Multilateral Conventions related to Hazardous Substances & Waste

Basel Convention

Rotterdam Convention

Stockholm Convention

Multilateral Environmental Agreements

- Bilateral treaties: which involve agreements by two countries; dealt for example with water or birds

- Multilateral treaties: which involve agreements by three or more countries and perhaps one or several international organizations; dealt with climate change, waste, …etc

Basel Convention

Rotterdam Convention

Stockholm Convention

Introduction:

- Persistent Organic Pollutants (POPs) :

  - POPs are organic (carbon-based) compounds that include synthesized substances (i.e. pesticides)
  - POPS are Toxic, causing (adverse health effects, such as birth defects, damage to immune and respiratory systems, and critical organs. Hormone system dysfunction)
  - POPs are ENVIRONMENTALLY PERSISTENT
  - POPs resist breakdown in water but they are lipophilic
  - POPs are semi-volatile and thus are capable of TRAVELLING GREAT DISTANCES

Dirty Dozen:

- 12 POPs (coined the "Dirty Dozen" by UNEP)
- These 12 chemicals include:
  - Eight pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, and toxaphene);
  - Two industrial chemicals (polychlorinated biphenyls and hexachlorobenzene);
  - Two unintended by-products(dioxins and furans)

- **POPs Classifications:**

(1) intentionally produced, such as pesticides, insecticides, fungicides;..etc
(2) produced intentionally and whose use is restricted to disease vector control, for example DDT for control of malaria;
(3) produced and released unintentionally as the result of human activity. The latter category includes dioxins, furans, dioxin-like PCBs, and hexachlorobenzene, that are generated primarily as by-products of incomplete combustion.

POPs Half-life time:

Table 1. The twelve priority persistent organic pollutants listed under the Stockholm Convention.

Category	Chemical	CAS#	Stockholm Convention Annex[a]	Use[b]	Soil Half-life (in years)
Pesticides	Aldrin	309-00-2	A	insecticide	N/A
	Chlordane	57-74-9	A	insecticide, termiticide	1
	DDT	50-29-3	B	insecticide	10-15
	Dieldrin	60-57-1	A	insecticide	5
	Endrin	72-20-8	A	insecticide, rodenticide	Up to 12
	Heptachlor	76-44-8	A	insecticide, termiticide	Up to 2
	Hexachlorobenzene	118-74-1	A	fungicide	2.7-22.9
	Mirex	2385-85-5	A	insecticide, termiticide	Up to 10
	Toxaphene	8001-35-2	A	insecticide	100 days up to 12 years
Category	**Chemical**	**CAS#**	**Stockholm Convention Annex**	**By-product (typical formation)**	**Soil Half-life (in years)**
Industrial Chemicals	Hexachlorobenzene	118-74-1	A	by-product of manufacture (chlorinated solvents, pesticides), application of pesticides, incineration of HCB-containing wastes	2.7-22.9
	Polychlorinated biphenyls	1336-36-3	A	Industry manufacture; co-planar PCBs are a by-product of combustion	10 days to 1.5 years
Unintended By-Products	Dioxins	Several	C	by-product	10-12
	Furans	Several	C	by-product	10-12

Sources: The Stockholm Convention on Persistent Organic Pollutants, the International Program on Chemical Safety, Persistent Organic Pollutants: An Assessment Report on DDT, Aldrin, Dieldrin, Endrin, Chlordane, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene, Polychlorinated Biphenyls, Dioxins, and Furans, L. Ritter, et al., submitted to the Second Meeting of the ISG, Intergovernmental Forum on Chemical Safety, ISG/96.5B, Dec. 1995.

[a] Annex A substances: slated for "elimination" in the Stockholm Convention. Annex B substances: slated for "restriction" for which there is a specified "acceptable purpose"; Annex C substances: continuing minimization and, where feasible, ultimate elimination of the total releases derived from anthropogenic sources.

[b] Typical uses; not to be confused with use exemptions listed in the Convention, which are noted in Table 4.

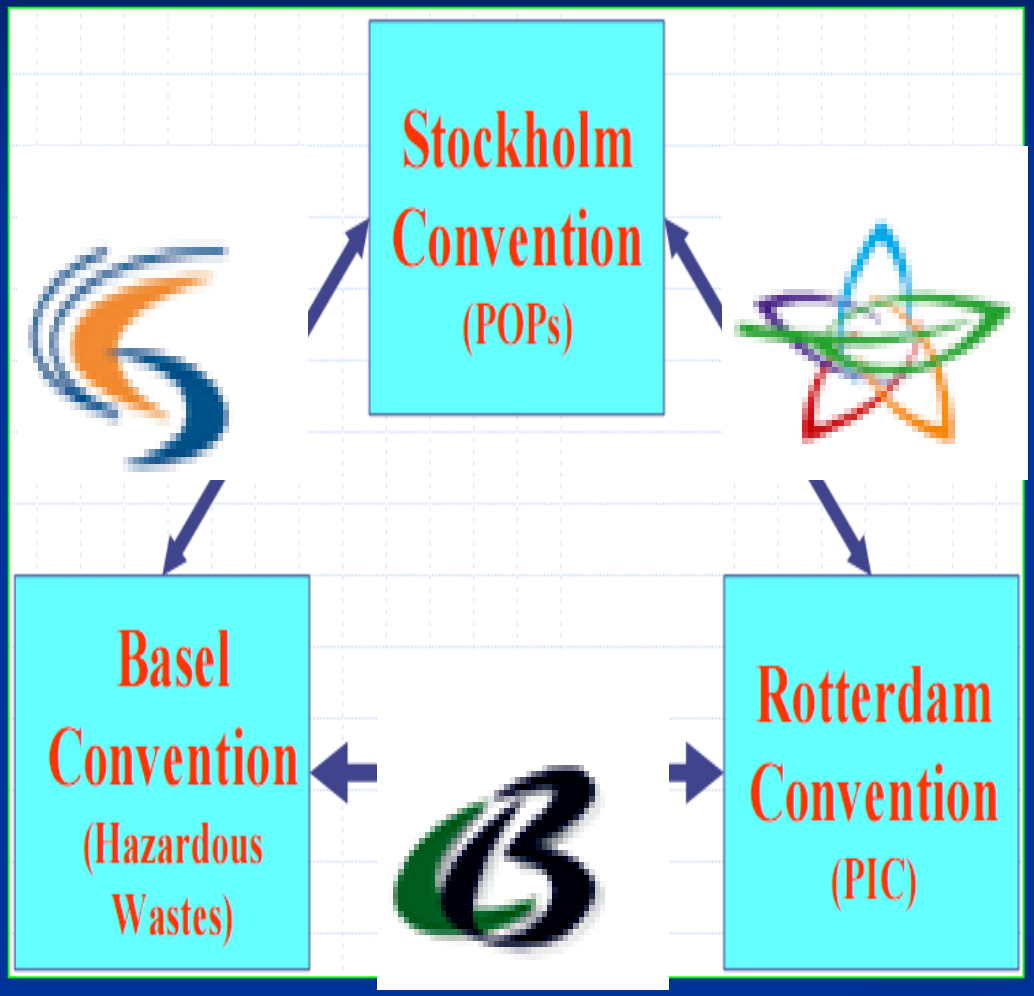
12 POPs Trade Names

Table 2. Synonyms and trade names for the twelve priority POPs identified in the Stockholm Convention

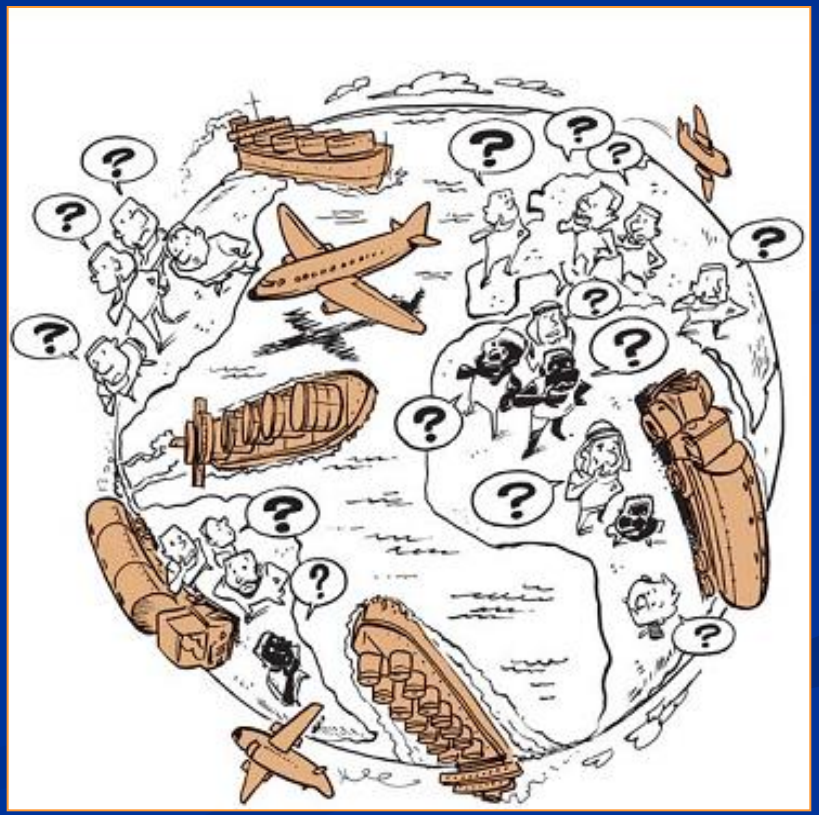
Chemical	Some Synonyms and Trade Names
Aldrin	Aldrec, Aldrex, Aldrex 30, Aldrite, Aldrosol, Altox, Compound 118, Drinox, Octalene, Seedrin
Chlordane	Aspon, Belt, Chloriandin, Chlorkil, Chlordane, Corodan, Cortilan-neu, Dowchlor, HCS 3260, Kypchlor, M140, Niran, Octachlor, Octaterr, Ortho-Klor, Synklor, Tat chlor 4, Topichlor, Toxichlor, Veliscol-1068
DDT	Agritan, Anofex, Arkotine, Azotox, Bosan Supra, Bovidermol, Chlorophenothan, Chloropenothane, Clorophenotoxum, Citox, Clofenotane, Dedelo, Deoval, Detox, Detoxan, Dibovan, Dicophane, Didigam, Didmac, Dodat, Dykol, Estonate, Genitox, Gesafid, Gesapon, Gesarex, Gesarol, Guesapon, Gyron, Havero-extra, Ivotan, Ixodex, Kopsol, Mutoxin, Neocid, Parachlorocidum, Pentachlorin, Pentech, Ppzeidan, Rudseam, Santobane, Zeidane, Zerdane
Dieldrin	Alvit, Dieldrite, Dieldrix, Illoxol, Panoram D-31, Quintox
Endrin	Compound 269, Endrex, Hexadrin, Isodrin Epoxide, Mendrin, Nendrin
Heptachlor	Aahepta, Agroceres, Baskalor, Drinox H-34, Heptachlorane, Heptagran, Heptagranox, Heptamak, Heptamul, Heptasol, Heptox, Soleptacx, Rhodiachlor, Veliscol 104, Veliscol heptachlor.
Hexachlorobenzene	Amaticin, Anticarie, Buntcure, Bunt-no-more, Co-op hexa, Granox, No bunt, Sanocide, Smut-go, Sniecotox
Mirex	Dechlorane, Ferriamicide, GC 1283
Toxaphene	Alltex, Alltox, Attac 4-2, Attac 4-4, Attac 6, Attac 6-3, Attac 8, Camphechlor, Camphochlor, Chemphene M5055, chlorinated camphene, Chloro-camphene, Clor chem. T-590, Compound 3956, Huilex, Kamfochlor, Melipax, Motox, Octachlorocamphene, Penphene, Phenacide, Phenatox, Phenphane, Polychlorocamphene, Strobane-T, Strobane T-90, Texadust, Toxakil, Toxon 63, Toxyphen, Vertac 90%.
Hexachlorobenzene	See Above
Polychlorinated biphenyls	Aroclor, Pyranol, Pyroclor, Phenochlor, Pyralene, Clophen, Elaol, Kanechlor, Santotherm, Fenchlor, Apirolio, Sovol.
Dioxins	The US EPA reassessment lists more than 160 pesticides in which dioxins are a contaminant.
Furans	N/A

NOTE: This list is not intended to be exhaustive.

Chemicals in Market?



70,000 chemicals on the world market. . .
1,500 new ones every year. . .
How do you know what's safe?



International Conventions

Convention	Scope	Entry into force	Parties Sept 2009
Basel	**Transboundary movement of hazardous wastes and their disposal**	May 1992	**172**
Rotterdam	**Prior informed consent procedure for hazardous chemicals & pesticides in international trade**	February 2004	**130**
Stockholm	**Persistent organic pollutants**	May 2004	**166**

Stockholm Convention

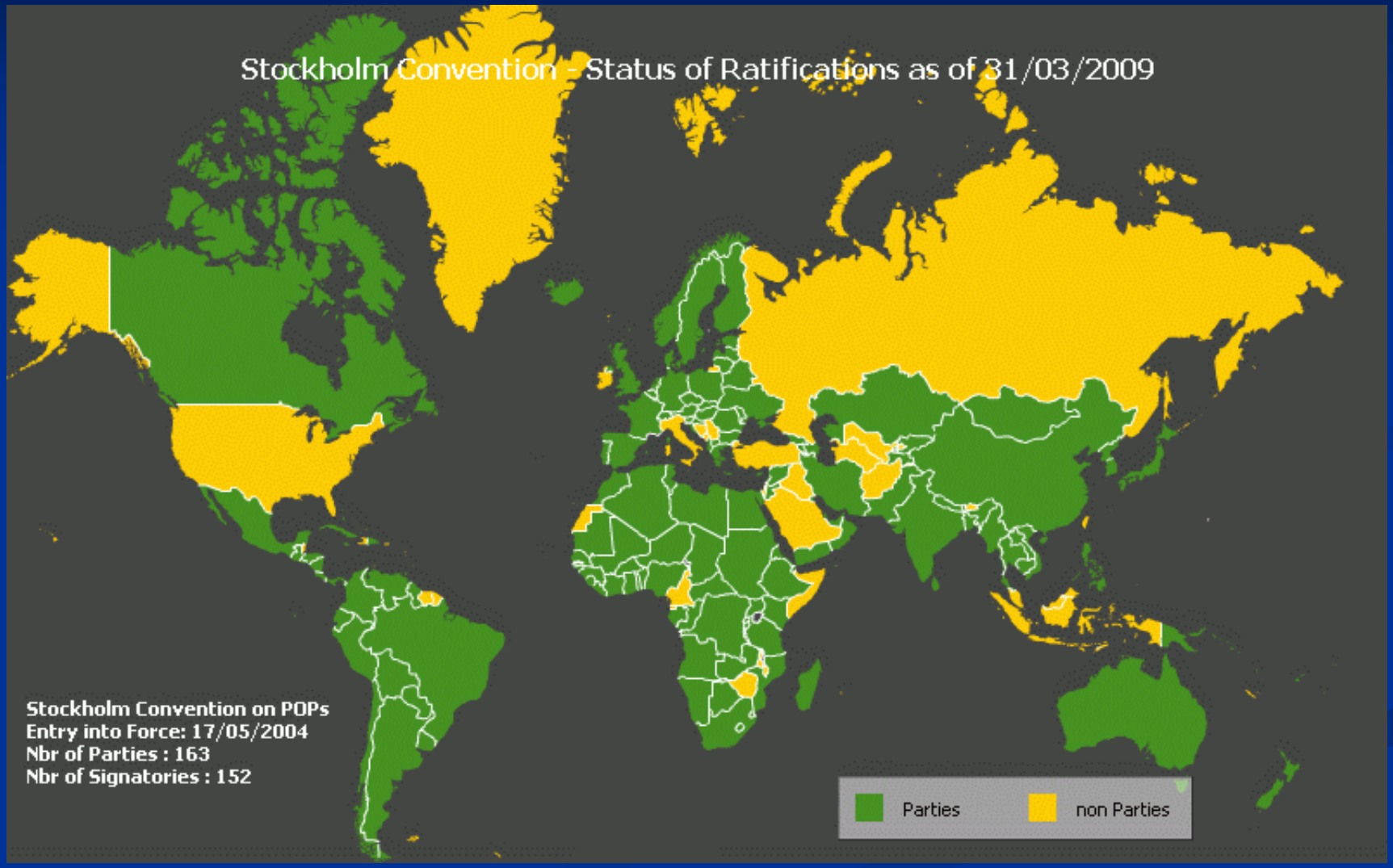
OBJECTIVE

- To protect human health and the environment from the harmful impacts of persistent organic pollutants (POPs)

HOW

- eliminate production and use of intentionally produced POPs
- minimize and where feasible eliminate releases of unintentionally produced POPs
- clean-up old stockpiles and equipment containing POPs
- support the transition to safer alternatives
- target additional POPs for action

Stockholm Convention status of ratification

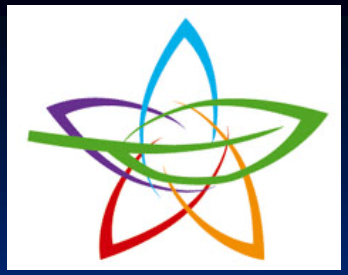


Basel Convention

OBJECTIVE

- Reduce transboundary movement of hazardous wastes to a minimum consistent with their environmentally sound management
- Dispose of hazardous wastes as close as possible to their source of generation
- Minimize generation of hazardous wastes in terms of quantity and degree of hazard.

Rotterdam Convention



OBJECTIVE

- to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;

- to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

The 3 Conventions Scope & Coverage

- Basel covers hazardous wastes that are explosive, flammable, poisonous, infectious, corrosive, toxic or ecotoxic.
- Rotterdam covers 22 pesticides and certain formulations of others, plus 9 industrial chemicals.
- Stockholm covers 9 pesticides, and 3 industrial chemicals and by-products.
- Most POPs are covered by all three Conventions.
- Many pesticides are subject to the three conventions.

- Evaluating/regulating new and existing chemicals (RC & SC)
- Import/export controls (BC, RC, SC)
- Waste management (BC & SC)
- Hazard communication (BC, RC, SC)
- Replacement (SC)
- Environmental releases (SC)