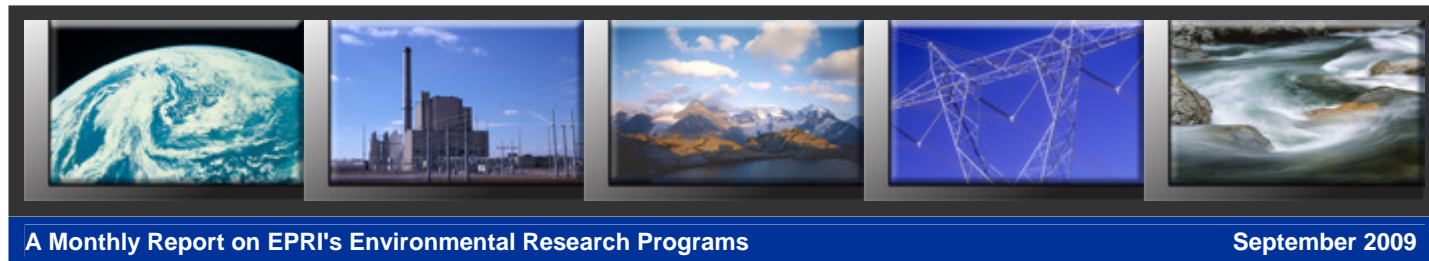


Environment Quick News



A Monthly Report on EPRI's Environmental Research Programs

September 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:

When we ask you about the value of EPRI research, one item that always receives high priority is the need to be responsive to regulatory timelines. High quality science is critical to good decision making, and we do our best to ensure that our research is timely and relevant.

Several updates are reported in this issue of Quick News on work we are conducting to meet key deadlines for a number of regulatory activities under way at EPA. For example, with regard to coal combustion products, we are finishing several draft reports that will be provided to the Agency in advance of its decision on how to regulate these materials. We will not only provide these materials to members but will also hold briefing sessions for EPA staff on the results of the work.

EPA is also moving toward establishing maximum achievable control technology (MACT) standards for hazardous air pollutants (HAPs). Our primary research activity related to these standards is a study to examine the health risks of utility industry HAP emissions, and that study is nearing completion. We recently submitted comments to EPA on its proposed Information Collection Request (ICR) to measure HAP emissions from a large number of coal-fired units.

Other regulatory rulemakings under way at EPA and described in this newsletter include progress on water treatment systems for FGD wastewater (effluent guidelines) and ongoing work in response to EPA's Section 316b rule for cooling water intake structures. Our climate research is heavily focused on informing policy discussions both nationally and internationally, particularly in light of the pending discussions in Congress and with respect to future international negotiations.

I hope you are all planning to attend the upcoming advisory meetings in Colorado on October 5–8. At these meetings we will provide research updates on these and other activities within our current research programs. We look forward to seeing you all there.

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Coal Combustion Product Management Website Debuts on epri.com

A new program website, [Coal Combustion Product Management Research](#), is now available on epri.com. The website currently features

- a research summary describing recent accomplishments and key near-term objectives,
- relevant 2010 EPRI research offerings in Programs 49 and 78,
- active supplemental projects, and
- lists of EPRI reports related to CCP environment issues and uses.

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

Phone Number Changes at EPRI Palo Alto and Charlotte Offices

Phone numbers of many EPRI staff in Palo Alto and Charlotte have changed because of a phone system upgrade. Please use the phone numbers listed in Quick News in the future, or check the online People Directory. On the member home page (ID and password required), choose Key Contacts, then enter the name of the person you wish to contact.

Program 42: Air Toxics Health and Risk Assessment

Preliminary Analyses of Plume Chemistry at Plant Crist

Preliminary analyses of mercury measurements, taken by flying an instrumented dirigible through the plume at Southern Company's coal-fired Plant Crist in Florida, seem to confirm previous observations that some of the oxidized mercury emitted from the stack converts to elemental mercury within the plume. At Plant Crist, the relative proportion of oxidized mercury measured in the plume at downwind distances between 1200 feet and 1–2 miles was lower than the relative proportion measured in the stack. EPRI has made similar observations in plumes at Southern Company's Plant Bowen in Georgia and We Energies' Pleasant Prairie Power Plant in Wisconsin. For more information, see the Issue Brief "[Measuring Mercury Chemistry in Power Plant Plumes](#)" (1019612), or contact Arnout Ter Schure, (650) 855-2281, aterschu@epri.com.

Understanding the Role of Halogens in Coastal Mercury Deposition

[Program on Technology Innovation: Coastal Halogen Atmospheric Research on Mercury Deposition \(CHARMeD\)](#) (1019522). This Technical Report describes research, funded through EPRI's Innovator Circle program, on how mercury oxidation by halogens (bromine oxide, iodine oxide) along coastal regions may influence the enhanced concentrations and wet deposition of oxidized mercury measured in the southeastern United States. For more information, contact Arnout Ter Schure, (650) 855-2281, aterschu@epri.com.

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

Southeastern Aerosol Research and Characterization Network Informs Current and Emerging Regulations

The annual meeting for the Southeastern Aerosol Research and Characterization (SEARCH) network project team was held in August to discuss management issues and research priorities. The SEARCH data are used by numerous organizations, and this year several researchers were invited to present their recent analyses.

- Charles Blanchard's analyses of 10-year trends in ozone and ozone precursors in the Southeast found it difficult to detect an effect from regulations on ambient ozone concentrations in Atlanta. Results suggest that reducing urban volatile organic compounds may be more effective for ozone reduction than reducing NOx.
- George Hidy's comparison of several methods for determining the amount of secondary organic aerosol formed in the atmosphere found substantial discrepancies, with no method clearly superior. These results imply that measurements or modeling studies based on only one method may be unrepresentative.

- Ivar Tombach investigated the feasibility of using PM-2.5 mass to indicate the amount of light scattering that can lead to ambient visibility reductions in urban areas. The linkages are not consistent, and thus variations related to location and season must be considered in relating these two parameters.

For more information, contact Stephanie Shaw, (650) 855-2353, sshaw@epri.com.

Summer Visibility Experiments Under Way in Washington State

The third in a series of aerosol characterization experiments began in August near Mt. Rainier National Park. The field and laboratory measurements are part of a multiyear, multisite study to investigate the causes of aerosol light extinction in U.S. national parks. The study is designed to test assumptions used to estimate light extinction and aerosol composition; it will compare the results from the Mt. Rainier site with those from other parks across the country. Results are intended to address issues related to concentration-varying light-scattering efficiencies, water absorption by aerosols, and organic-carbon-mass-to-organic-carbon ratios. Previous experiments were conducted during summer and winter periods at Great Smoky Mountains National Park. For more information, contact Naresh Kumar, (650) 855-8758, nkumar@epri.com.

Program 92: Assessment of Air Quality Impacts on Health and the Environment

Technology Innovation Program on Emissions, Health, and Environment Under Way

EPRI's Strategic Program on Health and Environmental Impacts of Future Power Plant Emissions has begun with two new projects related to toxicology and atmospheric chemistry. The first project, scheduled to begin in late August, aims to provide better understanding of the interactions between sulfate and other atmospheric constituents, including secondary organic aerosols and trace metals. For the first time, the toxicity and chemistry of aerosols containing sulfate, organics, and metals will be rigorously examined in the laboratory. The second project is exploring the thermodynamic properties and atmospheric chemistry of amines. Amines may have toxicological potential, but relatively little is known about their atmospheric chemistry and there may be losses in CO₂ capture systems, so understanding the atmospheric behavior of these compounds is very important. Two external advisory committees—a Scientific Advisory Committee and a Utility Advisory Committee—have been assembled, and kickoff webcasts have been held. For more information, contact Annette Rohr, (650) 855-2297, arohr@epri.com.

GLOBAL CLIMATE CHANGE

[Visit the Global Climate Webpage](#)

Global Climate Change Area News

EPRI's Global Climate Research Featured at Summer Seminar and in EPRI Journal

At this year's EPRI Summer Seminar, EPRI President and CEO Steve Specker presented updated Prism and MERGE analyses. The Prism analysis—so named for the appearance of the graphical results—provides an assessment of potential CO₂ reductions in several key technology areas of the electricity sector. The Model for Estimating the Regional and Global Effects of Greenhouse Gas Reductions (MERGE) analysis identifies the least-cost portfolio of technologies needed to meet future CO₂ emissions constraints. These analyses show that the electricity sector could potentially reduce annual CO₂ emissions in 2030 by 41% relative to 2005 emissions levels, but that such a reduction will require sustained research, development, and demonstration and aggressive deployment of a broad range of technologies. The "[Prism/MERGE Analyses: 2009 Update](#)" (1019563) is a special insert to the Summer 2009 *EPRI Journal*. A description of the Summer Seminar, its presentations and associated reports, and a press release on the Prism and MERGE findings can be found [here](#), or see the epri.com Newsroom section. For more information, contact Geoff Blanford, (650) 855-2126, gblanford@epri.com, or Richard Richels, (202) 293-7510, rrichels@epri.com.

Cost Estimates for Waxman-Markey Climate Legislation

The EPRI-hosted webcast "Understanding Cost Estimates for the Waxman-Markey Legislation" is now available to members of EPRI Programs 102 and 103. Analyses of the Waxman-Markey legislation have resulted in a wide range of estimates for cost per ton of CO₂. The webcast discusses the major public estimates (as of July 22) and key assumptions that drive the differences in these estimates. In particular, the

webcast examines the assumptions underlying estimates of the cost and availability of domestic and international emission offsets. The webcast presentation and a combined audio/video presentation file are available [here](#) or in the Recent & Archived Presentations section of the Global Climate [public website](#). For more information, contact Tom Wilson, (650) 855-7928, twilson@epri.com.

Richels Appointed to National Academy of Sciences Committee

EPRI's Richard Richels has been appointed to a new National Academy of Sciences committee on Stabilization Targets for Atmospheric Greenhouse Gas Concentrations. The committee's objective is to assist policymakers in decisions about stabilization target levels for atmospheric greenhouse gas concentrations. The committee will evaluate the implications of different atmospheric greenhouse gas target levels and explain the uncertainties inherent in the analyses that arrived at the targets. For more information, contact Richard Richels, (202) 293-7510, rrichels@epri.com.

Program 102: Global Climate Policy Costs and Benefits

Report on Abilities and Limits of Global Climate Models

[Review of General Circulation Models and Downscaling Techniques](#) (1019488). This Technical Report reviews the current state of general circulation models (GCMs) used to simulate the earth's climate and make projections decades or centuries into the future. The report discusses GCM limitations, uncertainties, and performance, and also describes various downscaling techniques used to modify GCM output from coarser spatial and temporal resolution to finer resolution. For more information, contact Naresh Kumar, (650) 855-8758, nkumar@epri.com.

Program 103: Greenhouse Gas Reduction Options

EPRI Board of Directors Learns About Greenhouse Gas Emissions Offsets

Adam Diamant gave EPRI's Board of Directors a presentation highlighting the key role of greenhouse gas emissions offsets in evolving domestic and international CO₂ cap-and-trade programs. The Aug. 5 presentation covered the near-term challenge of reducing the electricity sector's CO₂ emissions before the commercial availability of key new carbon mitigation technologies like carbon capture and storage. Mr. Diamant described the major issues associated with creating a large-scale offset market and highlighted the key role that offsets play in the design of Waxman-Markey climate legislation. Download the presentation [here](#). For more information, contact Adam Diamant, (510) 260-9105, adiamant@epri.com.

LAND AND GROUNDWATER

Program 49: Coal Combustion Products—Environmental Issues

Research Reports No Risk to Human Health From Mercury in Concrete or Wallboard

[Human Health Risks from Mercury in Concrete and Wallboard Containing Coal Combustion Products](#) (1019023). According to research reported in this Technical Update, a formal risk assessment using conservative assumptions demonstrated that mercury in coal fly ash concrete and flue gas desulfurization gypsum wallboard does not pose a risk to human health, either during use or after disposal in landfills. For more information, contact Ken Ladwig, (262) 754-2744, keladwig@epri.com.

Mid-Year Meeting Focuses on Research to Inform Pending Coal Ash Disposal Regulation

Progress on research described in the supplemental project notice "[Sustainable Management of Coal Combustion Products: Informing the Regulatory Process](#)" (1019334) was the focus of discussion at the Coal Combustion Product Research Mid-Year Meeting (Programs 49 and 78), held July 21–22 in Beltsville, MD. EPRI's Ken Ladwig is presenting summary results of this research to several federal agencies and Congressional staffers in September, when interagency review of EPA's regulatory proposal on coal ash disposal begins. In October, EPRI will complete draft final reports on all supplemental project research. EPA plans final release of its proposed regulation in December. For more information, contact Ken Ladwig, (262) 754-2744, keladwig@epri.com.

Program 50: Manufactured Gas Plant Site Management

Multiphase Field Study Improves Understanding of Soil Vapor Intrusion

Field Studies of Soil Vapor Intrusion at a Vacant Manufactured Gas Plant (MGP) Site in Wisconsin (1017924). To develop better tools for characterizing and predicting vapor intrusion at former MGP sites, this Technical Update presents information from the first two phases of a field study in which researchers surveyed, sampled, and analyzed soil gas, soil, and groundwater at a vacant MGP site in Wisconsin. For more information, contact Jim Lingle, (414) 355-5559, jlingle@epri.com.

Research Challenge: Understanding Naphthalene's Ability to Cause Cancer

Participants in the 2009 Naphthalene Research Meeting, held recently at the University of California at Davis, reviewed various researchers' work on naphthalene uptake and toxicity. According to EPRI's Annette Rohr, who attended the meeting, the primary outstanding research questions focus on naphthalene's ability to cause cancer. These questions include how naphthalene produces tumors, which enzyme systems support metabolic activation of naphthalene within cells, and what accounts for species differences in tumor development after naphthalene exposure and in metabolism of the chemical after nasal uptake. Answers to these questions would help to inform EPA's upcoming revision of its toxicological review of naphthalene. For more information, contact Annette Rohr, (650) 855-2297, arohr@epri.com.

Program 59: Power Plant Toxics Characterization

EPRI Responds to EPA's Proposed Information Collection Request for Hazardous Air Pollutant Emissions

On July 2 in the *Federal Register*, EPA proposed a mandatory Information Collection Request (ICR) that would require coal- and oil-fired power plants to submit monitoring data characterizing hazardous air pollutant emissions. EPA intends to use these new data to develop maximum achievable control technology (MACT) standards for power plants that would restrict emissions of all designated hazardous air pollutants, not just mercury. In consultation with its members, EPRI submitted comments on the proposed ICR by EPA's Aug. 31 deadline and will be helping members respond to ICR requirements as information becomes available. This work will be a joint effort of Environment and Generation. For more information, contact Paul Chu, (650) 855-2362, pchu@epri.com.

WATER AND ECOSYSTEMS

Program 53: Water Quality Criteria Development and Assessment

Project to Study Potential Toxicity of Utility Waste Streams to the Freshwater Mussel

EPRI is starting a multiyear project to study the potential toxicity of coal-fired power plant effluents to aquatic life, particularly freshwater mussels. While fish and daphnids are routinely used in effluent toxicity testing, mussels are not. Freshwater mussels in the central and eastern United States are threatened or endangered in many areas, and laboratory work outside EPRI has shown that EPA's current ammonia limits are not protective; thus, more-stringent discharge requirements are being considered. EPRI researchers will use standard EPA or ASTM testing procedures to conduct the assessments. The risks to freshwater mussels will be quantified and compared with risks to fish and daphnids, as well as with previous results for these organisms. The study, of high interest to many members, will be conducted by researchers from South Carolina's Clemson and Presbyterian universities. For more information, contact John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com.

Program 55: Strategic Water Issues: TMDLs, Availability, Climate

EPRI Involved in Discussions on Water Sustainability

EPRI's Bob Goldstein recently attended the National Association of Regulatory Utility Commissioners' Summer Meeting, where he participated on a panel that discussed the risks of water constraints on utility operations and gave a [presentation](#) on **Electric Power Generation and Water Sustainability**. Bob was also an invited plenary speaker at a water sustainability workshop held as part of the [First International Congress on Sustainability Science and Engineering](#), where he gave an [overview](#) of the Sustainable Water Resources Roundtable (a subcommittee of the National Advisory Committee on Water Information), which he co-chairs with members of

the U.S. Forest Service. The Congress, held Aug. 9–13 in Cincinnati, OH, addressed the multidisciplinary nature of industrial sustainability along the supply chain. The Congress was organized by the American Institute of Chemical Engineering's Institute for Sustainability and cosponsored by the Environmental Protection Agency, the National Science Foundation, and the National Institute of Standards and Technology. For more information, contact Robert Goldstein, (650) 855-2154, rogoldst@epri.com.

Program 56: Effluent Guidelines and Water Quality Management

EPRI Briefs EPA on Mercury/Selenium Characterization and Treatment

EPRI's Paul Chu and Kent Zammit met with EPA staff recently to provide an update on EPRI's FGD water characterization and treatment R&D work, focusing on mercury and selenium. EPA staff requested copies of various EPRI reports on FGD water characterization, water treatment, and ash ponds. Working with advisors, EPRI will provide these reports, along with an EPRI perspective. The [presentation](#) from the meeting is available on epri.com. For more information, contact Paul Chu, (650) 855-2362, pchu@epri.com.

Pilot Study Evaluates Iron Cementation Technology to Mitigate Selenium in FGD Wastewater

[Selenium Removal by Iron Cementation from a Coal-Fired Power Plant Flue Gas Desulfurization Wastewater in a Continuous Flow System—a Pilot Study](#) (1017956). This Technical Update describes a pilot evaluation of the metallic iron cementation process for selenium removal. The results indicated that a significant reduction of selenium in FGD wastewaters is possible. The oxidation state of selenium plays an important role in the successful application of this technology: Selenite was efficiently removed, and selenate was also removed, although this reaction was noticeably slower. Further development is needed to fully evaluate the technology and its performance on additional FGD water matrices. For more information, contact Paul Chu, (650) 855-2362, pchu@epri.com.

Success of Pilot Study Leads to Full-Scale Treatment of FGD Wastewater Flow at Plant

Because of successful results on a year-long pilot-scale study using vertical flow wetlands (VFW) to treat FGD wastewater, Duke Energy recently decided to install a full-scale system at its Marshall Plant by 2011. This decision was based on the capability of the VFW system to enhance treatment of selenium to ensure compliance with required permit levels at the site. On average, the VFW pilot system reduced selenium levels from 150 ug/L (influent) to 26 ug/L (effluent). Although the focus was on selenium treatment, mercury levels were also reduced, from 70 ng/L (influent) to 5 ng/L (effluent), as were other constituents. This study is part of EPRI's passive treatment program, focused on the development of natural systems for the treatment of utility wastewaters. Previous projects have successfully used VFWs to treat additional kinds of wastewater at other sites, encouraging researchers to try VFW for FGD waste streams. For more information, contact John W. Goodrich-Mahoney, (202) 293-7516, jmahoney@epri.com.

Ash Pond Management Guidance Manual Available

[Guidelines for Integrated Management of Ash Ponds, Volume 2](#) (1018856). This Technical Report is the second volume of a guidance manual for use by coal-fired power plant staff to help them better manage their ash ponds to comply with wastewater regulations. This volume concentrates on alkalinity, how it is caused and how it responds in an ash pond, and its impacts on ammonia. [Volume I](#) focused on three of the commonly regulated parameters: total suspended solids, pH, and ammonia. For more information, contact Mary McLearn, (650) 855-2487, mmclean@epri.com.

Program 58: Waterpower

EPRI Holds Kickoff Meeting for Advanced Turbine Engineering Development Project

On Aug. 5 at the facilities of Voith Hydro Inc. in York, PA, EPRI held the official kickoff meeting for the EPRI–U.S. Department of Energy (DOE) cofunded project that will complete the engineering development and model testing of the Alden/Concepts NREC advanced hydropower turbine (ACT). DOE, along with project sponsors New York Power Authority, Brookfield Renewable Power, Puget Sound Energy, South Carolina Electric & Gas, and New York State Energy Research & Development Authority, took part in the meeting. EPRI's Doug Dixon facilitated the meeting and described the project's goals and schedule. Staff of Alden Research Laboratory Inc. reviewed the current state of development of the turbine, and Voith staff described the next steps to complete the preliminary engineering design, model fabrication and testing, and final preliminary engineering of

the ACT. The overall project goal is to prepare the ACT for future deployment and testing at an actual hydropower project. A new EPRI Technical Report, [Redesign of the Alden/Concepts NREC Helical Turbine for Increased Power Density and Fish Survival: Evaluation of a Conceptual Prototype Turbine](#) (1015600), describes the development of the hydroturbine to date. For information on the meeting (including presentations) or how to participate in the project, contact Doug Dixon, (804) 642-1025, ddixon@epri.com.

Source Data Assembled for National Wave Energy Resource Assessment

The National Oceanographic and Atmospheric Administration, working with the EPRI project team, has assembled a 52-month (Feb. 2005 through May 2009) wave data set to be used as the source data for the national wave energy resource assessment project sponsored by the U.S. Department of Energy. The 60 GB of data contain fully partitioned sea-state parameters for the entire U.S. coastal ocean grid (out to 50 nautical miles) at three-hour intervals. For more information, contact Roger Bedard, (520) 979-3275, rbedard@epri.com.

EPRI Completes Wave Energy Technology Update

Under the sponsorship of Pacific Energy Ventures and the Oregon Wave Energy Trust (OWET), EPRI has completed a detailed update of wave energy technology. Chapters in the report include U.S. Wave Energy 2009 Highlights; Worldwide Wave Energy 2009 Highlights; Wave Energy Resources; Wave Energy Conversion Technology Description Design, Performance, Cost, and Economic Feasibility Studies; Installed Capacity and Estimated Growth; and R&D Needs. The report will be available by November 2009 on both the EPRI and OWET websites. For more information, contact Roger Bedard, (520) 979-3275, rbedard@epri.com.

EPRI Completes River Hydrokinetic System Definition/Feasibility Study

EPRI has completed its River Hydrokinetic System Definition and Feasibility Study at three sites in Alaska. This study was conducted under the sponsorship of the Alaska Energy Authority, Chugach Electric Association, and Anchorage Municipal Light & Power. EPRI first conducted a site survey for six locations in close proximity to small villages that typically have power needs of a few hundred kW. The attributes needed for a good site were characterized; of particular importance is the river current velocity profile. From this survey, documented under the [River Section](#) on EPRI's Ocean Energy Web Page, the Alaska sponsors selected three sites—Kvichak River at Igiugig, Eagle on the Yukon River, and Whitestone on the Tanana River—for preliminary design of a power plant. EPRI then performed the design and estimated the cost to construct, deploy, operate, and maintain each plant. Finally, EPRI assessed the technical and economic feasibility of hydrokinetic technology applied at these sites. The simple payback period for remote village isolated-grid Igiugig is 3 to 4 years; for remote village isolated-grid Eagle, 4 to 5 years; and for the remote village but grid-connected Whitestone case, 8 to 9 years. The design, cost, and economic assessment report is also available under the [River Section](#) on EPRI's Ocean Energy Web Page. For more information, contact Roger Bedard, (520) 979-3275, rbedard@epri.com.

EPRI Participates in Waterpower XVI, EPRI Waterpower Program Review, and Pumped Storage Development Council

Several EPRI staff attended the July 28–30 [Waterpower XVI conference](#) in Spokane, WA, the largest gathering of hydro professionals worldwide in 2009. EPRI participated in a number of activities:

- Roger Bedard was the moderator for the symposium session “Maximizing Waterpower’s Contribution to Clean Energy With New Technologies,” a discussion of ocean, tidal, and in-stream power development opportunities and challenges.
- Doug Dixon was the moderator for the symposium session “Broader Research and Development for More Clean Energy,” where panelists examined ways to ensure waterpower’s continued contribution.
- EPRI held a Waterpower research program review meeting on July 27 to discuss program goals and scope, highlight key research areas, and obtain feedback on how the EPRI Waterpower program is serving member and industry needs. [Presentations](#) are available on epri.com.
- Tom Key is participating on the National Hydro Association’s newly formed Pumped Storage Development Council. The council held its first meeting at the Waterpower Conference, attended by about 30 hydropower stakeholders. The council will be preparing information pieces on the status and benefits of pumped storage projects in the United States.

For more information, contact Tom Key, (865) 218-8082, tkey@epri.com; Roger Bedard, (520) 979-3275, rbedard@epri.com; or Doug Dixon, (804) 642-1025, ddixon@epri.com.

T&D ENVIRONMENTAL ISSUES

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

EPRI Prepares Review of Arsenic Remediation Technologies for Utility Sites

Managing arsenic contamination in soils, groundwater, and surface water is a challenge for owners of utility sites. Six years ago, EPRI published what was then a state-of-the-art review of available technologies to remediate arsenic contamination. Since then, some technologies have proven their worth, others have fallen out of favor due to inadequate performance in the field, and new technologies have arrived on the scene. EPRI is preparing a Technical Update that reviews the development, application, and success of established technologies, as well as the promise offered by many new technologies—especially those for treating groundwater. The update evaluates how applicable each technology is to various contaminated matrices requiring treatment and considers the advantages and disadvantages of implementing each technology. EPRI will publish its update, *Arsenic Remediation Technologies for Groundwater and Soil* (1019476), before year's end. For more information, contact Mary McLearn, (650) 855-2487, mmclearn@epri.com.

Program 60: EMF Health Assessment and Radio-Frequency Safety

[Visit the EMF Health Assessment and RF Safety Public Webpage](#)

EPRI Comments on a Study of Spatial Clustering of Childhood Cancer

McNally RJ, et al. "Spatial clustering of childhood cancer in Great Britain during the period 1969–1993," *International Journal of Cancer* 2009; 124:932–6. EPRI evaluates the strengths and limitations of this study, whose authors conclude that common infections may be responsible for the observed clustering of acute lymphoblastic leukemia and soft tissue sarcomas but not for the observed clustering of Wilms tumors. [Comments](#) are available on epri.com. For more information, contact Gabor Mezei, (650) 855-8908, gmezei@epri.com.

EPRI Publishes First Integrated Job Exposure Matrix for Electric Utility Workers

[Integrated Job Exposure Matrix for Electric Utility Workers](#) (1019011). This Technical Report describes development of the first job exposure matrix to address all utility worker exposures associated with electrical work, including exposures to magnetic fields, electric fields, nuisance shocks, imperceptible contact currents, and electrical shocks and burns. For more information, contact Rob Kavet, (650) 855-1061, rkavet@epri.com.

Resource Paper Describes Overview of Personal Communication Devices

[Overview of Personal Radio Frequency Communication Technologies](#) (1019020). This EPRI Resource Paper provides a basic understanding of how personal communications devices—such as cell phones, Blackberries, and Wi-Fi Internet connections—communicate with one another and describes the various signal modulation methods. For more information, contact Mike Silva, (650) 855-2365, msilva@contractor.epri.com.

EMF Newsletter Published

[EMF Research News, August 2009](#) (1019561). 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 Gabor Mezei, (650) 855-8908, gmezei@epri.com.

EMF Scientific Advisory Committee Meets

Leading scientists and engineers met with EPRI staff and members to discuss EMF Health Assessment and RF Safety Program research at the annual meeting of EPRI's external EMF Scientific Advisory Committee, held July 20–21 in Madison, WI. Research presented during the meeting included

- updated information on the international TransExpo Study of magnetic fields and childhood leukemia,

- Alzheimer disease basics considered in the context of a recent Swiss epidemiologic study,
- information on how a range of species use the earth's natural magnetic field for navigation,
- the feasibility of a study of leukemia in children with Down syndrome,
- work to develop a mouse model of childhood leukemia development for use in experimental studies,
- a pooled analysis of studies of magnetic field exposure and childhood brain cancer, and
- safety aspects of linemen's footwear.

For more information, contact Gabor Mezei, (650) 855-8908, gmezei@epri.com, or Rob Kavet, (650) 855-1061, rkavet@epri.com.

Mezei Becomes Program Manager, Kavet Assumes Role of Senior Technical Executive

Effective July 1, Dr. Gabor Mezei accepted the position of program manager for the EMF Health Assessment and RF Safety Program. Dr. Mezei, a medical doctor and epidemiologist, succeeds Dr. Robert Kavet, who remains with the program as a senior technical executive responsible for expanding the program's scientific horizons. For more information, contact Gabor Mezei, (650) 855-8908, gmezei@epri.com, or Rob Kavet, (650) 855-1061, rkavet@epri.com.

OCCUPATIONAL HEALTH AND SAFETY

Program 62: Occupational Health and Safety

Paper Evaluates Valve Hand Wheel Height and Torque Exertion

Smith, J, et al. "Height of industrial hand wheel valves affects torque exertion." *Human Factors: The Journal of the Human Factors and Ergonomics Society OnlineFirst*, 2009 Aug. 13, online as [doi:10.1177/0018720809340780](https://doi.org/10.1177/0018720809340780). Login and password required, but abstract is available. This study looked at the relationship between the height of a hand wheel valve, the maximum torque required (including direction) to operate the valve, and the risk of injury to workers' shoulders and backs. 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.

EPRI Testifies at House Subcommittee Hearing

On July 9, Bryan Hannegan testified at a hearing of the Subcommittee on Energy and Environment, House Committee on Science and Technology, in a presentation on Technology Research and Development Efforts Related to the Energy and Water Linkage. Among the key points Dr. Hannegan made were:

- The largest users of water are nuclear and coal-based power plants; however, renewable energy resources such as concentrated solar and biomass can also use significant water resources on a life-cycle basis.
- Advanced cooling technologies, such as dry cooling and use of degraded waters, can reduce water use in power plants but come at a significantly increased cost using technologies available today.
- Research efforts are urgently needed to mitigate the expected shortfall in water needed for thermoelectric cooling as a result of future electricity demand growth, competing demand for water resources, and new water demands from low-carbon generation sources.
- EPRI, working with DOE and others, has identified a \$40 million, 10-year research program focused on reducing the cost of existing cooling options and on developing new technology options and decision-support tools to reduce the demand for freshwater resources in the coming decades.

EPRI Participates in International Climate Meetings

John Novak attended the meetings of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol and the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, held in Bonn, Germany, on Aug. 10–15. During the meetings, Mr. Novak was involved in several other key discussions:

- **Briefing for Technology Transfer Umbrella Group.** One of the important topics at the meetings was technology transfer to developing countries, including cooperative RD&D. Delegates from the United States, Canada, and Australia asked Mr. Novak to provide a briefing on EPRI's approach to knowledge management and sharing (developed for carbon capture and storage projects). Twelve representatives from the United States, Australia, Norway, Canada, and Japan attended.
- **Meeting with the European Union.** Mr. Novak provided an update on climate activities in the United States, including the offsets provisions in H.R. 2454 and a description of the EPRI offsets workshops, to business representatives and the EU experts group on U.S. climate activities.
- **Meeting of the International Electricity Partnership (IEP).** The IEP, established last fall by CEOs from the international electricity associations, is developing a technology roadmap to reduce emissions from the electric power sector by 60–80% by 2050. EPRI is providing technical support to the IEP.
- **Meeting on IPCC Special Report on Renewables.** The Intergovernmental Panel on Climate Change (IPCC) is preparing a special report on renewables. International business groups met to continue planning for a workshop with the report's lead authors, so that business can provide input to the report. EPRI has agreed to participate in the workshop and to provide financial support.

New Supplemental Project Opportunities

For a complete list of all active Environment Supplemental Project Opportunities, click [here](#).

- [Pacific Gas & Electric Company WaveConnect™ Partnership \(This Is an EPRI Collaborative\)](#) (1020205)
- [Predicting Changes in Fish-Tissue Concentrations in Response to Changes in Mercury Loadings](#) (1020208)

New Marketing Communications

Program 42: Air Toxics Health and Risk Assessment

- [Measuring Mercury Chemistry in Power Plant Plumes](#), Issue Brief (1019612).

Program 50 : Manufactured Gas Plant Site Management

- [Manufactured Gas Plant Research](#), Fact Sheet (1019613)

Program 54: Fish Protection at Steam Electric Power Plants

- [EPRI and Omaha Public Power District Successfully Test New Fish Protection Technology](#), Success Story (1019594).

Program 60: EMF Health Assessment and Radio-Frequency Safety

- [Electric and Magnetic Fields \(EMF\) Information Packet 2009](#), Brochure (1019437)
- [Frequently Asked Questions About Electric and Magnetic Fields](#), Fact Sheet (1019448)
- [Electric and Magnetic Fields: Environmental Issues](#), Fact Sheet (1019449)

Upcoming Events

* denotes EPRI sponsored or cosponsored event

Environment Sector

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

Oct. 5–8, Boulder, CO. Contact: Marsha Grossman, (650) 855-8760, mgrossma@epri.com.

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

March 15–18, 2010, Orlando, FL. Contact: Marsha Grossman, (650) 855-8760, mgrossma@epri.com.

Air Quality

Annual Meeting of the American College of Epidemiology

Sept. 12–15, Silver Spring, MD. Contact: Sharan Campleman, (650) 855-2331, scampleman@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: Arnout Ter Schure, (650) 855-2281, aterschu@epri.com.

8th Annual Community Modeling and Analysis System (CMAS) Conference

Oct. 19–21, Chapel Hill, NC. Contact: Naresh Kumar, (650) 855-8758, nkumar@epri.com. More information is available at the [event website](#).

Air Quality VII Conference

Oct. 25–29, Arlington, VA. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com. More information is available at the [event website](#).

American Association for Aerosol Research 28th Annual Conference

Oct. 26–30, Minneapolis, MN. Contact: Stephanie Shaw, (650) 855-2353, sshaw@epri.com. More information is available at the [event website](#).

2009 National Ambient Air Monitoring Conference

Nov. 2–5, Nashville, TN. Contact: Stephanie Shaw, (650) 855-2353, sshaw@epri.com. More information is available at the [event website](#).

Society of Environmental Toxicology and Chemistry 30th Annual Meeting

Nov. 19–23, New Orleans, LA. Contact: Sharan Campleman, (650) 855-2331, scampleman@epri.com. More information is available at the [event website](#).

Society for Risk Analysis 2009 Annual Meeting

Dec. 6–9, Baltimore, MD. Contact: Sharan Campleman, (650) 855-2331, scampleman@epri.com. More information is available at the [event website](#).

American Geophysical Union 2009 Fall Meeting

Dec. 14–18, San Francisco, CA. Contact: Stephanie Shaw, (650) 855-2353, sshaw@epri.com. More information is available at the [event website](#).

Global Climate Change

9th Annual EPRI-IEA-IETA Workshop on Greenhouse Gas Emission Trading

Sept. 14–15, Paris, France. Contact: Adam Diamant, (510) 260-9105, adiamant@epri.com. More information is available at the [event website](#). Register for the workshop [here](#).

Land and Groundwater

**** Toxics Release Inventory for Power Plants LARK-TRIPP Workshop***

Sept. 15–16, Dallas, TX. Contact: Naomi Goodman, (650) 855-2193, ngoodman@epri.com. More information is available at the [event website](#).

**** Power Plant Toxics (PISCES) Database Training Webcast***

Sept. 23, 3:00 PM EDT. Contact: Naomi Goodman, (650) 855-2193, ngoodman@epri.com.

Air Quality VII Conference

Oct. 25–29, Arlington, VA. Contact: Leonard Levin, (650) 855-7929, llevin@epri.com. More information is available at the [event website](#).

*** *Agricultural Uses of FGD Gypsum***

Nov. 17–19, Indianapolis, IN. Contact: Ken Ladwig, (262) 754-2744, keladwig@epri.com. This workshop is jointly sponsored by EPRI, ACAA, USDA-ARS, EPA, and Southern Company. More information is available at the [event website](#).

*** *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. EPRI received 83 abstracts and has chosen the most interesting and technically innovative for platform sessions, with the remainder as poster sessions. Tabletop displays will also be included. Please register early since the symposium is likely to be overbooked. More information is available at the [event website](#).

T&D Environmental Issues

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 is available at the [event website](#).

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