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International SAICM Implementation Project (ISIP)

In 2010, in an effort to demonstrate SAICM implementation via IPEN Participating Organizations, IPEN launched an International SAICM Implementation Project, also known as ISIP. ISIP aims to mobilize resources for initial enabling activities pertaining to national priorities, in keeping with the work areas set out in the strategic objectives of section IV of the SAICM Overarching Policy Strategy.

In particular, the ISIP supports the Governance objective of SAICM's Overarching Policy Strategy paragraph 26, which calls for enhanced "cooperation on the sound management of chemicals between Governments, the private sector and civil society at the national, regional and global levels."

In addition, ISIP builds on the 2008-2009 Global SAICM Outreach Campaign to raise awareness about SAICM and strengthen collaboration among the public interest, health and labor sectors.

ISIP Objectives

ISIP's four objectives include:
• Promoting the need for sound chemicals management
• Advancing National SAICM Implementation
• Promoting global SAICM implementation by global civil society
• Building capacity among NGOs developing countries and countries with economies in transition

Title of activity: Organizing the Multi-Stakeholder National Workshop on Use of Chemical Pesticides in Agriculture: Reality and Way Forward towards Phasing-out Hazardous Pesticides from Bangladesh
NGO: Bangladesh Occupational Safety, Health and Environment Foundation (OSHE)
Country: Bangladesh
Date: October, 2012

Elements of SAICM Covered:

Promote substitution for highly toxic pesticides including effective non-chemical alternatives (27); Provide training in alternative and ecological agricultural practices, including non-chemical alternatives (51); Encourage industry to extend product stewardship and to voluntarily withdraw highly toxic pesticides which are hazardous and cannot be used safely under prevalent conditions (30); Promote integrated pest and integrated vector management (29); Establish programmes for monitoring chemicals and pesticides to assess exposure (66)

Description of:

The highly hazardous pesticide(s) registered/sold and/or in use in your country:

About 183 active ingredients of agricultural and public health pesticides belonging to 1391 trade names have been registered in Bangladesh, among which 123 active ingredients are agricultural pesticides and 60 active ingredients are public health pesticides (Table 1). However, seven active ingredients of different chemical groups under 109 trade name products have been banned from Bangladesh which were extremely hazardous (1a) and highly hazardous (1b) categories of pesticides classified by FAO (BCPA 2010). Pesticides of different groups are being marketed under various formulations such as granular (Gr), liquid (EC), powder (WP, dust, SP), and aerosol.

Table 1: List of registered agricultural and public health pesticides in Bangladesh

Sl. No.	Name of pesticides	Total number of common name products	Total number of trade name products
1	Insecticide	53	688
2	Fungicide	35	244
3	Herbicide	22	122
4	Miticide	8	71
5	Stored grain pesticide	3	28
6	Rodenticide	2	10
	Total agricultural pesticides	**123**	**1163**
7	Public health pesticides	60	228
	Grand Total	**183**	**1391**

Source: BCPA 2008

In Bangladesh, chemical control has been the primary method of pest control. Often farmers apply pesticides when there is no real need or they use wrong chemicals at wrong doses, methods and times. A survey report revealed that more than 47% of farmers in Bangladesh used more pesticides than needed to protect their crops in boro rice, potato, bean, eggplant, cabbage and mango. About 92% of farmers applied pesticides on their crops without taking proper protective measures. Only 4% of farmers had formal training in pesticide use or handling (FAO 2010). Another report revealed that 98% of farmers relied on pesticides and sprayed everyday in the rainy season to control the pest of brinjal and about 60% of farmers applied more than 140 times in a season (AVRDC 2006). Several studies of farmers have also revealed that inadequate product labeling and farmers' lack of information have lead to widespread overuse and misuse of dangerous pesticides. They expose themselves to highly poisonous pesticides and inhale substantial amounts of the pesticides when they spray to kill insects in their crops (Anon. 2010).

Banned or restricted pesticides:

Pesticides which do not conform to the regulatory standards are not permitted for registration. The following pesticides are banned in Bangladesh for use in agriculture:

Generic name

- phosphamidon
- monocrotophos
- methyl bromide
- dichlorvos
- methamidophos
- BHC
- dieldrin
- heptachlor

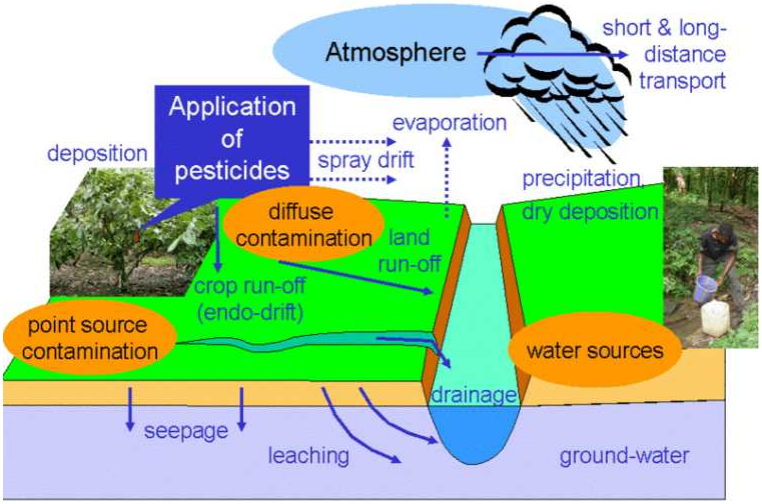
- 2, 4, 5-T
- DDT
- chlordane

Pesticide industry profile
The Pesticide industry in Bangladesh is comprised of private companies and foreign companies. It is represented by an organization, Bangladesh Crop Protection Association. Total members of the association are around 50. Pesticides are distributed through distributors.

Local production of pesticides:
The Government provides with duty waiver on import of technical material and other related adjuvant for local formulation of pesticides. There are 10 companies operating in different areas of the country producing some granular and emulsifiable concentrate formulation. Key pesticides being formulated in the country are Carbofuran 5 percent GR, Diazinon 10 percent GR, Butachlor 5 percent GR, Malathion 57 percent EC, Fenitrothion 50 percent EC and Diazinon 60 percent EC.

Alternatives and/or bio pesticides available, if any:
So far there has been no visible publicity in Bangladesh on alternative bio pesticides and their availability in the Bangladeshi market.

Health and environmental effects of the pesticides:
Pesticides are biologically active or toxic and they are also potentially hazardous to humans, animals, other organisms and the environment. The indiscriminate use of agricultural pesticides has created very serious health and environmental problems in the world. Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, including nontarget species, air, water, bottom sediments, and food. It is estimated that less than 1% of pesticides applied actually hit the target organisms. Most reaches nontarget sectors of the agroecosystem or spreads to surrounding ecosystems. Pesticides pollute air, soil, water, and food, and affect the environment as well as human health. Droplets of sprayed pesticides or particles from pesticides applied as dusts may travel on the wind to other areas, or pesticides may adhere to particles that blow in the wind, such as dust particles. Pesticides that are applied to crops can volatilize and may be blown by winds into nearby areas. Pesticide drift occurs when pesticides suspended in the air as particles are carried by wind to other areas, potentially contaminating them. Pesticides sprayed or dusted on crops or on trees ultimately settle on soil. They pollute surface and underground water through runoff, drifting from the treated area, percolation or leaching through the soil, faulty spraying equipment, accidental spills or leakages. They may also be carried to water by eroding soil.



Information on pesticide levels in the environment, in food, or in people:

EFFECT ON ENVIRONMENT

Pesticides, in addition to their potential adverse effects on human health, pose adverse effects on environment (plants, soil organisms, wild animals and other non-target organisms like pests and their natural enemies).

EFFECT ON LOCAL COMMUNITY

Pests destroy huge amount of food each year and the amount of loss due to pests were estimated at 35%, 39%, and 40% for maize, potato and rice, respectively (Oerke and Dehne 2004). Pesticides are widely used in most sectors of agricultural production to prevent or reduce losses by pests. However, their use causes health hazards to the local people and pollutes the local water system and environment.

Existing pesticide legislation in your country:

Type of relevant Acts in Bangladesh are as follows:

1. Destructive Insects and pests Rules, 1966
2. Pesticide ordinance 1971
3. The Pesticide Rules, 1985
4. Fertilizer (Control) Ordinance 1999
5. The Pesticide Ordinance (Amended), 2007

1. Destructive Insects and pests Rules, 1966

Import of Plant or Plant Products: No person shall import any plant or plant products which may be a source or medium of infection or infestation by diseases an plant pests destructive to agriculture or medium for the introduction of noxious weeds. (3)
Importation of insects and other animals, pests, plant diseases and cultures for scientific and allied purposes: No person shall import from any country any harmful living insects, animals, birts, fungi, fungus culture (bacterial culture, viral culture, mycoplasma culture) obnoxious weed plants or their propagating material except in accordance with the following provisions. (12)

2. The Pesticides Ordinance, 1971:

Storage and Use of Pesticides: (11) No person Shall store or use any pesticide save in accordance with rules made under this Ordinacen (11).
Formation of The agriculture Pesticide Technical Advisory Committee: the Governemtn shall constitute a committee, to be called the pesticide technical advisory committee, to advise the government on technical matters arising out of the administration of this Ordinance and to perform any other functions assigned to it by or under this ordinance. (12.1)
The Committee shall consist of a Chairman and such number of Vice-Chairmen and other members, being officers of the Government and persons representing trade and industry engaged in pesticide business, as the Government may appoint (12.2)

Establishing of Pesticide Laboratory: The Government shall setup a pesticide laboratory suitably equipped to carry out the functions entrusted to it by or under this ordinance (13.1)

Appointment of Inspectors: The Government may, by notification in the official gazette, appoint from amongst the officers of the Government employed for work relating to plant protection such number as it deems fit to be Inspectors within such local limits as may be specified in the notification (15).
Publication of results of test and analysis (19).
Purchase of pesticide may have it tested or analyzed (20).
Offences and Penalties (21)

3. The Pesticide Rules, 1985

Registration of Pesticides: Pesticides must be registered through valid process described at the law (Sec: II).
Conditions for manufacture and formulation of pesticides: A person who intends to manufacture and formulate pesticides registered under these rules shall provide and maintain adequately qualified staff and suitable premises and plant for the proper manufacture, formulation, repacking or storage of pesticide in respect of which the certificate of registration has been granted; maintain a laboratory for carrying out quality control tests of the pesticide; keep records of the details of manufacture and formulation of each bathch of the pesticide which is issued for sale or distribution; allow any person authorized by the government in this behalf to enter into any premises where the manufacture, formulation or packing of pesticide in being carried on; allow to inspect the premises and the means employed for testing of pesticides; (Chap III)

Import of pesticides: No pesticide shall be imported into Bangladesh unless it has been registered and it complies strictly with the application for registration; it is packed and labeled in conformity with these rules; the importer has proper facilities for its storage. (11)
License for manufacture/formulation, stock, repacking, sale of pesticides needed (12)

OSH and safe handling issues:

Packaging and labeling: No person shall stock or exhibit for sale or distribute any pesticide unless it is packed and labeled in accordance with the provisions of this chapter (30)
The manufacturer, formulator or distributor shall provide wholesale and retail dealers with leaflet of every pesticide which shall be affixed or attached to the package or repacking containing the following details, namely:

a) the plant pests for which the pesticide is to be applied, the adequate direction including the manner in which the pesticide is to be used at the time of application;
b) particulars regarding chemicals harmful to human beings, animals and wild life;
c) warning and cautionary statements including the symptoms of poisoning, suitable and adequate safety measure and emergency first aid treatment, where necessary;
d) caution regarding storage;
e) instructions concerning the decontamination or safe disposal of use containers;
f) statement showing the antidote for the poison shall be included in the leaflet and the label;
g) if the pesticide is irritating to the skin, nose, throat or eyes, a statement shall be included to that effect (32).

Name of the manufacturer, formulator or re-packer, name of the pesticide, registration number, net content of volume, batch number or lot number, expiry date, i.e. up to the date the pesticide will retain its efficacy and safety, Antidote statement should be printed or written on the container of pesticide (33)

The label, leaflets affixed or attached to the package or repacking containing pesticides shall be printed in Bengali. (33)

Protective Clothing: Persons handling pesticide during its manufacture, formulation repacking, transport, distribution or application shall be adequately protected with appropriate clothing and appliances; (51)

Respiratory Devices: For preventing of toxic dusts, vapors or gases the workers shall use chemical-cartridge respirator or supplied-air respirator or demand flow type respirator or full face or half face gas mask with canister. (52)

The manufacturers and distributors of pesticides and persons who undertake to spray pesticides on commercial basis (hereafter in these rules referred to as pest control operation")

shall keep sufficient stocks of such first aid tools, equipments, antidotes, injections and medicines, as may be required to prevent poisoning cases arising from inhalation, skin contamination, eye contamination and swallowing. (53)

Training of workers.-The manufacturers, formulators, repackers and distributors of pesticides and operators shall arrange for suitable training of the workers in observing safety precautions and handling safety equipment provided to them. (54)

Age of workers.-The manufacturers, formulators, repackers or distributors of pesticide shall not employ a worker of below 18 and over 60 years of age for working with pesticides. (55)

Disposal of used packages, condemned and surplus materials, etc.- (1) It shall be the duty of manufacturers, formulators, repackers of pesticides and operators to dispose of packages, condemned or surplus materials. (56)

Safety precautions.-

According to the provisions of the law the following precautions shall be observed while working with any kind of pesticide, namely:- (57)

a) read the "label" carefully, especially the safety precautions before handling any pesticides;
b) do not eat, drink or smoke;
c) when opening the container or while transferring, overalls, respirators goggles as the case may be;
d) wash hands and exposed skin before drinking or smoking;
e) avoid breathing pesticides;
f) avoid contaminating clothing;
g) avoid spilling and splashing;
h) wash and flush off pesticides from skins and eyes immediately;
i) remove heavily contaminated clothing and footwear immediately;
j) wash thoroughly protective clothing, gloves, etc.

Safety precautions for the health of worker (58): Every employer shall observe the following precautions against poisoning by pesticides, namely-

a) ensure that workers are thoroughly trained in the precautions to be observed and are being adequately supervised by qualified supervisors;
b) not to permit a worker on job unless he is using standard protective clothing or devices;
c) ensure that a worker does not eat, drink or smoke unless he has removed all his protective clothing and has washed his hands and face and has left the area of work;
d) ensure that the overall and boots are washed at least once in a week.

Application:

Though the provisions are clearly stated about the prohibition and safe use of pesticide, formation of safety council, inspecting systems etc but the reality is not same as the provisions desires.

Use of IPM and ecological agriculture:

Many alternatives are available to reduce the use of hazardous pesticides from the environment. Although there is much debate over alternative methods of controlling pesticides, Integrated Pest Management (IPM) may be the main policy for controlling pests and diseases. More importance needs to be given by government on the following activities for pest control under the Integrated Pest Management (IPM) policy:

- Motivate the Farmers to use more pest resistant varieties of crops. Modern cultivation practices will be followed so that the incidence of pest infestation is reduced.

- Use of mechanical control measures such as light trap, hand net, etc. will be increased and popularized. Biological control measures will be used to destroy harmful insects and preserve the useful ones.
- Plant originated pesticides and biopesticides should be used for pest management.
- Regular training and discussion programs on IPM will be conducted among the farmers under the supervision of Union Agricultural Development Committee with a view to successful introduction and popularization of the method at the farmers' level.
- Pest surveillance and monitoring system will be strengthened. Chemical pesticides will only be used in cases where IPM fails to control the pests.
- Environmentally friendly pesticides (high selective, low toxicity to non-target organisms, fast degradation in the environment, low mobility in soil, low application rate) should be selected for pest management.
- Insecticides should be applied in proper dose and time only after identification of pests and when their population will reach economic injury level.

Moreover, the following measures need to be taken by government in respect of distribution and use of chemical pesticides in the light of existing rules and regulations:

- Production, import, distribution or use of any chemical pesticide should be banned which is directly or indirectly harmful for human, animal and aquatic health.
- Use of any chemical pesticide harmful for natural environment should be discouraged and eventually banned.
- The system of approval of pesticides at the national level should be continued and its monitoring along with the testing of effectiveness of approved pesticides will be strengthened.

In reality, Bangladesh has not yet succeeded to well introduce and manage the IPM Programmes at the field level due to lack of institutional capacity at government level.

Conditions of work:

Bangladesh is predominately an agricultural dependence country for its economy. More then 60% of the labour forces of Bangladesh work in the agriculture sector and half of them are female. To expedite the agricultural production, there is indiscriminate use of chemical pesticides in the country. As a result of unsafe handling and use of pesticides and organic solvents, it has a far reaching impact on the agricultural laborers. As most of the laborers are women, it is impacting their reproductive systems. Further, they are not covered by labour laws and labour inspection system, so there is no functional industrial relation system available to take up their grievances. Un-safe handling of pesticides and illegal disposal of obsolete pesticides at nearest river and water sources has caused serious environmental implications and serious threat to health of workers, local community and natural eco system, as well as obstructing achievement of the goals of sustainable development initiatives by the state.

Occupational and non-occupational poisoning by toxic chemical pesticides may cause acute or chronic effects on human health. Acute effect occurs from a single exposure by any route of entry for short duration. The four routes of exposure of acute effect are dermal (skin), inhalation (lungs), oral (mouth) and the eyes. Farm workers and their families are exposed to agricultural pesticides during handling and using them. The acute toxicity causes mild skin irritation, vomiting, headache, salivation, and convulsion, lack of coordination, hypertension, respiratory failure, senseless and even death depending on the chemical nature of the pesticides.

Worldwide, one to five million farm workers are estimated to suffer pesticide poisoning every year (WHO, 2010) and at least 20,000 die annually from exposure, many of them in developing countries. The 2009 Health Bulletin, which compiles health statistics from 2008, recorded 7,438 pesticide-related poisoning deaths at more than 400 hospitals in Bangladesh amongst men and women aged 15-49. Organophosphate and carbamate insecticides usually cause acute effect on human health.

The chronic effects occur from small doses repeated over long period of time. The major routs of long time exposure are inhalation of aerosols, dust and vapor that contain pesticides; through oral exposure by consuming pesticides-polluted food and water; and through dermal exposure by direct contact of pesticides with skin. Farm workers, urban and rural people of our country are exposed to toxic chemical pesticides through these routes for longer duration. Children may be exposed due to their closer proximity to the floor and natural tendency to put contaminated objects in their mouth. The major chronic effects include birth defects, toxicity to a fetus, genetic changes, blood disorders, nerve disorders, production of malignant tumors, endocrine disruption, liver cancer and reproduction effects. Conditions of work in the agriculture sector in Bangladesh are such that pesticide users do not wear protective clothing or use correct spraying equipment due to lack of health and safety awareness.

Project Outcomes:

Description of the activity conducted to reduce the threat posed by highly hazardous pesticides and advance this SAICM aim.

The workshop conducted by OSHE foundation in Bangladesh helped to develop an up-to-date knowledge and good sanitation among the participants (at multistakeholder level) on potential risks, and also developed a set of recommendations with the identifying role of each actor to reduce the threat posed by highly hazardous pesticides and advance this SAICM aim.

Impact on target groups:

The targeted group at the workshop was engaged with different activities, i.e. sharing of experiences and work on this matter with other groups, and developed recommendations and future actions collectively.

Impact on target policies:

The objective of the implemented workshop is to review the current scenario, policy, regulatory frame work and practices on use of pesticides in agriculture in the country and to identify the major issues and challenges to minimize or phase out these hazardous pesticides,. The workshop also acted as a medium to introduce the FAO Code of Conduct and formulate a set of recommendations as follow up actions towards phasing-out hazardous pesticides from agriculture.

The results of the workshop are as follows:

- Formulization of a set of recommendations as follow up actions towards phasing-out hazardous pesticides from agriculture.

- Development of updated knowledge and sensitization on this subject matter among the attending stakeholders.

- Development of a “work together” attitude on this special matter at the national level

- Expressed commitment of participants to carry forward the outcome of the workshop at follow-up phases.

Outreach to stakeholders:

Participants at the workshop were from Government (Ministry of Agriculture, Ministry of Food, Ministry of Labour), national employers organisations, national trade unions and unions representing the agriculture sector, media representatives, academics, NGOs and civil society representatives.

Deliverables, outputs and/or products:

The workshop produced the following direct outputs:

1. One detailed workshop report with recommendations (in publication form)
2. One research-based key note paper from the workshop
3. Local media reports on activities
4. Activity photographs

Communication Efforts:

A formal letter was sent to all local print and electronic media to join and cover the event. One national private television channel (NTV) covered the event and one local newspaper published highlights of the events.

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NGO Recommendations for next steps:

- Government should immediately formulate national policy on chemical safety management with due attention to agriculture sector.

- Organise extensive awareness-raising and sanitation actions on chemical exposure among the workers in the agriculture sector, with due attention to health and safety training and actions.

- Participatory safety improvement actions such as WIND programme for Agriculture workers (as developed by the ILO) and FAO Code of Conduct on Pesticide need to be well introduced and expanded at the field level, targeting agriculture workers and small firms through special projects and programmes.

- Develop Multi-stakeholder collaboration on this subject matter at national level to strengthen further on this subject matter with follow-up actions at field level.

- Increase community level awareness on pesticide use on agriculture and its bad impact on workers heath and local environment;

- OSHE and IPEN should take more initiative and follow-up actions in Bangladesh on this subject matter.

- Integrated approach should be taken among all service provider departments on this subject matter.

There should be mediatory basic health and safety training facilities for the agriculture sector in the country so that they could take proper safety measures during and handling and application of pesticides.

Moreover, the use of appropriate spraying equipment, along with taking all the precautions required in all stages of pesticide handling, could also reduce exposure to pesticides.

Effective government lead activities required on the implementation of Integrated Pest Management (IPM) system that is less dependent on pesticides and use of plant product as well as extensive information and awareness campaign services at grass root level on bio-pesticides which could reduce the use of toxic chemical pesticides in agriculture and public health.