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**Planning Workshop on the
Assessment, Monitoring and Management of
Persistent Organic Pollutants (POP) and Persistent
Toxic Substances (PTS) in Coastal Ecosystems of
the Caribbean Region**

Report of the Workshop

26-27 November 2007
UNU-INWEH, Hamilton
Canada

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1. Introduction

This planning workshop was organized by United Nations University – International Network for Water Environment and Health (UNU-INWEH) with support from the World Bank, and was held in the framework of the project: Assessment, Monitoring and Management of Persistent Organic Pollutants (POP) and Persistent Toxic Substances (PTS) in the Coastal Ecosystems of the Wider Caribbean Region. This project commenced in September 2007 and is being funded by the World Bank through the Canada Persistent Organic Pollutants Fund of the Canadian International Development Agency (CIDA).

The project aims to build a network among environmental managers, analytical laboratories, and other pertinent governmental agencies in countries of the Wider Caribbean Region that will be effective in measuring, evaluating and then reducing pollution from POPs and other PTS in the coastal environment. The project builds on the outcomes and the recommendations of, and will address some of the specific data gaps identified in, past PTS/POPs initiatives in the region. The project includes eight countries, in all of which pollution by POPs and other PTS has been identified as an issue: Belize, Dominican Republic, Guatemala, Honduras, Jamaica, México, St Lucia and Trinidad & Tobago.

The two-day planning workshop aimed to:

1. Review issues related to POPs pollution and the Stockholm Convention obligations;
2. Review the need to protect coastal ecosystems because of economic and health concerns, and summarize what is known about PTS in the coastal environment, rivers and other water bodies close to coastal areas of the WCR;
3. Further refine project goals, objectives and activities;
4. Report on the successful networking approach used to tackle the PTS issue within the recently completed phase 1 of the MBRS project; and
5. Seek consensus from Caribbean participants on the specifics of the project.

The workshop was held 26-27 November 2007 in Hamilton, Canada with simultaneous translation between Spanish and English. The workshop participants included coastal managers and lab analysts, with representatives from Universities, relevant Ministries and UN agencies. From most countries 2 representatives were invited, except for Mexico and St. Lucia, which were represented by 3 participants. Representatives from Canadian Universities with expertise in POPs and other PTS research and monitoring in aquatic environments were also present.

The Workshop was attended by 25 participants. The agenda, list of participants are attached in Annexes 1-2 to this report.

2. Summary of the Workshop

Day 1, Monday 26 November 2007

Opening Session

Dr. Peter Sale, Assistant Director of UNU-INWEH opened the workshop and gave a short introduction to the project as well as an overview of the workshop objectives, agenda and modus operandi.

Presentation by Dr. Jae Oh, Head, Marine Environmental Studies Laboratory, IAEA based in Monaco on IAEA activities on POPs and related projects in the Caribbean and elsewhere.

- The Marine Environmental Studies Lab (MESL) at IAEA Monaco focuses amongst others on marine pollution.
- IAEA MESL has projects worldwide including a project in the Caribbean titled: “*Use of nuclear technologies to address the management of coastal zones in the Caribbean*” a 10 year project which commenced in 2007, including Dominican Republic, Guatemala, Honduras, Jamaica, Mexico among its 11 countries and 23 organizations.
- IAEA MESL also has monitoring and capacity building projects in other regions (e.g. Mediterranean, East Africa)
- IAEA MESL is active in the preparation of sample standards, and runs an Inter-laboratory program for labs that evaluates precision/accuracy of analyses of specific types. This includes Quality Control and Quality Assurance tests/ performance testing of Labs.
- In the Western Indian Ocean region, IAEA MESL conducted a regional assessment of lab capability to deal with land based sources of pollution (part of the GEF-WIOLAB project).
- MESL has another project examining contaminants in coastal waters of Arabian Gulf – did a cruise in 2005 and interacts with labs in this region.

Presentation by Dr. Zafar Adeel, Director UNU-INWEH on the UNU Coastal Hydrosphere project in the East Asian region.

- This project is operational since 1996
- Networking in the region was a very important factor for success of the project.
- Some findings of the project include: selecting sampling locations is important, ensuring data quality and data interpretation is crucial, cross reference with other laboratories is useful and there is a need for long-term monitoring.
- One of the main issues was the high turn over rate of technicians trained.
- Despite bans at the national level, pesticides are still being used in the region and still affect coastal waters. Another issue remaining is the accumulation of DDT in coastal sediments, even though there has been a decline in DDT use.

- Some lessons learnt at policy level: Governments can play a role in monitoring and governance – government role is best as the facilitator instead of the provider.
- Human and institutional capacity development – focus should be on the managers and the trainers so there is sustainability. Development of research networks is important as well, and south-south partnerships are effective.
- There was considerable value of having Shimadzu as corporate partner in the project.

SESSION 1: UNEP GEF Coastal Management Initiatives in the Caribbean Region

Presentation by Dr. Alexandre Cooman, Regional Project Manager, UNEP GEF Reducing Pesticide Runoff to the Caribbean Sea project Jamaica. UNEP interest in and activities for POP remediation in the Caribbean region.

- There are several applicable international agreements in the region including the Cartagena Convention, for which the Secretariat is hosted at Caribbean Environment Programme (CEP), in Jamaica. The LBS protocol, one of the protocols of this convention, includes the assessment and management of POP and PTS. CEP established the Assessment and Management of Environmental Pollution Programme (AMEP) and it may be useful to link to this programme. The AMEP Programme is responsible for the assessment and management of environmental pollution and provides regional co-ordination for the implementation of the LBS Protocol
- The AMEP Programme has supported the development of regional strategies for hazardous wastes and oils. Now preparing similar regional strategy for obsolete pesticides (Stockpiles).
- The *Reducing Pesticide Runoff to the Caribbean Sea, (GEF-REPCar) project* is funded by GEF for \$4.295M and covers Colombia, Costa Rica and Nicaragua. It focuses on management practices and specific measures to control the use and application of pesticides in the agricultural sector, thereby reducing runoff to the marine environment.
- The project is starting demonstration projects in Good Agricultural Practices and pesticides management in each country. It will also start a regional coastal pesticides monitoring programme. As part of this monitoring programme, protocols have to be developed and capacity building is needed. Pesticide monitoring in rivers and coastal waters will started towards the end of 2008.
- There will also be a focus on the institutionalization of management of pesticides in each country.
- The project has direct country buy-in at ministerial level.
- Noted that it is difficult to attain information from the producers of POPs and that there is data available from 1998 which needs to be updated.
- Expressed interest in combining efforts of the REPCar project with this project. Topics that can be developed jointly are capacity building, harmonization of sampling and analytical methodologies, and data-management.

Presentation Ms. Allison Astwood, Laboratory Manager CEHI, St Lucia - UNEP GEF project Integrating Watershed & Coastal Areas Management Project (IWCAM).

- The IWCAM project – “Integrated Watershed and Coastal Areas Management” –is a GEF-UNEP-UNDP project worth \$112M, involving 13 SIDS including Dominican Republic, Jamaica, St. Lucia, and Trinidad & Tobago. Phase One is for 5 years from 2005-2010.
- Activities include 9 demonstration projects in integrated management, including our 4 islands: Dominican Republic (mitigation of industrial wastes), Jamaica (integrated management of watersheds), Saint Lucia (watershed services) and Trinidad & Tobago (land-use planning).
- IWCAM provides support for preparation of national Integrated Water Resources Management Plans in several of the countries
- The IWCAM project focuses on similar issues to this project such as: laboratory assessments by IWCAM and by IAEA, core training on water quality monitoring, upgrades to lab equipment, QA and QC.
- They hope to include some non-IWCAM counties as well, so expansion of geographical coverage is possible.
- Might be possible to host the Database resulting from the UNU-INWEH project, as mentioned by Alexandre Cooman.

SESSION 2: Presentations by country representatives on current situation and capacity regarding Persistent Organic Pollutants in coastal waters

Presentation by Richard Brathwaite (UWI) and Wendy Norville (IMA):
Trinidad & Tobago:

- PTS are derived from agriculture, chemical industry, and energy sector
- No POPs under the SC are currently being imported or registered for use in Trinidad & Tobago.
- Pesticide Inventory done in 1999; arrangements being made for disposal of 24kg DDT
- Preliminary monitoring has shown very high levels of Tributyltin (TBT) from antifouling paints in sediments from the west coast area with extensive yachting, high PAH in bivalves from the Gulf of Paria where 4 of 6 sites were above the recommended limit and contamination with dioxins, furans, PCBs, pesticides, metals and PAH's in the Beetham harbor in Port of Spain.
- Have a Pesticide and Toxic Chemicals Board
- Situation is complicated since four different ministries have responsibilities for PTS: (1) health (2) Agriculture, Land and Marine Resources (3) Public utilities and the Environment (4) Trade and Industry
- Labs with some capability at IMA, UWI, CARIRI, Ministry of Health (Chemistry, Food and Drugs Division)

Presentation by Alexandra Entwistle, Caribbean Environmental Health Institute (CEHI) St Lucia:

- CEHI has office and lab space in St. Lucia, but is a 16-nation organization across the Caribbean including Belize, Jamaica, St. Lucia and Trinidad & Tobago

- The project Coordination unit for the IWCAM project is based at CEHI
- CEHI together with CAR/RCU and UNOPS are executing the IWCAM project
- Has capacity to do analyses or to offer training to others
- Could be possible host of the database for the project.

Presentation by Guy Mathurin, Pesticides and Toxic Chemicals Board, St. Lucia:

- Piton Management Area on southwest shore near Soufriere is World Heritage Site but likely stressed by PTS
- Tourism and Agriculture are main industries – agrichemicals and hotel cleaning and landscaping chemicals are main PTS problems
- Information on fertilizers is lacking. No information available on bio-accumulation and fate of POPs/PTS
- None of the 12 POPs chemicals are used in St Lucia any more.
- A lot of the pesticides were given to St Lucia by international organizations, thinking they were helping.
- Main issue at the Pesticides Board is human resources. They have a mandate and offices, but no staff.
- A previous DFID study on coastal waters revealed high levels of Potassium in watersheds from fertilizers
- They are party to Stockholm Convention, have done a chemical inventory, and have a National Implementation Plan written – seeking funds for action

Presentation by Gerardo Gold, CINVESTAV, Mexico:

- ECOSUR has accredited lab for certain analyses
- CINVESTAV has marine geochemistry and molecular ecotoxicology labs plus other facilities
- CONANP can provide logistic support and field sampling

Presentation by Paulette Kolbusch, NEPA, and Tony Greenaway, UWI, Jamaica:

- Jamaica has signed the Stockholm Convention, has an NIP, and is now taking action (with funding through IWCAM)
- NEPA (Natural Environment & Planning Agency) has a current project which focuses on reducing current levels of pollution in streams and rivers and the marine environment by reducing agricultural run off.
- Jamaica has outlawed importation and tightened regulations re POPs, and is in the process of destroying stockpiles.
- Jamaica has 26 watersheds all subject to agricultural runoff – most important PTS Source?
- UWI Pesticide Research Lab has the best capacity in the country for POP analyses.
- There are a number of other labs in the country equipped for POP, heavy metal and/or other PTS.
- NEPA contracts out for these analyses

- Labs in the country have organized into LAJ (Laboratory Association Jamaica) to help each other with common problems, JAANAC is the National Accreditation body.
- Problems in training, equipment supply, maintenance.
- Need for legislation that leads to the need for analyses in order to have sufficient sample processing to keep a lab operating efficiently and effectively.

Presentation by Francisco Garcia, SARN (Sec. Ambiente y Recursos Naturales), Honduras:

- Honduras is a Stockholm signatory and has an NIP in place to identify need, build inventory of PTS, and evaluate capacity.
- Plan later to develop priorities, and build action plan etc.
- Limited lab capacity – there are two private labs plus one government lab, but latter has no capacity. Only capacity present is for freshwater, not for coastal waters.
- There is no university lab capacity. (The government lab is responsible for compliance issues, but also has a mandate for research pollution issues, hence it may be appropriate to participate in the monitoring project).

Presentation by Jose Robledo AMASURLI, MARN, and Bessie Oliva, Universidad San Carlos, Guatemala:

- In Guatemala three major rivers take agricultural contamination to Caribbean.
- Ratified Stockholm 14 November 2007, and commencing an inventory of POPs. Ministry of Health is responsible for obligations under SC – but has no resources for this.
- Known that there were substantial imports of POPs in the past, and still using DDT for malaria control.
- Plenty of laws, but Ministries of Environment and of Health do not monitor for compliance.
- Lago de Izabal/Rio Dulce and Rio Motagua seriously contaminated, and high concentration of POPs in fish tissues from coastal Caribbean.
- Limited lab capacity, particularly in Universidad de San Carlos (USAC), and Universidad Mariano Galvez (UMG) (private).
- Min of Health has capacity but has compliance responsibilities, Universidad del Valle (UVG) does not have capacity.

Presentation by Ramon Delanoy de la Cruz, University de Santo Domingo, Dominican Republic:

- In 2006 commenced development of National Implementation Plan under Stockholm Convention.
- Dominican Republic is participating in the IAEA Caribbean project to improve coastal management in the Caribbean.
- Have begun sampling sediments to analyze for various PTS.
- Several labs exist with capacity to do analyses for PTS, including governmental (Secretario de Estado de Agricultura y Ganaderia, Universidad Autonoma de Santo Domingo (UASD), others.

Presentation by Dwight Neal, Friends of Nature, and Isaias Majil, Fisheries, Belize:

- Belize has signed the Stockholm Convention, completed an inventory of PTS, and is now preparing the National Implementation Plan.
- Situation made more complicated because three different Ministries have legal framework and responsibilities for PTS (these are Health, Environment, and Agriculture & Fisheries).
- Substantial inventories of DDT etc remain, awaiting removal and destruction.
- Transformers containing PCB oil are progressively being replaced – rumor that the oil is being sold to Guatemala for use there!
- Now using malathione for malaria control in place of DDT.
- Only baseline monitoring known was within the MBRS project, and in a WWF study at Sapodilla Cayes (this one may be replicated next year).
- Independent researchers are looking at heavy metals in fish in Belize.
- Problems: lack of lab capacity – nearest is CINVESTAV. There are two private labs in Belize but without mandate or interest in environmental monitoring, University of Belize has acquired some water quality testing equipment recently, general lack of technical expertise, government departments responsible lack funding, equipment, staff (Agricultural Health Authority has some capacity).
- Friends of Nature can give personnel time to the project for monitoring.

SESSION 3: Overview Stockholm Convention obligations of Countries and the Techniques for tracing POPs

Presentation by Ms. Hanneke van Lavieren – Programme Officer, UNU—INWEH. Obligations of countries under the Stockholm Convention, especially as related to pollution of aquatic ecosystems.

This presentation gave an update on status of Stockholm Convention signature, ratification and/or accession in the project countries as well as an overview of some of the relevant obligations to the SC to which the project may contribute. From the 8 countries, only Belize has not ratified the SC. Three countries have submitted their National Implementation Plans, and 2 NIPS are past due, one NIP is due in 2009 and 2 NIPs have not been scheduled.

Presentation by Dr. Ken Drouillard, GLIER, University of Windsor, Canada. Tracing persistent toxic substances and their impacts in aquatic ecosystems.

Tracing PTS, and their impacts in aquatic systems:

- Presented Detroit River study as an example of an approach to PTS investigations.
- Heavily impacted in past by industrial waste, first step was to update the river status.
- Developed models including hydrodynamics and food web data to show pathways of contaminants through food web and downstream.

- Used biomonitor approach to sample river – better than water because integrates over time, better than sediment because it samples what is available to fauna.
- Confirmed continuing point-source inputs of POPs.
- Project serves as a case study for model-based management framework.
- Discussion: What standards are being used, what levels are being used. Differences in interpretation, how can we compare data?

DAY 2, Tuesday 27 November 2007.

SESSION 4: What is known about POPs/ PTS in the coastal marine environment and rivers and other water bodies close to coastal areas of the WCR – Gaps, capacity needs etc

Presentation by Dr. Gerardo Gold, CINVESTAV, Merida, Mexico. Assessment of pollution in coastal marine and estuarine habitats of the Mesoamerican Barrier Reef region – using south-south partnerships to monitor PTS.

The pollution monitoring project within MBRS/SAM project:

- MBRS/SAM a GEF-funded four country project on coastal marine management, now preparing for a phase 2. Pollution monitoring was one component.
- Because of general lack of capacity, adopted use of less sophisticated methods, such as bioassay methods. [Even with simpler methods, it is still difficult to achieve because could not get liq. N2 in the field in all places].
- Used white grunt as target fish species, sampled the liver and did all analyses in single lab (CINVESTAV), and lab personnel participated in field sampling.
- In 2005, sampled sediments in 14 sites, and fish in 4 of these. In 2006 sampled sediments in 27 sites and fish in 14 of these. (2006 data not yet available)
- Training courses as workshops on biomarkers, on POP analyses, on field methods. In general, workshops were too short, and staff turnover so great that little expertise remained a year after a course.
- Found evidence for high PAH at Xcalac and northern Belize, high Lindane at Chetumal Bay, Belize, and Gulf of Honduras.
- Lessons: 1) using a single lab saved time, money, increased comparability of data, 2) short training courses are ineffective – getting people into advanced degree programs better, 3) in MBRS region there is little effort expended in management of marine habitats away from reefs – people like to dive on coral reefs, 4) need more info on biology of white grunt to see if really a suitable target species 5) need more information on heavy metals.
- MBRS phase 2 will have a strong watershed component, and pollution monitoring is a significant part of this.

Presentation by Dr. Chris Metcalfe, Environmental and Resource Studies, Trent University, Canada. "Potential for PTS contamination from tourism and agriculture in the western

Caribbean basin" and information on facilities and expertise at the Worsfold Water Quality Centre and the Institute for Watershed Science at Trent University.

- Presented the potential for PTS contamination from tourism and agriculture in the western Caribbean basin.
- Focused not so much on POPs but on other PTS.
- Reviewed importance of geology and history in determining how PTS move in the environment towards the coastal ocean – karst is different to river basins and to runoff directly to shore – all three types exist in the region.
- Used examples from the region.
- Discussed impacts of recreational activities and gave an example of a golf course construction and maintenance as source of PTS.
- Fungicides of major importance on golf courses.
- Outlined his two types of passive sampler, an alternative to the target species biomonitor – POCIS and SPMD – could be excellent for comparability across sites.

SESSION 5 AND 6: Open Discussions on the scope and implementation modalities of the project

Dr. Peter Sale presented the objectives of the project as well as likely actions to be taken and sought responses and recommendations.

The participants were asked to split up according to the groups outlined below and to caucus within country, and among countries, and develop an initial statement on the following:

Lab Group:

- ✓ List of laboratories (about 8 or so) that should be included
- ✓ Divided into ones with capacity and mandate, and ones with mandate but lacking capacity
- ✓ Any other comments regarding laboratories available, and best ways to manage them

Coastal Managers group:

- ✓ How able are you to contribute to the project?
- ✓ Can you help us reach out to others in the appropriate groups in your country?
- ✓ What do you see as the major needs relative to POP/PTS in your region

Outside the region group:

- ✓ What interest do you have in contributing?
- ✓ What could you bring to this project?
- ✓ What benefits could you get from participating?
- ✓ What do you see as the major needs regarding POP/PTS pollution of aquatic ecosystems?

Subsequently, an open discussion was held on some of the key project components:

- Proposed project activities (scope, duration)
- Training needs and opportunities
- Information gathering and warehousing (creation of databases, QA/QC procedures)
- Are we able to identify additional participants within our countries?
- Immediate next steps

The outcome of the discussions and conclusions reached during the workshop are given in the next section.

Outside the region Group:

The outside group suggested the following activities:

- Labs could be assisted to develop capacity to collect and do preliminary processing of samples, send them to one or two regional labs with better instrumentation, skill for final analysis;
- Environmental monitoring should be combined with risk assessment. To achieve this, demonstration projects could be established, as multidisciplinary research projects, with training imbedded, and, although based in one country engaging people from all countries.

Coastal Managers Group:

Some general points made were:

- The collection of field samples for any monitoring can be incorporated into on-going field programs at specific locations, infrastructure to support this work is in place.
- Managers can help with training in field methods, and can help engage the community in the project.
- However, it will be important to engage the governments at senior level securing commitment, otherwise will be difficult to ensure support or sustain the project.
- Also important to recognize that the field costs are real and need to be covered.
- Impacts of POPs and Hazardous Substances on coastal areas are hardly recognized as issue in the National Implementation Plans for the Stockholm Convention in the countries. This point should be set to a main issue within the NIPs, at the Environment Secretariat level, if the project is to be sustainable in the long run.

Laboratory group:

- There are a number of labs, but most lack good capacity, some others are well-equipped but will not see the monitoring of coastal pollution as part of their mandate.

- There may be logistic and cross-border issues with shipping samples to labs in neighboring countries
- The laboratories can be equipped in order to help them do tests and to attain the results that are needed for the project.
- Better equipped laboratories can offer analysis and qualification services and training to personnel from laboratories in other countries.

List of Laboratories per country:

Jamaica:

- University of West Indies- Pesticide Research Laboratory (capacity but not in marine waters)
- Mona Institute for Applied Science (UWI; commercial, not metals)
- Veterinary Laboratory (fish, metals, not water)
- International Centre for Environmental and Nuclear Sciences (metals only)
- Geology and Mines (metals only)
- Scientific Research Council (metals only)
- NEPA (contracts these analytes out)

Mexico:

- Colegio de la Frontera Sur, Unidad Chetumal (ECOSUR), (water quality, hydrocarbons, pesticides and heavy metals)
- Centro de Investigación y de Estudios Avanzados, Unidad Merida (CINESTAV)

Both have mandates to do research and particular studies.

Belize

- Belize Agriculture Health Authority (some capacity to analyze)
- University of Belize

Honduras

- Centro de Estudios y Control de Contaminantes (CESCCO) (has mandate for research on pollution issues, e.g. POP's)

Guatemala

- Universidad de San Carlos de Guatemala (USAC), Facultad de Ciencias Químicas y Farmacia (capacity for certain metals UV-VIS- water analysis)
- Universidad Mariano Galvez (UMG) (Pesticides)
- Universidad del Valle de Guatemala (UVG) (Pesticides)

Trinidad and Tobago

- Ministry of Health (Chemistry, Food and Drugs Administration)
- Caribbean Industrial Research Institute Lab
- University of West Indies (UWI) Chemistry Lab
- Institute of Marine Affairs (IMA) Chemistry Lab (has mandate, equipment, no personnel currently trained in pesticide analysis)

Saint Lucia

- Caribbean Environmental Health Institute (CEHI) Laboratory (has the mandate and
- Ministry of Agriculture

Dominican Republic

3. Outcome of Discussions and Conclusions

Involvement in project:

- Some participants noted that they would need to go back to their respective countries to discuss possible involvement in this project and their roles before being able to commit to the project.
- Suggestion for a letter from us to their Governments/institutions asking for their involvement?
- The participants need to have a clear purpose for them being involved.
- Regional strategies have been developed for hazardous wastes and oils. Now preparing similar regional strategy for obsolete pesticides (Stockpiles).

Sustainability:

- Sustainability issues should be kept in mind. Too many projects collapse at end of external funding.
- The issue of staff turnover is a major problem in this kind of project.
- Ideally, local institutions/government should take over activities eventually, also the funding.

Laboratory Selection:

- The choice of which labs to include may be a sensitive issue in some countries, although the relative lack of funding for upgrade of equipment in the present budget may reduce the sensitivity – benefits of inclusion may be modest.
- UNU- INWEH will have to make these decisions, based on past assessments of capacity, and information from participants.
- When selecting laboratories, we need to give some clear criteria.

- Visits to labs can be a valuable way to assess capacity. Importance of not only North-South but also South-South lab visits was noted.
- Benefit for the lab to be involved in this project should be demonstrated.
- The issue of getting supplies to the region for labs as well as maintenance issues was noted. Many times the equipment is purchased from abroad and there is no capacity to maintain it locally.

Sampling and Monitoring:

- An example was given from Jamaica where the UWI uses high school students and employees of clients in, water sampling. Samples are sent to the UWI for analyses (mainly nutrients). There is also a regional project called “Sand Watch”, involving primary school students collecting data on beaches (a NUESCO project).
- Not only the 12 POPs chemicals are issues in these countries. Many other more important stressors in the region (like waste and sewage), to which governments should give priority. While this project is funded with respect to POP pollution, it will not be inappropriate to facilitate monitoring of other kinds of pollution as well if logistically feasible.

4. Way Forward

- UNU-INWEH will contact each of the participants for specific follow up in each country with regards to involvement in the projects as well as for further advice on selection of laboratories.
- UNU-INWEH will further review existing capacity of labs, as reflected in past reports and studies.
- Following advice from participants, letters to relevant national authorities will be prepared and sent by UNU-INWEH to secure commitment for participation in the project.
- Specific involvement of possible partners will be identified and formulated (i.e. UNEP, CAR RCU, IWCAM, IAEA MESL, others).
- Canadian expert participants will discuss plans for their specific involvement and these will be integrated into the project by UNU-INWEH.
- Two regional Workshops will be organized (one on the mainland and the other in one of the island countries) – locations to be determined. These will take place during the period April to June 2008, as the first in-region components of the project.
- A South-North team will be created to visit participating labs, around the time of the workshops, and make recommendations on the best initial steps for building their capacity. It is anticipated that one or two labs in the region will become the primary centers for analyses under the project, while other labs will be assisted in developing the capacity for initial sample preparation and dispatch to regional centers.
- Initial monitoring will be commenced at appropriate sites in each country during summer 2008.

- By mid-summer 2008 (sooner if possible), a detailed project description will be finalized and approved by participants, so that commitments of time and resources are understood by all parties (we anticipate only in kind commitments from participating countries during Years 1 and 2).

5. Annexes

ANNEX 1

Workshop Agenda

26 November 2007

08:30-10.45 Opening Session – chaired by Hanneke van Lavieren

08:30 Dr. Zafar Adeel and Dr. Peter Sale. Welcome and Opening Remarks

08:45 Self-introductions by all participants

9:15 Dr. Peter Sale – Assistant Director UNU-INWEH. Introduction to the project and overview of the workshop objectives, agenda and modus operandi

9:40 Dr. Jae Oh –Head Marine Environmental Studies Laboratory, IAEA, Monaco. IAEA activities in POP related projects in the Caribbean and elsewhere.

10:00 Dr. Zafar Adeel, Director UNU-INWEH. UNU Coastal Hydrosphere project in the East Asian region.

10:30 *Coffee break*

11:00-12:00 SESSION 1: UNEP GEF Coastal Management Initiatives in the Caribbean Region- chaired by Jae Oh

11:00-11.30 Dr. Alexandre Cooman, Regional Project Manager, UNEP GEF Reducing Pesticide Runoff to the Caribbean Sea project Jamaica. UNEP interest in and activities for POP remediation in the Caribbean region.

11.30-12:00 Ms. Allison Astwood, Laboratory Manager CEHI, St Lucia - UNEP GEF project
Integrating Watershed & Coastal Areas Management Project (IWCAM).

12:00 *Lunch*

13:00 – 15:00 SESSION 2: Presentations by country representatives on current situation and capacity regarding Persistent Organic Pollutants in coastal waters (10 minutes each) – chaired by Hanneke Van Lavieren

13:00 Richard A.I. Brathwaite, UWI & Wendy Norville, IMA -- Trinidad & Tobago

13:10 Alexandra Entwistle, CEHI (regional perspective) & Guy Mathurin, PCB Min. of Agriculture, Forestry and Fisheries – St. Lucia

13:20 Gerardo Gold, CINVESTAV & José Juan Dominguez Calderón, CONANP – Mexico
13:30 Paulette Kolbusch, NEPA & Tony Greenaway, UWI – Jamaica
13:40 Francisco Garcia, Secretariat of Environment and Natural Resources– Honduras
13:50 Jose Robledo, AMASURLI & Bessie Oliva, Univ. de San Carlos – Guatemala
14.00 Ramon Delanoy de la Cruz, Univ. de Santo Domingo - Dominican Republic
14.10 Isaias Majil, Ministry of Agriculture, Fisheries & Dwight Neal, Friends of Nature – Belize

14:10- 14:50 General Discussion

14:50 *Coffee break*

15:15-17:00 SESSION 3: Overview Stockholm Convention obligations of Countries and the Techniques for tracing POPs – chaired by Zafar Adeel

15:15 Ms. Hanneke van Lavieren – Programme Officer, UNU—INWEH. Obligations of countries under the Stockholm Convention, especially as related to pollution of aquatic ecosystems

15:30 - 15.45 General Discussion

15:45 Dr. Ken Drouillard, GLIER, University of Windsor. Canada. Tracing persistent toxic substances and their impacts in aquatic ecosystems.

16:15 General Discussion

17:00 Meeting adjourned

Dinner at 19 pm at Thai Restaurant

27 November 2007

09:00 -11:00 SESSION 4: What is known about POPs/ PTS in the coastal marine environment and rivers and other water bodies close to coastal areas of the WCR – Gaps, capacity needs etc.- chaired by Ken Drouillard

09:00 Dr. Gerardo Gold, CINVESTAV, Merida, Mexico. Assessment of pollution in coastal marine and estuarine habitats of the Mesoamerican Barrier Reef region – using south-south partnerships to monitor PTS.

09:45 General Discussion

10:00 Dr. Chris Metcalfe, Environmental and Resource Studies, Trent University, Canada. "Potential for PTS contamination from tourism and agriculture in the western Caribbean basin" and information on facilities and expertise at the Worsfold Water Quality Centre and the Institute for Watershed Science at Trent University.

10:45 General Discussion

11:00 *Coffee break*

11:15-13:00 SESSION 5: Open Discussions on the scope and implementation modalities of the project – chaired Hanneke Van Lavieren

11:15 Dr. Peter Sale. Objectives, Methods, Years 1 & 2 vs Years 3 to 5.

11:45 Country participants will caucus within country, and among countries, and develop an initial statement on the following:

- Current interest in and capacity to participate in this project
- Current local knowledge that can be built upon by additional field sampling
- Laboratory capacity, interest in building same
- Capacity to aid other partners in achieving the goals for the project

13:00 *Lunch*

14:00-15.30 SESSION 6: Open Discussions on the scope and implementation modalities of the project - chaired by Peter Sale

14:30 Open discussion on key project components:

- Proposed project activities (scope, duration, extent of monitoring)
- Reporting frequency and requirements
- Contractual obligations
- Training needs and opportunities
- Meetings on regional and national scale
- Information gathering and warehousing (creation of databases, QA/QC procedures)

15:30 *Coffee break*

16:00 – 17:00 SESSION 6 continued: Open Discussions on the scope and implementation modalities of the project

16:00 General Discussion

- Open discussion on project activities – what will work in our countries, and what makes sense to attempt

- Who will serve as country representative? Are we able to identify additional participants within our countries?
- Immediate next steps

17.00-18.00 *Closing Session*

- Agreement on the general structure of the project
- Agreement on the identities of country representatives
- Additional steps needed to secure formal agreement by each country to participate
- Agreement on general statement of recommendation from this workshop
- Closing remarks

18:00 Workshop adjourned

28 November 2007

Optional trip to Niagara Falls from approximately 8:30 am - 14:00 pm

ANNEX 2

Participants List

#	Participant	Email Address	Organization/institute
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