Current situation and issues of industrial wastewater management

Sri Lanka
Content

1. Overview of industrial wastewater regulations
   ✓ Industrial wastewater quality standards.
   ✓ Industrial wastewater quality monitoring methods
   ✓ Challenges in monitoring
   ✓ The situation of compliance regarding industrial wastewater quality standards
   ✓ Industries which face challenges in compliance

2. Situation and challenges for the problematic industries and countermeasures.
   ✓ Overview of the problematic industry
   ✓ Impact to the environment of wastewater
   ✓ Reason for non compliance and the problematic pollutant(s)
   ✓ Current mitigation measures and the problem
   ✓ Technologies and needs for addressing the challenges
At present rivers becomes polluted due to:

- rapid growth of industries located in close vicinity of the rivers/lakes and passes through the country.

- Number of polluting industries which discharge treated and untreated industrial effluents already exist in the vicinity of these rivers.

The protection of water quality in natural rivers has thus become major issue from point of view of long term reliability.
Examples for Burning Issues of Water Pollution in SL

• Kidney disease - Anuradapura
  – Reason?
  – 3-5 deaths daily
  – 95% victims are male farmers
  – Effective age of patients 20- 50yrs
• Chunnakam Ground Water Pollution
  – Well water contaminated with oil
  – Improper discharge of waste oil
• Ratupaswala, Hanwella Water Pollution?
  – Public protest on industries
• Kelani River Water Pollution by Oil Discharge
• Ongoing Court Cases
  – Ratupaswala & Hanwella Water Pollution
  – Chunnakam ground water pollution by oil
Oil – water discharge
Haphazard industrial effluents discharges
Input Modes of Water Pollution

- **Point Sources**
  - Point sources are localized
  - Point discharges can easily monitored by regulatory agencies
  - Can regulate by establishing standards and monitoring

- **None point Sources**
  - Sources are delocalized or dispersed
  - Difficult to trace it out from where pollutants enter to the water body
    - Eg: surface runoffs from agricultural area carries, silt, fertilizer, pesticides, animal waste into the water and soil but not at only one particular point
  - Difficult to regulate by relevant agencies
  - The way to control is to set appropriate restrictions on land use
Water Pollutants & Sources

• Untreated or poorly treated wastewater discharge
  › Domestic
  › Industrial

• Haphazard dumping of solid waste

• Agricultural run off
  › Agro chemicals
  › Fertilizers

• Sand mining activities
Laws Related to Wastewater Management

• National Environmental Act
• National Water Supply and Drainage Act
• Mahaweli Authority Act
• BOI Act
• Forest Ordinance
• Etc.
The National Environmental Act (NEA) was enacted in 1980 Act No. 47 of 1980.

This is an umbrella law to prevail over the other environmental laws.

NEA is consist of v parts

- **Part I** - Establishment of the Central Environmental Authority and an Environmental Council
- **Part II** - Powers, Functions and Duties of the Authority
- **Part III** - Staff of the Authority
- **Part IV** - Environmental Management
  - A - Environmental Protection
  - B - Environmental Quality
  - C - Approval of Projects
- **Part V** - General
IV A - Environmental Protection

23A.

1. The Minister shall determine by order published in the Gazette the activities in respect of which a licenser is required to be obtained under this Act (hereinafter referred to as “prescribed activities”) being activities which involve or result in discharging, depositing or emitting waste into the environment causing pollution

2. No person shall carry on any prescribed activity except –

a. under the authority of a licence issued by the Authority; and
b. in accordance with such standards and other criteria as may be prescribed under this Act
Environmental standards and criteria prepared by the CEA

Standards criteria related to water quality  ->  Gazette Notification No.1534/18 dated 01.02.2008
Wastewater discharge standards

• Regulation No 1534/18 of 15.08.2008

• Type of Discharge Point
  - Inland Surface waters
  - Irrigation Purpose
  - Marine Coastal Areas
  - Central Treatment Plants

• Type of Activity
  - Rubber Industries
  - Textile Industries
  - Tanning Industries
Environmental Protection Licence (EPL)

Objectives:

• To prevent or minimize the discharges and emissions into the environment
  - From the prescribed activities in the gazette notification No.1533/16 dated 25.01.2008-138 activities
  - In compliance with the National Discharge and Emission standards

• To develop an approach in Pollution Control through
  - The best practicable Environmental Options (BPEO)
  - Best Available Techniques (BAT)
EPL Contd...

• The EPL issued to a prescribed activity shall conform the standards and criteria, such activity is allowed to discharge their wastewater to the environment.

• The EPL issued to a prescribed activity is legally bound with stipulated condition.

• The violation of the conditions in the EPL is an offence punishable under the provisions of the Act. (NEA)
EPL Contd...

• The holder of an EPL is under the obligation to comply with any directive given by the CEA to prevent or mitigate the environmental pollution and hazards

• The EPL shall ensure that monitoring of environmental pollution from prescribed activities or

• Other acts the CEA considers necessary to protect the environment
Validity period and Monitoring the EPL

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<tr>
<th>Category</th>
<th>Validity</th>
<th>Monitoring period</th>
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<tbody>
<tr>
<td>A</td>
<td>01 yr or less</td>
<td>3 months</td>
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<tr>
<td>B</td>
<td>03 yrs or less</td>
<td>1 year</td>
</tr>
<tr>
<td>C</td>
<td>03 yrs or less</td>
<td>3 year</td>
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Major Industry Sectors & Categories

- Chemical
- Food & Beverages
- Alcohol & Alcoholic Beverages
- Metal Finishing & Surface Treatment
- Dairy
- Textile
- Tanning
- Rubber
- Agrochemical
- Pharmaceutical
- Clay, Glass & Ceramic
- Health
- Transport & Vehicle service
- Paper & Pulp
Industrial Distribution in Sri Lanka

- High: 22556
- Medium: 10838
- Low: 10628
Island wide compliance for High & Medium polluting Industries
Issue of licence for the Management of Scheduled Waste

- As per the Part II of the National Environmental (Protection and Quality) Regulations No.1 of 2008 a Scheduled Waste Management Licence (SWML) should be obtained from the Central Environmental Authority for the Management (Generate, Collect, Transport, Store, Recover, Recycle or Dispose waste or establish any site or facility for the disposal) of waste specified in the Schedule VIII of the regulation
Elements of legislation

Responsibilities

Controls

Generator

Recycling

Transport

Storage

Treatment

Disposal
Natural Resources Management

• National Environmental Prohibition of the use of Equipment for Exploration, Mining and Extaaction of sand & gem
  - Gazette No. 1454/4 dated 17\textsuperscript{th} July 2006

• National Environmental Prohibition of cultivation of annual crops in high gradient area
  - Gazette No. 1456/35 dated 4\textsuperscript{th} August 2006

• Declaration of Environmental Protection area
Current Situation

✔ With regard to ground water in certain areas of the dry zone, there is a high fluoride content.
✔ In hard rocky areas, there is a high concentration of iron.
✔ In urban over-crowded cities, there is biological contamination of ground water.
✔ Over-utilization, particularly through tube wells, is another major problem affecting ground water resources in Sri Lanka.
✔ Oil spills, dumping of waste from industries, and sand mining, and industrial activities are the main causes of water pollution in the country.
Toxic chemicals then enter the county's water system and are delivered to other parts of the country, for example via the Mahaweli, Kelani, Walawe and Kalu, rivers causing health problems to those who rely on these water sources for their drinking water.
Polluting industries discharge treated and untreated industrial effluents to the rivers
Wastewater discharge through drains
Adoption of Best Available Technologies (BAT) & Best Environment Practicable Options (BEPO)

- Registration of consultant and experts laboratories (local & International) in CEA
- Laboratory accreditation and annual proficiency testing programme for registered labs.
- Introduce cleaner production techniques in collaboration with NCPC
- National Green Award Programme to motivate & encourage industries in environment protection & management
Proposed Regulations & Standards

• Proposed regulation for prescribed activities – accommodated 04 lists (IA,2A,B&C) on the basis of strict monitoring of high polluters.

• Introduction of new effluent discharge modes- sea out falls (long & short), leachate, phase out existing industry specific standards.

• Introduce guidelines for irrigation of lands from treated wastewater methodically.
The situation of compliance regarding industrial wastewater quality standards
Compliance Assistance Programmes

- Preparation of guidelines for SME sectors
- Develop low cost and affordable effluent treatment methods eg: vehicle service stations
- Soft loan (E friend I&II)schemes for pollution control activities
- Proposed tax reduction from pollution control devices
- Tri party agreement to dispose health care waste
- Corporate National E Waste Management Programme to facilitate E Waste generators.
Road Map for wastewater Discharge Fee Scheme

Wastewater Discharge Fee –

• Is a strategy primarily aiming at reducing the pollution loading into the natural recipient (rivers, lakes, tanks, marsh land, lagoons, estuaries, etc.), in a manner that integrates and harmonizes command and control (CAC) and economic instruments.

• The objective of generating a mechanism to improve environmental enforcement and compliance status of companies under the environmental regime of the CEA.
## Strengths & Weaknesses

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<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tr>
<td>Qualified staff</td>
<td>Inadequate staff</td>
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<tr>
<td>Frequent training and capacity building</td>
<td>Lack of monitoring</td>
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<tr>
<td>National Environmental Act. And its Regulations</td>
<td>Inadequate accredited laboratory facilities</td>
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<td>Not Enough penalties</td>
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Responses to the weaknesses

- Appointment of staff (more than 100 Environmental officers for inspections)
- Establishment of Laboratory facilities at Provincial Level
- Laboratory accreditation scheme and Proficiency testing of Laboratories
- Short listing and standardization of Experts/consultants in Pollution Control.
- Amendments to the existing Act.
  - (To include more fines and penalties, prohibition notices ie. Obtaining injunction orders) and to include provision for Wastewater discharge fee system.
Current & Future Challenges

- Lack of affordable pollution control techniques for small & medium scale enterprises.
- Weaknesses in law enforcement and lack of regular monitoring.
- Lack of awareness for environmental concerns among industrialists hence failures in self reporting system.
- Improper law enforcement by local government authorities. Unavailability of proper zoning plans in local government authorities in the country as a whole.
- Lack of systematic collection system for data and periodical analysis and issues such as quality and availability with respect to access.
- Lack of coordination in relevant institutions.
- Strengthen capacity building programmes and compliance monitoring.
Issues/challenges related to industrial effluents

– Economical issues in small and medium enterprises for pollution control
– Technology
– Weaknesses in law enforcement
– Willingness to apply cleaner technologies

Issues/challenges related to ground water

– Facilities for sampling and analysis
– Lack of available baseline data
– Less research on this subject
Issues/challenges related to water quality monitoring

- Lack of allocation from national budget
- No enough Laboratory staff-chemists etc.
- Lack of coordination in relevant institutions
- Non continuation of monitoring
- Failures in self reporting system in industries

- Except for pipe-borne water supply, irrigation and hydropower schemes, in general water resources in Sri Lanka are managed very poorly.

- Regulations are available to control most water related problems but enforcement of these regulations is lacking.
Impact to the environment of wastewater
Laboratory analysis of water samples
Water Sampling Using Mobile Laboratory
The ultimate result of degradation and depletion of water resources is the increasing health hazards.

Water-borne and vector-borne diseases are prevalent, particularly in urban low-income communities with poor sanitary facilities and drainage.

Despite government initiatives and legislation, very slow progress has been made towards combating water pollution.
Due to these there are several effects, the polluted water contains bacteria, parasites and viruses.

These cause life-threatening diseases like diarrhea, cholera and typhoid.

The some lakes are polluted and that are unhealthy for swimming, fishing or aquatic life which also reduces bio diversity and aquatic life.
Thank You