Water Quality, Sanitation Technology for the Americas

Mexican Official Standard
NOM-001-ECOL-1996

Spanish version: Norma Oficial Mexicana NOM-001-ECOL-1996
OFFICIAL JOURNAL OF THE FEDERATION

BODY OF CONSTITUTIONAL GOVERNMENT OF THE UNITED STATES OF MEXICO
SECRETARY OF ENVIRONMENT, NATURAL RESOURCES AND FISHERIES

Mexican Official Standard NOM-001-ECOL-1996 That establishes the maximum permissible limits of pollutants in wastewater discharges into national waters and goods

1997

At the margin a seal with the national emblem, which reads: United States of Mexico Secretary of Environment, Natural Resources and Fisheries.

JULIA CARABIAS LILLO, Secretary of Environment, Natural Resources and Fisheries, based on the provisions by Articles 32 Bis fractions I, IV and V of the Organic Law of Federal Public Administration; 85, 86 fractions I,
III and VII, 92 fractions II and IV and 119 of the National Water Act; 50 fractions VIII and XV 80. fractions II and VII, 36, 37, 117, 118 fraction II, 119 fraction I subsection a), 123, 171 and 173 of the General Law for Ecological Equilibrium and Environmental Protection; 38 fraction II, 40 fraction X, 41, 45, 46 fraction II and 47 of the Federal Law on Metrology and Standardization, I have decided to issue the following Mexican Official Standard NOM-001-ECOL-1996 That establishes the maximum permissible limits of pollutants in wastewater discharges into national waters and goods; and

**CONSIDERING**

That in compliance to the provisions of fraction I of the Article 47 of the Federal Law on Metrology and Standardization, the project of Mexican Official Standard NOM-001-ECOL-1996 That establishes the maximum permissible limits of pollutants in wastewater discharges in national waters and goods, was

*Well, enjoy your trip to Mexico. Good luck not getting your head cut off by drug lords.*

*I will enjoy that, thanks.*
published in the Official Journal of the Federation on June 24, 1996, in order that, those concerned within a period of 90 calendar days can submit their comments to the National Advisory Committee on Standardization for Environmental Protection, located on Avenida Revolución in 1425, mezanine upstairs, Tlacopac colony, zip code 01040, of this city.

That during the period as referred the previous considering, and in accordance with Article 45 of the quoted legal system, were available to the public the documents to which that precept relates.

That in accordance with Fractions II and III of Article 47 of the Federal Law on Metrology and Standardization, the comments submitted by interested parties were analyzed within the this Committee, performing the modifications from the mentioned Standard; the answers to the comments in question were published in the Official Journal of the Federation on December 24, 1996.

That having complied the established procedure in the Federal Law on Metrology and Standardization for the elaboration of Mexican Official Standards, the National Advisory Committee on Standardization for Environmental Protection, in session dated October 30, 1996, approved the Official Mexican Standard NOM 001-ECOL-1996 That establishes the maximum permissible limits of pollutants in wastewater discharges into national waters and goods, so I have decided to issue the following

MEXICAN OFFICIAL STANDARD NOM-001-ECOL-1996, THAT ESTABLISHES THE MAXIMUM PERMISSIBLE LIMITS OF POLLUTANTS IN WASTEWATER DISCHARGES INTO NATIONAL WATERS AND GOODS.

INDEX

1. Objective and field of application
1. **Objective and field of application**

This Mexican Official Standard establishes the maximum permissible limits of pollutants in *discharges of wastewater* dumped into national waters and goods, in order to protect its quality and enable their uses, and is mandatory for those responsible for such discharges. This Mexican Official Standard does not apply to discharges of water from *separate storm drainage*.

*Taco bell isn't real Mexican food... everyone knows that.*
2. References


3. Definitions

3.1 Coastal waters
These are the waters of the **territorial seas** in the extent and terms fixed by international law; as well as internal **marine waters, lagoons and estuaries** that are permanently or intermittently connected with the sea.

3.2 National Water
The waters owned by the Nation, under the terms of the Article 27 fifth paragraph, *Political Constitution of the Mexican United States*.

3.3 Wastewater
The waters of varying composition discharged from different uses such as **industrial, commercial, service, agricultural, livestock, domestic, including subdivisions** and in general any other **municipal uses**, and the mixture thereof.

3.4 Stormwater
Those that come from **rain**, coming from **snow and hail** are included as well.

3.5 Domestic goods
Are goods which is administered by the [National Water Commission](#) under Article 113 of the National Water Law.

3.6 Pollution load
Amount of a pollutant expressed in mass units per time unit, provided in a **wastewater discharge**.

3.7 Special conditions of discharge
The set of **physical, chemical and biological** parameters and their maximum levels allowed in wastewater discharges, determined by the **National Commission on Water** for the person or group responsible for the unloading or to a specific receptor body to preserve and control the quality of the waters under the **National Water Law and its Regulations**.

### 3.8 Basic Pollutants

Are those compounds and parameters presented in wastewater discharges and which can be removed or stabilized by conventional treatments. As relates to this Mexican Official Standard are only considered the following: **fats and oils, floating matter, sedimentable solids, total suspended solids, BOD 5, total nitrogen (total of Kjeldahl nitrogen concentrations of nitrite and nitrate, expressed as mg / liter of nitrogen), total phosphorus, temperature and pH**.

### 3.9 Pathogens Pollutants and parasitic

Are those **microorganisms**, cysts and parasites eggs that may be present in wastewater and represent a risk to human health, wildlife. As relates to this Mexican Official Standard are only considered fecal coliforms and helminth eggs.

### 3.10 Receiving body

They are the **currents, natural reservoirs, dams, channels, sea areas or national assets** where wastewater is discharged as well as the land on which those waters are infiltrated or injected when can **contaminate soil or aquifers**.

### 3.11 Discharge

Action of pour, infiltrate, deposit or inject wastewater to a receiving body in continuous, intermittent or random manner when this is a good of the nation’s public domain.
3.12 artificial reservoir
Artificial body formed by the construction of a board or screen which is fed by one or more rivers, groundwater or rainwater.

3.13 Natural Reservoir
Body of natural formation that is fed by one or more rivers or groundwater or rainwater.

3.14 Estuary
It is the segment of watercourse under tidal influence which extends from the shoreline to the point where the chlorides concentration in water is 250 mg / l.

3.15 natural Wetlands
The transition zones between aquatic and terrestrial systems are areas of temporary flooding or permanent, whether or not subject to tidal influence, as marshes, swamps marshes and mudflats whose boundaries are the type of the hydrophilic vegetation of permanent or seasonal presence; the areas where the soil is predominantly water; and lacustrine areas or permanently moist soil areas due to natural aquifer discharges.

3.16 maximum allowable limit
Value or range assigned to a parameter, which should not be exceeded in the wastewater discharge.

3.17 Heavy metals and cyanides
They are those who, at concentrations above certain limits, can produce negative effects on human health, or wildlife. As relates to this Mexican Official Standard are only considered the following: arsenic, cadmium, copper, chromium, mercury, nickel, lead, zinc and cyanides.
Composite sample 3.18

The resulting from mixing the number of single samples, as indicated in Table 1. To conform the composite sample, the volume of each of the sample units should be proportional to the discharge flow rate at the time of their decision.

### TABLE 1

<table>
<thead>
<tr>
<th>OPERATING HOURS PER DAY OF THE DISCHARGE GENERATION PROCESS</th>
<th>NUMBER OF SIMPLE SAMPLES</th>
<th>INTERVAL BETWEEN SIMPLE SAMPLING (HOURS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MINIMUM</td>
</tr>
<tr>
<td>Less than 4</td>
<td>minimum 2</td>
<td>–</td>
</tr>
<tr>
<td>From 4 to 8</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Greater than 8 and up to 12</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Greater than 12 and up to 18</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Greater than 18 and up to 24</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

3.19 Simple Sample

The one is taken at the discharge point, continuously, operating in a normal day that quantitatively and qualitatively reflect the most representative processes or activities that generates the discharge, during the time required to complete at least a sufficient volume to be carried out the necessary analyzes to know its composition, measuring the flow discharged on site and at the sampling time.
The volume of each single sample necessary for the formation of the composite sample is determined by the following equation:

\[ V_{MSi} = V_{MC} \times \left( \frac{Q_i}{Q_t} \right) \]

where:

- \( V_{MSi} \) = volume of each of the simple sample “i”, liters.
- \( V_{MC} \) = composite sample volume needed to perform all of the required laboratory analysis, liter.
- \( Q_i \) = measured flow at the discharge at the time of taking the simple sample, liters per second.
- \( Q_t \) = \( Q_i \) to \( Q_n \), liters per second.

### 3.20 Parameter

Variable used as a reference for determining the physical, chemical and biological water quality.

### 3.21 Daily average (D.A)

It is the value that results from the analysis of a composite sample. In the case of the fats and oils parameter is the average weighted in function of the flow, and the geometric mean for the faecal coliforms, of the values obtained from the analysis of each of the simple samples taken to conform the composite sample. The **pH units** shall not be outside the allowable range, in any of the simple samples.

### 3.22 Monthly average (M.A)
It is the value obtained by calculating the weighted average in function of the flow, of the values obtained from analysis of at least two composite samples (daily average).

3.23 Unrestricted Irrigation
The use of wastewater for the activity of planting, growing and harvesting of agricultural products in an unlimited way as forage, grains, fruits and vegetables.

3.24 Restricted Irrigation
The use of wastewater for the activity of planting, growing and harvesting of agricultural products, other than legumes and vegetables that are consumed raw.

3.25 River
Current of natural water, perennial or intermittent, which flows into other streams, or a natural or artificial reservoir, or into the sea.

3.26 Floor
Receiving body of wastewater discharges used for agricultural activities.

3.27 Conventional Treatment
Are treatment processes on which are removed or stabilize basic contaminants in wastewater.

3.28 Use in agricultural irrigation
The use of water for the planting activity, growing and harvesting of agricultural products and their preparation for the first sale, only if the products have not been subjected to industrial processing.
3.29 Public urban use

The use of national water to population centers or settlements, intended for human use and consumption, after purification.

4. Specifications

4.1

The concentration of basic pollutants, heavy metals and cyanides for the wastewater discharges into national waters and goods shall not exceed the indicated value as allowable maximum limit in Tables 2 and 3 of this Mexican Official Standard. The allowable range of the hydrogen potential (pH) is from 5 to 10 units.

4.2

To determine the pathogen contamination will be taken as indicator, the fecal coliforms. The maximum permissible limit for discharges of wastewater dumped into national waters and goods, as well as discharges dumped into the soil (use in agricultural irrigation) is 1,000 and 2,000 as most probable number (MPN) of fecal coliforms per 100 ml for the monthly and daily average, respectively.

4.3

To determine the contamination by parasites will be taken as an indicator, the helminth eggs. The maximum permissible limit for discharges dumped into the soil (use in agricultural irrigation) is of a helminth egg per liter for restricted irrigation, and five eggs per liter for unrestricted irrigation, which will be conducted according to the established technique in Annex 1 of this Standard.

TABLE 2

<table>
<thead>
<tr>
<th>MAXIMUM PERMISSIBLE LIMITS FOR BASIC POLLUTANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>(Milligrams per liter, except when specified)</td>
</tr>
<tr>
<td><strong>Temperature</strong> °C (1)</td>
</tr>
<tr>
<td><strong>Fats and oils</strong> (2)</td>
</tr>
<tr>
<td><strong>Floating matter</strong> (A)</td>
</tr>
<tr>
<td><strong>Settleable solids</strong> (ml/l)</td>
</tr>
<tr>
<td><strong>Total suspended solids</strong></td>
</tr>
<tr>
<td><strong>Biochemical Oxygen Demand 5</strong></td>
</tr>
<tr>
<td><strong>Total nitrogen</strong></td>
</tr>
<tr>
<td><strong>Total phosphorus</strong></td>
</tr>
</tbody>
</table>
(1) Instantaneous

(2) Simple sample Weighted Average

(3) Absent by the Test Method defined in NMX-AA-006.

A * Absent.

**TABLA 3**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>RIVERS</th>
<th>NATURAL AND ARTIFICIAL RESERVOIRS</th>
<th>COASTAL WATERS</th>
<th>SOIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Milligrams per liter, except when specified)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsénico</td>
<td>M.A. 0.2</td>
<td>M.A. 0.1</td>
<td>M.A. 0.2</td>
<td>M.A. 0.1</td>
</tr>
<tr>
<td>Cadmio</td>
<td>M.A. 0.2</td>
<td>M.A. 0.1</td>
<td>M.A. 0.2</td>
<td>M.A. 0.1</td>
</tr>
<tr>
<td>Cyanido</td>
<td>M.A. 2.0</td>
<td>M.A. 1.0</td>
<td>M.A. 2.0</td>
<td>M.A. 1.0</td>
</tr>
<tr>
<td>Cobre</td>
<td>M.A. 4.0</td>
<td>M.A. 4.0</td>
<td>M.A. 4.0</td>
<td>M.A. 4.0</td>
</tr>
</tbody>
</table>
4.4. At the responsible for the wastewater discharge that before the entry into force of this Mexican Official Standard were have fixed discharge conditions, will can choose to fulfill the maximum permissible limits established in this Standard, prior notice to the National Water Commission.

4.5. Those responsible for the wastewater discharges dumped into national waters and goods, must comply with this Mexican Official Standard according to the following:

1. The municipal discharges will have as a limit, the compliance dates established in Table 4. Compliance is gradual and progressive, according to the population ranges. The number of inhabitants corresponds to the determined in the XI National Census of Population and Housing for 1990, published by the National Institute of Statistics, Geography and Informatics.

2. The non-municipal discharges will have as a deadline, until the compliance dates established in Table 5. Compliance is gradual and progressive, depending on the greater contaminant load, expressed as biochemical oxygen demand 5 (BOD5) and total suspended solids (TSS), according to the loads of wastewater, expressed in the discharge permit application submitted to the National Water Commission.

### Table 4

<table>
<thead>
<tr>
<th>Element</th>
<th>1</th>
<th>1.5</th>
<th>0.5</th>
<th>1.0</th>
<th>0.5</th>
<th>1.0</th>
<th>0.5</th>
<th>1.0</th>
<th>0.5</th>
<th>1.0</th>
<th>0.5</th>
<th>1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrome</td>
<td>0.01</td>
<td>0.02</td>
<td>0.005</td>
<td>0.01</td>
<td>0.005</td>
<td>0.01</td>
<td>0.02</td>
<td>0.005</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Mercury</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Nickel</td>
<td>0.5</td>
<td>1</td>
<td>0.2</td>
<td>0.4</td>
<td>0.2</td>
<td>0.4</td>
<td>0.5</td>
<td>1</td>
<td>0.2</td>
<td>0.4</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>Lead</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Zinc</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>
### MUNICIPAL DISCHARGES

<table>
<thead>
<tr>
<th>COMPLIANCE DATE FROM:</th>
<th>RANGE OF POPULATION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2000</td>
<td>more than 50,000</td>
</tr>
<tr>
<td>January 1, 2005</td>
<td>from 20,001 to 50,000</td>
</tr>
<tr>
<td>January 1, 2010</td>
<td>from 2,501 to 20,000</td>
</tr>
</tbody>
</table>

### TABLE 5

<table>
<thead>
<tr>
<th>COMPLIANCE DATE FROM:</th>
<th>BIOCHEMICAL OXYGEN DEMAND 5 t/d (tons/day)</th>
<th>TOTAL SUSPENDED SOLIDS t/d (tons/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2000</td>
<td>more than 3.0</td>
<td>more than 3.0</td>
</tr>
<tr>
<td>January 1, 2005</td>
<td>from 1.2 to 3.0</td>
<td>from 1.2 to 3.0</td>
</tr>
<tr>
<td>January 1, 2010</td>
<td>less than 1.2</td>
<td>less than 1.2</td>
</tr>
</tbody>
</table>

4.6 The compliance dates established in Tables 4 and 5 of this Mexican Official Standard may be carried out by the National Water Commission for a specific receiving body, as long as exists the corresponding study to validate such modification.

4.7 The responsible for the discharges of municipal and non-municipal wastewater, in which the concentration of pollutants in any of the basic parameters, heavy metals and cyanides, exceeds the maximum permissible limits given in Tables 2 and 3 of this Mexican Official Standard, multiplied by five, for
type B receiving bodies (rivers, urban public use), are required to submit an action program or works to be performed to the water quality control of their discharges, to the National Water Commission, within no more than 180 calendar days from the publication of this standard in the Official Journal of the Federation.

Others responsible for discharges of municipal and non-municipal wastewater, are required to submit an action program or works to be performed to the water quality control of their discharges to the National Water Commission, within the time limits in Tables 6 and 7.

The foregoing is without prejudice to the payment of rights referred in the Federal Law and to the fines and penalties established by the laws and regulations in the matter.

### TABLE 6

<table>
<thead>
<tr>
<th>MUNICIPAL DISCHARGES</th>
<th>POPULATION RANGE</th>
<th>DEADLINE TO SUBMIT ACTION PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>greater than 50,000</td>
<td>June 30, 1997</td>
</tr>
<tr>
<td></td>
<td>from 20,001 to 50,000</td>
<td>December 31, 1998</td>
</tr>
<tr>
<td></td>
<td>from 2,501 to 20,000</td>
<td>December 31, 1999</td>
</tr>
</tbody>
</table>

### TABLE 7

<table>
<thead>
<tr>
<th>POLLUTANT LOAD OF NONMUNICIPAL DISCHARGES</th>
<th>BIOCHEMICAL OXYGEN DEMAND 5 AND/OR TOTAL SUSPENDED SOLIDS</th>
<th>DEADLINE TO SUBMIT ACTION PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t/d (tons/day)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>greater than 3.0</td>
<td>June 30, 1997</td>
</tr>
</tbody>
</table>
4.8 The responsible for the discharge is obligated to carry out the monitoring of the wastewater discharges to determine the daily and monthly average. The frequency analysis and reports, are shown in Table 8 for municipal discharges and in Table 9 for Non municipal discharges. In situations that justify a greater control such as water supply protection for human consumption, hydroecological emergencies or production processes out of control, the National Water Commission can modify the analysis periodicity, and reports. Monitoring records shall be kept for inspection for a period of three years after being performed.

**TABLE 8**

<table>
<thead>
<tr>
<th>POPULATION RANGE</th>
<th>SAMPLING FREQUENCY AND ANALYSIS</th>
<th>REPORT FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>greater than 50,000</td>
<td>ONE MONTHLY</td>
<td>ONE QUARTERLY</td>
</tr>
<tr>
<td>from 20,001 to 50,000</td>
<td>ONE QUARTERLY</td>
<td>ONE HALF-YEARLY</td>
</tr>
<tr>
<td>from 2,501 to 20,000</td>
<td>ONE HALF-YEARLY</td>
<td>ONE YEARLY</td>
</tr>
</tbody>
</table>

**TABLE 9**

<table>
<thead>
<tr>
<th>BIOCHEMICAL OXYGEN DEMAND</th>
<th>TOTAL SUSPENDED SOLIDS</th>
<th>SAMPLING FREQUENCY AND ANALYSIS</th>
<th>FRECUENCIA DE REPORTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 t/d (tons/day)</td>
<td>greater than 3.0</td>
<td>ONE MONTHLY</td>
<td></td>
</tr>
</tbody>
</table>
On Facebook, an astonishing Moose.
True: Seeing the Moose a few times, you'll understand. Do you consider yourself adventurous?

To try the Moose yourself, join the Waiting for the Moose group. Its free now, an opportunity closing shortly.