

UP Solid Waste Forum

Waste Characterization (non-hazardous)

Department of Environmental Quality

Office of Waste Management and Radiological Protection

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Solid Waste Regulation

- Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended
- Michigan's Solid Waste Management Act Administrative Rules
- Subtitle D of the federal Resource Conservation and Recovery Act of 1976, as amended

Contamination Spectrum

(from most to least contaminated)

- Hazardous Waste
- Beneficial Use By-Product – must leach less than 20 times the Part 201 generic residential health based criteria
- Low Hazard Industrial Waste – must leach less than 10 times the Part 201 generic residential health based criteria or 10% of the hazardous waste criteria
- Inert Material – must leach less than most restrictive groundwater criteria and totals must be less than the most restrictive pathway OR totals are less than background

Assumptions

- All materials behave like natural soil when placed into the environment
- Standard leaching tests are truly representative in predicting the mobility of contaminants
- We are satisfied with a 1 in 100,000 risk of someone getting cancer from a particular contaminant
- The equations used to calculate the allowable criteria are correct

Groundwater (Table 1)

- Residential drinking water
- Non-residential drinking water
- Groundwater/surface water interface
- Residential groundwater volatilization to indoor air inhalation criteria
- Non- residential groundwater volatilization to indoor air inhalation criteria

Soil (Table 2)

- Residential drinking water protection criteria
- GSI protection criteria
- Soil volatilization to indoor air
- Infinite source volatile soil inhalation criteria (VSIC)
- Finite VSIC
- Particulate soil inhalation
- Direct contact

Testing Protocol

- Representative samples
- Sampling equipment
- Test procedures
 - Total
 - Leachable
- Composites verses non-composites
- QA/QC

Allowable Leaching Tests

- EPA method 1311 – Toxicity Characteristic Leaching Procedure (TCLP)
- EPA Method 1312 – Synthetic Precipitation Leaching Procedure (SPLP)
- ASTM 3987 – Standard practice for shake extraction
- Other methods approved by the DEQ

Leaching Environmental Assessment Framework (LEAF)

- EPA Method 1313 – liquid-solid partitioning as a function of pH
- EPA Method 1314 – percolation column
- EPA Method 1315 – mass transfer rates
- EPA Method 1316 – liquid-solid partitioning as a function of liquid-to-solid ratio for constituents in solid materials using a parallel batch extraction

Data Comparison

- Point-by-point verses statistical analysis
 - If all results are below the method detection level then the criteria is met
 - If all the results are below the regulatory level then the criteria is met
 - If the 95% upper confidence level (UCL) of the results is below the regulatory level then the criteria is met
 - If the UCL is exceeded it may be possible to collect additional samples to demonstrate that the UCL meets the regulatory level

Questions



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