


INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	STATUS: Pending	POLICY NUMBER: WASTE-0071-NPD	
AGENCY NONRULE POLICY DOCUMENT SUBJECT: <i>Supplemental Sampling Guidance</i>	AUTHORIZED: <i>Bruno L. Pigott, Commissioner</i>		
	SUPERSEDES: NEW	ISSUING OFFICE(S): Office of Land Quality, Science Services Branch	
	ORIGINALLY EFFECTIVE:	RENEWED/REVISED: N/A	

Disclaimer: This Nonrule Policy Document (NPD) is being established by the Indiana Department of Environmental Management (IDEM) consistent with its authority under IC 13-14-1-11.5. It is intended solely to provide guidance and shall be used in conjunction with applicable rules or laws. It does not replace applicable rules and laws, and if it conflicts with these rules or laws, the rules or laws shall control. Pursuant to IC 13-14-1-11.5, this policy will be available for public inspection for at least 45 days prior to presentation to the appropriate State Environmental Board, and may be put into effect by IDEM 30 days afterward. If the nonrule policy is presented to more than one board, it will be effective 30 days after presentation to the last. IDEM also will submit the policy to the Indiana Register for publication.

1.0 PURPOSE

This NPD identifies various environmental media sampling methods. The methods adequately characterize the nature and extent of release-related chemicals or evaluate the effectiveness of a remedy as required for remedial actions and removal under IC 13-25-5-8.5, IC 13-11-2-185, and IC 13-11-2-187. The sampling methods apply to specific situations mentioned in Appendices A to E. The NPD is not intended to be a compendium of all environmental sampling methods and other methods may be approved as part of an approved remedial action.

2.0 SCOPE

This NPD applies to development and review of sampling plans and remedy proposals to determine the nature of release-related chemicals.

3.0 SUMMARY

This NPD identifies various sampling methods including groundwater sampling with peristaltic pumps, polyethylene diffusion bag samplers, the non-purge sampling option at petroleum sites, sampling soil and waste for volatile organic compounds, and micro-purge sampling option. Use the methods, as appropriate, to determine the concentration of a chemical in environmental media for the purposes of remediation.

4.0 DEFINITIONS

- 4.1. "Agency" – The Indiana Department of Environmental Management (IDEM).
- 4.2. "Nonrule policy" – The term assigned by the Indiana Department of Environmental Management (IDEM) to those policies identified in IC 13-14-1-11.5 as any policy which: A. Interprets, supplements, or implements a statute or rule; B. Has not been adopted in compliance with IC 4-22-2; C. Is not intended by IDEM to have the effect of law; and D. Does not apply solely to the internal IDEM organization, an administrative policy.

- 4.3. "OLQ technical staff" –Positions requiring specialized knowledge pertaining to a particular occupation or field of study such as chemistry, geology, engineering, and risk assessment.
- 4.4. "Release-related chemical" – A substance placed on the land or in the subsurface, which by virtue of its nature or quantity, is subject to regulation by IDEM's Office of Land Quality. The term also includes regulated breakdown products.
- 4.5. "Remediation objective" – A chemical in the environment at an equal or lower concentration which will not result in an unacceptable risk to receptors.

5.0 ROLES

- 5.1. Environmental consultants shall:
 - A. Review the various sampling methods and choose a method, specified in this NPD, as applicable.
 - B. Determine the concentration of release-related chemicals in environmental media.
 - C. Determine whether a project meets the identified remediation objectives.
- 5.2. OLQ technical staff shall:
 - A. Review sampling plans using the specific sampling techniques.
 - B. Make recommendations regarding the sampling method proposed by the consultant depending on the site-specific situation.

6.0 POLICY

- 6.1. The specific sampling method, Appendices A to E as applicable, shall be reviewed and if used, must meet data quality objectives.
- 6.2. IDEM shall review sampling plans and remedy proposals.
- 6.3. IDEM shall evaluate sampling plans and remedy proposals on their merits.
- 6.4. IDEM shall make recommendations after evaluation of plans and proposals.
- 6.5. The Appendices in this NPD should be used in conjunction with the Remediation Closure Guide, the Risk-based Closure Guide, or then-applicable current guidance.

7.0 REFERENCES

- 7.1. Indiana Statutes:
 - A. IC 13-11-2-185 Environment, Definitions, Definitions, Remedial action, <http://184.175.130.101/legislative/laws/2020/ic/titles/013/articles/010/>
 - B. IC 13-11-2-187 Environment, Definitions, Definitions, Removal, <http://184.175.130.101/legislative/laws/2020/ic/titles/013/articles/010/>
 - C. IC 13-14-1-11.5 Environment, Powers and Duties of Department of Environmental Management and Boards, Duties of Department, Use by Department, <http://184.175.130.101/legislative/laws/2020/ic/titles/013/articles/010/>
 - D. IC 13-25-5-8.5 Environment, Hazardous Substances; Voluntary Remediation of Hazardous Substances and Petroleum; Voluntary remediation work plan objectives; additional action to protect human health and the environment not necessary under certain circumstances; risk-based remediation objectives and proposals, <http://184.175.130.101/legislative/laws/2020/ic/titles/013/articles/010/>
 - E. IC 4-22-2 State Offices and Administration, Administrative Rules and Procedures, Adoption of Administrative Rules, <http://184.175.130.101/legislative/laws/2018/ic/titles/004/articles/015/chapters/013>
- 7.2. Agency Policies:

- A. Remediation Closure Guidance
https://www.in.gov/idem/cleanups/files/remediation_closure_guide.pdf.

7.3. Other Sources:

Groundwater Sampling with Peristaltic Pumps

- A. (US EPA 1996) Ground Water Issue: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, by Robert W. Puls and Michael J. Barcelona, EPA/540/S-95/504, April 1996, <https://www.epa.gov/sites/production/files/2015-06/documents/lwflw2a.pdf>
- B. (US EPA 2002) Ground Water Forum Issue Paper: Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers, by Douglas Yeskis and Bernard Zavala, EPA/542/S-02/001, May 2002, https://www.epa.gov/sites/production/files/2015-06/documents/gw_sampling_guide.pdf
- C. (US EPA 2005) Groundwater Sampling and Monitoring with Direct Push Technologies, EPA 540/R-04/005, August 2005, Available at <https://nepis.epa.gov/>
- D. (US EPA 2013) Groundwater Sampling, SESDPROC-301-R3, US EPA Region 4, Science and Ecosystem Support Division, March 6, 2013. <https://www.epa.gov/sites/production/files/2015-06/documents/Groundwater-Sampling.pdf>.
- E. (USGS 2014) National Field Manual for the Collection of Water-Quality Data, Chapter A2: Selection of Equipment for Water Sampling, version 3.1, revised by Francesca D. Wilde, Mark W. Sandstrom and Stanley C. Skrobialowski, April 2014, https://water.usgs.gov/owq/FieldManual/Chapter2/Chapter2_V3-1.pdf.
- F. (NJ DEP 2005) Field Sampling Procedures Manual, Chapter 5 – Sampling Equipment, New Jersey Department of Environmental Protection, August 2005, <http://www.nj.gov/dep/srp/guidance/fspm/>.
- G. (OH EPA 2006) Technical Guidance Manual for Ground Water Investigations, Chapter 10 – Ground Water Sampling, State of Ohio Environmental Protection Agency, Division of Drinking and Ground Waters, February 2006, http://www.epa.ohio.gov/portals/28/documents/TGM-10_final0206W.pdf.
- H. ASTM 2001. Standard Guide for the Selection of Purging and Sampling Devices for Ground-Water Monitoring Wells, ASTM D 6634-01 (current version is D 6634M-14), March 2001, available for purchase at: <https://www.astm.org/Standards/D6634.htm>
- I. FRTR. 4.4.1 Suction-Lift Pumps (Peristaltic), in Field Sampling and Analysis Matrix: Field Sampling and Collection Techniques, at Federal Remediation Technologies Roundtable (FRTR), https://frtr.gov/site/4_4_1.html
- J. Parker 1994. The Effects of Ground Water Sampling Devices on Water Quality: A Literature Review by Louise V. Parker in Groundwater Monitoring & Remediation, Volume 14, Issue 2, May 1994, pp 130-141, Available for purchase at: <https://ngwa.onlinelibrary.wiley.com/doi/abs/10.1111/j.1745-6592.1994.tb00108.x>

- K. Paul and Puls 1992. Comparison of Ground-Water Sampling Devices Based on Equilibration of Water Quality Indicator Parameters by Cynthia J. Paul and Robert W. Puls, [EPA/600/A-93/005](https://nepis.epa.gov/EPA/600/A-93/005), November 1992. Available at <https://nepis.epa.gov/>

Polyethylene Diffusion Bag Samplers

- A. Interstate Technology Regulatory Council (ITRC), 2002. Passive Diffusion Bag (PDB) Samplers, Frequently Asked Questions; available at: <http://www.itrcweb.org/Documents/PDBFAQs2.pdf>
- B. Interstate Technology Regulatory Council (ITRC), 2004. Technical and Regulatory Guidance for Using Polyethylene Diffusion Bag Samplers to Monitor Volatile Organic Compounds in Groundwater (DSP-3) Feb-04, <https://itrcweb.org/GuidanceDocuments/DSP-3.pdf>
- C. LeBlanc, D. and Archfield, S.; 2005. Comparison of Diffusion and Pumped Sampling Methods to Monitor Volatile Organic Compounds in Ground Water, Massachusetts Military Reservation, Cape Cod, Massachusetts, July 1999-December 2002, Scientific Investigations Report 2005-5010; available at: http://pubs.usgs.gov/sir/2005/5010/pdf/sir2005_5010.pdf
- D. Vroblesky, D.; 2001. User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells Part 1: Deployment, Recovery, Data Interpretation, and Quality Control and Assurance, U.S. Geological Survey, Water-Resources Investigation Report 01-4060; available at: <https://clu-in.org/download/char/passsamp/Users-guide-for-polyethylene-WRIR01-4060.pdf>
- E. Vroblesky, D., editor; 2001. User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells Part 2: Field Tests, U.S. Geological Survey, Water-Resources Investigation Report 01-4061; available at: <https://www.itrcweb.org/Guidance/GetDocument?documentID=23>

Sampling Soil and Waste for Volatile Organic Compounds (VOCs)

- A. Method 1312, Synthetic Precipitation Leaching Procedure in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Third Edition, Final Update II, September 1994, <https://www.epa.gov/sites/production/files/2015-12/documents/1312.pdf>
- B. Method 3815, Screening Solid Samples for Volatile Organics in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Third Edition, Final Update IV; February 2007, <https://www.epa.gov/sites/production/files/2015-12/documents/3815.pdf>
- C. (IDEM 2012) Remediation Closure Guide, Indiana Department of Environmental Management, March 22, 2012, and updates, https://www.in.gov/idem/cleanups/files/remediation_closure_guide.pdf
- D. (IDEM 2001) Risk Integrated System of Closure: Technical Resource Guidance Document, Indiana Department of Environmental Management, February 15, 2001, and updates, https://www.in.gov/idem/cleanups/files/risc_tech_guide.pdf
- E. (IDEM 2001a) Remediation Closure Guide, Indiana Department of Environmental Management, February 15, 2001, https://www.in.gov/idem/files/nrpd_waste-0046-r1.pdf
- F. Standard Guide for Sampling Waste and Soils for Volatile Organic Compounds, ASTM Standard D 4547-06. Available at <https://www.astm.org/Standards/D4547.htm>
- G. Standard Practice for Collection and Handling of Soils Obtained in Core Barrel Samplers for Environmental Investigations, ASTM Standard D 6640-01(2005), Available at <https://www.astm.org/Standards/D6640.htm>

Non-Purge Sampling Option at Petroleum Sites

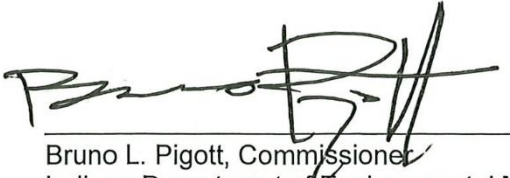
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- B. (IDEM 2017) Groundwater Sampling with Peristaltic Pumps. Technical Guidance Document, https://www.in.gov/idem/cleanups/files/remediation_tech_guidance_peristaltic_pump.pdf
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- K. Williams, K., Martinez, A., Daugherty, S., and Lundegard, P.D., 1996. Groundwater sampling - a pilot study of the effects of well purging. Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in Ground Water Conference, National Ground Water Association, 601 Dempsey Road, Westville, OH, pp 191-206

Micro-Purge Sampling Option

- A. (US EPA 2015) Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers. EPA 542-S-02-001. p 53 http://www.epa.gov/sites/production/files/2015-06/documents/gw_sampling_guide.pdf
- B. (US EPA 1996) Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. EPA/540/S-95/504, p 12, <https://www.epa.gov/sites/production/files/2015-06/documents/lwflw2a.pdf>
- C. (US EPA 2010) Low Stress (low flow) Purging and Sampling Procedures for the Collection of Ground Water Samples from Monitoring Wells. Revision 3, p 30 EPA Region I 2010, <https://www.epa.gov/sites/production/files/2017-10/documents/eqasop-gw4.pdf>
- D. (US EPA 1995) Use of Low-Flow (Minimal Drawdown) Methods for Ground Water

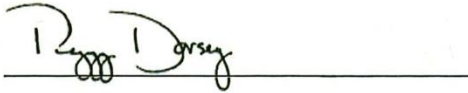
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- E. (US EPA 1994) Standard Operating Procedure for Well Purging. SOP #4.1, Revision 0, p 22, U.S. EPA Region VIII
- F. (IDEM 2005) Sampling and Analysis of Ground Water for Metals at Remediation Sites. WASTE-0057-NPD <https://www.in.gov/idem/resources/nonrule-policies/effective-nonrule-policies/waste-0057-npd/>
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8.0 SIGNATURES



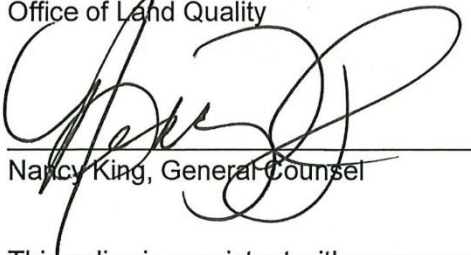
Bruno L. Pigott, Commissioner
Indiana Department of Environmental Management

6/18/21
Date



Peggy Dorsey, Assistant Commissioner
Office of Land Quality

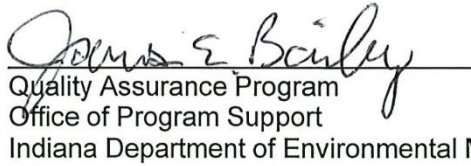
6/1/2021
Date



Nancy King, General Counsel

6/8/21
Date

This policy is consistent with agency requirements.



Quality Assurance Program
Office of Program Support
Indiana Department of Environmental Management

21 Jun 2021
Date

PRELIMINARY

9.0 APPENDICES

A. Groundwater Sampling with Peristaltic Pumps

https://www.in.gov/idem/cleanups/files/remediation_tech_guidance_peristaltic_pump.pdf

B. Polyethylene Diffusion Bag Samplers

https://www.in.gov/idem/cleanups/files/remediation_tech_guidance_pdb_sampler.pdf

C. Sampling Soil and Waste for Volatile Organic Compounds (VOCs)

https://www.in.gov/idem/cleanups/files/guidance_soil_sampling_vocs.pdf

D. Non-Purge Sampling Option

https://www.in.gov/idem/cleanups/files/guidance_sampling_non-purge.pdf

E. Micro-Purge Sampling Option

https://www.in.gov/idem/cleanups/files/guidance_sampling_micro-purge.pdf

Pending