

METHOD 1320

MULTIPLE EXTRACTION PROCEDURE

1.0 SCOPE AND APPLICATION

The Multiple Extraction Procedure (MEP) described in this method is designed to simulate the leaching that a waste will undergo from repetitive precipitation of acid rain on an improperly designed sanitary landfill. The repetitive extractions reveal the highest concentration of each constituent that is likely to leach in a natural environment. Method 1320 is applicable to liquid, solid, and multiphase samples.

2.0 SUMMARY OF METHOD

Waste samples are extracted according to the Extraction Procedure Toxicity Test (Method 1310, Chapter 8) and analyzed for the constituents of concern listed in Chapter 7, Table 7-1: Maximum Concentration of Contaminants for Characteristic of EP Toxicity, using the 7000 and 8000 series methods. Then the solid portions of the samples that remain after application of Method 1310 are re-extracted nine times using synthetic acid rain extraction fluid. If the concentration of any constituent of concern increases from the 7th or 8th extraction to the 9th extraction, the procedure is repeated until these concentrations decrease.

3.0 INTERFERENCES

Potential interferences that may be encountered during analysis are discussed in the appropriate analytical methods.

4.0 APPARATUS AND MATERIALS

4.1 Refer to Method 1310.

5.0 REAGENTS

5.1 Refer to Method 1310.

5.2 Sulfuric acid:nitric acid, 60/40 weight percent mixture: Cautiously mix 60 g of concentrated sulfuric acid with 40 g of concentrated nitric acid.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 Refer to Method 1310.

7.0 PROCEDURE

7.1 Run the Extraction Procedure (EP) test in Method 1310.

7.2 Analyze the extract for the constituents of interest.

7.3 Prepare a synthetic acid rain extraction fluid by adding the 60/40 weight percent sulfuric acid and nitric acid to distilled deionized water until the pH is 3.0 ± 0.2 .

7.4 Take the solid phase of the sample remaining after the Separation Procedure of the Extraction Procedure and weigh it. Measure an aliquot of synthetic acid rain extraction fluid equal to 20 times the weight of the solid sample. Do not allow the solid sample to dry before weighing.

7.5 Combine the solid phase sample and acid rain fluid in the same extractor as used in the EP and begin agitation. Record the pH within 5-10 min after agitation has been started.

7.6 Agitate the mixture for 24 hr, maintaining the temperature at 20-40°C (68-104°F). Record the pH at the end of the 24-hr extraction period.

7.7 Repeat the Separation Procedure as described in Method 1310.

7.8 Analyze the extract for the constituents of concern.

7.9 Repeat steps 7.4-7.8 eight additional times.

7.10 If, after completing the ninth synthetic rain extraction, the concentration of any of the constituents of concern is increasing over that found in the 7th and 8th extractions, then continue extracting with synthetic acid rain until the concentration in the extract ceases to increase.

7.11 Report the initial and final pH of each extraction and the concentration of each listed constituent of concern in each extract.

8.0 QUALITY CONTROL

8.1 All quality control data should be maintained and available for easy reference or inspection.

8.2 Employ a minimum of one blank per sample batch to determine if contamination or any memory effects are occurring.

8.3 All quality control measures suggested in the referenced analytical methods should be followed.

9.0 METHOD PERFORMANCE

9.1 No data provided.

10.0 REFERENCES

10.1 None required.

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