need for proper management of POPs pesticides wastes and POPs-contaminated waste
- Strengthening capacity for screening, enforcement, and monitoring of present and future POPs pesticide controls and use

The issue on coming up with a decision on the regulatory status of DDT (4) is considered second priority and the need to ban import and use of HCB and Mirex as the least priority.

Level of Capacity to Implement NIP

Capacity for liquidating POPs

The Philippine enabling activities to meet its obligations under the Stockholm Convention on POPs, particularly on in the initial inventory of POPs, revealed that the country currently has no sufficient means for liquidating POPs. The initial inventory showed that current stockpiles of obsolete POPs pesticides and PCB contaminated equipment are still potentially present in the Philippines. The report on the inventory stated that *there would be a need to dispose or destroy these stocks.*

A method for hazardous waste disposal gaining recognition in the Philippines is the co-processing of these wastes in cement kilns. EMB organized a technical working group on this method to draft the legal and technical guidelines for this method. In 1997, an agricultural company entered into a cooperative arrangement between EMB, ITDI and a cement manufacturer to dispose of their low efficacy herbicide in a cement kiln. The same cement manufacturer is currently conducting studies to determine their compliance to dioxin and furan emissions when introducing wastes into their kiln.

This method must comply with the best available techniques/best environmental practice (BAT/BEP) guidance of the Stockholm Convention. The Advance Draft (December 2004) on the Guidelines on BAT and provisional guidance on BEP relevant to Article 5 and Annex C of the Stockholm Convention on POPs. The guidance document has a specific section (V.B) on cement kilns firing hazardous waste which are included in source categories having "…the potential for comparatively high formation and release" of by-product POPs.

Given this present situation on the technical infrastructure, the Philippines may not have the sufficient technological capacity for the liquidation of POPs stockpiles, including POPs contaminated wastes, soils and sediments.

Monitoring Program

Monitoring releases to the environment is the main function of the Department of Environment and Natural Resources, through its Environmental Management Bureau. Monitoring impacts on human health on the other hand is the function of the Department of Health. However, due to the required resources needed in the conduct of regular monitoring for POPs, this activity is performed only on a per project basis, dependent on support from funding agencies. Other national government agencies and the academe perform research and monitoring on POPs depending on the availability of funds.

EMB does not have the capability to monitor dioxins and furans. Likewise, industries, including both government and private laboratories, do not have the capacity to monitor dioxins and furans. Both EMB and industries rely on foreign laboratories to collect and analyze samples for dioxins and furans. These foreign laboratories are based in Singapore, Australia, Japan and Belgium.

Community Right to Know

RA 6969: informing and educating the populace regarding the hazards and risks attendant to the manufacture, handling, storage, transportation, processing, distribution, use and disposal of toxic chemicals and other substances and mixtures; and prevention of entry, even in transit, as well as the keeping or storage and disposal of hazardous and nuclear wastes into the country for whatever purpose.

Public Interest NGO participation in the POPs issue

Public interest NGO participation in the POPs issue started when the Canadian and Philippine governments jointly prepared for the Experts Meeting on Persistent Organic Pollutants in Vancouver, Canada in June, 1995. The Philippine focal point at that time called on the University of the Philippines College of Medicine experts and the NGOs, particularly, Pesticide Action Network Philippines, to help in preparing the background documents for the meeting. PAN Philippines, since then, has involved itself in POPs related activities, including national and regional meetings, the Intergovernmental Negotiations Committee (INC) meetings on POPs, the signing of the Stockholm Convention, ratification campaign and subsequent meetings up to the second meeting of the Conference of the Parties which was concluded recently.

Other public interest NGOs (environmental, health and sustainable agriculture NGOs and Pos (people's organizations) have included POPs in their advocacy at one time or another during and after the INCs from 1998 to 2001 and thereafter. Through seminars, skillshares, days of action, media advocacy, and similar other activities, several environmental, health and sustainable agriculture NGOs, as well as grassroots organizations such as farmers, fisherfolk, women and youth, have joined in the campaign for public awareness and policy advocacy on POPs and other toxic chemicals. PAN Philippines(representing PAN Asia Pacific), together with Environmental Health Fund, was also a member of the Forum Standing Committee of the Intergovernmental Forum on Chemical Safety (IFCS), and was also engaged in the SAICM process (Strategic Approach to International Chemicals Management) both of which also took up the issue of Persistent Organic Pollutants. PAN Philippines was, in fact, more consistently engaged in the global POPs process from 1995 to the present than the Philippine government.

The Philippine government, because of frequent changes in the political leadership and for some other reasons, was not consistent in its representations in the global and regional activities related to POPs. For example, during the INCs, the national focal point changed from the Fertilizer and Pesticides Authority to the Environmental Management Bureau because of a change in the political leadership. There was also no functioning system within the government bureaucracy that would ensure appropriate selection of country representatives to international meetings. It was often the personal decision of a high ranking political appointee that determined who would represent the country in these meetings. As it happened with the POPs process, the focal person appointed at the national level to take responsibility for POPs related activities was not even the person sent to the most important meetings, especially the INC meetings from 1998 to 2001, on Persistent Organic Pollutants. It was only after the Stockholm Convention took in effect in 2004 that the Philippine government became relatively more consistent in its representation at the global arena on the POPs issue. Very often, it was PAN Philippines, and at times, Filipino individuals representing international NGOs, which took the initiative in putting forward Philippine positions at various meetings concerning POPs. Very often also, it was PAN Philippines which takes the initiative and prods the Philippine government agency, particularly the Department of

Health, to be engaged in the POPs related and chemical safety activities at the international level. For example, it was through the intercession of PAN Philippines (probably more on the personal capacity of its President who was also a consultant of the Department of Health) that the Department of Health became more involved in the POPs issue and became engaged at the Intergovernmental Forum on Chemical Safety.

Many of the activities undertaken by the public interest NGOs were facilitated through their active involvement with the International POPs Elimination Network (IPEN), which was the major coalition of public interest NGOs consistently engaged in the POPs process. Together with GAIA (Global Alliance for Incineration Alternatives), PAN Philippines act as a co-hub for the International POPs Elimination Project. PAN Philippines facilitated the submission of 10 Project Activity Memorandums (PAMs) in the region from NGOs in 5 different countries (Cambodia, China, Indonesia, Malaysia, and Philippines). Among the PAMs, there were 4 Country Situation Reports (China, Indonesia, Malaysia, and Philippines), 3 Hotspot Reports (all from the Philippines), and 3 Country-Based Project Activities on POPs (Philippines, Indonesia, and Cambodia).

PAN Philippines has been active in the process of preparing the Philippine National Implementation Plan (NIP) on the Stockholm Convention. PAN Philippines participated in several national workshops and meetings on the POPs NIP held by the Philippine government's Department of Natural Resources (DENR). In addition, PAN Philippines., GAIA, and other local NGOs met again with the National Focal Point on POPs to discuss outcomes of the COP1 and the draft NIP, providing significant comments and feedback.

Aside from participating actively in government-organized activities on POPs and the NIP, PAN Philippines also participated in other IGO initiatives relating to POPs. PAN Philippines co-organized a round-table discussion aimed at contributing to the development of the UNDP Small Grant Program's framework and priority setting on POPs. PAN Philippines also participated in the regional GHS workshop for ASEAN countries jointly organized by UNITAR, ILO and the Philippine Government and also participated in the workshop entitled "Protecting Children from Established and Uncertain Chemical Threats: Tools and Mechanisms for Information towards Prevention" organized by IPCS, WHO and the Lowell Center for Sustainable Production, School of Health and the Environment University of Massachusetts Lowell held in Geneva, Switzerland.

Recommendations (Public interest NGO perspective**) :**

1. Set up a multistakeholder national coordinating body with the full participation of public interest NGOs and other stakeholders.

The current top-down set-up where the focal point makes practically all the key decisions and controls practically all official foreign assistance related to the Stockholm Convention is not satisfactory and is not in accordance with the international guidance documents on the implementation of the Convention. It violates the provision of the Stockholm Convention on public participation and it is also contrary to the Convention's expressed intent for multi-sectoral and multi-agency collaboration in fulfilling country obligations under the Convention. Even the other agencies within the government are not substantially involved in decision making in coming up with POPs-related activities and in the allocation of resources. There is no functioning national coordinating body that exists until now. The focal point (Environment Management Bureau of the Department of Environment and Natural Resources) decides by itself a POPs related activity and only calls other agencies and stakeholders to participate in that activity without involving them in the planning and decision-making processes for that activity. While the EMB has supposedly established a Steering Committee (presumably the equivalent of a national coordinating committee) and a technical working group where public interest NGOs are represented, these structures are not functioning and are not participatory in character. The process of setting-up the national coordinating body can be done according to the guidelines recommended by the UNITAR and GEF.

2. The national coordinator (POPs focal person) should be a hired full-time person with sufficient experience in chemical safety issues, preferably from the academe.

If the country is serious about implementing the Stockholm Convention, it should hire an independent, full-time expert on chemical safety issues as a national coordinator. The job of organizing, coordinating and facilitating various activities related to the Stockholm Convention cannot be adequately performed by a middle level staff of a government agency already saddled with so many other kinds of work outside of the POPs issue. The coordinator should have at least three full-time staff assisting him/her in the performance of his/her tasks. The terms of reference for the coordinator and the staff can be formulated by the national coordinating body.

3. Trainings on the Stockholm Convention (history, goals and objectives, provisions, etc.) and on the participatory process of decision making in the implementation of the Stockholm Convention should be held for the national coordinating body, subsidiary bodies such as working groups and technical working groups, and other relevant groups participating in the implementation of the Convention, to educate members thoroughly on the Stockholm Convention and develop collective decision making process and consensus building. Government officials and employees not accustomed to a participatory process in decision making should be a special target.

4. Multi-stakeholder joint campaigns to put chemical safety, particularly, the issue of Persistent Toxic Substances high in the agenda of government decision makers (Executive, Legislative and Judiciary). This could take several forms: dialogues, legislative lobbying, media outreach, etc.

5. Intensified public awareness campaigns and trainings on alternatives, especially at the grassroots level to enable farmers, fisherfolk and other vulnerable sectors to avoid, reject and develop alternatives to persistent toxic substances. This can be most efficiently spearheaded by public interest NGOs but can be supported by the other stakeholders, especially the government.

6. POPs advocacy work for special groups such as the academe, professional associations, consumer groups, church groups, artists and media groups, etc., to convince them to take on the issue of persistent toxic substances and incorporate the issue in their programs, meetings and discussions.

7. Undertake more comprehensive surveys, monitoring and research activities to update the national profile on POPs and other persistent toxic substances, including completion of the inventory of POPs pesticides. The national coordinating body should facilitate a multi-stakeholder participation in this activity. The government sector should take the lead in resource generation and solicitation of foreign external assistance to support such research and monitoring projects.

8. Establishment of a national mechanism to speed up process of officially adding new POPs to the original list of twelve, prioritizing toxic chemicals of priority concern for the country. This, again, should be facilitated by the national coordinating body with the academe, perhaps, as the lead sector.

9. Work for legislative measures to strengthen existing laws and policies that protect health and the environment, such as, precautionary principle as the framework for decision making regarding chemicals, "right to know" taking precedence over business confidentiality, clear statutory provisions on the protection of the right to health and the right to a healthful environment, prevention of "harassment suits" by big business against their critics, community oversight over projects with potential health and environmental impacts.

10. Participatory periodic assessments of progress in the implementation of the Stockholm Convention and other related international environmental agreements. Clear and appropriate indicators of progress should be developed by the participating stakeholders.

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