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UNU-INWEH



## **Regional Workshop:**

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

**10-12 June 2008**

**Chaguaramas, Trinidad and Tobago**

## **Report of the Workshop**



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## 1. Introduction

This workshop is a follow-up to the Planning Workshop held in Hamilton, Canada, 25-27 November 2007, and is part 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, which commenced in September 2007. It is being funded by the World Bank through the Canada Persistent Organic Pollutants Trust Fund from the Canadian International Development Agency (CIDA). From now on the project will be referred to as the CCPP (Caribbean Coastal Pollution Project).

The Planning Workshop held in November 2007 reviewed the status of POPs and PTS pollution in the marine environment, rivers and other water bodies close to coastal areas of the eight countries covered by the project (Belize, Dominican Republic, Guatemala, Honduras, Jamaica, México, St Lucia and Trinidad & Tobago). It discussed the obligations of these countries under the Stockholm Convention, and presented an overview of other initiatives/partners dealing with similar issues in the region. It also discussed and refined the scope and implementation modalities of the project.

The objective of this Regional Workshop was to consolidate commitment from the participants to join a regional network including the eight participating countries and to finalize the program of activities to be undertaken commencing during the second half of 2008 and during 2009. The plans for the following activities were discussed and in some cases finalized:

- a) The collection of fish from agreed coastal locations in each country to develop a baseline of PTS pollution of coastal waters;
- b) The delivery of those samples to identified labs;
- c) Formal evaluation of capacity in PTS analysis for each of the laboratories participating in the project;
- d) Capacity enhancement possibilities;
- e) Initiation of regular monitoring for PTS in coastal waters; and
- f) Possibility of developing demonstration projects.

It also aimed at identifying possible links, collaborations with other activities and/or partners in the region, and to share knowledge and experience on POPs and PTS monitoring in aquatic environments.

The workshop was held 10-12 June 2008 at the Crews Inn Hotel Chaguaramas in Trinidad and Tobago and was kindly hosted by the Institute for Marine Affairs (IMA). Simultaneous interpretation in Spanish and English was provided during the workshop. It was attended by 35 participants including country representatives, as well as representatives from The World Bank, the Organization of American States (OAS), the UNEP GEF project, Integrating Watershed & Coastal Areas Management (IWCAM), the UNEP GEF project, Reducing Pesticide Runoff to the Caribbean Sea (REPCAR), and the UNEP Caribbean Environment Programme (CEP) office in Jamaica.

## 2. Summary of the Workshop

Day 1: 10 June 2008

### SESSION 1 – Opening and Welcome

#### Opening and Welcome

Commodore Anthony Franklin, Director IMA officially opened the workshop and welcomed the participants to Trinidad and Tobago. Commodore Franklin mentioned that POPs and PTS pollution in fresh -and coastal waters were serious issues in Trinidad and Tobago, and that we should keep in mind the transboundary movement of coastal pollution and the need for a regional approach to fill gaps in knowledge and get a complete assessment of the situation.

Next, Peter Sale, Assistant Director UNU-INWEH, welcomed the participants and presented the goals of the project and aims and tasks for this workshop. He stressed that this project aims to add to what is currently known of POPs and PTS pollution in coastal ecosystems in the project countries.

This was followed by short self-introductions by all participants. Then the topic was addressed in three presentations:

#### Roberto Rivas, Environmental Specialist, GEF/BID/ COCATRAM/ CCAD Regional Project: Environmental protection and maritime transport pollution control in the Gulf of Honduras.

- The Gulf of Honduras project looks at the issue of pollution from maritime transport and ports and 5 major ports are being sampled within the project.
- Marine currents play an important role in distributing the pollution in this region.
- The main source of POPs in Honduras is the use of pesticides in agriculture.
- Some data is available on POPs and PTS in coastal waters, such as the data collected on the white grunt in the MBRS project and data from a completed WWF study.
- The objectives of this project are: 1) to reverse degradation of marine ecosystems; 2) enhance control and prevention of maritime pollution; 3) improve navigational safety and 4) reduce land based sources of pollution.

#### Steve Maber, Senior Operations and POPs Officer Middle East & North Africa Region, The World Bank: World Bank activities with respect to POPs

- WB project on POPs storage and stockpiles in Honduras (1999-2001) was described. This project was developed after hurricane Mitch (1998).
- This project focussed on the storage of unlabeled chemicals and tested groundwater and breast milk for DDE – funded by AVR in the Netherlands.
- The Africa stockpiles programme was presented and the difficulties faced in implementing this project.
- The project (commenced in 2005) focused on 7 countries the components include: inventories of obsolete POPs stockpiles, repackaging, training of staff, safe guard, transport and disposal.
- Transport under the Basel convention was done to incinerators in Europe.
- It will take 15 years to clean up all obsolete pesticides.

Allison Astwood, Laboratory Manager, CEHI (and representing IWCAM): Update on activities.

- GEF-UNEP-UNDP project (2001-2010) has a budget of \$112M, involving 13 Small Islands including Dominican Republic, Jamaica, St. Lucia, and Trinidad & Tobago.
- Project Coordination Unit at CEHI. Aims to assist Caribbean small islands states to adopt an integrated approach to watershed and coastal area management.
- Activities include 9 demonstration projects in integrated management, including our 4 island nations: Dominican Republic (mitigation of industrial wastes), Jamaica (integrated management of watersheds), Saint Lucia (watershed services) and Trinidad & Tobago (land-use planning and watershed restoration).
- Laboratory Capacity enhancement component: needs assessment done in 2008 and strengthening of lab capacity by purchase of equipment and training is planned.
- Criteria for lab selection developed and lab questionnaire sent.
- Suggestions to look at possible links with the St. Lucia demo project?

A general discussion followed these presentations.

**SESSION 2 – Laboratory capabilities and POPs in the region**

Peter Sale: Introduction to the Laboratory Capacity Assessment Plan

- The list of 9 laboratories selected for this project and the selection criteria and process were presented. The criteria include:
  - mandate (this was the most important criterion)
  - sustainability of lab (budget and facilities)
  - recommendations from representatives
- After the labs were selected a questionnaire was sent for an initial evaluation.
- Laboratory capacity evaluation visits are planned for June - August 2008 by a team of three lab experts: Drs. Ken Drouillard, Chris Metcalfe and Gerardo Gold
- A final evaluation report with specific recommendations will be prepared and sent out after the visits.
- Lab capacity will be enhanced through lab equipment upgrades and technical training.

Ken Drouillard, GLIER, University of Windsor, Canada: Laboratory needs to implement a baseline POPs monitoring program

- Presented three possible models for Laboratory Facilities for this project: 1) fully functional independent laboratories in each country; 2) one or more regional analytical facilities; 3) regional analytical facilities, and independent sample processing facilities in each country.
- Possibly No. 3 is most relevant to this project
- Priorities for Regional Analytical Facilities are:
  - Staff – lab manager + technicians
  - Lab quality assurance program
  - Analytical instruments
  - Sample processing facilities
- Presented minimal lab staff needs and their specific responsibilities and roles.
- Discussed a laboratory quality assurance program and what is needed for such a program.
- The implementation of laboratory QA/QC program is not easy.
- Regional lab facilities requirements are:

- Needs to be fully functional laboratory
- Needs to have QA/QC within its own lab
- Needs to provide data management capabilities
- Needs investment in staff
- Satellite laboratory facilities: needs will vary depending on sample matrix.
- Ideally satellite lab receives samples from field program and sends for analysis to regional analytical facility.
- Cost estimate for each satellite lab (exclusive of equipment):
- Database management and data ownerships issues need to be sorted out, as do issues re international shipping of samples for analysis.

A general discussion followed.

Miguel Garcia, Monitoring Specialist, MBRS project: Monitoring Pollution in the Mesoamerican Barrier Reef System

- Coral reefs well covered under this project but no data on the sea bed, mangroves and water quality.
- In 2005 – 17 stations in four MBRS countries were sampled for fish and sediments.
- Different POPs and PTS chemicals were analyzed in sediment samples and livers of the white grunt.
- The concentrations found of these different chemicals in the sediments and white grunts were presented and show that in some areas the levels of hydrochloro-cyclohexanes in sediments exceeded PEL (the probable effect levels) which means probable toxicity for marine fauna.
- 25 % of the sediment samples exceeded NOAA's PEL for lindane and PAH concentrations found in the white grunt fish are high in some areas.
- Not possible with this data to find sources of pollution.
- 2006 – some sites were added.

**SESSION 3-4: Baseline sampling, sampling design and monitoring**

Ken Drouillard: Field Sampling; designing appropriate field sampling programmes; how to implement QA/QC in the field sampling process

- In designing a sampling plan you need a clear project objective.
- Are you looking at spatial patterns of contamination or source identification and control?
- Are you looking at ecosystem health assessment or human health assessment?
- Utilizing of models in field sampling design.
- Calibrated models provide scientifically defensible interpretation of data bioaccumulation models, hydraulic models, statistical designs.
- Weight of evidence assessments are used in absence of a management model framework (can lead to biased conclusion).
- Important to decide on what we want to sample? Water, sediments, organisms?
- Need to decide where to sample – individual countries.
- Food web sampling provides information on trophic transfer and human exposure to POPS via food - - indicator species – what species to choose: invertebrates, phytoplankton, fish, seabird eggs an option.

A general discussion followed dealing with identifying sites in each country, # of sites in each country, labs responsible for samples from particular sites.

## Day 2: 11 June 2008

Hanneke van Lavieren – Programme Officer, UNU-INWEH. What is known of POPs and PTS in coastal waters in the region? Overview of past studies

- Presented an overview of available data and information on POPs and PTS in coastal areas in the 8 countries.
- This document will serve initially as an internal working document with information fact sheets for each country- based on prior studies, NIPS etc.
- To use as background information for this project and to be updated regularly.
- Most data is incomparable but it provides some info on sources, where POPs and PTS is found in coastal areas.
- Requested all representatives to update and correct the country fact sheets after the regional workshop.

Andrea Salinas, Environmental Specialist, Dept. Sustainable Development, OAS: Towards a sound management of hazardous chemicals in Latin America and the Caribbean

- Started in October 2006 and focuses on broader chemical management than Stockholm Convention.
- Aims at supporting implementation of SC, address challenges in sound management of chemicals in this region, and identify gaps and priority needs.
- Activities include: Information sharing ; communication; strategic planning.
- Development of a network (reference lists of organizations, people etc.).
- Development of preliminary investigations of PTS (including POPs) and input into database.
- Online PTS and heavy metals inventory and database.
- Database structure includes info on sources, life cycles, uses, storage, import and export, disposal, etc. It includes 48 PTS:
  - 36 pesticides
  - 7 industrial compounds
  - 3 heavy metals
  - 1 organometallic compound
  - 1 unintended by-product
- Important gap in information is the importation of pesticides (no data).
- 4 Regional Workshops have been held for consultations on regional programme development.
- Surveys done at national and regional level on gaps and priorities.
- Next steps are strategic planning.
- [www.oas.org/dsd/](http://www.oas.org/dsd/)



Gerardo Gold, CINVESTAV, Merida, Mexico: The use of Biomarkers in Environmental Monitoring and Assessment

- Types of biomarkers: exposure, effect and susceptibility.
- Determine whether: high or low ecological relevance and short or long term response (to exposure).
- Used in: Environmental monitoring and assessment, complement chemical data and screening.
- Ideal biomarker is: specific, sensitive, easy, cheap and reflects damages.
- Problems: most are not specific enough, there are changes due to season, sexual maturity, gender and age
- Need to characterize biomarker for species used.
- Biomarkers are a great tool but you have to understand the species in question.

Chris Metcalfe, Environmental and Resource Studies, Trent University, Canada. Biomonitoring and passive sampling techniques for evaluating contaminant trends

- Described methods for biological monitoring.
- Bioassessment = community changes in abundance, diversity, biomass
- Bioindicators = degradation or healthy – indication of species health
- Biomonitoring = concentration of contaminants in biota – passive or active (transportation to monitoring site)
- Basic questions: What is there, What are the levels, What are the spatial trends, What are the temporal trends.
- Choice of biomonitoring organism (widely available, easily sampled, likely to accumulate analyte).
- Problems: biological variability, availability of organisms, complex sample matrix.
- Passive samplers (SPMD and POCIS) were presented including sampler deployments in the Great Lakes.
- Disadvantages of SPMDs are: subject to loss, reflect contaminant levels only in dissolved phase of water; contaminant profiles don't always match biota profiles; difficult to calculate concentrations of analytes in water.
- Presented Performance Reference Compounds (PRCs) and Exposure Adjustment Factors (EAFs).

Steven French Green Engineering, GENIVA: DDT Disposal project in Trinidad – SWMCOL Hazco, Green Engineering, GENIVAR

- Discussed a project which disposed of obsolete stockpiles of DDT in Trinidad.
- Initially DDT was used for (malaria) mosquitoes – then the use of DDT was stopped.
- The result was stockpiles of DDT where storage was not appropriate – stored since 1950.
- Safety training course was held in 2007. Involved were the Ministry of Health and the Pesticides Control Board.
- Next steps in the project were: site commissioning, emergency procedures established, DDT repackaging, decontamination zone, site decommissioning and then shipped away in UN containers.
- Disposal of old DDT containers: cut up, solidification of bedding sand, stabilization process and mixing of bedding sand – drums of solidified soil. Transport, disposal.

Doug Haffner, GLIER University of Windsor, University of Windsor: Case study: Overview of Fish Contaminant Study in the Laurentian Great Lakes

- Presence and concentration of chemicals is not enough, need to know exposure and effects.
- Biological monitoring is the best way to determine dose and develop cause-effect relationships. It also provides information on environmental health.
- Great Lakes fish contaminant surveillance programme (1977-2005).
- Great Lakes food web changed in time.
- PCB levels 1977-2003 in Great Lakes – PCB's banned in the 70s
- Whole fish monitoring data gave different results than monitoring data from sampling parts of the fish (dorsal muscle, skin off fillet).
- Smelt introduced to Great Lakes became part of trout diet.
- Have changes in the lake food web influenced chemicals in birds?

A general discussion followed. Some of the points raised were:

- How do we select what to sample?
- It was noted that fish and birds do not have the same value in this region as they do in the Great Lakes. So the link to tourism and human health has to be shown.
- There was some confusion on which chemicals we were testing for and where?
- Sediments are difficult to sample but how about biota, are passive samplers usable in coastal environment too?
- Should we measure people directly if we want to show health effects?
- What can we achieve within the coming year? Is POPs really a problem? That is the key question.
- Equipment maintenance and outside supplies are a big issue for lab equipment.

**Day 3: 12 June 2008**

**SESSION 5: Existing projects and Demonstration projects**

Nadia- Deen Ferguson, Assistant Programme Officer, Assessment & Management of Pollution (AMEP) sub-programme of UNEP CAR/RCU: Supporting Partnerships and Projects to reduce POP's

- Presented the UNEP CAR/RCU programme structure and the Cartagena Convention mandate and the Land based sources (LBS) of pollution protocol:
- Specific obligations for priority sources: sources and categories of pollutants of concern (POPs); domestic wastewater and agricultural non-point sources.
- AMEP sub-programme: helps countries to meet obligations on land based activities (LBA) and oil spills
- Current projects to reduce POPs were presented (including IWCAM, REPCAR)
- Areas for collaboration: information management, training in methodologies, technical exchange, information dissemination, lab capacity development, input to a regional report on LBA; regional workshop in Sept, 08.

Luisa Espinosa, INVEMAR, Colombia: Advances in Coastal Monitoring Programme as part of Colombia, Costa Rica and Nicaragua – reducing Pesticide Run-off into the Caribbean Sea Project (UNEP GEF-REPCar)

- The project was submitted in 2001 and approved in 2002. It started in 2006 (up to 2010).
- Aim: to mitigate pesticides runoff and promote good agricultural practices.
- Only 3 countries involved (Colombia, Costa Rica, Nicaragua).
- Coordinated by Ministry of Environment of countries but involves other institutions as well
- Institute for Marine & Coastal Research – INVEMAR (public and private) in Colombia Centre for investigation in aquatic resources (CIRA-UNUN) in Nicaragua, Centre for investigation in environmental pollution (CICA) and centre for research in marine and limnology sciences (CIMA) in Costa Rica.
- Kingston workshop held in Feb 2008. Looked at:
  - defining sampling techniques
  - discussed progress
  - technical capacity review
  - selecting matrices and compounds to be used
  - assessing monitoring alternatives
- Technical Workshop on sampling and pesticide analysis techniques at CICA, San José – Costa Rica in July 2008

Nancy Valdez, IWCAM Demonstration Project in the Dominican Republic: Mitigation of Impacts of Industrial Wastes on the Lower Haina River Basin and its Coast

- This is an IWCAM demonstration project as mentioned by Allison Astwood (CEHI).
- Looks at mitigation of impacts of industrial waste in Haina River and its coast.
- Focuses on an integrated focus on watershed management.
- Secretaria de Estado de Medioambiente y Recursos Naturales (SEMARENA), Subsecretaria de Gestión Ambiental (SGA) is the executing agency.
- Project runs for 4 years starting Nov 2006.
- Looks at reducing sources of pollution – relevant policy, improve laws, monitoring water quality, strategy for cleaning up river.
- Feb 2008 – project coordinator appointed - now designing plans to establish office.
- Mentioned that possible labs are available in DM for this project.
- Nancy to send lab info to Hanneke then Questionnaire can be sent.

Ken Drouillard. Why we should use Demonstration Projects?

- Project goals include tracing sources of POPs and PTS as well as baseline concentrations and risk assessments.
- Demo projects provide richer data and hands on experience.
- Design requires project objective: spatial patterns of contamination, source identification, ecosystem health assessment and human health assessment.
- White grunt for regional biomonitor? What part of white grunt is used for sampling? In MBRS it is the liver. POPs are found in lipids so same lipid concentration in all tissues.
- White grunt supports project scope for establishing a baseline data set.
- Food web sampling as a possible demo project? Food web is an area of synergy with Gulf of

Honduras.

Chris Metcalfe. Possible type of demonstration project: Water quality monitoring in relation to karst aquifers

- Presented Karst geology and flow of ground water and potential contamination.
- Yucatan peninsula presented as example.
- Sources of pollution: urban (domestic wastewater); agriculture (pesticides); tourism and recreation.
- Impacts of recreational activities such as wastewater discharges, hydrocarbons from boats and vehicles and maintenance of lawns and turf for hotels and golf courses.
- Outline of study to evaluate contamination of Karst geological zones with passive samplers and collection of biota and sediments.

A general discussion followed: highest concentrations of POPs are found in protected areas in the Yucatan peninsula. Discharge can be found far from area of contamination. Geological aspect is important in this issue. Maritime transport is important in Gulf of Honduras as in rest of region and there is the added issue related to ballast water etc. How are we going to decide on a demo project?

**SESSION 6: Finalization and Summary Statement**

General Discussion

The discussion covered the following points:

- It will be difficult to put the survey results into context because there are no baseline data available.
- Details of sampling were discussed in order to proceed such as: # of sites, budget available, how many samples at each site, need for GPS locations of sampling sites, what to sample, what level of replication we need, what size fraction would you analyze, whether age of the fish is important, what other species are there?
- The white grunt fish was suggested for sampling. It is already being sampled in MBRS. It would be analytically more comparable.
- In the 4 mainland countries, hotspot areas were suggested to be sampled: such as areas of river discharges, industrial areas etc.
- To take note that there is some available data on POPs in the coastal environment from WWF, TNC and MBRS which we can keep in mind
- In Kingston Harbour, Jamaica, UWI found no fine sediments because it had all washed away (by tide and currents), so it may not be wise to sample marine sediments.
- Do the things we sample give us different answers?
  - Sediments - accumulates broader range of chemicals (broader info) but you lose a lot of sediments and concentrations are low so you need large quantities
  - Organism such as fish - added value for human exposure
- We need to get buy in from managers and politicians – so we need to link it to human exposure and health risks, as well as economic loss (i.e. in fisheries, tourism etc.).
- Therefore fish is a good option.

## Final Consensus Statement

A draft consensus statement was presented.

The participants broke out into country groups to discuss the draft consensus statement as presented to the group and to agree on which agency and/or laboratory would be responsible for sampling, storage and which locations should be sampled.

The results of this discussion were presented by each country and incorporated into the draft consensus statement.

The final combined Consensus Statement was presented to the whole group and the participants unanimously approved the consensus statement. This Consensus Statement is attached as Annex 3 to this report. In this Consensus Statement the participants agreed upon:

- The baseline sampling design
- Roles for sampling and analyses
- Roles of countries, individuals and laboratories
- Sample sites and number of samples at each site
- Agreement on general statement of recommendation from this workshop

The workshop was closed by Peter Sale who outlined the immediate next steps for the project and closing remarks were made by Commodore Franklin and Hanneke Van Lavieren.

### **3. Way Forward**

- The consensus statement will be finalized and sent to all participants within two weeks of the workshop (in English and Spanish).
- Commitment from Heads of Laboratories will be sought during July 2008.
- Where applicable, participants will seek approval of this consensus statement from their peers.
- Hanneke Van Lavieren will contact relevant agencies and laboratories during July- August 2008 regarding the sampling workplans and contracts.
- A sampling protocol will be sent to everyone during July 2008.
- The three laboratory experts will visit the 10 laboratories selected for this project during July- August 2008.
- The final evaluation report of these laboratories, with recommendations for their roles within the project, as well as specific capacity needs and plans for enhancement will be sent to all participants during September 2008. This will also include details of methods for processing and analysis.
- Follow up in terms of laboratory staff training will be done during October 2008.
- Two research projects will be developed during the summer and sent to the participants during October 2008.

## ANNEX 1

### Workshop Agenda

**10 June 2008**

#### 08.30-12.00 SESSION 1 –Opening and Welcome

08.30 Commodore Anthony Franklin, Director IMA. Welcome and Opening Speech.

08.45 Peter Sale, Assistant Director UNU-INWEH. Welcome and Opening Remarks.

09.15 Self-introductions by all participants.

*10.00 Coffee break*

10.30 Roberto Rivas, Environmental Specialist, Gulf of Honduras Project GEF/BID/ COCATRAM/ CCAD. Regional Project: environmental protection and maritime transport pollution control in the Gulf of Honduras.

11.00 The World Bank and POPs, Steve Maber, Senior Operations Officer Middle East & North Africa Region

11.15 IWCAM/CEHI representative – update on activities.

11.30 General Discussion.

*12:00 Lunch*

#### 13.00 -15.30 SESSION 2 –Laboratory capabilities and POPs in the region

13.00 Peter Sale: List of Laboratories Selected and Introduction to the Laboratory Capacity Assessment Plan.

13.20 Ken Drouillard, GLIER, University of Windsor, Canada: Laboratory needs to implement a baseline POP monitoring program.

14.00 General Discussion.

14.30 Miguel Garcia, Monitoring Specialist, MBRS project: Monitoring Pollution in the Mesoamerican Barrier Reef System.

*15.00 Coffee Break*

**15.15 - 17.00 SESSION 3: Baseline sampling, sampling design and monitoring**

15.15 Ken Drouillard: Field Sampling; designing appropriate field sampling programmes; how to implement QA/QC in the field sampling process.

15.45 General Discussion. Identifying sites, # of sites in each country, labs responsible for samples from particular sites. Led by Ken Drouillard.

17:00 Meeting adjourned

**11 June 2008**

**08.30 -12.00 SESSION 4 – Baseline sampling, sampling design and monitoring, continued.**

08:30 Hanneke van Lavieren – Programme Officer, UNU-INWEH. What is known of POPs and PTS in coastal waters in the region? Overview of past studies.

8.45 Andrea Salinas, Environmental Specialist, Dept. Sustainable Development, OAS: Towards a sound management of hazardous chemicals in Latin America and the Caribbean.

09.00 Dr. Gerardo Gold, CINVESTAV, Merida, Mexico: The use of Biomarkers in sampling and risk assessment.

09.15 Dr. Chris Metcalfe, Environmental and Resource Studies, Trent University, Canada. Biomonitoring and passive sampling techniques for evaluating contaminant trends

9.45 General Discussion. Sampling methods.

10:15 *Coffee break*

10.30 Solid Waste Management Trinidad and Tobago – export of DDT from Trinidad.

11.00 Doug Haffner, GLIER, University of Windsor. Case study: Overview of Fish Contaminant Study in the Laurentian Great Lakes.

11.30 General Discussion. Finalize selection of sites, # of sites, kinds of samples, kinds of analyses in each country, identification of actors. Led by Chris Metcalfe.

**12:00-17.00 FIELD TRIP**

**12 June 2008**

**08.30 -10.30 SESSION 5: Existing projects and Demonstration projects**

08.30 Nadia- Deen Ferguson, Assistant Programme Officer, Assessment & Management of

Pollution (AMEP) sub-programme of UNEP CAR/RCU: Supporting Partnerships and Projects to reduce POP's

8.45 Luisa Espinosa, Invemar, Colombia: Advances in Coastal Monitoring Programme as part of Colombia, Costa Rica and Nicaragua – reducing Pesticide Run-off into the Caribbean Sea Project (UNEP GEF-REPCar)

9.00 Ken Drouillard. Why we should use Demonstration Projects: example of Lake Izabel.

9.15 Chris Metcalfe: possible type of demonstration project: Water quality monitoring in relation to karst aquifers.

9.30 Nancy Valdez, IWCAM Demonstration Project in the Dominican Republic: Mitigation of Impacts of Industrial Wastes on the Lower Haina River Basin and its Coast.

9.45 General Discussion.

**10.30 – 17.00 SESSION 6: Finalization and Summary Statement.**

11.00 Peter Sale: Preparing a Summary Statement for this workshop.

11.30 General Discussion.

12.00 *Lunch*

13.30 Break Out into country groups to discuss and prepare a summary statement per country on baseline sampling plan including: who does sampling, who does analysis, where, which laboratories.

14.00 Presentation of Summary Statements by each Country

14.45 General discussion on summary statements

15.15 *Coffee Break*

15.45 Presentation of final combined summary statement

16.00 Discussion of and agreement with final summary statement from workshop

- Agreement on baseline sampling design
- Agreement on roles for sampling and analyses
- Agreement on roles of countries, individuals and laboratories
- Agreement of sample sites
- Agreement on general statement of recommendation from this workshop

16.50 Immediate next steps and Closing remarks

17.00 Workshop Adjourned.

***Social Evening – offered and organized by IMA.***



## ANNEX 2

### Participants List

#	Participant	Email Address	Organization/institute
<b>Guatemala:</b>			
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**ANNEX 3**  
**FINAL CONSENSUS STATEMENT**

**Regional Workshop**

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

Trinidad and Tobago 10-12 June 2008

**Consensus Statement**

We the participants agree to undertake the following activities as the next steps in the project, to be completed over the next 8 months.

1. Laboratory Assessment
2. Laboratory Capacity Building
3. Sampling to extend the baseline of information on the prevalence of POPs and PTS in coastal waters of the 8 countries
4. Analysis of those samples and preparation of a report to the 8 countries

**Laboratory Assessment and Capacity Building**

The participating laboratories are:

<b>Country</b>	<b>Laboratories</b>
Belize	To be determined
Dominican Republic	To be determined
Guatemala	Department of Inorganic Analysis, Research laboratory. Faculty of CCQQ and Pharmacy of the University of San Carlos of Guatemala
Honduras	Centro de Estudios y Control de Contaminantes (CESCCO) - Secretaria de Recursos Naturales y Ambiente (SERNA)
Jamaica	National Environment and Planning Agency (NEPA) Laboratory
Jamaica	Pesticide Residue Laboratory, University of the West Indies, Mona
Mexico	Department of Marine Resources, CINVESTAV Unidad Merida
Mexico	Laboratorio Química de El Colegio de la Frontera Sur, ECOSUR- Unidad Chetumal
St Lucia	Caribbean Environmental Health Institute (CEHI)
Trinidad and Tobago	University of West Indies (UWI) - St. Augustine - Chemistry Department
Trinidad and Tobago	Institute of Marine Affairs (IMA) - Marine Chemistry Department

Laboratory assessments will be carried out by Drs Drouillard, Gerardo Gold and Chris Metcalfe by means of a questionnaire and a site visit. Written evaluation will be prepared for each laboratory, including recommendations on steps to take to improve capacity for evaluation of pollution in coastal waters. The evaluations will be constructive, forward looking documents that may help laboratory directors in their efforts to strengthen their institutions.

The project will provide resources (in kind or financial) to complete the initial steps in capacity building at each laboratory during 2008-2009.

### **Baseline Sampling Design**

Sampling to extend the baseline of POPs and PTS occurrence will occur during the summer/fall 2008 in every country. On average 6 sites will be sampled per country. At each site, three fish will be sampled, of 300gm to 500gm in weight. Fish will be white grunt, *Haemulon plumieri*, wherever possible. In sites where that fish does not occur, another grunt species can be substituted. If no grunts are available, another benthic-feeding, non-pelagic fish may be substituted. ***We agree that it is vital to attempt to collect white grunt from all sites.*** Smaller countries may sample fewer sites than the larger countries. Specific plans are as follows:

#### **Belize**

##### Sites

1. Corozal Bay Wildlife Sanctuary (unless Mexican colleagues monitor nearby Sanctuario del Manati).
2. Bacalar Chico Marine Reserve
3. Caye Caulker
4. Sapodilla Cayes
5. South Water Caye/ Dangriga Region
6. Port Honduras
7. English Caye (will replace Corozal Bay if latter is not monitored).
8. Belize River (being sampled through the Gulf of Honduras Project)
9. Placencia Lagoon (being sampled through the Gulf of Honduras Project)

##### Agencies responsible:

The Belize Fisheries Department will spearhead all monitoring logistics for the sites with assistance from collaborators and / or co-managers of our marine reserve network. Same efforts and set up shall apply as used under the MBRS SMP pollution monitoring component. Every effort shall be made to include the Belize Department of the Environment and the University of Belize as full participants in the implementation of the project.

##### Contact Person:

The focal point for the implementation of the project shall be Isaias Majil with specimen storage at the Fisheries Department Evidence Room.

Isaias Majil  
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P.O. Box 148, Princess Margaret Drive  
Belize City, Belize  
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## **Dominican Republic**

### Sites

1. Playa Azua
2. Playa la Salina
3. Mouth of Haina river
4. Boca Chica area
5. San Pedro
6. La Romana

### Agencies responsible:

No laboratory has been determined for the Dominican Republic as of yet. The chemistry laboratory at the Universidad Autonoma de Santo Domingo will be contacted to see if they can do the analyses, and are interested in participating in the project.

### Contact Person:

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## **Guatemala**

### Sites

1. Río Polochic: important since it belongs to the high part of the river basin
2. Río Dulce: this river comes together in the Bay of Amatique.
3. 7 altares: towards the north of the Bay of Amatique, important because near a reef which is part of the mesoamericano reef system.
4. Río Sarstún.

Two additional sites may be added after discussing with relevant authorities in Guatemala. Three additional sites will be monitored within the Gulf of Honduras Project:

5. Port Districts,
6. Port Santo Tomás de Castilla and
7. End from Manabique.

### Agencies responsible:

Sampling to be done by the Faculty of Chemical Sciences and Pharmacy, Universidad de San Carlos de Guatemala, and the biological station, Centro Conservacionista Chocón Machacas (CECON). Laboratory analyses will be done by the Department of inorganic analyses, Laboratory of the Faculty of Chemical Sciences and Pharmacy of Universidad de San Carlos de Guatemala.

### Contact Person:

For sampling and analysis:

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## **Honduras**

### Sites

1. Omoa in (Cortez)
2. Río Sn. Alejo (Tela, Laguna Los Micos)
3. Río Canepejal (Ceiba)
4. Río Agrean (Colón)



5. Rio Patuca, (Gracias a Dios)
6. Roatan Island (Bay islands)

Agencies responsible:

Will talk to biodiversity Dept, SERNA, in Honduras first to see if they can sample – and to decide who will actually do the sampling. Has to be discussed with people there.

Contact Person:

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**Jamaica**

Sites

A final decision will select up to eight of the following sites :

1. Kingston Harbour
2. Morant Bay
3. Port Antonio
4. Ocho Rios
5. Discovery Bay
6. Montego Bay
7. Negril
8. Black River
9. Portland Bight
10. St. Margaret’s Bay
11. Bluefields Bay
12. Martha Brae

Agencies responsible:

NEPA and UWI Center for Marine Science will coordinate the sampling with assistance from others as follows:

Site	#	Sample Collection By
Kingston Harbour	2	Port Royal Marine Lab
Morant Bay	1	NEPA
Port Antonio	1	Portland Environment Protection Association
Ocho Rios	1	Friends of the Sea
Discovery Bay	1	Marine Lab
Montego Bay	1	Montego Bay Marine Park
Negril	1	Negril Coral Reef Protection Society

Black River	1	NEPA
Portland Bight	1	Peter Espeut
St. Margaret's Bay	1	Portland Environment Protection Association
Bluefields Bay	1	Bluefields Citizens' Association
Martha Brae	1	Trelawny Environment Protection Association

Contact Person:

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**Mexico**

Site selection

Our goal is to repeat monitoring in areas where Mexico already has some data through MBRS/SAM Project. We also plan to sample 9 sites, provided that CONANP is able to absorb the cost of field collection at all sites. This will be confirmed on return to Mexico.

1. Xcalak
2. Mahahual
3. Punta Allen
4. Cozumel
5. Puerto Morelos
6. Cancun
7. Isla Mujeres
8. Holbox
9. Banco Chinchorro

Agencies responsible:

CONANP for logistics, field collection and CINVESTAV-Merida for analyses.

Contact Person:

Gerardo Gold (for samples quality and analyses):  
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The senior administrator of CONANP in this region of Mexico is Alfredo Arellano Guillermo  
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## **St Lucia**

### Sites

1. Castries Harbour
2. Vieux Forte Bay
3. Fond D'or Bay
4. Roseau Bay
5. Ciceron Bay 6. Anse Le Raya Bay

### Agencies responsible:

Ministry of Agriculture, Fisheries Division will be contacted to explore whether they are able and interested in participating. Alternatively, CEHI can do the sampling.

### Contact Person:

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## **Trinidad and Tobago**

### Sites

1. Trinidad, West Coast: Scotland bay
2. Trinidad, West Coast: Point Lisas
3. Trinidad, North Coast: Toco
4. Trinidad, East Coast: Guayaguayare or Ortoire
5. Tobago: Mount Irvine Bay
6. Tobago: Charlotteville

These will be confirmed following discussion with local fishermen as to the availability of the white grunt at these sites.

### Agencies responsible:

IMA (Wendy Norville) for sample collection and UWI (Denise Beckles) for sample storage. Sampling done by personnel from the Institute of Marine Affairs together with local fishermen.

### Contact Persons:

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### Sample Analysis

Analyses of the samples will be done through cooperation of participating laboratories with varying capacity. Details of the collaboration will be finalized following the laboratory assessments. But the initial steps are to deposit samples from each country at the following labs.

- Belize: Still determining laboratory in Belize. CINVESTAV in Mexico to do the analyses (or it could be ECOSUR)

- Dominican Republic: to be determined
- Guatemala: Unidad de Investigación –GIA- Facultad de Ciencias Químicas y Farmacia
- Honduras: CESCO laboratory
- Jamaica: NEPA Laboratory freeze and chemical extractions and UWI lab to do conclusions
- Mexico: CINVESTAV, ECOSUR
- St. Lucia: CEHI can do storage of sampling. Analysis capacity is not available at CEHI yet, so it depends when the analysis is planned
- Trinidad and Tobago: Samples stored in UWI lab. Chemistry dept. IMA and UWI will do analyses.

Details of methods for processing and analysis will be provided with the report from the laboratory assessment process. In the meantime, each collected whole fish will be placed into a separate plastic bag, with date and site information, and stored frozen until ready for processing.

12<sup>th</sup> June 2008  
Trinidad