

## References

- Anderson, Bryan. 2017. "Taxpayer dollars fund most oversight and cleanup costs at Superfund sites." *The Washington Post*, September 20, 2017, National. [https://www.washingtonpost.com/national/taxpayer-dollars-fund-most-oversight-and-cleanup-costs-at-superfund-sites/2017/09/20/aedcd426-8209-11e7-902a-2a9f2d808496\\_story.html](https://www.washingtonpost.com/national/taxpayer-dollars-fund-most-oversight-and-cleanup-costs-at-superfund-sites/2017/09/20/aedcd426-8209-11e7-902a-2a9f2d808496_story.html).
- ASTM. 1996. "Standard Guide for Representative Sampling for Management of Waste and Contaminated Media." D6044-96.
- Becker, Joanna M. 2005. "PhD thesis: Centimeter scale analysis of soil heterogeneities within a long-term, heavy metal contaminated site.", Purdue Univ. .
- Brewer, Roger, John Peard, and Marvin Heskett. 2016. "A Critical Review of Discrete Soil Sample Data Reliability: Part 1—Field Study Results." *Soil and Sediment Contamination: An International Journal* 26:1:1-22. doi: 10.1080/15320383.2017.1244171.
- Brewer, Roger, John Peard, and Marvin Heskett. 2017. "A Critical Review of Discrete Soil Sample Data Reliability: Part 2—Implications." *Soil and Sediment Contamination: An International Journal* 26:1:23-44. doi: 10.1080/15320383.2017.1244172.
- Bruce, M. L. 2003. "Turning Dirt into Dust, Evaluation of Kitchen Appliances." Louisville Chemistry Conference, Kentucky.
- Clausen, J. L., T. Georgian, K. H. Gardner, and T. A. Douglas. 2018a. "Applying Incremental Sampling Methodology to Soils Containing Heterogeneously Distributed Metallic Residues to Improve Risk Analysis." *Bulletin of Environmental Contamination and Toxicology* 100 (1):155-161. doi: 10.1007/s00128-017-2252-x.
- Clausen, J. L., T. Georgian, K. H. Gardner, and T. A. Douglas. 2018b. "Inadequacy of Conventional Grab Sampling for Remediation Decision-Making for Metal Contamination at Small-Arms Ranges." *Bull Environ Contam Toxicol* 100 (1):147-154. doi: 10.1007/s00128-017-2255-7.
- Clausen, J. L., T. Georgian, K. H. Gardner, and T. A. Douglas. 2018c. "Optimization of Field and Laboratory Sample Processing for Characterization of Metallic Residues at Military Training Ranges." *Bull Environ Contam Toxicol* 100 (5):603-608. doi: 10.1007/s00128-018-2311-y.
- Clausen, J.L., B. Swope, A. Bednar, S. Beal, D. Rosado, L. Leavitt, T. Cary, M. Catt, K. Armstrong, N. Parker, and A. Staples. 2016. Impact of the Incremental Sampling Methodology on Metal Bioavailability Assessments. edited by Cold Regions Research and Engineering Laboratory.
- Clausen, Jay, Thomas Georgian, and Anthony Bednar. 2013. *Cost and Performance Report of Incremental Sampling Methodology for Soil Containing Metallic Residues*. Vol. ERDC.
- Clausen, Jay, Thomas Georgian, Anthony Bednar, Nancy Perron, Andrew Bray, Patricia Tuminello, Gordon Gooch, Nathan Mulherin, Arthur Gelvin, Marc Beede, Stephanie Saari, William Jones, and Shawna Tazik. 2013. Demonstration of Incremental Sampling Methodology for Soil Containing Metallic Residues.
- Clausen, Jay L. , Thomas Georgian, Julie Richardson, Anthony Bednar, Nancy Perron, and Andrew Bray. 2012. Evaluation of Sampling and Sample Preparation Modifications for Soil Containing Metallic Residues
- Cochran, W.G. 1977. *Sampling Techniques - 3rd Edition, Wiley series in probability and mathematical statistics*: John Wiley & Sons, Inc.
- Conservation, Alaska Department of Environmental. 2019. Field Sampling Guidance. edited by Division of Spill Prevention and Response Contaminated Sites Program.
- Crumbing, Deana. 2014. "Hot Spots: Incremental Sampling Methodology (ISM) FAQs." *Unpublished peer-reviewed white paper*, <https://www.itrcweb.org/FileCabinet/GetFile?fileID=20542>".
- Crumbing, Deana. 2019. "Personal communication of PAH data analysis for a landfill Superfund site in EPA Region 3."
- Doctor, P.G, and R.O. Gilbert. 1978. Two Studies in Variability for Soil Concentrations: with Aliquot Size and with Distance. In *Selected Environmental Plutonium Research Reports of the NAEG*. Battelle Memorial Institute, Pacific Northwest Laboratory, Richland, Washington. .
- DOD/DOE. 2018. DOD DOE Consolidated Quality Systems Manual (QSM) for Environmental Laboratories. In *DOD/DOE QSM 5.1.1*
- DOT. 2011. 49 CFR Part 172 - HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS, HAZARDOUS MATERIALS COMMUNICATIONS, EMERGENCY RESPONSE INFORMATION, TRAINING REQUIREMENTS, AND SECURITY PLANS.
- DOT. 2019. Transportation, PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS. In *49 CFR 173.4a (c)(2)*. .
- Dowson, S. T. , N. L. Hassig, C. J. Murray, B. A. Pulsipher, and S. McKenna. 2007. Visual Sample Plan Version 5.0 User's

Guide.

DTSC, CA. 2001. California Department of Toxic Substances Information Advisory: Clean Imported Fill Material

DTSC, CA. 2018. California Department of Toxic Substances: Recommendations for Evaluating Polychlorinated Biphenyls (PCBs) at Contaminated Sites in California. HHRA Note Number 8. edited by DTSC's HUMAN AND ECOLOGICAL RISK OFFICE (HERO).

DTSC, CA. 2019. California Department of Toxic Substances Information Advisory: Guidance for Screening Level Human Health Risk Assessments. HHRA Note Number 4.

Fehsenfeld, Fred, Jack Calvert, Ray Fall, Paul Goldan, Alex Guenther, and C. Nicholas Hewitt. 1992. "Emissions of volatile organic compounds from vegetation and the implications for atmospheric chemistry." *Global Biogeochemical Cycles*. doi: <https://doi.org/10.1029/92GB02125>.

Frederick, Timothy, Alicia Frame, and Daniel Vallerio. 2017. "Comparison of soil sampling and analytical methods for asbestos at the Sumas Mountain Asbestos Site—Working towards a toolbox for better assessment".

Fye, J. L., H. H. Nelson, R. L. Mowery, A. P. Baronavski, and J. H. Callahan. 2002. "Scanning ultraviolet two-step laser mass spectroscopy of polycyclic aromatic hydrocarbon distributions on creosote-contaminated soil particles." *Anal Chem* 74 (13):3019-29. doi: 10.1021/ac025510l.

Georgian, T. 2020. "Title." Unpublished white paper.

Gerlach, R. W., and J. M. Nocerino. 2003. "Guidance for Obtaining Representative Laboratory Analytical Subsamples from Particulate Laboratory Samples " EPA/600/R-03/027.

Gilbert, R.O. 1987. "Statistical Methods for Environmental Pollution Monitoring."

Goodrum, PE, RA Budinsky, E Mendelsohn, and H Summers. 2018. "Use of Thyroid Disease Incidence and Dose-Response Analysis to Reduce Uncertainty in the Dioxin Oral Reference Dose." *Organohalogen Compounds* Vol. 80:429-432.

Goodrum, Philip , and Emma Mendelsohn. 2018. "Title." Organohalogen Compounds.

Gy, Pierre. 1953. "Erreur Commise dans le Prelevement d'un Echantillon sur un Lot de Minerai' (Error made when sampling a mineral lot)." *Congres des laveries des mines metalliques français*, Paris.

Gy, Pierre. 1988. *Ensemble Coherent de Theories (Heterogeneity, Sampling, Homogenisation. Their Logical Integration), Heterogeneity, Echantillonnage, Homogenisation*. Masson, Paris.

Hadley, P.W., E. Crapps, and A.D. Hewitt. 2011. "Time for a Change of Scene." *Environmental Forensics* 12:4:312-318.

Hadley, Paul W., and Stephen D. Mueller. 2012. "Evaluating "Hot Spots" of Soil Contamination (Redux)." *Soil and Sediment Contamination: An International Journal* 21 (3):335-350. doi: 10.1080/15320383.2012.664431.

Hartmann, H.M., J.P. Butler, A.M. Dorries, and J.R. Beck. 1993. . Use of the Exposure Unit Concept in Risk Assessments: A Case Study for Los Alamos National Laboratory. Los Alamos, NM: Los Alamos National Laboratory.

Hasselov, M. , and F. von der Kammer. 2008. "Iron oxides as geochemical nanovectors for metal transport in soil-river systems. ." doi: DOI: 10.2113/gselements.4.6.401.

HDOH. 2011. Technical Guidance Manual Notes: Decision Unit and Multi-Increment Sample Investigations Roger Brewer & John Peard. edited by Hazard Evaluation and Emergency Response (HEER).

HDOH. 2015. Small-Scale Variability of Discrete Soil Sample Data, Part 2: Causes and Implications for Use in Environmental Investigations.

HDOH. 2016a. Technical Guidance Manual for the Implementation of the Hawai'i State Contingency Plan. edited by Office of Hazard Evaluation and Emergency Response.

HDOH. 2016b. Technical Guidance Manual for the Implementation of the Hawai'i State Contingency Plan. edited by Office of Hazard Evaluation and Emergency Response.

HDOH. 2017a. Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material edited by Office of Hazard Evaluation and Emergency Response.

HDOH. 2017b. Technical Guidance Manual for the Implementation of the Hawai'i State Contingency Plan. edited by Office of Hazard Evaluation and Emergency Response.

Hewitt, A. D., T. F. Jenkins, and C. L. Grant. 1995 "Collection, Handling, and Storage: Keys to Improved Data Quality for Volatile Organic Compounds in Soil." *American Environmental Laboratory* 7:25-28.

Hewitt, Alan, Thomas Jenkins, Charles Ramsey, Kevin Bjella, Thomas Ranney, and Nancy Perron. 2005. "Estimating Energetic Residue Loading on Military Artillery Ranges: Large Decision Units."63.

Homsher, M.T. , F. Haeberer, P.J. Marsden, R.K. Mitchum, D. Neptune, and J. Warren. 1991. "Performance Based Criteria, A Panel Discussion, Part I and II." *Environmental Lab*

IATA. 2011. "International Air Transport Association Dangerous Goods Regulations (DGR)."

IDEQ. 2015. Idaho Department of Environmental Quality – Pile Sampling White Paper. .

ITRC. 2007a. Improving Environmental Site Remediation Through Performance-Based Environmental Management. RPO-7.

ITRC. 2007b. Triad Implementation Guide. Sampling, Characterization, and Monitoring (SCM-3)

ITRC. 2008. Use of Risk Assessment in Management of Contaminated Sites. RISK-2. Washington, D.C.: Interstate Technology & Regulatory Council, Risk Assessment Resources Team.

ITRC. 2012. Incremental Sampling Methodology (ISM) Document.

ITRC. 2015. Decision Making at Contaminated Sites: Issues and Options in Human Health Risk Assessment. RISK-3.

ITRC. 2019. Implementing Advanced Site Characterization Tools. ASCT-1.

ITRC. 2020. Risk Communication Toolkit. RCT-1. Washington, D.C.: Interstate Technology & Regulatory Council.

Jenkins, T. F., A. D. Hewitt, Marianne Walsh, S. Thiboutot, G. Ampleman, T. A. Ranney, and J. C. Pennington. 2004. "Distribution of energetic compounds in soils at training ranges." *Proceedings of the First Conference on Sustainable Range Management – 2004*:1792-1832.

Mattuck, Rosemary, Richard Blanchet, and A. Dallas Wait. 2005. "Data Representativeness for Risk Assessment." *Environmental Forensics* 6 (1):65-70. doi: 10.1080/15275920590913886.

MDEQ. 2018. Michigan Department of Environmental Quality – Incremental Sampling Methodology and Applications. edited by Resource Materials Remediation and Redevelopment Division. Lansing, Michigan.

MEDEP. 2015. Maine Department of Environmental Protection. Standard Operating Procedure. .

Minkinen, P.O., and K.H. Esbensen. 2018. "Sampling of particulate materials with significant spatial heterogeneity – Theoretical modification of grouping and segregation factors involved with correct sampling errors." *Analytica Chimica Acta*.

Minkinen, Pentti. 2004. "Practical applications of sampling theory." *Chemometrics and Intelligent Laboratory Systems* 74 (1):85-94. doi: <https://doi.org/10.1016/j.chemolab.2004.03.013>.

Minnitt, R.C.A., P.M. Rice, and C. Spangenberg. 2007. "Part 1: Understanding the components of the fundamental sampling error: a key to good sampling practice." *The Journal of The Southern African Institute of Mining and Metallurgy*.

OEPA. 2016. Ohio Environmental Protection Agency. Incremental Sampling for Soils and Sediments.

Owens, Kathy. 2020. "Personal communications with RPM for EPA Region 3."

Petersen, L. , P. Minkinen, and K.H. Esbensen. 2005 "Representative sampling for reliable data analysis: Theory of Sampling. ." *Chemometrics and Intelligent Laboratory Systems* 77:261- 277.

Pitard, F. 2019. *Theory of Sampling and Sampling Practice*. 3rd ed: Chapman and Hall/CRC.

Pooler, P.S, P.E Goodrum, D Crumbling, L.D Stuchal, and S.M Roberts. 2018. "Incremental Sampling Methodology: Applications for Background Screening Assessments." *Risk Analysis* Volume38 (Issue1):Pages 194-209.

Qiao, Hong Xia, Trenton Pulsipher, John E. Hathaway, Eric E. Richman, and Emil Vergilov Radkov. 2010. "A Statistical Method Analyzing LED Lumen Depreciation and Projecting LED Life."

Ramsey, C.A., and A.D. Hewitt. 2005. "A Methodology for Assessing Sample Representativeness. ." *Environmental Forensics* 6:71-75. doi: 10.1080/15275920590913877.

Ramsey, F., and D. Schafer. 2012. *The statistical sleuth: a course in methods of data analysis*. : Cengage Learning.

Singh, A., R. Maichle, and N. Armbya. 2007. ProUCL Version 4.1, User Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. edited by USEPA – Office of Research and Development.

USACE. 1998. Environmental Quality Technical Project Planning Process (updated 2016).

USACE. 2007. Protocols for Collection of Surface Soil Samples at Military Training and Testing Ranges for the Characterization of Energetic Munitions Constituents.

USACE. 2009. Implementation of Incremental Sampling (IS) of Soil for the Military Munitions Response Program. In *Environmental and Munitions Center of Expertise Interim Guidance*.

USACE. 2012. Conceptual Site Models. EM 200-1-12.

USACE. 2013a. Cost and performance report of Incremental Sampling Methodology for soil containing metallic residues: Project ER-0918. edited by Engineer Research and Development Center (U.S.) United States. Army. Corps of Engineers, Cold Regions Research and Engineering Laboratory (U.S.).

USACE. 2013b. Demonstration of Incremental Sampling Methodology for soil containing metallic residues: Project ER-0918. edited by Engineer Research and Development Center (U.S.) Army. Corps of Engineers, Cold Regions Research and Engineering Laboratory (U.S.).

USACE. 2013c. Incremental Sampling Methodology (ISM) for metallic residues: Project ER-0918. edited by Engineer Research and Development Center (U.S.) United States. Army. Corps of Engineers, Cold Regions Research and Engineering Laboratory (U.S.).

USEPA. 1989a. Risk Assessment Guidance for Superfund, Vol. I, Human Health Evaluation Manual (Part A)

USEPA. 1989b. Risk Assessment Guidance for Superfund, Vol. II Environmental Evaluation Manual.

USEPA. 1989c. Soil Sampling Quality Assurance User's Guide, Second Edition. Las Vegas, NV: Environmental Monitoring Systems Laboratory.

USEPA. 1992a. Correct Sampling Using the Theories of Pierre Gy. . edited by Environmental Sciences Division EPA Office of Research and Development, Technology Support Project.

USEPA. 1992b. PREPARATION OF SOIL SAMPLING PROTOCOLS: SAMPLING TECHNIQUES AND STRATEGIES.

USEPA. 1992c. Statistical Methods For Evaluating The Attainment Of Cleanup Standards Volume 3 Reference-Based Standards For Soils And Solid Media. Policy, Planning and Evaluation.

USEPA. 1994. SW-846 Method 8330 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.

USEPA. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments - Interim Final.

USEPA. 1999a. Correct Sampling Using the Theories of Pierre Gy. OFFICE OF RESEARCH AND DEVELOPMENT, Environmental Sciences Division.

USEPA. 1999b. SW-846 Test Method 8095: Explosives by Gas Chromatography.

USEPA. 2002a. 40 CFR §260.10 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL. In *40 CFR §260.10*

USEPA. 2002b. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. Office of Emergency and Remedial Response.

USEPA. 2002c. Guidance on Choosing a Sampling Design for Environmental Data Collection EPA QA/G-5S. edited by Office of Environmental Information. Washington, DC. .

USEPA. 2002d. Guidance on Choosing a Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan.

USEPA. 2002e. Guidance on Choosing a Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan.

USEPA. 2002f. "Method 5035A (SW-846): Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples."

USEPA. 2002g. RCRA Waste Sampling Draft Technical Guidance. Planning, Implementation, and Assessment. Solid Waste and Emergency Response (5305W).

USEPA. 2003. Guidance for Obtaining Representative Laboratory Analytical Subsamples from Particulate Laboratory Samples. Office of Research and Development.

USEPA. 2004a. Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP).

USEPA. 2004b. Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP).

USEPA. 2005a. Reference Guide to Non-combustion Technologies for Remediation of Persistent Organic Pollutants in Stockpiles and Soil

USEPA. 2005b. Uniform Federal Policy for Quality Assurance Project Plans. edited by Intergovernmental Data Quality Task Force (IDQTF).

USEPA. 2006a. Applicability of Superfund Data Categories to the Removal Program. Office of Solid Waste and Emergency Response. Office of Emergency Management.

USEPA. 2006b. Guidance on Systematic Planning Using the Data Quality Objectives Process. .

USEPA. 2006c. Method 8330B (SW-846): Nitroaromatics, Nitramines, and Nitrate Esters by High Performance Liquid Chromatography (HPLC).

USEPA. 2007. SW-846 Test Method 6200 Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment.

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance. OFFICE OF RESOURCE CONSERVATION AND RECOVERY, PROGRAM IMPLEMENTATION AND INFORMATION DIVISION.

USEPA. 2010. Best Management Practices: Use of Systematic Project Planning Under a Triad Approach for Site Assessment and Cleanup. edited by Office of Solid Waste and Emergency.

USEPA. 2011. Uniform Federal Policy Quality Assurance Project Plan Template For Soils Assessment of Dioxin Sites – User Guide –

USEPA. 2012a. Protection of the Environment. In *Title 40 CFR. 2012. Section 260.10:16*, edited by USEPA. US.

USEPA. 2012b. Site Characterization For Munitions Constituents. In *EPA Federal Facilities Forum Issue Paper*.

USEPA. 2013. Use of Amendments for In Situ Remediation at Superfund Sediment Sites.

USEPA. 2015. ProUCL Version 5.1, Technical Guide, Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. Office of Research and Development.

USEPA. 2016. Recommendations for Sieving Soil and Dust Samples at Lead Sites for Assessment of Incidental Ingestion. Office of Superfund Remediation and Technology Innovation

USEPA. 2019. Incremental Sampling Methodology (ISM) at Polychlorinated Biphenyl (PCB) Cleanup Sites  
Visual Sample Plan: A Tool for Design and Analysis of Environmental Sampling Version 7.12a. Pacific Northwest National Laboratory, Richland, WA. .

Walsh, Marianne, Charles Collins, Ronald Bailey, and Clarence Grant. 1997. Composite Sampling of Sediments Contaminated with White Phosphorus (CRREL ).

Walsh, Marianne, and Dennis Lambert. 2006. “Extraction Kinetics of Energetic Compounds from Training Range and Army Ammunition Plant Soils.”46.

WDOE. 2019. Washington Department of Ecology. Sediment Cleanup User’s Manual. .

Weng, Liping, Erwin J. M. Temminghoff, and Willem H. Van Riemsdijk. 2001. “Contribution of Individual Sorbents to the Control of Heavy Metal Activity in Sandy Soil.” *Environmental Science & Technology* 35 (22):4436-4443. doi: 10.1021/es010085j.

Xiong, Juan, Liping Weng, Luuk K. Koopal, Mingxia Wang, Zhihua Shi, Lirong Zheng, and Wenfeng Tan. 2018. “Effect of Soil Fulvic and Humic Acids on Pb Binding to the Goethite/Solution Interface: Ligand Charge Distribution Modeling and Speciation Distribution of Pb.” *Environmental Science & Technology* 52 (3):1348-1356. doi: 10.1021/acs.est.7b05412.

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