**POTPOURRI**

**Department of Environmental Quality**

**Office of the Secretary**

**Legal Affairs Division**

**La. R.S. 30:2019(D) Determination on Proposed Rule WQ114**

In accordance with Section 2019 of Title 30 of the Louisiana Revised Statutes, the Louisiana Department of Environmental Quality submits the following 30:2019(D) determination. (2405Pot4)

1. THE ENVIRONMENTAL AND PUBLIC HEALTH BENEFITS TO BE DERIVED FROM THE PROPOSED RULE

Water quality standards are provisions of state or federal law, which consist of designated uses for surface waters and water quality criteria based upon the designated uses. Water quality standards are developed to protect public health and welfare, protect aquatic species, and enhance the overall quality of surface waters. Code of Federal Regulations, Part 40, Section 131.4 requires states to review, establish, and revise water quality standards. Code of Federal Regulations Part 40, Section 131.11 (a) requires that criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. Additionally, “States must review water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of the designated water use or where the levels of toxic pollutants are at a level to warrant concern and must adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use.”

In accordance with 40 CFR 131.11(b), states should establish numerical values based on (i) 304(a) Guidance; (ii) 304(a) guidance modified to reflect site-specific conditions; or (iii) other scientifically defensible methods. EPA initially published aquatic life criteria recommendations for ammonia in 1976, followed by a 1985 criteria revision, then a 1999 revision, each revision incorporating newer data and better models. The draft nationally recommended freshwater ammonia criteria were published on December 30, 2009, and provided the public an opportunity to comment and provide scientific views. Supporting and related material published by the EPA, and comments submitted by the public on the draft freshwater ammonia criteria are available in the EPA Docket Center and are identified by Docket ID No. EPA-HQ-OW-2009-0921 (https://regulations.gov/docket/EPA-HQ-OW-2009-0921/document). EPA evaluated the new data and information and incorporated acceptable data in the development of the final recommended freshwater ammonia criteria. See EPA 822-R-18-022, *Aquatic Life Ambient Water Quality Criteria for Ammonia-Freshwater*. On August 22, 2013, EPA published final nationally recommended ambient water quality criteria for the protection of aquatic life from the effects of ammonia in freshwater (78 FR 52192). The EPA’s final nationally recommended ambient water quality criteria incorporates the latest scientific knowledge on the toxicity of ammonia to freshwater aquatic life.

Elevated concentrations of ammonia in freshwater have a direct toxic effect on aquatic life, exacerbated by elevated pH and temperature. Many effluents must be treated in order to keep concentrations of ammonia in surface waters from being unacceptably high. Freshwater mussels belonging to Family Unionidae are the primary aquatic organisms sensitive to ammonia and such freshwater mussels are widely distributed in Louisiana. Criteria are expressed in the form of a formula, in which temperature and pH are input to calculate the ammonia criterion.

The magnitude of ammonia toxicity to aquatic life is highly dependent on the temperature and the pH of the ambient water body. Thus, EPA presents the 2013 nationally recommended freshwater ammonia criteria as formulas, including inputs for local pH and temperature data, as well as toxicity values for the most sensitive species. The final 2013 nationally recommended criteria formulas were adjusted to specifically include toxicity values for Unionid mussel species, for which data was not previously available. Unionid mussel species are prevalent in most of the Eastern United States, including Louisiana (https://gbif.org/species/3461). LDEQ is obligated to consider criteria that are protective of aquatic species that will result in enhancement of the overall quality of surface waters of the state.

1. EXPLANATION OF THE DATA, ASSUMPTIONS, AND METHODS USED

Ammonia concentration in effluent is currently reported by 384 facilities covered by individual LPDES permits. A larger number of facilities have the potential to discharge a significant concentration of ammonia in effluent. Discharge Monitoring Reports (DMRs) from LPDES permitted facilities between January 2016 and December 2021 included concentration values between 0.1 and 462 mg/L with an average value of 4.58 mg/L. The nationally recommended criteria, calculated using a temperature value of 20 degrees C and a pH of 7 results in a 1.9 mg/L (chronic, 30-day average) and a 17 mg/L (acute, 1-hour average) criteria. Surface waters in Louisiana are often higher in temperature and pH can vary widely among surface waters of the state. Calculations using temperature and pH from Louisiana’s Water Quality Monitoring Network (<https://waterdata.deq.louisiana.gov/>) indicate that criteria values less than the nationally recommended criteria are often necessary to protect aquatic life. For example, utilizing the mussels present/salmonids absent formulas, an average temperature of 25 degrees C and pH value of 7.4, the resulting water quality criteria values are 1.1 mg/L (chronic, 30-day average) and 7.05 mg/L (acute, 1-hour average). According to the EPA nationally recommended freshwater ammonia criteria formulas, the higher the average temperature and pH, the lower the criteria. Average temperatures in Louisiana surface waters often exceed 25 degrees C and are sometimes as high as 27 degrees C. Utilizing the above-referenced DMR dataset approximately 41 percent of DMR values exceed 1.1 mg/L. Approximately 18 percent exceed of DMR values exceed 7.05 mg/L.

Taking into account the higher than average surface water temperatures and available DMR data, controlling ammonia discharges into surface waters from point sources becomes a necessity to meet the requirements of the Clean Water Act and the Code of Federal Regulations. As mentioned in Section I of this report, 40 CFR 131.11(a), states are required to review both water quality data and information on dischargers, and must adopt criteria for toxic pollutants that are sufficient to protect the designated use. Nearly all of LDEQ’s delineated subsegments are assigned the designated use of Fish and Wildlife Propagation (FWP). Documented species of Unionid mussels are widespread throughout the state (https://gbif.org/species/3461). Adoption of appropriate freshwater ammonia criteria will provide protection for the aquatic life, as well as enhancing the overall water quality.

However, LDEQ recognizes that species survey data is not 100 percent complete across all state waters. Proposed rule WQ114 is proposing to adopt the mussels present criteria formulas, and the mussels absent criteria formulas which will be implemented in LPDES permits through a performance-based approach. A performance-based approach relies on the adoption of a process rather than a specific outcome and does not require site-specific decisions to be codified in the regulations, so long as the process is transparent, predictable, repeatable and also provides the opportunity for the public participation. In conjunction with proposed rule WQ114, LDEQ is proposing revisions to the *Water Quality Management Plan, Volume 3*, *Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards,* which defines the process for implementing the mussels present or mussels absent criteria formulas in LPDES permits through a survey of the receiving water body to determine current and historical prescence or absence of Unionid mussels. The inclusion of both sets of criteria formulas and the performance-based approach in LPDES permitting provides the required protection of all aquatic species in Louisiana.

1. THE ESTIMATED ECONOMIC COST TO ALL PERSONS DIRECTLY AFFECTED BY THE PROPOSED RULE

LDEQ expects costs to be incurred by publicly and privately owned treatment works that discharge 100,000 gallons per day (GPD) of treated wastewater or more and some industrial facilities with a Louisiana Pollutant Discharge Elimination System (LPDES) permit. Industrial facilities affected are those that utilize or produce nitrogen, such as fertilizer manufacturers and facilities subject to ammonia-nitrogen effluent limit guidelines (ELGs), such as meat and seafood processors and petroleum refineries. Other industrial facilities (not yet identified) may also require ammonia-nitrogen limitations based on LDEQ's review of the actual discharge data supplied with each permit application. Certain facilities will be subject to more stringent ammonia-nitrogen limits, depending on the characteristics of their specific discharge and of the receiving water body, which may require changes to current operations and/or significant upgrades to existing treatment technology.

LDEQ has identified approximately 500 sanitary treatment plants (publicly and privately owned), 18 major industrial and 130 minor industrial facilities, which have the potential to be affected. However, not all of those potentially affected will have ammonia-nitrogen limits that are more stringent than the existing permit limits or have limits where no ammonia-nitrogen limits are included in the existing permit. Water quality based limits for ammonia-nitrogen are calculated using receiving stream flow, effluent data, and ambient pH and temperature data. The information is not available to conduct a full analysis, as LDEQ requires data from each individual facility to complete the analysis. LDEQ requested interested stakeholders to provide information regarding treatment options and cost estimate data through Potpourri Notice 2203Pot1, published on March 20, 2022, and stakeholder meetings. Potpourri Notice 2203Pot1 requested interested parties to submit information and comments concerning costs to directly affected persons, together with the environmental and/or human health risks and benefits, including information regarding treatment options and costs by May 31, 2022. No comments were received. LDEQ subsequently held a stakeholder a meeting on July 21, 2022, requesting information to be submitted by August 30, 2022. Three sets of comments were received. A second stakeholder meeting was held on October 24, 2022. No further comments were received. The information received was taken into consideration in this rule development and are presented in the following paragraphs.

Although data is not available for every potentially affected facility, LDEQ has received information that indicates the costs for installing new treatment technology would be significant. Information submitted by Foster Poultry Farms, LLC (a chicken processing facility) indicated the cost to upgrade the treatment system to meet limits between 2 and 4 mg/L ammonia-nitrogen would require $11.5 to $14 million of capital investment. LDEQ anticipates this estimate is the highest possible cost to a major industrial facility. Information submitted by St. Tammany Parish Government did not include a numeric cost estimate for improved treatment; however, St. Tammany Parish Government anticipated that advanced tertiary treatment technology would be required for most sanitary wastewater treatment facilities in St. Tammany Parish, which would be "unimaginably costly for redesign, construction, operations and rates to customers."

The proposed rule may also require additional effluent testing to demonstrate compliance with ammonia-nitrogen limits, which will be included in reissued and new LPDES permits. Facilities may be subject to additional testing costs to demonstrate compliance with ammonia-nitrogen limits. The estimated costs per test are:

* Ammonia-Nitrogen Effluent Concentration (Methods 350.1; 4500): $12 to $18 per test
* Temperature - $5 per test
* pH - $5 per test

The frequency of testing varies among permits and is dependent on permit type and the volume of wastewater discharged in gallons per day (GPD). Currently, LDEQ utilizes a standardized schedule for the monitoring of conventional pollutants in LPDES permits. The estimates presented below are based on this schedule. All minor facilities, which are classified as small businesses, already test for pH on a regular basis. All industrial facilities with a heat component in the process are already required to test for temperature. Therefore, the monitoring of pH and temperature is not expected to incur any additional cost.

Most publicly-owned treatment works (POTWs) and privately owned treatment works are already required to test for ammonia-nitrogen in the effluent in current permits, as most already have ammonia-nitrogen limitations based on the existing Water Quality Management Plan (WQMP). No additional costs are expected for these facilities with respect to monitoring. For the few facilities that currently do not have an ammonia-nitrogen limit in their permit or are not required to test for ammonia-nitrogen on a regular basis are expected to incur the following additional costs on an annual basis:

* POTWs/Privately-owned Treatment Works > 100,000 GPD < 500,000 GPD: $288 to $432/year
* POTWs/Privately-owned Treatment Works > 500,000 GPD < 1,000,000 GPD: $624 to $936/year
* Minor Industrial Facilities: $624 to $936/year

Because of the cost information received, LDEQ has included provisions and options in the proposed revisions to the Water Quality Management Plan, Volume 3: Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards to minimize costs to affected facilities in the form of extended compliance schedules and alternative representative stream flow calculations. The proposed revisions to this document are being public noticed in conjunction with this proposed rule. Please see the Small Business Analysis form for more details. Based on the regulatory provisions as proposed taken together with the implementation guidance revisions, LDEQ anticipates that ammonia limitations developed for individual permits will be fully protective of aquatic life, while avoiding the imposition of overly conservative limits that would incur undue economic burdens. Nonetheless, the costs to implement the proposed rule changes would be significant. Please see the Fiscal and Economic Impact statement for more details.

1. WRITTEN DETERMINATION

Based on sound scientific information, the environmental and public health benefits to be derived from the proposed rule outweigh the social and economic costs reasonably expected to result from the proposed rule.

Aurelia S. Giacometto Secretary