

Proposed Groundwater Monitoring Rule Revisions

MDNR Solid Waste Forum & Rule Revisions

February 21, 2018



Proposed Appendix I Inorganic Parameters for MSW Landfills

1. More accurately reflects a gw impact originating from a landfill
2. Eliminates false positives from sampling procedures and/or sediment
3. Reduces regulatory burden with reports related to false positives
4. No changes to organic Appendix I list

Appendix I— Current Parameters for Detection Monitoring Sanitary Landfills

COD

Cl

Fe

pH

Sp Cond

TDS

Ammonia

Antimony

Arsenic

Barium

Beryllium

Boron

Indicator Parameters

Cadmium

Calcium

Chromium

Cobalt

Copper

Fluoride

Hardness

Lead

Magnesium

Manganese

Mercury

Nickel

Nitrate/Nitrite

Phosphorous

Selenium

Silver

Sodium

Sulfate

Thallium

TOC

Vanadium

Zinc

VOCs

Appendix I—Proposed Parameters for Detection Monitoring Sanitary Landfills

~~COD~~
~~Cl, dissolved~~
~~Fe~~
~~pH~~
~~Sp Cond~~
~~TDS~~
~~Ammonia, dissolved~~
~~Antimony~~
~~Arsenic, dissolved~~
~~Barium~~
~~Beryllium~~
~~Boron, dissolved~~

Proposed Indicator Parameters

~~Calcium~~
~~Chromium, dissolved~~
~~Cobalt~~
~~Copper~~
~~Fluoride~~
~~Hardness~~
~~Lead, dissolved~~
~~Magnesium, dissolved~~
~~Manganese~~
~~Mercury, dissolved~~
~~Nickel~~
~~Nitrate/Nitrite, dissolved~~
~~Phosphorous~~
~~Selenium~~
~~Silver~~
~~Sodium~~
~~Sulfate, dissolved~~
~~Thallium~~
~~TOC~~
~~Vanadium~~
~~Zinc, dissolved~~
~~VOCs~~

Appendix I—Proposed Parameters for Detection Monitoring Sanitary Landfills

Proposed Indicator Parameters

Cl, dissolved

TDS

Boron, dissolved

Lead, dissolved

Nitrate/Nitrite, dissolved

VOCs

pH

Ammonia, dissolved

Cadmium, dissolved

Magnesium, dissolved

Sulfate, dissolved

Sp Cond

Arsenic, dissolved

Chromium, dissolved

Mercury, dissolved

Zinc, dissolved

Rationale

Proposed changes to the detection program are based on the following:

- The most frequently detected compounds in MSW leachate/ landfill gas
- Studies and information pertaining to (im)mobility, stability and persistence of heavy metals
- The contrast of concentrations between leachate and ambient groundwater
- Successful approval of the detection monitoring program in IL (approved 2007)

Why removal of total heavy metals?

- Heavy metals as a compound class are among the least mobile when compared to other inorganic indicators
- Heavy metals are subject to strong attenuation by sorption and precipitation
- Mobility of metals is controlled by physical factors related to geologic matrix and hydrochemical factors such as pH, Eh, etc.
- Turbidity issues create an unacceptable false positive rate that causes an increase in resampling events and unnecessary ASDs submitted which causes an extra burden on state regulators. In addition these false positives necessitate complex and continual statistical treatment of the data.

Why the new list?

- Select dissolved metals have high detection percentages in leachate studies
- Dissolved parameters, including the select metals exist truly in solution and are thus more mobile
- Filtering in the field will remove effects of well turbidity/sampling
- Select parameters are less affected by natural processes and/or exist at better concentration contrast between leachate and background gw which makes them more effective and reliable detection monitoring parameters
- Less regulatory burden from frequent ASDs not related to landfill activities
- Total metals will be captured during Assessment monitoring, if necessary

Other Proposed Changes

1. Allow Semi-Annual Sampling in March – May & September – November to reduce regulatory, laboratory, and sampling burden
 - Each facility to set its sampling months and not a floating 3 month sample period
2. A SSI will require regulatory confirmation procedures
 - The confirmation resampling event will be the next semi-annual monitoring event
 - If the resample confirms the SSI, then the owner will submit an ASD or follow the assessment process
3. Remove the statistical methods and reference the EPA 2009 UG and that a statistical evaluation plan will need to be submitted to SWMP for approval