

CURRICULUM VITAE

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EDUCATION: BA Political Science, 1980, Williams College, Williamstown, MA.
MS Agronomy (soil science), 1993, University of Maryland, College Park, MD. *Use of hyperaccumulator species to remediate metal contaminated soils*
Ph.D. Agronomy (soil science), 1996, University of Maryland, College Park, MD. *Long-term effects of biosolids application on agricultural soils*

PROFESSIONAL POSITIONS HELD

Research Associate Professor, Ecosystem Science Division, College of Forest Resources, University of Washington, Seattle, WA. 2005- present

Research Assistant Professor, Ecosystem Science Division, College of Forest Resources, University of Washington, Seattle, WA. 1999- 2005.

Post Doctoral Associate, Ecosystem Science Division, College of Forest Resources, University of Washington, Seattle, WA. 1998-99

Post Doctoral Associate, Environmental Chemistry Laboratory, USDA ARS Beltsville, MD. 1996-1998. GS 11

Technician, Department of Agronomy, University of Maryland. 1990 - 1996.

Founder, Long Island Produce. 1985-1989. Wholesale company distributing local produce to restaurants and supermarkets in the New York area.

Awards

US Compost Council- 2009 Rufus Chaney Research Award- for outstanding research in GHG implications of different organics management options

Washington Organics Recycling Council- 2008 Outstanding achievement in organics recycling

US EPA – 2007 National first place Clean Water Act recognition award biosolids exemplary management- Research Activities- Biosolids for Biodiesel, in cooperation with King County and Natural Selection Farms

Northwest Biosolids Management Association- 2006 Outstanding Leader

King County Green Globe Award 2005- outstanding achievement in environmental stewardship for use of biosolids to grow canola for biodiesel production

US EPA – 2004 National first place Clean Water Act recognition award biosolids exemplary management- Research Activities for lab and field-scale research demonstrating the effective use of biosolids to reduce metal toxicity on severely contaminated soils.

Biocycle. Passion Vision and Grit award for research in biosolids. 2004.

2001 Association of Washington Business – Cleanup award in cooperation with Avista Utilities for beneficial use of wood ash

2001 Discovery Magazine Technology Awards Program, semifinalist for "Tailor-Made Remediation mixtures and composts for metal toxic mine and smelter waste restoration."

1995- Graduate Student of the Year Agronomy Department, University of Maryland, College Park

Professional Societies, Committees,

National Academy of Science- Standing committee on soil science- member. Appointed for 3 year term beginning 2005. Term extended an additional 3 years 2008-2011

Chicago Climate Exchange- member protocol development committee for methane avoidance of putrescible organics to compost facilities 2008

Washington State Climate Action team- Beyond waste- lead of organics section charged with developing recommendations for organics diversion to minimize GHG impact-2008

Canadian Council of Ministers of the Environment – member of team charged with development of a tool to calculate GHG impact of different biosolids treatment and end use practices, 2008-9

California Integrated Waste Management Board- Life cycle analysis for organic residuals- team member, lead on benefits of compost use 2007-9

W-170 USDA CSREES Regional Research Committee ‘Chemistry and Bioavailability of Waste Constituents in Soils’ – member, former co-chair

National Biosolids Partnership Advisory Committee- member

National Research Council Water Science and Technology board, Committee on the Bioavailability of Contaminants in Soils and Sediments, member 2000-2003.

Soil Science Society of America, Chair S-11 (Soils and Environmental Quality) Division, 2003, member Women in Agronomy

US EPA Remediation Technologies Development Forum (RTDF) In-place Inactivation and Ecosystem Restoration Technologies (IINERT) soil metals group – member

Panels, reviews, editor responsibilities

US EPA reviewer -Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices-2009

US EPA- Consult/advise on organics end use component of Waste Reduction Model-2008-9
Solid Waste Association of North America- reviewer- GHG model for sanitary landfills-2009

Journal of Environmental Quality, associate editor 2003-2008

Biogeochemistry of Trace Elements, 2001-present invited co-editor of abstracts.

USDA Small Business and Innovative Research Air Water and Soils committee, Panel chair
2002, panel member 2000, 2001

Co-editor, proceedings of the 1997 BARC Symposium, " Beneficial Co-Utilization of
Agricultural, Municipal, and Industrial By-Products".

Reviewer for scientific journals and proposals including Environmental Science and
Technology, Journal of Environmental Quality, Journal of Phytoremediation, Plant and Soil,
Soil Science, USDA SBIR, BARD and NRICGP, EPA EPSCOR, NSF, US DOE, US EPA,
Solid Waste Association of North America, U MD, U FL, State of ME, Environment Canada,
State of ID, SERDP

Grant History

Agency	Topic	Period
Private gift- James Ellis	Life cycle analysis for afforestation of disturbed soils with organic amendments	2007-9
WA DOE Weyerhaeuser	Land application- true path to zero waste Decomposition of LDPE cartons during composting	2008-9 2006
FDI-CORFO	Uso de recursos fitogenticos natives para la fitoestabilizacion de relaveds mineros en la region de Coquimbo	2005-2007
USEPA OSWER	Pb and As availability	2005-6
US EPA	Follow up on Leadville mine restoration	2005-6
USDA SBIR (through Emerald Ranches)	Biosolids for Biodiesel	2003-2004 2005-2007
Northwest Biosolids Management Association Prior includes King County Reclaimed Water and Biosolids program contributions	Use of organic amendments to increase carbon storage in derelict lands N ₂ O emissions from biosolids amended soils Lead and Arsenic Availability Ecological Assessment Nonylphenol degradation in biosolids amended soils Use of reclaimed water to irrigate edible vegetables and turf grass	1987-present (renewed annually)
Mountains to Sound Greenway- King County	Gravel mine restoration Carbon Sequestration	1995-2045 (renewed annually)
International Lead Zinc Research Organization	In situ amendments to reduce metal availability	2000-present

Service Activities

Classes Taught

EPA OSWER Remedial Project Manager and On Scene Coordinator training- Beyond Hydroseeding- use of amendments in restoration. Presented at RPM and OSC training sessions twice each year since 2001-2007. A webcast version of the class was developed in 2005 and 2006

EPA- OSWER- Webinar Carbon accounting for Composting operations 2008

University of Washington

Water Quality BES 460 winter 2006 Instructor overall 3.8

Sustainable practices- ENV S 203 winter 2005 Instructor overall 4.8

Bioremediation ESC 416 winter 2000 Instructor overall 4.56

Introductory soil science ESC 210 Fall 1999, Spring 2000 Instructor overall 4.64, 4.41

Guest lecturer in range of classes included Water and Sustainability, Soil Microbiology, Introduction to Environmental Studies, Soils and Land Management

Graduate Students

Past- Chair 7 MS

Pam Devolder: *Effects of a biosolids compost and wood ash amendment on metal bioavailability in a wetland contaminated with mine tailings.* 2001

Barbara Rae Christensen: *The use of amendments to reduce the bioavailability of trace metals in contaminated soil.* 2002

Alex Svendsen: *The use of biosolids in combination with lime to ameliorate subsoil acidity in mine tailings.* 2002

Peter Severtson: *Effects of biosolids and gypsum amendments on metal bioavailability and plant growth when added to mine tailings.* 2003

Linda Gaulke: *The effects of soil amendments on the symbiotic nitrogen-fixing relationship of alnus rubra (red alder) and frankia.* 2004

Ingrid Clausen: *Potential for high iron biosolids compost to reduce the bioavailability of lead and arsenic contaminated soils in situ* 2006

Dana Devin Clarke *Degradation of nonylphenol in biosolids amended soils* 2007

Current –Chair 3 MS 1 PhD

Kristen McIvor: *Integration of Class A biosolids in urban community gardens (PhD expected 2009)*

Kate Kurtz: *Quantification of benefits associated with land application of residuals (MS expected 2010)*

Andrew Trlica: *A greenhouse gas and life cycle assessment of mined land restoration using organic residuals (MS expected 2009)*

Diane Nelson- *Characterization of bacteria in anaerobic co-digestion of wastewater and organics (MS expected 2010)*

Committee member 6 MS, 1 PhD

Media Recognition

National Academy of Science Podcast- Role of soils in Society- in conjunction with Smithsonian soils exhibit <http://media.nap.edu/podcasts/nax74dirtonsoil.mp3>

Research featured in US EPA Biosolids Recycling: Restore, Reclaim, Remediate video on remediation: <http://www.cluin.org/studio/video/>.

Environmental Science Technology- 2008 A page

Associated Press- Lead in soils

Focus of feature- Discover Magazine

Featured on National Public Radio Tacoma Affiliate

Featured in University of Washington University Week as well as on home web page of the University

Focus of feature for NBC and ABC news affiliates

Research reported in local news papers in Leadville, CO, Miami, OK, Prescott, AZ, and Spokane, WA.

Research subject for 4 features in EPA Tech Trends publication

Research subject of feature in NIEHS newsletter

Research subject of 2 features in Water Environment Federation Newsletter

Research subject of feature in Science Daily

Science citation index

989 citations for all work in peer reviewed journals (as of 2008)

PUBLICATIONS

Peer Review Journals

Brown, S., D.Devin-Clarke, M. Doubrava, and G.A. O'Connor. 2009. Fate of 4- Nonylphenol in a biosolids amended soil. *Chemosphere*, In press

Brown, S. , A. Svendson, and C. Henry. 2009. Restoration of high zinc and lead tailings with municipal biosolids and lime: field study. *J Environ. Qual.* In press

Brown, S. C. Krueger, and S. Subler.. 2008 Greenhouse Gas Balance for Composting Operations. *J. Environ. Qual.* 37:1396-1410.

Allen, H.L., S.L. **Brown**, R. Chaney, W.L. Daniels, C.L. Henry, D.R. Neuman, E. Rubin, J.A. Ryan, and W. Toffey. 2007 The use of soil amendments for remediation, revitalization and reuse US EPA EPA 542-R-07-013

Svendson, A., C. Henry, and S. **Brown**. 2007. Restoration of high zinc and lead tailings with municipal biosolids and lime: greenhouse study. *J. Environ. Qual.* 36:1609-1617.

Brown, S. and N. Basta. 2007. Field Test of In Situ Soil Amendments at the Tar Creek National Priorities List Superfund Site. *J. Environ. Qual.* 36:1627-1634

Brown, S., P. DeVolder, and C. Henry. 2007. Effect of amendment C:N ratio on plant diversity, cover and metal content for acidic Pb and Zn mine tailings in Leadville, CO. *Environ. Pollution.* 149:165-172.

Chaney, R.L., E. Filcheva, C.E. Green and S. L. **Brown**. 2006. Zn Deficiency Promotes Cd Accumulation by Lettuce from Biosolids Amended Soils with High Cd:Zn Ratio. *J. Residuals Sci. Tech* V3:2

Gaulke, L. S., C.L. Henry, and S. L. **Brown**. 2006. Nitrogen fixation and growth response of *Alnus Rubra* following fertilization with urea or biosolids. *Sci. agric. (Piracicaba, Braz.)*, 63, 4:361-369. ISSN 0103-9016.

Gaulke, L. S., C.L. Henry, and S. L. **Brown**. 2006. Nitrogen fixation and growth response of *Alnus rubra* amended with low and high metal content biosolids. *Sci. agric. (Piracicaba, Braz.)*, 63, 4:351-360. ISSN 0103-9016.

Brown, S., B. Christensen, E. Lombi, M. McLaughlin, S. McGrath, J. Colpaert, and J. Vangronsveld. 2005. An Inter-laboratory study to test the ability of amendments to reduce the availability of Cd, Pb, and Zn in-situ. *Environmental Pollution*, 138:34-45

Brown, S., M. Sprenger, A. Maxemchuk and H. Compton. 2005. An evaluation of ecosystem function following restoration with biosolids and lime addition to alluvial tailings deposits in Leadville, CO. *J. Environ. Qual.* 34:139-148.

- Brown**, S.L., W. Berti, R.L. Chaney J Halfrisch and J Ryan. 2004. In situ use of soil amendments to reduce the bioaccessibility and phytoavailability of soil lead. *J. Environ Qual.*33:522-531.
- Ryan, J.A., W.R. Berti, S.L. **Brown**, S.W. Casteel, R.L. Chaney, M. Doolan, P. Grevatt, J. Hallfrisch, M. Maddaloni, D. Moseby, and K. Scheckel. 2004. Reducing children's risk to soil lead: summary of a field experiment. *Environ. Sci. and Tech.* 38:19a-24a.
- DeVolder, P., S.L. **Brown**, D. Hesterberg and K. Pandya. 2003. Metal bioavailability and speciation in a wetland tailings repository amended with biosolids compost, wood ash, and sulfate. *J. Environ. Qual.*, 32 (3): 851-864.
- Brown**, S., R. Chaney J. Halfrisch and Q. Xue. 2003. Effect of Biosolids Processing on Lead Bioavailability in an Urban Soil. *J. Environ. Qual.* 32:100-108.
- Brown**, S., C.L. Henry, R.Chaney, H. Compton, and P.S. DeVolder. 2003. Using municipal biosolids in combination with other residuals to restore metal-contaminated mining areas. *Plant and Soil*, 249: 203-215
- Chaney, R.L., S.L. **Brown**, R. I. Stuczynski, W. L. Daniels, C.L. Henry, Y.M. Li, G. Siebielec, M. Malik, J. S. Angle, J. A. Ryan, and H. Compton. 2000. Risk assessment and remediation of soils contaminated by mining and smelting of lead, zinc and cadmium. *Rev. Int. Contam. Ambient.* 16:175-192.
- Brown**, S.L., R.L. Chaney, J.S. Angle and J.A. Ryan. 1998.Organic carbon and the phytoavailability of cadmium to lettuce in long term biosolids amended soils. *J. Environ. Qual.* V27:1071-1078.
- Brown**, S.L., R.L. Chaney, and J.S. Angle. 1997. Subsurface liming and metal movement in soils amended with lime stabilized biosolids. *J. Environ. Qual.* 26 (3) 724-732.
- Brown**, S.L., J.S. Angle and R.L. Chaney. 1997. Correction of limed-biosolids induced Mn deficiency on long-term field plots. *J. Environ. Qual.* 26:1375-1384.
- Chaney RL, Malik M, Li YM, **Brown** SL, Brewer EP, Angle JS, Baker AJM. 1997. Phytoremediation of soil metals. *Current Opin. In Biotech.* 8(3):279-284.
- Brown**, S.L., R.L. Chaney, C.A. Lloyd, J.S. Angle and J.A. Ryan. 1996. Relative uptake of cadmium by garden vegetables and fruits grown on long-term biosolids-amended soils. *Environmental Science and Technology V 30* :3508-3511.
- Brown**, S.L., R.L. Chaney, J.S. Angle and A.J.M. Baker. 1995a. Zinc and cadmium uptake of *Thlaspi caerulescens* grown in nutrient solution. *Soil Sci. Soc. Am. J.* 59:125-133.
- Brown**, S.L., J.S. Angle, R.L. Chaney and A.J.M. Baker. 1995b. Zinc and cadmium uptake by *Thlaspi caerulescens* and *Silene cucubalis* grown on sludge-amended soils in relation to total soil metals and soil pH. *Environ. Sci. Technol.* 29:1581-1585.
- Brown**, S.L., R.L. Chaney, J.S. Angle and A.J.M. Baker. 1994. Zinc and cadmium uptake by *Thlaspi caerulescens* and *Silene cucubalis* in relation to soil metals and soil pH. *J. Environ. Qual.* 23:1151-1157.

Books and book chapters

- National Research Council. 2003. R. Luthy (chair), R. Allen-King, S. **Brown**, D. Dzombak, S. Fendorf, J. Geisy, J. Hughes, S. Luoma, L. Malone, C. Menzie, S. Roberts, M. Ruby, T.

- Schultz, and B. Smets. Bioavailability of Contaminants in Soils and Sediments. National Academy of Sciences. National Academy of Sciences, Washington, DC. 420 p.
- Chaney, R.L., J.A. Ryan, U. Kukier, S. L. **Brown**, G. Siebielec, M. Malik, and J. Angle. 2001. Heavy Metal aspects of compost use. In P. Stoffella and B. Kahn (eds.) Compost Utilization in horticultural cropping systems. Lewis Publishers, Boca Raton, FA pp 323 – 360.
- Brown**, S.L. and R.L. Chaney. 2000. Combining residuals to achieve specific soil amendment objectives. In J.F. Power (ed.). Beneficial Uses of Agricultural, Industrial, and Municipal By-Products. Soil Sci. Soc. America, Madison, WI. pp. 343-360.
- Chaney, R.L., Y.-M. Li, J.S. Angle, A.J.M. Baker, R.D. Reeves, S.L. **Brown**, F.A. Homer, M. Malik and M. Chin. 2000. Improving metal hyperaccumulator wild plants to develop commercial phytoextraction systems: Approaches and progress. pp. 131-160. In N Terry and G.S. Banuelos (eds.) Phytoremediation of Contaminated Soil and Water. CRC Press, Boca Raton, FL.
- Chaney, R.L., J.A. Ryan, Y.-M. Li and S.L. **Brown**. 1999. Soil cadmium as a threat to human health. pp. 219-256 . In M.J. McLaughlin and B.R. Singh (eds.) Cadmium in Soils and Plants. Kluwer, Dordrecht.
- Brown**, S. Manganese deficiency induced by lime rich co-utilization products. 1998. In S. **Brown**, J.S. Angle, and L. Jacobs (eds.) Beneficial Co-Utilization of Agricultural, Municipal, and Industrial By-Products, proceedings of the XXII Beltsville Symposium. pp 289-298. Kluwer Academic Publishers, The Netherlands.
- Brown**, S, J.S. Angle and L. Jacobs (eds.) 1998 Beneficial Co-Utilization of Agricultural, Municipal, and Industrial By-Products, proceedings of the XXII Beltsville Symposium. Kluwer Academic Publishers, The Netherlands
- Chaney, R.L., S. L. **Brown**, and J.S. Angle. 1998 Soil-Root Interface: Ecosystem Health and Human Food-Chain Protection. In P.M. Huang (ed) Soil Chemistry and Ecosystem Health Soil Science Society of America Special Publication # 52, SSSA, Madison WI. pp. 279-312.
- Chaney, R.L., J.A. Ryan, and S.L. **Brown**. 1997. Development of the US-EPA limits for chromium in land-applied biosolids and application of these limits to tannery by-product derived fertilizers and other Cr-rich soil amendments. In S. Canali, F. Tittarelli, and P. Sequi (eds.) Chromium Environmental Issues. Franco Angleli, Milano, Italia.

Trade Journals

- Brown**, S 2007-present Climate Change Connections- monthly column Biocycle magazine
- Brown**, S. and D. Thompson. 2007. Biosolids opportunity in Tacoma Washington. Biocycle June 48:6:37-39
- Brown**, S. and S. Subler. 2007. Composting and greenhouse gas emissions: a producers perspective. Biocycle March 2007 37-41.
- Brown**, S. 2005. Evaluating benefits of class A biosolids cake production Part I. Biocycle, March 41-44.

- Brown, S.** 2005. Evaluating benefits of class A biosolids cake production Part II. *Biocycle*, April.
- Brown, S.** and P. Leonard. 2004. Biosolids and global warming: Evaluating the management impacts. *Biocycle* August:
- Brown, S.,** and P. Leonard. 2004. Building carbon credits with biosolids recycling: Part II *Biocycle* September :25-29
- Brown, S. L.,** Chaney, R. L. and Hill, D. M. Biosolids compost reduces lead bioavailability in urban soils. *BioCycle* 44(6):20-24. 2003.
- Brown, S.L.,** R. Chaney, M. Sprenger, and H. Compton. 2002. Soil remediation using biosolids. *Biocycle* June: 40-44
- Brown, S.L.,** R. Chaney, M. Sprenger, and H. Compton. 2002. Assessing impact to wildlife at biosolids remediated sites. *Biocycle* August: 51-58.
- Henry, C., and S. **Brown.** 1997. Restoring a superfund site with biosolids and fly ash. *Biocycle*, 38(11):79-83.

Proceedings

- Brown, S** and A. Trilica. 2008. Carbon accumulation potential for mine sites restored with organic amendments. International Conference on the Biogeochemistry of Trace Elements. Chihuahua, Mexico July 13-16.
- Brown, S** and S. Subler. 2007. Generating carbon credits through mine site restoration with organic amendments. *Mine Closure 2007 Proceedings*, A. Fourie, M. Tibbett, and J. Wiertz, eds. *Mine Closure*, Santiago Chile October 16-19.
- Brown, S.,** C.Henry, and P.DeVolder. 2007. Effect of amendment C:N ratio on plant diversity, cover and metal content for Pb and Zn mine tailings in Leadville, Colorado, USA. *Mine Closure 2007 Proceedings*, A. Fourie, M. Tibbett, and J. Wiertz, eds *Mine Closure*, Santiago Chile October 16-19.
- Brown, S.** and N. Basta. 2004. Use of an in vitro extract to measure reductions in bioavailability of soil lead. *SoilRem* 2004. Nanjing, China Nov 11-14.
- Brown, S. L.,** C. L. Henry, H. Compton, R.L. Chaney, and P. DeVolder. 2000. Using municipal biosolids in combination with other residuals to restore metal-contaminated mining areas. Chap 1. In *Proc. Symp. Mining, forest and Land Restoration: The Successful Use of Residuals/ Biosolids/Organic Matter for Reclamation Activities* (Denver, CO, July 17-20, 2000). Rocky Mountain Water Environment Association, Denver, CO.
- Brown, S.L** C. L. Henry, H. Compton, R. L. Chaney and P. DeVolder¹. 2000 Using municipal biosolids in combination with other residuals to restore zinc and lead contaminated mining areas. In Y. M. Luo et al.(eds), *Proceedings of SOILREM 2000*, Hangzhou, China Oct 9-12, 2000
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- Brown**, S. L., C. L. Henry, H. Compton, R.L. Chaney, and P. DeVolder. 2000. Using municipal biosolids in combination with other residuals to restore a vegetative cover on heavy metal mine tailings. In Proceedings of the 17th National Meeting of the American Society for Surface Mining and Reclamation. June 11-15, 2000 Tampa, FL pp. 665-670.
- Chaney, R.L., S.L. **Brown**, J.S. Angle, T.I. Stuczynski, W.L. Daniels, C.L. Henry, G. Siebielec, Y.-M. Li, M. Malik, J.A. Ryan and H. Compton. 2000. In situ Remediation/RecLamation/Restoration of Metals Contaminated Soils using Tailor-Made Biosolids Mixtures. Chapter 2; 24 pp. In Proc. Symp. Mining, Forest and Land Restoration: The Successful Use of Residuals/Biosolids/Organic Matter for Reclamation Activities (Denver, CO, July 17-20, 2000). Rocky Mountain Water Environment Association, Denver, CO.
- Chaney, R.L., S.L. **Brown**, Y.-M. Li, J.S. Angle, T.I. Stuczynski, W.L. Daniels, C.L. Henry, G. Siebielec, M. Malik, James A. Ryan and Harry Compton. 2000. Progress in Risk Assessment for Soil Metals, and In-situ Remediation and Phytoextraction of Metals from Hazardous Contaminated Soils. Proc. US-EPA Conf. "Phytoremediation: State of the Science." May 1-2, 2000, Boston, MA. In press.
- Chaney, R.L., S.L. **Brown**, J.A. Ryan, J.G. Hallfrisch, Q. Xue, T.I. Stuczynski and H. Compton. 2001. Using Biosolids, Composts, and Tailor-Made Biosolids Mixtures in Remediating Urban and Brownfield Sites and Other Metal-Contaminated Soils. pp. . In Proc. Innovative Uses of Biosolids Symposium, Sept. 17-19, 2000. Chicago, IL. Water Environment Federation, Arlington, VA.
- Brown**, S. and C.L. Henry. 1999. Building Partnerships with EPA Superfund. Proceedings Water Environment Federation Residuals Conference, Charlotte, NC January 20-23.
- Chaney, R.L., S.L. **Brown**, T.I. Stuczynski, W.L. Daniels, C.L. Henry, Y.-M. Li, G. Siebielec, M. Malik, J. S. Angle, J.A. Ryan and H. Compton. 1999. In-situ remediation and phytoextraction of metals from hazardous contaminated soils. Proc. US-EPA's Conference on "Innovative Clean-Up Approaches: Investments in Technology Development, Results & Outlook for the Future.", Nov. 2-4, 1999, Bloomingdale, IL.
- Brown**, S. L. and C.L. Henry. 1999. Use of biosolids and other residuals for restoration of metal-affected ecosystems. Manual prepared for US EPA Office of Environmental Response.
- Brown**, S. 1998. Biosolids and fly ash used to restore the Bunker Hill Superfund site. EPA Tech Trends. EPA 542-N-98-005 Issue No. 29.
- Brown**, S. L., C. Henry, R. L. Chaney, and H. Compton. 1998. Bunker Hill Superfund site: ecological restoration program. In Proceedings of the 15th National Meeting of the American Society for Surface Mining and Reclamation. May 17-22, 1998. St. Louis, MO. pp 388-393.
- Henry, C.L. and S. **Brown**. 1997. Restoring a Superfund site with biosolids and fly ash. BioCycle 38:79-83.
- Brown**, S., R.L. Chaney, J. Hallfrisch and Q. Xue. 1997. Effect of biosolids processing on the bioavailability of Pb in urban soils. In Biosolids Management Innovative Treatment Technologies and Processes, Water Environment Research Federation Workshop Proceedings # 104. October 18, 1997. Chicago, IL.
- Chaney, R.L., M. Malik, Y.M. Li, S.L. **Brown**, E.P. Brewer, J.S. Angle and A.J.M. Baker. 1997. Phytoremediation of soil metals. Current Opinions in Biotechnology 8:279-284.]

- Chaney, R.L., J.A. Ryan, Y.-M. Li, R.M. Welch, P.G. Reeves, S.L. **Brown** and C.E. Green. 1996. Phyto-availability and bio-availability in risk assessment of Cd in agricultural environments. pp. 49-78. In OECD Proc. Sources of Cadmium in the Environment (Stockholm, Sweden, Oct. 15-22, 1995). OECD, Paris, France.
- Chaney, R.L., S. **Brown**, Y.-M. Li, J.S. Angle, F. Homer and C. Green. 1995. Potential use of metal hyperaccumulators. Mining Environment Magazine 3(3):9-11.
- Filcheva, E. and S.L. **Brown**. 1994. Effect of Fe, Mn, and Zn enriched biosolids compost on uptake of Cd by lettuce from Cd-contaminated soils. pp. 205-207. In C.E. Clapp, W.E. Larson and R.H. Dowdy (eds.) Sewage Sludge: Land Utilization and the Environment. American Society of Agronomy, Madison, WI.

Abstracts/presentations

2009

- Brown**, S. and S. Subler. Developing a methane avoidance protocol for landfill diversion. US Compost Council, Houston, TX Jan 27-28
- Brown**, S. and M. Cotton. Quantifying benefits of compost use on California Farms. California Integrated Waste Management Board. Sacramento, CA Feb 2
- Brown**, S. and S. Subler, The CCX compost protocol. Solid Waste Association of North America Northwest Chapter. Seattle, WA March 6
- Brown**, S. and N. Beecher. Biosolids and carbon. Ecosystem Based Management: the Chesapeake and Other Ecosystems Baltimore, MD March 25
- Brown**, S. and S. Subler. WARM, Organics, Carbon Markets - How do they fit together? US EPA. Annual Resource Conservation Challenge Workshop US EPA, Virginia March 25-27
- Brown**, S., C.Cogger, K. Kurtz, and M. Cotton. Quantifying the benefits of compost use in soils. Biocycle Annual Conference, San Diego April 25-7.
- Brown**, S. and N. Beecher. A spreadsheet tool to calculate GHG implications of different biosolids management options. Water Environment Federation Specialty Conference, Portland, OR. May 3-6
- Brown**, S. Biosolids management in the age of limited resources- Plenary presentation. Water Environment Federation Specialty Conference, Portland, OR. May 3-6
- Brown**, S. and D. Devin-Clarke. Degradation of Estrogens and Triclosan in biosolids amended turf grass. Water Environment Federation Specialty Conference, Portland, OR. May 3-6

2008

- Brown**, S., S. Subler and A. Trlica. Carbon accounting for reclaimed mine sites. Soil Science Society of America Annual Meetings. Houston, TX Oct 5-10.
- Brown**, S. Biosolids and greenhouse gas balance. Water Environment Federation, Residuals and Biosolids specialty conference. Philadelphia, PA Feb 28.
- Brown**, S. Soil carbon, a tool for GHG mitigation and sustainability. Davis Forum. National Groundwater Association. Memphis, TN Feb 29.

Brown, S. Performance measures for in situ amendments to reduce contaminant bioavailability. US EPA Industrial Residuals Conference. Denver, CO April 2.

Brown, S. Biosolids and sustainability. Oregon Association of Clean Water Agencies. Bend, OR July 17

Brown, S. Compost, soil and sustainability. US Compost Council, Oakland, CA. Plenary presentation. Feb 8-12

Brown, S. and S. Subler. A greenhouse gas balance for composting operation. US Compost council. Feb 8-12.

Brown, S., Scott Subler, M. Cotton, and N. Goldstein. 2007. What is waste? Biocycle Annual Conference, San Diego, CA April 27-29

Brown, S., 2007. Soils, sustainability for climate change. Biocycle Annual Conference San Diego, CA April 27-29

2007

Brown, S. Organics and global warming. Massachusetts Residuals Association. Boston, MA Plenary speaker November

Brown, S. Biosolids and climate change. New England Biosolids and Residuals Annual Conference. Springfield, MA Dec 2.

Brown, S. Carbon to nitrogen ratio of amendment and native plant establishment. CIMM, CORFU. La Serena, Chile Oct 12

Brown, S. Compost and climate change. Stop Waste, Alameda County annual meeting. Dec 15. Plenary speaker

Brown, S. The value of a pile. California Resource Recovery Association. Los Angeles, CA July 30 Plenary speaker

Brown, S. Biosolids and sustainability. Hellenic wastewater treatment authority. Thesoloniki, Greece, May 20.

2006

Brown, S. Biosolids as a tool for carbon sequestration. Water Environment Research Federation/ EPA Workshop. Sacramento, CA July 10-12, 2006

Brown, S. Biosolids and global warming, an introduction. Montana State Department of Ecology training session. Missoula, MT June 7, 2006

Brown, S. Composting and greenhouse gas accounting. US Composting Council, Annual meeting, Keynote address. Albuquerque NM, February

Brown, S. Understanding and developing quantitative measures for metal bioavailability. Encuentro de Quimica Analitica y Ambiental. Universidad Arturo Prat, Iquique, Chile, Oct 16-19. 2006. Keynote address

Brown, S. and I. Clausen. Use of high Fe composts to reduce Pb and As availability. Soil Science Society of America Annual Meetings. Indianapolis, IN Nov 2006

Devin-Clarke, D., M. Doubrava, and S. **Brown.** Fate of 4 nonlyphenol in applied biosolids. Soil Science Society of America Annual Meetings. Indianapolis, IN Nov 2006

Schmidt, R., S **Brown** and R. Rodriguez. Fungal Endophytes Associated with Plants on Remediated Mine Tailings and Uncontaminated Soils. Soil Science Society of America Annual Meetings. Indianapolis, IN Nov 2006

2005

Brown, S. , C. Henry, and T. Durfey. Biosolids for Biodiesel. Water Environment Research Federation Innovative Uses of Biosolids and Animal and Industrial Residuals. Chicago, IL June 29-July 2.

Brown, S. and N. Basta. Field test of in situ soil amendments at the Tar Creek National Priorities List Superfund Site. International Conference on the Biogeochemistry of Trace Elements. Adelaide, Australia. April 3-7, 2005.

Sprenger, M, S. **Brown**, S. Fredericks, and H. Compton. Assessment of the Residual Terrestrial Bioaccumulation and Risk from Cd, Pb, and Zn to Small Mammals Colonizing a Biosolids Treated Mining Waste Material in Joplin MO, USA. International Conference on the Biogeochemistry of Trace Elements. Adelaide, Australia. April 3-7, 2005.

2004

Brown, S.L. and N. T. Basta. 2004. Use of an in vitro extract to measure reductions in bioavailability of soil lead. The 2nd International Conference on Soil Pollution and Remediation. November 9-12, Nanjing, China p. 61.

Brown, S., C.L. Henry, H. Compton, M. Sprenger, and K. Scheckel. 2004. Restoration of metal contaminated soils using biosolids. Sustainable Land Application Conference. Lake Buena Vista, FL Jan 4-8. p. 19.

Compton, H., M. Sprenger, S. **Brown**, and C. Henry. 2004. Evaluating the success of in situ amendments to reduce metal bioavailability by accessing ecosystem function. Sustainable Land Application Conference. Lake Buena Vista, FL Jan 4-8. p. 91.

2003

Brown, S., C.L. Henry, A. Svendsen, and P. DeVolder. 2003. Use of biosolids and lime to restore a native plant cover on metal mine tailings. Soil Science Society of America annual meetings, Denver, CO Nov 2-6.

Henry, C.L., P. DeVolder, and S. **Brown**. 2003. Restoring a native plant cover to metal mine tailings amended with biosolids. Soil Science Society of America annual meetings, Denver, CO Nov 2-6.

Sprenger, M., H. Compton, A. Maxemchuk, and S. **Brown**. 2003. An evaluation of ecosystem restoration following biosolids application in Leadville, CO. Soil Science Society of America annual meetings, Denver, CO Nov 2-6.

Brown, S., D Hesterberg, P DeVolder, H Compton, M Sprenger, and K Pandya. 2003. Metal bioavailability and speciation in a wetland tailings repository amended with biosolids compost wood ash and sulfate. International Conference on the Biogeochemistry of Trace Elements Uppsala, Sweden, June

Brown, S, R Chaney, J Hallfrisch, Q Xue, J Ryan, W Berti. 2003. Use of soil amendments to reduce the bioavailability of lead, zinc and cadmium in situ. International Conference on the Biogeochemistry of Trace Elements Uppsala, Sweden, June

2002

Chaney, R L, JA Ryan, S **Brown** C Henry, T Stuczynski, T Siebielec and W R Berti. 2002. Ecosystem restoration on metal-toxic soils using biosolids and alkaline byproducts. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 011.

Brown, S, B Christiansen, S McGrath, E Lombi, M McLaughlin, and J Vangronsveld. 2002. Ability of soil amendments to reduce metal bioavailability on zinc and lead mine tailings. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 012.

McGrath, S, E Lombi, M McLaughlin, S **Brown** and J Vangronsveld. 2002. Comparison of biological and chemical indicators to evaluate soil remediation. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 013.

Vangronsveld, J, J Colpaert, A Ruttens, E Lombi, B. Christiansen, S McGrath, S **Brown**, and M McLaughlin. 2002. Use of cyclonic ashes to remediate metal contaminated soils. 2002. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 014.

Lombi, E, R Hamon, M McLaughlin, S McGrath, S **Brown**, J Vangronsveld, B Christiansen, J Colpaert and V Ferguson. 2002. Importance of sorption versus fixation reactions in decreasing metal bioavailability for in situ remediation. 2002. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 015.

Maxemchuk, A, H Compton, M Sprenger, S **Brown**, and M Zimmerman. 2002. Reducing bioavailability and toxicity of metals at mining sites using biosolids and lime soil amendments. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 017.

Brown, S, D Mosby, J Yang, R Chaney, W Berti. 2002. In situ field tests to reduce metal bioavailability: site characterization and treatment selection, installation and performance. 2002. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 018.

Ryan, J, W Berti, S **Brown**, S Casteel, R Chaney, P Grevatt, J Hallfrisch, M Maddaloni and K Scheckel. 2002. Reducing children's risk to soil lead: Summary of a field experiment to reduce soil lead bioavailability. 2002. SETAC 23rd Annual Meeting in North America. Salt Lake City Nov 16-20. 020.

2001

Compton, H., S. **Brown**, C. Henry, and M. Sprenger. 2001. Use of Biosolids and Lime to Restore a Metal Affected Ecosystem in Leadville, Co. 6th International conference on the biogeochemistry of trace elements. Guelph, Ontario July 29-Aug 2, 2001. p. 35.

Svendsen, A., S. **Brown**, and C. Henry. 2001. Use of Biosolids and Lime to Ameliorate Subsoil Acidity in Mine Tailings. 6th International conference on the biogeochemistry of trace elements. Guelph, Ontario July 29-aug 2, 2001 p 36.

Christensen, B. and S. **Brown**. 2001. Use of Soil Amendments to Restore a Vegetative Cover on Zinc and Lead Mine Tailings. 6th International conference on the biogeochemistry of trace elements. Guelph, Ontario July 29-aug 2, 2001 p. 37.

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Brown, S., C. Henry, and R. Chaney. 2001. Restoration of large scale metal contaminated sites using biosolids and other residuals. 6th International conference on the biogeochemistry of trace elements. Guelph, Ontario July 29-aug 2, 2001 p. 282.

Brown, S., D. Moseby, J. Yang, and R. Chaney. 2001. Treatment Selection, Field Characterization and Installation for In Situ Testing of Soil Amendments. Soil Science Society of America. Annual meeting abstracts. Oct 21-25, 2001. Charlotte, NC.

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Brown, S.L., C.L. Henry, R.L. Chaney, H. Compton. 2000. Restoration of self sustaining ecosystems on metal affected soils. Agron. Abstracts:407.

DeVolder, P.S., S.L. **Brown**, C.L. Henry, H. Compton. 2000. Effects of biosolids compost and wood ash amendment on metal bioaccessability in wetland sediment contaminated with mine tailings. Agron Abstracts:50.

Svendsen, A.J., S.L. **Brown** and C.L. Henry. 2000. Use of biosolids and lime to ameliorate subsoil acidity in mine tailings. Agron. Abstracts:407.

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Brown, S.L. and R. L. Chaney. 1999. Utility, human and ecosystem impact, and remedial technologies for lead in the environment. In W.W. Wenzel, D.C. Adriano, H.E. Doner, C.Keller, N.W. Lepp, M. Mench, R. Naidu, and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace Elements. I.K. Iskander, S.E. Hardy, A.C. Chang and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace International Society for Trace Element Research, Vienna, Austria.

Brown, S.L., R. L. Chaney, and B. Berti. 1999. Field test of amendments to reduce the in situ availability of soil lead. In W.W. Wenzel, D.C. Adriano, H.E. Doner, C.Keller, N.W. Lepp, M. Mench, R. Naidu, and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace Elements. Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace International Society for Trace Element Research, Vienna, Austria.

Brown, S.L., C. L. Henry, P. DeVolder, H. Compton, and R. L. Chaney. 1999. Bunker Hill superfund site: ecological restoration program. In W.W. Wenzel, D.C. Adriano, H.E. Doner, C.Keller, N.W. Lepp, M. Mench, R. Naidu, and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace Elements. I.K. Iskander, S.E. Hardy, A.C. Chang and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on

Biogeochemistry of Trace Elements. International Society for Trace Element Research, Vienna, Austria.

Brown, S.L., R. L. Chaney, and J. Ryan. 1999. The phytoavailability of zinc and cadmium in long-term biosolids- amended soils. In W.W. Wenzel, D.C. Adriano, H.E. Doner, C.Keller, N.W. Lepp, M. Mench, R. Naidu, and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace Elements, International Society for Trace Element Research, Vienna, Austria

Henry, C.L., S.L. **Brown**, H. Compton, and R. L. Chaney,. 1999. Upper Arkansas river ecological restoration: biosolids demonstration project, Leadville, CO In W.W. Wenzel, D.C. Adriano, H.E. Doner, C.Keller, N.W. Lepp, M. Mench, R. Naidu, and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace Elements International Society for Trace Element Research, Vienna, Austria.

Henry, C.L., S.L. **Brown**, and H. Compton. 1999 West Page Swamp wetland restoration project at Bunker Hill, ID. In W.W. Wenzel, D.C. Adriano, H.E. Doner, C.Keller, N.W. Lepp, M. Mench, R. Naidu, and G.M. Pierzynski (eds). Abstracts of the 5th Int. Conf. on Biogeochemistry of Trace Elements International Society for Trace Element Research, Vienna, Austria.

1997

Brown, S.L. and R.L. Chaney. 1997. Use of by-products for creation of value-added products for land application of environmental remediation. Agron. Abstr. 1997:339.

Brown, S.L. and R. L. Chaney. 1997. A rapid in vitro procedure to characterize the effectiveness of a variety of in situ lead remediation technologies Austria. In I.K. Iskander, S.E. Hardy, A.C. Chang and G.M. Pierzynski (eds). Abstracts of the Fourth Int. Conf. on Biogeochemistry of Trace Elements. U.S. Army CRREL, Hanover, NH.

Chaney, R.L., J.A. Ryan, Y.-M. Li, R.M. Welch, P.G. Reeves, S.L. **Brown** and C.E. Green. 1997. Soil cadmium as a threat to human health. pp. 671-672. In I.K. Iskander, S.E. Hardy, A.C. Chang and G.M. Pierzynski (eds). Abstracts of the Fourth International Conf. on Biogeochemistry of Trace Elements. U.S. Army Cold Regions Res. Eng. Lab, Hanover, NH.

Chaney, R.L., S.L. **Brown**, C.A. Lloyd, M.C. Morella, S.B. Sterrett and J.S. Angle. 1997. Long-term phytoavailability of Cd in soils amended with high quality biosolids. pp. 683-684. In I.K. Iskander, S.E. Hardy, A.C. Chang and G.M. Pierzynski (eds). Abstracts of the Fourth Int. Conf. on Biogeochemistry of Trace Elements. U.S. Army CRREL, Hanover, NH.

1995

Chaney, R.L., Y.M. Li, S.L. **Brown**, J.S. Angle and A.J.M. Baker. 1995. Use of improved hyperaccumulator plants to phytoremediate metal contaminated soils. Agron. Abstr. 1995:227.

1993

Brown, S.L., R.L. Chaney and J.S. Angle. 1993. Uptake of Zn and Cd by *Thlaspi caerulescens* and *Silene cucubalis* as affected by total soil metals and pH. Agronomy Abstr. 1993:242.

Chaney, R.L., Y.-M. Li, A.L. Schneiter, and S.L. **Brown**. 1993. Effect of sewage sludge cadmium concentration and soil pH on cadmium in grain of sunflower, wheat, peanut, oat, and soybean. Agron. Abstr. 1993:27.

Brown, S.L., R.L. Chaney, J.S. Angle and A.J.M. Baker. 1992. Potential for phytoremediation: Zn and Cd uptake by hyperaccumulator *Thlaspi* grown in smelter-contaminated soils. Agron. Abstr. 1992:34.

INVITED TALKS/ SEMINARS

2006

US Composting Council, Albuquerque, NM. Keynote speaker 'Use of Compost for Carbon Sequestration

US EPA New Orleans- Remedial Project Managers Training Program – Jumpstarting Ecological Restoration

2005

International Conference on the Biogeochemistry of Trace Elements, Adelaide, Aus Symposium organizer and presenter on 'Tools to evaluate changes in metal availability'

Soil Science Society of America- Symposium organizer- Metal availability in biosolids amended soils

Purdue University, West Lafayette, IN Guest Lecturer, Using residuals to accrue carbon credits

Greater Vancouver Regional District- Potential for biosolids and regulatory progress

US EPA Internet Seminar – Jumpstarting Ecological Restoration

US EPA Phoenix- Remedial Project Managers Training Program – Workshop on Ecological Restoration, 'Using residuals as a tool for Restoration

2004

Land Applications of Residuals Conference, Orlando FL Use of Residuals to reduce metal toxicity on contaminated soils

Biocycle West Coast Conference-Portland, OR. Carbon sequestration in the King County Biosolids Program

US EPA MIAMI- Remedial Project Managers Training Program – Workshop on Ecological Restoration, 'Using residuals as a tool for Restoration

Water Environment Research Federation- Chicago, IL- Innovative uses of Manures and Biosolids Conference 'Use of Residuals for Restoration of Contaminated Sites

SOIL REM- 2nd International Conference on Soil Remediation, Nanjing, China 'Evaluation of Soil Amendments to reduce lead and arsenic bioavailability'

Soil Science Society of America National meeting, Seattle, WA Evaluation of bioavailability of soil lead and arsenic following amendment addition.

Biofest Northwest Biosolids Management Association annual meeting presentation
'Class A biosolids, what does Class A get you?'

2003

International Conference on the Biogeochemistry of Trace Elements, Uppsala Sweden, June, 2003. Two invited platform presentations on 'Measures to assess ecosystem restoration' and 'Use of soil amendments to reduce the bioavailability of soil Cd, Pb, and Zn'.

EPA Brownsfields –Washington, DC. Invited presentation with head of US EPA Brownsfields program on the potential to use residuals to restore Brownsfields sites

King County, WA- Toxic Waste Division- Toxicity and bioavailability of mercury in biosolids

King County, WA- Wastewater Treatment Division- Use of biosolids to reduce metal availability

Oregon Association of Clean Water Agencies, Portland OR 'Recent advances on the behavior of metals in biosolids' as part of a one day workshop on Metals in Biosolids

EPA Brownsfields National conference, Portland, OR. Two invited talks
'Bioavailability of Lead in Soils' and 'Use of Residuals for Ecosystem Restoration'

EPA Superfund Program, Prescott, AZ Presentation to stakeholders and regulators involved in the McClellan tailings site on 'Lead and arsenic availability following amendment addition'

Soil Science Society of America Annual Meeting, Denver, CO. Organized symposium on Ecological Restoration in Leadville, CO and gave a presentation on 'Efficacy of different lime sources for reducing metal availability'

US EPA Remedial Project Managers Training Colorado Springs, CO Workshop on ecosystem restoration 'Role of soils in restoration' and 'Using residuals to restore metal contaminated ecosystems'.

Biofest Northwest Biosolids Management Association annual meeting presentation
'Lead and arsenic reduction with biosolids compost'

2002

Society of Environmental Toxicology and Chemistry – invited platform presentation on symposium on in situ restoration of metal contaminated soils, Salt Lake City, Nov 16-20. Co author on 8 platform presentations

Soil Science Society of America Annual Meeting, Indianapolis, IN. Invited presentations in symposium on Joplin, MO field test of amendments to reduce lead availability on '

PBET procedure to evaluate changes in lead availability' and 'Field plot treatment selection and installation at Joplin'

UKWIR/WERF Bath, England. 'Biosolids and metal availability'

US EPA Leadville, CO. Presentation to stakeholders and regulators involved in the Leadville Alluvial Tailings project site on 'Research results to date'

USEPA Office of Solid Waste and Emergency Response- On Scene Coordinators Training Orlando FL 'Role of soils in restoration'

USEPA Office of Solid Waste and Emergency Response- Remedial Project managers training – 'Use of residuals as an alternative remedial option'

Lewis and Clark College, Portland, OR 'Role of science within the decision making process in EPA's Superfund program'

Biofest Northwest Biosolids Management Association annual meeting presentation 'National Research Council report on biosolids'

2001 USEPA, OSWER Implementing Ecological Revegetation/Restoration at Superfund and RCRA Sites Workshop, invited speaker Argonne National Laboratory, April and May, 2001

Department of Energy, Savannah River Ecology Laboratory Savannah, GA. Invited Seminar 'Evaluating metal bioavailability'

Ohio State University, Columbus, OH. Invited seminars 'Soil amendments to reduce Pb availability' and 'Using biosolids to restore ecosystems'

UC Riverside Soil and Water Sciences Department, Invited seminar. Use of soil amendments to restore functional ecosystems on metal contaminated mine wastes. May, 2001

in Soil Science Society of America, annual meetings Symposium on the field evaluation of situ treatments to reduce soil-lead bioavailability, invited speaker Charlotte, NC November, 2001

Sixth Annual Conference on the Biogeochemistry of Trace Elements: Phyto-, microbial and chemical remediation tools for metal contaminated soils and groundwater", invited speaker Guelph, Ontario, July, 2001

Forest Research, Rotorura, New Zealand invited seminar on 'Altering wetlands chemistry to reduce metal availability in situ'

Biofest Northwest Biosolids Management Association annual meeting presentation
'Lead availability in compost amended soils'

Biocycle West Coast conference, Portland OR. 'Use of biosolids at Superfund sites'

US EPA OSWER Kansas City MO. 'Ecological risk assessment at in situ remediated
hard rock mining sites' presentation for regional project managers, industry and
stakeholders.

2000

USEPA, OSWER, On Scene Coordinator training. Phoenix, AZ. Presentation on use of
residuals for restoration for Hard Rock Mining session.

Soil Science Society of America, annual meetings Minneapolis, MN Special symposium
on Soil Quality, invited presentation 'Restoration of Self-Sustaining Ecosystems on
Metal Affected Soils' November, 2000

SoilRem 2000 – Hangzhou, China international workshop on remediation of organic and
metal contaminated soils, invited presentation on remediation of metal contaminated
soils

Biofest Northwest Biosolids Management Association annual meeting presentation on
potential ecosystem impacts associated with soils restoration. September, 2000

Land, mining, and forest restoration symposium/workshop – the successful use of
residuals/ biosolids/organic matter for reclamation activities. Sponsored by US EPA
Office of Water Workshop held in Denver, CO July, 2000. Co-organizer, workshop and
symposium

Biocycle, Southwest annual conference. San Diego, CA. Invited presentation 'Using
biosolids to remediate metal contaminated soils at Superfund sites'

US EPA Region 10 Invited presentations for Leadville Memorandum of Understanding
group and CORE group on initial results of Biosolids restoration projects

EPA OSWER (superfund) Technical support project general meeting with head officials
of Superfund program Washington, DC. 'Role of soils in Restoration'

US EPA WERF Golden CO, organized two sessions for conference on soil remediation.

1999

Invited Faculty lecture for visiting committee, College of Forest Resources, University of
Washington

Invited to organize a one day workshop on the use of biosolids for restoration of disturbed soils at the annual meeting of the American Society for Surface Mining and Restoration. Scottsdale, AZ August 15-18, 1999

Invited to organize a meeting of the EPA Inplace Inactivation and Natural Ecosystem Restoration Team to discuss indices of ecological restoration. Coeur d'Alene, ID June, 1999.

Invited to present keynote address on in situ restoration of Pb contaminated soils for special session on remediation of metal contaminated soils, Fifth Annual Conference on the Biogeochemistry of Trace Elements, Vienna Austria, July, 1999.

Presented 2 platform presentations and co-authored 3 platform presentations. Fifth Annual Conference on the Biogeochemistry of Trace Elements, Vienna Austria, July, 1999.

Invited to present a lecture on soil factors in ecological restoration for a workshop on Ecosystem Restoration hosted by the Environmental Response Team of US EPA OERR Edison, NJ, June, 1999.

Invited to present a lecture to the Senior Management Team of USEPA OERR on the potential for the use of biosolids to restore metal impacted sites Washington, DC April, 1999.

Invited seminar "Scientific basis for the 503 biosolids regulations", Water Environment Federation, Technical Meeting Charlotte, NC January, 1999.

Presented a platform presentation "Building Partnerships with EPA Superfund" at the Water Environment Federation Residuals conference, Charlotte, NC January 1999.

Invited by US EPA Region 8 to present a seminar on the scientific basis for the biosolids amendment on the Leadville, CO alluvial tailings to the Upper Arkansas CORE group Denver, CO, March, 1999.

Presented a platform presentation on the use of residuals for restoration of metal contaminated soils in Bunker Hill, ID at PNPCA conference Portland, OR October, 1999.

Presented a platform presentation on the Bunker Hill, ID restoration projects for the Society of Ecological Restoration conference in Tacoma, WA October, 1999.

1998

Invited by the International Lead and Zinc Research Organization to participate in the work group on remediation of metals in soils, Montpelier, FR August, 1998. Presented information on the Bunker Hill, ID and Joplin, MO projects.

Invited by USEPA to participate in conference on the use of residuals for mine land reclamation, Chicago, IL September, 1998. Presented talks on the scientific basis for use of biosolids to limit metal availability and the Leadville, CO restoration project

Invited by New South Wales Forestry to advise on use of residuals for restoration of disturbed soils Sydney, Australia June 1998.

Presented a platform presentation "Bunker Hill Superfund site: ecological restoration program". Meeting of the American Society for Surface Mining and Reclamation. May 1998. St. Louis, MO.

1997

Presented a platform presentation and co-authored two platform presentations at the Biogeochemistry of Trace Elements meeting in Berkeley, CA, June, 1997.

Invited by the MD Department of Agriculture to lecture on microelement concerns in relation to the agricultural use of biosolids for the Nutrient Management Certification program

Invited to prepare a book chapter with Dr. Rufus Chaney entitled 'Use of by-products for creation of value-added products for land application or environmental remediation' for the forthcoming ASA publication "Beneficial Uses of Agricultural, Industrial, and Municipal By-Products.

Invited by the International Lead Zinc Research Organization to participate in the In Situ Soil Remediation Technology Workshop, Berkeley CA June, 1997, presented information on the Joplin, MO in situ Pb inactivation study as well as the Bunker Hill Ecosystem Restoration Project.

Invited seminar "Forming Alliances for Long-Term Success at Bunker Hill" at the Northwest Biosolids Management Association 1997 "Illuminating the Future: Building Alliances and Markets" meeting, September 14-16, 1997.

Invited seminar "Manganese Deficiency Induced by Lime-rich Co-utilization Products" presented at the 1997 BARC Symposium: "Beneficial Co-utilization of Agricultural, Municipal, and Industrial By-products", May 4-8, 1997.

Invited seminar "Approaches to Ecosystem Restoration" presented at BHP Copper meeting of mine reclamation managers. Report prepared that included an evaluation of the ongoing reclamation efforts at several BHP mine facilities, August 17-21, 1997.

Invited by the Maryland Department of the Environment to present results of several field studies on biosolids induced Mn deficiency to the Sewage Sludge Task Force.

Invited by BioCycle to present a talk on the Bunker Hill Ecosystem Restoration research at the West Coast BioCycle conference.