

# CWIP

**Jamaica's Pilot Pollution  
Release and Transfer  
Register Project**

# Coastal Water Quality Improvement Project

USAID Contract No. 532-C-00-98-00777-00

## **JAMAICA'S PILOT POLLUTION RELEASE AND TRANSFER REGISTER PROJECT**

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Prepared for the:

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And the

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# TABLE OF CONTENTS

<b>Glossary</b>	<b>5</b>
<b>Executive Summary</b>	<b>6</b>
<b>1 Introduction</b>	<b>11</b>
1.1 Background	11
1.2 Objectives	13
1.3 Scope	13
1.4 Report Outline	13
<b>2 Methodology and Results</b>	<b>15</b>
2.1 Outline of Methodology	15
2.1.1 Stakeholder Involvement Strategy	15
2.1.2 Multi-stakeholder PRTR Working Group	16
2.1.3 Facilities Participating in the Pilot Study	17
2.1.4 Facility Information	18
2.1.5 Pollutants and Parameters Recommended for Potential Inclusion in the Register	18
2.1.6 Gathering Information from Participating Facilities	19
2.1.7 Design and Review of Draft PRTR Reports	20
<b>3 Reports</b>	<b>23</b>
3.1.1 General Facility Information	23
3.1.2 Overview of Compliance Information by Medium	23
3.1.3 Pollution Prevention and Energy Conservation Activities	24
3.1.4 Community Activities	24
3.1.5 Major Pollutant Sources within the Urban Area (or in 5km Radius of the Facility if Facility is not in a Parish Capital)	24
3.1.6 Designated Natural and Man Made Assets with the Urban Area (or in 5km is Sources is not in a Parish Capital)	25
3.1.7 Most Significant Environmental Aspects	26
3.1.8 Environmental Setting	26
<b>4 Implementation Issues</b>	<b>27</b>
4.1 Implementation Steps (as required in the Terms of Reference)	27
4.1.1 Stakeholder Consultation and Outreach	27
4.1.2 Methods to Estimate Releases and Transfers Guidance for Reporters	28
4.2 Means to Publicise PRTR Information	30
4.2.1 Legislation and Regulations that could be Impacted by the PRTR	30
<b>5 Appendices</b>	<b>34</b>
5.1 Appendix 1 – Terms of Reference	34
5.2 Appendix 2 – Rationale for Selection of List of Substances to be Reported in Jamaica's Pollutant Release and Transfer Register (PRTR)	37
5.2.1 Bases for Additions to or Deletions from the PAP List	38
5.2.2 Recommended Jamaican PRTR List	39

5.3	Appendix 3 – List of Fields and their Descriptions	56
5.4	Appendix 4 – Sample Reports	62
5.5	Appendix 5 – Draft PRTR Regulations	63
5.6	Appendix 6 – Summary of the Regional PRTR Conference, March 19 and 20	67
5.6.1	<i>Conference Program</i>	67
5.6.2	<i>Key Results</i>	67
5.6.3	<i>Outcome of the Workshop Sessions at the Conference</i>	69
5.6.4	<i>Barriers and Challenges to Implementing PRTRs</i>	69
5.6.5	<i>Identifying/Identification of Gaps and Next Step for Implementing Jamaica’s PRTR</i>	70
5.6.6	<i>Next Steps – Other English Speaking Caribbean Basin Countries</i>	72

**List of Tables**

Table 1	Next Steps – Jamaica	7
Table 2	Next Steps – English Speaking Caribbean Basin Countries	9
Table 4-1	Legislation and Policies Affected by PRTR	31
Table 5-1	List of Compounds for which there are Existing or Proposed Jamaican Standards or are Included in International Treaties or Conventions to which Jamaica is a Signatory	39
Table 5-2	Proposed Jamaican PRTR List	42
Table 5-3	List of Compounds Included in Existing or Draft Jamaican Regulations and Compounds Likely to be Emitted from Existing or Proposed Jamaican Sources	47
Table 5-4	List of Priority Air Pollutants (PSPs) Recommended for Deletion from the PAP List	52
Table 5-5	Next Steps – Jamaica	70
Table 5-6	Next Steps – English Speaking Caribbean Basin Countries	73

## **GLOSSARY**

BOD	Biological Oxygen Demand
CARICOM	Caribbean Community
CCPA	Canadian Chemical Producers' Association
CEHI	Caribbean Environmental Health Institute
CHTA	Caribbean Hotel and Tourism Association
CIDA	Canadian International Development Agency
CORINAIR	Core Inventory of Air Emissions in Europe
CTO	Caribbean Tourism Organization
CWIP	Coastal Water Quality Improvement Project
CWWA	Caribbean Waste Water Association
EC	Environment Canada
ENACT	Environmental Action Program
ISIC	International Standard Industrial Classification for All Economic Activities
JBI	Jamaica Bauxite Institute
JCSEF	Jamaica Computer Society Education Foundation
JMA	Jamaica Manufacturers' Association
JNAAQS	Jamaican National Ambient Air Quality Standard
JPPC	Jamaica Private Power Company
LKGY&CD	Ministry of Local Government, Youth and Community Development
MACT	Maximum Achievable Control Technology
MLE	Ministry of Land & Environment
MME	Ministry of Mining and Energy
MoH	Ministry of Health
MOU	Memorandum of Understanding
MoW	Ministry of Water
NEPA	National Environment and Planning Agency
NEST	National Environmental Societies Trust
NPRI	National Pollutant Release Inventory
NWC	National Water Commission
ODS	Ozone depleting substances
PAP	Priority Air Pollutant
POP	Persistent organic chemical
PRTR	Pilot Pollutant Release and Transfer Register (PRTR)
PSOJ	Private Sector Organization of Jamaica
SIA	Sugar Industry Authority
U.S. EPA	United States Environmental Protection Agency
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
UTECH	University of Technology
UTM	Universal Transverse Mercator
UWI	University of the West Indies
WRA	Water Resources Authority

## EXECUTIVE SUMMARY

This report presents the methodology and results of the Jamaican Pollutant Release and Transfer Register (PRTR) pilot project and the next steps for implementing Jamaica's PRTR. The report also includes the outcomes of discussions at a regional PRTR conference attended by representatives from English speaking Caribbean Basin countries and Jamaican stakeholders and the next steps for other English speaking Caribbean Basin countries. This report does not include the conference proceedings which will be prepared by the National Environment and Planning Agency (NEPA).

The key results from the Pilot study and the conference are as follows:

- Both engaged a cross section of stakeholders
- The PRTR will be based on reporting required under regulations except for hotels in the tourism sector which would report voluntarily
- Enabling regulations are already in place but additional regulations are required
- The phasing in of the PRTR would follow enactment of outstanding regulations. The PRTR would be truly multimedia only after regulations for air quality, trade and sewage effluent and solid waste are enacted. The phasing in of regulations is best likely to match NEPA's capacity to implement the regulations and the PRTR
- The regulations are being designed to eliminate duplicative or multiple reporting – i.e., provide “one-window” reporting
- NEPA will be the agency with responsibility for compiling and disseminating the register
- Innovations in the Jamaican PRTR relative to those in other countries include:
  - i. Subsuming reporting thresholds in the various regulations.
  - ii. Reports will include information on sources and resources at risk within prescribed distances of each reporting facility, a summary of the facility's environmental aspects, a description of the facility's environmental setting and community activities that are relevant to the environmental aspects
  - iii. A simplified report that indicates the number of pollutants or parameters that are in compliance with applicable air, water and solid waste regulations and the total number of applicable pollutants or parameters for each medium
  - iv. The “traditional” report will include an indication of the degree of compliance for each parameter or substance in each medium based on applicable standards, targets or guidelines
  - v. Pollution prevention, energy conservation and community activities will be reported.

Summaries of the next steps for Jamaica and for English speaking Caribbean Basin countries are summarised in Tables 1 and 2.

**Table 1 Next Steps – Jamaica**

Activity	Comment/Status	Likely Schedule & Next steps	Gap/Need/Key activity	External Assistance
<b>Regulatory/Administrative</b>				
Air quality regulations	Drafting instructions are currently with the Chief Parliamentary Counsel (CPC) and the Attorney General (AG) for final drafting and comment. There will be a short comment period on new substantive provisions that were introduced since the last consultation	May/June. Complete selected aspects of a regulatory impact assessment. Submit regulations to Minister for approval and Gazetting.	Follow up on status by NEPA  Prepare for comment period	No
Sewage Effluent Regulations	Draft of proposed regulations are ready for the public consultation step.	Complete consultation, send to CPC through Ministry of Land and Environment (MLE)	Maintain momentum and schedule	No
Trade Effluent Regulations	A draft of the regulations is expected in the next month or so.	To be followed by consultation, revisions as needed and then to CPC/AG through the Ministry of Land and Environment	Maintain momentum and schedule	No
PRTR Regulations	Draft reviewed by PRTR Pilot Working Group.	Decision by NEPA on need for regulations/ Prepare drafting instructions for PRTR regulations	Regulatory Services Division to champion within NEPA to do next steps	No
Hazardous Waste Regulations	To be drafted by Ministry of Local Government, Youth and Community Development (MLGY&CD)	NEPA to liaise with MLGY&CD	Dr. Barrett to champion and liaise with MLGY&CD	No
Determine coordination mechanisms among the various government agencies with respect to data sharing for PRTR	NEPA/MLE/Ministry of Works, Youth & Community Development Ministry of Mining & Energy (MME), Ministry of Water and Housing, Ministry of Health	Identify coordination needs and expand/adapt current mechanisms to meet the needs of PRTR	Manager, Pollution Prevention & Control (PP&C) to champion	No
Determine scope of Regulatory Impact Assessment for PRTR	Plan requirements	Likely the RIAS will entail very little effort other than estimation of costs to government (NEPA) since PRTR is based on other regulations	Manager, Legal Services Branch to champion	No

Activity	Comment/Status	Likely Schedule & Next steps	Gap/Need/Key activity	External Assistance
<b>Implementation</b>				
NEPA to declare position on PRTR	Reissue basis for including PRTR among the tools that NEPA will use for environmental management in general and pollution prevention and emissions reductions in particular. Include benefits of PRTR.	Develop policy document on PRTR (statement of need, benefits and process) and/or include in NEPA's national EMS policy	Director, PP&C Division to represent Division's needs champion	No
Plan integration of PRTR into NEPA's Information Technology systems	Develop scope of work that is needed.	Gap analysis to identify needs and basis for design	Capacity within NEPA. Needed. Team with expertise in PRTR, IT and knowledge of what is in hand at NEPA	NEPA to request external assistance (ENACT, and/or CWIP).
Develop specific database management and reporting for PRTR		ENACT to assist in implementing air, sewage and trade effluent regulations	Capacity within NEPA needed. Manager PP&C to champion	NEPA to request external assistance (ENACT and/or CWIP).
Prepare Guidance Document for Reporting entities (including Methods to estimate releases and transfers)	Draft of Guidance exists in the <i>Guideline Document</i> for Air Quality Regulations. This document needs to be reviewed and updated for example to address changes in the list of Priority Air Pollutants (PAPs), energy conservation etc.	Update <i>Guideline Document</i> and prepare similar document for sewage and trade effluent	Pollution Prevention and Control Division to champion	NEPA to request assistance for preparing manual (ENACT, and/or CWIP)
Develop strategy to strengthen Non Government Organisations (NGOs) to be better able to utilise PRTR information		Design and prepare suitable citizen's guide for PRTR; establish links and/or network with similar NGOs in other jurisdictions		NEPA to request external assistance
Data Issues	PRTR database design, software and hardware requirements), data management, database maintenance	Integration (of annual reporting) with NEPA's system to track conditions in permits and licenses	Staff training	NEPA to request external assistance (ENACT, and/or CWIP)

Activity	Comment/Status	Likely Schedule & Next steps	Gap/Need/Key activity	External Assistance
Stakeholder education/outreach	Devise outreach strategy to inform industry and those subject to regulations	NEPA to meet with stakeholders to give detailed information on how reporting would use reports provided by regulations. Complement with outreach associated with individual regs (e.g., training for estimation, monitoring etc.)	NEPA staff training on PRTR and implementation of individual regs. Training courses/seminars for regulated community	NEPA to request external assistance (ENACT, and/or CWIP)
<b>Dissemination/access Public education</b>	Develop public education strategy Methods to publicise PRTR info	NEPA's Public Education Division to work with stakeholders	Strengthening of NGOs and others to take advantage of and use PRTR information	NEPA to request external assistance
Define scope of Regulatory Impact Analysis (RIA) (anticipate limited scope since PRR will be based on other regulations)	Estimate implementation costs to govt & industry - contingent on policy decision on RIA by NEPA.	Use template being developed for RIAS	Develop policy on RIA. And identify capacity needed	No
Determine NEPA's staffing and training needs	Staff and training needs	Compile all training needs including exchange/assignment to other jurisdictions that operate PRTR. Identify staff, funding and delivery methods	Capacity within NEPA	NEPA to request external assistance
Determine NEPA's capital needs	NEPA's IT resources are likely strained and would be challenged by additional information/data needs	Identify hardware and software and other resources needed for data management/ dissemination/access	Lack of capacity to handle additional load. Identify champion	NEPA to request external assistance

**Table 2 Next Steps – English Speaking Caribbean Basin Countries**

Activity	How
Seek formal endorsement of Community right to know and PRTRs in particular from CARICOM	Claude Davis & Associate/Innovative Environmental Solutions (CDA/IES) to facilitate initial discussions between Environment Canada (EC) and CARICOM Secretariat
Seek formal endorsement of Community right to know and PRTRs in particular from the Association of Caribbean States (ACS)	CDA/IES facilitate initial discussions between EC and Secretary General of ACS

Activity	How
Strengthen selected/appropriate existing regional environmental institutions	Identify institutions (e.g., Caribbean Environmental Health Institute (CEHI), Caribbean Tourism Organization (CTO), Caribbean Hotel and Tourism Association (CHTA), ...)  Conduct gap analysis to identify needs and clearly identify linkages with other existing and planned initiatives
Establish a English Speaking Caribbean Basin PRTR network to promote PRTR implementation	Develop options (web site(s), list servers, chat rooms, etc.) and consult with potential members to ensure solution is what they want/need and that it is sustainable. Suggest EC support funding of such a project by CIDA or UNITAR or other International Financial Institution say over a finite (e.g., 5 years) period  Establish English Speaking Caribbean Basin PRTR Working Group. Suggest 3 members from each country (government, private sector, NGO); develop Terms of Reference and objectives
Use existing regional technical/environmental fora to promote PRTR	Identify fora (CWWA, biennial UWI conferences, Caribbean Academy of Sciences (CAS))  Ensure a papers or other presentations on PRTRs are made at the forthcoming regional CWWA conference in October and at the CAS conference in June 2002
Strengthen capacity of NGO community to be able to make better use of PRTR information	Review/determine existing programs and develop mechanisms and tools to focus on PRTR related capacity building
Enhance EMS initiatives to engage industry to promote PRTRs	Ensure PRTR is included in EMS programs. CDA/IES to develop template/methodology to do this. Work in conjunction with EAST projects and CTO to develop specific program for tourism/hotel sector.
Develop program for Suriname and Guyana mining sector	Work with Guyana Manufacturers Association and OMEI to include reporting ethic and specific programs (estimation methods, fitting into the regulatory framework) for mining activities in Suriname and Guyana.
Develop linkages with International and Canadian institutions	Network and agencies to develop closer link with UNITAR and with Canadian Federation of Municipalities and the International Council of Local Environmental Initiatives (ICLEI)
Assessment of next steps for individual countries	Delegates from each country will follow up and discuss next steps within their own countries. It is suggested that such information be coordinated through CDA/IES

# 1 INTRODUCTION

This report describes the processes and outcomes of a Pilot Pollutant Release and Transfer Register (PRTR) project in Jamaica. The project was funded by the Coastal Water Quality Improvement Project (CWIP) and was implemented in conjunction with the National Environment and Planning Agency (NEPA). A multi-stakeholder Working Group was actively and intimately involved in reviewing draft PRTR reports and in addressing aspects of the scope and implementation of the Pilot PRTR project.

The project is an important component of NEPA's strategy to manage, monitor and report on the status of Jamaica's environment. Some of the anticipated benefits of the PRTR are:

- The public release of PRTR data will make polluter more accountable for their releases to the environment and will enable, inform and encourage the public to participate in the dialogue on environmental protection.
- PRTRs will offer a mechanism for government to obtain an integrated source of information that can be used to define goals and priorities for environmental policies and national pollution reduction and environmental management programs.
- The annual inventories derived from the PRTR and the regulations will provide a means for NEPA, individual reporting facilities and all stakeholders to monitor and evaluate the effectiveness and impact of governmental strategies and individual facilities' activities.
- PRTRs provide industry with a global picture of its releases and waste transfers and a means to identify potential ways to reduce environmental impacts and costs. It may encourage and even trigger voluntary agreements in setting up pollution reduction strategies.
- In the case of trade effluent releases it will provide the National Water Commission (NWC) with additional information on wastes that enter NWC wastewater treatment plants.
- The PRTRs will serve as a tool for communication among industry, government and the community.

## 1.1 Background

Agenda 21, the Rio Declaration on Environment and Development and the Statement of Principles for the Sustainable Management of Forests were adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in June 3-14, 1992. Principle 10 of the Rio Declaration states:

*Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.*

Section 19.40(b) of Agenda 21 commits governments and relevant international organizations to improve databases and information on toxic chemicals such as emission inventory programs. Such inventories are now known as Pollutant Release and Transfer Registers (PRTRs). Several

developed countries have implemented Pollutant Release and Transfer Registers (PRTRs) for toxic chemicals in response to the Agenda 21 objectives. The PRTRs embody the “Community Right to Know” principle implicit in Principle 10 of the Rio Declaration<sup>1</sup>. Implementation of such registers requires collection and dissemination of information on pollutant releases and transfers and has involved multi-stakeholder participation.

The UNCED also resulted in commitments by developed countries to assist developing countries in the design and implementation of appropriate PRTRs. To date, there have been limited efforts to promote such registers to developing countries or to assist developing countries and countries with economies in transition, to implement PRTRs. Countries such as Mexico, the Slovak Republic, and Hungary have developed or are developing PRTRs. International bodies, environmental groups, industrial firms and associations and other non-governmental organizations are involved in developing these systems.

The National Environment & Planning Agency's (NEPA's) Corporate Plan includes the establishment of a Pollution Register on environmental performance. The establishment of the Register is a component of NEPA's strategy to encourage “Community Right to Know”. The strategy envisioned public access to information on permitted and licensed activities by December 2001.

The strategy is complemented by several of NEPA's regulatory and policy initiatives including for example, the development of air quality, sewage and trade effluent regulations and a national policy on environmental management systems. The Coastal Water Quality Improvement Project (CWIP) funded by US AID, includes a program to improve the environmental practices of industry and commercial establishments through active involvement of all stakeholders including communities. The Environmental Action Program (ENACT), funded by the Canadian International Development Agency (CIDA), also includes building capacity in the private sector and promoting the development and implementation of environmental management systems. These programs are designed to reduce the levels of wastes generated and the amounts of pollutants released to the environment by promoting pollution prevention and responsible environmental stewardship.

This Pilot Pollution Register project arose from two initiatives. Environment Canada provided the United Nations Institute for Training and Research (UNITAR) with seed funds to promote the development and implementation of PRTRs modelled along the lines of NPRI. A few countries were identified as potential candidates for developing PRTRs based on the National Pollutant Release Inventory (NPRI). A pilot project is under development in Chile with the assistance of UNITAR, the Canadian Chemical Producers' Association (CCPA) and Pollution Probe. Jamaica was identified as a potential candidate that would benefit from implementing such a system. Environment Canada arranged to approach NEPA and other Jamaican stakeholders to determine their willingness to consider implementing a PRTR.

In view of Jamaica's expressed willingness and plans to implement such a PRTR system, the U.S. AID funded Coastal Water Quality Improvement Project (CWIP) program, agreed to fund a pilot PRTR project in Jamaica. It was proposed to present the results of the pilot project at a regional workshop for English speaking countries in the Caribbean Basin to promote the implementation of PRTRs throughout the region.

CWIP contracted Claude Davis & Associates to guide and facilitate the pilot study which will be implemented by NEPA and with direct involvement of a cross section of stakeholders.

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<sup>1</sup> UNEP, 1992. Agenda 21. <http://www.unep.org/Documents/Default.asp?DocumentID=78&ArticleID=1163>

## 1.2 Objectives

The objectives of the pilot study are to:

1. Design and develop a draft pollution register in consultation with NEPA and a stakeholder working group. Its development should include a review of existing registers and NEPA's current and proposed methods of capturing information in the permit and licensing system.
2. Identify legal issues under the current act and regulation, which may need to be addressed in the implementation of a pollution register.
3. Prepare a report on the development of the register including the draft register.

## 1.3 Scope

The scope of work as delineated in the Terms of Reference (Appendix 1) for the pilot PRTR in Jamaica entailed the following:

- Identify in collaboration with CWIP five or six facilities drawn from sectors that are common to most English speaking Caribbean Basin countries that are willing to participate in the pilot project
- Compose PRTR Stakeholder Consultation and Review Working Group and develop Terms of Reference consistent with the development of PRTRs elsewhere but adapted to Jamaica's circumstances
- Select list of pollutants for potential inclusion in Jamaica's PRTR
- Estimate pollutant releases based on methods included in the proposed Air Quality *Guideline Document*<sup>2</sup> in the case of discharges to air and for releases to water and land, on methods taken from Australian, Canadian, European Union and United States methods in their respective PRTRs and selecting methods most appropriate to Jamaica's situation
- Prepare draft reports of releases
- Identify legislation and policies that could be impacted by the PRTR
- Based on the review and input from the PRTR Stakeholder Consultation and Review Working Group:

Confirm the selection of the initial list of pollutants to be included in the register

Recommend a list of reports to be provided for information in the register

Recommend means to publicise PRTR information

Recommend means to implement PRTR

## 1.4 Report Outline

The methodology and results are described in Section 2. Descriptions of the reports recommended by the Working Group are presented in Section 3. Implementation issues such as the means to publicise reports, Guidance for reporters, legislative and regulatory requirements to enable the Register and an outline of steps needed to implement the register are presented in Section 4. Details of the recommended pollutants to be included in the register, a description of

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<sup>2</sup> Natural Resources Conservation Authority, Ambient Air Quality Guideline Document  
<http://www.nepa.gov.jm/PCWM/index.htm>

information to be included in the database for the regulations and hence the register, sample reports and information on the regional conference are among the material that is provided in Appendices.

## **2 METHODOLOGY AND RESULTS**

### **2.1 Outline of Methodology**

The pilot study entailed the following processes:

- Stakeholder involvement strategy
- Selection of participating facilities
- Design of a multi-stakeholder working group
- Development of Terms of Reference for the working group and the participating facilities
- Identification of substances and other information to be included in the register
- Gathering information from participating facilities
- Design of draft PRTR reports and review of reports by the working group (three meetings)
- Report preparation

These processes and their outcomes are described below.

#### **2.1.1 Stakeholder Involvement Strategy**

Stakeholders in pollution registers typically comprise the public (government) and private sectors and the community at large. The public sector entity with primary responsibility for environmental management is typically the lead agency – with the other government agencies playing supporting roles. The National Environment and Planning Agency (NEPA) has primary responsibility for environmental management in Jamaica as mandated in the Natural Resources Conservation Authority (NRCA) Act. The public sector agencies with supporting roles are:

- Ministry of Land & Environment (MLE)
- Ministry of Water (MoW)
- Water Resources Authority (WRA)
- Ministry of Local Government, Youth and Community Development (MLGY&CD)
- Ministry of Health (MoH)
- Ministry of Mining and Energy (MME)
- Jamaica Bauxite Institute (JBI)

Stakeholder participation in the pilot study was designed to be the first component of the public consultation process. In this component, stakeholder participation was through a representative multi-stakeholder working group that would review the progress of and outputs from the pilot study. Also included in the public consultation process would be a workshop/conference that would present the results of the pilot study to the broader Jamaican stakeholders as well as to representatives from the English speaking Caribbean Basin countries.

Additional public consultation components would entail consultation and comment opportunities that would normally take place in the context of NEPA's processes for development of regulations [since the implementation of the Register would be predicated almost exclusively on regulatory initiatives as will be described below].

The following agencies/organisations were invited to send representatives or their alternates to participate in the multi-stakeholder PRTR Working Group. The number of meetings attended by the named person or their representative and the total number of meetings are in square brackets. It was also noted that the meetings would be open should anyone else desire to attend.

## Public Sector

- NEPA (Dr. M. Barrett, Mr. S. Haughton, Ms. W Townsend) [3/3]
- Ministry of Land & Environment (Ms. A. Calneck) [1/3]
- Ministry of Housing and Water
- Water Resources Authority (WRA) (Ms. M. Watts, Mrs. N. Morgan-Ferguson) [1/3]
- CWIP (Mr. Scott McCormick, Ms. Denise Forrest) [3/3]
- ENACT (Mr. Stewart Forbes) [3/3]
- Environment Canada (Mr. Alain Chung) [NA]
- Tourism Product Development Company (Mr. Hugh Cresser) [1/3]

## Industry/Private Sector

- Participating facility representatives
  - Bernard Lodge Sugar Factory (Ms. Elaine Manning) [3/3]
  - Caribbean Cement Company (Mr. Stephen Parris) [3/3]
  - Negril Cabin Resort (Mr. Raynor Mills) [0/3]
  - NWC Ocho Rios (Mr. P. Stewart) [1/3]
  - Petrojam (Mr. G. Ivey, Mr. L. Jarrett) [2/3]
  - Jamaica Private Power Company (JPPC) (Mr. Ffrench Campbell) [1/1]
- Bauxite Sector Environmental Committee (Mr. Lindley Jarrett) [2/3]
- Jamaica Manufacturers' Association (Mrs. Velma Sharpe) [0/3]
- Sugar Industry Authority (Ms Elaine Manning) [3/3]

## Community at Large (Non Government Organisations)

- National Environmental Societies Trust (NEST) (Mr. Peter Forde) [1/3]
- University of the West Indies (UWI) (Dr. W. Pinnock (formally withdrew)
- University of Technology (UTECH) (Mr. Amani Ishemo) [0/3]
- Jamaica Computer Society Education Foundation (JCSEF) (Ms A Crawford) [2/3]

### **2.1.2 Multi-stakeholder PRTR Working Group**

The Working Group was requested to:

- Review and comment on the format and type of content of PRTR reports prepared by the consultant for the PRTR pilot project
- Recommend the nature and type of contextual information to be included in the initial PRTR reports
- Recommend means for dissemination of PRTR information
- Comment on draft regulations for establishing PRTR
- Make recommendations on the following:

Membership of the PRTR Work Group. Membership was limited to government agencies, industry associations or community organizations. Individual community groups, persons or companies could be included where suitable representative industry or community organizations do not exist.

Additional pollutants or substances (other than those listed in draft air and water quality regulations, sewage and trade effluent regulations, Pesticide Control Authority regulations and ozone depleting substances (ODS)) that NEPA should consider including in the register.

Exclusion of any pollutants or substances already included in draft air and water quality, sewage and trade effluent and Pesticide Control Authority regulations.

The types of facilities that should report releases of PRTR pollutants or substances (in addition to those that are required to report under existing or proposed regulations)

Additional reporting that should be made by NEPA or other agencies (e.g., mobile sources, other groups of facilities that are not covered by reporting requirements of existing or proposed regulations)

The phasing in of PRTR reporting requirements for all combinations of pollutants or substances, facilities, releases to different media (air, water, land) and releases/disposal/transfers to land (i.e., solid waste) given and bearing in mind the proposed schedule(s) for implementing various proposed/draft regulations

Whether or not, and if so when, to include reporting of the exchange of wastes that contain PRTR pollutants or substances

Three full-day meetings of the Working Group were held (October 12, 2001, December 11, 2001 and January 21, 2002).

The first meeting established Terms of Reference for the Working Group, a tentative schedule for the remaining meetings and receipt of data from participating facilities/companies. The initial schedule was delayed in view of the "September 11" events. Prior to the first meeting, six companies agreed to participate in the study. Since some companies may have operations at more than one location, i.e., at one or more facilities, and some of the proposed regulations require licences or permits for each facility, the term facility rather than company is used in the remainder of this report.

### **2.1.3 Facilities Participating in the Pilot Study**

Six facilities were selected to be representative of a cross section of facilities in Jamaica and most of the types of facilities that are present in the remainder of the English speaking Caribbean countries. The facilities include one hotel since it was decided that reporting by hotels would help to promote existing EMS initiatives in the hotel sector, promote green tourism and also complement, especially by wider dissemination of reports, Green Globe and similar tourist sector environmental initiatives. The types and identities of the facilities were:

Sugar factory:	Sugar Company of Jamaica, Bernard Lodge Sugar
Cement plant:	Caribbean Cement Company Limited
Hotel:	Negril Cabins Resort
Sewage treatment plant:	National Water Commission (NWC), Ocho Rios
Petroleum refinery:	Petrojam
Fossil fuel fired electric power station:	Jamaica Private Power Company (JPPC)

As a condition of providing data and information and also participating in the Working Group, members companies had the option to agree to the terms indicated in Memoranda of Understanding with NEPA. The MOU included confidentiality clauses indicating that:

- The companies that participate in the pilot PRTR project agree to provide information for the exclusive use of the Working Group.
- Information provided by each company to the Working Group will be limited to the amounts of each PRTR pollutant or substance released to each medium (air, water and land) and transferred off site from each company's facility.

- Any information supplied by facilities to NEPA for the pilot PRTR project will not be used by NEPA for compliance purposes.

#### **2.1.4 Facility Information**

Information to be included in the reports and for the design of the PRTR were based on a number of premises:

Information for the reports would be obtained only for those industrial facilities that are required under regulations or other legislation to make annual reports for the pollutants/parameters of interest.

Companies participating in the pilot study would NOT be required to undertake any monitoring in order to provide information on releases. All reports would be derived entirely from available information provided by the companies and otherwise obtained by the consultant (e.g., typical industry-specific data where company specific data are lacking).

The regulations likely to require such reporting will be identified during the pilot study. Reporting for the Register would entail “one window” reporting and not entail industry filing multiple reporting of the same information to the same or different government agencies. The intent for the P3RTR is to require no additional reporting requirements other than those required under regulations for obtaining licences.

Facilities in the hotel industry would report on a voluntary basis where they are not otherwise required to report under regulations/legislation. Such reporting by hotels would provide an additional or alternate forum to report information similar that reported and/or collected in connection with Green Globe (or similar hotel industry initiatives) certification and/or in implementing environmental management systems.

The register will include information on ecological assets and sources near to each facility, and the facilities’ pollution prevention, environmental management systems and environment related community activities.

The reports would include facility information to identify (company name, type of business), locate (address, geographic coordinates) and provide a contact person from whom the public could obtain additional information.

#### **2.1.5 Pollutants and Parameters Recommended For Potential Inclusion in the Register**

The list of pollutants and parameters recommended for inclusion in the register was based on identifying pollutants/parameters that are likely to be released into the Jamaican environment now and in the foreseeable future and those that must be included in reports required to be filed under existing or planned regulations or legislation.

In the case of draft air pollution regulations, the pollutants that require annual reporting of emissions are those for which there are ambient air quality standards or air quality guidelines and stack emission standards or targets. Based on a review of the list of pollutants specified in the draft air quality regulations the following changes were recommended:

- Modify the list of Priority Air Pollutants (PAPs) in the draft air quality regulations to include only those PAPs likely to be released into the Jamaican environment due to existing or likely future industrial facilities. For example, there are currently no coal fired electric power plants in Jamaica but such plants are under active consideration and are hence included in the draft

regulations and are retained. The draft regulations include provisions for making additions to the list as new industries (not currently foreseen) are introduced into Jamaica.

- Add the greenhouse gases to the list of pollutants that require reporting under the air pollution regulations.
- Segregate the reporting of releases from the use of renewable and non-renewable fuels and reporting of energy information (energy used and sold from various types of energy sources<sup>3</sup>). Facilities would then be in a better position to report on energy conservation efforts. Note that some of the energy reporting that is proposed in the regulations would be confidential and not included in the Register.

The rationale for the selection of pollutants and parameters to be reported is provided in Appendix 2. It should be stressed that the reporting requirements would depend on the phasing in and implementation of the various associated regulations/legislation requiring reporting for particular pollutants/parameters and would not represent the pollutants/parameters that would be reported immediately. The PRTR would therefore be truly multimedia only after the all of regulations (air, water and solid waste) are in place. The Working Group also proposed that asbestos be included in the pollutants/substances that require reporting. For example under future waste management regulations, facilities could be required to report quantities of asbestos sent to landfills or stored on-site.

The pollutants included in the current and in the initial reports were those included in existing or draft regulations, namely the draft air quality regulations, draft trade effluent standards and draft sewage effluent standards. These pollutants/parameters have been identified and are included in Appendix 2.

#### **2.1.6 Gathering Information From Participating Facilities**

Facilities participating in the pilot study were NOT required to undertake any monitoring in order to provide information on releases or transfers for the pilot study. All information in the reports was derived entirely from available information.

The participating facilities were provided with detailed results of the estimates of their own releases. Such information will help facilities to identify potential gaps in their regulatory requirements for proposed regulations. The Working Group was provided only with the results of the calculations as provided in the Overview and Summary reports. As a condition of providing data and information and also participating in the Working Group, member companies had the option to agree to the terms indicated in Memoranda of Understanding with NEPA. The MOU included confidentiality clauses indicating that:

- The companies that participate in the pilot PRTR project agree to provide information for the exclusive use of the Working Group.
- Information provided by each company to the Working Group will be limited to the amounts of each PRTR pollutant or substance released to each medium (air, water and land) and transferred off site from each company's facility.
- Any information supplied by facilities to NEPA for the pilot PRTR project will not be used by NEPA for compliance purposes.

Information from the participating facilities was obtained through responses to a detailed questionnaire that was adapted to the known operations and processes at each facility. In some

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<sup>3</sup> Categories include non-fuel sources (electrical energy purchased and sold (MWh), energy used as obtained from renewable sources (combustion, solar, wind, other (specify for each type)).

cases meetings were held with the facility's environmental staff. Where available, reports/information with monitoring or other data were requested and obtained.

### **2.1.7 Design and Review of Draft PRTR Reports**

The pilot project is intended to mimic the system that will eventually be implemented. The design of the PRTR reports in the pilot study will be used to fine tune some of the broad principles in implementing a PRTR system and to identify specific information and other characteristics of the PRTR system. It should be noted that the pilot study did not entail the design of any database or any software application or database management system that would collect, prepare or disseminate the information.

The Working Group adopted a culture that would make the reports:

- a) Provide information on compliance rather than non-compliance;
- b) Focus on pollution prevention and energy conservation;
- c) Highlight accountability by NEPA by requiring information on the status of all non-compliant events or issues;
- d) Include information on selected and predetermined natural (ecological) and selected man-made assets so that both the hazards (releases that could pose environmental risks) and the receptors at risk (natural and selected man-made assets) and a description of the environmental setting are included in the same report;
- e) Pay special attention to providing readily understandable information; and
- f) Provide as much contextual information as is feasible about releases.

The inclusion of reports on assets and sources represents a significant enhancement when compared with PRTR reports compiled elsewhere. Since the Jamaican register will have the benefit of being based (except for the hotel sector) entirely on regulatory reporting, compliance and reportable incident information can be included at the outset. Such information will allow for simple non-quantitative information to be provided for each facility.

Information to be included in the PRTR reports was based on a number of premises:

#### Based on Regulations

Information for the Register would be obtained only for those industrial facilities that are required under regulations or other legislation to make annual reports for the pollutants/parameters of interest. The regulations likely to require such reporting will be identified during the pilot study.

In the cases of the air quality and sewage regulations, the facilities that would be regulated are estimated to account for over 90% of releases to air and 100% of sewage releases from sources other than individual (e.g., motor vehicles) or domestic sources. A comparable estimate for trade effluent is not yet available since those regulations are not as far advanced at the air and sewage effluent regulations. Where feasible and necessary, it is recommended that NEPA provide an estimate for such releases (e.g. from mobile sources, domestic sewage, pesticide run off) that are not included and covered by the regulatory reporting. Such information would provide additional context for understanding the industrial releases.

### Voluntary Reporting by Hotels

Reporting for the hotel sector is envisioned to be entirely voluntary except where hotels are otherwise required to obtain licences or permits or otherwise report under the regulations or legislation indicated above.

### Hotel Reporting to Complement Green Globe and Other Initiatives

Reporting by hotels would provide an additional or alternate forum to report information similar to that reported and/or collected in connection with Green Globe (or similar hotel industry initiatives) certification and/or in implementing environmental management systems.

### One-Window Reporting

Reporting for the Register would entail “one window” reporting and not entail facilities filing multiple reporting of the same information to the same or different government agencies. The intent for the P3RTR is to require no additional reporting requirements other than those required under regulations for obtaining licences.

### Include Information On Designated Natural And Man Made Assets and Community Activities

The register will include reporting of the presence of designated natural assets within a prescribed distance from each facility. The designation of reportable assets would be prescribed based on a predetermined list of assets that would qualify for inclusion in reports. Facilities will also be encouraged to report on relevant community related activities

### Focus on Reporting Pollution Prevention Activities

Like other PRTR reports, pollution prevention activities will be included in the reports but companies will be encouraged to focus on such activities.

#### *2.1.7.1 Information To Be Included In Initial Reports And Preparation Of Reports*

Over the course of the meetings of the working group, various suggestions were made regarding the format and content of the draft reports. The information in the reports is defined in terms of specific fields which are summarized in a format that will facilitate the eventual development of a database for the report.

The list of fields and their descriptions are provided in Appendix 3. The Working Group recommended that at least two reports – an Overview Report and a Detailed Report, be made available to the public. [The reports are intended to be stand alone reports and as such some information will be repeated.]

### Number and types of reports

Five reports were identified:

#### 1. Overview Report with:

General facility information

Summaries describing:

- Regulatory compliance for pollutants/parameters grouped by media (without listing any specific parameters/pollutants);

- Emission control and reduction measures;
- Pollution prevention and energy conservation activities;
- Community activities;
- Natural and selected man made assets and sources within 5 km (or if the source is in an urban area within the urban area); and

Most significant environmental aspects, environmental setting.

## 2. Detailed Report

The Detailed Report will elaborate on the summary of regulatory compliance by specifying for each pollutant/parameter, the amounts released to air, water and land and the percentage compliance with applicable regulatory requirements and performance in each medium. The report will repeat the facility description and the remaining summaries of pollution prevention, community activities, environmental aspects, nearby sources and assets as provided in the Overview Report.

The Working Group also recommended that NEPA provide and make public the following information:

3. A list of licensed facilities that did not file reports and the status (as of the end of the reporting year) of NEPA sanctions or follow up activity as required
4. The status of NEPA activities regarding follow up on facilities that were not in compliance as reported in the Detailed Report
5. A list of active and pending permit and licence applications as of December 31, of the previous year.

It should be noted that NEPA already provides an electronic (through its web site) and a hardcopy (available for inspection at NEPA's Offices) list showing the status of permit and licence applications. The list includes requirements for a full environmental impact assessments. A full description of the information to be contained in the Overview and Detailed reports is presented in Section 3. The reports for the six facilities are provided in Appendix 4.

### 3 REPORTS

Information contained in the Overview and Detailed Reports and the rationale for inclusion of key items of information in these reports are described in this section. When the PRTR is fully implemented, the information in the reports will be derived from specific pieces of information supplied in the annual reporting by facilities as required under various regulations. These pieces of information may be combined or summarised by NEPA as needed to provide material for the reports. The reports will not interpret any of the information provided by facilities in their required regulatory reporting. Some of the information such as ecological assets and the numbers of sources in urban areas will be “predetermined”. In such cases, the predetermined information will be included in the material provided in *Guidance Documents for Regulatory Reporting*. The types of information that reports will contain and the sources of the information are as follows:

Category of Information	Sources
General facility information	Annual report provided by facility
Overview of compliance information by medium	Derived from annual reports provided by facility
Pollution prevention and energy conservation activities	Annual report provided by facility
Community activities	Annual report provided by facility
Natural and selected man made assets with the urban area (or in 5 km if source is not in a parish capital)	Annual report provided by facility. NEPA will confirm from “Predetermined” information
Major pollutant sources with the urban area (or in 5 km if source is not in a parish capital)	Annual report provided by facility. NEPA will confirm from “Predetermined” information
Most significant environmental aspects	Annual report provided by facility
Environmental setting	Annual report provided by facility. NEPA will confirm from “Predetermined” information

#### 3.1.1 General facility information

The items in this category require little elaboration. The geographic information is provided in both latitude/longitude as well as UTM coordinates since most maps will contain at least one of these coordinate systems. Map coordinates in English units were not recommended since such maps are likely to be phased out over time. The North American Industrial Source Classification is suggested as the means to categorise facilities since it will be consistent with practice for compiling emission inventories in the hemisphere. In addition, the International Standard Industrial Classification for All Economic Activities (ISIC) code will be included since this is what is currently being used in national accounting. [This field was not included in the draft reports during the pilot study and was added in light of information on national accounting that was obtained after the pilot study was completed.]

#### 3.1.2 Overview Of Compliance Information By Medium

The main feature of the Overview Report is the summary of information about pollutant releases. The Working Group was firm in its desire that the report must include a qualitative statement for each medium (air, water, land) that indicates the number of pollutants or parameters that comply with applicable standards, targets or guidelines and the total number of pollutants or parameters for which there are compliance standards, targets or guidelines. The statements would read such as “x of the y regulated pollutants released to air were in compliance with applicable standards,

targets or guidelines". Such a statement was considered likely to be readily understood by the vast majority of readers. The statement avoids use of chemical names yet is a simple, meaningful summary of information about the releases. The statement would not interpret or give an opinion about the information.

### **3.1.3 Pollution Prevention And Energy Conservation Activities**

The reported information on pollution prevention and energy conservation will be summaries of several types of pollution prevention activities. The pollution prevention activities can be categorized into the following types:

- Materials or Feedstock Substitution
- Product Design or Reformulation
- Equipment or Process Modifications
- Spill and Leak Prevention
- On-site Recovery, Re-Use or Recycling
- Inventory Management or Purchasing Techniques
- Good Operating Practice or Training
- Other (facilities would be required to specify)

The information reported in the overview report would be supplied from annual reports that would be included in the required regulatory reporting. The regulations should require reporting of Pollution Prevention targets and activities with an indication of which of the above activities were employed and the level of success relative to the target. The PRTR report would reproduce the Pollution Prevention targets set (amount of reduction and schedule) and the categories of pollution prevention activities (as listed above) that were employed during the reporting period.

### **3.1.4 Community Activities**

Like pollution prevention, community activities are voluntary and the facilities will be required in their annual regulatory reports to describe the community activities that address environmental issues. The following are some of the types of community environmental information that could be reported:

- Consultation methods (surveys, focus groups, community panels, etc.) and number
- Communication methods (meetings, newsletter, workshops) and number
- Complaint (about environmental issues) handling procedure in place, number of complaints, number resolved
- Environmental awareness or education program
- Donations/grants to local communities for environmental issues
- Sponsorship of local and national environmental community activities/programs
- Other (specify)

The information would be supplied as a limited amount of text (e.g., 50 words) or by setting up predetermined categories (for example corresponding to the list above and as provided in the draft descriptions of fields in the database) and requesting a yes/no/quantity type of response. The *Guidance Document* would elaborate on the type of information (based on the above categories and others) and the manner in which it should be provided.

### **3.1.5 Major Pollutant Sources Within The Urban Area (Or in 5 km Radius of the Facility if Facility is not in a Parish Capital)**

The Working Group agreed to the proposal regarding the sizes and definitions of the areas to be used in reporting the number and types of sources and assets. The Working Group agreed to define urban areas as the entire Kingston and St Andrew and other parish capitals. This

definition would be reviewed from time to time. For facilities not located in these urban areas, a 5 km radius from the site will be used for the area within which sources and assets will be characterised. A similar (5 km) radius is used in other circumstances to define watershed areas. The pollutant sources required to be reported are those that will be licenced in the proposed air quality, trade effluent and sewage regulations. In the process of applying for an air pollution licence, facilities will be required to report their location (latitude/longitude and UTM coordinates). Identical provisions are recommended for sewage and trade effluent regulations. NEPA will be expected to compile a list of all major and significant sources (including among other things their location) to allow assignment to parish capitals or the 5 km radius from facilities. NEPA would be expected to publish this list in the *Guidance Document for Regulatory Reporting* and on the NEPA web site.

### **3.1.6 Designated Natural And Man Made Assets With The Urban Area (Or In 5 Km If Source Is Not In A Parish Capital)**

The term “Ecological assets” was used during the pilot study and some members would have preferred an alternate descriptor. The suggested descriptor is *Designated Natural and Man Made Assets* with the understanding that such assets will be predetermined based on the criteria suggested below. The predetermined list of assets should be prepared and reviewed/approved by the Stakeholder Advisory Group and published in a *Guidance Document for Regulatory Reporting*. Suggested criteria for determination of Designated Natural and Man made Assets are as follows:

#### Natural (Ecological) Assets

- Natural assets include those areas of land or water that are not subject to intensive maintenance or management techniques
- Areas used and valued locally and nationally for their ability to support diverse flora and fauna; the need to protect endangered species or to preserve sensitive habitats; for their aesthetics, public good, erosion control; or for commercial or public recreational use.

#### Selected Man made Assets

- Man made features or developments that have nationally recognized historic, archaeological or cultural value and which are used for recreation, tourist attraction (e.g., historic buildings/heritage sites, managed parks or gardens used for recreation, tourist attraction) but excludes agricultural operations.

Examples of natural assets are as follows:

- Drinking water supply intakes
- Water supply catchment area (Note the 5 km radius for determining area for assets is the same as that used by the Water Resources Authority (WRA) for their catchment area)
- Beaches
- Fishing beaches
- Fishery/fishing areas
- Coral reefs
- Marine Parks
- Surface water springs/streams/rivers/ponds
- Wetlands
- Bird sanctuaries
- National Park/Protected area

Examples of Man made assets

- Heritage sites
- Commercial gardens (public gardens or gardens associated with hotels and

### **3.1.7 Most Significant Environmental Aspects**

The term “Environmental Aspect” is used in the same sense as that in ISO 14001, namely, “element of an organization’s activities, products or services that can interact with the environment”. Examples of environmental aspects are:

- Waste generation
- Waste water discharge
- Storm water discharge
- Point, fugitive or area source air emissions
- Automobile exhaust emissions
- Chemical use
- Energy use
- Product obsolescence
- Product disposal

These environmental aspects can have a variety of environmental impacts such as impacts on:

- Flora, fauna, biological diversity, habitat, landscape or natural beauty
- Agricultural land, forest resources, water supplies, minerals, marine resources, energy resources, wetlands, rain forests, wilderness
- Air quality, water quality, radiation levels, soil erosion, waste generation and soil contamination levels

### **3.1.8 Environmental Setting**

The environmental setting will describe the major geographic features within the urban area or the 5 km radius. The features should include the shoreline features and use (recreational/tourist beach, fishing beach, harbour, marine park, etc), major hills or valleys, population density, major land use types). The information supplied for this item should be limited to a specific number of words (e.g., 100 words).

## 4 IMPLEMENTATION ISSUES

The experience gained in the pilot project needs to be utilised in the implementation phase of the PRTR system. The steps required for implementation are listed below. Some of these steps were partially addressed as required by the Terms of Reference for this project and these items are underlined in the list and are discussed in the text that follows the list.

### Steps to Implement the PRTR

- Stakeholder consultation and outreach
  - Complete regulatory requirements
    - Identify legislation and regulations that could be impacted by the PRTR
    - Promulgate associated regulations (air quality, sewage effluent and trade effluent regulations)
    - Prepare drafting instructions for PRTR regulations
- Determine NEPA's staffing needs (staff, training)
- Estimate costs for development, implementation and ongoing operation of PRTR system
- Prepare *Guidance Document for Regulatory Reporting*
  - Methods to estimate releases and transfers
- Plan for the integration of the PRTR into NEPA's internal information systems
- Data Issues
  - Database design
  - Software and hardware requirements
  - Management of data (data verification and quality checks; error correction; support/assistance services for data estimation; data entry; compilation and reporting)
  - Database maintenance
- Devise means to publicise PRTR information
- Public education

### 4.1 Implementation Steps (As Required In The Terms Of Reference)

#### 4.1.1 Stakeholder Consultation and Outreach

The PRTR system will rely on information supplied through reporting required under various regulations. In the process of developing these regulations, NEPA has been engaging and plans to continue to engage stakeholders in a consultation process that allows input to the regulations. In spite of such consultations it is essential that stakeholders, especially those reporting, are afforded opportunity for input to the PRTR reporting system and are fully informed and educated about their obligations. The formation and deliberations of the stakeholder PRTR working group and the recent Regional Conference on PRTRs were two important steps in the consultation process. The deliberations of the PRTR Working Group for the pilot study recommended that the

Working Group should become an integral part of the process as recommended in the Draft PRTR regulations.

A comprehensive plan for consultation and outreach is needed and it should bear in mind and be fully coordinated with activities associated with the development of the regulations that will drive the PRTR. It is also recommended that the Working Group continue during the implementation phase with a mandate/terms of reference to continue address stakeholder issues and evolution of the report format and content. The WG should not be involved in NEPA's internal operational activities related to PRTR.

The consultation/outreach should include the following:

- Develop a document that outlines the PRTR (what it is, how it will work, the pros and cons, implementation schedule, sample reports, consultation activities (Working Group mandate/TOR, other opportunities for input), outreach activities, etc.)
- Presentations and/or workshops with:
  - Industry associations (PSOJ, JMA, SIA, etc)
  - NGOs/academia/professional organizations
  - Government agencies including especially Ministry of Education

Workshops and training programs associated with each regulation (ensure that the link between the regulations and PRTR is emphasized)

#### **4.1.2 *Methods To Estimate Releases And Transfers Guidance for Reporters***

The six facilities were requested to provide information that would allow generation of the draft reports. The methods used to estimate air releases in the pilot project were the same as those recommended for use in the air quality regulations. In the case of water releases (sewage and trade effluent) the pilot study used available monitoring and flow data that the facilities provided. The releases were estimated as the product of the concentration and flow. Where flow data were not available (especially sewage flows) estimates were based on typical per capita flows. The methods used in the pilot may not be applicable generally to all of the various types of facilities especially because the monitoring requirements and hence data availability especially for smaller facilities, could be different. In the case of the air quality regulations, the intent is to minimize monitoring by reserving it (monitoring) as a requirement when standards or targets are exceeded or could be exceeded if controls malfunction or are otherwise absent or not functional. When monitoring is not required, there would be periodic (upon licence application and upon renewals) assessments that would indicate the appropriate method for estimating or monitoring releases. It is anticipated that similar approaches will be used for trade effluent and sewage regulations.

The draft sewage effluent regulations require all treatment plants be registered and those above a certain size will require a licence. All facilities will be required to know their design flow but there will be varying monitoring requirements for licensed facilities. It is recommended that the monitoring requirements be guided by the need to obtain reliable information for the majority of the overall national sewage loading into treatment plants (e.g. for 80 to 90% of the load) by selecting the sizes (and hence numbers) of facilities that would be required to monitor and the nature (which parameters) and frequency of monitoring.

Estimates of the amounts of pollutants released to the various media (air, water, land) or transferred from facilities were based on the following:

## Air

Methods for reporting annual release of air pollutants have been prescribed in the draft air quality regulations by reference to the *Guideline Document*. The methods (in decreasing order of preference) are to be based on:

- a) Source monitoring (stack testing or continuous emission monitoring)
- b) Analysis for fuel oil sulphur content and mass balance to estimate releases of sulphur dioxide. In cases where combustion gases come in contact with a product that absorbs sulphur dioxide, stack test measurements are required to determine the amount of sulphur dioxide release to air.
- c) Mass balance estimation methods
- d) Use of U.S. Environmental Protection Agency (U.S. EPA) Emission Factors and facility specific activity information. Where US EPA emission factor data are not available facilities may use CORINAIR emission factors and failing that methods must be approved by NEPA.

## Water

Methods for reporting annual release of pollutants to (surface or underground) water have not been specified since draft trade Effluent Regulations are not yet available. It is anticipated that all facilities will be required to conduct monitoring and that sampling and analytical methods for measuring concentrations will be prescribed in the proposed Trade Effluent Regulations. The methods used were as follows:

- a) Concentration and flow (volume per unit time) data were used to estimate loadings (concentrations multiplied by flow).
- b) Where flow data are not available load estimates are to be based on industry average flows (adapted for Jamaican conditions) multiplied by the concentration. It is suggested that the frequency of flow measurements be guided by the variability of flows (the more constant the flow the less frequent the need for measurement). Similarly, the frequency of sampling and analysis be guided by the variability in effluent characteristics (the less variable the concentrations the less frequent monitoring is required).

It is recommended that sector specific guidelines be prepared to guide each sector on the monitoring and requirements that are peculiar to the sector (for example by specifying by name the various waste streams that are present in each sector). The key sectors/facility types would be bauxite alumina plants, sugar factories, distilleries, agriprocessing (coffee, citrus etc), sewage treatment plants, power generation plants and petroleum refinery. The numbers of facilities in manufacturing should be reviewed to determine the need for detailed guidance for subsectors within manufacturing sector.

## Land

Amounts released to land entailed using information provided by facilities. In the case of trade effluent water releases to land (surface and/or underground), the estimation method will be the same as that for releases to surface and underground water.

## Transfers

It is anticipated that reporting requirements in the Solid Waste Collection and Reduction Regulations 2000 under the National Solid Waste Management Act will satisfy the requirements for collecting and reporting transfers of solid waste to landfills or to other facilities.

### **4.2 Means To Publicise PRTR Information**

The working group discussed potential means for making the Register available to the public. The following are the recommendations:

The PRTR report will be published by NEPA on an annual basis in hard copy and electronic formats as follows.

#### Hardcopy

- Available for inspection at NEPA's and the Ministry of Land and Environment's offices.
- Available for inspection at each parish capital's library.

#### Electronic

- NEPA's P3RTR web site.
- Other Government agencies' web sites, schools and community group's web sites should be requested to provide a link to the NEPA P3RTR web site.
- Available on request via email (no charge).
- CD-ROM or diskette for a fee (cost recovery basis).

#### Other

- Report to be tabled in parliament.

The working group was particularly concerned with the communication and public education aspects of the register. The typical pollution registers provided by other countries detailed information on the quantities of substances released to various media (air, water, land) without providing any contextual information. The Working Group devised a simple reporting format which was adopted in what is called the Overview Report. This report provides a qualitative summary of the releases to the environment by indicating how the facility has complied with regulations applicable to air, water and land releases. The Overview Report specifies the number of pollutants /parameters that were in compliance with applicable limits as established by the regulations applicable to each pollutant/parameter in each medium.

#### **4.2.1 Legislation And Regulations That Could Be Impacted By The PRTR**

The current system for collecting information from facilities is based on Section 17 of the NRCA Act. The use of this mechanism will not satisfy the reporting requirements for a PRTR nor will it or does it allow NEPA to obtain reliable, consistent information on facilities that release or could potentially release pollutants into the environment. The intent is to develop regulations (air quality, sewage and trade effluent) under the NRCA Act that will allow NEPA to better manage Jamaica's environment. Once these regulations are in place reporting under Section 17 would not be required for facilities that are regulated under the new regulations. Only in the event that a facility is not regulated under any of the above regulations and has the potential to cause environmental harm would there be resort to Section 17.

Several pieces of legislation and other policy initiatives were identified as potentially impacted by the P3RTR. These instruments are listed in Table 2-1 together with a description of the manner in which they would impact P3RTR. It should be noted that the Natural Resources Conservation (Permits and Licence) Regulations, 1996 (Section 21) requires the Authority to keep a register or registers to record and make available to the public, information on permits and licenses and all actions taken under the Act or the (Permits and Licence) regulations in respect of such permit or licence.

It is fortunate that other regulations that could be impacted by the Register are all in draft form and there will be ample time to make appropriate adjustments. Since the P3RTR would impact several (draft) regulations, it was agreed during discussions with NEPA (including NEPA's legal staff) to develop separate PRTR regulations to better enable the Pollution Register as currently envisioned and also to recommend changes to the current draft of the air quality regulations. Specific changes in the annual reporting are to include:

- The number of reportable incidents.
- The required numbers of samples for each parameter per year and every five years (based on licence conditions including any specified in control orders and compliance plans).
- The number of samples actually taken and reported.
- The number of exceedances for each combination of parameter and standard (ambient or stack) as reported.

Similar reporting should be included in the Sewage Effluent and Trade Effluent Regulations. In drafting these regulations it is recommended that the monitoring and reporting requirements be specified and made consistent with annual reporting required to provide information for the Register and also to ensure that there is one-window reporting. It should be noted that some regulations may not fall under NEPA's jurisdiction for enforcement or receiving reports; in such cases NEPA should ensure that adequate provisions that legally require NEPA to receive a copy of such reports it needs for the Register are included in such regulations. For example, the regulations under the National Solid Waste Management Act are under the jurisdiction of the Ministry of Local Government, Youth and Community Development.

The Draft PRTR Regulations were reviewed by the Working Group. A draft of these regulations which incorporate the Working Group's comments is given in Appendix 5.

**Table 4-1 Legislation and Policies Potentially Affected by PRTR**

<b>Legislation/Regulation</b>	<b>Mandated or Lead Agency /Government Department</b>	<b>How it impacts on proposed PRTR</b>
<b>Natural Resources Conservation Authority (NRCA) Act</b>	NEPA/Ministry of Land & Environment	Forms the basis under which environmental regulations are promulgated
<i>Regulations under the NRCA Act</i>	NEPA/Ministry of Land & Environment	
Natural Resources Conservation (Ambient air quality standards) Regulations, 1996	NEPA/Ministry of Land & Environment	Includes pollutants for which there are ambient air quality standards. Such pollutants would be reportable under the proposed PRTR

<b>Legislation/Regulation</b>	<b>Mandated or Lead Agency /Government Department</b>	<b>How it impacts on proposed PRTR</b>
Natural Resources Conservation (Permits and Licence) Regulations, 1996	NEPA/Ministry of Land & Environment	The regulations include provisions for NRCA to impose terms and conditions for licensees and permittees including monitoring and reporting. The reports from such permittees and licensees would be incorporated into the PRTR. It is anticipated that this regulation would be reviewed and revised if necessary in light of the proposed air quality and trade effluent regulations
<i>Draft/Proposed Regulations under the NRCA Act</i>	NEPA/Ministry of Land & Environment	
Draft Air Quality Regulations	NEPA/Ministry of Land & Environment	Includes pollutants for which there are ambient air quality guidelines and stack emission standards. Annual reports of emissions of such pollutants will be required. All such reports would be incorporated into the proposed PRTR
Draft National Trade Effluent Standards	NEPA/Ministry of Land & Environment	Includes pollutants and standards
Draft National Sewage Effluent Regulations	NEPA/Ministry of Land & Environment	
<b>The National Solid Waste Management Act</b>	Ministry of Works, Youth and Community Development	
<i>Solid Waste Collection and Reduction Regulations 2000</i>		Manifests to be reported to Waste Management Authority
<b>Other Initiatives</b>		
National EMS Policy	NEPA/Ministry of Land & Environment	Potential changes to the NRCA Act Potential incentives for facilities that implement EMS policies Potential preferences or treatment for companies that implement EMS Note – Government departments to implement EMS and to lead by example

Legislation/Regulation	Mandated or Lead Agency /Government Department	How it impacts on proposed PRTR
<b>International Initiatives</b>		
UNFCCC Protocol	Ministry of Water & Housing	Jamaica is a signatory to the convention. Once ratified, periodic reports including a greenhouse gas emission inventory need to be filed. The P3RTR will greatly facilitate such reporting
Natural Resources (Hazardous Waste) (Control of Transboundary Movement) Regulations, 2001	NEPA/Ministry of Land & Environment	Jamaica is a signatory to the Basel Convention to control the transboundary movement of hazardous wastes. These regulations are needed for Jamaica to ratify the Convention. It is anticipated that parallel regulations regarding intra-island movement and management of hazardous waste will be developed.
Persistent Organic Pollutants Protocol	NEPA/Ministry of Land & Environment	Jamaica is a signatory to the POPs protocol and intends to ratify the protocol. Reporting of ongoing releases of POPs that are unintended by products (PCBs and dioxins and furans). These unintended by products are included in the draft air quality regulations and the PRTR will complement initiatives undertaken in developing National Implementation Plans as required under the process for ratifying the Convention.
Cartagena Protocol	NEPA/Ministry of Land & Environment	This protocol concerns pollution from land-based sources and activities and will include requirements for standards and reporting.

## **5 APPENDICES**

### **5.1 APPENDIX 1 - TERMS OF REFERENCE**

#### **Pilot Program for Pollutant Release and Transfer Inventory for Jamaica**

The National Environmental & Planning Agency (NEPA) has included in its Corporate Plan the establishment of a Pollution Register on environmental performance. The establishment of the Register is a component of NEPA's strategy to encourage "Community Right to Know". The strategy envisions public access to information on permitted and licensed activities by December 2001. The Coastal Water Quality Improvement Project (CWIP) funded by US AID, also includes a program to improve the environmental practices of industry and commercial establishments through active involvement of all stakeholders including communities. The ENACT program, funded by CIDA, also includes building capacity in the private sector and promoting the development and implementation of environmental management systems. These programs are designed to reduce the levels of wastes generated and the amounts of pollutants released to the environment by promoting pollution prevention and responsible environmental stewardship. The establishment of Pollutant Release and Transfer Registers (PRTRs) as envisaged at the United Nations Conference on Environment and Development (UNCED) embodies the "Community Right to Know" principle. This requires provision of information on pollutant releases and transfers, as well as the multistakeholder involvement in developing and implementing such registers.

The UNCED also resulted in commitments by developed countries to assist developing countries in the design and implementation of appropriate PRTRs. To date, there have been limited efforts in promoting or assisting developing countries, and countries with economies in transition, to implement PRTRs. Countries such as Mexico, the Slovak Republic, and Hungary have developed or are developing PRTRs. International bodies, environmental groups, industrial firms and associations, and other non-governmental organizations are involved in developing these systems.

Environment Canada has provided the United Nations Institute for Training and Research (UNITAR) with seed funds to promote the development and implementation of PRTRs modelled along the lines of NPRI. A few countries were identified as potential candidates for developing PRTRs based on NPRI. A pilot project is under development in Chile with the assistance of UNITAR, the Canadian Chemical Producers' Association (CCPA) and Pollution Probe. Jamaica is among the other countries identified as potential candidates that would benefit from implementing such a system.

In view of Jamaica's willingness and plans to implement such a PRTR system a regional workshop for English speaking countries in the Caribbean Basin has been proposed as a means to promote the implementation of PRTRs throughout the region. Jamaica is willing to act as a pilot for the region in implementing a PRTR.

In view of the ongoing initiatives within NEPA, CWIP, ENACT and Environment Canada, CWIP in consultation and close cooperation with NEPA and ENACT, proposes to develop a pilot PRTR in Jamaica. The results of the pilot study would form one of the bases for a regional workshop for the wider Caribbean and for implementation of the Pollution Register as indicated in NEPA's corporate plan.

#### **Scope of Work**

The scope of work for the pilot PRTR in Jamaica entails the following:

- Identify (with the assistance of CWIP staff) five or six facilities drawn from sectors that are common to most English speaking Caribbean Basin countries and who are willing to participate in the pilot project. A preliminary list of facilities/sectors is as follows:
  - Hotel/tourism
  - Power plant/electricity generation
  - Cement factory/manufacturing
  - Petroleum refinery/petroleum refining
  - Sewage treatment/waste management
  - Sugar factory/manufacturing
- Enlist (with assistance from CWIP) the involvement of stakeholders to participate in the project as the PRTR Stakeholder Consultation and Review Group

The stakeholders are to include the following:

- NEPA
  - Ministry of Land & Environment
  - CWIP
  - ENACT
  - Environment Canada (through liaison in Ottawa)
  - Facility representatives
  - NGOs (NEST,)
  - Bauxite Sector Environmental Committee
  - Jamaica Manufacturers' Association
  - Sugar Industry Authority
  - Jamaica Tourist Board or Tourism Product Development Company
  - Academia (UWI, UTECH)
  - Two representatives from the following organizations: Jamaica Computer Society Education Foundation, Jamaica Information Service, Sustainable Development Forum
- Develop terms of reference for stakeholder participation in the PRTR Stakeholder Consultation and Review Group. The terms of reference are to be consistent with the development of PRTRs elsewhere but adapted to Jamaica's circumstances
  - Compile a list of pollutants for potential inclusion in Jamaica's PRTR. The list is to be drawn from existing and proposed air and water quality standards and legislation and international commitments (e.g., Montreal protocol, Persistent Organic Pollutants (POPs) convention) to which Jamaica is a signatory.
  - Compile the pollutant release information for a minimum of all of the pollutants for which there are existing or proposed standards or guidelines or are specifically included in existing or proposed regulations. Estimates of pollutant releases are to be based on methods included in the proposed Air Quality Guideline Document in the case of discharges to air and for releases to water and land, on methods taken from Australian, Canadian, European Union and United States methods in their respective PRTRs and selecting methods most appropriate to Jamaica's situation.
  - Prepare proforma reports of releases based on reports available for the NPRI system
  - Identify legislation and regulations that could be impacted by the PRTR and identify legislation that would enable the implementation of the PRTR or recommend legislative changes to enable the PRTR. Such legislation must include availability of licence information as intended by NEPA/NRCA.

- Provide the PRTR Stakeholder Consultation and Review Group with the reports and moderate the discussion and review of the information with a view to the following:
  - Selection of an initial list of pollutants to be included in the register
  - Recommendation for a list of reports to be provided for information in the register
  - Recommendation for means to publicise PRTR information
  - Appendices with estimation methods and reporting formats

## 5.2 APPENDIX 2 - RATIONALE FOR SELECTION OF LIST OF SUBSTANCES TO BE REPORTED IN JAMAICA'S POLLUTANT RELEASE AND TRANSFER REGISTER (PRTR)

Since the PRTR will be based on reporting requirements in existing or proposed regulations and standards, the selection of substances for the PRTR list is based on a review of the existing standards and regulations. In addition, it is recommended to include compounds that require reporting under international conventions or treaties to which Jamaica is or plans to be a signatory. Since such conventions or treaties invariably carry reporting obligations it is recommended that the PRTR include means to facilitate such reporting obligations where it is appropriate.

There are currently gazetted ambient air quality standards and draft standards for trade effluent, sewage effluent, ambient surface water quality and marine water quality. All of the substances or parameters in such standards are included in the PRTR provided that they arise from manmade sources and are amenable to quantification of releases<sup>4</sup>. A large number of compounds have been included in Draft Air Quality Regulations as Priority Air Pollutants (PAPs) which were selected based on their toxicity and their likely presence in industrial source categories regardless of whether or not the source categories are present in Jamaica. The PAP list was reviewed to ensure that only those toxic compounds that are typically emitted in current or likely future Jamaican man made sources are included in the PAP and PRTR lists. It will be recommended that the PAP list be amended accordingly. The selection of Jamaica's PRTR list is therefore based on a review of substances in the following categories:

- a) All pollutants or substances for which there are existing or proposed Jamaican environmental standards.
- b) All pollutants or substances that are to be reported in international conventions or treaties to which Jamaica is a signatory or has expressed intent to be a signatory (POPs Protocol, Montreal Protocol, United Nations Framework Convention on Climate Change (UNFCCC), Cartagena Protocol (Protocol Concerning Pollution From Land-Based Sources And Activities).
- c) All pollutants or substances that are to be reported to the National Environmental and Planning Agency (NEPA) in existing or proposed Draft environmental regulations under the Natural Resources Conservation Authority (NRCA) Act.
- d) The Priority Air Pollutants (PAP) list – revised to ensure that the list includes only those toxic substances that are very likely to be emitted from existing Jamaican sources or from industries that are likely to be established in Jamaica in the near future.
- e) Other substances suggested by Working Group members.

The PRTR Working Group will be asked to review the Proposed Jamaican PRTR List and to confirm or recommend the substances that should be included and the schedule for including subgroups of the substances on the list.

The substances in categories A and B and the corresponding type of environmental standard or international convention are listed in Table 1. Appendix 1 lists the substances in categories C and D along with indications of whether or not the substance is likely to be emitted from existing or proposed Jamaica sources. Also indicated in Appendix 1 is type of pollutant (criteria air pollutant (c), Priority air pollutant (p), emission standard (e) or international convention (u).

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<sup>4</sup> Substances/parameters excluded are ozone, pH, conductivity, temperature of water releases

Category E so far contains only waste oils (categorized as derived mainly from one of the petroleum product types used in Jamaican commerce, oil sludges and a category for other). For example, a contaminated heavy fuel oil that is mainly bunker C would be categorized as predominantly bunker C. A sludge that is a mixture of used lubricating oils and fuels would be categorized as Oily sludge.

Table 2 gives the Proposed Jamaican PRTR List.

### **5.2.1 Bases For Additions To Or Deletions From The PAP List**

The Priority Air Pollutants are toxic substances for which Ambient Air Quality Guideline Concentrations are proposed in the Draft Air Quality Regulations. Under the regulations, licensed facilities will be required to determine if their industry/facility would typically emit PAPs and report on the releases. Industrial facilities that emit any of the pollutants are required to ensure their emissions do not exceed the Guideline concentrations at or beyond the facilities' property boundaries. In addition, facilities that are required to have an Air Pollutant Discharge licence will be required to report by June 30 each year, the total emissions of all PAPs emitted from their facility in the preceding calendar year. The list of PAPs include some substances that are not likely to be emitted from industrial sources that are currently present in Jamaica. There are also some toxic substances that are emitted from existing Jamaica sources that are not included in the list.

Regulations under the Pesticides Control Act require registration and annual reporting of sales of pesticides used in Jamaica. For the time being, it is suggested that only those pesticides listed in the POPs Convention be considered for inclusion in the PRTR since the POPs Convention will require an inventory for the POPs chemicals. Information (annual sales) for other pesticides is available. If needed, it would be feasible for NEPA to include non-POPs pesticides sales information in the PRTR report.

Several jurisdictions have identified toxic substances typically present in emissions from various types of sources as well as a list of facilities that are associated with each toxic air pollutant. One of the most comprehensive lists of pollutants and their sources is provided by the United States Environmental Protection Agency (U.S. EPA)<sup>5</sup> publication "Handbook for Air Toxics Emission Inventory Development Volume I: Stationary Sources" (hereafter referred to as the *Handbook*.) Appendix J of the *Handbook* lists Maximum Achievable Control Technology (MACT) source categories and associated Hazardous Air Pollutants as defined in the U.S. The pollutants emitted from the bauxite alumina industry were obtained from those reported in Australia's PRTR namely the National Pollutant Inventory (NPI) for bauxite alumina plants. The pollutants associated with the source categories were compared with the PAPs list in the Draft Air Quality Regulations. The following source categories were identified as already present or likely to be introduced (in parentheses) into Jamaica:

- Bauxite alumina processing
- Combustion sources
  - Electricity generation from oil and (coal and coke) fired utility boilers, turbines and internal combustion engines
  - Hospital waste incineration
  - (Municipal waste incineration)
  - (Hazardous waste incineration)
  - Industrial, institutional and commercial boilers

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<sup>5</sup> U.S. EPA 1998. Handbook for Air Toxics Emission Inventory Development Volume I: Stationary Sources, URL: [www.epa.gov/ttn/chief](http://www.epa.gov/ttn/chief); Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, EPA-454/B-98-002, November 1998.

- Mobile sources
- Dry cleaning facilities
- Gasoline marketing and distribution
- (Halogenated solvent cleaners)
- Leather tanning
- Lime manufacture
- Municipal landfills
- Petroleum refining
- Pharmaceuticals
- Portland cement manufacture
- Printing, publishing and surface coating
- Sulphuric acid manufacture
- Waste water treatment plants

The future source categories identified were coal and coke fired utility boilers, municipal and hazardous waste incineration as combustion sources and halogenated solvent cleaners. The list of source categories includes area sources (underlined) which are small sources not likely to require an air pollutant discharge licence. The area sources are included because they often emit the same pollutants as the licensed facilities. For example, mobile sources (motor vehicles, boats, aircraft, railway locomotives) emit the same pollutants as other combustion sources in quantities that are comparable to emissions from the licensed sources. In such cases it is instructive to provide estimates of such area source emissions so that the releases from licensed sources may be placed in a proper context. It is proposed that NEPA prepare the estimates of area source emissions for inclusion in the PRTR. Such data will be useful contextual information.

### 5.2.2 Recommended Jamaican PRTR List

The recommended list comprises those compounds in Table 1 plus those in Appendix 1 provided they are typically emitted from existing or proposed Jamaican sources.

**Table 5-1 List of Compounds for which there are Existing or Proposed Jamaican Standards or are Included in International Treaties or Conventions to which Jamaica is a Signatory**

Pollutant/Parameter	Standard or Convention
Total Suspended Particulate Matter (TSP)	JNAAQS, Stack Emission Standard
PM10	JNAAQS
Lead	JNAAQS, Stack Emission Standard, Trade effluent standards
Sulphur Dioxide	JNAAQS, Stack Emission Standard, UNFCC
Carbon Monoxide	JNAAQS, UNFCC
Nitrogen Dioxide	JNAAQS
Nitrogen oxides (NOx) sum of NO <sub>2</sub> and NO	Stack Emission Standard, UNFCC
Hydrogen Chloride (HCl)	Stack Emission Standard
Dioxins	Stack Emission Standard, Persistent Organic Pollutants (POPs) Convention (Unintended by-products), PAP
Furans	Stack Emission Standard, POPs Convention (Unintended by-products), PAP
Antimony (Sb)	Stack Emission Standard

<b>Pollutant/Parameter</b>	<b>Standard or Convention</b>
Copper (Cu)	Stack Emission Standard
Manganese (Mn)	Stack Emission Standard
Vanadium (V)	Stack Emission Standard
Zinc (Zn)	Stack Emission Standard, Trade effluent standards
Arsenic (As)	Stack Emission Standard, Trade effluent standards
Chromium (Cr)	Stack Emission Standard
Cobalt (Co)	Stack Emission Standard
Nickel (Ni)	Stack Emission Standard
Selenium (Se)	Stack Emission Standard
Tellurium (Te)	Stack Emission Standard
Cadmium (Cd)	Stack Emission Standard, Trade effluent standards
Mercury (Hg)	Stack Emission Standard
Thallium (Tl)	Stack Emission Standard
Nitrate	Trade effluent standards
Phosphate	Trade effluent standards
Oil & Grease	Trade effluent standards, Cartagena Protocol
Total Suspended Solids (TSS)	Trade effluent standards, Sewage Effluent Standards, Cartagena Protocol
Total Coliform	Trade effluent standards, Draft Ambient Water Quality Standards - Marine
Faecal Coliform	Trade effluent standards, Sewage Effluent Standards, Draft Ambient Water Quality Standards - Marine, Cartagena Protocol
Biological Oxygen Demand (BOD <sub>5</sub> )	Sewage Effluent Standards, Trade effluent standards, Draft Ambient Water Quality Standards - Freshwater and Marine water, Cartagena Protocol
Total Nitrogen	Sewage Effluent Standards
Phosphates	Sewage Effluent Standards, Draft Ambient Water Quality Standards - Freshwater, Marine water
Chemical Oxygen Demand (COD)	Sewage Effluent Standards
Residual Chlorine	Sewage Effluent Standards
Calcium	Draft Ambient Water Quality Standards - Freshwater
Chloride	Draft Ambient Water Quality Standards - Freshwater
Magnesium	Draft Ambient Water Quality Standards – Freshwater
Nitrate	Draft Ambient Water Quality Standards - Freshwater, marine water
Potassium (K)	Draft Ambient Water Quality Standards - Freshwater
Silica	Draft Ambient Water Quality Standards - Freshwater
Sodium	Draft Ambient Water Quality Standards - Freshwater

<b>Pollutant/Parameter</b>	<b>Standard or Convention</b>
Sulphate	Draft Ambient Water Quality Standards - Freshwater
Conductivity	Draft Ambient Water Quality Standards - Freshwater
Total Dissolved Solids (TDS)	Draft Ambient Water Quality Standards - Freshwater
Total Alkalinity	Draft Ambient Water Quality Standards - Marine
aldrin	POPs Convention
chlordane	POPs Convention
DDT	POPs Convention, PAP
dieldrin	POPs Convention, PAP
endrin	POPs Convention
heptachlor	POPs Convention, PAP
mirex	POPs Convention
toxaphene	POPs Convention
hexachlorobenzene (HCB)	POPs Convention (Industrial chemicals), PAP
polychlorinated biphenyls (PCBs).	POPs Convention (Industrial chemicals), PAP
Carbon dioxide	UNFCC
Methane (CH <sub>4</sub> )	UNFCC
Nitrous oxide (N <sub>2</sub> O)	UNFCC
Nonmethane volatile organic compounds (NMVOC)	UNFCC
Chlorofluorocarbons (CFCs)	Montreal Protocol
Carbon tetrachloride	Montreal Protocol
Methyl chloroform	Montreal Protocol
Bromochloromethane	Montreal Protocol
Methyl bromide	Montreal Protocol
Halons	Montreal Protocol
Hydrochlorofluorocarbons (HCFCs)	Montreal Protocol
Hydrobromofluorocarbons	Montreal Protocol
Bromochloromethane	Montreal Protocol

PM<sub>10</sub> - refers to particles with an aerodynamic diameter of 10 micrometres or less as measured by the PM<sub>10</sub> sampler

JNAAQS - Jamaican National Ambient Air Quality Standard

UNFCC - United Nations Framework Convention on Climate Change

POPs Convention - Persistent Organic Pollutant Convention

PAP - Priority Air Pollutant in the Draft Air Quality Regulations

**Table 5-2 Proposed Jamaican PRTR List**

<b>Pollutant/Parameter</b>	<b>Likely to be emitted from Jamaican Sources</b>	<b>Standard or Convention or category</b>
1,1,2,2-tetrachloroethane	YES	p
1,1,2-trichloroethane	YES	p
1,2,4-Trichlorobenzene	YES	
1,2-dichloroethane	YES	p
1,3-butadiene	YES	p
1,3-dichloropropene	YES	p
1,4-Dichlorobenzene	YES	p
1,4-Dioxane (1,4-Diethyleneoxide)	YES	
2,2,4-Trimethylpentane	YES	
2,4-Dinitrophenol	YES	
2,4-dinitrotoluene	YES	p
2-Chloroacetophenone	YES	
2-nitropropane	YES	p
4-4'-Methylenediphenyl Diisocyanate	YES	
4-Nitrophenol	YES	
Acetaldehyde	YES	p
Acetone	YES	p
Acetonitrile	YES	p
Acid mist	YES	n
Acrolein	YES	p
Acrylic acid	YES	p
Acrylonitrile	YES	p
Aldrin	YES	p
Ammonia	YES	p
Aniline	YES	p
Antimony & compounds	YES	p
Arsenic & compounds	YES	p
Benzene	YES	p
Benzo(a)pyrene	YES	p
Benzyl chloride	YES	p
Beryllium & compounds	YES	n
Biological Oxygen Demand (BOD <sub>5</sub> )	YES	Sewage Effluent Standards, Trade effluent standards, Draft Ambient Water Quality Standards - Freshwater and Marine water, Cartagena Protocol

<b>Pollutant/Parameter</b>	<b>Likely to be emitted from Jamaican Sources</b>	<b>Standard or Convention or category</b>
Biphenyl	YES	
Bis(2-ethylhexyl)phthalate (DEHP)	YES	
Bromochloromethane		Montreal Protocol
Bromoform	YES	
Cadmium & compounds	YES	p
Calcium	YES	Draft Ambient Water Quality Standards - Freshwater
Calcium oxide	YES	p
Carbon dioxide	YES	UNFCC
Carbon disulphide	YES	p
Carbon monoxide	YES	c
Carbon tetrachloride	YES	p
Chemical Oxygen Demand (COD)	YES	Sewage Effluent Standards
chlordane	YES	p
Chloride	YES	Draft Ambient Water Quality Standards - Freshwater
Chlorine	YES	
Chlorobenzene	YES	
Chlorofluorocarbons (CFCs)		Montreal Protocol
Chloroform	YES	p
Chromium (Cr)	YES	Stack Emission Standard
Chromium, hexavalent compounds	YES	p
Chromium, trivalent compounds	YES	p
Cobalt & compounds	YES	e
Copper & compounds	YES	p
Cresols	YES	p
Cumene	YES	
Cyanide Compounds	YES	
DDT	YES	p
Dibutyl Phthalate	YES	
Dieldrin	YES	p
Diethanolamine	YES	
Dimethyl Sulfate	YES	
Dioxins (Chlorinated dibenzo-p-dioxins (cdds))	YES	p
Endrin	YES	POP
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	YES	

<b>Pollutant/Parameter</b>	<b>Likely to be emitted from Jamaican Sources</b>	<b>Standard or Convention or category</b>
Ethyl Chloride (Chloroethane)	YES	
Ethylbenzene	YES	
Ethylene dibromide	YES	p
Ethylene dichloride	YES	p
Ethylene glycol	YES	p
Faecal Coliform	YES	Trade effluent standards, Sewage Effluent Standards, Draft Ambient Water Quality Standards - Marine, Cartagena Protocol
Formaldehyde	YES	p
Furans		Stack Emission Standard, POPs Convention (Unintended by-products), PAP
Glycol Ethers	YES	
Halons		Montreal Protocol
Heptachlor	YES	p
Hexachlorobenzene	YES	p
Hexane	YES	
Hydrobromofluorocarbons		Montreal Protocol
Hydrochlorofluorocarbons (HCFCs)		Montreal Protocol
Hydrogen Chloride (HCl)	YES	
Hydrogen Fluoride (Hydrofluoric Acid)	YES	
Hydrogen sulphide	YES	p
Isophorone	YES	
Lead	YES	c
Magnesium	YES	Draft Ambient Water Quality Standards - Freshwater
Maleic Anhydride	YES	
Manganese & compounds	YES	e
Mercaptans (as methyl mercaptan)	YES	p
Mercury & compounds	YES	p
Mercury alkyl	YES	p
Methane (CH <sub>4</sub> )	YES	u
Methanol	YES	
Methyl bromide	YES	p
Methyl chloroform (1,1,1-Trichloroethane)	YES	
Methyl ethyl ketone (2-Butanone)	YES	

<b>Pollutant/Parameter</b>	<b>Likely to be emitted from Jamaican Sources</b>	<b>Standard or Convention or category</b>
Methyl iodide (Iodomethane)	YES	
Methyl Isobutyl Ketone (Hexone)	YES	
Methyl Methacrylate	YES	
Methyl tert-butyl ether	YES	
Methylene chloride	YES	p
Methylhydrazine	YES	
Mirex	YES	POP
Nickel & compounds	YES	p
Nitrate	YES	Trade effluent standards, Draft Ambient Water Quality Standards - Freshwater, marine water
Nitric acid	YES	p
Nitrobenzene	YES	
Nitrogen dioxide	YES	c
Nitrogen oxides (NOx) sum of NO <sub>2</sub> and NO	YES	u
Nitrous oxide (N <sub>2</sub> O)	YES	u
NMVOC	YES	u
Oil & Grease	YES	Trade effluent standards, Cartagena Protocol
o-xylene	YES	p
PCCDF (Polychlorinated furans)	YES	e
Pentachlorophenol	YES	p
Phenol	YES	p
Phosphate	YES	Trade effluent standards, Sewage Effluent Standards, Draft Ambient Water Quality Standards - Freshwater, Marine water
Phosphorus	YES	
Phthalic Anhydride	YES	
PM	YES	c
PM <sub>10</sub>	YES	c
polychlorinated biphenyls (PCBs).	YES	p
Polycyclic Aromatic Compounds (PAC) [Sum of 16 compounds]	YES	n
Potassium (K)	YES	Draft Ambient Water Quality Standards - Freshwater
Propionaldehyde	YES	
Propylene dichloride (1,2-Dichloropropane)	YES	

<b>Pollutant/Parameter</b>	<b>Likely to be emitted from Jamaican Sources</b>	<b>Standard or Convention or category</b>
Propylene Oxide	YES	
P-xylene	YES	p
Quinoline	YES	p
Residual Chlorine	YES	Sewage Effluent Standards
Selenium & compounds	YES	p
Silica	YES	Draft Ambient Water Quality Standards - Freshwater
Sodium	YES	Draft Ambient Water Quality Standards - Freshwater
Sodium hydroxide	YES	p
Styrene	YES	p
Sulfuric acid	YES	n
Sulphate	YES	Draft Ambient Water Quality Standards - Freshwater
Sulphur dioxide	YES	c
Sulphur oxides	YES	n
Sulphuric acid	YES	p
Tellurium (Te)		Stack Emission Standard
Tetrachloroethylene	YES	p
Thallium (Tl)		Stack Emission Standard
Total Alkalinity	YES	Draft Ambient Water Quality Standards - Marine
Total Coliform	YES	Trade effluent standards, Draft Ambient Water Quality Standards - Marine
Total Dissolved Solids (TDS)		Draft Ambient Water Quality Standards - Freshwater
Total Nitrogen	YES	Sewage Effluent Standards
Total Suspended Particulate Matter (TSP)	YES	JNAAQS, Stack Emission Standard
Total Suspended Solids (TSS)	YES	Trade effluent standards, Sewage Effluent Standards, Cartagena Protocol
Toxaphene		p
Trichloroethylene	YES	p
Vanadium (V)	YES	Stack Emission Standard
Vinyl Acetate	YES	
Vinyl chloride	YES	p
Vinylidene chloride	YES	p
Volatile organic compounds	YES	c

Pollutant/Parameter	Likely to be emitted from Jamaican Sources	Standard or Convention or category
Waste oils		
Xylenes	YES	p
Zinc and compounds	YES	e

# c – Criteria air pollutant; e – emission standard; n – new; p – Priority Air Pollutant; u – International convention

NAAQS - Jamaican National Ambient Air Quality Standard

**Table 5-3 List of Compounds Included in Existing or Draft Jamaican Regulations and Compounds Likely to be Emitted From Existing or Proposed Jamaican Sources**

Pollutant	Category <sup>#</sup>	Likely to be emitted from Jamaican Sources
Carbon monoxide	c	YES
Lead	c	YES
Nitrogen dioxide	c	YES
PM	c	YES
PM <sub>10</sub>	c	YES
Sulphur dioxide	c	YES
Volatile organic compounds	c	YES
Cobalt & compounds	e	YES
Manganese & compounds	e	YES
Polychlorinated dioxins and furans	e	YES
Zinc and compounds	e	YES
Acid mist	n	YES
Beryllium & compounds	n	YES
Carbon dioxide (process emissions)	n	YES
PAC	n	YES
Sulphuric acid	n	YES
Sulphur oxides	n	YES
1,1,2,2-tetrachloroethane	p	YES
1,1,2-trichloroethane	p	YES
1,2-dichloroethane	p	YES
1,3-butadiene	p	YES
1,3-dichloropropene	p	YES
2,3,7,8-tetrachlorodibenzo(p)dioxin	p	YES

<b>Pollutant</b>	<b>Category<sup>#</sup></b>	<b>Likely to be emitted from Jamaican Sources</b>
2,4-dinitrotoluene	p	YES
2-nitropropane	p	YES
Acetaldehyde	p	YES
Acetone	p	YES
Acetonitrile	p	YES
Acrolein	p	YES
Acrylic acid	p	YES
Acrylonitrile	p	YES
Aldrin	p	YES
Ammonia	p	YES
Aniline	p	YES
Antimony & compounds	p	YES
Arsenic & compounds	p	YES
Benzene	p	YES
Benzo(a)pyrene	p	YES
Benzyl chloride	p	YES
Cadmium & compounds	p	YES
Calcium oxide	p	YES
Carbon disulphide	p	YES
Carbon tetrachloride	p	YES
Chlordane (technical)	p	YES
Chlorinated dibenzo-p-dioxins (cdds)	p	YES
Chloroform	p	YES
Chromium, hexavalent compounds	p	YES
Chromium, trivalent compounds	p	YES
Copper & compounds	p	YES
Cresols	p	YES
DDT	p	YES
Dieldrin	p	YES
Ethylene dibromide	p	YES
Ethylene dichloride	p	YES
Ethylene glycol	p	YES
Formaldehyde	p	YES
Heptachlor	p	YES
Hexachlorobenzene	p	YES

<b>Pollutant</b>	<b>Category<sup>#</sup></b>	<b>Likely to be emitted from Jamaican Sources</b>
Hydrogen sulphide	p	YES
Mercaptans (as methyl mercaptan)	p	YES
Mercury & compounds	p	YES
Mercury alkyl	p	YES
Methyl bromide	p	YES
Methylene chloride	p	YES
Nickel & compounds	p	YES
Nitric acid	p	YES
O-xylene	p	YES
P-dichlorobenzene	p	YES
Pentachlorophenol	p	YES
Phenol	p	YES
Polychlorinated biphenyls	p	YES
P-xylene	p	YES
Quinoline	p	YES
Selenium & compounds	p	YES
Sodium hydroxide	p	YES
Styrene	p	YES
Sulphuric acid	p	YES
Tetrachloroethylene	p	YES
Toxaphene	p	YES
Trichloroethylene	p	YES
Vinyl chloride	p	YES
Vinylidene chloride	p	YES
Xylenes	p	YES
Endrin	POP	YES
Mirex	POP	YES
Methane (CH <sub>4</sub> )	u	YES
Nitrogen oxides as nitrogen dioxide	u	YES
Nitrous oxide (N <sub>2</sub> O)	u	YES
NMVOC	u	YES
1,2,4-Trichlorobenzene		YES
1,4-Dichlorobenzene		YES
1,4-Dioxane (1,4-Diethyleneoxide)		YES
2,2,4-Trimethylpentane		YES

<b>Pollutant</b>	<b>Category<sup>#</sup></b>	<b>Likely to be emitted from Jamaican Sources</b>
2,4-Dinitrophenol		YES
2-Chloroacetophenone		YES
4-4'-Methylenediphenyl Diisocyanate		YES
4-Nitrophenol		YES
Biphenyl		YES
Bis(2-ethylhexyl)phthalate (DEHP)		YES
Bromoform		YES
Chlorine		YES
Chlorobenzene		YES
Cumene		YES
Cyanide Compounds		YES
Dibutyl Phthalate		YES
Diethanolamine		YES
Dimethyl Sulfate		YES
Epichlorohydrin (1-Chloro-2,3-epoxypropane)		YES
Ethyl Chloride (Chloroethane)		YES
Ethylbenzene		YES
Glycol Ethers		YES
Hexane		YES
Hydrochloric Acid		YES
Hydrogen Fluoride (Hydrofluoric Acid)		YES
Isophorone		YES
Maleic Anhydride		YES
Methanol		YES
Methyl chloroform (1,1,1-Trichloroethane)		YES
Methyl ethyl ketone (2-Butanone)		YES
Methyl iodide (Iodomethane)		YES
Methyl Isobutyl Ketone (Hexone)		YES
Methyl Methacrylate		YES
Methyl tert-butyl ether		YES
Methylhydrazine		YES
Nitrobenzene		YES
Phosphorus		YES
Phthalic Anhydride		YES
Propionaldehyde		YES

<b>Pollutant</b>	<b>Category<sup>#</sup></b>	<b>Likely to be emitted from Jamaican Sources</b>
Propylene dichloride (1,2-Dichloropropane)		YES
Propylene Oxide		YES
Trichloroethylene		YES
Vinyl Acetate		YES
Toluene-2,4-diisocyanate	n	NO
1,1,1,2-tetrachloroethane	p	NO
2,6-dinitrotoluene	p	NO
2-diethylaminoethanol	p	NO
2-naphthylamine	p	NO
3-chloro-2-methylpropene	p	NO
4,4-methylenebis(2-chloroaniline)	p	NO
Acetic acid	p	NO
Acetylene	p	NO
Acrylamide	p	NO
Allyl chloride	p	NO
Alpha-hexachlorocyclohexane	p	NO
Arsine	p	NO
Azobenzene	p	NO
Benzidine	p	NO
Bis(chloromethyl)ether	p	NO
Bis-2-chloroethylether	p	NO
Boron & compounds	p	NO
Boron tribromide	p	NO
Boron trichloride	p	NO
Bromine	p	NO
Calcium hydroxide	p	NO
Carbon black	p	NO
Chlorinated paraffins	p	NO
Chlorine dioxide	p	NO
Chlorodibromomethane	p	NO
Decaborane	p	NO
Diborane	p	NO
Dibromochloropropane	p	NO
Dicapryl phthalate	p	NO
Dichlorobenzidine	p	NO

Pollutant	Category <sup>#</sup>	Likely to be emitted from Jamaican Sources
Dimethyl disulphide	p	NO
Dimethyl sulphide	p	NO
Dimethylvinyl chloride	p	NO
Diethyl phthalate	p	NO
Ethyl acrylate	p	NO
Ethylene oxide	p	NO
Ethylene thiourea	p	NO
Furan	p	NO
Furfural	p	NO
Hexachlorobutadiene	p	NO
Hexamethylene diisocyanate	p	NO
Hydrazine	p	NO
Methylene diphenyl isocyanate	p	NO
Nickel subsulphide	p	NO
N-nitroso-n-methylurea	p	NO
O-ansidine hydrochloride	p	NO
Phosphine	p	NO
P-toluidine	p	NO
Pyridine	p	NO
Toluene diisocyanate	p	NO
Tris(2,3-dibromopropyl) phosphate	p	NO
Vinyl bromide	p	NO
Vinyl toluene	p	NO

# c – Criteria air pollutant; e – emission standard; n – new; p – Priority Air Pollutant; u – International convention

**Table 5-4 List of Priority Air Pollutants (PAPs) Recommended for Deletion from the PAP list**

Pollutant	Present in Jamaican Sources
1,1,1,2-tetrachloroethane	NO
2,6-dinitrotoluene	NO
2-diethylaminoethanol	NO
2-naphthylamine	NO
3-chloro-2-methylpropene	NO
4,4-methylenebis(2-chloroaniline)	NO

<b>Pollutant</b>	<b>Present in Jamaican Sources</b>
Acetic acid	NO
Acetylene	NO
Acrylamide	NO
Allyl chloride	NO
Alpha-hexachlorocyclohexane	NO
Arsine	NO
Azobenzene	NO
Benzidine	NO
Bis(chloromethyl)ether	NO
Bis-2-chloroethylether	NO
Boron & compounds	NO
Boron tribromide	NO
Boron trichloride	NO
Bromine	NO
Calcium hydroxide	NO
Carbon black	NO
Chlorinated paraffins	NO
Chlorine dioxide	NO
Chlorodibromomethane	NO
Decaborane	NO
Diborane	NO
Dibromochloropropane	NO
Dicapryl phthalate	NO
Dichlorobenzidine	NO
Dimethyl disulphide	NO
Dimethyl sulphide	NO
Dimethylvinyl chloride	NO
Diethyl phthalate	NO
Ethyl acrylate	NO
Ethylene oxide	NO
Ethylene thiourea	NO
Furan	NO
Furfural	NO
Hexachlorobutadiene	NO
Hexamethylene diisocyanate	NO
Hydrazine	NO
Methylene diphenyl isocyanate	NO

<b>Pollutant</b>	<b>Present in Jamaican Sources</b>
Nickel subsulphide	NO
N-nitroso-n-methylurea	NO
O-ansidine hydrochloride	NO
Phosphine	NO
P-toluidine	NO
Pyridine	NO
Toluene diisocyanate	NO
Toluene-2,4-diisocyanate	NO
Tris(2,3-dibromopropyl) phosphate	NO
Vinyl bromide	NO
Vinyl toluene	NO

The Cartagena Protocol requires signatories to consider various pollutants (listed below) in formulating effluent and emission limitations and management practices for various land based pollution sources and activities. Several of these pollutants are included in the various water quality standards.

- a) Organohalogen compounds and their precursors;
- b) Organophosphorus compounds and their precursors;
- c) Organotin compounds and their precursors;
- d) Heavy metals and their compounds;
- e) Crude petroleum and hydrocarbons;
- f) Used lubricating oils;
- g) Polycyclic aromatic hydrocarbons;
- h) Biocides and their derivatives;
- i) Pathogenic micro-organisms;
- j) Cyanides and fluorides;
- k) Detergents and other non-biodegradable surface tension substances;
- l) Nitrogen and phosphorus compounds;
- m) Persistent synthetic and other materials, including garbage, that float, flow or remain in suspension or settle to the bottom and affect marine life and hamper the uses of the sea;
- n) Compounds with hormone-like effects;
- o) Radioactive substances;

- p) Sediments; and
- q) Any other substance or group of substances that result in specified adverse environmental effects or impacts.

### 5.3 APPENDIX 3 - LIST OF FIELDS AND THEIR DESCRIPTIONS

#### Jamaica's Pollution Prevention and Pollutant Release and Transfer Register (P3RTR)

The following table describes the content (description) and format (type and field length) of the columns in the proposed P3RTR database. The database file should be in dBase III-compatible DBF format, which can be imported by most spreadsheet and word processing software, such as MS Excel, Lotus, QuattroPro, Access, MS Word and WordPerfect.

The data in this file summarize on-site releases and off-site transfers to be reported.

Column Name	Type	Width	Description
YEAR	C	4	Calendar year to which information in the report applies and the year in which releases, transfers and other activities occurred
PRTR_ID	C	10	A unique four(?)-digit identifier assigned by NEPA. This number is associated with all environmental permits, licences and activities for the facility (not the company name). This number needs to be consistent with and identical to the number used by NEPA in other NEPA databases
<b>FACILITY IDENTIFICATION AND SITE ADDRESS</b>			
COMP_NAME	C	60	Name of the Company
FACI_NAME	C	60	Name of the facility, as reported by the company and used in other NEPA databases
ADDRESS1	C	40	Site address of the facility (line 1) (as reported)
ADDRESS2	C	40	Site address of the facility (line 2)
CITY	C	40	City/town/village/district where facility is located (as reported)
PARISH	C	2	Parish where the facility is located
URL	C	80	Company web-site address (http://XXXXXXXXXX...)
EMPLOYEES	N	6, 0	Number of full-time employees (or equivalent) at the facility (as reported)
<b>INDUSTRIAL CLASSIFICATION SYSTEM CODES</b>			
NAICS	C	6	North American Industrial Classification System Code of the primary business activity at the facility
ISIC	C	6	International System for Industrial Classification code. (Available from a Concordance between NAISC and ISIC)
<b>FACILITY LOCATION</b>			
UTM_N	N	8, 4	Latitude of the facility in decimal degrees (format -xx.xxxx)
UTM_E	N	9, 4	Longitude of the facility in decimal degrees (format -xxx.xxxx)
UTM_ZONE	V	2,0	UTM Zone. Note that Jamaica falls in two UTM zones (17 and 18)

Column Name	Type	Width	Description
<b>FACILITY CONTACT</b>			
PUBL_CONT	C	50	Name of the public contact for the facility (as reported)
PUBL_PHONE	C	12	Area code and telephone number for the public contact
PUBL_FAX	C	12	Area code and facsimile number for the public contact
PUBL_EMAIL	C	60	Email address for the public contact
<b>SUBSTANCE INFORMATION</b>			
SUBST	C	50	Name of the reported substance
CAS_NUMBER	C	11	Chemical Abstracts Service Registry number for the substance. "NAXx" is assigned for substances for which there is no unique CAS identifier
CAS_NUM_US	C	9	Chemical Abstracts Service Registry number for the substance but with the '-' removed and padded with leading zeros
<b>ON-SITE RELEASES TO THE ENVIRONMENT</b>			
RELE_FLAG	C	1	Flag indicating if the facility reported any releases
RELE_AIR	N	12, 3	Sum of on-site releases of the substance to air from stacks, vents, storage, spills, or fugitive emissions, reported in metric tonnes (i.e. 1 tonne = 1000 kg) (format xxxxx.xxx)
ANN_SUB_ID	N	6, 3	Annual release in tonnes CAS Number or other assigned substance parameter number as defined in guidance document. This is repeated as many time as there are substances reported
N_AIR_INCID	N	4, 0	Number of exceedances of ambient standard or guideline concentration
N_STCJ_INCID	N	4, 0	Number of exceedances of stack emission standard or target
TOT_AIR_INCID	N	4, 0	Total number of reportable incidents for air releases
FLG_SUB_ID	C	1	Substance has ambient air quality standard or guideline concentration, stack emission standard or target (Coded to cover all combinations or these parameters)
N_MON_SUB_ID	N	6, 0	Number of samples required to be taken each year based on licence conditions for parameter (all monitoring stations)
R_MON_SUB_ID	N	6, 0	Actual number of samples reported in year for parameter (all stations)
CSMP_SUB_ID	N	3, 3	Percentage compliance sampling (number reported divided by total number required times 100)

Column Name	Type	Width	Description
CSTD_SUB_ID	N	3, 3	Percentage compliance with standard, target
RELE_INJEC	N	12, 3	Total on-site release of the substance by injection to underground wells, as reported in tonnes (format xxxxx.xxx)
RELE_WATER	N	12, 3	Sum of on-site releases of the substance to surface water from direct discharges, spills, and leaks, reported in tonnes (format xxxxx.xxx)
RELE_LAND_SUB_ID	N	12, 3	On-site releases of the substance to land through landfilling, landfarming, spills, leaks, or other activities, reported in tonnes (format xxxxx.xxx)
RELE_TOT_SUB_ID	N	12, 3	Sum of on-site releases of the substance to all media, in tonnes. This value may not equal the sum of releases to air, water, land and underground injection, because facilities have the option of reporting total on-site releases under one tonne, as a sum for all media. Values of zero in this column suggest that while a facility manufactures, processes or otherwise uses the substance in quantities of 10 tonnes or more, none is released on-site to the environment. (format xxxxx.xxx)
<b>OFF-SITE TRANSFERS FOR DISPOSAL</b>			
DISP_FLAG	C	1	Flag indicating if the facility reported off-site transfers for disposal
DISP_TREAT	N	12, 3	Sum of off-site transfers of the substance for physical, chemical or biological treatment, or incineration, reported in tonnes (format xxxxx.xxx)
DISP_LAND	N	12, 3	Sum of off-site transfers of the substance for landfilling or landfarming, reported in tonnes (format xxxxx.xxx)
DISP_MSTP	N	12, 3	Total off-site transfer of the substance to municipal wastewater treatment plants, reported in tonnes (format xxxxx.xxx)
DISP_OTHER	N	12, 3	Sum of off-site transfers of the substance for storage or underground injection, reported in tonnes (format xxxxx.xxx)
DISP_TOTAL	N	12, 3	Sum of all off-site transfers of the substance, in tonnes, other than for recovery, re-use, or recycling (format xxxxx.xxx)
<b>OFF-SITE TRANSFERS FOR RECYCLING</b>			
RECY_FLAG	C	1	Flag indicating if the facility reported off-site transfers for recycling.
RECY_ENER	N	12, 3	Energy recovery (all formats xxxxx.xxx)
RECY_SOLV	N	12, 3	Recovery of solvents
RECY_ORGA	N	12, 3	Recovery of organic substances (not solvents)
RECY_META	N	12, 3	Recovery of metals and metal compounds

Column Name	Type	Width	Description
RECY_INOR	N	12, 3	Recovery of inorganic materials (not metals)
RECY_ACID	N	12, 3	Recovery of acids or bases
RECY_CATA	N	12, 3	Recovery of catalysts
RECY_ABAT	N	12, 3	Recovery of pollution abatement residues
RECY_UOIL	N	12, 3	Refining or re-use of used oil
RECY_OTHE	N	12, 3	Other
RECY_TOTAL	C	12, 3	Sum of all off-site transfers for recovery, re-use, or recycling, in tonnes, if reported. A value of zero does not mean that the facility did not transfer a substance for '3Rs' (format xxxxx.xxx)
<b>POLLUTION PREVENTION AND ENERGY CONSERVATION ACTIVITIES AND TARGETS (P2EC)</b>			
PPA_A	C	1	Materials or Feedstock Substitution
PPA_A_DESCR	C	100	
PPA_B	C	1	Product Design or Reformulation
PPA_B_DESCR	C	100	
PPA_C	C	1	Equipment or Process Modifications
PPA_C_DESCR	C	100	
PPA_D	C	1	Spill and Leak Prevention
PPA_D_DESCR	C	100	
PPA_E	C	1	On-site Recovery, Re-Use or Recycling
PPA_E_DESCR	C	100	
PPA_F	C	1	Inventory Management or Purchasing Techniques
PPA_F_DESCR	C	100	
PPA_G	C	1	Good Operating Practice or Training
PPA_G_DESCR	C	100	
PPA_H	C	1	Other
PPA_H_DESCR	C	100	
PPA_I	C	1	No Pollution Prevention Activities
PPT	C	1	Pollution prevention target(s) set
PPT_DESC			Pollution prevention description
ECT	C	1	Annual energy conservation target(s) set
EC_ACT1	C	100	Planned changes in activity or production levels
EC_ACT2	C	100	Unplanned changes in activity or production levels
EC_OTHER	C	100	Other activity or production related changes
EC_STRUCTURE1	C	100	Changes in procedures or scheduling
EC_STRUCTURE2	C	100	Employee and customer education

Column Name	Type	Width	Description
EC_STRUCT2	C	100	Maintenance enhancements
EC_STRUCT3	C	100	Boiler related activities (non-capital)
EC_STRUCT4	C	100	Other structural related changes
EC_TECHNOL1	C	100	Changes due to process technology
EC_TECHNOL2	C	100	Changes due to Lighting
EC_TECHNOL3	C	100	Changes due to water consumption measures
EC_TECHNOL4	C	100	Changes due to retrofitting with more efficient electrical equipment (capital)
EC_TECHNOL5	C	100	Changes due to retrofitting with more efficient fuel combustion equipment (capital)
EC_TECHNOL6	C	100	Other technology changes
<b>ECOLOGICAL ASSETS</b>			
ON_SITE_ASSETS	C	100	On-site ecological assets
5K_OR_U_ASSET1	C	100	Description of ecological asset 1
5K_OR_U_ASSET2	C	100	Description of ecological asset 2
5K_OR_U_ASSET3	C	100	Description of ecological asset 3
5K_OR_U_ASSET4	C	100	Description of ecological asset 4
5K_OR_U_ASSET5	C	100	Description of ecological asset 5
<b>SOURCES IN URBAN AREA OR IN 5KM RADIUS</b>			
MAJOR_AIRSRCS	N	2,0	Number of Major air pollution sources within 5 km or in urban area
MAJOR_AIR_DESCR	C	100	Description (industrial sectors) of Major sources
SIG_AIR_SRCS	C	100	Number of Significant air pollution sources within 5 km or in urban area
SIG_AIR_DESCR	C	100	Description (industrial sectors) of Significant sources
WATER_SRCS	N	2,0	Number of water pollution sources (trade effluent and sewage effluent sources that require licences or permits) within 5 km or in urban area
WATER_DESCR	C	100	Description (industrial sectors) of water pollution sources
<b>MOST SIGNIFICANT ENVIRONMENTAL ASPECTS</b>			
SIG_ASPECTS1	C	100	Description of significant environmental aspect 1
SIG_ASPECTS2	C	100	Description of significant environmental aspect 2
SIG_ASPECTS3	C	100	Description of significant environmental aspect 3
SIG_ASPECTS4	C	100	Description of significant environmental aspect 4
SIG_ASPECTS5	C	100	Description of significant environmental aspect 5

Field Type: C = Character  
N = Numeric

Solid Waste Reduction target(s)  
Waste Intensity  
Sources – include contaminated site

**5.4 APPENDIX 4 - SAMPLE REPORTS**

## 5.5 APPENDIX 5 - DRAFT PRTR REGULATIONS

### Draft Pollution Prevention and Pollutant Release and Transfer Register Regulations, 2002

1. Authority
2. Purpose
3. Definition of Terms
4. Scope
5. Content of register
6. Public availability of the register
7. Stakeholder advisory group
8. Penalties

#### Schedule 1

##### 1. *Authority*

Provisions under the NRCA Act (Section 21 of the Natural Resources Conservation (Permits and Licences) Regulations, 1996 require the establishment of a pollution register or registers to record all actions taken under the Act. These regulations specify and describe the Pollution Prevention and Pollutant Release and Transfer Register and its operation.

##### 2. *Purpose*

The purpose of the register is to make available to the public, information on sources of pollution, the resources that may be damaged or harmed by such pollutions, pollution prevention and other measure taken by facilities to reduce releases of pollutants and steps being taken by NEPA to protect the environment in respect of the sources of pollutants and the resources that potentially could be harmed by the pollutants released. The register will allow the stakeholders to obtain information about pollutants, their sources, the resources that potentially may be affected by the pollutants released into the environment.

##### 3. *Definition of Terms*

“Act” means the Natural Resources Conservation Authority Act (1991) or as amended.  
“Ecological resources” shall include but not limited national parks and protected areas, beaches used for public recreation or for fishing, national heritage sites, other natural or man-made areas used for tourism or public recreation and other ecological assets recommended from time to time specified by NEPA on the advice of the Pollution Register Advisory Group.  
“Minister” is the Minister of Land and Environment.

##### 4. *Scope*

###### 4 (1) Pollutants

The register shall include information on all pollutants that are included in any existing or future regulations under the Natural Resources Conservation Authority Act, and included in other regulations in Jamaica or international treaties or protocols to which Jamaica is a signatory or has stated its intention to become a signatory where such regulations or treaties require reporting of information on the release or transfer of pollutants of other substances to the Authority or to international organizations specified in such treaties.

###### 4 (2) Source

(a) The register shall include information on all sources of pollutants in 4 (1).

- (b) For sources or facilities that are not regulated under 4 (a) (such as motor vehicles and aircraft and marine sources), it is the duty of the Authority to use its best efforts to estimate the releases of pollutants from such sources so that they are included in the Register.

#### 4 (3) Resources at risk

The register shall include information on natural and man made resources that are located within prescribed distances from sources in 4(2). The prescribed distances from the sources shall be as follows:

- (i) The entire area of the parishes of Kingston and St Andrew when the facility or source is located in the parishes of Kingston and St Andrew;
- (ii) The boundary of any parish capital for facilities or sources located within a parish capital;
- (iii) An area within a radius of 5 kilometres from the boundaries of the facility or source for all source not located in a parish capital or in the parishes of Kingston and St Andrew.
- (iv) Such areas as determined by the Authority with input from the Stakeholder working group and published in the Gazette by order of the Minister.

#### **5. Content of the register**

The information to be published or made available to the public by NEPA shall include information of sources and their releases to air, water and land; energy use and energy conservation; pollution prevention information; the resources at risk from released pollutants; information on any violations of regulations under the NRCA Act; lists of all regulated facilities at the end of each calendar year (license applications, the status of the applications at the end of each calendar year, non-confidential information on each application, conditions of licences, any control order, penalties, prosecutions or convictions attached to each licence or permit; and actions undertaken by NEPA in respect of violations of regulations and any other non-confidential information the Authority deems fit. The Register shall not include any information that is designated as confidential under any regulation under the Act.

Details of the information are given in schedule 1.

#### **6. Public availability of the register**

6(1) The register shall be made available to the public as follows:

- Paper copies of the Register shall be made available for inspection at:
  - The premises of the Authority during the Authority's business hours.
  - Public Libraries in each Parish capital.
- Electronic copies shall be made available:
  - On the internet
- By any other appropriate means as may be determined from time to time by the Authority

6(2) The Authority may charge fees to provide photocopies or electronic copies of the register to persons requesting such copies.

## **7. Stakeholder advisory group**

A Pollution Register Stakeholder Advisory Group shall be established with the Terms of Reference indicated in Schedule 2. Such Terms of Reference can be modified as needed by order of the Minister on publication in the Gazette.

The purpose of the Advisory Group is to provide means whereby stakeholders, namely representatives of the public through community groups or nongovernmental organizations, representatives of industry or trade associations whose facilities are included in the register, and government agencies, provide input to the Minister on the means whereby the Register is disseminated, the scheduling of publication of the register and the contextual information that will promote increased understanding of the information included in the register.

### **Schedule 1 Information to be provided in the Pollution Register**

1. The names and addresses of the owner and the operator of the facility.
2. The name and address of the person or company who prepared the report.
3. The name, address and geographical location of the facility.
4. A description of the activities or operations or type of business conducted at the facility
5. Ecological and man-made resources within a prescribed area of the facility. The prescribed area shall be established by NEPA and initially shall be:
  - a) If the facility is in the parish of Kingston and St Andrew the entire Corporate Area ( that is the parishes of Kingston and St Andrew); or
  - b) If the facility is located in the parish capital the prescribed area shall be the parish capital; or
  - c) If the facility is not located in a parish capital or within the parishes of Kingston and St Andrew the prescribed area shall be a 5 kilometre radius from the facility
6. A summary of the extent to which the facility is in compliance with regulations.
7. The name of the contaminant or substance and the Chemical Abstract Service Registry number for the contaminant, or such other identification number assigned to the contaminant by the Ministry.
8. The method that was used to monitor or calculate the releases of the of the contaminant or substance.
9. The total amounts of each contaminant or substance discharged from the facility during the year into the air, to water bodies (fresh water, sea water or underground stream) or to land on the surface or to underground.
10. Efforts made by the facility to reduce the amounts of releases by pollution prevention, pollution control or other means.
11. The amounts of renewable and non-renewable energy resources used by the facility.
12. Efforts made by the facility to reduce or conserve the amount of energy used and to increase.

13. Efforts made by the facility to increase the proportion of renewable energy used by the facility.
14. The extent of contact between the facility and the community to discuss or inform the community about environmental issues as they relate to the facility and its releases of pollutants into the environment.
15. Efforts made by the facility and the community to protect or conserve ecological assets.
16. Information on any violations of regulations under the NRCA Act or any of the regulations under the Act.
17. Lists of all regulated facilities at the end of each calendar year (license applications, the status of the applications at the end of each calendar year, non-confidential information on each application, conditions of licences, any control order, penalties, prosecutions or convictions attached to each licence or permit.
18. Actions undertaken by NEPA in respect of violations of regulations

**Schedule 2    Membership and Terms of Reference of the Pollution Register Advisory Group**

Membership will be limited to representatives from relevant government agencies, industry or industry related associations or organisations, community or environmental non-government organizations, academic institutions, media and other public information dissemination organizations and other members as the minister sees fit. NEPA may co-opt such resource persons as needed to perform secretarial or coordinating functions.

The Terms of Reference **of the Pollution Register Advisory Group** shall be as follows:

- Recommend the nature and type of contextual information to be included in the initial and subsequent reports made available to the public
- Recommend means for disseminating the Register to the Public
- Recommend the exclusion of any pollutants or substances already included in draft air and water quality, sewage and trade effluent and Pesticide Control Authority regulations.
- The types of facilities that should report releases of pollutants or substances (in addition to those that are required to report under existing or proposed regulations)
- Additional reporting that should be made by NEPA or other agencies (e.g., mobile sources, other groups of facilities that are not covered by reporting requirements of existing or proposed regulations)
- The phasing in of the reporting requirements for all combinations of pollutants or substances, facilities, releases to different media (air, water, land) and releases/disposal to land solid waste given and bearing in mind the proposed schedule(s) for implementing various proposed/draft regulations
- Whether or not, and if so when, to include reporting of the exchange of wastes that contain PRTR pollutants or substances

## **5.6 APPENDIX 6 - SUMMARY OF THE REGIONAL PRTR CONFERENCE, MARCH 19 & 20**

### **5.6.1 Conference Program**

A regional PRTR conference was held in Kingston, Jamaica on March 19 and 20, 2002. One hundred and two (102) persons attended the conference with a composition as follows:

- Eighteen (18) from English speaking Caribbean Basin countries, Belize (2), Cayman Islands (3), Bahamas (3), Organization of Eastern Caribbean States (OECS) (3), Barbados (2), Trinidad & Tobago (2), Guyana (2), CEHI (1).
- Six (6) from Canada, Environment Canada (2), Canadian Chemical Producers Association (1), Pollution Probe (1), Claude Davis & Associates and Innovative Environmental Solutions (1).
- One (1) from Europe, United Nations Institute for Training and Research (UNITAR).
- Seventy seven (77) from Jamaica, Government/public sector agencies, private sector and civil society

Last minute changes in plans prevented attendance by a representative from each of the Caribbean Community (CARICOM) Secretariat and the Caribbean Tourism Organization (CTO). The conference was held under the auspices of the National Environment and Planning Agency (NEPA). The Minister of Land and Environment, Mr. Horace Dalley, gave the keynote speech at the conference. Financial support for the conference was provided by Environment Canada, UNITAR, CWIP, ENACT, Petrojam Jamaica Ltd. Considerable in kind support was provided by NEPA. The Le Meridien Pegasus Hotel provided overseas guests with reduced room rates.

The conference was structured to:

- Present Canadian government, industry and non-government organization (NGO) perspectives on the Canadian National Pollutant Release Inventory (NPRI);
- Provide an account of international initiatives and support programs for pollution registers
- Present the results of the Jamaican pilot Pollution Preventions and Pollutant Release and Transfer (P3RTR) project;
- Describe Jamaica's Environmental Management Systems Policy initiatives nationally and for the tourism sector
- Present overviews of English speaking Caribbean countries' situation regarding the potential establishment of PRTRs; and
- Allow Jamaican and other English speaking Caribbean countries' to identify implementation barriers and the next steps in the process of implementing or not similar pollution registers in their respective countries. Delegates were split into two working groups each of with a facilitator and a rapporteur.

### **5.6.2 Key Results**

The key results from the Pilot study and the conference are as follows:

- Jamaica's pilot PRTR project engaged a cross section of stakeholders that provided input on all aspects of the pilot project.
- The PRTR is designed to be based on regulations except for the hotels in the tourism sector who would voluntarily report
- Enabling legislation namely the Natural Resources Conservation Act and the National Waste Management Act are already in place.
- The phasing in of the PRTR would follow enactment of regulations for air quality, sewage effluent, trade effluent and solid waste management. Once these regulations are in place, the Register will be fully multi-media
- Separate PRTR regulations are also being considered to ensure that the reporting requirements for the Register are based only on information required by other pieces of regulations and to specify NEPA's responsibilities with respect to the register.
- The regulations are being designed so that reporting requirements under each regulation will form the sole basis for reporting into the PRTR. There will be no separate reporting for the Register other than that required for the regulations except for those hotels in tourist sector that do not have to report under any regulation.
- NEPA will be the agency with responsibility for compiling and disseminating the register
- Several innovations are included in the register:
  - The typical reporting thresholds that other registers specify will be subsumed in the various regulations. For example, the draft sewage regulations will require licensing of all sewage plants above a specified capacity (currently 20 m<sup>3</sup>/day) and will require registration of all sewage treatment plants. Similar triggers for licensing are or will be included in the air and trade effluent regulations.
  - The register will include reporting of sources and resources at risk (population, ecological and selected man made assets) within prescribed distances of each reporting facility, a summary of the facility's environmental aspects and a description of the facility's environmental setting.
  - In addition to the typical reports that list the amounts of pollutants/substances that are released or transferred, the Jamaican PRTR reports will include a simplified report that indicates the number of pollutants or parameters that are in compliance with applicable air, water and solid waste regulations and the total number of applicable pollutants or parameters for each medium.
  - The "traditional" report will also include an indication of the degree of compliance for each parameter or substance in each medium based on applicable standards, targets or guidelines.
  - Pollution prevention and energy conservation activities will be reported.
  - Facilities will also be required to report on their community activities that are relevant to the environmental aspects.

### **5.6.3 Outcomes of the Workshop Sessions at the Conference**

Delegates at the conference were split into two groups such that at least one delegate from each of the seven English speaking Caribbean Basin countries was in each group. The workshop sessions at the conference was designed to:

- Identifying barriers to implementation
- Identifying/identification of gaps and next steps
- Key steps for implementing PRTP for:
  - Jamaica
  - Other countries

### **5.6.4 Barriers and Challenges to Implementing PRTRs**

#### **5.6.4.1 Barriers in Implementing Jamaica's PRTR**

- Potential misunderstanding of the objectives of the PRTR (punitive actions).
- Concerns about the potential misuse of data (issue of confidentiality proprietary information major concern).
- Resistance by companies due to perceived or real additional cost to companies in terms of their environmental management costs and burden of additional reporting.
- Lack of capacity within the NGO sector to make use of information.
- Limitations in the capacity (human, technology, financial) of the regulatory agencies to appropriately implement PRTR.
- Lack of capacity in small and medium size enterprises.
- Concern about data quality (estimation methods, data integrity).
- Effective collaboration and coordination among government agencies.

#### **5.6.4.2 Challenges/Issues in Implementing Jamaica's PRTR**

- Determine any potential clashes between PRTR reporting processes and the Freedom of Information Act.
- Scheduling the implementation process within the capacity of stakeholders (NEPA, reporters).
- Stimulating community interest.
- Challenge to ensure that PRTR real objective is for the environmental good (benefit for all).
- Outreach to small and medium sized enterprise.

### 5.6.5 Identifying/Identification of Gaps and Next Steps for Implementing Jamaica's PRTR

The PRTR Pilot Study Working Group and the working sessions at the conference provided indications of the next steps for the implementation of the PRTR in Jamaica and also the next steps for the remaining Caribbean countries. These are summarised in Tables 2-1 (Jamaica) and 2-2 (Other English speaking Caribbean countries).

**Table 5-5 Next Steps – Jamaica**

Activity	Comment/Status	Likely Schedule & Next steps	Gap/Need/Key activity	External Assistance
<b>Regulatory/Administrative</b>				
Air quality regulations	Drafting instructions are currently with the Chief Parliamentary Counsel (CPC) and the Attorney General (AG) for final drafting and comment. There will be a short comment period on new substantive provisions that were introduced since the last consultation	May/June. Complete selected aspects of a regulatory impact assessment. Submit regulations to Minister for approval and Gazetting.	Follow up on status by NEPA  Prepare for comment period	No
Sewage Effluent Regulations	Draft of proposed regulations are ready for the public consultation step.	Complete consultation, send to CPC through Ministry of Land and Environment (MLE)	Maintain momentum and schedule	No
Trade Effluent Regulations	Draft of the regulations are expected in the next month or so.	To be followed by consultation, revisions as needed and then to CPC/AG through the Ministry of Land and Environment	Maintain momentum and schedule	No
PRTR Regulations	Draft reviewed by PRTR Pilot Working Group.	Decision by NEPA on need for regulations/ Prepare drafting instructions for PRTR regulations	Regulatory Services Division to champion within NEPA to do next steps	No
Hazardous Waste Regulations	To be drafted by Ministry of Local Government, Youth and Community Development (MLGY&CD)	NEPA to liaise with MLGY&CD	Dr. Barrett to champion and liaise with MLGY&CD	No
Determine coordination mechanisms among the various government agencies with respect to data sharing for PRTR	NEPA/MLE/Ministry of Works, Youth & Community Development Ministry of Mining & Energy (MME), Ministry of Water and Housing, Ministry of Health	Identify coordination needs and expand/adapt current mechanisms to meet the needs of PRTR	Manager, Pollution Prevention & Control (PP&C) to champion	No

Activity	Comment/Status	Likely Schedule & Next steps	Gap/Need/Key activity	External Assistance
Determine scope of Regulatory Impact Assessment for PRTR	Plan requirements	Likely the RIAS will entail very little effort other than estimation of costs to government (NEPA) since PRTR is based on other regulations	Manager, Legal Services Branch to champion	No
<b>Implementation</b>				
NEPA to declare position on PRTR	Reissue basis for including PRTR among the tools that NEPA will use for environmental management in general and pollution prevention and emissions reductions in particular. Include benefits of PRTR.	Develop policy document on PRTR (statement of need, benefits and process) and/or include in NEPA's national EMS policy	Director, PP&C Division to represent Division's needs champion	No
Plan integration of PRTR into NEPA's Information Technology systems	Develop scope of work that is needed.	Gap analysis to identify needs and basis for design	Capacity within NEPA. Needed. Team with expertise in PRTR, IT and knowledge of what is in hand at NEPA	NEPA to request external assistance.
Develop specific database management and reporting for PRTR		ENACT to assist in implementing air, sewage and trade effluent regulations	Capacity within NEPA needed. Manager PP&C to champion	NEPA to request external assistance.
Prepare Guidance Document for Reporting entities (including Methods to estimate releases and transfers)	There is a Draft <i>Guideline Document</i> for Air Quality Regulations. This document needs to be reviewed and updated e.g., to address changes in the list of Priority Air Pollutants (PAPs), energy conservation etc. Similar documents should be prepared for the other regulations. Sections common to each document should be identified and separated/combined as needed.	Update <i>Guideline Document</i> and prepare similar documents for sewage and trade effluent regulations. Rename the documents as <i>Guidance Document for Regulatory Reporting – Air Quality/Trade Effluent/Sewage Effluent?</i> (Or similar name)	Pollution Prevention and Control Division to champion	NEPA to request assistance for preparing manuals*
Develop strategy to strengthen Non Government Organisations (NGOs) to be better able to utilise PRTR information		Design and prepare suitable citizen's guide for PRTR; establish links and/or network with similar NGOs in other jurisdictions		NEPA to request external assistance*

<b>Activity</b>	<b>Comment/Status</b>	<b>Likely Schedule &amp; Next steps</b>	<b>Gap/Need/Key activity</b>	<b>External Assistance</b>
Data Issues	PRTR database design, software and hardware requirements), data management, database maintenance	Integration (of annual reporting) with NEPA's system to track conditions in permits and licenses	Staff training	NEPA to request external assistance*
Stakeholder education/outreach	Devise outreach strategy to inform industry and those subject to regulations	NEPA to arrange seminars/training for stakeholders to give detailed information on how to report. Complement with outreach associated with individual regs (e.g., training for estimation, monitoring etc.)	NEPA staff training on PRTR and implementation of individual regs. Training courses/seminars for regulated community	NEPA to request external assistance*
Determine NEPA's capital needs	NEPA's IT resources are likely strained and would be challenged by additional information/data needs	Identify hardware and software and other resources needed for data management/dissemination/access	Lack of capacity to handle additional load. Identify champion	NEPA to request external assistance
<b>Dissemination/access Public education</b>	Develop public education strategy Methods to publicise PRTR info	NEPA's Public Education Division to work with stakeholders	Strengthening of NGOs and others to take advantage of and use PRTR information	NEPA to request external assistance*
Define scope of Regulatory Impact Analysis (RIA) (anticipate limited scope since PRR will be based on other regulations)	Estimate implementation costs to govt & industry - contingent on policy decision on RIA by NEPA.	Use template being developed for RIAS	Develop policy on RIA. And identify capacity needed	No
Determine NEPA's staffing and training needs	Staff and training needs	Compile all training needs including exchange/assignment to other jurisdictions that operate PRTR. Identify staff, funding and delivery methods	Capacity within NEPA	NEPA to request external assistance*#

### **5.6.6 Next Steps – Other English Speaking Caribbean Basin Countries**

The workshop groups and the plenary session resulted in several recommendations and suggestions for follow up activity. The deliberations are summarised below. There was general agreement that on returning to their respective countries, delegates would explore steps to discuss the potential for implementation more widely. Although many of the barriers and challenges indicated for Jamaica would be present in other countries, it was impractical to identify country specific challenges and barriers. Instead a summary of the next steps id provided below. Delegates were very appreciative of the opportunity for the personal interactions that the conference provided and noted that there are few opportunities for such interaction among “environmental stakeholders” in the region. Although there are many common features among

the countries, it is evident from the country profiles presented that there is wide variety of industrial development, environmental issues that need to be addressed, existence of enabling legislation and capacity to implement PRTRs. In spite of these differences, several region wide recommendations were made.

Suggested Regional Initiatives:

- Seek formal endorsement of PRTRs from CARICOM and a commitment to seek mechanisms (external funding and utilisation of existing regional institutions) to promote implementation throughout the region.
- Develop regional approaches for assistance in keeping with promises made at Rio
- Strengthen selected existing regional environmental institutions so that PRTR implementation can be facilitated.
- Develop, as far as is practical, a regional approach to PRTR while bearing in mind the distinct features and differences among countries and ensuring individual countries' circumstances and needs are addressed.
- Establish a network that would continue to promote PRTR implementation throughout the region. This could entail one or more of the following: a web site, list servers, chat rooms etc
- Use existing regional technical/environmental fora to promote PRTR.
- Strengthen regulatory framework especially in OECS countries.
- General strengthening of the capacity especially among NGOs and community to be able to make better use of PRTR information.
- Build on and use existing EMS initiatives to engage industry and promote reporting of activities through PRTRs and to promote the benefits of PRTRs

Other country specific recommendations were:

- Guyana and Suriname have common issues and will benefit from similar PRTR without compromising approaches for other (non-English speaking) Caribbean countries.
- Strengthen regulatory framework in OECS countries.
- Use the forthcoming Caribbean Waste Wastewater Association (CWWA) conference (and subsequently) as a forum to continue promotion of PRTRs.

Specific recommendations are included in the table below.

**Table 5-6 Next Steps – English Speaking Caribbean Basin Countries**

Activity	How
Seek formal endorsement of Community right to know and PRTRs in particular from CARICOM	CDA/IES facilitate initial discussions between Environment Canada (EC) and CARICOM Secretariat
Seek formal endorsement of Community right to know and PRTRs in particular from the Association of Caribbean States (ACS)	CDA/IES facilitate initial discussions between EC and Secretary General of ACS

Activity	How
Strengthen selected/appropriate existing regional environmental institutions	Identify institutions (e.g., Caribbean Environmental Health Institute (CEHI), Caribbean Tourism Organization (CTO), Caribbean Hotel and Tourism Association (CHTA), ...) Conduct gap analysis to identify needs and clearly identify linkages with other existing and planned initiatives
Establish a English Speaking Caribbean Basin PRTR network to promote PRTR implementation	Develop options (web site(s), list servers, chat rooms, etc.) and consult with potential members to ensure solution is what they want/need and that it is sustainable. Suggest EC support funding of such a project by CIDA or UNITAR or other IFI say over a finite (e.g., 5 years) period Establish English Speaking Caribbean Basin PRTR Working Group. Suggest 3 members from each country (government, private sector, NGO); develop Terms of Reference and objectives
Use existing regional technical/environmental fora to promote PRTR	Identify fora (CWWA, biennial UWI conferences, Caribbean Academy of Sciences (CAS)) Ensure a papers or other presentations on PRTRs are made at the forthcoming regional CWWA conference in October and at the CAS conference in June 2002
Strengthen capacity of NGO community to be able to make better use of PRTR information	Review/determine existing programs and develop mechanisms and tools to focus on PRTR related capacity building
Enhance EMS initiatives to engage industry to promote PRTRs	Ensure PRTR is included in EMS programs. CDA/IES to develop template/methodology to do this. Work in conjunction with EAST projects and CTO to develop specific program for tourism/hotel sector.
Develop program for Suriname and Guyana mining sector	Work with Guyana Manufacturers Association and OMEI to include reporting ethic and specific programs (estimation methods, fitting into the regulatory framework) for mining activities in Suriname and Guyana.
Develop linkages with International and Canadian institutions	Network and agencies to develop closer link with UNITAR and with Canadian Federation of Municipalities and the International Council of Local Environmental Initiatives (ICLEI)
Assessment of next steps for individual countries	Delegates from each country will follow up and discuss next steps within their own countries. It is suggested that such information be coordinated through CDA/IES

CWIP

Coastal Water Quality Improvement Project