State of Oregon
DEQ Department of Environmental Quality

Memorandum

To: DEQ Water Quality Staff

From: Water Quality Permitting and Program Development; updated by Aliana Britson

Date: 7/22/2024

Subject: Implementation Instructions for the Water Quality Criterion Nitrosamines (CAS#: 35576-91-1)

This memo clarifies how the chemical group nitrosamines are measured in effluent and surface water to determine compliance with water quality criteria. This memo does not affect the evaluation of criteria for the nitrosamine derivatives.

Criterion summary

Oregon water quality standards include numeric criteria for nitrosamines and six additional nitrosamine derivatives to protect human health (See table below).

Chemical	Human Health Criteria		Aquatic Life Criteria (Freshwater)		Aquatic Life Criteria (Saltwater)	
	Water + Org (µg/L)	Org Only (µg/L)	Acute (µg/L)	Chronic (µg/L)	Acute (µg/L)	Chronic (µg/L)
Nitrosamines	0.00079	0.046	---	---	---	---
N-Nitrosodibutylamine	0.0050	0.022	---	---	---	---
N-Nitrosodiethylamine	0.00079	0.046	---	---	---	---
N-Nitrosodimethylamine	0.00068	0.30	---	---	---	---
N-Nitrosodi-n-propylamine	0.0046	0.051	---	---	---	---
N-Nitrosodiphenylamine	0.55	0.60	---	---	---	---
N-Nitrosopyrrolidine	0.016	3.4	---	---	---	---

Key issues

The CAS number provided for the nitrosamines (35576-91-1) in OAR 340-041-8033 Table 40 is actually for nitrosamine, which is a discrete compound. Current lab methods do not analyze for nitrosamine, but instead measure target analytes of its derivatives (e.g. N-nitrosodimethylamine, N- nitrosodiphenylamine). EPA's current list of national recommended criteria does not include a CAS number for nitrosamines[1].

[1] See EPA's Recommended Water Quality Human Health Criteria Table

EPA published the water quality criteria for Nitrosamines in 1980[2]. The same toxicity factor was used for both nitrosamines and N-nitrosodiethylamine, which is the most potent of the nitrosamine derivatives. The criteria for these chemicals are also identical.

Nitrosamines are not currently listed in *Appendices D* or *J* of *40 CFR 122* and are not required as part of the federally mandated priority pollutant scan. However, since nitrosamines are listed as state water quality criteria, 40 CFR 122.21(j)(4)(iv) requires that all domestic major facilities monitor for this pollutant. In the event where monitoring for nitrosamines is indicated, staff are directed to require monitoring and analysis for N-nitrosodiethylamine in lieu of nitrosamines and use the resulting data as a surrogate when evaluating reasonable potential and calculating water quality based effluent limits.

Conclusion

DEQ's policy is to analyze for N-nitrosodiethylamine as the surrogate measurement for nitrosamines when determining reasonable potential and calculating WQBELs.

[2] US EPA, Ambient Water Quality Criteria for Nitrosamines. October 1980 EPA 440/5-80-064