

DENR ADMINISTRATIVE ORDER
No. 35
Series of 1990

Subject: REVISED EFFLUENT REGULATIONS OF 1990, REVISING AND AMENDING THE EFFLUENT REGULATIONS OF 1982

Pursuant to the provisions of Section 6 (i) of Presidential Decree No. 984, otherwise known as the "Pollution Control Decree of 1976", and by virtue of Executive Order No. 192, Series of 1987, the Department of Environment and Natural Resources hereby adopts and promulgates the following rules and regulations:

Section 1. Title. - These rules and regulations shall be known as the "Revised Effluent Regulations of 1990".

Section 2. Scope. - These rules and regulations shall apply to all industrial and municipal wastewater effluents.

Section 3. Definitions. - The following words and phrases, as used in these rules and regulations, shall have the following meaning unless the context clearly indicates otherwise:

- a. **"BOD"** means a measure of the approximate quantity of dissolved oxygen that will be required by bacteria to stabilize organic matter in wastewater or surface water. It is a semi-quantitative measure of the wastewater organics that are oxidizable by bacteria. It is also a standard test in assessing wastewater strength.
- b. **"Coastal Water"** means an open body of water along the country's coastline starting from the shoreline (MLLW) and extending outward up to the 200-meter isobath or three-kilometer distance, whichever is farther.
- c. **"Department"** refers to the Department of Environment and Natural Resources.
- d. **"Effluent"** is a general term denoting any wastewater, partially or completely treated, or in its natural state, flowing out of a manufacturing plant, industrial plant or treatment plant.
- e. **"Inland Water"** means an interior body of water or watercourse such as lakes, reservoirs, rivers, streams, creeks, etc., that has beneficial usage other than public water supply or primary contact recreation. Tidal affected rivers or streams are considered inland waters for purposes of these regulations.
- f. **"Mixing Zone"** is the place where the effluent discharge from a point source mixes with a receiving body of water. The area or extent of the zone shall be determined by the discharger and approved by the Department on a case-to-case basis.
- g. **"NPI"** means New/Proposed Industry or wastewater treatment plants to be constructed.
- h. **"OEI"** means Old or Existing Industry.

- i. **"Primary Contact Recreation"** means any form of recreation, where there is intimate contact of the human body with the water, such as swimming, water skiing, or skin diving.
- j. **"Protected Water"** means a watercourse or a body of water, or any segment thereof, that is classified as a source of public water supply, propagation and harvesting of shellfish for commercial purposes, or spawning areas for Chanoschanos and similar species, or primary contact recreation, or that which is designated by competent government authority or by legislation as tourist zone, national marine park and reserve, including coral reef park and reserve.
- k. **"Strong Water"** refers to wastewater whose initial BOD value before treatment is equal to or greater than 3,000 mg/L.

Section 4. Heavy Metals and Toxic Substances. - Industrial and other effluents when discharged into bodies of water classified as Class A, B, C, D, SA, SB, SC and SD in accordance with Section 68, as amended, of the 1978 NPCC Rules and Regulations shall not contain toxic substances in levels greater than those indicated in Table 1.

Table 1 - Effluent Standards: Toxic and Other Deleterious Substance (Maximum Limits for the Protection of Public Health)^(a)

Parameter	Unit	Protected Waters		Protected Waters		Inland Waters		Marine Waters		Marine Waters	
		Category I		Category II		Class C		Class SC		Class SD	
		(Class AA & SA)		(Class A,B & SB)							
		<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>
Arsenic	mg/L	(b)	(b)	0.2	0.1	0.5	0.2	1.0	0.5	1.0	0.5
Cadmium	mg/L	(b)	(b)	0.05	0.02	0.1	0.05	0.2	0.1	0.5	0.2
Chromium (hexavalent)	mg/L	(b)	(b)	0.1	0.05	0.2	0.1	0.5	0.2	1.0	0.5

^(a) Except as otherwise indicated, all limiting values in Table 1 (Section 4) are maximum and therefore shall not be exceeded.

^(b) Discharge of sewage and/or trade effluents are prohibited or not allowed.

Cyanide	mg/L	(b)	(b)	0.2	0.1	0.3	0.2	0.5	0.2	-	-
Lead	mg/L	(b)	(b)	0.2	0.1	0.5	0.3	1.0	0.5	-	-
Mercury	mg/L	(b)	(b)	0.005	0.005	0.005	0.005	0.005	0.005	0.05	0.01
(Tot.)											
PCB	mg/L	(b)	(b)	0.003	0.003	0.003	0.003	0.003	0.003	-	-
Formaldehyde	mg/L	(b)	(b)	2.0	1.0	2.0	1.0	2.0	1.0	-	-

Section 5. Conventional and Other Pollutants Affecting Aesthetics and Oxygen Demand. - Effluents from domestic sewage and industrial wastewater treatment plants not covered under Section 6 of these Regulations, when discharged into receiving waters classified as Class A, B, C, D, SA, SB, SC, and SD in accordance with Section 68, as amended, of the 1978 NPCC Rules and Regulations shall not contain the following pollutants in concentrations greater than those indicated in Tables 2A and 2B.

Table 2A - EFFLUENT STANDARDS: Conventional and Other Pollutants in Protected Waters Category I and II and in Inland Waters Class C^(a)

Parameter	Unit	Protected Waters				Inland Waters	
		Category I		Category II		Class C	
		(Class AA & SA)		(Class A, B & SB)			
		<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>
Color	PCU	(b)	(b)	150	100	200 ^c	150 ^c
Temperature (max rise in deg. Celsius in RBW)	°C rise	(b)	(b)	3	3	3	3
pH (range)		(b)	(b)	6.0-9.0	6.0-9.0	6.0-9.0	6.5-9.0
COD	mg/L	(b)	(b)	100	60	150	100
Settleable Solids (1-hour)	mg/L	(b)	(b)	0.3	0.3	0.5	0.5
5-Day 20 °C BOD	mg/L	(b)	(b)	50	30	80	50
Total Suspended Solids	mg/L	(b)	(b)	70	50	90	70
Total Dissolved Solids	mg/L	(b)	(b)	1,200	1,000	-	-
Surfactants (MBAS)	mg/L	(b)	(b)	5.0	2.0	7.0	5.0
Oil/Grease (Petroleum Ether Extract)	mg/L	(b)	(b)	5.0	5.0	10.0	5.0
Phenolic Substances as Phenols	mg/L	(b)	(b)	0.1	0.05	0.5	0.1
Total Coliforms	MPN/100mL	(b)	(b)	5,000	3,000	15,000	10,000

^(a) Except as otherwise indicated, all limiting values in Tables 2A and 2B are 90th percentile values. This is applicable only when the discharger undertakes daily monitoring of its effluent quality, otherwise, the numerical values in the tables represent maximum values not to be exceeded once a year.

^(b) Discharging of sewage and/or trade effluents is prohibited or not allowed

Table 2B - EFFLUENTS STANDARDS: Conventional and Other Pollutants in Inland Waters Class D, Coastal Waters Class SC and SD and other Coastal Waters not yet Classified)

Parameter	Unit	Inland Waters		Coastal Waters		Class SD & Other Coastal Waters	
		(Class D)		(Class SC)		Not Classified	
		<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>	<u>OEI</u>	<u>NPI</u>
Color	PCU	---	---	(c)	(c)	(c)	(c)
Temperature (max. rise in deg. Celsius in RBW)	°C rise	3	3	3	3	3	3
pH (range)		5.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	5.0-9.0	5.0-9.0
COD	mg/L	250	200	250	200	300	200
5-Day 20 °C BOD	mg/L	150 ^(d)	120	120 ^(d)	100	150 ^(d)	120
Total Suspended Solids	mg/L	200	150	200	150	^(g)	^(f)
Total Dissolved Solids	mg/L	2,000 ^(h)	1,500 ^(h)	-	-	-	-
Surfactants (MBAS)	mg/L	-	-	15	10	-	-
Oil/Grease (Petroleum Ether Extract)	mg/L	-	-	15	10	15	15

^(c) Discharge shall not cause abnormal discoloration in the receiving waters outside of the mixing zone

^(d) For wastewaters with initial BOD concentration over 1,000 mg/L but less than 3,000 mg/L, the limit may be exceeded up to a maximum of 200 mg/L or a treatment reduction of ninety (90) percent, whichever is more strict. Applicable to both old and new industries.

^(g) Not more than 60 mg/L increase (dry season)

^(f) Not more than 30 mg/L increase (dry season)

^(h) If effluent is the sole source of supply for irrigation, the maximum limits are 1,500 mg/L and 1,000 mg/L, respectively, for old industries and new industries.

Phenolic Substances as Phenols	mg/L	-	-	1.0 ⁽ⁱ⁾	0.5 ⁽ⁱ⁾	5.0	1.0
Total Coliforms	MPN/100mL	(j)	(j)	-	-	-	-

NOTES for Table 2A and Table 2B:

1. In cases where the background level of Total Dissolved Solids (TDS) in freshwater rivers, lakes, reservoirs and similar bodies of water is higher than the Water Quality Criteria, the discharge should not increase the level of TDS in the receiving body of water by more than ten percent of the background level.
2. The COD limits in Tables 2A and 2B generally apply to domestic wastewater treatment plant effluent. For industrial discharges, the effluent standards for COD should be on a case to case basis considering the COD – BOD ratio after treatment. In the interim period that this ratio is not yet established by each discharger, the BOD requirements shall be enforced.
3. There are no effluent standards for chloride except for industries using brine and discharging into inland waters, in which case the chloride content should not exceed 500 mg/L.
4. The effluent standards apply to industrial manufacturing plants and municipal treatment plants discharging more than thirty (30) cubic meters per day.

Section 6. Effluent Standards for BOD for Strong Industrial Wastes. -

a) **Interim Requirements for Old or Existing Industries.** - For strong industrial wastewaters with high BOD and where the receiving body of water is Class C, D, SC and SD in accordance with Section 68, as amended, of the 1978 NPCC Rules and Regulations, the interim effluent requirements for old industries which will be applicable within the period indicated in Table 3A.

⁽ⁱ⁾ Not present in concentration to affect fish flavor or taste or tainting.

^(j) If effluent is used to irrigate vegetable and fruit crops which may be eaten raw, Fecal Coliforms should be less than 500 MPN/100 mL.

Table 3A - Interim Effluent Standards for BOD Applicable to Old or Existing Industries Producing Strong Industrial Wastes, (1990-1994)

Industry Classification Based on BOD of Raw Wastewaters Produced	Maximum Allowable Limits in mg/L, according to Time Period and Receiving Body of Water			
	Effectivity date - Dec. 31, 1991		Jan. 1, 1992-Dec. 31, 1994	
	Inland Waters Coastal Waters		Inland Waters Coastal Waters	
	(Class C & D)	(Class SC & SD)	(Class C & D)	(Class SC & SD)
1. Industries producing BOD within 3,000 to 10,000 mg/L	320 or 95% removal	650 or 90% removal	200 or 97% removal	320 or 95% removal
2. Industries producing BOD within 10,000 to 30,000 mg/L	1,000 or 95% removal	2,000 or 90% removal	600 or 97% removal	1,000 or 95% removal
3. Industries producing more than or 30,000 mg/L	1,500 or 95% removal	3,000 or 90% removal	900 or 97% removal	1,500 or 95% removal

Note: *

1. Use either the numerical limit or percentage removal whichever is lower (or whichever is more strict).
2. Starting January 1, 1995, the applicable effluent requirements for old or existing industries are indicated in Table 3B.
3. For parameters other than BOD, Table 2A and Table 2B both under Section 5 shall apply.

b) **Requirements for New Industries.** - Upon the effectivity of these regulations, new/proposed industries, or those old/existing industries that are yet to construct their wastewater treatment facilities, which are producing or treating strong wastewaters shall comply with the requirements in Table 3B below. By January 1995, this Table shall be applicable to all industries producing strong wastes.

Table 3B - Effluent Standards for New* Industries Producing Strong Wastes upon Effectivity of these Regulations, and for All Industries Producing Strong Wastes starting January 1, 1995.

Industry Classification Based on BOD of Raw Wastewater	Maximum Allowable Limits in mg/L Based on Receiving Body of Water	
	Inland Waters	Coastal Waters
	(Class C & D)	(Class SC & SD)
1. Industries producing within 3,000 to 10,000 mg BOD/L	130 or 98% removal	200 or 97% removal
2. Industries producing within 10,000 to 30,000 mg BOD/L	200 or 99% removal	600 or 97% removal
3. Industries producing more than 30,000 mg BOD/L	300 or 99% removal	900 or 97% removal

Note: *Including old or existing industries producing strong waste whose wastewater treatment plants are still to be constructed.

1. Use either numerical limits or percentage removal whichever is lower (or whichever is more strict).
2. For parameters other than BOD, Tables 2A and 2B shall apply.

Section 7. *Mixing Zone Requirements.*- The following general conditions shall govern the location and extent of the mixing zone:

- a. No mixing zone or combination of mixing zones shall be allowed to significantly impair any of the designated uses of the receiving body of water.
- b. A mixing zone shall not include an existing drinking water supply intake if such mixing zone would significantly impair the purposes for which the supply is utilized.
- c. A mixing zone for rivers, streams, etc., shall not create a barrier to the free migration of fish and aquatic life.
- d. A mixing zone shall not include a nursery area of indigenous aquatic life nor include any area designated by the Department of Environment and Natural Resources for shellfish harvesting, tourist zones and national marine parks and reserves, coral reef parks and reserves and declared as such by the appropriate government agency.
- e. In general, the length of the mixing zone or plume in rivers or similar waterways shall be as short as possible and its width shall be preferably not more than one-half of the width of the waterway.
- f. In discharging hot effluents from power plants, mineral ore milling and similar generators of large volume of liquid wastes the permissible size of the mixing zone shall be determined through modeling taking into consideration the size, hydraulic and hydrological data of the receiving body of water and the design

and siting of the wastewater outfall.

- g. For the protection of aquatic life resources, the mixing zone must not be used for, or be considered as a substitute for wastewater treatment facility.

Section 8. Additional Requirements. -

- a. In addition to fulfilling the above-stated requirements in Sections 4 to 6, no effluent shall cause the quality of the receiving body of water to fall below the prescribed quality in accordance with its classification or best usage.
- b. Where the combined effect of a number of individual effluent discharges causes one or more water quality parameters to exceed the prescribed limits, the maximum permissible concentrations of such parameters shall be reduced proportionately so as to maintain the desired quality.
- c. When discharging effluents into coastal waters, the location and design of the submarine outfall shall be based on prevailing oceanographic and wind conditions so that discharged materials shall not find their way back to the shore and that there shall be minimum deposition of sediments near and around the outfall.
- d. Effluents discharged into protected inland and coastal waters Category II, such as Class A, B, and SB, shall meet the requirements of Section 4 and 5 above.
- e. Starting January 1, 1995, old or existing industries shall comply with the standards set for new industries in these regulations.
- f. For a period to be determined by the Department Secretary and provided that the resulting effect on receiving waters does not pose an immediate threat to life, public health, safety or welfare or to animal or plant life or property, any existing industry that produces strong wastes which cannot meet the limits for BOD in Tables 3A and 3B, maybe allowed to operate and be issued a temporary permit to operate on condition that it pays first a penalty fee for polluting a receiving body of water in the amount equivalent to five pesos (PhP 5.00) per kilogram of BOD discharged per day in exceedance of the allowable effluent limit provided further that the calculated fine shall not exceed PhP5,000 per day in accordance with PD 984 and its implementing rules and regulations. (Conversion Factor: 1 mg/L = 1 g/cu.m.)
- g. Each discharger covered under these regulations shall monitor its effluent and its effect on the receiving body of water regularly in order to ensure compliance with Sections 4, 5 and 6 hereof and Section 69, as amended, of the 1978 NPCC Rules and Regulations.

Section 9. Prohibitions. -

- a. No industrial or domestic sewage effluent shall be discharged into Class AA and SA waters.
- b. In order to avoid deterioration of the quality of the receiving body of water, no new industrial plant with high waste load potential shall discharge into a body of water where the dilution or assimilative capacity of said water body during

dry weather condition is insufficient to maintain its prescribed water quality according to its usage or classification.

- c. No person shall discharge, wholly or partially, untreated or inadequately treated industrial effluents directly into bodies of water or through the use of bypass canals and/or pumps and other unauthorized means except upon prior approval of the Department Secretary.
- d. Other Restrictions:
 1. All water pollution control facilities/installations shall be properly and consistently maintained and correctly and continuously operated in order to maintain an effluent quality that complies with Sections 4 to 6 of these regulations.
 2. No industrial or manufacturing plant shall be operated without the control facilities or wastewater treatment system in good order or in proper operation except with the permission of the Department Secretary when special circumstance arise.
 3. No industrial or manufacturing plant or source of pollution shall be operated at capacities beyond the limits of operation or capability of the wastewater treatment facility in order to maintain the effluent quality within the standards or pertinent conditions required by law and/or stipulated in the permit to operate.
 4. No person shall build, erect, install or use any equipment, contrivance or any means the use of which will conceal and/or dilute an effluent discharge and which otherwise constitute a violation of any provisions of these regulations or the 1978 NPCC Rules and Regulations, as amended.

Section 10. *Methods of Analysis for Effluents.* - For purposes of these Regulations, any domestic or industrial effluent discharged into any body of water or watercourse shall be analyzed in accordance with the latest edition of the "Philippine Standard Methods for Air and Water Analyses", the "Standard Method for the Examination of Water and Wastewater" published jointly by the American Public Health Association, the American Waterworks Association and the Water Pollution Control Federation of the United States, or in accordance with such other methods of analysis as the Department may prescribe. The approved methods of analysis are given in Table 4.

Table 4 - Approved Methods of Analysis

PARAMETER	METHOD OF ANALYSIS
Arsenic	Silver Diethyldithiocarbamate Method (Colorimetric)
BOD	Azide Modification (Dilution Technique)
Boron	Carmine Method (Colorimetric Method)
Cadmium	Atomic Absorption Spectrophotometry (Wet ashing with concentration HNO ₃ + HCl)
Chlorinated Hydrocarbons	Gas Chromatography (ECD)
Chromium (Hexavalent)	Diphenyl Carbazine Colorimetric Method
Color	Visual Comparison Method Platinum Cobalt Scale
Cyanide	Specific Ion Electrode Method
Dissolved Oxygen	Azide Modification (Winkler Method), Membrane Electrode (DO meter)
Fecal Coliforms	Multiple-Tube Fermentation Technique or Membrane Filter
Lead	Atomic Absorption Spectrophotometry
Nitrate As Nitrogen	Brucine Method for Saline Waters, specific Ion Electrode Meter for Fresh Water
Oil And Grease	Gravimetric Method (Petroleum Ether Extraction)
Organo Phosphorus Compounds	Gas Chromatography (FPD)
PCB	Gas Chromatography (ECD)
PH	Glass Electrode Method
Phenolic Substances	Chloroform Extraction Method
Phosphate As Phosphorus	Stannous Chloride Method
Settleable Solids	Imhoff Cone Method
Surfactant (MBAS)	Methylene Blue Method (Colorimetric)
Temperature	Use of Mercury-Filled Thermometer
Total Coliforms	Multiple-Tube Fermentation Technique or Membrane Filter
Total Mercury	Cold Vapor Technique, (Mercury Analyzer, AAS)

Total Suspended Solids	Gravimetric Method
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Note: *Other methods found in the Philippine Standard Methods for Air and Water Analysis, the "Standard Methods for the Examination of Water and Waste Waters", published jointly by American Public Health Association, the American Waterworks Association and the Water Pollution Control Federation of the U.S. or in accordance with such other method of analyses as the DENR may prescribe.*

Section 11. Maximum Quantity to be Discharged. - For the protection of public health and the aquatic resources of the country and in cases where the volume, strength and nature of one or more pollutants, enumerated in, or not otherwise covered in the preceding Sections, are expected to cause a serious deterioration of a receiving body of water or cause harm or injury to aquatic life and resources, the Department Secretary shall promulgate guidelines for the use of the concerned line agencies, providing for the maximum quantity of any pollutant or contaminant that maybe allowed to be discharged into the said body of water or watercourse, including the maximum rate at which the contaminant may be so discharged.

This Section particularly applies, but is not limited to industrial effluents covered under Section 6 of these regulations, specifying in kilograms per day the BOD that may be discharged considering the classification and dry weather flow of the receiving body of water.

Section 12. Penalties. - Any person or group of persons found violating or failing to comply with any Order or Decision of the Department and/or the Pollution Adjudication Board or any provision of these Regulations, shall be liable under Section 9 of the Pollution Control Law (PD No. 984) and/or Section 106 of the 1978 NPCC Rules and Regulations, as amended.

Section 13. Separability Clause. - Any Section or provision of these regulations declared to be unconstitutional or invalid by a competent court, the other sections or provisions hereof shall remain to be in force.

Section 14. Repealing Clause. - Any provision of the 1978 Rules and Regulations, as amended, the Effluent Regulations of 1982, and other existing rules and regulations of the Department which are inconsistent herewith are hereby repealed.

Section 15. Amendments. - This Regulation may be amended and/or modified from time to time by the Department.

Section 16. Effectivity. - This Regulation shall take effect thirty (30) days after publication in the official gazette or any newspaper of general circulation.

APPROVED.

(Sgd.) FULGENCIO S. FACTORAN, JR.
Secretary
Department of Environment and
Natural Resources