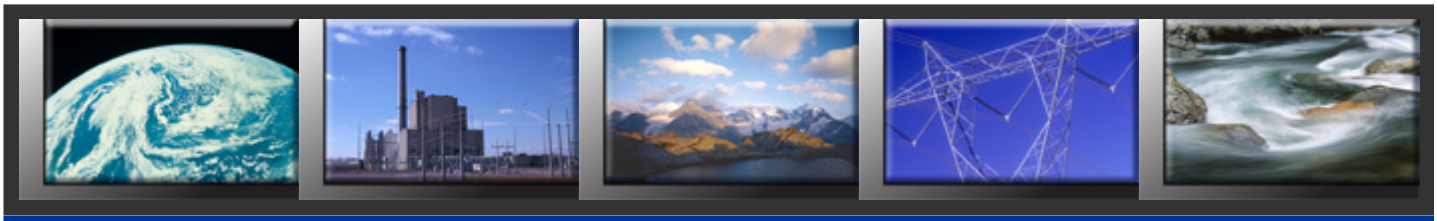
EPRI ELECTRIC POWER RESEARCH INSTITUTE

Environment Quick News



A Monthly Report on EPRI's Environmental Research Programs **March 2009**

Program members can use their EPRI.com ID and password to download Acrobat PDF files of EPRI technical reports. For assistance, contact the EPRI Customer Assistance Center at (800) 313-3774.

Dear Environment Sector members:

For years you have told us that EPRI research was often difficult to find and difficult to use. We've listened, and now we're acting. We've taken several steps in the past month to streamline our communications and outreach to members and other stakeholders.

Some of these changes are reflected in this issue of *Quick News* itself. We have tried to make articles shorter, reflecting key results or take-home messages. Where we are reporting on a published document, we now provide only a few lines about the content, plus a link to the document itself, a report summary, or the abstract of a paper. This way you can quickly skim to find what you are interested in and pursue in greater depth those topics where you need more information.

In addition, our web team has worked hard to improve your ability to find what you are looking for on EPRI's website, epri.com. Some of the new capabilities include:

- Slightly modified member home page look and feel
- Search tool enhancements
- Abstract standardization and content improvement
- Improved download experience

These and other actions we're taking will provide easier and more efficient access to our research results and help you extract more value from your EPRI membership at a time where your research dollars are at a premium. Write us back, and tell us if these improvements have been valuable to you and what else we might do to improve your ability to access and use EPRI information.

We also want to inform you about an upcoming workshop on the issue of coal combustion products management. The workshop will take place on April 1st and 2nd at the Sheraton Station Square Hotel, 300 West Station Square Drive, Pittsburgh, PA 15219. Senior executives from all entities owning or operating coal-based generation are invited to participate, along with one member of their technical staff. For more information, click here.

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Program 42: Air Toxics Health and Risk Assessment

United Nations Negotiations on a Mercury Treaty—EPRI's Role

With EPRI's direct technical support, the Governing Council of the United Nations Environment Programme (UNEP) has been considering both voluntary and binding conventions for controlling mercury transport between countries and mercury-associated activities within countries. Since 2007, EPRI has supported UNEP by serving as cochair and sponsor of the Mercury Air Transport and Fate Research working group and by participating in working groups on Mercury Control from Coal Combustion and on Mercury Management in Gold Mining. EPRI researchers and staff contribute regularly to UNEP mercury publications and engage in frequent technical consultations with the International Office of the U.S. Environmental Protection Agency and the State Department on the scientific background for the U.S. position on international mercury oversight. In a dramatic change of course during a Feb. 8 stakeholder meeting for industry and association groups in Washington, DC, the State Department announced that the U.S. position now would be to support an international binding convention. While advocating swift action to formulate this convention, State Department officials acknowledged that mercury of fossil fuel origin presents complex issues that may require completion of a separate technical study for UNEP before negotiators consider final treaty provisions. For more information, contact Leonard Levin, (650) 855-7929, llevin@epri.com.

How Uncertainty About Mercury Emissions Affects Global Mercury Cycle

Lohman K, et al. "Sensitivity of the global atmospheric cycle of mercury to emissions," *Applied Geochemistry* 23 (2008) 454–466, doi:10.1016/j.apgeochem.2007.12.022 (E228051). Simulation case studies presented in this paper show how estimated global concentrations of mercury in the air are affected by current uncertainties about mercury emissions from specific source categories. Accounting for emission uncertainties in modeling atmospheric mercury helps researchers make predictions that are consistent with observed mercury concentrations. For more information, contact Leonard Levin, (650) 855-7929, llevin@epri.com.

Researchers Investigate Mercury in the Great Salt Lake

Peterson, C., and M.S. Gustin. "Mercury in the air, water and biota at the Great Salt Lake (Utah, USA)," *Science of the Total Environment*, 405 (2008) 255–268, doi:10.1016/j.scitotenv.2008.06.046 (E228055). Researchers tested their hypothesis that atmospheric chemistry in the Great Salt Lake Basin encourages airborne mercury to deposit in the lake by using information they collected about mercury concentrations in air, water, and brine shrimp to model mercury deposition. Recent Utah Department of Health mercury advisories cautioning people who may eat birds that feed on the lake's brine shrimp have increased concern about mercury in the Great Salt Lake. For more information, contact Leonard Levin, (650) 855-7929, llevin@epri.com.

Paper Reviews Asian Contribution to Global Mercury Cycle

Jaffe, D., and S. Strode. "Sources, fate and transport of atmospheric mercury from Asia," *Environmental Chemistry,* 5 (2008) 121–126 (E228052). This paper reviews the sources of mercury coming from Asia, the environmental fate of these emissions, and their global transport. Because Asian sources account for 54% of all anthropogenic mercury emissions to the atmosphere and 7–20% of all mercury deposition in North America, understanding Asia's contribution to the global mercury cycle is critically important. For more information, contact Leonard Levin, (650) 855-7929, llevin@epri.com.

Program 91: Assessment Tools for Ozone, Particulate Matter, Regional Haze and Atmospheric Deposition

Two Projects Combine to Inform the Regional Transport Issue

Results from two different projects in Program 91 are combining to examine the contribution of various emissions sources to regional air quality. Decision-makers will benefit from improved quality of the resulting emission inventories and modeling tools to use in their analyses. EPRI obtains expert review of its research products and application in specific case studies. The first project is providing updated emissions for on-road vehicles in the metropolitan areas of Detroit, MI, and Atlanta, GA, by refining information and developing state-

of-the-art modules within the EPA MOBILE6 model used to estimate these emissions. In the second project, Carnegie Mellon University is working in concert with EPA to develop a new treatment for organic PM in EPA's Community Multiscale Air Quality Modeling System (CMAQ). This new module better represents the formation and behavior of organic PM emissions in the atmosphere. The National Renewable Energy Laboratory, the Mid-Atlantic Regional Air Management Association, and the Lake Michigan Air Directors Consortium are interested in using both the refined PM emissions from heavy-duty on-road vehicles and the updated organic emissions data with the improved CMAQ model for their own independent projects. For more information, contact Stephanie Shaw, (650) 855-2353, sshaw@epri.com, or Eladio Knipping, (650) 855-2592, eknippin@epri.com.

Preliminary Simulations of Interstate Transport Modeling Completed

The Advanced Modeling System for Transport, Emissions, Reaction, and Deposition of Atmospheric Material (AMSTERDAM) is being used to elucidate the impact of electric utility emissions on interstate transport of pollutants, particularly when a plume-in-grid model (such as the Advanced Plume Treatment, APT) is used. The study's results can be used to inform future air quality policy deliberations, now that the Clean Air Interstate Rule (CAIR) for SO_2 and NOx has been remanded to EPA. A 360 km by 360 km "pseudo-state" analysis region centered on the convergence of eight states (AR, MO, IL, IN, KY, TN, AL and MS) was defined for this study. Simulations were performed removing electric utility emissions and all anthropogenic emissions from the pseudo-state and calculating downwind contributions with and without the APT module. Initial results were presented in webcasts on Feb. 19 and Feb. 26. More detailed presentation of the results and discussion of potential future model applications will be held during the Mar. 16–19 Advisory Council meetings in San Diego. For more information, contact Eladio Knipping, (650) 855-2592, eknippin@epri.com, or Naresh Kumar, (650) 855-2990, nkumar@epri.com.

Air Quality Area News

Announcing Release of Improved EPRI Regional Air Quality Model

The EPRI Advanced Modeling System for Transport, Emissions, Reaction, and Deposition of Atmospheric Material (AMSTERDAM) is now available from the University of North Carolina's Community Modeling and Analysis System Center (CMAS). Intended for use by utilities, regulators, and state and local agencies, the model includes the following new features:

- the Advanced Plume Treatment (APT) plume-in-grid module for better representation of the physical and chemical processes of power plant plumes;
- the Model of Aerosol Dynamics, Reaction, Ionization, and Dissolution (MADRID) module for enhanced treatment of particulate matter, with specific improvements to the treatment of organic aerosols;
- treatment of mercury chemistry and deposition adopted from the Trace Elements Atmospheric Model (TEAM) research; and
- parallel processing for faster run times.

AMSTERDAM builds on the framework of EPA's Community Multiscale Air Quality Modeling System (CMAQ) by adding different modules, more-enhanced chemistry for PM, and mercury reactions. It offers users an alternative to CMAQ for regional modeling for ozone, particulate matter, air toxics, and deposition. For more information, contact Eladio Knipping, (650) 855-2592, eknippin@epri.com, or Leonard Levin, (650) 855-7929, llevin@epri.com.

GLOBAL CLIMATE CHANGE

Visit the Global Climate Webpage

Program 102: Global Climate Policy Costs and Benefits

New Climate Brief on Key Climate Variables

"Key Climate Variables Relevant to the Energy Sector and Electric Utilities" (1018548). This Brief presents information on some key climate variables that may affect the energy sector, including changes in long-term

trends and changes in extreme events. For more information, contact Naresh Kumar, (650) 855-2990, nkumar@epri.com.

Program 103: Greenhouse Gas Reduction Options

Success Story: An Analysis of CO2 Policy Impacts on Western Power Markets

"EPRI Analysis Benefits Western Utilities by Examining Impacts of CO2 Price on Western Power Markets" (1018610). Western U.S. utilities needed to better understand the challenges they face from potential climate policies limiting CO_2 emissions. EPRI teamed with PacifiCorp to design a project analyzing scenarios for different CO_2 prices and examining how these prices would impact the ability of western utilities to meet specific environmental goals. For more information, contact Victor Niemeyer, (650) 855-2744, niemeyer@epri.com.

Success Story: PRISM Analysis Provides Valuable Tool to Help Shape Company's Climate Change Strategy

"PRISM Analysis Benefits Oglethorpe Power Corporation: Shapes Response to a Carbon-Constrained Future" (1018604). Oglethorpe Power Corp. (OPC) needed to show its Board of Directors the significant challenges the company might face in light of potential climate change policies limiting GHG emissions, as well as to discuss possible mitigation options. EPRI quickly developed a company "PRISM" analysis illustrating the risks OPC may face from evolving climate policy, as well as GHG mitigation options to help it address these challenges. For more information, contact Adam Diamant, (510) 260-9105, adiamant@epri.com.

Supplemental Project to Assess Impact of Climate Policy on Retrofit Investment in Fossil Generation

"Assessing the Impact of Climate Policy on Retrofit Investment in Fossil Generation" (101868). This project is intended to help utilities quantify the potential value of retrofit investments that aim to keep existing coal generating units compliant with increasingly strict air and water quality standards. For more information, contact Victor Niemeyer, (650) 855-2744, niemeyer@epri.com.

EPRI Hosts Fourth GHG Emissions Offset Policy Dialogue Workshop

On Feb.19, EPRI hosted the fourth workshop in a series that comprises the EPRI Greenhouse Gas Emissions Offset Policy Dialogue project. Approximately 85 representatives from the policymaking, environmental, industrial, financial, and research communities participated in this workshop, held in Washington, DC. The workshop explored the potential key role domestic greenhouse gas (GHG) emissions offsets in the agricultural and forestry sectors may play in evolving U.S. climate policy approaches. All of the project and workshop background materials and expert presentations can be viewed and downloaded by the general public here. For more information, contact Adam Diamant, (510) 260-9105, adiamant@epri.com.

LAND AND GROUNDWATER

Program 49: Coal Combustion Products—Environmental Issues

How Arsenic and Selenium Leach From Coal Fly Ash

The Leaching Behavior of Arsenic and Selenium From Coal Fly Ash (1015545). Researchers examined and modeled processes that control how arsenic and selenium leach from coal fly ash under various environmental conditions. For more information, contact Ken Ladwig, (262) 754-2744, keladwig@epri.com.

Invited Presentations Showcase Beneficial Uses of Coal Combustion Products

Presentations by EPRI's Ken Ladwig at recent and upcoming Environmental Protection Agency (EPA) meetings showcase the beneficial uses of coal combustion products (CCPs). These invited talks show EPRI's communications with EPA on a topic that has recently received media attention focused on coal ash.

- Basic information about coal ash and flue gas desulfurization (FGD) gypsum was the subject of Ladwig's presentation at the Industrial Materials Recycling Education Forum held at EPA Region 9 offices in San Francisco on Jan. 13. The purpose of the forum was to present information about the characteristics, beneficial uses, benefits, and potential risk of large-volume industrial byproducts, focusing on EPA Resource

Conservation Challenge priority materials such as coal ash. Ladwig's presentation was very well received by about 30 people at the forum and by those who participated in a subsequent Feb. 3 follow-up call open to personnel at all EPA regional offices.

- The use of FGD gypsum in agriculture will be the subject of Ladwig's presentation at the EPA National Resource Conservation Challenge Training Workshop to be held Mar. 25–27 in Arlington, VA. This is a major EPA workshop on the recycling of industrial materials and offers a platform for presenting research results on the beneficial use of CCPs.

For more information, contact Ken Ladwig, (262) 754-2744, keladwig@epri.com.

Fact Sheet Summarizes Coal Combustion Product Research Achievements and 2009 Objectives

"EPRI Coal Combustion Product Management Research—Research Summary 2009 Programs 49 and 78" (1018549). This one-page Fact Sheet gives a quick summary of the information and services offered by EPRI in the area of CCPs, the industry needs and issues addressed, program impacts, key accomplishments, and objectives for 2009. For more information, contact Ken Ladwig, (262) 754-2744, keladwig@epri.com.

Program 50: MGP Site Management

Reactive Capping Project Attracts Attention at Contaminated Sediments Conference

Jeff Clock presented a poster on reactive capping for coal tar–impacted sediments at the Fifth International Conference on Remediation of Contaminated Sediments, held Feb. 2–5 in Jacksonville, FL. Clock's poster described the second phase of a project in which researchers are installing an organoclay cap containing sorbent materials that will sequester organic contaminants in sediments at a former MGP site. EPRI will invite project sponsors to attend the cap installation in April. The conference, which attracted an international audience of more than 900 scientists and engineers, featured a number of presentations relevant to MGP site management, including discussions of sediment remediation projects. Battelle, the conference sponsor, will publish proceedings in the spring. For more information, contact Jeff Clock, (845) 608-0642, jclock@epri.com.

Managing Free Product During Site Investigation and Closure

Evaluation of Site Investigation/Closure Requirements and Their Applicability to Residuals from Former Manufactured Gas Plants (1018277). This report reviews regulatory requirements for identifying free product—coal tar present in concentrations greater than the residual saturation point of soil at a site—and evaluates how site investigation and closure rules in six states apply to source material and free product at former MGP facilities. For more information, contact Jeff Clock, (845) 608-0642, jclock@epri.com.

Success Story: Soil Vapor Intrusion Data Support Site Redevelopment Plans

"EPRI Soil Vapor Intrusion Study Helps We Energies Plan for Redevelopment of Former MGP Sites" (1018611). EPRI performed a field study to determine if soil vapor containing hydrocarbons from historic MGP operations could migrate into structures that will be built on a remediated site formerly owned by We Energies. For more information, contact Jim Lingle, (414) 355-5559, jlingle@epri.com.

Program 59: PISCES—Plant Multimedia Toxics Characterization

EPRI Seeks Host Sites for Trace Metal Multimedia Projects

EPRI invites interested companies to offer their power plants as host sites for two new projects tracking the fate of trace metals in plant air, water, and solid waste streams.

- ***Using iron as a scrubber additive.*** In a joint field study with Generation, researchers will add iron to a full-scale scrubber to enhance mercury removal from flue gas at a power plant with selective catalytic reduction (SCR) and flue gas desulfurization (FGD) (scrubber) systems. Adding iron is a standard approach to water treatment in which various metals coprecipitate with the iron. Limited data suggest that both mercury and selenium found in scrubber water may coprecipitate with particulate iron. Researchers will collect multimedia samples to evaluate how iron addition impacts the fate of mercury and selenium in the scrubber, as well as scrubber mercury re-emissions to flue gas. EPRI proposes tests on one full-scale scrubber system. Depending on results of these tests, EPRI may invite additional host sites to participate in the study.
- ***Switching to high-sulfur coal after installing selective catalytic reduction and flue gas desulfurization systems.*** Many power plants are installing SCR with FGD for control of nitrogen oxide and sulfur dioxide

emissions, as well as co-benefit mercury control. With FGD in place to reduce sulfur dioxide emissions, plant operators may elect to switch from low-sulfur to high-sulfur coal for economic reasons. EPRI seeks a host site planning SCR/FGD installation and coal switching, so that researchers can measure trace metals of concern in plant media before and after these changes occur.

For more information, contact Paul Chu, (650) 855-2812, pchu@epri.com.

WATER AND ECOSYSTEMS

Program 54: Fish Protection at Steam Electric Power Plants

Report Published on Thermal Discharge Research and Regulations

Clean Water Act Section 316(a): Past, Present, and Future (1018500). This report summarizes the status of and future trends in thermal discharge research and regulations under Section 316(a) of the Clean Water Act (CWA). For more information, contact Doug Dixon, (804) 642-1025, ddixon@epri.com.

EPRI's Closed-Cycle Cooling Research Progresses

Based on the expected delay in release of EPA's proposed Section 316(b) Phase II Rule, EPRI is issuing interim reports on the current status of its closed-cycle cooling research for review by funders. Three interim reports have been issued. Two provide the results of an analysis of financial and reliability impacts to three North American Electric Reliability Council (NERC) regions (PJM, ERCOT, and New England ISO). These results forecast the megawatt losses from facilities where retrofitting and reducing power reserve margins in those regions would be uneconomical. The third is an updated interim report on the cost of retrofits. An interim report on the adverse social and environmental impacts of closed-cycle cooling retrofits will be issued for review by mid-March. Final reports will be provided to EPA during the comment period for the proposed rule. The reports will not be finalized until after the proposed rule is reviewed to ensure that issues relevant to closed-cycle cooling discussed in EPA's proposal are fully addressed in the comments. A workshop will be held at the EPRI Environment Sector Advisory Meetings in San Diego on Mar. 16, where current results for each of the four projects will be presented. For more information, contact Dave Bailey, (703) 978-6226, dbailey@epri.com.

EPRI Meeting With EPA 316(b) Phase II Rule Development Team

On Jan. 21, Doug Dixon and Dave Bailey met with the EPA Phase II Rule development team to discuss the status of EPRI's ongoing research and to gather ideas on information gaps that could be addressed via EPRI R&D efforts. EPRI learned that the revised draft Phase II Rule is delayed because of the change in Administration and is not likely to be released until summer 2009 or even later. EPRI also learned that EPA is very interested in

- results of EPRI's national impingement mortality and entrainment survey,
- procedures for conducting entrainment and entrainment survival monitoring, and
- research that demonstrates the performance and retrofit feasibility of entrainment protection technologies such as fine mesh screens, cylindrical wedge-wire screens, and aquatic filter barriers. EPA noted that its analyses have indicated that screens with mesh sizes in excess of 2.0 mm are not protective of fish and shellfish.

For more information, contact Doug Dixon, (804) 642-1025, ddixon@epri.com.

EPRI Extends Final Date for Impingement Mortality and Entrainment National Survey

Because of the expected delay in release of the revised draft Phase II Rule, EPRI is extending the period for its survey of impingement mortality and entrainment information to March 31. Updated information from this survey is critical for supporting EPRI's closed-cycle cooling research and its comments on the draft Phase II Rule once the Rule is available for review. EPA has also expressed a strong interest in the data. By the end of January, information had been obtained from approximately 35% of the industry; however, insufficient responses from plants in several regions of the country and on some water body types are causing a bias in the data obtained to date. EPRI is working with several industry groups to increase industry responses. For

more information, contact Doug Dixon, (804) 642-1025, ddixon@epri.com, or Dave Bailey, (703) 978-6226, dbailey@epri.com.

EPRI 2009 Fish Protection Research Program Plan

EPRI has adjusted its 2009 R&D program to ensure that its results will provide information to support EPRI's comments on the draft Phase II Rule—now expected to be released no earlier than summer 2009—and to provide members and the public with information to support future compliance efforts. Based on project prioritization by the program's Technical Advisory Committee, program research is now focused on additional testing of fine-mesh screen performance, development of techniques for improved entrainment and entrainment survival monitoring, and analyses of the feasibility of retrofitting technologies that provide entrainment protection. EPRI is also developing video monitoring procedures through which interactions of early life stages of fish and shellfish with fine mesh screens at different velocity conditions can be observed and analyzed. Results from this effort will provide information to better determine appropriate screen mesh sizes and intake bay water velocities. For more information, contact Doug Dixon, (804) 642-1025, ddixon@epri.com.

Dixon Organizing National Symposium on Fish Community Monitoring in Big Rivers

EPRI's Doug Dixon, working with a colleague from the Ohio River Valley Sanitation Commission, recently received approval to conduct a national symposium on Monitoring, Characterizing, and Managing Big River Fish Communities at the American Fisheries Society annual meeting, to be held Aug. 30–Sept. 3 in Nashville, TN. The symposium will examine the scope, tools, and results of monitoring programs used to evaluate the fish communities of "big" rivers, such as the Mississippi, Ohio, Missouri, and Tennessee. Several presentations will explore the scope and results of the EPRI Ohio River Ecological Research Program. Other topics will include invasive species monitoring and control; big river fish community indices; fish contamination monitoring and advisories; mussel monitoring and restoration; endangered species (e.g., sturgeon) monitoring, protection, and restoration; identification of priority areas for protection and restoration; fish marking and recapture to track riverine movements; and larval fish sampling. More information is available at the event website. For more information, contact Doug Dixon, (804) 642-1025, ddixon@epri.com.

Program 55: Strategic Water Issues

Advanced Cooling Technologies Development/Demonstration Advisory Committee Meeting

On Feb. 17, the Advisory Committee for EPRI's Advanced Water-Conserving Cooling Technologies Development and Demonstration Program met in Dallas, TX. The purpose of the meeting was to discuss the various research proposals for the program and to provide input to EPRI in setting priorities for the coming year. In addition to EPRI researchers and program funders, attendees included representatives from

- the Department of Energy's National Energy Technology Laboratory, presenting an update on recent projects;
- the Energy and Environmental Research Center at the University of North Dakota, discussing water conservation in carbon capture and storage processes;
- Idaho National Laboratory, presenting on water used in nuclear plants;
- KEMA, discussing membranes for water capture from flue gas; and
- Lehigh University, discussing condensing heat exchangers for water capture from flue gas.

Presentations by EPRI and collaborating Électricité de France (EdF) researchers on day 2 included:

- ammonia bottoming cycles: EdF pilot and Aspen modeling results;
- water conservation in flue gas desulfurization scrubbers;
- use of alternative water sources for power plant cooling; and
- evaluation of technologies to increase thermoelectric generation and water use efficiency.

For more information, contact Kent Zammit, (805) 481-7349, kezammit@epri.com.

Supplemental Project: Advanced Cooling Technologies Development/Demonstration

"Advanced Water-Conserving Cooling Technologies Development and Demonstration" (1018028). This collaborative effort, led by a team of EPRI and industry experts, proposes a range of projects to develop, test, and deploy efficient advanced cooling technologies. For more information, contact Kent Zammit, (805) 481-7349, kezammit@epri.com.

New EPA Documents Published Related to TMDLs

Two recent EPA reports include information related to development of total maximum daily loads (TMDLs) in surface waters, a major focus of work in Program 55. The *National Water Quality Inventory Report to Congress* for the 2004 reporting cycle is now available; this report is the primary vehicle for informing Congress and the public about general water quality conditions in the United States—for example, waters containing mercury, which is the most frequent impairment of lakes, ponds, and reservoirs. Also, EPA's Office of Water has issued its draft *Handbook for Developing Watershed TMDLs*, which discusses the potential environmental, financial, and implementation benefits of developing TMDLs on a watershed scale. EPRI's forthcoming TMDL Technical Evaluation Framework, to be published in March, will include a discussion of the EPA handbook in the context of providing guidance on how to technically review a TMDL. For more information, contact Robert Goldstein, (650) 855-2593, rogoldst@epri.com.

Program 56: Effluent Guidelines and Water Quality Management

Supplemental Project: 2009 Evaluations of Mercury and Selenium Flue Gas Desulfurization Water Treatment Technologies

"Mercury and Selenium FGD Water Treatment Evaluations: 2009 Studies" (1018486). This project will continue to evaluate promising technologies for treatment of the FGD chloride purge stream—specifically the mercury and selenium constituents. For more information, contact Paul Chu, (650) 855-2812, pchu@epri.com.

Supplemental Project: Optimization of a Vertical Flow Wetland to Remove Selenium and Mercury in Flue Gas Desulfurization Waste Water

"Design Optimization of a Vertical Flow Wetland to Remove Se/Hg in FGD Waste Water" (1018538). In 2008, EPRI began conducting an ongoing pilot-scale vertical flow wetland system study using FGD wastewater from a bituminous power plant. Initial results indicate promising selenium and mercury reductions across the organic substrate. The objective of this study is to build upon those results and characterize selenium and mercury reductions in a full-scale treatment system to further evaluate the design parameters for wetland treatment (i.e., passive treatment) so as to optimize capital, operational and maintenance costs, and space requirements. For more information, contact John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com.

Program 58: Hydropower Environmental Issues

Event Sheet on April Workshop on Hydropower in a Carbon-Constrained Future

"Hydropower in a Carbon-Constrained Future: Applications and Markets" (1018588). This workshop, to be held April 7–8 in Mendenhall, PA, is the second workshop examining the economic opportunities for hydropower generation that now exist because of climate change issues and the need for renewable energy options. The highlight of this workshop will be a tour of the Exelon Trade floor and a visit to the Exelon Conowingo hydropower facilities. For more information, contact Doug Dixon, (805) 642-1025, ddixon@epri.com, or Tom Key, (865) 218-8082, tkey@epri.com.

T&D ENVIRONMENTAL ISSUES

Program 51: T&D Facilities & Equipment: Environmental Issues

Software Helps Companies Choose Distribution Poles

Poles Decision Tool, Version 1.0 (1016892). This web-based software lets users evaluate and compare distribution poles made of treated wood, nonwood alternatives, and nontreated wood across their full life cycle. For more information, contact Mary McLearn, (650) 855-2487, mmclearn@epri.com.

Program 57: ROW: Siting, Vegetation Management, and Avian Issues

Report Updates Vegetation Management Strategies

Electric Transmission Line Right-of-Way Post-Blackout Vegetation Management Strategies: 2008 Update (1015595). This report reviews efforts to improve strategies for vegetation management along power line corridors undertaken since EPRI's 2007 report (1012551) on standards developed after the 2003 East Coast blackout. For more information, contact John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com.

EPRI Develops Functional Specifications for Bird Activity Monitor

Bird Activity Monitoring (BAM) (1015599). Research reported here developed functional specifications for a video-based bird activity monitor (BAM) that researchers can use to study bird interactions with utility structures such as overhead power lines. For more information, contact John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com.

Program 60: EMF Health Assessment and RF Safety

Visit the EMF Health Assessment and RF Safety Public Webpage

EPRI Launches Pooled Analysis of Childhood Leukemia Survival and Exposure to Electric and Magnetic Fields

EPRI is launching a pooled analysis to examine survival rates among children with acute lymphoblastic leukemia (ALL) in relation to extremely low frequency electric and magnetic field (ELF-EMF) exposure. Previous studies by Foliart et al. (2006) and Svendsen et al. (2007) found a somewhat poorer survival rate among children in the highest exposure category, but the authors noted that their studies included too few children in this category to support conclusive findings. EPRI researchers hope to overcome this difficulty by pooling additional cases drawn from other studies of magnetic fields and childhood leukemia. They will monitor the clinical outcomes of about 3500 childhood ALL cases drawn from 11 published studies. The researchers estimate that these numbers will provide improved statistical power. For more information, contact Gabor Mezei, (650) 855-8908, gmezei@epri.com.

EPRI Models Improve Prediction of Radio-Frequency Burns in the Workplace

Radiofrequency Burns in the Workplace (1015627). Researchers developed models to determine threshold conditions for radio-frequency (RF) burns and extended the models to predict the occurrence of burns at frequencies above 3 MHz that had not been modeled before. For more information, contact Mike Silva, (650) 855-2815, msilva@contractor.epri.com.

Success Story: EPRI Helps AEP Develop Comprehensive Radio-Frequency Safety Program

"AEP Uses EPRI Research to Develop Comprehensive RF Safety Program" (1018708). EPRI developed and implemented an RF safety seminar to address the safety and technical issues involved in working with RF equipment at AEP facilities. For more information, contact Mike Silva, (650) 855-2815, msilva@contractor.epri.com.

EMF Newsletter Published

EMF Research News, January 2009 (1018585). This semiannual newsletter provides an update on EPRI and non-EPRI research results, ongoing research, and key worldwide events concerning exposure to power- and radio-frequency electric and magnetic fields. For more information, contact Rob Kavet, (650) 855-1061, rkavet@epri.com.

OCCUPATIONAL HEALTH AND SAFETY

Program 62: Occupational Health and Safety

Report on Respirable Fraction of Fine Particles of Crystalline Silica in Coal Fly Ash

Computer-Controlled Scanning Electron Microscopy (CCSEM) Investigation of Respirable Quartz in Air Samples Collected During Power Plant Maintenance Activities (1015632). This report presents research

using a new electron microscopy method to determine the amount of respirable crystalline silica (quartz) in coal fly ash (CFA). For more information, contact Gabor Mezei, (650) 855-8908, gmezei@epri.com.

DVD Demonstrating Improved Work Practices From Electrical Worker Ergonomic Handbook Under Development

Certain work tasks performed by electricians in fossil-fueled power plants are physically strenuous and expose electricians to risks of costly musculoskeletal disorders such as lower back, shoulder, and wrist injuries. EPRI researchers have begun work on a DVD entitled "Ergonomic Interventions for Electrical Workers in Fossil-Fueled Power Plants." Based on the *EPRI Ergonomics Handbook for the Electric Power Industry: Ergonomic Interventions for Electrical Workers in Fossil-Fueled Power Plants* (1014042), the interactive DVD will demonstrate how common electrical work practices can be improved and how to mitigate injuries through modifications to existing equipment, tools, and methods. Used in conjunction with the printed handbook, the DVD provides a readily accessible visual aid that will improve the understanding and implementation of best practices. The partially completed DVD was well received when demonstrated at recent advisory and EEI meetings. Scheduled release is December 2009; it will be available at no cost to Occupational Health and Safety program members. EPRI is planning to produce more DVDs based on other Ergonomic Handbooks in the future. For more information, contact Gabor Mezei, (650) 855-8908, gmezei@epri.com.

ENVIRONMENT FEDERAL HIGHLIGHTS (Washington D.C. Office, John Novak)

For more information on the items below, contact John Novak, 202-293-6180, jnovak@epri.com.

Center for the Study of the Presidency

John Novak participated in a meeting of the Domestic Energy Production Working Group held by the Center for the Study of the Presidency (CSP). CSP is a nonpartisan, nonprofit group founded in 1965 to promote leadership in the Presidency and Congress to generate innovative solutions to current national challenges. The meeting brought together representatives from government, industry, and academia to provide input on domestic energy challenges and RD&D priorities. The CSP will develop a report and recommendations and provide them to the Obama Administration and members of Congress.

Carbon Sequestration Leadership Forum

John Novak participated in a small invitation-only discussion with senior DOE and State Department officials who comprise the Secretariat of the Carbon Sequestration Leadership Forum (CSLF). The purpose of the discussion was to provide insights into U.S. perspectives and priorities leading up to the CSLF Ministerial Summit in October in London. Participants expressed the view that as a lead-up to the international climate negotiations in Copenhagen in December, it was important for the CSLF Ministers to make a statement on the role of CO_2 capture and storage in meeting global climate change goals, on the status of the technology, and on the RDD&D needs.

International Electricity Partnership (IEP)

Electricity industry leaders, representing utilities providing the majority of the world's electricity, met in Atlanta, GA, in 2008 and agreed to form an International Electricity Partnership to deliver advanced electric technologies to create a global low-carbon future. EPRI has been asked to provide technical support to the IEP. John Novak participated in a meeting with representatives from the Edison Electric Institute and Eurelectric to discuss efforts to develop a roadmap for decarbonizing the electric power sector by the year 2050.

International Energy Agency International CO2 Capture and Storage (CCS) Roadmap

In November 2008, the International Energy Agency (IEA) launched an International Carbon Capture and Storage (CCS) Roadmap process by inviting stakeholders to discuss the key milestones needed for the financial, technical, legal, and international cooperation developments necessary to successfully deploy CCS. On Feb. 2 and 3, John Novak participated in the second Roadmap workshop on financing, legal, regulatory, and international collaboration/knowledge transfer issues related to CCS. The IEA will take the information from these two workshops and from future technical work group meetings/conference calls and develop a CCS

Roadmap that will be presented to the IEA Ministerial Meeting in October and at the international climate negotiations in December.

Global Carbon Capture and Storage Initiative

In 2008, Australian Prime Minister Kevin Rudd launched the Global Carbon Capture and Storage Initiative (GCCSI) with the establishment of a Global Institute to speed up the development of carbon capture and storage (CCS) technology. The Australian government will contribute up to $100 million annually to the Institute, which will be based in Australia. The Institute will work cooperatively with other countries and industry to develop and commercialize CCS technologies to help reduce global CO_2 emissions. EPRI staff have been in discussions with the GCCSI with regard to potential participation or possibly joining the GCCSI as a founding member.

New Supplemental Project Opportunities

Program 103: Greenhouse Gas Reduction Options

- "Assessing the Impact of Climate Policy on Retrofit Investment in Fossil Generation"

Program 56: Effluent Guidelines and Water Quality Management

- "Design Optimization of a Vertical Flow Wetland to Remove Se/Hg in FGD Waste Water"
- "Mercury and Selenium FGD Water Treatment Evaluations: 2009 Studies"

Program 58: Hydropower Environmental Issues

- "Utility Marine Energy Interest Group (UMIG)"

For a complete list of all active Environment Supplemental Project Opportunities click here.

Upcoming Events

* denotes EPRI sponsored or cosponsored event

Environment Sector

**** Environment Sector and Area Council Advisory Meetings***

Mar. 16–19, San Diego, CA. Contact: Adina Kozuh, (650) 855-2991, akozuh@epri.com.

**** Environment Sector and Area Council Advisory Meetings***

Oct. 5–8, Boulder, CO. Contact: Adina Kozuh, (650) 855-2991, akozuh@epri.com.

Air Quality

**** Annual EPRI/UARG Air Toxics Research Coordination Meeting***

May 6–8, Palo Alto, CA. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com.

9th International Conference on Mercury as a Global Pollutant

June 7–12, Guiyang, China. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com. More information is available at the event website.

National Atmospheric Deposition 2009 Annual Meeting & Scientific Symposium

Oct. 6–8, Saratoga Springs, NY. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com

Air Quality VII Conference

Oct. 25–29, Arlington, VA. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com.

Global Climate Change

**** 14th Annual EPRI Global Climate Change Research Seminar***

May 20–21, Washington, DC. Contact: Ana Montes, (650) 855-2165, amontes@epri.com.

Land and Groundwater Issues

EPA National Resource Conservation Challenge Training Workshop

Mar. 25–27, Arlington, VA. Contact: Ken Ladwig, (262) 754-2744, keladwig@epri.com. Ken Ladwig will give an invited talk on the use of FGD gypsum in agriculture. More information is available at the event website.

**** World of Coal Ash***

May 4–7, Lexington, KY. Contact: Ken Ladwig, (262) 754-2744, keladwig@epri.com. More information is available at the event website.

Battelle Tenth International* In Situ *and On-Site Bioremediation Symposium

May 5–8, Baltimore, MD. Contact: Jim Lingle, (414) 355-5559, jlingle@epri.com. More information is available at the event website.

**** Annual EPRI/UARG Air Toxics Research Coordination Meeting***

May 6–8, Palo Alto, CA. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com.

9th International Conference on Mercury as a Global Pollutant

June 7–12, Guiyang, China. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com. More information is available at the event website.

**** MGP Mid-Year Meeting***

June 25–26, Chicago, IL. Contact: Jeff Clock, (845) 608-0642, jclock@epri.com, or Jim Lingle, (414) 355-5559, jlingle@epri.com.

Air Quality VII Conference

Oct. 25–29, Arlington, VA. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com.

**** EPRI MGP 2010 Symposium***

Jan. 27–29, 2010, San Antonio, TX. Contact: Jeff Clock, (845) 608-0642, jclock@epri.com, or Jim Lingle, (414) 355-5559, jlingle@epri.com. More information is available at the event website.

Water and Ecosystems

**** Second Forum on Energy & Water Sustainability: Increasing Resource Productivity***

Apr. 10, Goleta, CA. Contact: Robert Goldstein, (650) 855-2593, rogoldst@epri.com. More information is available at the event website.

9th International Conference on Mercury as a Global Pollutant

June 7–12, Guiyang, China. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com. More information is available at the event website.

American Fisheries Society Annual Meeting

Aug. 3–Sept. 3, Nashville, TN. Contact: Doug Dixon, (804) 642-1025, ddixon@epri.com. Doug Dixon is organizing a National Symposium on Fish Community Monitoring in Big Rivers during this meeting. More information is available at the event website.

T&D Environmental Issues

29th International Congress on Occupational Health

Mar. 22–27, Cape Town, South Africa. Contact: Gabor Mezei, (650) 855-8908, gmezei@epri.com. The congress will include a special session on EMF. More information is available at the event website.

The Bioelectromagnetics Society 31st Annual Meeting

June 14–19, Davos, Switzerland. Contact: Rob Kavet, (650) 855-1061, rkavet@epri.com. More information is available at the event website.

* ***Mid-Year Joint Meeting of P51 (Transmission & Distribution) and P57 (Rights-of-Way)***

July 8–9, Charlotte, NC. Contact: Babu Nott, (650) 855-7946, bnott@epri.com. More information is available at the event website.

***** ***2009 EMF Scientific Advisory Committee Meeting***

July 20–21, Milwaukee, WI. Contact: Rob Kavet, (650) 855-1061, rkavet@epri.com.

International Society of Arboriculture 85th Annual Conference & Trade Show

July 24–29, Providence, RI. Contact: John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com.

Ninth International Symposium on Environmental Concerns in Rights-of-Way Management

Sept. 27–Oct. 1, Portland, OR. Contact: John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com. More information and a call for papers are available at the event website.

Occupational Health & Safety

29th International Congress on Occupational Health

Mar. 22–27, Cape Town, South Africa. Contact: Gabor Mezei, (650) 855-8908, gmezei@epri.com. More information is available at the event website.

Together…Shaping the Future of Electricity®

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