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

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### 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 (O/O) 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 O/O may change for a constituent over time. This variation may be due in part or in whole to such issues as, but not limited to, 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. This guidance is intended to address this problem.

### 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 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. The table represents one option available to an O/O 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 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. Other options for establishing PQL values that comply with OAC Rule 3745-27-10(C)(7)(e) may be available.

### POINT OF CONTACT

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<b>TARGET PQL LIST</b>			
<b>INORGANIC NONMETALS</b>	Units	MCL/std	Target PQL
Alkalinity	mg/L		10
COD	mg/L		10
Chloride	mg/L	250 smcl	5
Cyanide	ug/L	200 mcl	20
Nitrogen, Ammonia	mg/L		0.2
Nitrogen, Nitrate/Nitrite	mg/L	10	0.1
TDS	mg/L	500 smcl	20
Sulfate	mg/L	250 smcl	5
Turbidity	NTU		1
<b>METALS</b>			
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		1000
Chromium	ug/L	100	10
Cobalt	ug/L		10
Copper	ug/L	1300 *	10
Fluoride	ug/L	4000	500
Iron	ug/L	300 smcl	50
Lead	ug/L	15 *	3
Magnesium	ug/L		1000
Manganese	ug/L	50 smcl	10
Mercury	ug/L	2	0.2
Nickel	ug/L	100	15
Potassium	ug/L		1000
Selenium	ug/L	50	5
Silver	ug/L	100 smcl	10
Sodium	ug/L		1000
Strontium	ug/L	4000 lifetime	1000
Thallium	ug/L	2	1
Vanadium	ug/L		20
Zinc	ug/L		20

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<b>VOLATILE ORGANICS</b>			
Acetone	ug/L		20
Acrylonitrile	ug/L		5
Benzene	ug/L	5	1
Bromochloromethane	ug/L		1
Bromodichloromethane**	ug/L	80	1
Bromoform**	ug/L	80	1
2-Butanone (MEK)	ug/L		10
Carbon disulfide	ug/L		5
Carbon tetrachloride	ug/L	5	1
Chlorobenzene	ug/L	100	1
Chloroethane	ug/L		5
Chloroform**	ug/L	80	1
Chloromethane (Methyl chloride)	ug/L		1
Dibromochloromethane**	ug/L	80	1
Dibromomethane (Methylene bromide)	ug/L		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		5
1,1-Dichloroethane	ug/L		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
1,3-Dichloropropane	ug/L		1
cis-1,3-Dichloropropene	ug/L		1
trans-1,3-Dichloropropene	ug/L		5
Ethylbenzene	ug/L	700	2
2-Hexanone	ug/L		10
Iodomethane (Methyl iodide)	ug/L		5
Bromomethane (Methyl bromide)	ug/L		1
Methylene Chloride (Dichloromethane)	ug/L	5	2
4-Methyl-2-pentanone (MIBK)	ug/L		10
Styrene	ug/L	100	1
1,1,1,2-Tetrachloroethane	ug/L		1
1,1,2,2-Tetrachloroethane	ug/L		1
Tetrachloroethene	ug/L	5	1

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Toluene	ug/L	1000	2
1,1,1-Trichloroethane	ug/L	200	1
1,1,2-Trichloroethane	ug/L	5	1
Trichloroethene	ug/L	5	1
Trichlorofluoromethane	ug/L		5
1,2,3-Trichloropropane	ug/L		1
Vinyl Acetate	ug/L		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
mcl : maximum contaminant level; based on chronic exposure			
smcl : secondary maximum contaminant level; based on chronic exposure			
lifetime : action level based on lifetime exposure			
* The constituent has an associated action level not an MCL or SMCL. For copper, the action level is exceeded if copper is 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.			