
Practical Quantitation Limits [OAC Rule 3745-27-10(C)(7)(e)]

PURPOSE

To provide guidance regarding the use and interpretation of Practical Quantitation Limits (PQLs) as statistical limits in accordance with paragraph (C)(7)(e) of rule 3745-27-10 of the Ohio Administrative Code (OAC). This guidance was developed to assist the landfill facility owner/operator in complying with this rule.

BACKGROUND

Ohio Administrative Code (OAC) rule 3745-27-10(C)(7) addresses the performance standards for statistical methods chosen to evaluate ground water monitoring data from a municipal solid waste landfill facility. Specifically, OAC rule 3745-27-10(C)(7)(e) requires that:

"The statistical method shall account for data below the limit of detection with one or more statistical procedures that ensure protection of human health and the environment. Any PQL used in the statistical method shall be the lowest concentration level that can be reliably achieved within the specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility."

The PQL computation assumes that the value is the lowest concentration of an analyte that can be quantified with a statistical degree of confidence. Because of the increased confidence in the PQL value, this level can be used as a statistical limit.

Often PQLs submitted by an owner/operator may change for a constituent over time. This variation may be due to such issues as ground water matrix interference, analytical method, laboratory, laboratory personnel or a change in analytical instruments. Such variability is not unexpected and reflects the nature of PQLs. This variability has been the source of inconsistencies related to compliance with this rule.

GUIDANCE

Attached is a table entitled "Target PQL List" which includes all of the OAC rule 3745-27-10 Appendix I constituents except for field parameters. The table represents one option available to an owner/operator for establishing PQLs that comply with OAC rule 3745-27-10(C)(7)(e). Ohio EPA has determined that if the ground water analytical data submitted have been analyzed using PQLs that are equal to or less than these target values then compliance with OAC rule 3745-27-10(C)(7)(e) has been achieved provided proper laboratory protocols have been followed.

The PQLs shown on the table were developed from a review of ground water monitoring data from solid waste landfill facilities and laboratories that do business in Ohio and should not be considered to be a fixed set of standards. The limits found on that list should be flexible based on site-specific issues. Examples of site-specific factors that may influence the PQL include matrix interferences, risk issues, and/or USEPA's future limits. If a statistically significant increase has occurred at a PQL lower than that shown in this guidance, or if there have been detections between the older PQL and the new Target PQL, then a demonstration must be made justifying the change to the higher Target PQL. The Ohio EPA has interpreted OAC rule 3745-27-10(C)(7)(e) to mean that a PQL which is less than the level found in the Target PQL list attached to this guidance must be used in future analyses unless documentation can be provided that supports a change to a higher PQL.

Documentation may be requested by Ohio EPA to justify changing the PQL for a given constituent.

POINT OF CONTACT

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TARGET PQL LIST			
INORGANIC NONMETALS	Units	MCL/std[#]	Target PQL
Alkalinity	mg/L	n/a	10
COD	mg/L	n/a	10
Chloride	mg/L	250 smcl	5
Cyanide	ug/L	200	20
Nitrogen, Ammonia	mg/L	n/a	0.2
Nitrogen, Nitrate	mg/L	10	1
Nitrogen, Nitrite	mg/L	1	0.1
TDS	mg/L	500 smcl	20
Sulfate	mg/L	250 smcl	5
Turbidity	NTU	n/a	1
METALS	Units	MCL/std	Target PQL
Antimony	ug/l	6	3
Arsenic	ug/L	10	3
Barium	ug/L	2000	10
Beryllium	ug/L	4	2
Cadmium	ug/L	5	2
Calcium	ug/L	n/a	1000
Chromium	ug/L	100	10
Cobalt	ug/L	n/a	10
Copper	ug/L	1300 *	10
Iron	ug/L	300 smcl	50
Lead	ug/L	15 *	3
Magnesium	ug/L	n/a	1000
Manganese	ug/L	50 smcl	10
Mercury	ug/L	2	0.2
Nickel	ug/L	100	15
Potassium	ug/L	n/a	1000
Selenium	ug/L	50	5
Silver	ug/L	100 smcl	10
Sodium	ug/L	n/a	1000
Thallium	ug/L	2	1
Vanadium	ug/L	n/a	20
Zinc	ug/L	5000 smcl	20

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VOLATILE ORGANICS	Units	MCL/std	Target PQL
Acetone	ug/L	n/a	20
Acrylonitrile	ug/L	n/a	5
Benzene	ug/L	5	1
Bromochloromethane	ug/L	n/a	1
Bromodichloromethane**	ug/L	80	1
Bromoform**	ug/L	80	1
2-Butanone (MEK)	ug/L	n/a	10
Carbon disulfide	ug/L	n/a	5
Carbon tetrachloride	ug/L	5	1
Chlorobenzene	ug/L	100	1
Chloroethane	ug/L	n/a	5
Chloroform**	ug/L	80	1
Chloromethane (Methyl chloride)	ug/L	n/a	1
Dibromochloromethane**	ug/L	80	1
Dibromomethane (Methylene bromide)	ug/L	n/a	1
1,2-Dichlorobenzene (o)	ug/L	600	1
1,4-Dichlorobenzene (p)	ug/L	75	1
trans-1,4-Dichloro-2-butene	ug/L	n/a	5
1,1-Dichloroethane	ug/L	n/a	1
1,2-Dichloroethane	ug/L	5	1
1,1-Dichloroethene	ug/L	7	1
cis-1,2-Dichloroethene	ug/L	70	1
trans-1,2-Dichloroethene	ug/L	100	1
1,2-Dichloropropane	ug/L	5	1
cis-1,3-Dichloropropene	ug/L	n/a	1
trans-1,3-Dichloropropene	ug/L	n/a	5
Ethylbenzene	ug/L	700	2
2-Hexanone	ug/L	n/a	10
Iodomethane (Methyl iodide)	ug/L	n/a	5
Bromomethane (Methyl bromide)	ug/L	n/a	1
Methylene Chloride (Dichloromethane)	ug/L	5	2
4-Methyl-2-pentanone (MIBK)	ug/L	n/a	10
Styrene	ug/L	100	1
1,1,1,2-Tetrachloroethane	ug/L	n/a	1
1,1,2,2-Tetrachloroethane	ug/L	n/a	1
Tetrachloroethene	ug/L	5	1
Toluene	ug/L	1000	2
1,1,1-Trichloroethane	ug/L	200	1

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VOLATILE ORGANICS (continued)	Units	MCL/std	Target PQL
1,1,2-Trichloroethane	ug/L	5	1
Trichloroethene	ug/L	5	1
Trichlorofluoromethane	ug/L	n/a	5
1,2,3-Trichloropropane	ug/L	n/a	1
Vinyl Acetate	ug/L	n/a	5
Vinyl Chloride	ug/L	2	1
Xylene	ug/L	10000	2
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	0.1
1,2-Dibromoethane (EDB)	ug/L	0.05	0.04

An MCL is shown as an integer, otherwise 'smcl' or action level (*) is noted

n/a not applicable

MCL maximum contaminant level

smcl secondary maximum contaminant level; National Secondary Drinking Water Regulation

* The constituent has an associated action level not an MCL or SMCL. For copper, the action level is exceeded if copper greater than 1,300 ug/L is detected in more than 10% of tap samples in a compliance period. The action level for lead is exceeded if lead at a concentration greater than 15 ug/L is detected in more than 10% of tap samples in a compliance period.

** Indicates the parameter is an organic disinfection byproduct (DBP), specifically the Total Trihalomethanes (TTHMs): The MCL is the sum of the concentrations of Bromodichloromethane, Dibromochloromethane, Bromoform and Chloroform.