ACHIEVEMENTS

- Detailed gap analysis of the existing rules to manage POPs has been done and amendments in the existing legislation on POPs are being made
- Professional and department level training sessions on “Capacity Building of Stakeholders on Safe Handling and Management of POPs” are already undertaken in all provinces
- Gender Action Plan for Gender mainstreaming to strengthen the management of POPS has been developed
- Until now, 475 MT of POPs Pesticides and PCBs have been collected from various locations and disposed of in cement kiln.
- Gas Chromatography –Mass Spectrometry has been procured for up gradation of Federal and Provincial EPA Laboratories for the identification of POPs.
- Public awareness through:
  - short documentaries and knowledge material.
- Reconfirmation of POPs pesticides Stockpiles from all provinces including GB & AJK
- Mid Term Evaluation by National and International consultant has been completed.

COMPREHENSIVE REDUCTION AND ELIMINATION OF PERSISTENT ORGANIC POLLUTANTS IN PAKISTAN

22 training workshops

Sectoral guidelines for control and management of POPs

Updated National Chemical Profile of Pakistan

- 2 KPK
- 2 in Balochistan
- 6 in Punjab
- 6 in Sindh
- 2 in Gilgit Baltistan
- 2 in AJ&K
- 2 in Islamabad

1055 Trainees

813 Men

242 Women

PROJECT COMPONENTS

1. Development and implementation of a Regulatory, Policy and enforcement system to manage POPs
2. Capacity building of public/private sector stakeholders and local communities to reduce releases of POPs
3. Collection, Transport and Disposal of POPS Pesticides and PCBs
4. Monitoring and Evaluation

UNDP Pakistan

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Ministry of Climate Change

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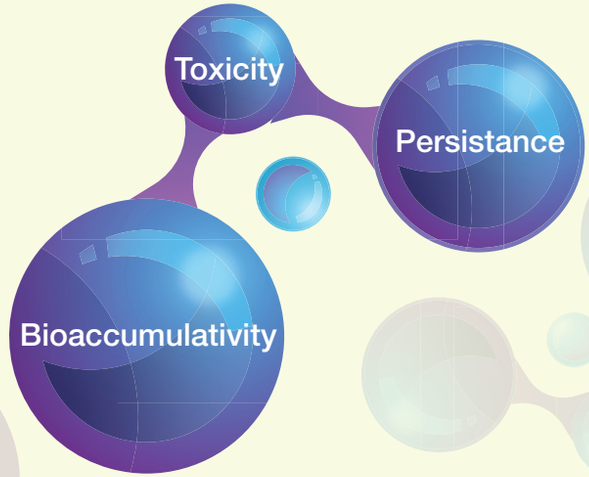
INTRODUCTION AND BACKGROUND

Global Environment Facility (GEF) funded project titled “Comprehensive Reduction and Elimination of Persistent Organic Pollutants (POPS) in Pakistan” was started in 2015. The project is being jointly implemented by Ministry of Climate Change (MoCC) and United Nations Development Program (UNDP), Pakistan.



SOURCES OF POPS IN PAKISTAN

Potential sources of POPs in Pakistan are electrical equipment, home appliances; open burning of e-waste, furniture, plastic processing industry, paints, plasticizer, PVC production, coal/wood combustion, industrial processes, and PCBs associated emissions.

Duration	**Implementing partners**	**Funding partner**	**Location**	**Total allocated resources**
2015–2019	Ministry of Climate Change and UNDP	Global Environment Facility	Pakistan	USD 5,450,000

PERSISTENT ORGANIC POLLUTANTS

POPs Also called as Organochlorine - organic compound containing chlorine are

- Highly toxic chemicals
- Stored in fat and are persistent
- Global threat to Human Health
- Serious Environmental Risks
- The “dirty dozen” —> main group of POPs

HEALTH IMPLICATIONS OF POPS

- Disruption of endocrine, reproductive, and immune systems.
- Damage to brain and peripheral nervous system.
- Behavioral problems, diabetes and thyroid problems.
- Cancer, allergies and hyper sensitivity.

PROJECT GOAL

Reducing risks to human health and the environment by avoiding the uncontrollable release of POPs from the environment and preventing people’s exposure to POPs.

ACHIEVEMENTS IN ELIMINATION OF POPS PESTICIDES FROM PAKISTAN

- Detailed gap analysis of the existing rules to manage POPs Pesticides has been completed and amendments in the existing legislation on POPs Pesticides management and control are in process.
- GC-MS has been procured for EPAs to strengthen their capacity for the identification and management of POPs Pesticides.

Capacity Building of Relevant Stakeholders [Table of departments]

Agriculture Department

Plant Protection Department (Federal & Provincial)

Federal & Provincial Environmental Protection Departments

Pakistan Customs

Dry ports and Seaports Staff

Academia

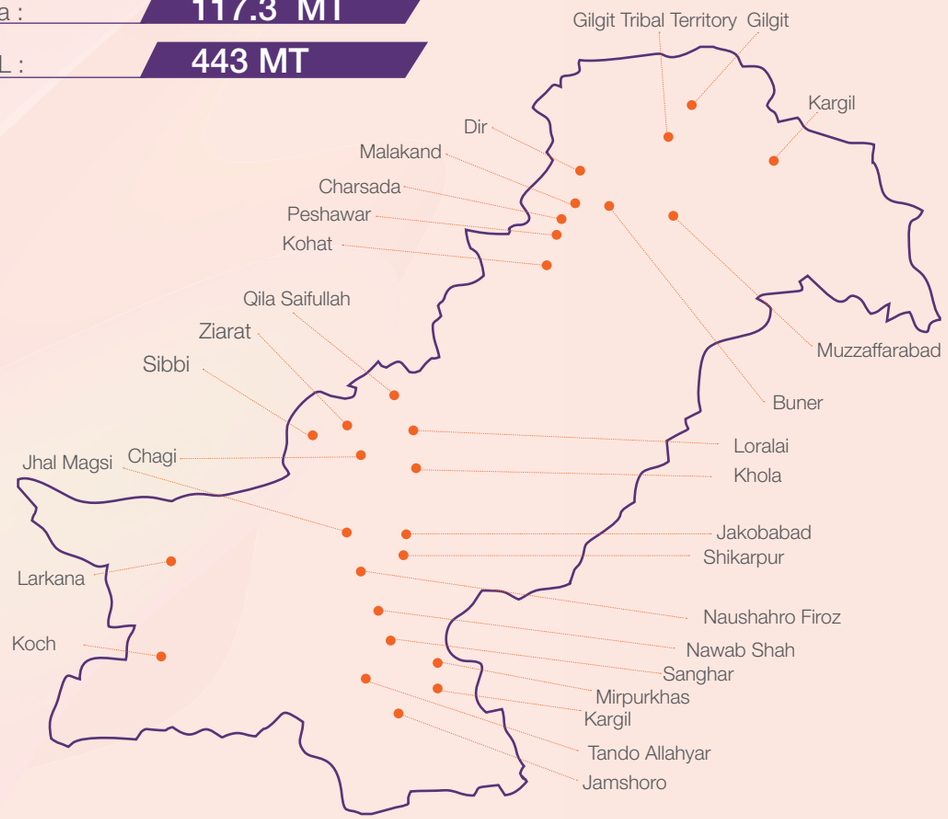
Certified Laboratories Staff

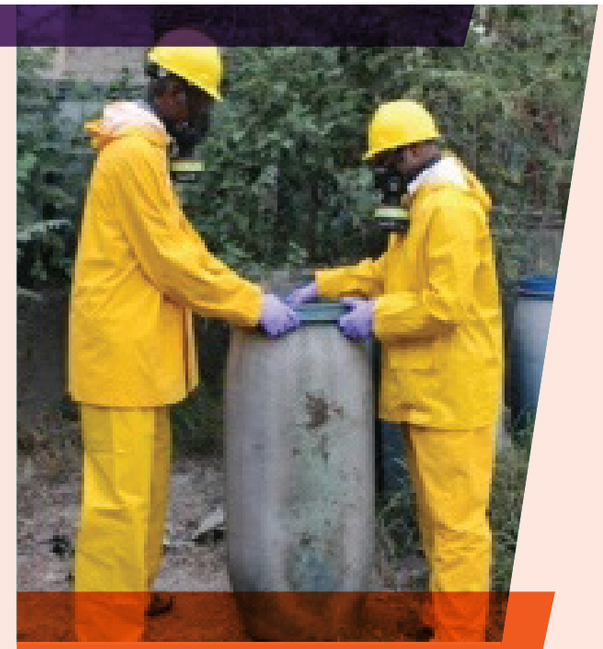
Until now, 443 MT of POPs Pesticides were collected from major stockpiles of the country and disposed off in a UN approved facility/cement kiln. The quantities collected and disposed off from various locations are:

Peshawer:	40.07 MT
Sukkhur:	116.6 MT
Mirpur Khas :	72.83 MT
Lahore:	10.74 MT
Bahawalpur:	85.8 MT
Quetta :	117.3 MT
TOTAL :	443 MT

Reconfirmation of available POPs Pesticides Stockpiles at all provinces of the country has been done. Total quantities of POPs Pesticides identified in each province are

Balochistan:	99.4106 MT
KPK:	48.03 MT
AJK:	0.016 MT
Sindh:	60.02 MT
TOTAL:	208.17 MT





COMPREHENSIVE REDUCTION AND ELIMINATION OF PERSISITENT ORGANIC POLLUTANTS (POPS) IN PAKISTAN

POPS PESTICIDES PURVIEW

UNDP Pakistan · gef · Ministry of Climate Change

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INTRODUCTION & BACKGROUND

POPs Pesticides - purely generated from anthropogenic sources, are associated largely with the manufacturing/usage and disposition of pesticides organic compounds mainly in agricultural domains. Out of 12 main POPs a.k.a "the dirty dozen", nine are POPs pesticides, which are:

Stockholm Convention: a global treaty triggered by the international community in 2004 – calls for the elimination &/or phasing out of POPs from globe

- Aldrin
- Dieldrin
- Chlordane
- DDT
- Endrin
- Endosulfan
- Heptachlor
- Mirex
- Toxaphene

Among the 16 new POPs, seven more chemicals have been categorized as POPs pesticides, as given below:

- Alpha hexachlorocyclohexane
- Beta hexachlorocyclohexane
- Chlordecone
- Lindane
- Pentachlorophenol and its salts and esters
- Pentachlorobenzene
- Technical endosulfan and its related isomers

High persistence in the environment e.g.

- **Half-life for DDT in soil range from 22 to 30 years**
- **Toxaphene up to 14 years**
- **Dieldrin up to 7 years**
- **Chlordecone up to 30 years**

EFFECTS OF POPS PESTICIDES ON HUMAN HEALTH

All the POPs Pesticides are considered to be carcinogenic to human health. Some specific health effects of POPs Pesticides on human health include:

- Cancer
- Allergies and hypersensitivity
- Damage to the central and peripheral nervous systems
- Reproductive disorders
- Disruption of the immune system

EFFECTS OF POPS PESTICIDES ON WILDLIFE

POPs Pesticides exposures result in diseases, or abnormalities in a number of wildlife species, including certain kinds of fish, birds, and mammals. These are:

- Reproductive disorders
- Developmental defects
- Behavioral changes
- Neurologic disorders
- Endocrine disruptions
- Immunologic disorders

Over 500,000 Pakistanis suffered annually from poisoning due to agro-chemicals, out of which 10,000 died so far.

EFFECTS OF POPS ON ENVIRONMENT

- POPs Pesticides contribute to air pollution after being carried as particles to other areas.
- POPs Pesticides contribute in soil pollution as they Degrade and damage the community of microorganisms.
- POPs Pesticides contribute to water pollution by percolating, or leaching through the soil or it may be carried to the water as runoff.

EXISTING LAWS IN PAKISTAN RELATED TO POPS PESTICIDES

Development of legislation to manage and control POPs Pesticide is still underway. However, the toxicity of POPs Pesticides is known since decades. Some of the existing laws/rules which may directly or indirectly deal with management of POPs Pesticides are:

- Agricultural Pesticides Ordinance 1971
- Agricultural Pesticides Rules 1973
- Import/Export Policy Order 2016 (Pakistan).
- Hazardous Substances Rules, Sindh, 2014
- Handling, Manufacture, Storage, Import of hazardous waste and hazardous substances Rules, Pakistan EPA, Draft-2016.
- Hazardous Substances Rules, Punjab, (Draft), 2018.

EXISTING LEGISLATION TO MANAGE PCBS IN PAKISTAN

Some of the existing laws/rules which may directly or indirectly deal with management of PCBs in Pakistan are:

- Regulation of Generation, Transmission and Distribution of Electric Power Act 1997.
- Import/Export Policy Order 2016 (Pakistan)
- Hazardous Substances Rules, Sindh, 2014.
- Handling, Manufacture, Storage, Import of hazardous waste and hazardous substances Rules, Pakistan EPA, Draft-2016.
- Hazardous Substances Rules, Punjab (Draft) 2018.

Project is also working on development of PCBs management plan and national level inventory.

POPS PROJECT ACHIEVEMENTS IN ELIMINATION OF PCBS FROM PAKISTAN

- Gap Analysis of existing legislation has been done and amendments in these existing legislation to include POPs have been suggested at national consultative meeting.
- Conducting training firm, TAUW was engaged for the capacity building training workshop on PCB Holders from Power Sector of Pakistan on PCBs best management practices.
- 5000 samples of PCB contaminated oil and equipment will be tested by the end of this project which will ultimately help in development of PCBs Inventory of Pakistan.
- Gas Chromatograph-Mass Spectrometer has been procured for the laboratories of Federal and Provincial EPAs to strengthen their capacity for the identification of all type of PCB congeners.
- 300MT of PCBs contaminated oil or equipment will be disposed of by the end of this project and so far, 31.23 MT have already been transported and disposed of.
- Project is also introducing advance technologies including on spot / mobile treatment for PCBs contaminated oil in Pakistan.

K-Electric Karachi: **18.59** MT

Mangla Power Station: **12.64** MT

TOTAL PCBs Disposed **31.23** MT

COMPREHENSIVE REDUCTION AND ELIMINATION OF PERSISITENT ORGANIC POLLUTANTS (POPS) IN PAKISTAN

POPS PCBS PURVIEW

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POLYCHLORINATED BIPHENYLS (PCBS)

- Group of man-made organic chemicals consisting of chlorinated hydrocarbons i.e. carbon, hydrogen and chlorine atoms.
- The number of chlorine atoms and their structure in a PCB molecule determine many of its physical and chemical properties.
- They have no known taste or smell, and can be found in different forms ranging from thin, light-colored liquids to yellow or black waxy solids.
- Domestically manufactured from 1929 until their manufacturing was banned in US in 1979 and by the International Stockholm Convention in 2001.

PCBs remained in use in hundreds of industrial and commercial processes including:

- Electrical, heat transfer and hydraulic equipment
- Plasticizers in paints, plastics and rubber products
- Pigments, dyes and carbonless copy paper
- Other industrial applications

Point to Ponder

There are 209 individual PCB congeners of varying toxicity.

PCBs usually have been used as clear oily mixtures whose lubricating, insulating, and coolant properties have led to their being widely distributed for many industrial and commercial uses.

EFFECTS OF PCBS ON HUMAN HEALTH

- Suppression of the immune system.
- Tumor promoters that enhance the effects of other carcinogenic substances.
- Exposure during fetal and early life reduces IQ levels, alters behavior and results in low birth weight infants, who are at high lifetime risk for several diseases.
- Also alter thyroid and reproductive function in both males and females.
- Increase the risk of developing diabetes, cardiovascular and liver disease.
- Results in elevated liver enzymes with possible hepatic damage.
- Respiratory problems and disruption in the hormonal function.

EFFECTS OF PCBS ON WILDLIFE

In animals, commercial PCBs elicit a broad range of toxic responses including:

- Dermal toxicity, genotoxicity, neurotoxicity reproductive and developmental toxicity
- Body weight loss, carcinogenesis and acute lethality
- Fatty liver and hepatomegaly
- Porphyria and immunosuppressive effects
- Thyroid hormone-level alterations