

DRAFT PROPOSAL

Priority-setting and Determination of Objectives for phase out of POPs in Support of the National Implementation Plan in Bangladesh

1. Introduction

The Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted in May 2001. Its purpose is to impose consistent management of Persistent Organic Pollutants POPs by all states. POPs have long been recognized as particularly harmful pollutants due to their adverse effect on human health and environment. Under the project “Bangladesh: Preparation of the POPs National Implementation Plan under the Stockholm Convention”, NIP is to be prepared for submission to the convention. NIP outlines how the government intends to implement the basic requirement of the convention. Preparation of the NIP includes 5 phases, namely,

- i. determination of the coordinating mechanisms and organization process;
- ii. establishment of a POPs inventory and assessment of national infrastructure and capacity;
- iii. priority-setting and determination of objectives;
- iv. formulation of a prioritized and costed NIP, and specific Action Plans; and
- v. endorsement of the NIP by stakeholder.

2.0. The Role of Priority-setting and Determination of Objectives in NIP Development

The UNEP-World Bank interim guidelines for the NIP preparation and in particular phase three of the guideline outlines the objectives of priority-setting and determination of objectives. The purpose of Phase 3 is specifically:

- To develop country specific criteria for prioritizing health and environmental impacts of POPs;
- Assess the inventories of POPs conducted in the country as well as assessments of the legal regime and the infrastructure or operational capacity to manage POPs;
- Identify gaps in the inventory data, legal regime and shortfalls in infrastructure capacity;
- Set specific objectives for the country to manage POPs.

3.0 Basis for Priority-setting and Objectives Determination In Bangladesh

The NIP Development Guidelines suggests that “the criteria should take into account health, environmental and socio-economic impacts and availability of alternatives”. in priority assessments and objectives setting for the development of the National Implementation Plan.

3.1. Inventory Reports

In order to make the National Implementation Plan (NIP) the first and foremost task is to make the inventory of the POPs components. During last 6 months time separate inventory of 3 major categories of POPs has been made. The pesticide inventory reflects that out of the 9 POPs pesticides 2 (Mirex and Toxaphane) had never been used in Bangladesh, the latest 3 (Chlordane, Dieldrin and Heptachlor) had been banned in 1997. The only POP pesticide, DDT had been produced in Bangladesh by the Bangladesh Chemical Industries Corporation (BCIC) at their production plant at Chittagong which has also been closed down in 1993. However, a total amount of 495 Metric Ton of POPs pesticides comprising DDT 75% WP (locally produced) 12.79 MT, DDT 75WP (imported) 482.90 MT and another 32.00 MT Microcell/Wassalom Raw materials for DDT production still exist in different stores/godowns in Bangladesh. Beside there are 13.65 Metric Tones of non-POP obsolete pesticides are laying with the Department of Agriculture Extension (DAE). These quantity needs to be disposed off /destroyed satisfying international rules and regulation. PCB inventory report reflects that in large quantity, this chemical is in use in electric transformer oil in Bangladesh. The project is proposing a comprehensive management plan to make free the PCB contaminated transformer oil in Bangladesh following the guideline of the Stockholm Convention. Unintentional byproduct POPs chemicals (Dioxin and Furan) inventory reflects that the major sources of releases are from the Production of Chemicals and Consumer Goods, Uncontrolled combustion process, Disposal/landfill and Power Generation and Heating.

3.2. Impact of POPs on Human Health

Human health impacts of POPs are a critical criterion. The major difficulty encountered in regard health impact was the lack of data on levels of contaminants in various parts of the Bangladesh environment and its inhabitants. For example, the Pesticides Inventory Report reports that it could not find any studies that assessed POPs in breast milk of women in Bangladesh. The report speculates, however, that given the history of use of DDT, chlordane and heptachlor in the country over several decades, that both urban and rural women will have been exposed to these substances and breast milk samples if taken and analyzed would show levels of these contaminants.¹

3.3. Impact of POPs on Environment

Another criterion would be the impact of POPs on the environment.

Unfortunately there is a paucity of data on environmental levels of contaminants due to lack of systematic monitoring. Only a few academic research studies were found and noted in pesticide inventory. These included

- Pesticide residues in fish (Matin et al 1996)²
 - Samples contain DDT and derivatives ranging .025mg/kg to .0171 mg/kg and dieldrin were found in fish samples.
- Organochlorine insecticide residues in river water (Alam et al, 1999)³

¹ Report on Field Data Collection and Preparing Inventories on Use/Stock/Produces/Sources of POPs Pesticide in Bangladesh, February 2005, Environment Agriculture and Development Services Ltd prepared for NIP Project Team, Department of Environment, Bangladesh

² Matin, M.A., Amin, M.R., Rahman, S., Khaton, J., Malek, M.A., Rahman, M. and Mian, A.J., 1996 Studies on pesticides residues in floodplain fish species Nuclear Science and Applications, 25(1): 55-60.

- Samples analyzed contained residues of DDD, DDE, at concentrations ranging from 0.20 to 6.75 ng/ml
- Organochlorine insecticide residues in surface and groundwater (Matin et al 1998)⁴
 - Samples analyzed contained residues of DDT, heptachlor, lindane, and dieldrin WHO MRLs except for samples from Begumganj irrigation project which contained DDT at 19 μ g/l well above the WHO guideline of 2 μ g/l
- Study on Pesticide Residues in Water Environment of Dhaka metropolitan city area (Malek et al 2000)⁵ reported the presence of pp-DDT, DDe, DDD in lake, pond and hand tube well water of Dhaka city. But no DDT was detected in WASA supply water and deep tube well water within the detection limit (0.002 μ g/l)

It is estimated that fish contributes from 61% to 71% of daily per capita protein source. Given the predominance of fish in the Bangladeshi diet as a major source of protein it is important that contaminant levels in fish be monitored for basic public safety concerns. Also, freshwater and marine fish is an excellent environmental indicator and monitoring levels of contaminants in selected fish species to provide longitudinal data is a critical component of the management of pollutants including POPs.

It is difficult to manage POPs without a well developed information system which supports rational risk management. At this time, Bangladesh does not have a sufficiently developed monitoring system in place for POPs and does not have the capacity to operate such a monitoring system, as mentioned in the Infrastructure Assessment Report and the Proceedings of the Meeting on Monitoring Capabilities

3.4. Critical Populations

Given the lack of systematic quantitative information on human exposure, it may be useful to identify potentially effected sub-populations based on first order inventories which are being completed by the project team. Such populations would be identified based on likely exposure to contaminants as indicated in inventories. For example, repair persons in utility companies who are in contact with transformer fluids may have been exposed to PCBs much more frequently and to higher concentrations than the general public. Wholesalers, retailers and farmers who handle pesticides on regular basis should be viewed more critically than other groups and should be considered for monitoring. (it was anecdotally

³ Alam, M.M., Das, N.G., Rahman, M.M., Malek, M.A., 1999, Organochlorine insecticide residues in water and soil of the Megha Dhonagoda Irrigation Project of Bangladesh, *J. Asiatic Soc. Bangladesh*, Sci 25(1) 125-142.

⁴ Matin, M.A., Malek, M.A., Amin, M.R., Rahman, S., Khatoon, J., Rahman, M., Mian, A.J. 1998 Organochlorine insecticide residues in surface and underground water from different regions of Bangladesh, *Agriculture, Ecosystem, and Environment*, 69: 11-15.

⁵ Malek, M.A., M.S. Rahman, J. Khatoon, Aminuddin, M., M.H. Khan and A.Z Chowdhury, 2002 Study on Pesticide Residues in Water Environment of Dhaka metropolitan city area, Final Report of R & D Projects supported by the MOS&T, p15.

related that some godowns (pesticide storehouses) had been converted into homes and people who live in these got used to the fumes of chemicals and didn't notice it unless pointed out to them by others)

Another critical sub population are fishers and their wives and children. If they are known to consume more fish due to occupational circumstances of the household than they may be subject to greater exposure.

3.5. Assessment of the laboratory capability and capacity

Bangladesh is lacking of analytical laboratory capacity to identify and measure POPs in Bangladesh. This is confirmed by making an inventory of the potential laboratories in the country and at a meeting of key representatives of major laboratories in Bangladesh hosted by the POPs project on January 10, 2005. After comparing analytical capability of existing laboratories, the meeting concluded that there are no Bangladesh laboratories which would meet tier 3 standards as set by the UNEP Global POPs Monitoring Network⁶.

3.6. Legal regime and administrative arrangement for POPs management in Bangladesh

Bangladesh is a signatory of the Stockholm Convention, the ratification is under process. Director General of the Department of Environment is the National Focal Point for the Convention. Assessment of the legal regime of POPs management has been done. There is the only regulating instrument for controlling pesticides (The Pesticide ordinance 1971 and the Pesticide Rule 1985) which is directly applicable for POPs pesticides having significant inadequacies of specific parts for the operation. No legal instrument is there other than the Environment Conservation Act 1995 and the Environment Conservation Rule 1997 for the control of any toxic / hazardous chemical. However, some amendment of this act, instrument could be more effective for controlling the POPs in Bangladesh.

4.0. PROPOSED PRIORITIES FOR BANGLADESH

The following immediate/short term and long term priorities seem likely based on an examination of the inventories completed to date, the infrastructure analysis and preliminary legal analysis.

4.1. Short term (2006-2008)

4.1.1 Formation of National Implementation Agency (NIA) and Institutional Responsibilities setup for each aspect of POPs components –

A National Implementation Agency comprising representatives of all major stakeholders (DOE, DAE, Power sector, Health Department, National Monitoring Network) will be founded as a coordinating body for NIP implementation. NIA will be appointed by the Ministry of Environment and Forests. National Focal Point of the Stockholm Convention (Director General, DOE) will be the chief of the NIA. For each action plan and strategy separate department/institution/agency will

⁶ Proceeding of the Meeting on POPs Monitoring Capabilities in Bangladesh, January 10, 2005 Project Management Unit, Department of Environment, p. 13.

be nominated as implementing body. National Implementation Agency will ensure the availability of fund and resources for implementing the NIP.

4.1.2. Updating the National Legislation needs-

At present the legal analysis is being done with a goal to find out gaps and fill them up with necessary amendments. For example, the Pesticides laws may be proposed to be amended to mitigate the POPs pesticides issues and so the ECA, 95 and other laws to address the PCB and unintentional POPs. However, as it is difficult to sort out laws pertinent to the chemical management in Bangladesh and implement them due to cross sectoral implementing agencies, the notion of umbrella legislation (a Framework Law, in other word, may be in the name of the Bangladesh Chemicals Management Act) would come into the legal regime to address not only POPs but also all nationally and internationally recognized harmful chemicals related issues, in a comprehensive manner.

4.1.3. Capacity building for monitoring, research and development on POPs-

The Convention includes two articles that describe monitoring of POPs and evaluation of the effectiveness. These articles are Article 11 (Research, development and monitoring) and Article 16 (Effectiveness evaluation).

An initial inventory of the potential laboratories in Bangladesh has been made recording their capabilities and resources available. For the purpose , a total of 34 organization/laboratories were requested to fill up the questionnaire comprising the information on general and manpower, equipment and facilities available for POPs chemical analysis, performed work done by the laboratory etc. Only 19 have feet back their information. The evaluation reflects that none of the laboratories could be included even in the Tire – 3 category of UNEP. But fact is that qualified manpower and major equipment are available with many of the laboratories. Unfortunately, the fact is that there is no national accreditation system for laboratories in Bangladesh. If the capacity build alone or in single places, the disadvantages like QA/QC very difficult, lack of data comparability, lack of accreditation system, and unsustainability of the capacity will exist. A National Monitoring Network for POPs might overcome the problem and make the capacity sustainable.

The major objectives of the National Monitoring Network (NMN) for POPs :

- i. Supporting and upgrading the existing laboratories.
- ii. Updating the equipment and analytical techniques.
- iii. Introducing QA/QC, inter laboratory proficiency testing scheme, accreditation of laboratory.
- iv. Sharing in generating data acceptable by all parties.

- v. Ensuring the sustainability of the capacity of participating laboratories.
- vi. Link up with the regional and global POPs monitoring programme.
- vii. Setting up national reference laboratories.

Activities for the NMN for POPs:

- 1) Coordination among the participating laboratories in the National Monitoring Network.
- 2) Arrangement and management of funds for the monitoring programme.
- 3) Analysis of POPs components in various matrixes and life samples (air, soil, water, agricultural products, biota, human tissues etc.).
- 4) Survey on presence of PCB contents in potentially PCB containing equipment and oil through out the country.
- 5) Analysis of the samples from potential release sources of unintentional byproduct POPs (dioxin/furan).
- 6) Generating POPs monitoring data over the years.
- 7) Inter-laboratory studies for proficiency tests for POPs matrix combination.
- 8) Research programme on degradation and transportation of POPs chemicals in Bangladesh environment.
- 9) Development and evaluation of POPs analytical methods.
- 10) Prompt solution of the minor problems usually encountered by the participating laboratory.
- 11) Organizing training facilities/ workshop to develop the technical capabilities of the participating laboratories.
- 12) Ensure supply of rare chemicals-standards for the participating laboratories.
- 13) Contact and maintain liaisons with regional and global monitoring programme.
- 14) Introducing national accreditation system for POPs analysis laboratories.

4.1.4. Safe disposal of identified Stockpiles and Wastes

The pesticides inventory identified approximately 495 tones of surplus DDT in poor storage conditions which threatened human health and the environment. The immediate safe storage and disposal of these stocks is urgent. To the extent these stocks can be exported to fully accredited disposal units in nearby countries or securely stored until a domestic disposal unit is established is of utmost importance

4.1.5. Preparation of Action Plan on PCBs

The PCB inventory has identified a significant number of transformers and lubricating oils which might be contaminated with PCBs. A preliminary estimate based on the inventory indicated that with power sector organizations there are 376690 transformers containing 107370 Metric

tones of transformer oil. Whole quantity needs to be monitored for presence of PCB and thus a comprehensive inventory is completed and accurate estimates are anticipated. The existence of PCBs in contaminated oil will need to be managed in a systematic and responsible way. An action plan with specific steps for the management of PCBs in Bangladesh with the objective of elimination of PCBs in use by 2025 is an immediate priority. The specific steps of an action plan should include the following:

- Immediate legally based ban of the import, manufacture or use of PCB containing products and materials;
- Raise awareness of PCBs and POPs amongst specific groups which are more exposed to PCBs such as personnel who repair transformers for utilities or maintenance staff of heavy machinery which could have used oil or heat transfer fluids contaminated with PCBs;
- A detailed inventory of the PCBs sources in the country which builds on the initial inventory being carried for the development of the NIP;
- The establishment of laboratories as recommended by the Monitoring Meeting to conduct PCB analysis;
- The setting of handling and storage guidelines for the management of PCBs currently in use;
- Regular inspection by the DOE of facilities who have PCBs in use and-or are storing PCBs and;
- The development of an environmentally sound disposal facility for PCBs

4.2. Long term (2006-2015)

4.2.1. Awareness Raising Programme

Article 10 of the convention assures the public information, awareness and education about the POPs chemicals. In order to make aware of the POPs and to get feed back from the users, policy makers, coordinators, relevant administrators, educators and scientists three separate awareness meetings were organized on POPs Pesticides, PCBs and Unintentional byproduct POPs (Dioxin and Furan) on 29 September, 7 October and 19 December 2004 respectively. Comprehensive awareness items such as Logo, Leaflet, Poster, TV Spot, Radio Spot, Sticker, Booklet, Bill board, Tin sign, Advocacy folder and an Website are being designed through an advertising firm. Steps will be taken to publicize those as soon as these will be ready and approved by the appropriate authority. An action programme at least for 5 years is to be planned out in this sector.

4.2.2. National Monitoring Programme

While monitoring was discussed above in relation to establishing sufficient analytical capability to identify and quantify POPs in samples of various media, a systematic monitoring program in samples of specific media are taken regularly and analyzed to develop a quality assured longitudinal data base is required. Such programs are essential for determining whether environmental conditions vis a vis POPs contamination is improving or deteriorating. Also system monitoring of

foods for POPs residues could serve health protection and environmental objectives. Monitoring programs require trained staff and long term funding to produce reliable data sets. Monitoring of PCBs in potential equipment will be prerequisite for success in PCB elimination.

A programme of 10 years may be continuous or intermittent with a gap of 2/3 years should to be formulated predetermining the matrix, location and analytes needs to be set up.

4.2.3. Implementation of Action Plan on PCBs

4.2.4. Measures to minimize/control Dioxin/Furan release in Bangladesh

4.2.5. Strengthening Inspection and Enforcement

A well developed and fully functional environmental protection process and pesticide management process is required to manage POPs. While it appears that Bangladesh has the comprehensive legislation that establishes these processes, its operational capacity to carry out to administer them is weak. Over the long term the basic infrastructure of environmental protection and pesticide management must be strengthened.

For environmental protection, there needs to be an increase in trained staff to carry out the basic functions of issuing environmental approvals, advising on abatement, carrying out inspections and investigating infractions of the law or rule.

4.2.6. Systemic Research on POPs

4.2.6.1. adaptation, evaluation and development of POPs analytical methods,

4.2.6.2. degradation, accumulation and transportation of POPs in Bangladesh environment.

4.2.6.3. study on the effect of POPs in bio system.

5.0. Conclusion

The priority setting proposal has been made on the basis of the inventory reports on POPs in Bangladesh, assessment of the legal, administrative and laboratory capabilities. The short term proposals focused mainly on the infrastructures build up and organizational responsibility distribution for the implementation of the National Implementation Plan, long term proposals includes 6 independent arena of work foresighted for POPs management in Bangladesh. Each arena will have to have action programmes. If the priorities are settled the preparation of NIP could be proceeded with sectoral activities and action programmes.

S:\M.A. Malek\Priority setting workshop\Priority setting presentation.doc