Reviewing of effluent discharge standards in Sri Lanka

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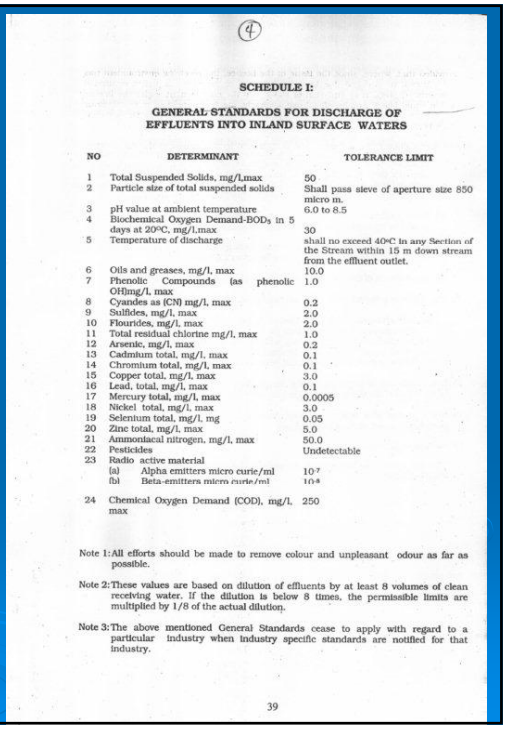
Background

- Regulations were made under Section 32 of National Environmental Act, No. 47 of 1080, as amended by Act No. 56 of 1988 read with Article 44(2) of constitution
- These regulations were cited as National Environmental (Protection & Quality) Regulations
- 1st set of standards came into force in 08th January 1990
- 1st revision came into force in 01st February 2008 which has been yet in force
- 2nd revision is in progress
- 1st set of standards and 1st revision were tied up with the regulations pertaining to EPL
- However, 2nd revision is planned to be made as stand alone regulation

1st set of standards

- Addressed
  - General standards for discharge of effluents into inland surface waters
  - Limits for industrial effluents discharged on land for irrigation purposes
  - Limits for industrial & domestic effluents discharged into marine coastal areas
  - Limits for effluents from rubber factories discharged into surface waters
  - Limits for effluents from textile industry discharged into surface waters
  - Limits for effluents from tanning industry discharged into surface or marine coastal areas

General standards showing water quality parameters



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SCHEDULE I:

GENERAL STANDARDS FOR DISCHARGE OF EFFLUENTS INTO INLAND SURFACE WATERS

NO	DETERMINANT	TOLERANCE LIMIT
1	Total Suspended Solids, mg/Lmax	50
2	Particle size of total suspended solids	Shall pass sieve of aperture size 850 micro m.
3	pH value at ambient temperature	6.0 to 8.5
4	Biochemical Oxygen Demand-BOD_5 in 5 days at 20°C, mg/l,max	30
5	Temperature of discharge	shall no exceed 40°C in any Section of the Stream within 15 m down stream from the effluent outlet.
6	Oils and greases, mg/l, max	10.0
7	Phenolic Compounds (as phenolic OH)mg/l, max	1.0
8	Cyandes as (CN) mg/l, max	0.2
9	Sulfides, mg/l, max	2.0
10	Flourides, mg/l, max	2.0
11	Total residual chlorine mg/l, max	1.0
12	Arsenic, mg/l, max	0.2
13	Cadmium total, mg/l, max	0.1
14	Chromium total, mg/l, max	0.1
15	Copper total, mg/l, max	3.0
16	Lead, total, mg/l, max	0.1
17	Mercury total, mg/l, max	0.0005
18	Nickel total, mg/l, max	3.0
19	Selenium total, mg/l, mg	0.05
20	Zinc total, mg/l, max	5.0
21	Ammoniacal nitrogen, mg/l, max	50.0
22	Pesticides	Undetectable
23	Radio active material	
	(a) Alpha emitters micro curie/ml	10^{-7}
	(b) Beta-emitters micro curie/ml	10^{-6}
24	Chemical Oxygen Demand (COD), mg/l, max	250

Note 1: All efforts should be made to remove colour and unpleasant odour as far as possible.

Note 2: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by 1/8 of the actual dilution.

Note 3: The above mentioned General Standards cease to apply with regard to a particular industry when industry specific standards are notified for that industry.

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1st Revision

- Addressed
  - Limits for discharge of industrial waste into inland surface waters
  - Limits for industrial waste discharged on land for irrigation purposes
  - Limits for industrial & domestic waste discharged into marine coastal areas
  - Limits for waste from rubber factories discharged into inland surface waters
  - Limits for waste from textile industry discharged into inland surface waters
  - Limits for waste from tanning industry discharged into surface or marine coastal areas
  - Limits for discharge of effluents into public sewers with central treatment plants

What is more in 1st revision

- New water quality parameters added
  - Colour
  - Dissolved phosphate
  - Total Kjeldhahl N
  - Iron
  - Detergents/ Surfactants
  - Faecal coliforms
  - Chromium Hexavalent
- Hydraulic loading applicable for different types of soils

2nd Revision planned

- Certain criteria leading to either maximum or minimum values in the present standard may result in ambiguous situations and also several complaints and observations have been received since the last review in 2008

- Hence,11 thrust areas being identified to be revised and 11 sub-committees appointed

11 Thrust areas

1. To prepare a separate set of standards for sea outfall (long / short)
2. To prepare a separate set of standards for discharge of domestic wastewater (both black /grey)
3. To prepare a separate set of standards for discharge of treated effluents (both industrial & domestic) to public sewers
4. To study the effectiveness of 1: 8 dilution scenario and to propose recommendations for dilution factor in discharge and receiving treated wastewater in streams, rivers and water bodies
5. To study the existing levels of pollutants for discharge of treated water (Industrial / Domestic) on land for irrigation or replenishment of water table
6. To study the odour characteristics for the discharge of treated wastewater (both industrial & domestic)

7. To study the effectiveness and applicability of the following parameters in the wastewater discharge standards
   - BOD - can we have a reliable value?
   - TSS - Is max. particle size meaningful?
   - Temperature (discharging) – Study from the ecological point of view
   - Phenolic Compounds – Diff. types of compounds present
     Fluorides – high value , to be studied further
   - Sulphate - Limits should be included
   - Chromium hexavalent – No measurement to detect the level/ remove?
   - Mercury - limits measurable or not
   - Pesticides – How accurate this is?
   - Dissolved phosphates – Is this value reasonable?
   - Cyanide - clarify the form free/ionic
   - Detergents/ surfactants - Propose a method for measurement
   - Total/ faecal coliform – too difficult to comply with
   - Radio active waste – Is this reasonable?

8. List IV – Rubber Industry
9. List V- Textile Industry
10. List VI – Tanning Industry
11. To prepare a set of standards for discharge of leachate from municipal solid waste disposal facility

Evaluation team

- Prof. (Mrs) N. Ratnayake – University of Moratuwa
- Dr. Mahesh Jayaweera - University of Moratuwa
- Dr. A.M. Mubarak – Director/ITI
- Mrs. Ramani Ellepola – Director General /CEA
- Mr. K.H. Muthukudaarachchi – Deputy Director General (EPC) /CEA

Working Group 1:To prepare a separate set of standards for sea out fall (long / short)

1. **Group Leader : Mr. G.A. Kumararatne, Addl. GM (Sewerage) – NWSDB**
2. **Convener : Mr. N. Manorathne (AD/EPC) - Central Environmental Authority**
3. Mr. R.S. Warusamana PD(GCWMP) - NWSDB
4. Mrs. Kumudini Samarasinghe (Superintendent Eng.) - CMC
5. Mr. Jagath Gunasekera (Asst. Manager) - Marine Environment Protecting Agency
6. Mr. Bandula Wickamaarachchi (Snr. Eng) - Coast Conservation Department
7. Mr. R.M.U. Senarath (Snr. DD) - Board of Investment of Sri Lanka
8. Mr. Asitha Seneviratne (Addl. Sec) - Ministry of Industries
9. Mr. Nihal Cooray - Chamber of Commerce
10. Dr. Gemunu Herath (Snr. Lecturer) - University of Peradeniya
11. Dr. R.N. Chandrajith (Snr. Lecturer) - University of Peradeniya
12. Mr. S.A.M. Asmi - NARA
13. Mrs. Chandima Gamage (Development Asst.) - Tourist Board
14. Ms. Nilanthi Bandara (Snr. Lecturer) - University of Sri Jayawardenepura
15. Mr. A.M.K.B. Attanayake (DD) - UDA
16. Ms. Theja Senaratne (Acg. D) - SLSI
17. Mr. Nishanka Wasalabandara(Asst.GM) - Water Resources Board
18. Mr. B.M.J. Prermatillake (Planning Officer) - Coast Conservation Department

TOR for the review & update of Effluent Discharge Standards (Regulation No. 1534/18 dated 2008.02.01)

1. Background
2. Problem Statement
3. Objectives of the Study
4. Literature Survey
   - Sri Lankan Context
   - regional Context
5. Methodology to be adopted
   - SWOT analysis with all stakeholders
   - Scientific methods if adopted
6. Proposed Criteria
7. Recommendations and Future Improvements
8. References
9. Appendix

Way forward

- More realistic practical set of emission standards
- Novel set of ambient standards which are tied up with emission standards
- Ambient standards – Case by case vs general
- New measurement procedures for missing parameters
- Standards for sediment quality

Thank you