Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility
(Version 5)

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: March 01, 2013 Screener: Christine Wellington-Moore

Panel member validation by: Hindrik Bouwman
Consultant(s):

I. PIF Information *(Copied from the PIF)*
FULL SIZE PROJECT GEF TRUST FUND
GEF PROJECT ID: 4858
PROJECT DURATION : 4
COUNTRIES : Bangladesh
PROJECT TITLE: Environmentally-sound Management and Disposal of PCBs and Medical Wastes
GEF AGENCIES: UNIDO
OTHER EXECUTING PARTNERS: Department of Environment of the Ministry of Environment and Forests
GEF FOCAL AREA: POPs

II. STAP Advisory Response *(see table below for explanation)*

Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): **Minor revision required**

III. Further guidance from STAP

PIF Information extract: The objective of this project is to assist Bangladesh in fulfilling its obligations under the Stockholm Convention by (1) reducing the release of PCBs to the environment, and (2) improving healthcare waste management in the country to reduce the emission of dioxins/furans from disposal activities (reducing current annual emissions of 119 g TEQ by 2.1 g TEQ). There is intention to strengthen the policy and regulatory framework regulating PCB contaminated equipment, and to implement the BAT/BEP technology options for the destruction of at least 500 tonnes of PCB oil and PCB-containing equipment (current inventory uncertain). The uPOPs control work is to be effected through the harmonization of health care waste (HCW) management, implementation of Environmentally Safe Management (ESM) of medical waste by policy enforcers, medical waste generators and service providers, as well as encouragement of Public-Private Partnerships (PPP) mode of delivery for implementation and demonstration of pilot BAT/BEP.

Further guidance from STAP:

Overall the PIF proposes a feasible approach to improving management of PCBs and HCW. However, the STAP does wish to provide some recommendations that should be noted in the course of developing the project document:

Comments on PCB Disposal component
The PIF outlines the low level of awareness and capacity as concerns safe handling of PCBs and PCB equipment in Bangladesh. With respect to the PCB disposal aspects of the project, as a reminder, the STAP trusts that the eventual project document will also consider all of the elements that constitute environmentally sound disposal. The STAP Advisory document on POPs Disposal Technology in GEF Projects, focuses on what exactly constitutes environmentally sound disposal of POPs, and what disposal technologies can achieve it. This guidance includes disposal requirements and listings of technologies that may be applicable. To date, these guidelines have been generally adopted by the Stockholm Convention as the standard reference. There have also been comprehensive reviews of technologies which are periodically published, and on-line libraries of technology data sheets are maintained by the Basel Convention and supporting organizations. The Fifth Conference of the Parties (COP-5) to the Stockholm Convention invited the Basel Convention to continue this work, specifically with respect to establishing the levels of destruction and irreversible transformation of chemicals to ensure POPs characteristics are not exhibited; considering methods that constitute environmentally sound disposal; defining low POP-content in wastes; and updating general technical guidelines as well as preparing or updating specific technical guidelines for environmentally sound waste management (SC-5/9). Likewise, in its decision SC-5/20, COP-5 further encourages the GEF and parties in a position

to do so to facilitate the transfer of appropriate technologies to developing countries and countries with economies in transition (CEITs).

The findings of the document state, inter alia, that:

"..... the destruction or irreversible transformation of POPs in an environmentally sound manner is not limited by the availability of appropriate technologyâ€"there are a number of such technologies. Rather, it is limited by the practical ability to assemble and apply them--particularly in developing countries and CEIT's - in a manner that is environmentally effective, timely, and cost effective..... Destruction cannot be addressed in isolation. The application of POPs disposal technology should be viewed as one part of an overall POPs management process or system. This system includes steps taken in advance of the actual disposal or destruction to identify, capture, secure, and prepare POPs stockpiles and wastes for disposal. It also includes post-destruction steps to manage emissions, by-products and residuals. The management process depends upon high-quality information regarding POPs stockpiles and waste, and the effectiveness of the institutional and regulatory framework under which POPs management is undertaken."

Therefore based on the aforementioned background:

a) In developing the project document and determining disposal options, action should be taken to incorporate the Stockholm/Basel and GEF guidance on technology selection for POPs disposal and the overall development of the ESM system for PCBs. This would ensure that a comprehensive set of parameters be used to select technologies for GEF investment (e.g. environmental performance, ability to manage residuals and transformation products of the destruction and decontamination processes, full assessment of pre-treatment steps required and attendant associated risks, and required resources and capacities to manage them). Explicitly following of the aforementioned scientific guidelines would be desirable in the course of project development, implementation, and monitoring and evaluation. This would also ensure that the true costs of a technology are brought to light since pre-destruction steps (eg. characterization of the PCB congeners to be handled, prioritization, capture and transport, containment and pre-treatment) can carry their own significant resource and capacity burdens, and can often be the barrier to implementation of technologies in developing countries and CEITs. Definition of environmentally safe low POPs concentrations would also be clearer and kept consistent with best practices.

b) The dangers of informal, repurposed use of POPs containing containers should be included in any targeted awareness in stakeholder communities. There may be a large gender component to this (eg if women do water collection and other gathering of food etc using repurposed containers). But this may or may not be a problem in Bangladesh.

c) The document does not take into account the Climate Vulnerability risks, and the role Climate can play in prioritising sites for operations and storage of PCBs ahead of disposal. Apart from their high log KOW values which permit strong adsorption to nonpolar surfaces (eg organic carbon) and lipophilic matrices in food chains (both aquatic and terrestrial, PCBs are marked by a number of chemical and physical characteristics, not the least of which are:- a) the myriad of congeners in existence, with attendant different levels of chlorination, b) the difference in behaviours and break down products of these congeners when released to the environment, c) the difference in their degree to be metabolised and non-uniform break down products within organisms, d) their readiness to volatise when spread over soil and water surfaces, e) their short atmospheric residence times (in the order of months), allowing them to vaporize and be re-deposited, cycling back between land and waters surfaces and air. Given these characteristics alone, it is hardly surprising that site-specific uniqueness has played a role in the recorded behaviour of PCBs in contamination cases around the globe. When one further considers that Climate Change is impacting, inter alia, on atmospheric temperature, rainfall regime, storm frequency and attendant drought/flood cycles, it is clear that in considering the potential impacts of PCB releases, it is equally important to look at the physical-chemical characteristics of the congener along with the natural geological and hydrological features of the area of contamination, and the fluctuating atmospheric conditions (temperature, rain, wind, vulnerability to storms etc) of the sites eventually selected.

Comments on Health Care Waste Component
Given the small contribution of medical waste to total solid waste in the country, one might opine on the Global Environment Benefit of focusing on HCW as opposed to the other sources uPOP releases. Nevertheless, the hazards of inherent to medical waste, as well as the opportunity for sound PPP and investment planning could be a worthwhile effort in terms of eventually getting longer term participation of private sector in medical waste management. It is viewed favourably that there has been good thought to promoting waste minimisation, which ultimately keeps waste out of the landfills in the first place, halting the potential for uPOPs at source.

STAP's comments are just broad suggestions to improve the project development process:

(i) Given the quality of thought given to the proposed project interventions, the STAP is certain that current guidance is already being consulted by the project developers. However, all of the guidance being used it is not explicitly stated, so some possible guidance is suggested below:- though there is mention that the project will build upon the outputs of the Global GEF/ UNDP/WHO healthcare waste and mercury management project, which is still incomplete. At the risk of belabouring a point, the STAP simply reminds developers to be sure to use current guidance and case studies such as

(a) The WHO Chapter on health care waste minimisation and management (http://www.who.int/water_sanitation_health/medicalwaste/058to060.pdf). There is practical advice to minimise waste such as reducing the use of injections and hence generation of PVC waste through use of pills.
(b) The Global GEF/ UNDP/WHO healthcare waste and mercury management project (still incomplete)
(c) Case studies such as "Best Practices in Health Care Waste Management: Examples from four Philippine Hospitals" (http://www.noharm.org/lib/downloads/waste/Best_Practices_Waste_Mgmt_Philippines.pdf)
(d) The USEPA website gives links to "Hospital Prevention (P-2) strategies" (California Department of Health Services), and a "Guide to Mercury Assessment and Elimination in Health Care Facilities" (http://www.epa.gov/region9/waste/p2/hospart.html) which gives a breakdown of equipment of concern, methods of planning and implementation of HCW strategies and plans, and could be a good practical guide of past experience, complete with cost-benefit analyses. The page also includes a section on Pollution Prevention for Health care Professionals, which could help inform any training packages put together for doctor and nursing staff.

So the STAP strongly recommends that developers should examine even non-GEF experiences in this field, since the GEF has limited experience in this area of work.

(ii) Another issue not explicitly stated in the project is the reduction of the municipal type of waste generated by hospitals, which can make up about 80% of the total waste. Incineration of such waste leads to uPOPs as well, and it should be targeted in the overall training of the medical staff (see suggested guidance from EPA et. al.)

(iii) In the Risk table, though rated low, there is risk associated with financial, technical and administrative issues associated with the PPP. However, cost-benefit analysis to show savings to the hospitals, and ultimate reduction of burden to workers managing smaller quantities of waste have often been the "selling point" that leads to successful implementation of HCWM in facilities. The STAP again emphasises the need to do a thorough search of case studies, and to find ways to incorporate these benefits meaningfully into the various stakeholder trainings and awareness activities, such that each group can see the benefits brought to bear for their particular group and the facility as a whole.

(iv) Though they should be low, once all is implemented appropriately, should there not be a risk associated with inappropriate use of non-combustible, decontamination techniques, such that infectious waste might "slip through the cracks" as the waste handlers get up to speed in using these alternative techniques? There needs to be some mention of this, and the risk mitigation protocols that will be put in place to make sure that the overall HCWM runs as planned.

(vi) The Dioxin Toolkit might be used to obtain a more detailed and appropriate TEQ emission number for medical wastes disposed. STAP would like to see this being done as it would provide better quantitative indicators for project monitoring via the POPs tracking tool.

(VII) The project envisages the upgrading of two laboratories for analyzing air emissions. This might imply the measurements of dioxins and furans. Care should be taken, if this is the intention, that enough resources and training should be employed to achieve the competency of these laboratories at an early stage so that they may gain experience by participating in this project.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Consent	STAP acknowledges that on scientific or technical grounds the concept has merit. However, STAP may state its views on the concept emphasizing any issues where the project could be improved. Follow up: The GEF Agency is invited to approach STAP for advice during the development of the project prior to submission of the final document for CEO endorsement.
2. Minor revision required.	STAP has identified specific scientific or technical challenges, omissions or opportunities that should be addressed by the project proponents during project development. Follow up: One or more options are open to STAP and the GEF Agency: (i) GEF Agency should discuss the issues with STAP to clarify them and possible solutions. (ii) In its request for CEO endorsement, the GEF Agency will report on actions taken in response to STAP's recommended actions.

3. Major revision required	STAP has identified significant scientific or technical challenges or omissions in the PIF and recommends significant improvements to project design. Follow-up: (i) The Agency should request that the project undergo a STAP review prior to CEO endorsement, at a point in time when the particular scientific or technical issue is sufficiently developed to be reviewed, or as agreed between the Agency and STAP. (ii) In its request for CEO endorsement, the Agency will report on actions taken in response to STAP concerns.