Status of PRTR in Cambodia

Final Global Project on the Implementation of Pollutant Release and Transfer Registers (PRTR) as a Tool for Persistent Organic Pollutants (POP) Reporting, Dissemination and Awareness raising
25 – 27 March 2019, Siem Reap-Cambodia

Mr. Uon Sokunthea
Department of Hazardous Substance Management
General Directorate of Environmental Protection
Ministry of Environment
Kingdom of Cambodia
# Achievement of PRTR Implementation

## The main achievement

### Activities/National Service

Update National Executive Proposal and Legal

- Updating National Executive Proposal
- Sub-Decree on Pollutant Release and Transfer Register
- NCC meeting to consulting (face to face Meeting)

National Consultants to develop and Coordinate training to industrial, NGOs, Civil Society and media/Journalists

- National Strategy for Dissemination information and PRTR Data
- Implementation of National Strategy
  - Website: [www.prtrcambodiamoe.gov.kh](http://www.prtrcambodiamoe.gov.kh)
  - Facebook PRTR Cambodia
  - Google form to conduct Survey in more than 1000 peoples
  - Conducting the Campaign Seminar
### Achievement of PRTR Implementation (cont....)

**The main achievement**

<table>
<thead>
<tr>
<th>Pilot Trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Conduct Survey to pollution sources (Selection of the pilot trial region)</td>
</tr>
<tr>
<td>- Obtain policy commitment by industrial and other pollution sources's reporting</td>
</tr>
<tr>
<td>- Identify of threshold and chemical or pollution substances</td>
</tr>
<tr>
<td>- Implementing and POPs Reporting</td>
</tr>
<tr>
<td>- General Guideline on EET</td>
</tr>
<tr>
<td>- Specific Manual on EET</td>
</tr>
<tr>
<td>- Training to Trainer for industrial sectors resources</td>
</tr>
</tbody>
</table>
Training to Industries on Estimation Technique to Pilot Trial Y2018

Training to 42 Facilities on How to reporting and Estimation Technique (EET)

- Beer Product
- Bio-Energy Product
- Cement Product
- Coal Power Plant
- Textile and Garment
Reporting System

\[(x + a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}\]

Calculation of pollutant release and transfer

- Validation data processing
- Evaluation

Report of pollutant release and transfer to MoE

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Agu</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting by Faculties</td>
<td>Validation Data</td>
<td>Compile data and analysis</td>
<td>Dissemination Data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pollution sources' reports will be received and evaluated. Each facility will generate account for their personal reports.

Report of Emission/Transfer

Pollution sources can use the manual in the web portal. Allow facilities to estimate their annual emissions through emission factors developed by National Consultant.
Online Reporting Format (cont...)

![Image of online reporting format](image-url)

- **Information about the company**
- **Information about the legal representative of the facility**
- **Information about the industrial facility**

- **Send request to get approval from MOE's administrator**
Online Reporting Format (cont...)
Online Reporting Format (cont...)

- CRM: Chemicals contained in raw materials
- MFP: Manufactured products
- WCT: Water consumption
- ECT: Electricity consumption
- SWG: Solid Waste Generation
- LWG: Liquid Waste Generation
- EMR: Emission to
- EAT: Transfer to
### Chemicals contained in raw materials used

**Reporting year 2017, from Wednesday, 01 Feb 2017 to Thursday, 01 Jan 1970**

<table>
<thead>
<tr>
<th>Raw material</th>
<th>Commercial name</th>
<th>CAS number</th>
<th>Annual consumption</th>
<th>Measurement Unit</th>
<th>Used in</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury and compounds (as Hg)</td>
<td></td>
<td>7439-97-6</td>
<td></td>
<td></td>
<td>Fuels and fuel additives</td>
<td></td>
</tr>
</tbody>
</table>

**Save**

Copyright © 2018 PRTR Cambodia

Designed & Hosted by Classic Web Design
### Online Reporting Format (cont...)

![PRTR Cambodia - Pollutants](image)

**Manufactured products**

<table>
<thead>
<tr>
<th>Products</th>
<th>Annual production</th>
<th>Measurement unit</th>
<th>Type of process</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>10000</td>
<td>kw/year</td>
<td>yes</td>
<td>+ Add</td>
</tr>
</tbody>
</table>

**Copyright © 2018 PRTR Cambodia**

**Designed & Hosted by Classic Web Design**
Completing and Final Data Format

#### Facility Data 2018

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Commercial name</th>
<th>CAS number</th>
<th>Annual consumption</th>
<th>Unit</th>
<th>Used in</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>cans sport</td>
<td>1332-21-4</td>
<td>2300</td>
<td>Other</td>
<td>Adhesives and sealants</td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>cans beers</td>
<td>71-43-2</td>
<td>3200</td>
<td>Other</td>
<td>Desiccants and absorbents</td>
<td></td>
</tr>
</tbody>
</table>

- Manufactured products
- Water consumption
- Electricity consumption
- Solid Waste Generation
- Liquid Waste Generation
- Air Emissions
- Emission to
  - Emissions to
    - Chemical identity
      - Chemical name
        - 2-Bromopropane
          - CAS Number: 75-26-3
          - Generation point: in-site
          - Quantity: 120 Nm3/hour
          - Estimation method: Direct Measurement
        - Acetaldehyde
          - CAS Number: 75-07-0
          - Generation point: in-site
          - Quantity: 230 Nm3/hour
          - Estimation method: Emission Factor
        - Benzene
          - CAS Number: 71-43-2
          - Generation point: out-site
          - Quantity: 560 Nm3/hour
          - Estimation method: Mass Balance

- Transfer to
  - TOYOTA Modern
# Searching Data Format

<table>
<thead>
<tr>
<th>Facility Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting year</td>
</tr>
<tr>
<td>City/Province</td>
</tr>
<tr>
<td>Facility name</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Main Activity</td>
</tr>
<tr>
<td>Sub Activity</td>
</tr>
<tr>
<td>Pollutant Releases</td>
</tr>
<tr>
<td>Group Pollutant</td>
</tr>
<tr>
<td>Pollutant</td>
</tr>
<tr>
<td>Pollutant Releases</td>
</tr>
<tr>
<td>Pollutant Transfers</td>
</tr>
<tr>
<td>Group Pollutant</td>
</tr>
<tr>
<td>Pollutant</td>
</tr>
<tr>
<td>Transfer to</td>
</tr>
<tr>
<td>Type of waste</td>
</tr>
<tr>
<td>Treated directly in-site</td>
</tr>
<tr>
<td>Treated directly out-site</td>
</tr>
</tbody>
</table>
Result of Searching Data
As PRTR System - Coal Power Plant

Cambodian Energy Limited

Pollutant Release and Transfer Registers (PRTR)
2019

25 March 2019
## 2. Description of Facilities

### 2.1. Chemical contained in raw materials used

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Commercial Name</th>
<th>CAS Number</th>
<th>Annual Consumption</th>
<th>Measurement Unit</th>
<th>Used in¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (NH₃)</td>
<td>Ammonia</td>
<td>7664-41-7</td>
<td>880</td>
<td>Kg</td>
<td>Water Treatment Process</td>
</tr>
<tr>
<td>Hydrochloric Acid (HCl)</td>
<td>-</td>
<td>11,200</td>
<td>Kg</td>
<td>WTP Process</td>
<td></td>
</tr>
<tr>
<td>Sodium hydroxide (NaOH)</td>
<td>-</td>
<td>17,280</td>
<td>Kg</td>
<td>WTP Process</td>
<td></td>
</tr>
<tr>
<td>Tri Sodium Phosphate - TSP (Na₃PO₄·12H₂O)</td>
<td>-</td>
<td>50</td>
<td>Kg</td>
<td>WWTP Process</td>
<td></td>
</tr>
<tr>
<td>Poly Aluminum Chloride (PAC)</td>
<td>-</td>
<td>1600</td>
<td>Kg</td>
<td>WWTP Process</td>
<td></td>
</tr>
<tr>
<td>Polyacrylamide (PAM)</td>
<td>-</td>
<td>150</td>
<td>Kg</td>
<td>WWTP Process</td>
<td></td>
</tr>
</tbody>
</table>
### 3. Waste Generation

#### 3.1. Solid Waste Generation

<table>
<thead>
<tr>
<th>Process or sub-process</th>
<th>Type of waste</th>
<th>Quantity (ton/year)</th>
<th>Quantity of waste in stock (ton/year)</th>
<th>Treated directly in site</th>
<th>Treated directly outside</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hazardous Waste</td>
<td>15256</td>
<td>397</td>
<td>0</td>
<td>Recycle</td>
</tr>
</tbody>
</table>

- **Treated directly in site**
  - Quantity (ton/year): 0
  - Treated Method: Recycle
- **Treated directly outside**
  - Quantity (ton/year): 14859
  - Treated Method: Reuse
  - Name of landfill or company: Shi Mao

---

*Note: Total ash was taken by Shi Mao is 14859 ton/year which contain fly ash material is 8859 ton and bottom ash is 6000 ton/year*
### 4.1. Emission to

<table>
<thead>
<tr>
<th>Emission to</th>
<th>Chemical Identity</th>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Generation Point</th>
<th>Quantity (ton/year)</th>
<th>Unit</th>
<th>Estimation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td></td>
<td>Sulfur Dioxide</td>
<td>9-5-7446</td>
<td>Boiler Flue Gas</td>
<td>713</td>
<td>mg/Nm3</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td>Nitrogen Dioxide</td>
<td></td>
<td>Boiler Flue Gas</td>
<td>315</td>
<td>mg/Nm3</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td>Particulate Matter</td>
<td></td>
<td>Boiler Flue Gas</td>
<td>22</td>
<td>mg/Nm3</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Result taken from average CEMS reading*
### 3.3 Emission Release

<table>
<thead>
<tr>
<th>Process/sub-process</th>
<th>Substance or Parameter</th>
<th>Emission transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. Emissions and transfers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemical type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Name of the chemical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emission source</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emission transfer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quantity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatment method</td>
</tr>
</tbody>
</table>

1. Any substance or parameter mentioned in Annexes A.
2. Conducted emission collected and released through.
3. Emission escaped from installed equipment.
Dissemination and Publication on the System and Disclose the data

✓ 3 channel of national TV, Radio...
Dissemination and Publication

- more than 300 students from Academe
Dissemination and Publication (cont...)

✓ Through social media
Dissemination and Publication (cont...)

Boost Post

- Audience
  - People who like your Page
  - People who like your Page and their friends
  - Pollutant Release and Transfer of Register (PRTR) Cambodia by Industrial Sector

  Location - Living In
  - Cambodia: Kampong Chnang, Kampong Chhnang (+25 ml)
  - Kampong Chhnang Province;
  - Kampong Speu Province;
  - Kompot Chhuk, Kampong Thom (+25 ml) Kampong Thom Province; Kandal Province; Phnom Penh; Bavet, Slay Rieng (+25 ml) Slay Rieng Province; Sihanoukville (province) (+25 ml)
  - Sihanoukville Province

- Age
  - 18 - 65+

- People you choose through targeting

See All (4) Add New

Total Budget

Boost Post Now

By tapping the above button you agree to Facebook's terms and conditions.
Dissemination and Publication (cont...)

Past Promotions

Website Promotion
- Completed
- $49.75 Spent
- People Reached: 43,264
- Promoted by Uon Sokun
- Link Clicks: 676

Boosted Post
- Completed
- $6.00 Spent
- People Reached: 10,824
- Promoted by Uon Sokun
- Link Clicks: 236

Boosted Post
- Completed
- $4.00 Spent
- People Reached: 7,352
- Promoted by Uon Sokun
- Link Clicks: 142

Boosted Post
- Completed
- $4.00 Spent
- People Reached: 1,535
- Promoted by Uon Sokun
- Post Engagement: 152

Boosted Post
- Completed
- $3.00 Spent
- People Reached: 1,011
- Promoted by Uon Sokun
- Post Engagement: 98

Boosted Post
- Completed
- $3.00 Spent
- People Reached: 1,877
- Promoted by Uon Sokun
- 10-Second Video Views: 841

Results from Your Ad
- People Reached: 43,264
- Link Clicks: 676

View Detailed Results

Feedback
- Are you satisfied with this ad?
  - NO
  - YES

Overview
- Status: Completed
- Audience: Male/Female, 18 - 65+, 1 location
Conduct the survey through to Google form as follow
Sharing Google Form

PRTR Cambodia shared a link.

Pollutant Release and Transfer of Register (PRTR) Cambodia by Industrial Sector

Location - Living In
- Cambodia: Kampong Chhnang, Kampong Chhnang (+25 mi) Kampong Chhnang Province; Kampong Speu Province; Kompr Chhuk, Kampong Thom (+25 mi) Kampong Thom Province; Kandal Province; Phnom Penh; Bavet, Svay Rieng (+25 mi) Svay Rieng Province; Sihanoukville (province) (+25 mi) Sihanoukville Province

Age
- 18 - 65+

Total Budget

Boost Post Now

By tapping the above button you agree to Facebook's terms and conditions.
Result Survey

✓ Gender

1060 responses

54.9%

45.1%
✓ Group of occupation

- 56.1%
- 24.2%
- 9.1%

1060 responses
Result Survey (Cont...)

- Group of occupation

1. បំពេញឈ្នះដូចម្តេច PRTR ដែលបាន?
(ពេលមនុស្សនឹងមង្គលនេះអាចរួបរួមអាចបានបំផុត)

1060 responses

![Pie Chart](image)

- បញ្ហា ត្រូវបានបង្កើតឡើងចេញពីការសម្រាប់ពួកគេដែលបានបំផុតប្រាកដពីការបង្កើតប្រភេទប្រចាំទឹកធ្វើការទៅក្នុងក្រុងបឹង 41 (68.3%)
Challenge
Challenges

- Limited regulation to foster the PRTR implementation as well as mechanism and coordination and cooperation between Industrial...etc
- Time constrained for PRTR Legislation development as during national election and establishment new government Y2018
- Limited time, cooperation, Knowledge of personnel at both public and private sectors regarding to PRTR system
- IT expert was not clearing and has a background with the PRTR system
- Limited database storage and facilities which the online reporting system;
Facilities reporting of data emission calculations for data search forms was limited

Some facilities were not regular for testing of liquid waste regular and keeping their data reporting

PRTR reporting format shall be coming along with guideline on how to fill the form as well providing emission factors, calculation methods, and released media,

There is the need for more national consultants in various fields of chemical expertise;

There is knowledge barrier among personnel regarding chemicals wastes management, even consultants;

There were hardly to engage with focal facilities to be participated in the PRTR trials;

There was an obstacle for project implementation which related to delayed budget allocation as well as limited supports,
thank you very much for your attention!