J. Bogner
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Geoenvironmental Research Experience (list projects in progress or completed within the past 5 years)**:** [partial list]

Improved methodologies for global landfill methane emissions, NASA/Goddard Inst. of Space Studies through Columbia University, NY, NY 1998-2002.

Field research measuring the landfill methane mass balance at selected cells at three French landfills, CREED(Centre de Recherches pour l'Environnement, l'Energie, et le Dechets), Limay, France [Research Group for Vivendi Environment], 1998-present. In cooperation with Danish Tech. Univ., and Florida State Univ.

Emissions and biodegradation of landfill gas trace components in cover soils at two French landfills, CREED, 2001-present. In cooperation with Danish Tech. Univ., Florida State Univ., and U. of California-Irvine.

Using improved monitoring and modeling techniques to better understand contaminant mass balances during phytoremediation, Argonne National Laboratory, 2003-present.

Use of biocovers and biofilters to reduce landfill methane emissions. NSF, in cooperation with J. Chanton, Florida State Univ. 2003-present.

Background research for bioreactor development in mine pit containing acid spoils. Australia, Collex, 2001.

Geoenvironmental Teaching Experience (list related courses, including short courses, taught within the past 5 years)**:**

Geochemistry, UIC.
guest lectures UIC, NIU
guest lectures this year date to be determined: MSU, UNCC

Geoenvironmental Consulting Experience (list major projects only)**:**

Technical, analytical, and planning assistance for commercial landfill methane recovery, Zahren Alternative Power Corporation (ZAPCO)/U.S. Energy Biogas, Jenbacher Energiesysteme, Ltd., YESCO Power, EMCON/OWT, and Sexton. 1998-present. Coordination of landfill gas monitoring and analytical services for commercial gas recovery, including routine analysis and specialized monitoring (speciated hydrocarbons and halocarbons, volatile siloxanes). Projects include development and implementation of field protocols, coordination of laboratory analysis, data review.

Recommendations for improved methodology for annual U.S. landfill methane emissions inventory, U.S. EPA Methane Branch through ICF Consulting, 2002-present.

Phytoremediation growth chamber experiments, U.S. EPA, Cincinnati and Shaw Group, 2003. Review of preliminary data and experimental design, plus recommendations for future projects.

Field protocols for monitoring landfill methane emissions, Environment Agency of England and Wales through W.S. Atkins Environment (U.K.), 1999.

Basic Ordering Agreement (BOA) for Waste Management, Inc., 2001-present. Specialized technical assistance with landfill gas emissions issues.

Landfill gas emissions risk assessment, Environment Agency of England and Wales through Golder U.K., 2002 Technical review and evaluation of GASSIM, new software under development by Golder U.K. for landfill gas risk assessment

Landfill gas treatment, Environment Agency of England and Wales through LQM of the Univ. of Nottingham, 2001-2002.

Review and data analysis for landfill methane emissions monitoring, Landfill Service Corp., 2001.

Geochemical processes in specialized landfill, EMCON, 1999.

Modeling of alternative landfill cover designs, San Diego County, California, 1998.

Modeling of gas migration at closed landfill, Ft. Benning, Golder Associates, 1999.

Review of methods for field measurement of emissions, METRO Landfill, SCS Engineers, 1999.

Expert witness, Envirowaste [NZ], BFI[U.S.], TEI/Foxboro [U.S.], 1998-present. Expert testimony to the Environment Court of NZ on landfill gas emissions and for cases in the U.S. involving landfill odors, emissions, and field instrumentation.

Landfill remediation and siting, Tanta [Egypt], 1999.

Landfill gas treatment recommendations for LNG Production, private client, 2001-2002.

Recommendations for protocols to validate landfill gas emissions reductions for carbon credits trading, pro bono, Chicago Climate Exchange, 2002.

Appraisal of Geoenvironmental Research, Education and Practice and Perspective on Emerging Geoenvironmental Issues and Technologies:

The biggest change that I have seen in 30 years of environmental research is that there are few truly long-term interdisciplinary field projects these days. The LTER (long term ecological research) sites and some other NSF- and USGS-supported efforts are notable exceptions. Thoughtfully-conceived, well-monitored long term field projects should be the norm in this area...not subject to political whims and with longer than 6-month to 1-year deadlines for meaningful research results. We can do short-term laboratory studies as well as write models to quickly simulate field processes, but these are of no value unless validated in field settings. Unfortunately, I've been seeing a lot of policy decisions and environmental regulations during the past 10 years based on unvalidated regulatory "models."

On the positive side, I've seen the field of geochemistry shift from equilibrium solutions to microbial kinetics as controlling many near-surface processes, now and in the geologic past. We have had to get much more "biological" and this is a positive development.

Others at this workshop will address educational needs more eloquently than I can. I will say that I always try to hire students and new graduates with solid technical majors rather than environmental science majors, because the latter can lack depth and fundamental skills in chemistry and biology.

With regard to geoenvironmental practice, a multitude of site characterization methods have given way to a multitude of site clean-up methods. Monitored natural attenuation is also an attractive option for which we are beginning to develop field practice guidelines as we gain understanding. As discussed above, long-term field projects would be helpful to move both the science and engineering of site clean-ups forward more quickly. Many technologies are not adequately tested at pilot scale and there have been some ill-advised field failures as a result.

Although I'm not a microbiologist, I read with fascination about the continued identification of microorganisms which can exploit "extreme" environments which conventional wisdom would discount entirely. I also suspect that the promising area of using molecular biology approaches to monitor controlling biological processes will expand greatly during the next few years. Characterizing rapid spatial and temporal variability in soil microbiological processes, either directly or indirectly through soil gases and liquids, continues to present field challenges. Also, in field settings, the importance of rhizosphere processes, both physical and biochemical, is another emerging area.