

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 302
WATER QUALITY STANDARDS

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.212 **Total Ammonia Nitrogen and Un-ionized Ammonia**

- a) Total ammonia nitrogen (as N: STORET Number 00610) shall in no case exceed 15 mg/L.
- b) The total Un-ionized ammonia nitrogen (as N: STORET Number 00612) shall not exceed the acute, and chronic, and sub-chronic standards shall be determined by the equations given below subject to the provisions of Section 302.208(a) and (b), and Section 302.213 of this Part. Exceedance of each standard shall be determined by subsections (c) and (d) of this Section.

- 1) The acute standard (AS) shall be calculated using the following equation:

$$AS = \frac{0.411}{1 + 10^{7.204 - \text{pH}}} + \frac{58.4}{1 + 10^{\text{pH} - 7.204}}$$

~~From April through October, the Acute Standard (AS) shall be 0.33 mg/L and the Chronic Standard (CS) shall be 0.057 mg/L.~~

- 2) The chronic standard (CS) shall be calculated using the following equations:

- A) During the Summer period, as defined in subsection (e) of this Section:

- i) When temperature is less than or equal to 14.51°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right\} (2.85)$$

- ii) When temperature is above 14.51°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right\} (1.45 * 10^{0.028 * (25 - T)})$$

Where T = Temperature, degrees Celsius

B) During the Winter period, as defined in subsection (e) of this Section:

i) When temperature is less than or equal to 7°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right\} (1.45 * 10^{0.504})$$

Where T = Temperature, degrees Celsius

ii) When temperature is greater than 7°C:

$$CS = \left\{ \frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right\} (1.45 * 10^{0.028 * (25 - T)})$$

From November through March, the AS shall be 0.14 mg/L and the CS shall be 0.025 mg/L.

3) The sub-chronic standard shall equal 2.5 times the chronic standard.

c) Attainment of the Total Ammonia Nitrogen Water Quality Standards

1) The acute standard shall not be exceeded at any time except in those waters for which the Agency has approved a ZID pursuant to Section 302.102.

2) The 30-day average concentration of total ammonia nitrogen (in mg/L) shall not exceed the chronic standard (CS) except in those waters in which mixing is allowed pursuant to Section 302.102. The chronic standard (CS) shall be determined pursuant to subsection (d) of this Section using at least four consecutive samples collected over a period of at least 30 days. The samples must be collected in a manner that assures an average representative of the sampling period.

3) The four day average concentration of total ammonia nitrogen (in mg/L) shall not exceed the sub-chronic standard except in those waters in which mixing is allowed pursuant to Section 302.102. The sub-chronic standard shall be determined pursuant to subsection (d) of this Section using at least four consecutive samples collected over a period of at least 4 days. The samples must be collected in a manner that assures an average representative of the sampling period.

For purposes of this Section, the concentration of un-ionized ammonia nitrogen as N and total ammonia nitrogen as N shall be computed according to the following equations:

$$U = \frac{N}{[0.94412(1+10^X) + 0.0559]}$$

$$\text{and } N = U [0.94412(1+10^X) + 0.0559]$$

$$\text{where: } X = \frac{0.09018 + 2729.92}{(T + 273.16)} \text{ pH}$$

U = Concentration of un-ionized ammonia as N in mg/L

N = Concentration of ammonia nitrogen as N in mg/L

T = Temperature in degrees Celsius

- d) The water quality standard for each water body shall be calculated based on the temperature and pH of the water body at any particular time. The concentration of total ammonia in each sample shall be divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

The following tables indicates the maximum total ammonia nitrogen concentrations (mg/L as N) allowable pursuant to subsections (a) and (b) of this Section for certain combinations of pH and temperature:

- 1) Summer (April through October) Acute un-ionized ammonia 0.33 mg/L

	pH	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0
		°F	°C						
55	12.8	15.0	15.0	15.0	15.0	13.8	7.9	4.6	1.7
60	15.6	15.0	15.0	15.0	15.0	11.2	6.5	3.8	1.4
65	18.3	15.0	15.0	15.0	15.0	9.8	5.3	3.1	1.2
70	21.1	15.0	15.0	15.0	13.2	7.6	4.4	2.6	1.1
75	23.9	15.0	15.0	15.0	10.9	6.3	3.7	2.2	0.9
80	26.7	15.0	15.0	15.0	9.0	5.2	3.1	1.9	0.8
85	29.4	15.0	15.0	13.1	7.5	4.4	2.6	1.6	0.7
90	32.2	15.0	15.0	10.9	6.3	3.7	2.2	1.4	0.7

- 2) Summer (April through October) Chronic un-ionized ammonia 0.057 mg/L

	pH	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0
		°F	°C						

55	12.8	15.0	15.0	7.4	4.2	2.4	1.4	0.8	0.3
60	15.6	15.0	15.0	7.0	3.4	1.9	1.1	0.7	0.2
65	18.3	15.0	15.0	4.9	2.8	1.6	0.9	0.5	0.2
70	21.1	15.0	12.6	4.0	2.3	1.3	0.8	0.5	0.2
75	23.9	15.0	10.3	3.3	1.9	1.1	0.6	0.4	0.2
80	26.7	15.0	8.6	2.7	1.6	0.9	0.5	0.3	0.1
85	29.4	15.0	7.8	2.3	1.3	0.8	0.4	0.3	0.1
90	32.2	15.0	5.8	1.9	1.1	0.6	0.4	0.2	0.1

3) ~~Winter (November through March) Acute un-ionized ammonia
0.14 mg/L~~

	pH	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0
°F	°C								
32	0.0	15.0	15.0	15.0	15.0	15.0	9.2	5.2	1.7
35	1.7	15.0	15.0	15.0	15.0	14.1	8.0	4.5	1.5
40	4.4	15.0	15.0	15.0	15.0	11.3	6.4	3.7	1.3
45	7.2	15.0	15.0	15.0	15.0	9.0	5.1	2.9	1.0
50	10.0	15.0	15.0	15.0	12.8	7.3	4.1	2.4	0.9
55	12.8	15.0	15.0	15.0	10.3	5.9	3.4	2.0	0.7
60	15.6	15.0	15.0	14.8	8.4	4.8	2.7	1.6	0.6

4) ~~Winter (November through March) Chronic un-ionized ammonia
0.025mg/L~~

	pH	6.5	7.0	7.5	7.75	8.0	8.25	8.5	9.0
°F	°C								
32	0.0	15.0	15.0	9.1	5.1	2.9	1.6	0.9	0.3
35	1.7	15.0	15.0	7.9	4.4	2.5	1.4	0.8	0.3
40	4.4	15.0	15.0	6.3	3.6	2.0	1.1	0.7	0.2
45	7.2	15.0	15.0	5.0	2.8	1.6	0.9	0.5	0.2
50	10.0	15.0	12.7	4.0	2.3	1.3	0.7	0.4	0.2
55	12.8	15.0	10.2	3.3	1.8	1.0	0.6	0.3	0.1
60	15.6	15.0	8.3	2.6	1.5	0.9	0.5	0.3	0.1

- e) The Summer period shall occur from March through October. In water bodies that provide habitat for a period of time other than March through October for early life stages that are sensitive to ammonia, where the Winter water quality standard does not provide adequate protection, the water body shall meet the Summer water quality standard during the period of time early life stages are present. All other time periods shall be subject to the Winter standard.

BOARD NOTE: Acute and chronic standard concentrations for total ammonia nitrogen (in mg/L) for different combinations of pH and temperature are shown in Appendix C.

(Source: Amended at _____ Ill. Reg. _____, effective _____)

Section 302.213 Effluent Modified Waters (Ammonia) (Repealed)

- a) ~~Effluent modified waters are those waters or portions of waters that the Agency has determined, pursuant to 35 Ill. Adm. Code 309: Subpart A, to have the potential to exceed, and are therefore not subject to, the chronic ammonia standards of Section 302.212(b) downstream of an effluent outfall and outside of any allowable mixing zone. The Agency shall not identify a waterbody as an effluent modified water if it:~~
- 1) ~~has uses known to be adversely impacted by ammonia as designated under 35 Ill. Adm. Code 303.201 outside of any allowable mixing zone; or~~
 - 2) ~~exceeds the acute standard of Section 302.212(b) of this Part.~~
- b) ~~All effluent discharges to an effluent modified water must meet the requirements of 35 Ill. Adm. Code 304.122(d) prior to dilution with the receiving water.~~

(Source: Added at 21 Ill. Reg. 370, effective December 23, 1996)

Section 302.APPENDIX A REFERENCES TO PREVIOUS RULES

Section 302.APPENDIX B Sources of Codified Sections

Section 302.APPENDIX C Maximum total ammonia nitrogen concentrations allowable for certain combinations of pH and temperature

**PART 304
EFFLUENT STANDARDS**

SUBPART A: GENERAL EFFLUENT STANDARDS

Section 304.122 Total Ammonia Nitrogen (as N: STORET number 00610)

- a) No effluent from any source which discharges to the Illinois River, the Des Plaines River downstream of its confluence with the Chicago River System or the Calumet River System, and whose untreated waste load is 50,000 or more population equivalents shall contain more than 2.5 mg/L of total ammonia nitrogen as N during the months of April through October, or 4 mg/L at other times.

- b) Sources discharging to any of the above waters and whose untreated waste load cannot be computed on a population equivalent basis comparable to that used for municipal waste treatment plants and whose total ammonia nitrogen as N discharge exceeds 45.4 kg/day (100 pounds per day) shall not discharge an effluent of more than 3.0 mg/L of total ammonia nitrogen as N.
- c) In addition to the effluent standards set forth in subsections (a) and (b) of this Section, all sources are subject to Section 304.105 unless the Agency determines as part of the NPDES Permit Program under 35 Ill. Adm. Code 309: Subpart A that alternate effluent standards are applicable pursuant to subsection (d) of this Section.
- ~~d) All dischargers to effluent modified waters as defined at 35 Ill. Adm. Code 302.213, except for treatment works qualifying under Section 304.120(c), shall have an effective NPDES permit with monthly average effluent limits of 1.5 mg/L total ammonia as N during the months of April through October, and 4.0 mg/L total ammonia as N at other times, as well as the following restrictions:~~
- ~~1) Dischargers achieving lower ammonia concentrations than given above, yet not meeting the chronic water quality standards of 35 Ill. Adm. Code 302.212(b), shall maintain their existing level of performance consistent with the facility's expected organic and hydraulic loadings for the duration of their NPDES permit.~~
 - ~~2) New or expanded discharges that increase ammonia loading to general use waters and/or create effluent modified waters or portions of waters must demonstrate compliance to the Agency with the nondegradation requirements at 35 Ill. Adm. Code 302.105.~~

(Source: Amended at _____ Ill. Reg. _____, effective _____)

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