

BATTELLE

Environmental Updates

Highlights of Battelle's International Environmental Leadership

Spring 2004

INTEGRATED SOLUTIONS

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- A hand is shown placing a puzzle piece into a globe that is composed of many interlocking puzzle pieces. The globe is primarily blue, representing water, with some green and brown areas representing land. The puzzle pieces are arranged in a way that they form a complete sphere.
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National Children's Study Improving Children's Environmental Health

Recognizing the need to examine the effect of environmental influences on the health and development of our nation's children, while also acknowledging the limitations of existing research, Congress directed public health agencies to conduct a broad and deep investigation of the multitude of factors potentially associated with all aspects of child health and development. In response to this mandate, the National Institute of Child Health and Human Development (NICHD), the U.S. Environmental Protection Agency (U.S. EPA), and the Centers for Disease Control and Prevention (CDC) are developing the National Children's Study (NCS). The NCS seeks to improve the health and well-being of children by collecting information from approximately 100,000 U.S. children from prenatal development through early adulthood. The NCS is one of the most scientifically challenging public health research studies conducted to date, incorporating behavioral, emotional, educational, and contextual consequences to enable a complete assessment of the physical, chemical, biological, and psychosocial environmental influences on children's well-being.

The complexity of such a study demanded that Battelle combine its resources to provide the breadth of expertise needed to support the NCS. Battelle staff from across divisions and locations collaborated quickly to provide the support needed for the initial design of the NCS and pilot study

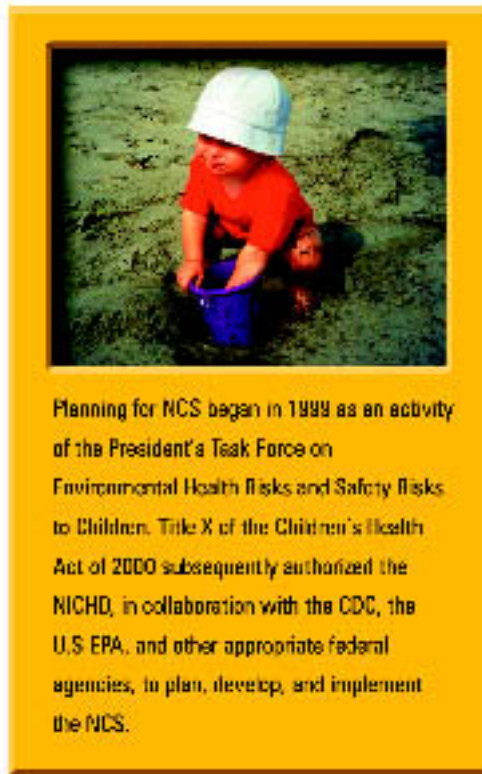
work. Statisticians and program managers in Columbus, Ohio, have provided scientific and technical support to NICHD for the start-up phase of the NCS. At the same time, Battelle survey operations experts in Baltimore, Maryland, and Atlanta, Georgia, were called upon to provide a realistic perspective of survey implementation that might impact the statistical design of the NCS.

Expertise measurement methodologies, neurobehavioral effects, and psycho-social behaviors are provided by Battelle staff in Seattle. In addition, Battelle has engaged previous partners, such as Harvard University, in developing a statistical sampling protocol for the NCS.

Battelle's support for the NCS has involved engaging experts to recommend the measures to be used to assess neurobehavioral outcomes in the NCS, developing sample data collection protocols for a pilot study, and developing a series of papers on critical sampling strategy issues for the NCS, including potential sampling design options. Battelle is also providing scientific content for the next phase of the NCS to guide the selection of the study population, sampling strategy and study design, community involvement and participation, ethical issues, biological

specimen collection, and observations and measurements.

For more information, please contact Mr. Warren Strauss at (614) 424-4275, strauss@battelle.org.



Planning for NCS began in 1989 as an activity of the President's Task Force on Environmental Health Risks and Safety Risks to Children. Title X of the Children's Health Act of 2000 subsequently authorized the NICHD, in collaboration with the CDC, the U.S. EPA, and other appropriate federal agencies, to plan, develop, and implement the NCS.



Providing *Integrated Solutions* to MWRA

In a 1985 landmark case, the Commonwealth of Massachusetts was cited with non-compliance of the Clean Water Act and court ordered to clean up Boston Harbor. When the Massachusetts Water Resources Authority (MWRA) was created and charged with the task of bringing Boston's sewage treatment system up to federal standards, Battelle scientists were brought in as environmental experts. MWRA designed and built a state-of-the-art secondary treatment facility at Deer Island and a 9.5-mile ocean outfall that became operational in September 2000. Battelle has been involved with the project since the initial outfall siting studies of the late 1980s and was contracted to assist in the design and conduct of a monitoring program to document the environmental benefits of pollution abatement (i.e., recovery of Boston Harbor) and verify that discharge through the new offshore sewage outfall would not adversely impact Massachusetts Bay.

Battelle's role in the monitoring program has included (1) water column studies of nutrient dynamics and effects as related to eutrophication issues, (2) benthic studies to assess the response of soft- and hard-bottom benthic organisms to effluent discharges, (3) evaluation of benthic nutrient fluxes and denitrification, (4) chemical studies to assess the fate of effluent in sediments, (5) effluent characterization studies using state-of-the-art analytical methods to measure low levels of contaminants in the effluent, (6) fish and shellfish studies to determine the level of contaminants in important commercial and recreation species (lobster and flounder) as related to ecological and human health issues, (7) quality control/quality assurance, (8) data management, and (9)

data interpretation and synthesis. Special studies conducted for the program include (1) an effluent plume dilution and transport certification study in Massachusetts Bay, (2) an offshore larval lobster settlement study, (3) development of a scope of work for building a Massachusetts Bay food web model, (4) combined sewer overflow (CSO) discharge evaluations in Boston Harbor, and (5) a comprehensive statistical analysis of the monitoring program and recommendations for optimization that **enabled the MWRA to negotiate a 20% savings on their permit-required ocean monitoring.**

Battelle built and continues to oversee a team to offer all of these services, combining technical, project management, and environmental data management expertise from within its Duxbury, Massachusetts center, other offices within Battelle, and a dedicated group of world-class academic and private sector scientists.

By providing this broad expanse of environmental science services, Battelle strives to deliver integrated solutions to MWRA. Since monitoring began in 1992, MWRA has relied upon Battelle to conduct more than 440 oceanographic surveys to accomplish the technical objectives of this project. Battelle has analyzed tens of thousands of samples gathered during the field studies, managed all aspects of the QA and reporting on more than two gigabytes of raw data that the program has generated, and prepared more than 90 major interpretive reports that describe and assess the fate, transport, and effects of past and current discharges to Boston Harbor and Massachusetts Bay, respectively.

For additional information, please contact Dr. Carlton D. Hunt at (781) 952-5374, huntc@battelle.org.



ENVVEST Program Addresses Nonpoint Source Pollution in Watersheds

The Sinclair and Dyes Inlet watershed in Kitsap County, Washington, forms a subestuary of Puget Sound in the Pacific Northwest. The creeks and streams that drain the 62,348 acres transport water, sediment, and chemicals from forests, farms, industrial, suburban, and urban land-use areas. About 35% of the watershed is classified as developed, centered along the shoreline and located in the urban centers of Bremerton, Silverdale, and Port Orchard, an area that includes roads, parking lots, and other urban infrastructure, as well as the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) industrial area.

The stream networks drain about 80% of the watershed, but about 30% of the developed areas (11% of the watershed) drain directly to the nearshore. A little over 100 years ago, Sinclair Inlet and the Kitsap Peninsula were relatively undeveloped. However, since the establishment of the Navy base in Sinclair Inlet in 1891, the creation of the town of Bremerton in 1901, and the major expansions at PSNS & IMF during World Wars I and II, the area has seen a significant increase in contami-

nants from military installations, industrial activities, municipal outfalls, and other nonpoint sources. At the height of WW II, with a Bremerton population that peaked at over 80,000, industrial operations poured out goods for the war effort with little regard for the environmental safeguards that exist today. Although work at PSNS was reduced after the war, with the 1975 establishment of the Submarine Base at Bangor, Kitsap County has continued to experience rapid growth in population, infrastructure, and development of open space, particularly along the coastal fringe. Currently, about a quarter of a million people live in Kitsap County.

In 1998 the Washington Department of Ecology (WDOE) listed some of the sediments in both Sinclair and Dyes Inlets under Section 303(d) of the Clean Water Act (CWA), because concentrations of mercury, copper, other metals, and organic chemicals (e.g., polychlorinated biphenyls, or PCBs) exceeded sediment quality standards.

For the past two years, chemists and biologists from the Pacific Northwest National Laboratory, Marine



Sciences Laboratory (MSL) in Sequim, Washington, a Battelle-managed Department of Energy Laboratory, have collaborated with scientists and others at the Navy, the Space and Naval Warfare Systems Command (SPAWAR), San Diego, California, and the U.S. Army Corps of Engineers Engineering Research and Development Center, Vicksburg, Mississippi, to understand the sources, pathways, and sinks of the contaminants entering the inlets. The resulting PSNS & IMF environmental investment (ENVVEST) program incorporates advisory and technical committees comprised of members from the U.S. Environmental Protection Agency, WDOE, and several county, municipal, and tribal stakeholders.

Battelle's contributions have included the following:

- Developing a sediment contamination mass-balance for copper
- Evaluating sources of bacterial pollution for development of a total maximum daily load (TMDL)
- Collecting and analyzing surface and cored sediments for metals and organic contamination

- Surveying and evaluating PSNS railroad culverts for fish passage
- Monitoring of freshwater streams for biological integrity
- Assessing salmon habitat
- Helping develop a watershed-based restoration plan

Sediment cores collected in the inlets by MSL divers and analyzed at the MSL show that contamination levels of mercury and PCBs were higher 40 years ago than they are today. The Navy's cleanup efforts, as well as source control by the Navy and others, have resulted in an improvement in sediment and water quality that has recently allowed the reopening of shellfish beds in Dyes Inlet. Additional measurements, numerical modeling, and monitoring will allow the science team to determine the most effective management steps to continue the improvement of water and sediment in the inlets.

For additional information, contact Dr. Martin C. Miller at (360) 681-3668, martin.miller@pnl.gov.

Detecting Termiticides and Lead Contamination in Housing

The U.S. Army is in the process of transferring family housing facilities to private contractors under the Residential Communities Initiative (RCI). RCI will improve the quality of life for soldiers and their families by upgrading existing housing units or building new housing units. Prior to the transfer of the housing units to the private contractors, the housing units must be tested for probable contaminants in an effort to eliminate possible health concerns produced by future contact with the contaminants; two such contaminants are termiticides and lead.

Chlordane was commonly used as a termiticide applied to housing building foundations, including U.S. Army housing, during construction and maintenance until approximately 1978. This pesticide is extremely persistent in the environment and the affected soil is protected from weathering and vertical migration due to the covering of the structure. Eventually, the chlordane in the soil can become air-borne and contaminate the ambient air inside the structure. As a result, chlordane is a concern for indoor air quality in structures to which it has been applied.

Lead in the soil was also of concern due to the use of lead-based paint on the interior and exterior of many buildings for decades. Lead is commonly known to have an adverse effect on the physical and mental developmental growth of children. As the externally applied lead-based

paint ages, flakes and chips fall, causing contamination of the soil surrounding the housing structure.

Staff members from three different Battelle divisions are involved in a project to determine the extent of the termiticide residue in the air, as well as lead contamination and termiticide residue in the soil and the indoor air around Army housing. The effort is being managed by staff at the Battelle Eastern Science and Technology (BEST) Center, with sample collection support from the BEST Center and the Environmental Restoration (ER) division at Battelle Columbus Operations (BCO). Analytical support is provided by the Atmospheric Science and Applied Technology (ASAT) division at BCO.

In August 2002, sampling crews from the BEST Center and ER went to Fort Hood located in Killeen, Texas, to sample indoor air and soil. The air, soil, and wipe samples were sent to ASAT for extraction and

analyses. Data were reported to the client in complete data packages, which included details of the sample collection, extraction, and results.

The results varied from site to site. Lindane, aldrin, chlorpyrifos, heptachlor and dieldrin were found in several soil samples. Heptachlor and chlorpyrifos were found in several air samples.

For more information, contact Ms. Kim Andrews at (614) 424-5254, andrewsk@battelle.org.





Providing *Integrated* Solutions to Government Clients

The range of expertise and services offered through Battelle's Energy & Environment Division provides Battelle clients with the diverse backgrounds required to address challenging environmental projects. Throughout the years, our clients have come to rely on us to provide integrated solutions to a variety of challenges in the protection and management of natural resources.

As one example, by incorporating various areas of environmental science expertise located across Battelle, we deliver integrated solutions to the United States Army Corps of Engineers. Our Sequim, Washington, laboratory provides metals and toxicology services while organic analyses is provided by our Duxbury, Massachusetts, laboratory. Environmental modeling is provided by our Water Resources Modeling experts located in Seattle, Washington, while our Environmental Restoration group in Columbus, Ohio provides risk-based alternatives for site remediation.

In order to fully respond to the U.S. Environmental Protection Agency's (EPA) diverse project needs, Battelle has combined its resources to provide the required breadth of expertise. These projects range from developing screening assays for suspected endocrine disruptor chemicals and assessing sources of air pollution to providing marine and coastal science technical services. Through the Technical Support for EPA Oceans and Coastal Protection Division (OCPD) Contract, Battelle supports the mission of EPA Headquarters OCPD, Wetlands, and Assessment & Watershed Protection Divisions, and OCPD's Regional

offices. EPA accesses Battelle's capabilities under 10 diverse technical areas: field and laboratory analysis; environmental, ecological, and human health risk assessments; sources and control of floatable aquatic debris; ocean disposal activities; database development and modeling; status reports, guidance documents, and workshops; regulatory/NEPA support; public outreach and technology transfer; pollution control and mitigation; and technical support and regulation development.

Examples of marine and coastal projects conducted for EPA include: providing workshops and training for National Estuary Program, developing nutrient criteria for a northern Gulf of Mexico pilot study, and assisting with the implementation of a bi-national plan to address Harmful Algal Bloom issues – to name only a few projects where Battelle offers a wide range of technical experts and applied science to provide integrated solutions. For the U.S. Navy, Battelle evaluates and implements innovative and/or enhances existing remediation technologies to ensure that the Navy's environmental cleanup initiatives are optimized and cost-effectively implemented while meeting Navy objectives, regulatory requirements, and public concerns. In some cases, we help prepare the sites for alternative uses after cleanup is completed.

Through these types of experiences, clients have learned that Battelle's scientists and engineers can fully respond to their needs – and provide integrated solutions to their environmental challenges.

For additional information, contact Ms. Karen Foster at (781) 952-5370, foster@battelle.org.

Fundamental Solutions for Spent Fuel

Researchers at the Battelle-managed Pacific Northwest National Laboratory (PNNL) have supported engineered solutions for spent nuclear fuel used to produce nuclear materials on the Hanford site since the mid-1990s. For the U.S. Department of Energy (DOE) and Hanford cleanup contractors, PNNL has applied radiochemical processing capabilities to help better understand the behavior of uranium-based fuel and enable safe processing to stabilize the fuel. PNNL science is providing DOE with a defensible basis for processing the fuel and ultimately protecting the Columbia River from potential contamination.

Since production of material for nuclear weapons ceased, approximately 4.6 million pounds of used fuel has been stored in two leak-prone concrete pools. Hanford's K Basins also hold 2.6 million gallons of radioactive water, just 400 yards from the Columbia River.

DOE needed to reduce the risk posed by the used fuel and decided to move it to interim dry storage in underground vaults 12 miles inland. DOE also plans to remove sludge, which is a combination of dust, sand, and oxidized or degraded fuel, and ultimately dispose of the Basins.

A key concern was rapid chemical reactions that could occur when the fuel was removed from the water. Applying specialized radiochemical expertise, Battelle researchers characterized the fuel, defining the kinds of chemical reactions that could take place as the uranium was drying. The researchers' work led to a more complete understanding of the hazards associated with drying and prescribed the condition the fuel must

achieve to assure safe storage for decades. Information about hydrogen and heat generation during drying contributed to a decision to clean the fuel before placing it in dry storage.

Processing the fuel requires that it first be removed for cleaning from the aluminum and stainless steel canisters where it is stored. The canisters left behind could then be removed from the basins at a later date.

DOE is evaluating options for dispositioning the Basins, including the potential to embed the canisters within a layer of concrete grout. Fluor

Hanford, DOE's cleanup contractor for spent fuel, identified concerns about using concrete grout because the aluminum in the canisters could potentially react with the concrete to generate heat and hydrogen. Could DOE safely fill the basins with concrete leaving all the canisters in place? Battelle researchers provided analyses that

established the safe upper limit for the amount of aluminum to be left in the basins, as well as the number of canisters that would have to be removed before the fill.

Battelle researchers also applied expertise in radiochemical analysis, thermodynamics, fluid dynamics, and computer modeling to characterize the sludge, identify the corrosion products and expansion rates of the sludge aging process, and provide information on how much oxygen and hydrogen the sludge would generate. Their work led to an understanding of the amount of sludge that could be safely placed in a storage container.

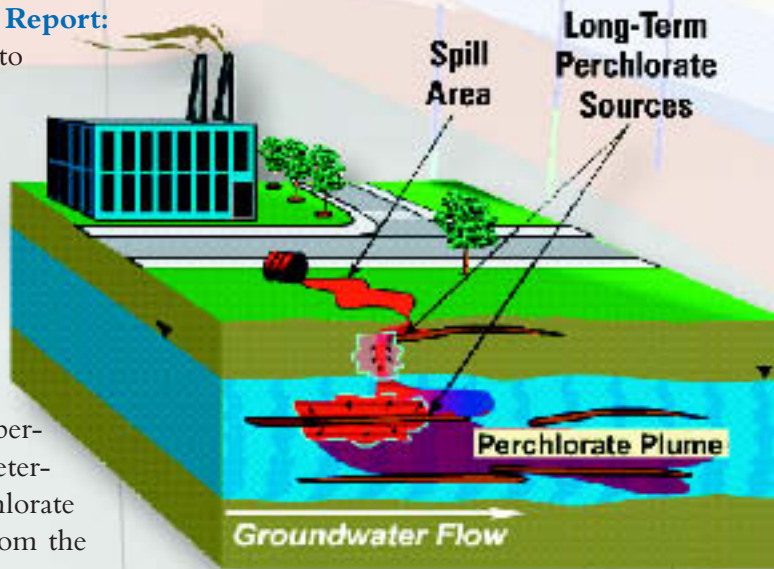
For more information, contact Mr. Terry Walton at (509) 372-4548, terry.walton@pnl.gov.



Environmental Services at a National Priorities List Site

As prime contractor, Battelle is providing a wide range of environmental services to a National Priorities List (NPL) Site in Southern California through a contract with the U.S. Navy. These services support the ongoing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program at the site, which began in 1992. Primary chemicals of interest include perchlorate and volatile organic compounds (VOCs). Battelle is providing a full spectrum of services for the site, including:

- **Off-Facility Perchlorate Treatment Support:** Supporting implementation of an off-facility ground water treatment plant to remove perchlorate and VOCs prior to potable use
- **Expanded Treatability Study for Perchlorate:** Implementing a large-scale treatability demonstration for perchlorate and VOC source area
- **Feasibility Study (FS) Report:** Preparing an FS Report to address perchlorate and VOCs located within the facility boundaries
- **Determination of Perchlorate Plume Extent:** Conducting groundwater modeling, field investigation and sampling, and evaluating alternate sources of perchlorate and VOCs to determine the extent of perchlorate and VOCs originating from the facility
- **Groundwater Modeling:** Preparing a groundwater model to evaluate fate and transport of perchlorate and VOCs from the facility, evaluate fate and transport of perchlorate and VOCs from sources other than the facility, and estimate the release time frame
- **Proposed Plan and Record of Decision:** Preparing the Proposed Plan and Record of Decision for the on-facility soil operable unit



- **Design and Optimization of the Soil Vapor Extraction (SVE) System:** Providing recommendations for the implementation of SVE for on-facility soil remediation to support cost-effective SVE implementation to achieve the remedial action objective (RAO)
- **National Environmental Policy Act (NEPA) Values Assessment:** Preparing a NEPA values assessment to address NEPA values that have not been adequately addressed within CERCLA
- **On-Site Technical Support:** Providing on-site technical support such as field oversight and logistics coordination during field activities, reviews of reports and plans, preparation of presentation and support materials for meetings with involved parties, and interactions with regulatory agencies
- **Community Relations Plan (CRP):** Preparing a revised version of the CRP, which addresses community concerns identified during public meetings coordinated by Battelle
- **Web-based Administrative Record (AR) and Information Repositories:** Preparing a website that contains electronic versions of all project documentation, which will eventually replace hard copy information repositories at three public libraries

For more information on Battelle's wide range of site remediation support capabilities, contact Mr. Keith Fields at (614) 424-7723, fieldsk@battelle.org.

Accelerating Compilation of Environmental Data into Information

Timely and accurate delivery of complex environmental data under environmental permits and regulatory schedules requires attention to all aspects of the data management process. From sample collection and chain-of-custody tracking to laboratory analysis, quality assurance, and transmission of the data to the agencies – Battelle offers integrated environmental management capabilities to achieve the task at hand: efficient and streamlined compilation of data.

Innovative software technologies developed and implemented by Battelle successfully ensure on-time data delivery, while also enabling clients to examine interim data products via project-specific web portals. Status tools help in-house and client project managers track sample collection, analysis, and data delivery, and demonstrate how Battelle's web-based systems support data flow, project managers, and visualization. Remote software links field-work and laboratory activities via automated quality control procedures prior to submission and again at the reporting stage, substantially shortening the time between data generation, evaluation and synthesis, and public reporting. Embedding the QC measures remotely catches errors earlier, at the time when the technician is still available to provide corrections. Accelerating compilation of environmental data creates information for environmental managers to ensure restoration studies are on track and enables quicker decision making.

Online accessibility to environmental data has played an important role in Battelle's project for New York and New Jersey's inter-agency Contamination Assessment and Reduction Program (CARP). Battelle's role involved

building a web-based, rapid turnaround system that coordinated information management for the entire CARP project. The project included creating procedures and methods for sample tracking, lab reporting, data synthesis, and distribution across 12 participating organizations. Battelle was able to provide results within two days of delivery from the field teams and labs. Battelle's services are being applied to the major field studies, including interstate water quality assessments, sediment contamination characterization, biota sampling, source trackdown, contaminant load modeling, and integration with historical legacy databases. Battelle is using this web-based system to integrate survey results and interactive screening via generic browsers, as well as portable CD applications for basic querying and mapping services. The database and querying tools fit within the CARP project's larger, public web presence (www.carpweb.org).

Battelle's standardized sample tracking and data reporting protocols have allowed numerous disparate field studies to incorporate these flexible tools. CARP managers have also been able to use the near real-time data dissemination to monitor study efforts, which has created opportunities to validate labwork and compare interim results instead of waiting until all studies were completed. CARP's advanced analytical techniques and extensive online QC requirements have led to lab reporting protocols that are customized, yet can be reconciled with many other electronic data deliverable (EDD) conventions.

To learn more about Battelle's Environmental Management Information System capabilities, contact Mr. Tom Gulbransen at (631) 941-3211, gulbran@battelle.org.



Providing Integrated Solutions *South of the Border*

In recent years through several diverse project assignments, Battelle has provided integrated solutions to PEMEX, the national petroleum company of Mexico. In 1998, Battelle formed a strategic alliance with three Mexican institutions: the Mexican Petroleum Institute (IMP) the National Autonomous University of Mexico (UNAM), and the Autonomous Metropolitan University (UAM). In 2003, Battelle and the IMP formalized a technology alliance based on the transfer of technology from Battelle to the IMP. Through these partnerships, we have conducted (or are in the process of conducting) several environmental projects, including the following: assessment of PEMEX's environmental legacy in the state of Tabasco; assessment of the environmental consequences of PEMEX's offshore operations; evaluation of PEMEX's options for wastewater treatment and management; evaluation of PEMEX's supervisory control and data acquisition (SCADA) system for gas pipeline operation; assessment of risk for gas pipelines in the Ciudad de Carmen region; development of an emergency management system for PEMEX refining operations; and development of a technology strategy for IMP, based on benchmarking, technology intelligence, value chain development, scenario-based planning, and technology road mapping. Through these project assignments and the alliance, PEMEX has relied upon Battelle to provide solutions to a wide array of environmental challenges.

Often, within one project, Battelle applies many areas of expertise to fully respond to clients' needs. This was the case in determining the magnitude and extent of environmental impacts of PEMEX's petroleum exploration and production operations and gas processing oper-

ations in the oil fields of the Región Sur. The areas of focus were air quality, corrosion, water quality (surface water and groundwater), soils (salinization, acidification, and fertility), agricultural systems, aquatic and terrestrial ecosystems, and human health (public and worker).

To date, Battelle and its alliance partners have collected data on the operational parameters of PEMEX, evaluated air quality and corrosion rates by setting up a network of air and corrosion sampling stations throughout the region, and evaluated soil conditions, groundwater conditions, and surface water conditions through an extensive sampling and analysis program throughout the region. Battelle employed stable isotope analysis, chemical fingerprinting, and transport modeling to separate PEMEX-produced constituents in these media from those produced by other industries, natural processes, and agricultural practices. Human health exposure codes and ecosystem exposure and response computer codes to estimate the potential for adverse effects of chemical concentrations on human health and the ecosystem were also employed. Sophisticated biological community analyses to separate effects on the ecological system that were due to PEMEX effluents, rainforest conversion to industry and agricultural uses, and habitat fragmentation were also carried out. These methods included tracking changes in forest quality over time using satellite data.

By accessing technical expertise across the allied institutions, scientists were able to identify the specific operations contributing to those impacts, review and recommend operational changes that would prevent future impacts, and review and recommend mitigation activities to lessen existing effects of past PEMEX operations or accidents.

For additional information, please contact Mr. Rick Chidester at (206) 528-3230, chidesterr@battelle.org.



Battelle's *Cincinnati* Presence

In January 2000, Battelle opened an office in the greater Cincinnati, Ohio, area in order to have more immediate contact with EPA personnel involved with the Environmental Technology Commercialization Center (ETC²). As of December 15, 2003, the office relocated from the Baldwin Center near downtown Cincinnati to Pfeiffer Place, located in Blue Ash, on the north side of Cincinnati.

The Cincinnati office is an integral part of the Management and Data Analysis Sciences product line within Battelle's Energy and Environment Division. The primary mission of the Cincinnati office is to serve as an initial point of contact for Battelle's major client in Cincinnati – EPA. EPA's Cincinnati operations include the headquarters and laboratories of the EPA National Risk Management Research Laboratory, as well as the headquarters of the EPA

National Homeland Security Research Center. Other organizations represented in Cincinnati include EPA's National Exposure Research Laboratory and National Center for Environmental Assessment. Other federal laboratories located in or near Cincinnati include the Food and Drug Administration, the National Institute of Occupational Safety and Health, the Air Force Research Laboratory, the Air Force Aeronautical Systems Center, and the Air Force Materiel Command. Cincinnati is home to major industrial firms such as Procter and Gamble (including Procter and Gamble Pharmaceuticals) and Ethicon (a division of Johnson and Johnson) as well as other chemical specialty firms.

The new address of the Cincinnati office is 10300 Alliance Road, Suite 155, Cincinnati, OH 45242.

Dr. Michael Taylor Re-joins Battelle

Earlier this year, Battelle enhanced its Cincinnati operation by adding Dr. Michael Taylor as a senior staff member. The Cincinnati team now includes Dr. Taylor, Dr. Harry Stone, and Ms. Heidi Tessitore.

Dr. Taylor began his career at Wright Patterson Air Force Base, as an officer in the Biomedical Sciences Corps. After completing a Postdoctoral Visiting Associateship and working in the Aerospace Research Laboratory for five years, Dr. Taylor moved to Wright State University, where he performed pioneering work in the mass spectrometric quantitation of chelated metals. He also developed and applied new analytical methodology for quantitating herbicide residues and dioxins. His work at Wright State was supported by the U.S. EPA, the U.S. Air Force, and several chemical companies. EPA continued as a major supporter

of Dr. Taylor's work at IT Corporation where he led programs to develop and test new methodologies for characterizing and detoxifying hazardous wastes. In 1999, Dr. Taylor began working for Battelle in the Environmental Technology Commercialization Center. After a brief departure to work in the U.S. Air Force's Technology Transfer Center, Dr. Taylor has now returned to Battelle. Dr. Taylor received his Ph.D., M.S., and B.S. degrees from Purdue University.

For additional information from members of the Cincinnati team, contact: Dr. Mike Taylor at (513) 362-2605, taylor@m@battelle.org; Dr. Harry Stone at (513) 362-2602, stoneh@battelle.org; or Ms. Heidi Tessitore at (513) 362-2601, tessitoreh@battelle.org.



Michael Taylor

Mark Nielsen Joins Battelle

Mr. J. Mark (Mark) Nielsen, P.E., recently joined Battelle's Environmental Restoration Systems group as a Program Manager. Mr. Nielsen comes to Battelle with more than 15 years of environmental engineering experience, including the management of site assessment/remediation projects and litigation support, with particular emphasis on the application of risk assessment and risk management strategies to site remediation and landfill closure projects under Superfund, RCRA, and state cleanup programs. Responsibilities on these projects have included conducting exposure



Mark Nielsen

assessments for baseline risk assessments, developing risk-based corrective action and unit closure/post-closure strategies, evaluating remedy implementation risks, preparing RCRA permit applications, and assisting with regulatory negotiations. He has also served as Adjunct Professor in the Department of Civil Engineering at Drexel University. Mr. Nielsen holds an M.S. in civil engineering from Princeton University, and a B.S. in civil engineering from Drexel University. Mr. Nielsen can be reached at (215) 579-2330, nielsenj@battelle.org.

Russell Sirabian Joins Battelle

Mr. Russell Sirabian, P.E., recently joined Battelle's Environmental Restoration Systems group as Program Manager. Mr. Sirabian has 19 years of environmental consulting experience related to managing the implementation of numerous site remediation and wastewater treatment projects. His site remediation projects include both *in-situ* remedial technologies and ex-situ treatment systems. His primary focus includes evaluation and selection of remedial technologies, development of conceptual level design, process instrumentation and control design, construction management, and the management and optimization of ongoing



Russell Sirabian

operations, maintenance, and monitoring. Mr. Sirabian's design experience includes air sparging, soil vapor extraction, multi-phase extraction, biosparging, bioventing, air stripping, liquid and vapor phase carbon, UV/peroxidation, biological treatment, membrane separation, ion exchange, precipitation, clarification and filtration, oil/water separation, dissolved air flotation, and thermal and catalytic oxidation. Mr. Sirabian received an M.E. in environmental engineering from Manhattan College and a B.S. in chemical engineering from Tufts University. Mr. Sirabian can be reached at (914) 576-7713, sirabianr@battelle.org.



Battelle Conducts New Conference for *Range Management Professionals*

The *First Conference on Sustainable Range Management* was held January 5–8, 2004 in New Orleans. The meeting, which was organized, sponsored, and conducted by Battelle, was a venue for exchange of information benefiting all stakeholders concerned with how military ranges and training areas can be used to test and evaluate weapon systems and to train DoD personnel without conflicting with economic, environmental, and other concerns. Many issues must be resolved in order to sustain the military's ability to conduct realistic training into the foreseeable future. These issues include urban

encroachment, frequency and airspace competition, life-cycle management of munitions, control of air emissions, and noise abatement. Progress has been made in some of these areas, but more work is needed to find solutions for the competing demands of development, environmental stewardship, commerce, and long-term air, land, and sea training needs. Dr. Bruce Alleman and Mr. Steve Downes from Battelle's Environmental Restoration Department in Columbus, Ohio, chaired the Conference.

For more information or to be added to the mailing list, send e-mail messages to rangecon@battelle.org.

International Conference on Environmental Remediation

The Fourth International Conference on Remediation of Chlorinated and Recalcitrant Compounds will be held May 24–27, 2004 in Monterey, California. This meeting, which is sponsored, organized, and conducted by Battelle, is the world's premier conference on environmental remediation issues. This year, more than 1,500 environmental professionals from 35 to 40 countries around the world are expected to attend. Among them will be leading environmental scientists, engineers, and regulators,

as well as top government officials and industry leaders involved in guiding environmental policy. The Monterey Conference Center and the city of Monterey will once again provide a perfect backdrop for the program. This conference is being chaired by Mr. Arun Gavaskar and Mr. Abraham Chen from Battelle's Environmental Restoration Department in Columbus, Ohio.

For more information, please call The Conference Group at (800) 783-6338 or send email messages to info@confgroupinc.com.



EPA Renews Contract for Statistical and Technical Support

In February 2004, the U.S. Environmental Protection Agency (EPA) awarded Battelle a \$20 M, five-year contract to provide statistical, mathematical, and technical analysis support and planning, as well as field data collection and laboratory analysis, to a wide range of programs in EPA's Office of Pollution Prevention and Toxics (OPPT). Since 1982, Battelle has continuously held task-order contracts with OPPT to provide statistical and technical support for the assessment of toxic substances. This contract renewal continues Battelle's long relationship with OPPT and emphasizes the importance that OPPT places in Battelle's broad base of technical staff, facilities, and equipment to support their risk management and regulatory needs.

Battelle will continue to provide support on this new contract to EPA's Lead-Based Paint Program, which aims to significantly reduce the incidence of lead poisoning in U.S. children. Battelle also will continue supporting EPA programs that focus on other national program chemicals such as mercury, PCBs, dioxins, and asbestos/fibers. The contract's broad technical program support component offers many opportunities to engage Battelle in program design, evaluation, and outreach efforts for EPA and to perform activities that provide a scientific basis for policy decisions.

For more information regarding Battelle's contracts with OPPT, please contact Dr. Bruce Buxton at (614) 424-4547, buxtonb@battelle.org.

Arctic Oil and Gas Monitoring Contract Awarded

Battelle's Coastal Resource and Environmental Management and Safety group was recently awarded a \$1.0 M, five-year contract with the U.S. Department of Interior, Minerals Management Service (MMS) in Anchorage, Alaska, as part of the Continuation of Arctic Nearshore Impact Monitoring in the Development Area (cANIMIDA) Program. The original ANIMIDA program was initiated as a long-term study to monitor the potential impacts of the first offshore oil and gas developments in the Federal waters of the Arctic – Northstar Island (which began oil production in 2001) and Liberty Prospect (proposed for future development). The cANIMIDA program continues the monitoring studies and incorporates seven task orders including hydrocarbon and metal chemistry studies, suspended sediment

studies, an assessment of subsistence whaling impacts, regional biota contaminant assessment, and a study of a unique benthic biological community in the nearshore Beaufort Sea.

Battelle will provide MMS with core contractor services, including overall project coordination and management, field logistics for summer and winter sampling surveys, development of cANIMIDA database design and analysis tools interfacing with the MMS Coastal and Offshore Resource Information System (CORIS) database, and preparation of peer-reviewed scientific journal articles.

For more information about this program, please contact Mr. John Brown at (781) 895-4847, brownjs@battelle.org.

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