



References

- Abdel-Rahman, M. S., G. A. Skowronski, and R. M. Turkall. 2002. "Assessment of the dermal bioavailability of soil-aged benzo(a)pyrene." *Human and Ecological Risk Assessment* 8 (2):429-441.
- Abdel-Rahman, M. S., G. A. Skowronski, R. M. Turkall, and A. M. Kadry. 1998. "Dermal bioavailability of phenanthrene aging in soil." In *Contaminated Soils, Volume 3*, edited by E. J. Kosteci, P. T. Calabrese, and M. Bonazountas. 153-163. Amherst, MA: Amherst Scientific Publishers.
- Accardi-Dey, A., and P. M. Gschwend. 2002. "Assessing the combined roles of natural organic matter and black carbon as sorbents in sediments." *Environmental Science & Technology* 36 (1):21-29.
- Adriano, D. C. 2001. *Trace elements in the terrestrial environments: Biogeochemistry, bioavailability, and risks of heavy metals. Second Edition*. New York: Springer-Verlag.
- Alexander, B. H., H. Checkoway, E. M. Faustman, C. Van Netten, C. H. Muller, and T. G. Ewers. 1998. "Contrasting associations of blood and semen lead concentrations with semen quality among lead smelter workers." *American Journal of Industrial Medicine* 34 (4):464-469.
- Alexander, M. 1995. "How Toxic Are Toxic Chemicals in Soil? Critical Review." *Environmental Science & Technology* 29 (11):2713-2717.
- Alexander, M. 2000. "Aging, Bioavailability, and Overestimation of Risk from Environmental Pollutants." *Environmental Science & Technology* 34 (20):4259-4265.
- Anderson, R. H., D. B. Farrar, and J. M. Zodrow. 2013. "Terrestrial Metals Bioavailability: A Comprehensive Review and Literature-Derived Decision Rule for Ecological Risk Assessment." *Human and Ecological Risk Assessment* 19 (6):1488-1513.
- ATSDR (Agency for Toxic Substances and Disease Registry). 2007a. "Toxicological Profile for Arsenic." Agency for Toxic Substances and Disease Registry. <http://www.atsdr.cdc.gov/toxprofiles/tp2.pdf>.
- ATSDR. 2007b. "Toxicological Profile for Lead." U.S. Department of Health and Human Services, Public Health Service.
- ATSDR. 2015. "Support Document to the 2015 Priority List of Hazardous Substances that will be the Subject of Toxicological Profiles." Agency for Toxic Substances and Disease Registry. http://www.atsdr.cdc.gov/SPL/resources/ATSDR_2015_SPL_Support_Document.pdf.
- ATSDR 2017. "Substance Priority List." Agency for Toxic Substances and Disease Registry. <https://www.atsdr.cdc.gov/SPL/index.html#content-main>
- Attanayake, C. P., G. M. Hettiarachchi, A. Harms, D. Presley, S. Martin, and G. M. Pierzynski. 2014. "Field evaluations on soil plant transfer of Pb from an urban garden soil." *Journal of Environmental Quality* 43 (2):475-487.
- Attanayake, C. P., G. M. Hettiarachchi, S. Martin, and G. M. Pierzynski. 2015. "Potential Bioavailability of Lead, Arsenic, and Polycyclic Aromatic Hydrocarbons in Compost-Amended Urban Soils." *Journal of Environmental Quality* 44:930-944.
- Aucott, A., and A. Caldarelli. 2011. "Investigation of release, fate and transport of lead from motor vehicle wheel weights." Trenton, NJ: Office of Science, New Jersey Department of Environmental Protection.
- Ballew, C., L. K. Khan, R. Kaufmann, A. Mokdad, D. T. Miller, and E. W. Gunter. 1999. "Blood lead concentration and children's anthropometric dimensions in the Third National Health and Nutrition Examination Survey (NHANES III), 1988-1994." *Journal of Pediatrics* 134 (5):623-630.
- BARGE (BioAccessibility Research Group of Europe). 2016. "Unified BARGE Method (UBM)." <http://www.bgs.ac.uk/barge/home.html>.
- Basta, N. T., J. N. Foster, E. A. Dayton, R.R. Rodriguez, and S. W. Casteel. 2007. "The effect of dosing vehicle on arsenic bioaccessibility in smelter-contaminated soil." *Journal of Environmental Science and Health, Part A* 42 (9):1275-1281.
- Basta, N. T., J. N. Foster, and K. G. Scheckel. 2007. "Arsenic speciation using extended X-ray absorption fine structure and chemical extraction methods to assess oral bioavailability." Soil Science Society Annual Meeting, New Orleans, Nov. 5, 2007.
- Basta, N. T., and A. L. Juhasz. 2014. "Using In Vivo Bioavailability and/or In Vitro Gastrointestinal Bioaccessibility Testing

- to Adjust Human Exposure from Soil Ingestion." In *Geochemistry, Mineralogy and Microbiology of Arsenic in Environment, Reviews in Mineralogy and Geochemistry*, edited by R. J. Bowell, J. Majzlan and C. N. Alpers. 451-472. Mineralogical Society of America.
- Basta, N. T., J. A. Ryan, and R. L. Chaney. 2005. "Trace element chemistry in residual-treated soil." *Journal of Environmental Quality* 34 (1):49-63.
- Basta, N. T., B. Stevens, S. W. Whitacre, K. G. Scheckel, A. Betts, K. D. Bradham, D. Thomas, and C. Schadt. 2016. "Mechanisms and Permanence of Sequestered Pb and As in Soils: Impact on Human Bioavailability." *SERDP Project ER-1742*. Alexandria, VA: Strategic Environmental Research and Development Program.
- Beak, D. G., N. T. Basta, K. G. Scheckel, and S. J. Traina. 2006a. "Bioaccessibility of arsenic (V) bound to ferrihydrite using a simulated gastrointestinal system." *Environmental Science & Technology* 40:1364-1370.
- Beak, D. G., N. T. Basta, K. G. Scheckel, and S. J. Traina. 2006b. "Bioaccessibility of lead sequestered to corundum and ferrihydrite in a simulated gastrointestinal system." *Journal of Environmental Quality* 35 (6):2075-2083.
- Beak, D. G., N. T. Basta, K. G. Scheckel, and S. J. Traina. 2008. "Linking solid phase speciation of Pb sequestered to birnessite to oral Pb bioaccessibility: Implications for soil remediation." *Environmental Science & Technology* 42 (3):779-785.
- Beckingham, B., and U. Ghosh. 2011. "Field-Scale Reduction of PCB Bioavailability with Activated Carbon Amendment to River Sediments." *Environmental Science & Technology* 45 (24):10567-10574.
- Beesley, L., E. Moreno-Jiménez, J. L. Gomez-Eyles, E. Harris, B. Robinson, and T. Sizmur. 2011. "A review of biochars' potential role in the remediation, revegetation and restoration of contaminated soils." *Environmental Pollution* 159 (12):3269-3282.
- Beland, F. A., and S. J. Culp. 1998. Technical Report for Experiment No. 6722: Chronic Bioassay of Two Composite Samples From Selected Manufactured Gas Plant Waste Sites. *USEPA*.
- Birkefeld, A., Schulin R., and B. Nowack. 2007. "In situ transformations of fine lead oxide particles in different soils." *Environmental Pollution* 145:554-561.
- Blake, K. C. H., and M. Mann. 1983. "Effect of calcium and phosphorus on the gastrointestinal absorption of ²⁰³Pb in man." *Environmental Research* 30 (1):188-194.
- Bogan, B. W., and W. R. Sullivan. 2003. "Physicochemical Soil Parameters Affecting Sequestration and Mycobacterial Biodegradation of Polycyclic Aromatic Hydrocarbons in Soil." *Chemosphere* 52 (10):1717-1726.
- Bonde, J. P., and H. Kolstad. 1997. "Fertility of Danish battery workers exposed to lead." *International Journal of Epidemiology* 26 (6):1281-1288.
- Borja-Aburto, V. H., I. Hertz-Picciotto, M. R. Lopez, P. Farias, C. Rios, and J. Blanco. 1999. "Blood lead levels measured prospectively and risk of spontaneous abortion." *American Journal of Epidemiology* 150 (6):590-597.
- Botz, M. K., and G. L. Knudson. 1970. Hydrogeology of the Berkeley Pit area. Part I - The alluvium. *Prepared for the Anaconda Company, Butte, Montana*.
- Bowell, R. J., and D. Craw. 2014. "The management of arsenic in the mining industry." In *Arsenic: Environmental Geochemistry, Mineralogy, and Microbiology*, edited by R. J. Bowell, C. N. Alpers, H. E. Jamieson, D. K. Nordstrom and J. Majzlan, 507-532. *Rev. Mineral. Geochem.*
- Bradham, K. D., G. L. Diamond, K. G. Scheckel, M. F. Hughes, S. W. Casteel, B. W. Miller, J. M. Klotzbach, W. C. Thayer, and D. J. Thomas. 2013. "Mouse assay for determination of arsenic bioavailability in contaminated soils." *Journal of Toxicology and Environmental Health Part A* 76:815-826.
- Bradham, K. D., C. Nelson, A. L. Juhasz, E. Smith, K. G. Scheckel, D. R. Obenour, B. W. Miller, and D. J. Thomas. 2015. "Independent data validation of an in vitro method for the prediction of the relative bioavailability of arsenic in contaminated soils." *Environmental Science & Technology* 49:6313-6318.
- Bradham, K. D., K. G. Scheckel, C. M. Nelson, P. E. Seales, G. E. Lee, M. F. Hughes, B. W. Miller, A. Yeow, T. Gilmore, S. M. Serda, S. Harper, and D. J. Thomas. 2011. "Relative bioavailability and bioaccessibility and speciation of arsenic in contaminated soils." *Environmental Health Perspectives* 119:1629-1634.
- Brändli, R. C., T. Hartnik, T. Henriksen, and G. Cornelissen. 2008. "Sorption of native polyaromatic hydrocarbons (PAH) to black carbon and amended activated carbon in soil." *Chemosphere* 73 (11):1805-1810.
- Brattin, W. J., and S. Casteel. 2013. "Measurement of arsenic relative bioavailability in swine." *Journal of Toxicology and Environmental Health Part A* 76 (7):449-457.
- Brattin, W. J., J. Drexler, Y. W. Lowney, S. Griffin, G. L. Diamond, and L. Woodbury. 2013. "An in vitro method for estimation of arsenic relative bioavailability in soil." *Journal of Toxicology and Environmental Health, Part A* 76

(7):458-478.

- Brown, G.E., Jr., and G. A. Parks. 2001. "Sorption of trace elements on mineral surfaces: Modern perspectives from spectroscopic studies, and comments on sorption in the marine environment." *International Geology Review* 43:963-1073.
- Brown, S. L., R. L. Chaney, and G. M. Hettiarachchi. 2016. "Lead in Urban Soils: A Real or Perceived Concern for Urban Agriculture?" *Journal of Environmental Quality* 45:26-36.
- Budinsky, R. A., J. C. Rowlands, S. Casteel, G. Fent, C. A. Cushing, J. Newsted, J. P. Giesy, M. V. Ruby, and L. L. Aylward. 2008. "A pilot study of oral bioavailability of dioxins and furans from contaminated soils: Impact of differential hepatic enzyme activity and species differences." *Chemosphere* 70 (1774-1786).
- California Environmental Protection Agency. 2009. "Revised California human health screening levels for lead." Office of Environmental Health Hazard Assessment.
- Canfield, R. L., C. A. Henderson Jr, D. A. Cory-Slechta, C. Cox, T. A. Jusko, B. P. Lanphear, D. C. Bellinger, K. M. Stiles, and H. L. Needleman. 2003. "Intellectual impairment and blood lead levels." *New England Journal of Medicine* 349:500-502.
- Casteel, S. W., R. P. Cowart, C. P. Weis, G. M. Henningsen, E. Hoffman, W. J. Brattin, M. F. Starost, J. T. Payne, S. L. Stockham, S. V. Becker, and J. R. Turk. 1996. "A swine model for determining the bioavailability of lead from contaminated media." In *Advances in Swine in Biomedical Research*, edited by Tumbleson and Schook, 637-46. New York: Plenum Press.
- Casteel, S. W., C. P. Weis, G. M. Henningsen, and W. J. Brattin. 2006. "Estimation of Relative Bioavailability of Lead in Soil and Soil-like Materials Using Young Swine." *Environmental Health Perspectives* 114:1162-1171.
- Casteel, S. W., C. P. Weis, G. M. Henningsen, E. Hoffman, Brattin W. J., and T. L. Hammon. 1998. "Bioavailability of Lead in a Slag Sample from the Midvale Slag NPL Site, Midvale Utah. Phase II Swine Bioavailability Investigations." *U.S. Environmental Protection Agency, Region 8. Document Control Number 04800-030-0166*. Denver, CO.
- Casteel, S., C. P. Weis, G. M. Henningsen, E. Hoffman, W. J. Brattin, and T. L. Hammon. 1998. "Bioavailability of Lead in a Soil Sample from the Butte NPL Site." *U.S. Environmental Protection Agency, Region 8. Document Control No. 01800-030-0165*. Denver, CO.
- Cave, M. R., J. Wragg, I. Harrison, C. H. Vane, T. Van de Wiele, E. de Groeve, C. P. Nathanail, M. Ashmore, R. Thomas, J. Robinson, and P. Daly. 2010. "Comparison of batch mode and dynamic physiologically based bioaccessibility tests for PAHs in soil samples." *Environmental Science & Technology* 44 (7):2654–2660.
- CCME (Canadian Council of Ministers of the Environment). 2008. "Canadian Soil Quality Guidelines for Carcinogenic and Other Polycyclic Aromatic Hydrocarbons (Environmental and Human Health Effects)." *Scientific Supporting Document*.
- CDC (Centers for Disease Control and Prevention). 2005. "Preventing Lead Poisoning in Young Children." Atlanta, GA: Centers for Disease Control and Prevention.
- CDC. 2012. "CDC response to advisory committee on childhood lead poisoning prevention recommendations in "low level lead exposure harms children: a renewed call of primary prevention"." Atlanta, GA: Centers for Disease Control and Prevention. https://www.cdc.gov/nceh/lead/docs/cdc_response_lead_exposure_recs.pdf.
- CDC. 2013. "Lead Biomonitoring Summary." http://www.cdc.gov/biomonitoring/Lead_BiomonitoringSummary.html (accessed October 25, 2016).
- CH2M. 2008. Operable Unit 1 Arsenic-impacted Sediment Remedial Action Work Plan Supplement.
- CH2M. 2011. Supplemental Human Health Risk Assessment Report for the Operable Unit 1 Hillside. *Hill Air Force Base, Utah*.
- Chaney, R. L., N. T. Basta, and J. A. Ryan. 2008. Element Bioavailability and Bioaccessibility In Soils: What Is Known Now, and what are the Significant Data Gaps? Appendix B. *SERDP and ESTCP Expert Panel Workshop on Research and Development Needs for Understanding and Assessing the Bioavailability of Contaminants in Soils and Sediments*. Arlington, VA: SERDP and ESTCP.
- Chaney, R. L., and M. Mahoney. 2014. "Phytostabilization and Phytomining. Principles and Successes." LIFE-OF-MINE 2014 Conference, Brisbane, QLD, 16-18 July 2014.
- Chaney, R. L., M. H. Zia, and E. E. Codling. 2011. "Simplified urban soil bioaccessible Pb test correlated with bioavailability of soil-Pb to humans in untreated and phosphate-treated Joplin soils." International Conference on the Biogeochemistry of Trace Elements, Florence, Italy, July 3-8, 2011.
- Charman, W.N., C. J. Porter, S. Mithani, and J. B. Dressman. 1997. "Physicochemical and physiological mechanisms for

- the effects of food on drug absorption: The role of lipids and pH." *Journal of Pharmaceutical Sciences* 86:269-282.
- Choate, L. M., J. F. Ranville, A. L. Bunge, and D. L. Macalady. 2006. "Dermally adhered soil: amount and particle size distribution." *Integrated Environmental Assessment and Management* 2 (4):375-384.
- Chung, N., and M. Alexander. 2002. "Effect of soil properties on bioavailability and extractability of phenanthrene and atrazine sequestered in soil." *Chemosphere* 48:109-115.
- Clausen, J. L., B. Bostick, and N. Korte. 2011. "Migration of Pb in surface water, pore water, and groundwater with a focus on firing ranges." *Critical reviews in Environmental Science & Technology* 41 (15):1397-1448.
- Commission, Presidential/Congressional. 1997. "Framework for Environmental Health Risk Management." *Final Report, Volume 1*. Washington, D. C.: The Presidential/Congressional Commission on Risk Assessment and Risk Management.
- Cornelissen, G., O. Gustafsson, T. D. Bucheli, M. T. O. Jonker, A. A. Koelmans, and P. C. M. Van Noort. 2005. "Extensive sorption of organic compounds to black carbon, coal, and kerogen in sediments and soils: Mechanisms and consequences for distribution, bioaccumulation, and biodegradation." *Environmental Science & Technology* 39 (18):6881-6895.
- Cornelissen, G., H. Rigterink, M. M. A. Ferdinandy, and P. C. M Van Noort. 1998. "Rapidly desorbing fractions of PAHs in contaminated sediments as a predictor of the extent of bioremediation." *Environmental Science & Technology* 32 (7):966-970.
- Craw, D., and R. J. Bowell. 2014. "The characterization of arsenic in mine waste." In *Arsenic: Environmental Geochemistry, Mineralogy, and Microbiology.*, edited by R. J. Bowell, C. N. Alpers, H. E. Jamieson, D. K. Nordstrom and J. Majzlan, 473-505. Rev. Mineral. Geochem.
- Crews, H. M., J. A. Burrell, and D. J. McWeeney. 1983. "Preliminary enzymolysis studies on trace element extractability from food." *Journal of the Science of Food and Agriculture* 34:997-1004.
- Cullen, W. R., and K. J. Reimer. 1989. "Arsenic speciation in the environment." *Chemical Reviews* 89:713-764.
- Culp, R.A., and A. B. Rawitch. 1973. "Solubilization of lead from an alkyd paint matrix by simulated gastric and intestinal digestive fluids." *Journal of Paint Technology* 45:38-41.
- Cutler, W. G., A. El-Kadi, N. V. Hue, J. Peard, K. Scheckel, and C. Ray. 2014. "Iron amendments to reduce bioaccessible arsenic." *Journal of Hazardous Materials* 279:554-561.
- Davis, A., J. W. Drexler, M. V. Ruby, and A. Nicholson. 1993. "Micromineralogy of mine wastes in relation to lead bioavailability, Butte, Montana." *Environmental Science & Technology* 27 (7):1415-1425.
- Davis, A., M. V. Ruby, and P. D. Bergstrom. 1991. "Geochemical Controls on the Bioavailability of Lead from Mine Waste Impacted Soils." Proc. of the Hazardous Materials Conference, Hazardous Materials Control Institute, Greenbelt, MD.
- Davis, A., M. V. Ruby, and P. D. Bergstrom. 1992. "Bioavailability of Arsenic and Lead in Soils from the Butte, Montana, Mining District." *Environmental Science & Technology* 26 (3).
- Davis, A., M. V. Ruby, M. Bloom, R. Schoof, G. B. Freeman, and P. D. Bergstrom. 1996. "Mineralogic Constraints on the Bioavailability of Arsenic in Smelter-Impacted Soils." *Environmental Science & Technology* 30 (2):392-399.
- Defoe, P. P., G. M. Hettiarachchi, C. Benedict, and Martin. S. 2014. "Safety of gardening on Pb-and arsenic-contaminated urban brownfields." *Journal of Environmental Quality* 43 (6):2064-2078.
- Denys, S., J. Caboche, K. Tack, G. Rychen, J. Wragg, M. Cave, C. Jondreville, and C. Feidt 2012. "In vivo validation of the unified BARGE method to assess the bioaccessibility of arsenic, antimony, cadmium, and lead in soils." *Environmental Science & Technology* 46:6252-6260.
- Diamond, G. L., K. D. Bradham, W. J. Brattin, M. Burgess, S. Griffin, C. A. Hawkins, A. L. Juhasz, J. M. Klotzbach, C. Nelson, Y. W. Lowney, K. G. Scheckel, and D. J. Thomas. 2016. "Predicting oral relative bioavailability of arsenic in soil from in vitro bioaccessibility." *Journal of Toxicology and Environmental Health, Part A* 79 (4):165-173.
- Drexler, J. 2010. "University of Colorado-Boulder LEGS."
- Drexler, J. W., and W. J. Brattin. 2007. "An in vitro procedure for estimation of lead relative bioavailability: With validation." *Human and Ecological Risk Assessment* 13 (2):383-401.
- DTSC (California Department of Toxic Substances Control). 2011a. "Lead Risk Assessment Spreadsheet 8." <https://www.dtsc.ca.gov/AssessingRisk/LeadSpread8.cfm>.
- DTSC. 2011b. "User's Guide to Leadsread8 and Recommendations for Evaluation of Lead Exposures in Adults." Human and Ecological Risk Office (HERO).
- DTSC. 2015. "Human Health Risk (HERO)." California Environmental Protection Agency.

<http://www.dtsc.ca.gov/assessingrisk/humanrisk2.cfm>.

- DTSC. 2016a. "Human Health Risk Assessment Note 3 - DTSC-Modified Screening Levels." Sacramento, CA: California Environmental Protection Agency.
<https://dtsc.ca.gov/wp-content/uploads/sites/31/2022/02/HHRA-Note-3-June2020-Revised-May2022A.pdf>.
- DTSC. 2016b. "Human Health Risk Assessment Note 6: Recommended Methodology for Evaluating Site-Specific Arsenic Bioavailability in California Soils." Sacramento, CA: California Environmental Protection Agency.
<https://www.dtsc.ca.gov/AssessingRisk/upload/HHRA-Note-6-CAB-Method.pdf>
- Duan, L., T. Palanisami, Y. Liu, Z. Dong, M. Mallavarapu, T. T. Kuchel, K. T. Semple, and R. Naidu. 2014. "Effects of Aging and Soil Properties on the Oral Bioavailability of Benzo[a]Pyrene Using a Swine Model." *Environment International* 70:192-202.
- Duggan, M. J., and M. J. Inskip. 1985. "Childhood exposure to lead in surface dust and soil: a community health problem." *Public Health Reviews* 13:1-54.
- ENVIRON. 2014. Butte Priority Soils Operable Unit, Public Health Study, Phase 1, Butte, Montana. Prepared by ENVIRON International Corporation for Butte Silver Bow County and Atlantic Richfield Company. In *Project Number 3032503A*.
- Essington, M. E. 2004. *Soil and water chemistry: An integrative approach*. Boca Raton, FL: CRC Press.
- Exponent. 2008a. "Bingham-Magna Ditch Site Investigation, Report 4 of 5, Technical Memorandum, Evaluation of Risk-Based Soil Cleanup Levels for the Former Bingham-Magna Ditch. Prepared for Kennecott Utah Copper Corporation, Murray, Utah." *Document # DERR 2008-018021*.
- Exponent. 2008b. Bioaccessibility of Arsenic from Sediments: Bingham-Magna Ditch. Prepared for Kennecott Utah Copper Corporation, Salt Lake City, Utah.
- Exponent, Battelle and. 2000. "Final Guide for Incorporating Bioavailability Adjustments into Human Health and Ecological Risk Assessments at U.S. Navy and Marine Corps Facilities."
- FDA (Food and Drug Administration). 2016. "Kohl, Kajal, Al-Kahal, or Surma: By Any Name, a Source of Lead Poisoning." <https://www.fda.gov/cosmetics/productsingredients/products/ucm137250.htm>.
- Finster, M.E., K.A. Gray, and H.J. Binns. 2004. "Lead levels of edibles grown in contaminated residential soils: a field survey." *Science of the Total Environment* 320 (2):245-257.
- Freeman, G. B. , R. A. Schoof, M. V. Ruby, A. O. Davis, S. C. Dill, S. C. Liao, C. A. Lapin, and P. D. Bergstrom. 1995. "Bioavailability of arsenic in soil and house dust impacted by smelter activities following oral administration in cynomolgus monkeys." *Fundamental and Applied Toxicology* 28:215-222.
- Freeman, G. B., S. C. Liao, P. I. Feder, and J. D. Johnson. 1992. Absolute Bioavailability of Lead Following Intravenous and Dosed Feed Administration Using Sprague-Dawley Rats. In *Laboratory ID #SC910144*. Columbus, OH: Battelle Columbus Operations.
- Gennart, J-P., J-P. Buchet, H. Roels, P. GHyselen, E. Ceulemans, and R. Lauwerys. 1992. "Fertility of male workers exposed to cadmium, lead or manganese." *American Journal of Epidemiology* 135 (11):1208-1219.
- Ghosh, U., J. W. Talley, and R. G. Luthy. 2001. "Particle-scale Investigation of PAH Desorption Kinetics and Thermodynamics from Sediment." *Environmental Science & Technology* 35:3468-3475.
- Girouard, E., and G. J. Zagury. 2009. "Arsenic bioaccessibility in CCA-contaminated soils: Influence of soil properties, arsenic fractionation, and particle size fraction." *Science of the Total Environment* 407:2576-2585.
- Glorennec, P., C. Peyr, J. Poupon, Y. Oulhote, and B. Le Bot. 2010. "Identifying sources of Pb exposure for children, with Pb concentrations and isotope ratios." *Journal of Occupational and Environmental Hygiene* 7 (5):253-260.
- Gouliarmou, V., and P. Mayer. 2012. "Sorptive bioaccessibility extraction (SBE) of soils: Combining a mobilization medium with an absorption sink." *Environmental Science & Technology* 46:10682-10689.
- Gover, R. 1995. "Nutrition and metal toxicity." *The American Journal of Clinical Nutrition* 61 (3):646s-650s.
- Griffin, S., and Y. W. Lowney. 2012. "Final Report: Validation of an In Vitro Bioaccessibility Test Method for Estimation of Bioavailability of Arsenic from Soil and Sediment." *Project ER-200916: Environmental Security Technology Certification Program (ESTCP)*.
- Grimmer, G., H. Brune, G. Dettbarn, U. Heinrich, J. Jacob, E. Mohtashamipur, K. Norpoth, F. Pott, and R. Wenzel-Hartung. 1998. "The Effect of Aging on Pyrene Transformation in Sediments." *Environmental Toxicology and Chemistry* 22 (1):40-49.
- Grøn, C., A. Oomen, E. Weyand, and J. Wittsiepe. 2007. "Bioaccessibility of PAH from Danish soils." *Journal of Environmental Science and Health, Part A* 42 (9): 1233-1239.

- Gurer-Orhan, H., H. U. Sabir, and H. Özgüneş. 2004. "Correlation between clinical indicators of lead poisoning and oxidative stress parameters in controls and lead-exposed workers." *Toxicology* 195 (2):147-154.
- Guyton, A. C. 1981. *Textbook of Medical Physiology*. New York: W. B. Saunders.
- Guyton, A. C., and J.E. Hall. 1996. *Textbook of Medical Physiology, 9th ed.* Philadelphia, PA: W.B. Saunders Company.
- Hack, A., and F. Selenka. 1996. "Mobilization of PAH and PCB from contaminated soil using a digestive tract model." *Toxicology Letters* 88:199-210.
- Hamel, S.C., B. Buckley, and P.J. Lioy. 1998. "Bioaccessibility of metals in soils for different liquid to solid ratios in synthetic gastric fluid." *Environmental Science & Technology* 32 (3):358-362.
- Hamon, R., M. McLaughlin, and E. Lombi, eds. 2006. *Natural Attenuation of Trace Element Availability in Soils*: CRC Press.
- Hanchette, C. L. 2008. "The political ecology of lead poisoning in eastern North Carolina." *Health & Place* 14 (2):209-216.
- Hatzinger, P. B., and M. Alexander. 1995. "Effect of Aging of Chemicals in Soil on Their Biodegradability and Extractability." *Environmental Science & Technology* 29 (2):537-545.
- Hawaii DOH. 2010. "Arsenic in Soils Fact Sheet." Hawaii Department of Health.
- Hawaii DOH. 2012. Update to soil action for inorganic arsenic and recommended soil management practices: Memo from Roger Brewer to Barbara Brooks. Hawaii Department of Health.
- Hawaii DOH. 2014. "Section 9. Supplemental guidance for select contaminants of concern." *Technical Guidance Manual for Implementation of the Hawaii State Contingency Plan*. Hawaii Department of Health.
- Hawthorne, S. B., D. G. Poppendieck, C. B. Grabanski, and R. C. Loehr. 2002. "PAH Release During Water Desorption, Supercritical Carbon Dioxide Extraction and Field Bioremediation." *Environmental Science & Technology* 36:4795-4803.
- Health Canada. 2011. "Health Canada Guidance Manual on consideration of oral bioavailability of chemicals in soil for use in human health risk assessment."
- Heard, M. J., A. C. Chamberlain, and J. C. Sherlock. 1983. "Uptake of lead by humans and effect of minerals and food." *Science of the Total Environment* 30:245-253.
- Hemond, H. F., and H. M. Solo-Gabriele. 2004. "Children's Exposure to Arsenic from CCA-Treated Wooden Decks and Playground Structures." *Risk Analysis* 24 (1):51-64.
- Hemphill, C. P., M. V. Ruby, B. Beck, A. Davis, and P. D. Bergstrom. 1991. "The Bioavailability of Lead in Mining Wastes: Physical/Chemical Considerations." *Chemical Speciation and Bioavailability* 3 (314):135-138.
- Henderson, R.G., Durando, J., Oller, A.R., Merkel, D.J., Marone, P.A., and Bates, H.K. 2012a. "Acute oral toxicity of nickel compounds." *Regulatory Toxicology and Pharmacology* 62:425-432.
- Henderson, R.G., Cappellini, D., Seilkop, S.K., Bates, H.K., Oller, A.R. 2012b. "Oral bioaccessibility testing and read-across hazard assessment of nickel compounds." *Regulatory Toxicology and Pharmacology* 63:20-28.
- Hendryx, M., E. Fedorko, and J. Halverson. 2010. "Pollution Sources and Mortality Rates Across Rural-Urban Areas in the United States." *The Journal of Rural Health* 26 (4):383-391.
- Henry, H., M. F. Naujokas, C. Attanayake, N. T. Basta, Z. Cheng, G. M. Hettiarachchi, M. Maddaloni, C. Schadt, and K. G. Scheckel. 2015. "Bioavailability-based in situ remediation to meet future lead (Pb) standards in urban soils and gardens." *Environmental Science & Technology* 49 (15):8948-8958.
- Hernberg, S., and J. Nikkanen. 1970. "Enzyme inhibition by lead under normal urban conditions." *The Lancet* 295 (7637):63-64.
- Hettiarachchi, G. M., and G. M. Pierzynski. 2004. "Soil lead bioavailability and in situ remediation of lead-contaminated soils: A review." *Environmental Progress* 23 (1):78-93.
- Hettiarachchi, G. M., G. M. Pierzynski, F. W. Oehme, O. Sonmez, and J. A. Ryan. 2003. "Treatment of contaminated soil with phosphorus and manganese oxide reduces lead absorption by Sprague-Dawley rats." *Journal of Environmental Quality* 32 (4):1335-1345.
- Holman, H.-Y. N., R. Goth-Goldstein, D. Aston, M. Yun, and J. Kengsoontra. 2002. "Evaluation of Gastrointestinal Solubilization of Petroleum Hydrocarbon Residues in Soil Using an In Vitro Physiologically Based Model." *Environmental Science & Technology* 36 (6):1281-1286.
- Horter, D., and J. B. Dressman. 2001. "Influence of physiochemical properties on dissolution of drugs in the gastrointestinal tract." *Advanced Drug Delivery Reviews* 46:75-87.
- Houben, D., L. Evrard, and P. Sonnet. 2013. "Mobility, bioavailability and pH-dependent leaching of cadmium, zinc and lead in a contaminated soil amended with biochar." *Chemosphere* 92 (11):1450-1457.

- Hughes, M. F. 2002. "Arsenic toxicity and potential mechanisms of action." *Toxicology Letters* 133 (1):1-16.
- IARC. 2006. "Inorganic and organic lead compounds." *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: IARC, Working Group on the Evaluation of Carcinogenic Risks to Humans*.
- ICCVAM. 1997. "Validation and Regulatory Acceptance of Toxicological Test Methods: A Report of the Ad Hoc Coordinating Committee on the Validation of Alternative Methods." *NIH Publication 973981*. Research Triangle Park, NC: National Institute of Environmental Health Sciences.
- ISSI, Inc. 1998. Investigation of Speciation, In Vitro Bioaccessibility and Environmental Leachability of Lead and Arsenic in Slags at the Midvale OU2 Superfund Site. In *March 11, 1998*.
- ITRC (Interstate Technology & Regulatory Council). 2003. "Characterization and Remediation of Soils at Closed Small Arms Firing Ranges." *SMART-1*. Washington, D.C.: Interstate Technology & Regulatory Council, Small Arms Firing Range Team. <http://www.itrcweb.org/GuidanceDocuments/SMART-1.pdf>.
- ITRC. 2012. "Incremental Sampling Methodology." *ISM-1*. Washington, D.C.: Interstate Technology & Regulatory Council, Incremental Sampling Methodology Team. www.itrcweb.org/ism-1.
- ITRC. 2015. "Decision Making at Contaminated Sites: Issues and Options in Human Health Risk Assessment." *RISK-3*. Washington, D. C.: Interstate Technology & Regulatory Council, Risk Assessment Team. www.itrcweb.org/risk-3.
- Jacobs, D. E., R. P. Clickner, J. Y. Zhou, S. M. Viet, D. A. Marker, J. W. Rogers, D. C. Zeldin, P. Broene, and W. Friedman. 2002. "The prevalence of lead-based paint hazards in US housing." *Environmental Health Perspectives* 110 (10):A599.
- James, H. M., M. E. Hilburn, and J. A. Blair. 1985. "Effects of meals and meal times on uptake of lead from the gastrointestinal tract in humans." *Human & Experimental Toxicology* 4 (4):401-407.
- James, K., R. E. Peters, M. R. Cave, M. Wickstrom, E. G. Lamb, and S. D. Siciliano. 2016. "Predicting Polycyclic Aromatic Hydrocarbon Bioavailability to Mammals from Incidentally Ingested Soils Using Partitioning and Fugacity." *Environmental Science & Technology* 50 (3):1338-1346.
- James, K., R. E. Peters, B. D. Laird, W. K. Ma, M. Wickstrom, G. L. Stephenson, and S. D. Siciliano. 2011. "Human Exposure Assessment: A Case Study of 8 PAH Contaminated Soils Using in Vitro Digestors and the Juvenile Swine Model." *Environmental Science & Technology* 45 (10):4586-4593.
- Johnson, J. D., G. B. Freeman, S. C. Liao, P. I. Feder, and J. M. Killinger. 1991. Bioavailability of Lead in Mining Waste Soil: A Dosed Feed Study Using Sprague-Dawley Rats. In *Laboratory ID # SC9000006*. Columbus, OH: Battelle Columbus Operations.
- Jørgensen, S. S., and M. Willems. 1987. "The fate of lead in soils: The transformation of lead pellets in shooting-range soils." *Ambio* 16:11-15.
- Juhasz, A. L., P. Herde, C. Herde, J. Boland, and E. Smith. 2014. "Validation of the predictive capabilities of the Sbrc-G in vitro assay for estimating arsenic relative bioavailability in contaminated soils." *Environmental Science & Technology* 48:12962-12969.
- Juhasz, A. L., E. Smith, J. Weber, R. Naidu, M. Rees, A. Rofe, T. Kuchel, and L. Sansom. 2009. "Assessment of four commonly employed in vitro arsenic bioaccessibility assays for predicting in vivo arsenic relative bioavailability in contaminated soils." *Environmental Science & Technology* 43:9887-9894.
- Juhasz, A. L., E. Smith, J. Weber, M. Rees, A. Rofe, T. Kuchel, L. Sansom, and R. Naidu. 2007. "Comparison of in vivo and in vitro methodologies for the assessment of arsenic bioavailability in contaminated soils." *Chemosphere* 69:961-966.
- Juhasz, A. L., J. Weber, E. Smith, R. Naidu, B. Marschner, M. Rees, A. Rofe, T. T. Kuchel, and L. Sansom. 2009. "Evaluation of SBRC-gastric and SBRC-intestinal methods for the prediction of in vivo relative lead bioavailability in contaminated soils." *Environmental Science & Technology* 43 (12):4503-4509.
- Juhasz, A.L., J. Weber, G. Stevenson, D. Slee, D. Gancarz, A. Rofe, and E. Smith. 2014. "In vivo measurement, in vitro estimation and fugacity prediction of PAH bioavailability in post-remediated creosote-contaminated soil." *Science of the Total Environment* 473:147-154.
- Kabata-Pendias, Alina, and Henryk Pendias. 2001. *Trace Elements in Soils and Plants*. CRC Press.
- Kang, Y., Pan, W.J., Liang, S.Y., Li, N., Zeng, L.X., Zhang, Q.Y., and Luo, J.W. 2016. Assessment of relative bioavailability of heavy metals in soil using in vivo mouse model and its implication for risk assessment compared with bioaccessibility using in vitro assay. *Environmental Geochemistry and Health* 38(5):1183-1191.
- Karimi-Lotfabad, S., M. A. Pickard, and M. R. Gray. 1996. "Reactions of polynuclear aromatic hydrocarbons on soil." *Environmental Science & Technology* 30 (4):1145-1151.

- Kelly, M. E., S.E. Brauning, R. A. Schoof, and M. V. Ruby. 2002. *Assessing Oral Bioavailability of Metals in Soil*. Columbus, OH: Battelle Press.
- Kelsey, J. W., B. D. Kottler, and M. Alexander. 1997. "Selective Chemical Extractants To Predict Bioavailability of Soil-Aged Organic Chemicals." *Environmental Science & Technology* 31 (1):214-217.
- Khan, B. I., H. M. Solo-Gabriele, B. K. Dubey, T. G. Townsend, and Y. Cai. 2004. "Arsenic Speciation of Solvent-Extracted Leachate from New and Weathered CCA-Treated Wood." *Environmental Science & Technology* 38:4527-4534.
- Kissel, J. C. 2011. "This mismeasure of dermal absorption." *Journal of Exposure Science and Environmental Epidemiology* 21:302-309.
- Kissel, J. C., K. Y. Richter, and R. A. Fenske. 1996. "Factors affecting soil adherence to skin in hand-press trials." *Bulletin of Environmental Contamination and Toxicology* 56 (5):722-728.
- Klassen, C. D. 2013. *Casarett and Doull's Toxicology: the basic science of poisons*. New York, NY: McGraw-Hill Education.
- Koelmans, A. A., M. T. Jonker, G. Cornelissen, T. D. Bucheli, P. C. Van Noort, and O. Gustafsson. 2006. "Black carbon: the reverse of its dark side." *Chemosphere* 63 (3):365-377.
- Lagerwerff, J. V., and A. W. Specht. 1970. "Contamination of roadside soil and vegetation with cadmium, nickel, Pb, and zinc." *Environmental Science & Technology* 4 (7):583-586.
- Laidlaw, M. A. S., S. Zahran, N. Pingitore, J. Calgue, G. Devlin, and M. P. Taylor. 2014. "Identification of lead sources in residential environments: Sydney Australia." *Environmental Pollution* 184:238-246.
- Laidlaw, M.A.S., H.W. Mielke, G.M. Filippelli, D.L. Johnson, and C.R. Gonzales. 2005. "Seasonality and children's blood lead levels: developing a predictive model using climatic variables and blood lead data from Indianapolis, Indiana, Syracuse, New York, and New Orleans, Louisiana (USA)." *Environmental Health Perspectives* 113:793-800.
- Lake, D. L., P. W. W. Kirk, and J. N. Lester. 1984. "Fractionation, characterization, and speciation of heavy metals in sewage sludge and sludge-amended soils: A review." *Journal of Environmental Quality* 13:165-183.
- Lanphear, B. P., T. D. Matte, J. Rogers, R. P. Clickner, B. Dietz, and R. L. Bornschein. 1998. "The contribution of lead-contaminated house dust and residential soil to children's blood lead levels. A pooled analysis of 12 epidemiologic studies." *Environmental Research* 79:51-68.
- Lanphear, B.P., P. Succop, S. Roda, and G. M. Henningsen. 2003. "The effect of soil abatement on blood lead levels in children living near a former smelting and milling operation." *Public Health Reports* 118:83-91.
- Leggett, R. W. 1993. "An age-specific kinetic model of lead metabolism in humans." *Environmental Health Perspectives* 101:598-616.
- Li, Y., Y. Zhu, S. Zhao, and X. Liu. 2015. "The weathering and transformation process of lead in China's shooting ranges." *Environmental Science: Processes & Impacts* 17 (9):1620-1633.
- Lindsay, W. L. 1979. *Chemical Equilibria in Soils*. New York: John Wiley and Sons.
- Lindsay, W. L. 2001. *Chemical Equilibria in Soils*. Caldwell, NJ: The Blackburn Press.
- Lombi, E., F. Zhao, G. Zhang, B. Sun, W. Fitz, H. Zhang, and S. P. McGrath. 2002. "In situ fixation of metals in soils using bauxite residue: Chemical assessment." *Environmental Pollution* 118:435-443.
- Los Angeles Department of Public Health. 2016. "Traditional and Home Remedies Known to Contain Lead." <http://publichealth.lacounty.gov/eh/docs/Lead/FolkRemediesFlyer.pdf> (accessed May 31, 2016).
- Loving, T. G. 1976. *Lead in the Environment*. Washington, D.C.: US Department of the Interior, US Government Printing Office.
- Lowney, Y. W., R. C. Wester, R. A. Schoof, C. A. Cushings, M. Edwards, and M. V. Ruby. 2007. "Dermal Absorption of Arsenic from Soils as Measured in the Rhesus Monkey." *Toxicological Sciences* 100:382-391.
- Lowney, Y. W., M. V. Ruby, A. Bunge, J. Gomez-Eyles, U. Ghosh, J. Kissel, T. Peckham, S. Roberts, J. Shira, H. Xia, and C. Menzie. 2017. "PAH Interactions with Soil and Effects on Bioaccessibility and Bioavailability to Humans." *SERDP Project ER-11743*. Alexandria, VA: Strategic Environmental Research and Development Program.
- Luo, L., S. Lin, H. Huang, and S. Zhuang. 2012. "Relationships Between Aging of PAHs and Soil Properties." *Environmental Pollution* 170:177-182.
- Luthy, R. G., G. R. Aiken, M. L. Brusseau, S. D. Cunningham, P. M. Gschwend, J. J. Pignatello, M. Reinhard, S. J. Traina, Jr. Weber, W. J., and J. C. Westall. 1997. "Sequestration of Hydrophobic Organic Contaminants by Geosorbents." *Environmental Science & Technology* 31 :3341-3347.
- Maddaloni, M., N. Lolocono, W. Manton, C. Blum, J. Drexler, and J. Graziano. 1998. "Bioavailability of soilborne lead in adults, by stable isotope dilution." *Environmental Health Perspectives* 106 (Suppl. 6):1589-1594.

- Magalada, J. R., G. G. Lonstreth, W. H. J. Summerskill, and V. L. W. Go. 1976. "Measurement of gastric functions during digestion of ordinary solid meals in man." *Gastroenterology* 70:203-210.
- Mahaffey, K. R., P. S. Gartside, and C. J. Glueck. 1986. "Blood lead levels and dietary calcium intake in 1-to 11-year-old children: Second National Health and Nutrition Examination Survey, 1976 to 1980." *Pediatrics* 78 (2):257-262.
- Marafante, E., and M. Vahter. 1987. "Solubility, retention, and metabolism of intratracheally and orally administered inorganic arsenic compounds in the hamster." *Environ Res* 42 (1):72-82.
- McBride, M. B. 1994. *Environmental chemistry of soils*. New York: Oxford University Press.
- McKenzie, R. M. 1980. "The adsorption of Pb and other heavy metals on oxides of manganese and iron." *Soil Research* 18 (1):61-73.
- MDEQ. 2006. "RRD Operational Memorandum No. 1: Technical Support Document - Attachment 6: Part 201 Soil Direct Contact Criteria and Part 213 Tier I Soil Direct Contact Risk-Based Screening Levels.": Michigan Department of Environmental Quality.
- Merrill, J. C., J. J. P. Morton, and S. D. Soileau, eds. 2007. *Metals*. Edited by A. W. Hayes, *Principles and Methods of Toxicology (5th ed.)*. CRC Press.
- Meunier, L., S. R. Walker, J. Wragg, M. B. Parsons, I. Koch, H. E. Jamieson, and K. J. Reimer. 2010. "Effects of soil composition and mineralogy on the bioaccessibility of arsenic from tailings and soil in gold mine districts of Nova Scotia." *Environmental Science & Technology* 44:2667-2674.
- Minca, K. K., N. T. Basta, and K. G. Scheckel. 2013. "Using the Mehlich-3 Soil Test as an Inexpensive Screening Tool to Estimate Total and Bioaccessible Lead in Urban Soils." *Journal of Environmental Quality* 42:1518-1526.
- Minekus, M. 2015. "The TNO Gastro-Intestinal Model (TIM)." In *The Impact of Food Bioactives on Health: in vitro and ex vivo models*, edited by Kitty Verhoeckx, Paul Cotter, Iván López-Expósito, Charlotte Kleiveland, Tor Lea, Alan Mackie, Teresa Requena, Dominika Swiatecka and Harry Wichers, 37-46. Cham: Springer International Publishing.
- Minhas, J. K., L. Vasiluk, L. J. Pinto, F. A. P. C. Gobas, and M. M. Moore. 2006. "Mobilization of chrysene from soil in a model digestive system." *Environmental Toxicology & Chemistry* 25 (7):1729-1737.
- Mitchell, V. L. 2014. "Health risks associated with chronic exposures to arsenic in the environment." In *Arsenic - Environmental Geochemistry, Mineralogy, and Microbiology*, edited by R. Bowell, C. N. Alpers, D. K. Nordstrom, H. E. Jamieson and J. Majzlan, 435-449.
- Moody, R. P., J. Joncas, M. Richardson, and I. Chu. 2007. "Contaminated soils (I): In vitro dermal absorption of benzo[a]pyrene in human skin." *Journal of Toxicology and Environmental Health, Part A* 70 (21):1858-1865.
- Moody, R. P., A. V. Tytchino, A. Yip, and S. Petrovic. 2011. "A novel "by difference" method for assessing dermal absorption of polycyclic aromatic hydrocarbons from soil at federal contaminated sites." *Journal of Toxicology and Environmental Health, Part A* 74:1294-1303.
- Moss, M. E., B. P. Lanphear, and P. Auinger. 1999. "Association of dental caries and blood lead levels." *JAMA* 281 (24):2294-2298.
- NAS. 1972. *Lead: Airborne Lead in Perspective*. Washington, D.C.: National Academy of Sciences.
- NAS. 1977. "Arsenic." *Medical and Biological Effects of Environmental Pollutants*. Washington, D.C.: National Academy of Sciences.
- NEPI (National Environmental Policy Institute). 2000. "Assessing the Bioavailability of Metals in Soil for Use in Human Health Risk Assessments." *Bioavailability Policy Project Phase II Metals Task Force Report*: National Environmental Policy Institute.
- Newmont. 2013. "Remedial Action Assessment, Historic Mine and Mill Sites, Empire Mine State Historic Park, Grass Valley CA." https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/4043278336/HMMS_Remedial_Assessment_Report_Jan11.pdf.
- Nieboer, E., Y. Thomassen, V. Chashchin, and J.O. Odland. 2005. "Occupational Exposure Assessment of Metals." *The Journal of Experimental Medicine* 7:411-415.
- Nordstrom, S., L. Beckman, and I. Nordensen. 1979. "Occupational and environmental risks in and around a smelter in northern Sweden: V. Spontaneous abortion among female employees and decreased birth weight in their offspring." *Hereditas* 90:291-296.
- Norman, E. H., W. C. Bordley, I. Hertz-Picciotto, and D. A. Newton. 1994. "Rural-urban blood lead differences in North Carolina children." *Pediatrics* 94 (1):59-64.

- Northcott, G. L., and K. C. Jones. 2001. "Partitioning, extractability, and formation of nonextractable PAH residues in soil. 1. Compound differences in aging and sequestration." *Environmental Science & Technology* 35 (6):1103-1110.
- NRC (National Research Council). 1983. "Risk Assessment in the Federal Government: Managing the Process (Red Book)." *National Research Council Committee on the Institutional Means for Assessment of Risks to Public Health, Commission on Life Sciences*. Washington, D.C.: National Academies Press.
- NRC. 2003. *Bioavailability of Contaminants in Soil and Sediment: Processes, Tools, and Applications*. Edited by National Research Council. Washington, D.C. : The National Academies Press.
- NRC. 2009. "Science and Decisions: Advancing Risk Assessment." *Committee on Improving Risk Analysis Approaches used by the USEPA*. Washington, D. C.: National Academies Press.
http://www.nap.edu/catalog.php?record_id=12209.
- Nriagu, J. O. . 1990. "The rise and fall of leaded gasoline." *Science of the Total Environment* 92:13-28.
- NTP (National Toxicology Program). 2012. "Monograph on health effects of low-level lead."
<https://www.ncbi.nlm.nih.gov/pubmed/23964424>.
- NTP. 2014. "Report on Carcinogens, Thirteenth Edition." Research Triangle Park, NC: U.S. Department of Health and Human Services, Public Health Service. <https://ntp.niehs.nih.gov/results/pubs/index.html>.
- O'Connor, H. J., C. J. Schorah, N. Habibzadah, and A. T. R. Axon. 1989. "Vitamin C in the human stomach: Relation to gastric pH, gastroduodenal disease, and possible sources." *Gut* 30:436-442.
- Obyrcki, J. F., N. T. Basta, K. Scheckel, A. Juhasz, B. N. Stevens, and Minca. K. K. 2016. "Phosphorus amendment efficacy on soil Pb depends upon bioaccessible method conditions." *Journal of Environmental Quality* 45 (1):37-44.
- Obyrcki, J. F., N. T. Basta, and R. S. Wilson. 2017. "Evaluating Public and Regulatory Acceptance for Urban Soil Management Approaches." *Journal of Environmental Quality* 46:20-26.
- Oen, A. M. P., B. Beckingham, U. Ghosh, M. E. Kruså, R. G. Luthy, T. Hartnik, T. Henriksen, and G. Cornelissen. 2012. "Sorption of Organic Compounds to Fresh and Field-Aged Activated Carbons in Soils and Sediments." *Environmental Science & Technology* 46 (2):810-817.
- Ohio EPA. 2009. "Application of Bioavailability in the Assessment of Human Health Hazards and Cancer Risk." Columbus, OH: Ohio EPA.
<http://www.epa.state.oh.us/portals/30/rules/Application%20of%20Bioavailability%20in%20the%20Assessment%20of%20Human%20Health%20Hazards%20and%20Cancer%20Risk.pdf>.
- Ossiander, E. M., M. M. Mueller, and J. VanEnwyk. 2005. "Childhood lead poisoning in Washington state: A statewide survey." *Archives of Environmental & Occupational Health* 60 (1):25-30.
- Oulhote, Y., B. Le Bot, J. Poupon, J. P. Lucas, C. Mandin, A. Etchevers, D. Zmirou-Navier, and P. Glorennec. 2011. "Identification of sources of Pb exposure in French children by Pb isotope analysis: a cross-sectional study." *Environmental Health* 10 (1):75.
- Peckham, T. K., J. H. Shirai, A. L. Bunge, Y. W. Lowney, M. V. Ruby, and Kissel. J. C. 2016. "Dermal absorption of benzo[a]pyrene into human skin from soil: Effect of artificial weathering, concentration and exposure duration." *Journal for Exposure Science and Environmental Epidemiology* 00:1-8.
- Peraza, M. A., F. Ayala-Fierro, D. S. Barber, E. Casarez, and L. T. Rael. 1998. "Effects of micronutrients on metal toxicity." *Environmental Health Perspectives* 106 (Suppl 1):203.
- Peters, R. E., K. James, M. Cave, M. Wickstrom, and S. D. Siciliano. 2016. "Is received dose from ingested soil independent of soil PAH concentrations?—Animal model results." *Environmental Toxicology and Chemistry* 35 (9):2261-2269.
- Peters, R. E., M. Wickstrom, and S. D. Siciliano. 2015. "The bioavailability of polycyclic aromatic hydrocarbons from different dose media after single and sub-chronic exposure in juvenile swine." *Science of The Total Environment* 506:308-314.
- Peters, R. E., M. Wickstrom, and S. D. Siciliano. 2016. "Do biomarkers of exposure and effect correlate with internal exposure to PAHs in swine?" *Biomarkers* 21 (3):283-291.
- Pitard, F. 1993. *Pierre Gy's Sampling Theory and Sampling Practice, Second Edition*. Boca Raton, Florida: CRC Press.
- Pu, X., L. S. Lee, R. E. Galinsky, and G. P. Carlson. 2004. "Evaluation of a rat model versus a physiologically based extraction test for assessing phenanthrene bioavailability from soils." *Toxicology Science* 79:10-17.
- Rabinowitz, M. B., G. W. Wetherill, and J. D. Kopple. 1976. "Kinetic analysis of lead metabolism in healthy humans." *Journal of Clinical Investigation* 58 (2):260.

- Raes Harms, A. M., D. R. Presley, G. M. Hettiarachchi, C. Attanayake, S. Martin, and S. J. Thien. 2014. "Harmony Park: A Decision Case on Gardening on a Brownfield Site." *Natural Sciences Education* 43:33-41.
- Rahman, A., J. A. Barrowman, and A. Rahimtula. 1986. "The influence of bile on the bioavailability of polynuclear aromatic hydrocarbons from the rat intestine." *Canadian Journal of Physiology and Pharmacology* 64 (9):1214-1218.
- Rahman, M. A., and H. Hasegawa. 2011. "High levels of inorganic arsenic in rice in areas where arsenic-contaminated water is used for irrigation and cooking." *The Science of the Total Environment* 409 (22):4645-4655.
- Ramesh, A., S. A. Walker, D. B. Hood, M. D. Guillén, K. Schneider, and E. H. Weyand. 2004. "Bioavailability and risk assessment of orally ingested polycyclic aromatic hydrocarbons." *International Journal of Toxicology* 23:301-333.
- Redwine, J. C., N. T. Basta, J. S. Richey, and R. Donahue. 2010. "Bioaccessibility of Arsenic in Soil: Method Evaluation and Comparison to In Vivo Primate Data." Electric Power Research Institute and Southern Company Services, Inc. <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=00000000001019851>.
- Reid, B. J., J. D. Stokes, K. C. Jones, and K. T. Semple. 2000. "Nonexhaustive Cyclodextrin-Based Extraction Technique for the Evaluation of PAH Bioavailability." *Environmental Science & Technology* 34 (15):3174-3179.
- Reimann, C., D. B. D. B. Smith, L. G. Woodruff, and B. Flem. 2011. "Lead-concentrations and Lead-isotope ratios in soils collected along an east-west transect across the United States." *Applied Geochemistry* 26 (9):1623-1631.
- Richardson, G. M., D. A. Bright, and M. Dodd. 2006. "Do Current Standards of Practice in Canada Measure What is Relevant to Human Exposure at Contaminated Sites? II: Oral Bioaccessibility of Contaminants in Soil." *Human and Ecological Risk Assessment: An International Journal* 12 (3):606-616.
- Roberts, S. M., J. W. Munson, Y. W. Lowney, and M. V. Ruby. 2007. "Relative Oral Bioavailability of Arsenic from Contaminated Soils Measured in the Cynomolgus Monkey." *Toxicological Sciences* 95 (1):281-288.
- Roberts, S. M., W. R. Weimar, J. R. T. Vinson, J. W. Munson, and R. J. Bergeron. 2002. "Measurement of Arsenic Bioavailability in Soil Using a Primate Model." *Toxicological Sciences* 67:303-310.
- Roberts, S.M., J.W. Munson, M.V. Ruby, and Y. W. Lowney. 2016. "Effects of Source and Concentration on Relative Oral Bioavailability of Benzo (a) pyrene from Soil." *Environmental Science & Technology* 50 (20):11274-11281.
- Rodriguez, R. R., N. T. Basta, S. W. Casteel, F. P. Armstrong, and D. C. Ward. 2003. "Chemical extraction methods to assess bioavailable As in contaminated soil and solid media." *Journal of Environmental Quality* 32:876-884.
- Rodriguez, R.R., N. T. Basta, S. W. Casteel, and L. W. Pace. 1999. "An in vitro gastrointestinal method to estimate bioavailable arsenic in contaminated soils and solid media." *Environmental Science & Technology* 33:642-649.
- Rotard, W., W. Christmann, W. Knoth, and W. Mailahn. 1995. "Determination of absorption availability of PCDD/PCDF from "Kieselrot" (red slag) in the digestive tract, Simulation of the digestion of technogenic soil." *Umweltwiss. Schadst.-Forsch* 7 (1):3-9.
- Roy, T. A., A. J. Krueger, B. B. Taylor, D. M. D.M. Mauro, and L.S. Goldstein. 1998. "Studies estimating the dermal bioavailability of polynuclear aromatic hydrocarbons from manufactured gas plant tar contaminated soils." *Environmental Science & Technology* 32 (20):3113-3117.
- Roy, T. A., and R. Singh. 2001. "Effect of soil loading and soil sequestration on dermalbioavailability of polynuclear aromatic hydrocarbons." *Bulletin Environmental Contaminant Toxicology* 67:324-331.
- Rozett, K., R. Singh, T. A. Roy, W. Neal, and E.H. Weyand. 1996. "Bioavailability of chemical components of soil contaminated with manufactured gas plant residue." *Toxicologist* 30:324.
- Ruby, M. V., A. Davis, J. H. Kempton, J. W. Drexler, and P. D. Bergstrom. 1992. "Lead Bioavailability: Dissolution Kinetics Under Simulated Gastric Conditions." *Environmental Science & Technology* 26 (6):1242-1248.
- Ruby, M. V., A. O. Davis, R. A. Schoof, S. Eberle, and C. M. Sellstone. 1996. "Estimation of lead and arsenic bioavailability using a physiologically based extraction test." *Environmental Science & Technology* 30:422-430.
- Ruby, M. V., and Y. W. Lowney. 2012. "Selective soil particle adherence to hands: implications for understanding oral exposure to soil contaminants." *Environmental Science & Technology* 46 (23):12759-12771.
- Ruby, M. V., Y. W. Lowney, A.L. Bunge, S. M. Roberts, J. L. Gomez-Eyles, U. Ghosh, J. Kissel, P. Tomlinson, and C. A. Menzie. 2016. "Oral Bioavailability, Bioaccessibility, and Dermal Absorption of PAHs from Soil - State of the Science." *Environmental Science & Technology* 50 (5):2151-2164.
- Ruby, M. V., R. A. Schoof, W. J. Brattin, M. Goldade, G. Post, M. Harnois, and D. E. Mosby. 1999. "Advances in evaluating the oral bioavailability of inorganics in soil for use in human health risk assessment." *Environmental Science & Technology* 33 (21):3697-3705.
- Ryan, J. A., K. G. Scheckel, W. R. Berti, S. L. Brown, S. W. Casteel, R. L. Chaney, J. Hallfrisch, M. Doolan, P. Grevatt, M.

- Maddaloni, and D. Mosby. 2004. "Reducing children's risk from lead in soil." *Environmental Science & Technology* 38 (1):18A-24A.
- Sabbioni, E., M. Fischbach, G. Pozzi, R. Pietra, M. Gallorini, and J. L. Piette. 1991. "Cellular retention, toxicity and carcinogenic potential of seafood arsenic. I. Lack of cytotoxicity and transforming activity of arsenobetaine in the BALB/3T3 cell line." *Carcinogenesis* 12 (7):1287-1291
- Saha, U.K., S. Taniguchi, and K. Sakarai. 2001. "Adsorption behavior of cadmium, zinc and lead on hydroxyaluminum and hydroxyaluminosilicate-montmorillonite complexes." *Soil Science Society of America Journal* 65:694-703.
- Sawhney, B.L., and M. P. N. Gent. 1990. "Hydrophobicity of Clay Surfaces: Sorption of 1,2-Dibromoethane and Trichloroethene." *Clays and Clay Minerals* 38 (1):14-20.
- Schaffer, S. J., M. S. Kincaid, N. Endres, and M. Weitzman. 1996. "Lead poisoning risk determination in a rural setting." *Pediatrics* 97 (1):84-90.
- Scheckel, K. G., G. L. Diamond, M. F. Burgess, J. M. Klotzbach, M. Maddaloni, B. W. Miller, C. R. Partridge, and S. M. Serda. 2013. "Amending soils with phosphate as means to mitigate soil lead hazard: a critical review of the state of the science." *Journal of Toxicology and Environmental Health-Part B-Critical Reviews* 16 (6):337-380.
- Scheckel, K. G., R. L. Chaney, N. T. Basta, and J. A. Ryan. 2009. "Advances in Assessing Bioavailability of Metal(loid)s in Contaminated Soils." *Advances in Agronomy* 107:10-52.
- Scheckel, K. G., and J. A. Ryan. 2004. "Spectroscopic approaches to defining the inorganic and organic constituents of biosolids." Proc. Sustainable Land Application Conf, Jan. 4-8, 2004.
- Schoof, R., and Nielsen, J.B. 1997. Evaluation of methods for assessing the oral bioavailability of inorganic mercury in soil. *Risk Analysis* 17(5):545-555.
- Schroder, J.L., Basta, N.T., Si, J., Casteel, S.W., Evans, T., and Payton, M. 2003. In vitro gastrointestinal method to estimate relative bioavailable cadmium in contaminated soil. *Environmental Science & Technology* 2003:1365-1370
- Schroder, J. L., N. T. Basta, S. W. Casteel, T. J. Evans, M. E. Payton, and J. Si. 2004. "Validation of the in vitro gastrointestinal (IVG) method to estimate relative bioavailable Pb in contaminated soils." *Journal of Environmental Quality* 33 (2):513-521.
- Schroder, J. L., N. T. Basta, J. Si, S. W. Casteel, T. Evans, and M. Payton. 2003. "In vitro gastrointestinal method to estimate relative bioavailable cadmium in contaminated soil." *Environmental Science & Technology* 37:1365-1370.
- Schultz, L. F., M. Young, and R. M. Higashi. 1999. "Sorption-desorption Behavior of Phenanthrene Elucidated by Pyrolysis - Gas Chromatography-Mass Spectrometry Studies of Soil Organic Matter." *Environmental Toxicology and Chemistry* 18:1710-1719.
- Schwartz, R., A. Z. Belko, and E. M. Wien. 1982. "An in vitro system for measuring intrinsic dietary mineral exchangeability; alternative to intrinsic isotopic labeling." *Journal of Nutrition* 112:497-504.
- Semple, K. T., M. J. Riding, L. E. McAllister, F. Sopena-Vazquez, and G. D. Bending. 2013. "Impact of Black Carbon on the Bioaccessibility of Organic Contaminants in Soil." *Journal of Hazardous Materials* 261:808-816.
- Shalat, S. L., H. M. Solo-Gabriele, L. E. Fleming, B. T. Buckley, K. Black, M. Jimenez, T. Shibata, M. Durbin, J. Graygo, W. Stephan, and G. Van De Bogart. 2006. "A Pilot Study of Children's Exposures to CCA-Treated Wood from Playground Equipment." *Science of the Total Environment* 367:80-88.
- Shargel, L., and A. B. C. Yu. 1999. *Applied Biopharmaceutics and Pharmacokinetics, Fourth Edition*. New York, NY: McGraw-Hill.
- Shock, S. S., B. A. Bessinger, Y. W. Lowney, and J. L. Clark. 2007. "Assessment of the Solubility and Bioaccessibility of Barium and Aluminum in Soils Affected by Mine Dust Deposition." *Environmental Science & Technology* 41 (13):4813-4820.
- Siciliano, S. D., K. James, G. Zhang, A. N. Schafer, and D. Peak. 2009. "Adhesion and enrichment of metals on human hands from contaminated soil at an arctic urban brownfield." *Environmental Science & Technology* 43 (16):6385-6390.
- Siciliano, S. D., B. D. Laird, and C. L. Lemeieux. 2010. "Polycyclic aromatic hydrocarbons are enriched but bioaccessibility reduced in brownfield soils adhered to human hands." *Chemosphere* 80:1101-1108.
- Singh, A. P., R. K. Goel, and T. Kaur. 2011. "Mechanisms pertaining to arsenic toxicity." *Toxicology International* 18 (2):87-93.
- Smith, D. B., W. F. Cannon, L. G. Woodruff, F. Solano, J. E. Kilburn, and D. L. Fey. 2013. "Geochemical and mineralogical data for soils of the conterminous United States." *U.S. Geological Survey Data Series 801*: U.S. Geological Survey. <http://pubs.usgs.gov/ds/801/>.

- Smith, E., I. M. Kempson, A. L. Juhasz, J. Weber, A. Rofe, D. Gancarz, R. Naidu, R. G. McLaren, and M. Gräfe. 2011. "In vivo-in vitro and XANES spectroscopy assessments of lead bioavailability in contaminated periurban soils." *Environmental Science & Technology* 45 (14):6145-6152.
- Sneddon, J., R. Clemente, P. Riby, and N. W. Lepp. 2009. "Source-pathway-receptor investigation of the fate of trace elements derived from shotgun pellets discharged in terrestrial ecosystems managed for game shooting." *Environmental Pollution* 157 (10):2663-2669.
- Spalt, E. W., J. C. Kissel, J. H. Shirai, and A. L. Bunge. 2009. "Dermal absorption of environmental contaminants from soil and sediment: a critical review." *Journal of Exposure Science and Environmental Epidemiology* 19:119-148.
- Sparks, D. L. 2003. *Environmental Soil Chemistry. Second Edition*. San Diego, CA: Academic Press.
- Sposito, G. 1986. "Sorption of trace metals by humic materials in soils and natural waters." *Critical Reviews in Environmental Control* 16 (2):193-229.
- SRC, Inc. 2014. "Technical Memorandum: Preliminary Remediation Goals (PRGs) for the Barker-Hughesville and Carpenter Snow Creek Superfund Sites." *From SRC, Inc. to EPA, Region 8 dated May 15, 2014. EPA Review Draft*.
- Stanek, E. J., E. J. Calabrese, R. M. Barnes, J. M. C. Danku, Y. Zhou, P. T. Kostecki, and E. Zillioux. 2010. "Bioavailability of arsenic in soil: Pilot study results and design considerations." *Human and Experimental Toxicology* 29 (11):945-960.
- Sterckeman, T., F. Douay, D. Baize, H. Fourrier, N. Proix, and C. Schwartz. 2004. "Factors affecting trace element concentrations in soils developed on recent marine deposits from northern France." *Applied Geochemistry* 19 (1):89-103.
- Strawn, D. G., and D. L. Sparks. 2000. "Effects of soil organic matter on the kinetics and mechanisms of Lead (II) sorption and desorption in soil." *Soil Science Society of America Journal* 64 (1):144-156.
- Stroo, H. F., R. Jensen, R. C. Loehr, D. V. Nakles, A. Fairbrother, and C. B. Liban. 2000. "Environmentally acceptable endpoints for PAHs at a manufactured gas plant site." *Environmental Science & Technology* 34 (18):3831-3836.
- Stroo, H. F., T. A. Roy, C. B. Liban, and J. P. Kreitingerzz. 2005. "Dermal Bioavailability Of Benzo[A]Pyrene On Lampblack: Implications For Risk Assessment." *Environmental Toxicology and Chemistry* 24:1568-1572.
- Stumm, W. 1992. *Chemistry of the solid-water interface: Processes at the mineral-water and particle-water interface in natural systems*. New York: John Wiley & Sons, Inc.
- Thomas, D. J., M. Styblo, and S. Lin. 2001. "The cellular metabolism and systemic toxicity of arsenic." *Toxicology and Applied Pharmacology* 176 (2):127-144.
- Turkall, R. M., M. S. Abdel-Rahman, and G. Skowronski. 2010. *Effects of soil matrix and aging on the dermal bioavailability of hydrocarbons and metals in the soil: Dermal bioavailability of soil contaminants*, ScholarWorks@UMass Amherst. Amherst, MA.
- Turlakiewicz, Z., and J. Chmielnicka. 1985. "Diethyllead as a specific indicator of occupational exposure to tetraethyllead." *British Journal of Industrial Medicine* 42 (682-685).
- URS Corporation. 2008. "Bingham - Magna Ditch Site Investigation, Report 1 of 5 Final Characterization Report, Prepared for Kennecott Utah Copper Corporation." *Document # DERR-2008-017958*. <http://eqedocs.utah.gov/>.
- USACE (United States Army Corps of Engineers). 2016. "Draft Final PAH Bioavailability Study Report, Former Foster Air Force Base Skeet Range Site, Victoria, TX." *Prepared for the United States Army Corps of Engineers, Fort Worth District*: prepared by Pika/Arcadis JVC.
- USEPA (United States Environmental Protection Agency). 1989a. "Review of the National Ambient Air Quality Standards for Lead Exposure Analysis Methodology and Validation." *EPA-450/2-89-011*. Research Triangle Park, NC: USEPA Office of Air Quality Planning and Standards.
- USEPA. 1989b. "Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part A). Interim Final." *EPA/540/1-89/002*. Washington, D.C.: Office of Emergency and Remedial Response. U.S. Environmental Protection Agency.
- USEPA. 1991a. Maximum contaminant level goals and national primary drinking water regulations for lead and copper. *Federal Register* 56: 26461-26564.
- USEPA. 1991b. "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)." *EPA/540/R-92/003*. Washington, D. C.: Office of Emergency and Remedial Response.
- USEPA. 1991c. "Update on OSWER Soil Lead Cleanup Guidance. Memo from Don R. Clay, Assistant Administrator." Washington, D.C.: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. <https://semspub.epa.gov/work/05/205247.pdf>

- USEPA. 1992a. "Dermal Exposure Assessment: Principals and Applications." *EPA/600/8-91/011B*.
- USEPA. 1992b. "Supplemental Guidance to RAGS: Calculating the Concentration Term." *Intermittent Bulletin Volume 1 Number 1, Publication 9285.7-08I*. Washington, D. C. : U. S. Environmental Protection Agency.
- USEPA. 1993. "Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons." *EPA/600/R-93/089*. Washington, D.C.: United State Environmental Protection Agency, Office of Research and Development.
- USEPA. 1994a. "Acid Mine Drainage Prediction." *EPA-530/R-94-036*. Wasington, D.C.: Office of Solid Waste.
- USEPA. 1994b. "Baseline Risk Assessment for Lead, Expedited Response Action, Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site, Butte, Montana." *Prepared by CDM Federal Programs Corporation for U.S. Environmental Protection Agency, Region VIII, Montana Office*.
- USEPA. 1994c. Enforcement/Action Memorandum: Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site, Butte, Montana. U.S. Environmental Protection Agency.
- USEPA. 1994d. "Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children." *9285.7-15-1. EPA/540/R-93/081*. Washington, D. C.: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000WN4R.TXT>
- USEPA. 1994e. "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities." *OSWER Directive 9355.4-12*. Washington, D. C.: Office of Emergency and Remedial Response.
- USEPA. 1996a. "Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposure to Lead in Soil." Technical Review Workgroup for Lead.
- USEPA. 1996b. "Soil Screening Guidance: User's Guide." *OSWER 9355.4-23*. Washington, D. C.: Office of Superfund Remediation and Technology Innovation.
- USEPA. 1997. "Bioavailability of Lead in a Slag Sample from the Midvale Slag NPL Site." *Report prepared for USEPA Region VIII by Roy F. Weston, Inc. Document Control Number 04800-030-0166. (Draft)*.
- USEPA. 1999. "Short Sheet: IEUBK Model Bioavailability Variable." *EPA-540/F-00-006*. Washington, D.C.: Office of Solid Waste and Emergency Response.
- USEPA. 2000a. "Short Sheet: TRW Recommendations for Sampling and Analysis of Soil and Lead (Pb) Sites." *EPA 540-F-00-010; OSWER 9285.7-38*. . Washington, D.C.: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.
- USEPA. 2000b. "Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures." *EPA/630/R-00/02*. Washington, D.C.: Risk Assessment Forum Technical Panel. U.S. Environmental Protection Agency.
- USEPA. 2001. "Final Couer d'Alene Basin Remedial Investigation Report."
- USEPA. 2002a. "Memorandum. Subject: Role of Background in the CERCLA Cleanup Program." *OSWER 9285.6-07P*. Washington, D.C.
- USEPA. 2002b. "Midvale Slag Superfund Site Operable Unit 2 Midvale, Utah Record of Decision."
- USEPA. 2002c. "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites." *OSWER 9355.4-24*. Washington, D.C.
- USEPA. 2003a. "Final Human Health Risk Assessment, Walkerville Residential Site, Butte-Silver Bow County, Montana." *TDD No. 0009-0061*: Prepared by URS Operating Services, Inc. for U.S. Environmental Protection Agency, Region VIII.
- USEPA. 2003b. "Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. Final " *EPA-540-R-03-001*. Washington, D.C.: Technical Review Workgroup for Lead. <https://semspub.epa.gov/work/06/199244.pdf>
- USEPA. 2003c. "Superfund lead-contaminated residential sites handbook." *OSWER 9285.7-50*. Washington, D.C.: Office of Emergency and Remedial Response.
- USEPA. 2004. "Risk Assessment Guidance for Superfund (RAGS) Volume 1, Human Health Evaluation Manual (Part E), Supplemental Guidance for Dermal Risk Assessment." *EPA 540/R/99/005*. Washington, D. C.: United States Environmental Protection Agency. <http://www.epa.gov/risk/risk-assessment-guidance-superfund-rags-part-e>.
- USEPA. 2005a. "Guidelines for Carcinogenic Risk Assessment." *EPA/630/P-03/001F*. Washington, D. C.: U.S. Environmental Protection Agency.
- USEPA. 2005b. "Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens. Risk Assessment Forum." *EPA/630/R-03/003F*.

- USEPA. 2006a. "Guidance on Systematic Planning Using the Data Quality Objectives Process." *EPA QA/G-4; EPA/240/B-06/001*. Washington, D. C.: United States Environmental Protection Agency. <http://www.epa.gov/quality/guidance-systematic-planning-using-data-quality-objectives-process-epa-qag-4>.
- USEPA. 2006b. "Record of Decision: Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site." *Prepared by U.S. Environmental Protection Agency, Region VIII in consultation with and partial concurrence from Montana Department of Environmental Quality*.
- USEPA. 2007a. "Appendix C. IEUBK win parameter dictionary." *EPA 9285.7-42*. Washington, D.C.: Office of Solid Waste and Emergency Response.
- USEPA. 2007b. "Estimation of relative bioavailability of lead in soil and soil-like materials using in vivo and in vitro methods." *OSWER 9285.7-77*. Washington, D.C.: Office of Solid Waste and Emergency Response. <https://semspub.epa.gov/work/HQ/175416.pdf>
- USEPA. 2007c. "Guidance for Evaluating the Oral Bioavailability of Metals in Soils for Use in Human Health Risk Assessment." *9285.7-80*. Washington, D.C.: Office of Solid Waste and Emergency Response. <https://semspub.epa.gov/work/HQ/175333.pdf>.
- USEPA. 2007d. "User's Guide for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK)." *EPA 9285.7-42*.
- USEPA. 2008. "Region 8 and Utah Division of Environmental Response and Remediation Notice of Acceptance Letter, RE: Review of the risk assessment document entitled Bingham-Magna Ditch Site Investigation Report 4 of 5, Technical Memorandum Evaluation of Risk-Based Soil Cleanup Levels for the Former Bingham-Magna Ditch."
- USEPA. 2009a. "Region 8 and Utah Division of Environmental Response and Remediation Technical Memorandum: Technical conclusions on appropriateness to leave Bingham Magna Ditch sediment with elevated concentrations of arsenic at depth below current surface grade."
- USEPA. 2009b. "Relative Bioavailability of Arsenic from Soil Barber Orchard Superfund Site Waynesville, North Carolina." *Prepared for U.S. Environmental Protection Agency, Region 4 by Center for Environmental & Human Toxicology, University of Florida. (available through U.S. EPA Region 4 Administrative Record Index for the Barber Orchard (Explanation of Significant Differences) NCSDN0406989)*.
- USEPA. 2009c. "Validation assessment of in vitro lead bioaccessibility assay for predictive relative bioavailability of lead in soils and soil-like materials at Superfund sites." *OSWER 9200.3-51*. Washington, D. C.: Office of Solid Waste and Emergency Response.
- USEPA. 2010a. "Baseline Human Health Risk Assessment for the Barker Hughesville Mining District Superfund Site in Judith Basin County, Montana." *Prepared by U.S. Environmental Protection Agency, Region 8, Denver, CO, with technical assistance from SRC, Inc. External Review Draft*.
- USEPA. 2010b. "Bioavailability of Dioxin and Dioxin-like Compounds in Soil, Final Report." Las Vegas, NV: Office of Superfund Remediation and Technology Innovation, U.S. Environmental Protection Agency. <https://semspub.epa.gov/work/HQ/174554.pdf>.
- USEPA. 2010c. "Development of a relative potency factor (RPF) approach for polycyclic aromatic hydrocarbon(PAH) mixtures. External Review Draft." *EPA/625/r-08/12A*. Washington, D.C.: U.S. Environmental Protection Agency. https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=194584.
- USEPA. 2010d. "Integrated Exposure Uptake Biokinetic Model for Lead in Children, Windows version (IEUBK win v1.1 build 11)." <http://epa.gov/superfund/lead/products.htm#user>.
- USEPA. 2010e. "Region 8 Recommendations for Quantifying the Bioavailability of Lead and Arsenic in Soil for Use in Human Health Risk Assessment." http://www.epa.gov/region8/r8risk/hh_rba.html.
- USEPA. 2010f. "Relative Bioavailability of Arsenic in Soils at 11 Hazardous Waste Sites Using an In Vivo Juvenile Swine Method." *OSWER Directive #9200.0-76*. Washington, D.C.: USEPA.
- USEPA. 2010g. "Silver Bow Creek/Butte Area Residential Metals Abatement Program (RMAP)." Bulletin #1.
- USEPA. 2011a. "Final Report Bioavailability of Dioxins and Dioxin-Like Compounds in Soil." West Las Vegas, NV U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation, Environmental Response Team.
- USEPA. 2011b. "Reusing Potentially Contaminated Landscapes: Growing Gardens in Urban Soils." *EPA Document No. 542/F-10/011*. Washington, D.C.: USEPA. https://clu-in.org/download/misc/urban_gardening_fact_sheet.pdf.
- USEPA. 2012a. "Compilation and Review of Data on Relative Bioavailability of Arsenic in Soil." *OSWER 9200.1-113*. Washington, D.C.: USEPA. <https://www.epa.gov/superfund/soil-bioavailability-superfund-sites-guidance#arsenic>.

USEPA. 2012b. "Guidance for Methods Development and Methods Validation for the Resource Conservation and Recovery Act (RCRA)." Washington, D.C.: U.S. Environmental Protection Agency.

USEPA. 2012c. "Memorandum Compilation and Review of Data on Relative Bioavailability of Arsenic in Soil and Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil Documents." *OSWER Directive 9200.1-113*. Washington, D.C.: USEPA.
<https://www.epa.gov/superfund/soil-bioavailability-superfund-sites-guidance#arsenic>.

USEPA. 2012d. "Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil." *OSWER 9200.1-113*. Washington, D.C.: USEPA. <https://www.epa.gov/superfund/soil-bioavailability-superfund-sites-guidance#arsenic>.

USEPA. 2012e. "Standard operating procedure for an in vitro bioaccessibility assay for lead in soil." *OSWER 9200.1-86*. Washington, D.C.: USEPA. <https://semspub.epa.gov/work/HQ/174533.pdf>.

USEPA. 2013a. "Integrated Science Assessment for Lead." *EPA/600/R-10/075F*: National Center for Environmental Assessment-RTP Division.

USEPA. 2013b. "IRIS Toxicological Review of Benzo[a]pyrene (Public Comment Draft)." *EPA/635/R-13/138a-b*. Washington, D.C.: U.S. Environmental Protection Agency.

USEPA. 2013c. "Lead at Superfund Sites: Risk Assessments."
<https://www.epa.gov/superfund/lead-superfund-sites-risk-assessment>

USEPA. 2013d. "Method 1340 In vitro bioaccessibility assay for lead in soil."

USEPA. 2014a. "Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors." *OSWER Directive 9200.1-120*.

USEPA. 2014b. "Region 8 Final Close-out Report Midvale Slag Superfund Site, Midvale, UT."

USEPA. 2014c. "Risk Assessment Forum White Paper: Probabilistic Risk Assessment Methods and Case Studies." *EPA/100/R-14/004*. Washington, D.C.: U.S. Environmental Protection Agency.

USEPA. 2014d. "Soil Dioxin Relative Bioavailability Assay Evaluation Framework." *OSWER 9200.2-136*.

USEPA. 2014e. "Technical Review Workgroup Recommendations Regarding Gardening and Reducing Exposure to Lead." *OSWER 9200.2-142* Washington, D. C.

USEPA. 2015a. "Guidance for Sample Collection for Bioaccessibility Assay for Lead (Pb) in Soil." *OSWER 9200.3-100*.

USEPA. 2015b. "Inorganic Arsenic - Toxicological Review for IRIS." USEPA.
https://yosemite.epa.gov/sab/sabproduct.nsf/fedgrstr_activites/Rev%20Tox%20Review%20Inorg%20Arsenic!OpenDocument&TableRow=2.0.

USEPA. 2016a. "All-Ages Lead Model (ALM) version 1.05 (External Draft Report)."

USEPA. 2016b. "Baseline Human Health Risk Assessment for the Barker Hughesville Mining District Superfund Site." *Report prepared by U.S. Environmental Protection Agency, Region VIII, by SRC, Inc.*

USEPA. 2016c. "Protect your family for exposures to lead." accessed June 01, 2016.

USEPA. 2016d. "ProUCL Software, Version 5.1." <https://www.epa.gov/land-research/proucl-software>.

USEPA. 2016e. "Recommendations for sieving soil and dust samples at lead sites for assessment of incidental ingestion." *OLEM Directive 9200.1-128*. Washington, D.C.: USEPA.

USEPA. 2016f. "Regional Screening Levels for Chemical Contaminants at Superfund Sites User's Guide." May 2016.
<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>.

USEPA. 2016g. "Remedial Investigation Report for the Barker Hughesville Mining District Superfund Site." *Report prepared for U.S. Environmental Protection Agency, Region VIII, Montana Office, by CDM Federal Programs Corporation*.

USEPA. 2016h. "Updated Scientific Considerations for Lead in Soil Cleanups." *OLEM 9200.2-167*. Washington, D.C.: USEPA, Office of Land and Emergency Management.

USEPA. 2017a. "ALM spreadsheets (MS Excel). Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas, Calculations of Preliminary Remediation Goals (PRGs) for Soil in Nonresidential Areas." *Version date 06/14/2017*.
https://www.epa.gov/sites/default/files/2017-07/alm_update_with_2009-2014_nhanes_pbbo_and_gsdi_06202017.xlsx.

USEPA. 2017b. "Memorandum: Transmittal of Update to the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters and the Integrated Exposure Uptake Biokinetic Model's Default Maternal Blood Lead Concentration at Birth Variable." *OLEM Directive 9285.6-56*. Washington, D.C.: USEPA Office of Land and Emergency Management. <https://www.epa.gov/superfund/lead-superfund-sites-guidance>.

- USEPA. 2017c. "Method 1340 In Vitro Bioaccessibility Assay for Lead in Soil." *SW-846 Update VI*. Washington, D. C.
- USEPA. 2017d. "Regional Screening Levels (RSLs) - Users Guide ". U. S. Environmental Protection Agency. <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide-june-2017>.
- USEPA. 2017e. "Standard Operating Procedure for an In Vitro Bioaccessibility Assay for Lead and Arsenic in Soil." *OLEM 9200.2-164*. Washington, D. C.: USEPA, Office of Land and Emergency Management.
- USEPA. 2017f. "Toxicological Review of Benzo(a)pyrene. CASRN 50-32-8." *EPA/635/R-17/003Fa*. Washington, D.C. : U.S. Environmental Protection Agency.
- USEPA. 2017g. "Validation Assessment of In Vitro Arsenic Bioaccessibility Assay for Predicting Relative Bioavailability of Arsenic in Soils and Soil-like Materials at Superfund Sites." *OLEM 9355.4-29*. Washington, D.C.
- USEPA. 2017h. "Regional Screening Levels (RSLs) - Generic Tables (June 2017)" <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>
- USEPA. n.d. "Memorandum from Christopher P. Weis, PhD, DABT, Regional Toxicologist to Stan Christensen, RPM Midvale Slag Site." *Evaluation of risk-based PRGs for commercial/industrial development of the slag piles at the Midvale Slag NPL site, Midvale, UT. Ref: 8EPR-PS*.
- USEPA and BARC. 2008. "United States Environmental Protection Agency and Bioaccessibility Research Canada. Standard Operating Procedure for an in vitro bioaccessibility assay for lead in soil."
- USGS (United States Geological Survey). 2008. "National Geochemical Survey, Geochemistry by County." <https://mrdata.usgs.gov/geochem/doc/averages/countydata.htm>.
- USGS. 2014. "Geochemical and mineralogical maps for soils of the conterminous United States." <https://pubs.usgs.gov/of/2014/1082/>.
- Van de Wiele, T. R., K. M. Peru, W. Verstraete, S. D. Siciliano, and J. V. Headley. 2004. "Liquid chromatographic-mass spectrometric screening of polycyclic aromatic hydrocarbon hydroxylates formed in a simulator of the human gastrointestinal tract." *Journal of Chromatography B* 806:245-253.
- Vasiluk, L., L. J. Pinto, Z. A. Walji, W. S. Tsang, F. A. P. C. Gobas, C. Eickhoff, and M. M. Moore. 2007. "Benzo[a]pyrene bioavailability from pristine soil and contaminated sediment assessed using two in vitro models." *Environmental Toxicology and Chemistry* 26 (3):387-393.
- Venteris, E. R., N. T. Basta, J. M. Bigham, and R. Rea. 2014. "Modeling spatial patterns in soil As to estimate natural baseline concentration." *Journal of Environmental Quality* 43:936-946.
- Vural, N., and Y. Duydu. 1995. "Biological monitoring of lead in workers exposed to tetraethyllead." *Science of the Total Environment* 171:183-187.
- Walraven, N., M. Bakker, B. J. H. van Os, G. T. Klaver, J. J. Middleburg, and G. R. Davies. 2015. "Factors controlling the oral bioaccessibility of anthropogenic Pb in polluted soils." *Science of the Total Environment* 506:149-163.
- Washington State Department of Ecology. 2007. "Science Advisory Board Issue Paper on Bioavailability."
- Weis, C. P., and J. M. LaVelle. 1991. "Characteristics to Consider When Choosing an Animal Model for the Study of Lead Bioavailability." *Chemical Speciation and Bioavailability* 3 (314):113-119.
- Wester, R. C., H. I. Maibach, D. A. W. Bucks, L. Sedik, J. Melendres, C. L. Laio, and S. DeZio. 1990. "Percutaneous Absorption of [14C]DDT and [14C]Benzo(a)pyrene from Soil." *Fundamental and Applied Toxicology* 15 (5):510-516.
- Whitacre, S., N. Basta, B. Stevens, V. M. Hanley, R. H. Anderson, and K. Scheckel. 2017. "Modification of an Existing In vitro method to predict relative bioavailable arsenic in soils." *Chemosphere* 180:545-552.
- Whitacre, S. W., N. T. Basta, and E. A. Dayton. 2013. "Bioaccessible and non-bioaccessjble fractions of soil arsenic." *Journal of Environmental Science and Health, Part A* 48 (6):620-628.
- White, A. F., and S. L. Brantley. 1995. "Chemical weathering rates of silicate minerals: an overview." *Chemical weathering rates of silicate minerals* 31:1-22.
- WHO (World Health Organization). 1999. "Hazard Prevention and Control in the Work Environment: Airborne Dust " *WHO/SDE/OEH/99.14, Occupational and Environmental Health*. Geneva: Department of Protection of the Human Environment. WHO.
- WHO. 2001. "Safety Evaluation of Certain Food Additives and Contaminants (PCDDs, PCDFs, PCBs)." *Food Additive Series 48*: World Health Organizaiton. <http://www.inchem.org/documents/jecfa/jecmono/v48je20.htm>.
- WHO. 2002. "Safety Evaluation of Certain Food Additives and Contaminants." *WHO Technical Report Series 909*: World Health Organization. http://whqlibdoc.who.int/trs/WHO_TRS_909.pdf.
- Wortman, S. E., and S. T. Lovell. 2013. "Environmental Challenges Threatening the Growth of Urban Agriculture in the

- United States." *Journal of Environmental Quality* 42:1283-1294.
- Woudneh, M. B., J. P. Benskin, R. Grace, M. C. Hamilton, B. H. Magee, G. C. Hoeger, N. D. Forsberg, and J. R. Cosgrove. 2016. "Quantitative determination of hydroxy polycyclic aromatic hydrocarbons as a biomarker of exposure to carcinogenic polycyclic aromatic hydrocarbons." *Journal of Chromatography A* 1454:93-100.
- Wragg, J., M. Cave, N. T. Basta, E. Brandon, S. W. Casteel, S. Denys, C. Gron, A. Oomen, K. J. Reimer, K. Tack, and T. Van de Wiele. 2011. "An inter-laboratory trial of the unified BARGE bioaccessibility method for arsenic, cadmium and lead in soil." *Science of the Total Environment* 409 (19):4016-4030.
- Xia, H., J. L. Gomez-Eyles, and U. Ghosh. 2016. "Effects on Polycyclic Aromatic Hydrocarbon Source Materials and Soil Components on Partitioning and Dermal Uptake." *Environmental Science & Technology* 50 (7):3444-3452.
- Yamamoto, N., Y. Takahashi, J. Yoshinaga, A. Tanaka, and Y. Shibata. 2006. "Size distributions of soil particles adhered to children's hands." *Environmental Toxicology and Chemistry* 51:157-163.
- Yang, J.-K., M. O. Barnett, P. M. Jardine, N. T. Basta, and S. W. Casteel. 2002. "Adsorption, sequestration, and bioaccessibility of As (V) in soils." *Environmental Science & Technology* 36:4562-4569.
- Yang, J., T. A. Roy, A. J. Krueger, W. Neil, and C. R. Mackerer. 1989. "In vitro and in vivo percutaneous absorption of benzo[a]pyrene from petroleum crude-fortified soil in the rat." *Bulletin of Environmental Contamination and Toxicology* 43:207-214.
- Zagury, G. J., S. Dobran, S. Estrela, and L. Deschênes. 2008. "Inorganic arsenic speciation in soil and groundwater near in-service chromated copper arsenate-treated wood poles." *Environmental Toxicology and Chemistry* 27 (4):799-807.
- Zahran, S., M. A. Laidlaw, S. P. McElmurry, G. M. Filippelli, and M. P. Taylor. 2013. "Linking source and effect: Resuspended soil Pb, air Pb, and children's blood Pb levels in Detroit, Michigan." *Environmental Science & Technology* 47 (6):2839-2845.
- Zhang, W., G. G. Zhang, and H. Z. He. 1994. "Early health effects and biological monitoring in persons occupationally exposed to tetraethyllead." *International Archives of Occupational and Environmental Health* 65:395-399.
- Zhang, Y., J. J. Pignatello, S. Tao, and B. Xing. 2015. "Bioaccessibility of PAHs in fuel soot assessed by an in vitro digestive model with absorptive sink: Effect of food ingestion." *Environmental Science & Technology* 49:14641-14648.
- Zheng, Y., J. Wu, J. C. Ng, G. Wang, and W. Lian. 2002. "The absorption and excretion of fluoride and arsenic in humans." *Toxicology Letters* 133 (1):77-82.
- Zia, M. H., E. E. Codling, K. Scheckel, and R. L. Chaney. 2011. "In vitro and in vivo approaches for the measurement of oral bioavailability of lead (Pb) in contaminated soils: a review." *Environmental Pollution* 159 (10):2320-2327.