1,4-Dioxane: NJDEP Ground Quality Water PQL

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Information to be Presented:

- Background
  - Round Robin Laboratory Study Conducted by Bernie Wilk
  - OQA Certified Methods
- USEPA Unregulated Contaminant Monitoring Rule (UCMR3) Analytical Method.
- Basis of NJDEP Ground Water Quality Standard PQL (adopted January 2018):

1,4-Dioxane GWQS – 0.4 ug/L (adopted January 2018)

- Human Health Criterion – 0.4 µg/L
- PQL – 0.1 µg/L

Procedure for Describing Process for Development of an Analytical Interim Practical Quantitation Levels (PQL)

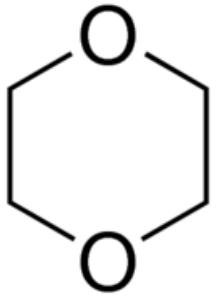
1. Basis for PQL 1,4-Dioxane appears as a listed parameter in a published USEPA Method 522 entitled; "DETERMINATION OF 1,4-DIOXANE IN DRINKING WATER BY SOLID PHASE EXTRACTION (SPE) AND GAS CHROMATOGRAPHY/ MASS SPECTROMETRY (GC/MS) WITH SELECTED ION MONITORING (SIM)."

2. The published detection level (DL) range for water is 0.020 μg/L to 0.026 μg/L depending on the absorbent cartridge used to isolate this compound.

3. Using the Department's standard practice for calculating a Practical Quantification Level this DL is multiplied by a factor of five (5) which results in a PQL value of 0.1 ppb. See: National Environmental Methods Index (NEMI) http://www.nemi.gov/ ISGWQC: 0.4 ppb Interim PQL: 0.1 ppb

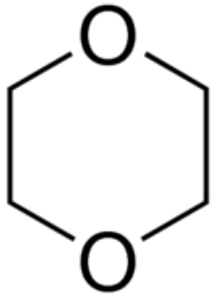
4. https://www.state.nj.us/dep/dsr/gw-criteria-pql-public-comment/1,4-dioxane-pql.pdf

1,4-Dioxane
NEMI Methods



NEMI MDLs ug/L	Method	Number of Parameters
0.026	**METHOD 522 DETERMINATION OF 1,4-DIOXANE IN DRINKING WATER BY SOLID PHASE EXTRACTION (SPE) AND GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS) WITH SELECTED ION MONITORING (SIM): EPA/600/R-08/101**	1
10	**Method 1624, Revision B: Volatile Organic Compounds by Isotope Dilution GC/MS**	35
15	**SW-846 8015C, Nonhalogenated Organics Using GC/FID**	35

1,4-Dioxane
NJDEP/OQA Certified Methods



Number of Certified Labs	Method	Number of Parameters	Certification
5	522	1	Non-Potable Water
14	624.1	116	Non-Potable Water
2	EPA SOM02.4		Non-Potable Water
3	Other NJ Modified 8270		Non-Potable Water
1	SM6200-B-11		Non-Potable Water
1	SW-846 8015D		Non-Potable Water
31	SW-846 8260C	49	Non-Potable Water

USEPA Method 522

- Lowest Concentration Minimum Reporting Levels (LCMRLs) of 0.036 ug/L and 0.047 ug/L have been determined in reagent water. The single laboratory LCMRL is the lowest true concentration for which the future recovery is predicted to fall, with high confidence (99%), between 50 and 150% recovery

New Jersey vs. National Public Water System (PWS) 1,4-Dioxane Detections in UCMR3 (2013-2015)

	New Jersey PWS		*National PWS (other than NJ)*	
	# Detects	*% Detects*	*# Detects*	*% Detects*
≥ 0.07 µg/L (Reporting Level)	**80/174**	**45.9%**	**997/4741**	**21.0%**

- Data for finished water at all large PWS (>10,000 customers) and a few small PWS. Using USEPA Method 522

- Detected above *Reporting Level* and *Health Reference Concentration* more than twice as frequently in NJ than nationally.

***Post 2018**

Lab ID	Laboratory Name	MDL	LowPoint Calibration	RL
		ug/L	ug/L	ug/L
CT003	PHOENIX ENVIRONMENTAL LABORATORY	0.02	0.25	0.25
IL457	AMERICAN WATER CENTRAL LABORATORY	0.04	0.07	0.07
IN598	EUROFINS EATON ANALYTICAL, LLC (SOUTH BEND)	0.02	0.07	0.07
MA015	ALPHA ANALYTICAL	0.03	0.1	0.1
NY158	PACE ANALYTICAL SERVICES, LLC - LONG ISLAND NY	0.007	0.02	0.02
PA010	ALS ENVIRONMENTAL - MIDDLETOWN	0.02	0.04	0.07
	Median	0.02	0.07	0.07
	Average	0.02	0.09	0.10
	Median Interlaboratory MDL * 5	0.10		

Thank you for your attention

Questions?

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