






Alternatives to SC - POPs Pesticides

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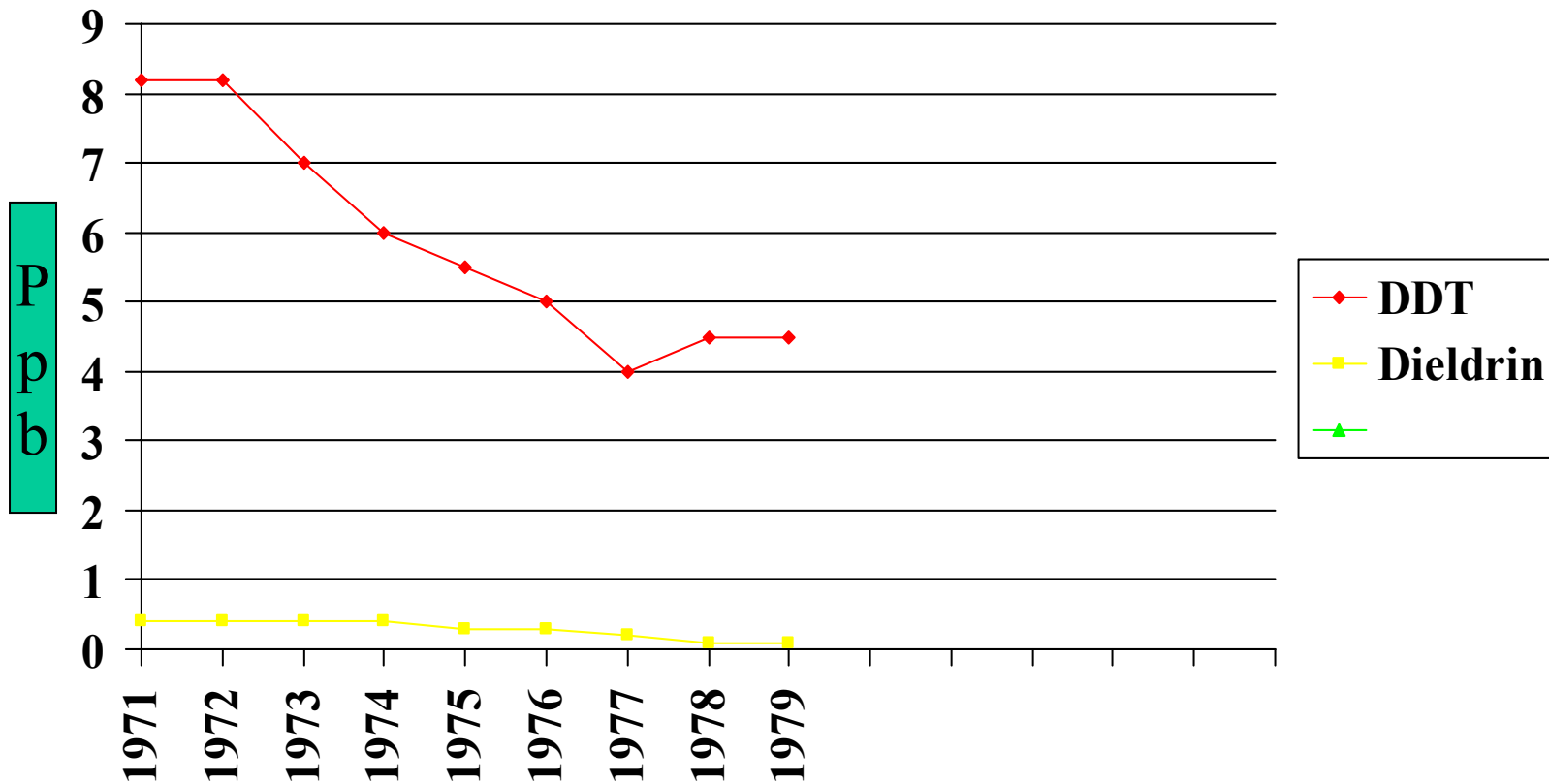
	Less Persistent	More persistent
<p>Less Toxic</p> 	<p><u>Group 1</u></p> <ul style="list-style-type: none">-Cellulose-Carbohydrates-Carboxylates (soaps)-biopolymers	<p><u>Group 2</u></p> <ul style="list-style-type: none">-iron-Silicon-Aluminium-Copper-Polyolefins
<p>More Toxic</p> 	<p><u>Group 3</u></p> <ul style="list-style-type: none">-Acids and bases-Ethers-Alcohols and thiols-Aliphatic amines-Aromatic amines-Ethylene/propylene-Phenol-Aromatic hydrocarbons	<p><u>Group 4</u></p> <ul style="list-style-type: none">-Halogenated aliphatic hydrocarbons-Lead-Mercury-Cobalt-Cadmium-Halogenated aromatic hydrocarbons (PCBs, DDT)-Dioxins and furans



Basic Questions on POP Pesticides

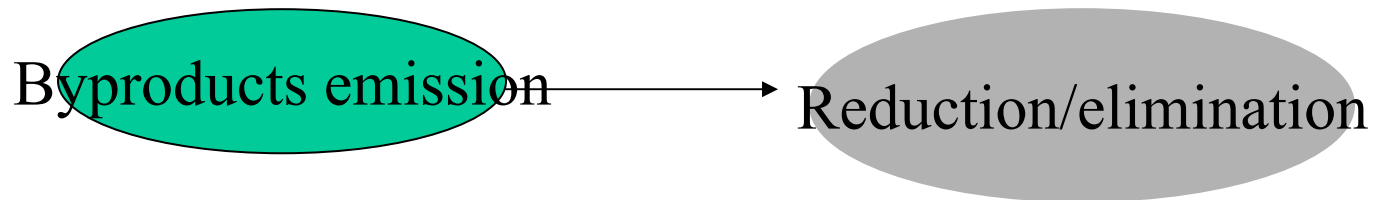
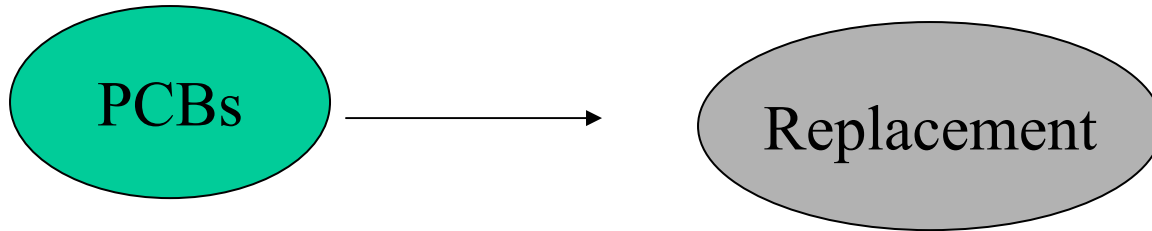
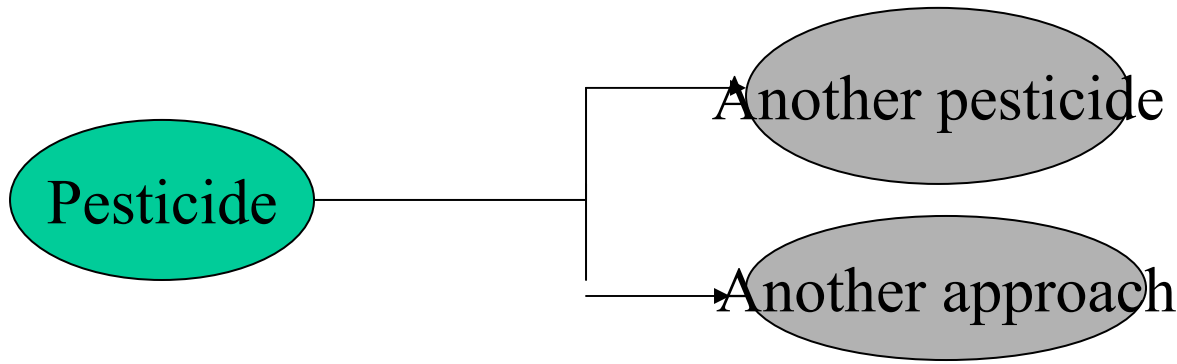
- Where POPs originate from- Developed countries
- Who discovered various uses of POPs- Developed countries
- Who developed technologies for production of POPs- Developed countries
- Who transferred technology to developing countries- Developed countries
- Who got the benefits of POPs- Developed and developing countries
- Who is suffering from POPs – Developed and developing countries

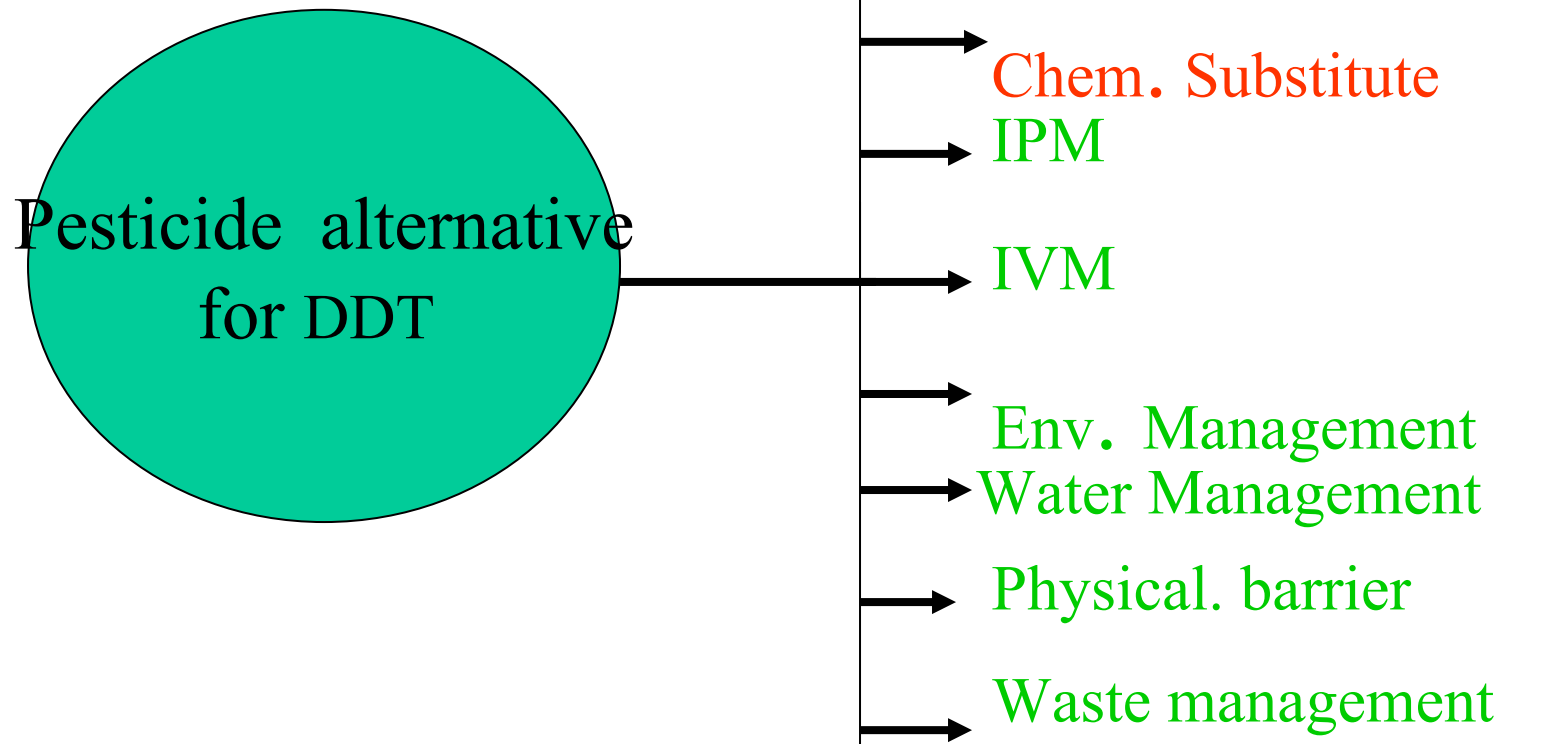
DDT and Dieldrin in Human Adipose Tissues.





Alternatives to POPs





Source -UNEP

DDT

- A number of synthetic pyrethroids
- Organo-phosphorus compounds
- Environmental management-eliminate larval breeding sites, house design, netting etc.
- Bio.pesticides, fish breeding

Termites Control (Buildings)

- Chlorpyrifos
- isophenphos
- permethrin
- fenvalerate
- cypermethrin
- bendiocarb

Termite control(Crops)

- Carbofuran
- cabosulfan
- chlorpyriphos
- cypermethrin
- carbaryl

Alternatives

- Preferred on environmental grounds
- Many are toxic
- Risk assessment should be made
- Use of appropriate PPE

Pakistan -Alternatives Recommended by Govt.

- Aldrin- Chlorpyrifos, Methamyl, Pyrethroids, Endosulfan
- Chlordane- Chlorpyrifos, Deltamethrin.
- DDT- Acephate, diazinon, malathion.
- Dieldrin- Cypermethrin, Deltamethrin, Monocrotophos.
- Heptachlor- Carbofuran, Chlorpyrifos, Pyrethroids.
- Mirex Chlorpyrifos, Cypermethrin.
- Toxaphene Chlorpyrifos, Endosulphan, Pyrethroids



Tools of IPM

- ♠ Biological
- ♠ Cultural practices
- ♠ Chemical
- ♠ Genetic



IPM Goals

- ♠ High Yields
- ♠ high Quality
- ♠ Low Risk

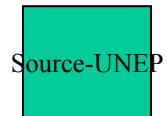
-Removal of non.essential standing water

-Exposure of the water surface to sunlight

-Removal of vegetation where possible

-Clearing channels to allow to flow freely

=use of biological control agents
eg. Predatory fish, Bti.etc.





Solution!

- **Minimize or eliminate by using BEP/BAT**



Capacity building

- Prioritization
- Identification of Barriers
- Research
- Cooperation among industry-Government-R&D Institution-Stakeholders.
- Monitoring ,

PCB Alternatives

- Transformers -Mainly mineral oil
- In capacitors- Alkyl substituted benzenes.
- Plasticizers- Chlorinate paraffins
- Hydraulic fluids- Vegetable based oils
- heat exchange fluids- biphenyl oxide.