

**NICHOLAS T. BASTA**  
**PROFESSOR OF SOIL AND ENVIRONMENTAL CHEMISTRY**  
<https://senr.osu.edu/>

## **EDUCATION**

Ph.D. 1989 Iowa State University, Soil Chemistry  
Minor in Analytical Chemistry  
M.S. 1984 Iowa State University, Soil Science  
B.S. 1981 The Pennsylvania State University, Chemistry

## **PROFESSIONAL EXPERIENCE**

7/13-present Co-Director, Environmental Science Graduate Program, The Ohio State University, Columbus, OH.  
7/03–present Professor of Soil and Environmental Chemistry, School of Environment and Natural Resources, The Ohio State University, Columbus, OH.  
8/91-6/03 Professor of Soil Chemistry, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK  
6/90-7/91 Research Soil Scientist, USDA ARS, North Central Soil Conservation Research Laboratory, Morris, MN

## **RECOGNITION AND AWARDS**

Fellow, Soil Science Society of America  
Fellow, American Society of Agronomy  
Professor Courtesy Appointment, Division of Environmental Health Sciences, College of Public Health, The Ohio State University.  
Chair, Soil Chemistry (Division S-2), Soil Science Society of America, 2008-2011  
Technical Editor, *Journal of Environmental Quality*, 2002-2007 (reappointed for 2005-2007)  
Board Representative, Environmental Soil Science (Division S-11), Soil Science Society of America, 2001-2004  
Associate Editor, *Journal of Environmental Quality*, 1997-1999 (reappointed for 2000-2002)

## **RESEARCH**

### **Focus**

My research program focuses on soil and environmental chemistry / science and its application for soil and environmental remediation:

- ✚ Environmental chemistry of organic and inorganic pollutants in contaminated soils with emphasis on human (e.g., public health), agronomic (e.g., crop, animal), and ecological bioavailability, contaminant fate and transport, and human health and ecological risk assessment
- ✚ Development and evaluation of new technologies used for in situ remediation of contaminated soils (e.g., soil amendments).

- ✦ Development of innovative *in vitro* laboratory methods to predict (1) contaminant and nutrient bioavailability and (2) the ability of remediation methods to reduce contaminant bioavailability and human and ecological exposure.
- ✦ Beneficial use of agricultural, industrial, and municipal by-products through land application; soil and environmental chemistries of by-products in agronomic/environmental systems with emphasis on their risk and environmental impact
- ✦ Fundamental biogeochemical processes that affect heavy metal and trace element bioavailability, human and ecological health in soil-water systems

## GRANTS AND CONTRACTS

Source	Number	Project Total (\$)
Extramural Sources	37	25,924,274
Intramural Sources, Oklahoma State Univ.	7	201,265
Intramural Sources, Ohio State Univ.	7	560,549
All	51	26,685,868

## PUBLICATIONS

Publication	Total	Last 5 Yr
Refereed journal manuscripts	111	23
Books / Book chapters	13	4
Abstracts and proceedings	283	58
Non refereed journal manuscripts	2	2
Research Project Final Technical Reports	21	6
Research bulletins	4	1
Instructional	2	0
Extension Publications	4	1
New Releases	13	8
<b>Total</b>	<b>455</b>	<b>101</b>

## Publication Scholar Metrics for Refereed Science Journal Manuscripts

Citations	7105
h-index	41
i10-index	91
Publications with >100 citations	22
Publications with >50 citations	39
Five highest cited	537, 443, 387, 384, 358

## SELECT JOURNALS 2013 TO PRESENT

Whitacre, Shane D., Nicholas T. Basta, Brooke N. Stevens, Valerie Hanley, Richard H. Anderson, and Kirk G. Scheckel. 2017. Modification of an Existing *In vitro* Method to Predict Relative Bioavailable Arsenic in Soils. *Chemosphere* 180:545-552.

- Obrycki, John F., Darryl B. Hood, Tyler Serafini, Chris Alexander, Pam Blais, Nicholas T. Basta. Public health data contextualizes soil Pb hazard management in Ohio. 2017. *Journal of Public Health Management and Practice*. doi: 10.1097/PHH.0000000000000488
- Obrycki, John F., Nicholas T. Basta, Robyn S. Wilson. 2017. Evaluating public and regulatory acceptance for urban soil management approaches. *J. Environ. Qual.* 46: 20-26. doi:10.2134/jeq2016.06.0230.
- Obrycki, John F., Kirk G. Scheckel, and Nicholas T. Basta. 2017. Soil solution interactions may limit Pb remediation using P amendments in an urban soil. *Environ Pollut.* 220:549-556.
- Obrycki, John F., Nicholas T. Basta, Steven W. Culman. 2016. Management Options for Contaminated Urban Soils to Reduce Public Exposure and Maintain Soil Health. *J. Environ. Qual.* Doi.2134/jeq2016.07.0275
- Beyer, Nelson, W., Nicholas T. Basta, Rufus Chaney, Paula F. P. Henry, Thomas May, David Mosby, Barnett A. Rattner, Kirk G. Scheckel, Daniel Sprague. Bioaccessibility tests accurately estimate bioavailability of lead to quail. *Environ. Toxicol. Chem.* 35: 2311–2319, 2016.
- Basta, N.T., D.M. Busalacchi, L.S. Hundal, K. Kumar, R.P. Dick, R.P. Lanno, J. Carlson, A.E. Cox, and T.C. Granato. 2016. Restoring ecosystem function in degraded urban soil using biosolids, biosolids blend and compost. Special Issue: Soil in the City. *J. Environ. Qual.* 45(1): 74-83.
- Obrycki, John F., Nicholas T. Basta, Kirk Scheckel, Albert Juhasz, Brooke N. Stevens, and Kristen K. Minca. 2016. Phosphorus amendment efficacy on soil Pb depends upon bioaccessible method conditions. Special Issue: Soil in the City *J. Environ. Qual.* 45(1): 37-44.
- Yujin Jiao, Julie K. Bower, Wansoo Im, Nicholas Basta, John Obrycki, Mohammad Z. Al-Hamdan, Allison Wilder, Claire Bollinger, Tongwen , Zhang, Ludie Hatten, Jerrie Hatten, Darryl B. Hood. 2015. Development of Educational PPGIS Risk-Communication Tools and Application to Evaluating Urban Soils. In Proceedings from the 2015 Minority Health and Health Disparities Grantees' Conference, as a Special Issue of the International Journal of Environmental Research and Public Health (IJERPH). *J. Community Medicine.* <http://www.mdpi.com/1660-4601/13/1/11>.
- Kaiser, M.L., M.L. Williams, N. Basta, M. Hand, and S. Huber. 2015. When vacant lots become urban gardens: Characterizing the perceived and actual food safety concerns of urban agriculture in Ohio. *J. Food Protect.* 78(11):2070-2080.
- Heather Henry , Marisa F. Naujokas , Chammi Attanayake , Nicholas T. Basta , Zhongqi Cheng, Ganga M. Hettiarachchi , Mark Maddaloni , Christopher Schadt , and Kirk G. Scheckel. 2015. Bioavailability-based in situ remediation to meet future lead (Pb) standards in urban soils and gardens. *Environ. Sci. Technol.* 49 (15), pp 8948–8958.
- Li, Jie, Kan Li, Xin-Yi Cui, N.T. Basta, Li-Ping Li, Hong-Bo Li, and L.Q. Ma. 2015. In vitro bioaccessibility and in vivo relative bioavailability in 12 contaminated soils: Method comparison and method development. *Science of the Total Environment.* 532:812-820.
- Carlson, J., J. Saxena, N. Basta, L. Hundal, D. Busalacchi. 2015. Application of organic amendments to restore degraded soil: effects on microbial properties. *Environ. Monit. Assess* 187(3):1-15.
- Sharma, Kuhuk, Nicholas T. Basta, and Parwinder S. Grewal. 2015. Soil heavy metal contamination in residential neighborhoods in post-industrial cities and its potential human exposure risk. *Urban Ecosystems.* 18: 115–132.

- Venteris, E.R., N.T. Basta, J.M. Bigham, and R. Rea, 2014. Modeling spatial patterns in soil As to estimate natural baseline concentration. *J. Environ. Qual.* 43:936-946.
- Jardine, P.M., M.A. Stewart, M.O. Barnett, N.T. Basta, S.C. Brooks, S. Fendorf, T.L. Mehlhorn. 2013. Influence of Soil Geochemical and Physical Properties on Chromium (VI): Sequestration and Bioaccessibility. *Environ. Sci. Technol.* 47:11241-11248.
- Sieblec, G., P. Kidd, M. Pecio, R. Galazka, M. Mench, N. Basta, R.L. Chaney, V. Alvarez-Lopez, B. Rodriguez-Garrido, J. Vandgronsveld, W. Friesl-Hanl, A. Cundy, M. Puschenreiter. 2013. Testing Single and Combinations of Amendments for Stabilization of Metals in Contrasting Extremely Contaminated Soils. *E3S Web of Conferences* 1: 01003. <https://doi.org/10.1051/e3sconf/20130101003>
- Juhasz, A.L., N.T. Basta, and E. Smith. 2013. What is required for the validation of in vitro assays for predicting contaminant relative bioavailability? Considerations and criteria. *Environmental Pollution* 180:372-375.
- 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 Pb in urban soils. *J. Environ. Qual.* 42(5):1518-1526.
- Basta, N.T., and J. Wragg. 2013. Advances in Bioaccessibility Methodology. *Journal of Environmental Science and Health, Part A.* 48(6):593.
- Koch, I., Reimer, K.J., Bakker, M.I., Basta, N.T., Cave, M.R., Denys, S., Dodd, M., Hale, B.A., Irwin, R., Lowney, Y.W., Moore, M.M., Paquin, V., Rasmussen, P.E., Repaso-Subang, T., Stephenson, G.L., Siciliano, S.D., Wragg, J., Zagury, G.J. 2013. Variability of bioaccessibility results using seventeen different methods on a standard reference material, NIST 2710. *Journal of Environmental Science and Health, Part A.* 48(6):641-655.
- Whitacre, S.D., N.T. Basta, and E.A. Dayton. 2013. Soil Controls on Bioaccessible Arsenic Fractions. *J. Environ. Health Sci. Part A.* 48(6): 620-628.
- Minca, K.K., and N.T. Basta. 2013. Comparison of Plant Nutrient and Environmental Soil Tests to Predict Pb in Urban Soils. *Sci. Total Environ.* 445-446:57-63.

#### **BOOKS / BOOK CHAPTERS (2013-PRESENT)**

- Obrycki J.F., K.K. Minca, and N.T. Basta. 2016. Screening for Soil Lead Contamination Using a Common Soil Test Method. In *Sowing Seeds in the City: Municipal and Ecological Considerations* (S. Brown, K. McIvor and E. Snyder (eds.), Springer, NY.
- Basta, N.T. and A. Juhasz. 2014. Chapter 9: Using In Vivo Bioavailability and/or In Vitro Gastrointestinal Bioaccessibility Testing to Adjust Human Exposure from Soil Ingestion. In : R.J. Bowell, J. Majzlan and C. Alpers (eds.) *Geochemistry, Mineralogy and Microbiology of Arsenic in Environment, Reviews in Mineralogy and Geochemistry*, Mineralogical Society of America.
- Whitacre, S.D., N.T. Basta, C.J. Everett, K. Minca, and W.L. Daniels. 2013. Identification of toxic agents and potential exposure routes to Appalachian coal mining communities. In: J.R. Craynon (ed.) *Environmental considerations in energy production*. Soc. Mining Met. & Explor., Englewood, CO.

## TEACHING AND ADVISING

### **ENVIRONMENT AND NATURAL RESOURCES 5262: SOIL CHEMICAL PROCESS AND ENVIRONMENTAL QUALITY**

ENR 5262 (3 semester hr) has two 1-hr lectures and a 2-hr wet/computer laboratory. **Environment and Natural Resources 5262: Soil Chemical process and environmental quality.** A comprehensive study of chemical processes in soil systems that impact biogeochemical cycles and environmental quality. Topics including environmental fate of toxic substances, water quality, and remediation of contaminated soil. Course included hands-on experience with modern techniques used for soil chemical investigations including the USEPA MINTEQ model (offered every Autumn Semester).

### **ENVIRONMENT AND NATURAL RESOURCES 5273: ENVIRONMENTAL FATE AND IMPACT OF POLLUTANTS IN SOIL AND WATER**

ENR 5273 (3 semester hr) has two 1 hr 20 m lecture classes. (offered every Spring Semester). An overview of pollutant sources, pollutant transport through soil and water, and environmental fate of pollutants. Soil and environmental chemistry or organic and inorganic contaminants. Pollutant transport through human and ecosystem exposure pathways.

### Environment and Natural Resources 5279: **URBAN SOILS AND ECOSYSTEM SERVICES: ASSESSMENT AND RESTORATION**

3 semester hrs (one 2-hr class; one 3-hr lab). A comprehensive study focused on assessment and restoration of urban soil to provide essential ecosystem services. Urban soil laboratory provides hands-on experience with soil assessment and restoration

## PROFESSIONAL ACTIVITIES

### **SOCIETY MEMBERSHIP**

#### **Active**

American Association for the Advancement of Science (AAAS) (member 2004-present)

American Chemical Society (ACS) (member 1989-present)

North American Colleges and Teachers of Agriculture (NACTA) (2018-present)

Ohio Academy of Sciences (2016-present)

Society for Ecological Restoration International (2010-present)

Society for Environmental Toxicology and Chemistry (SETAC) (member 1996-present)

Soil Science Society of America (SSSA) (member 1982-present)

Union of Concerned Scientists (2012-present)

Gamma Sigma Delta

Sigma Xi, The Scientific Research Society, 1995

## **International and National Activities**

### **SELECT INTERNATIONAL SCIENTIFIC MEETINGS INVITED (79 invited presentations at international and national scientific meetings)**

#### **Symposium Organized at International and National Scientific Meetings**

Total 23: Bioavailability and bioaccessibility (14), Soil and environmental contaminant chemistry (5); Beneficial reuse of byproducts (4).

#### **EDITORIAL BOARDS**

Editorial Board, *Current Pollution Reports*; 2015-present

Editorial Board, *J. Soil and Sediment Contamination*; 2003-2015

*J. Environmental Quality*

Technical Editor, 2002-2004; re-appointed 2005-2007.

Associate Editor, 1997-2000; re-appointed 2000-2002

Editorial Board, *Critical Reviews in Environmental Science and Technology* (2004-2006).

#### **International Committees**

International Conference for Heavy Metals in the Environment (2016-present)

International Committee, International Conference on Biogeochemistry of Trace Elements (2001-present)

Bioavailability Research Group of Europe, 2004-present.

Bioavailability Research Group of Canada, 2007-present.

Executive Committee, International Society of Trace Element Biogeochemistry, ISTEBS (2003-2007). ISTEBS Nomination Committee, Chair

#### **National Committees**

Interstate Technology and Regulatory Council (ITRCweb.org). Bioavailability in Contaminated Soil Workgroup, 2014-present

Soil Science Society of America, Chair Division S-2, Soil Chemistry, 2009-2012.

Contaminated Soil Advisory Group, Society for Environmental Toxicology and Chemistry, 1997-present

John Glenn Institute for Public Service and Public Policy, Affiliate Member, The Ohio State University, Columbus, OH., 2005-present.

U.S. EPA Emergency Response Team, Office of Solid Waste-Superfund. Amendments for Ecological Restoration, 2006-present.

Soil Science Society of America, Marion L. & Chrystie M. Jackson Soil Science Award (S482), 2006-2008.

Soil Science Society of America Fellows Committee, 2004-2006.

Board Representative, Environmental Soil Science (Division S-11), Soil Science Society of America, 2001-2004

USDA NIFA Technical Committee, Project W3170, Beneficial Reuse of Residuals and Reclaimed Water: Impact on Soil Ecosystem and Human Health (formerly W2170), 1994-present. Co-Chair, 1999-2004

Residuals Management Research Committee, American Water Works Association, 1996-2004.

U.S. EPA In-place Inactivation and Natural Ecological Restoration Technologies (IINERT) Committee, 1997-2010. The IINERT Committee is one of seven action teams established in November 1995 under the USEPA Remediation Technologies Development Forum. The committee consists of representatives from government, industry, and academia. The

charge of the group is to develop and improve environmental remediation technologies for cleanup of contaminated sites.

**COMMITTEES, *REGIONAL / STATE***

Ohio Academy of Science, 2015-present

Ohio Water Environment Association, 2005-present.

Ohio Environmental Protection Agency Phosphorus Task Force, 2007-2009.