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Underground Injection Control Program
GUIDELINES FOR SAMPLING AND ANALYSES OF MOTOR VEHICLE WASTE DISPOSAL WELLS

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Disclaimer: These guidelines only apply in U.S. EPA - Region 5, serving Indiana, Michigan, Minnesota and Indian lands in U.S. EPA - Region 5. They do not replace or supercede local or State regulations or policy. Owners are responsible for understanding and complying with these regulations as well as applicable local and State regulations in any sampling and analyses.

I. PROJECT MANAGEMENT

A. Background

1. Safe Drinking Water Act and the Underground Injection Control Program

In December 1974, Congress passed the Safe Drinking Water Act (SDWA) to protect the quality of drinking water in the United States. Specifically, Part C of the SDWA mandated the regulation of underground injection of fluids through wells to protect underground sources of drinking water from contamination. In May 1980, the United States Environmental Protection Agency (EPA) published final Underground Injection Control (UIC) regulations which established the minimum permitting and other program administrative requirements for the five major categories of injection wells (Class I, II, III, IV and V). New rules banned the construction of new motor vehicle waste disposal wells (MVWDWs, one type of Class V well) as of April 5, 2000, and required all operators of existing MVWDWs in source water protection areas (SWPAs) or "other sensitive ground water areas" to close or obtain permits for their wells. The required closure dates depend on where the well is located. If the well is in a SWPA, the well must be closed within one year of the completion of the local source water assessment. If the well is in an "other sensitive ground water area," the deadline is January 1, 2007.

2. Motor Vehicle Waste Disposal Wells

Class V wells present the possibility of endangering human health and the environment because they dispose of fluids above or into underground sources of drinking water (USDW). EPA Region 5 believes it is necessary to assess the potential for this endangerment before closing Class V injection wells. Closure is more than just not using the well to dispose of fluids. If hazardous wastes are present, it also may include conducting a site assessment and if necessary, performing remediation at the site. MVWDWs are potential hazards because of the presence of hydrocarbons and solvents in service bay areas. Contaminants from spills or from disposal of wastes can get into the groundwater via the MVWDW at these sites. The focus of this document is the sampling and analysis of MVWDW waste products.

3. Purpose of this Document

Some facilities may be required to sample and analyze their wastes if the EPA Region 5 believes that there may be a risk to local private or public water supplies. Before collecting samples for analysis, a Sampling Plan is needed. This plan must be provided to EPA Region 5 for approval at least 30 days prior to sampling the MVWDW. The Sampling Plan is described in Section II. A. Site assessments may be required at a MVWDW facility where it has been determined that injection into the well may cause a violation of drinking water regulations or otherwise adversely affect the health of persons.

For the purposes of this document,"closure" means closing the MVWDW in such a way that motor vehicle wastes no longer have the potential to go into the groundwater. (In some cases, some parts of the disposal system can continue to be used for other wastes, such as sanitary

wastes from a restroom.)

B. Project Description (Requirements Specific to MVWDWs)

Operators of MVWDWs should submit samples of both their waste sludge and waste water to a laboratory for chemical analysis. Based on the review of analyses from previous sampling of MVWDW sludge and waste water, EPA Region 5 has selected a representative set of contaminants commonly found in MVWDW waste products. Benzene, cadmium, lead and trichloroethene (TCE*) have been found in previous sample analyses when other contaminants have also been detected. EPA Region 5 believes that these four constituents will provide an adequate representation of the relative potential for contamination by the fluids discharged from a MVWDW. This will assist EPA Region 5 in determining the need for further follow-up to ensure the protection of the groundwater in the closure of the MVWDW. The methods to be used to analyze samples for these constituents are shown in Table 1.

Note: It is strongly recommended that operators of MVWDWs hire an environmental laboratory or consultant to properly collect, preserve and transport any samples taken for analysis. Improper handling of environmental samples can render them worthless and cause additional sampling to be required.

* Also called trichloroethylene

C. Data Quality Objectives and Criteria for Measurement Data

TABLE 1

Analyte	TC Limit (mg/L)	Method SW-846
Benzene	0.5	8260B
		8021B
Cadmium	1.0	6010
		7130
		7131A
Lead	5.0	6010
		7420
		7421
Trichloroethylene	0.5	8260B
		8021B

* "The estimated instrumental detection limits shown are provided as a guide for an instrumental limit. The actual method detection limits are sample dependent and may vary as the sample matrix varies."Estimated quantitation limits taken from http://www.epa.gov/epaoswer/hazwaste/test/8_series.htm

D. Certification

1. The individual signing any sampling results is responsible for the content, validity and completeness of the report. All reports related to well closure activities must include the following certification (Title 40 of the Code of Regulations (40 CFR) Section 144.32(d)):

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

2. State certified laboratories must be used for the sample analyses described in Table 1. If the distance to the nearest laboratory is such that hand-delivery is not possible, samples should be express/overnight delivered. All laboratories involved in the analysis of samples must retain their calibration logs for two years, and laboratory data logs and sampling labels or information from the labels for three years. All analytical tests must be performed in accordance with methods acceptable under quality assurance guidelines.

STATE CERTIFIED LABORATORY WEBSITES

Michigan:

http://www.deq.state.mi.us/documents/deq-dwrpd-lab-Cert_Chem_Lab.pdf

Two for Indiana:

http://www.in.gov/idem/ctap/labs.html

http://www.in.gov/isdh/labs/chem2001.htm

Three for Minnesota:

http://www.health.state.mn.us/divs/phl/cert/index.html Home page: allows different types of searches

http://www.health.state.mn.us/divs/phl/cert/contract.html Contract labs

http://www.health.state.mn.us/divs/phl/cert/noncontract.html Noncontract labs

E. Documents and Records

The facility operator must preserve records of all MVWDW sampling and analyses. EPA Region 5 requires that the operator retain all technical information generated through the project, such as information on specific sites, until three years after MVWDW closure. However, since future activities at a site, such as sale of property, may necessitate evaluating past practices, in most cases it is best to retain records of disposal activities permanently. Field information about sampling efforts must include sample identification numbers; date and time of sample collection; description of the location of collection; the collection method; the rationale for selecting the samples and representativeness of the sample; and a description of any deviation from standard protocols.

II. DATA GENERATION AND ACQUISITION

A. Description of Sampling Plan

Before taking any samples, EPA Region 5must approve your Sampling Plan. Properly trained personnel must conduct all sampling following the approved Sampling Plan. The Sampling Plan should describe all methods, protocols and location(s). EPA Region 5 recommends that the operator follow the guidelines set forth in a document such as "Test Methods for Evaluating Solid Waste", SW-846 or "Methods for Chemical Analysis of Water and Wastes", EPA Region 5 600/4-79/020. See 40 CFR Section 136.3, which includes a list of approved sample

preservation techniques. The sampling and analysis description should include the following for each parameter:

1. Sample description
2. Sample collector's name (include sampling company name);
3. Sampler's title;
4. Sample collection method;
5. Sample collection point;
6. Sample preservation technique;
7. Analytical method for parameter detection/quantification;
8. Anticipated analytical method accuracy;
9. Anticipated upper & lower analytical method quantification limit; and
10. Adequate field documentation of sampling;
11. Equipment cleaning blanks;
12. Trip blanks;
13. Sample chain-of-custody protocol;
14. Equipment calibration;
15. Data reduction;
16. Data reporting;
17. Internal quality control;
18. Performance audits;
19. System audits;
20. Laboratory preventative maintenance;
21. Data assessment procedures;
22. Laboratory corrective actions, and
23. Quality assurance reports.

B. Quality Assurance and Quality Control

Quality assurance (QA) is the process of assuring that data obtained are technically sound and

properly documented. Quality control (QC) procedures are used to measure the degree to which quality assurance objectives are met.

This document provides guidelines on some of the minimum requirements to ensure the quality of the data produced during sampling/analysis activities. The regulated facilities are responsible for the quality of the data produced and are expected to provide data of known, documented and verifiable quality.

1. Equipment cleaning blanks

Equipment blanks are taken to detect cross-contamination due to improper cleaning of sampling equipment. After sampling the most concentrated wastestream (if known), the sampling device should be cleaned according to the sampling plan protocol. The sampling device should then be rinsed with de-ionized, distilled water and the rinse water collected in a container for transport to the laboratory for analysis of, at a minimum, the same parameters in the sampling plan. If only one sample is taken, an equipment blank should be taken prior to the sampling event.

2. Trip blanks [REQUIRED]

Trip blanks are sample containers filled with Type II reagent grade water at the laboratory, sealed at the laboratory, which accompany the sample containers used throughout the sampling event. The sample containers must be handled in the same manner as the samples. The trip blank(s) should be returned to the laboratory for analysis of, at a minimum, the same parameters in the sampling plan. At least one (1) trip blank per sampling event is recommended.

3. Sample duplicates [REQUIRED]

Sample duplicates are taken in order to check the QA/QC of the laboratory conducting the analysis. The sample should be drawn from the site which is considered to be the most concentrated (if known). The duplicate sample must be split from the original sample in a way that ensures both samples are the same. The duplicate must be labeled with a sample number which will not conflict with the other samples, but which the laboratory will not be able to identify as a duplicate.

4. Sample chain-of-custody protocol [REQUIRED]

Sample chain-of-custody should be followed at all times during the sampling and subsequent analysis. The chain-of-custody documents the handling and control necessary to identify and trace a sample from collection to final analytical results. Such documentation includes records of personnel handling the samples, labeling to prevent mixup, container seals to prevent unauthorized tampering with the samples and secure custody.

5. Equipment calibration

The QA/QC section of the Sampling Plan should specify the frequency and type of instrument calibration performed at the laboratory and in the field. The calibration should be done according to instrument manufacturer specifications and at the recommended frequency.

6. Data reduction

Data reduction is the process of converting the raw data printouts and displays into the reportable units. An example of such reduction is the proper conversion from the number of counts per

second observed on a particular instrument to the concentration of sodium in the sample in milligram/liter. Data reduction should be specified by formula for each parameter tested and is specific to the laboratory used.

7. Data validation

Data validation is the process of double-checking the results of analytical methods in order to determine that they meet project objectives. This process involves review of chain-of-custody forms, review of equipment calibration methods, as well as review of raw data and the subsequent data reduction.

8. Internal quality control

This aspect of quality assurance deals with the standard and routine efforts which the laboratory undertakes to ensure that all data generated meets the quality which is necessary for compliance with its own reporting requirements. Internal quality control should be addressed by discussing the laboratory's use of blanks, matrix spikes and matrix spike duplicates, preparation of reagents, and laboratory duplicate or replicate analyses.

9. Laboratory audits

Laboratory audits should be conducted as part of the routine quality assurance program. There should be periodic and dependable inspections of the laboratory facilities and personnel by impartial parties.

10. Corrective actions [REQUIRED IF CORRECTIVE ACTION IS PERFORMED]

Corrective actions should be implemented when any aspect of the analytical or sampling method does not achieve the project objectives. This may entail re-sampling the wastestream and/or re-analyzing the fluid or sludge for a particular parameter, re-calibrating an analytical device, or any other such action. The action levels for each such process should be shown in tabular form;

11. Reports to EPA Region 5 [REQUIRED]

The report to EPA Region 5 should contain all the results, data and sampling description necessary to enable EPA Region 5 staff to assess the accuracy, completeness and representativeness of the reported analytical results. The report should contain a table which specifies the type of sample (blank, waste, etc.), sampling date, sampling location, analytical method, method detection limit, validation result and analytical result. The results of analyses and all accompanying required data, including chain-of-custody forms, should be reported to EPA Region 5 within 45 days of the sampling event, unless conditions beyond the control of the operator prevent it. Copies of all QA/QC information as well as copies of all sampling and analysis data, whether submitted to EPA Region 5 or not, should be held by the MVWDW operator for at least three years in case that information is needed for review by the EPA,

Region 5.