

# CRESP UPDATE: SAVANNAH RIVER

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### **CRISP UPDATE: SAVANNAH RIVER**

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## **Ecological Hazard Identification Task Group**

The Ecological Hazard Identification Group is progressing in three major areas of research: bioindicators, ecological services, and restoration. In the area of bioindicators we are completing a risk analysis for hunters who might eat Mourning Doves shot near Par Pond compared to the doves shot in the hunting fields near Jackson and Barnwell. The Task Group completed the analysis of lead, cadmium, mercury and other heavy metals in the feathers, muscle and liver of Mourning Doves. We found that levels of metals in the doves collected from Par Pond were well below the levels that might cause any problems to the doves themselves. This project is conducted in conjunction with L. Brisbin and R. Kennamer from the Savannah River Ecology Laboratory (SREL).

There are three other projects in the bioindicators area. One project conducted with L. Brisbin and J. Stout of SREL examines the level of mercury contamination in tissues of another common game bird, Wood Ducks. Another project conducted with W. Gibbons from SREL is examining the level of heavy metal contamination in the eggs of Slider Turtles. The Task Group is conducting a project using the Index of Biotic Integrity (IBI) to assess the health of fish communities. This study is being conducted with G. Meffe and J. Snodgrass of SREL, and J. Karr of CRISP-West. Each of these projects is progressing nicely.

In the area of ecological services, the Task

Group has completed two surveys of local groups to determine the level of recreational use, general perceptions of environmental problems, and preferences for future land use at SRS. One survey targeted hunters and fishermen attending the Palmetto Sportmen's Classic. The second survey reflects the ideas of the general public interviewed at the Mayfest. This project in Columbia, South Carolina was done in collaboration with J. W. Gibbons at SREL. Data from the Palmetto Sportsmen's Classic was presented to CDC/SRS Health Effects Subcommittee, the Risk Management and Future Use Subcommittee of the SRS Citizens Advisory Board, and at the scientific meeting of the Society for Risk Analysis in New Orleans.

The Task Group conducted a pilot survey with fisherman along the Savannah River. The revised and final survey was conducted with fishermen in the Spring. J. Sanchez from CRISP-East is just finishing her analysis of information on hunting and fishing patterns at SRS. The information is derived from people who signed on to the SRS complex to hunt during the 1995 hunting season.

In the area of restoration ecology, the Task Group is just finishing a pilot study conducted in collaboration with R. Sharitz and G. Wiens of SRS on growth rates of three common species of plants that grow locally. Seedlings are planted in fly ash soil and in another type of common soil from SRS and their growth rates are compared. The common plants used are Blue Stem Grass, Waxmyrtle, and Field Goldenrod. The results of these experiments will determine the usefulness of these specific plants as bioindicators of soil degradation, give insight into the ability to restore DOE degraded land to natural habitat, and provide practical data on some plants that actually occur in these habitats at SRS.

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## Exposure Assessment Task Group

This Task Group continues to work on various aspects of the development and application to SRS of a computer-based Exposure Dose Modeling and Analysis System. A paper which describes this system was published in the journal, *Environmental Science and Technology*, in January 1997. This system is an outcome of an effort to integrate environmental models with biological models of uptake and dose. The Task Group's current work on this system includes, among others, the following three areas:

One area is the development of methods for using the Geographic Information System (GIS) technology to link groundwater models with exposure models. An advantage of this effort is that it will allow predicted groundwater contaminant plumes to be visualized in conjunction with other geographically-based information.

A second area of work currently conducted by the Exposure Assessment Task Group is the evaluation of computer-based models which describe the potential ways in which atmospheric particulate matter is transported. This evaluation will help identify improvements that may be needed in particulate transport models. Together with this effort, the Task Group is working on the development of a model to describe the deposition of particulates in the lung, which is based upon fundamental physical and chemical principles. One of the main reasons the Task Group is evaluating and developing particulate transport models is the issue of fugitive dust. This issue addresses the

potential for the on and off-site transport of contaminated particles resuspended by wind.

A third area of work is the joint effort with the Ecological Hazard Identification Task Group to analyze the relationship between Cesium levels in water, sediments, and topsoil, with levels of Cesium observed in fish and birds.

## Occupational Health & Safety Task Group

Recent activities of the Occupational Health and Safety Task Group have focused mainly on examining the potential risks to subcontractor workers engaged in various aspects of environmental management at SRS. DOE and Westinghouse employees are served by well-equipped and well-trained professionals in the areas of radiation protection, industrial hygiene, and occupational medicine, but subcontract workers may not receive the same level of services. The Occupational Safety and Health Task Group is investigating whether the same level of services will be available to the employees of subcontractors. Since DOE will rely increasingly on subcontractors rather than permanent workers, this trend increases the number of workers who may have inadequate protection.

The Task Group will be working with occupational safety and health professionals at SRS and with the local building trades to determine the best approaches for assuring that the workforce at Savannah River is well-informed and well-protected. One topic under discussion is the need for establishing a registry for all workers engaged in environmental management activities on SRS. The registry will allow the DOE to ascertain that workers have the training, protection, and surveillance appropriate for the kinds of jobs they will

be doing and the kinds of hazards they may encounter.

The Task Group has met with the Augusta Building Trades Council and will continue to communicate with its members. This Council represents one of the Task Group's major stakeholders. Elizabeth Samaras from CRESP-East continues to work on innovative approaches to improving worker-based hazard identification and for tracking the level of worker training.

## Social, Land Use, Demographic, Geographic and Economic Task Group

The Social, Land Use, Demographic, Geographic and Economic Task Group of CRESP-East continues progress with its major projects. The Task Group has received a multi-regional economic forecasting model. This computer-based model calculates the economic impacts of potential changes in the budget of the Department of Energy (DOE) on the local economy. This forecasting model can examine economic impacts of current DOE budgets, and estimate impacts on future changes in the DOE budget on many economic measures including employment and income. The Task Group will immediately test the ability of the equations in the model to predict these economic impacts based upon past and future modest changes in the DOE budget.

The second project, a survey of land use planners near major DOE sites, recently has finished the data collection phase. The Task Group plans to analyze and have results available in the near future. A third study is to survey industrial growth in the regions surrounding five major DOE sites. This part of the study will begin with a survey near the Savannah River Site.

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The Task Group also has initiated a FUSRAP study. In this project, specific sites from the Formerly Utilized Sites Remedial Action Program (FUSRAP) will be identified for land use, economic, and environment studies. There is a total of 46 FUSRAP sites, and background data from all locations are being collected to determine which specific sites will be studied intensively.

## Stakeholder Communication Task Group

In October, the Stakeholder Communication Task Group initiated a longitudinal descriptive study of factors related to public education and outreach at SRS. This study represents a collaborative research effort between CRESP, the University of South Carolina School of Public Health and the Georgia Southern University Center for Rural Health and Research. All of the telephone interviews have been completed and preliminary data analysis will be available within the next month.

In November, the Stakeholder Communication Task Group from CRESP-East hosted a conference at the Environmental and Occupational Health Sciences Institute entitled, "Communicating Risk in a Changing World." The meeting was co-chaired by Barry Johnson, Assistant Administrator of the Agency for Toxic Substances and Disease Registry (ATSDR), Bernard Goldstein, Director of EOHSI, and Principal Investigator of CRESP, and Maria Pavlova of the DOE Office of Occupational Medicine and Medical Surveillance. Approximately 70 experts in the field of risk communication convened to discuss state-of-the-art risk communication. Stakeholder involvement as an essential component in developing communication strategies was a theme throughout many of the discussions. Proceedings from the conference will be available shortly.

Dr. Lynn Waishwell, Director of Communication and Outreach of CRESP-East, is coordinating a needs assessment of environmental education for the Environmental Education Association of South Carolina (EEASC) in conjunction with several key South Carolina environmental educators of EEASC. She will additionally conduct a small group component to the needs assessment at the annual EEASC meeting in March.

## CRESP-West

Stuart Harris of the Consolidated Tribes of the Umatilla Indian Reservation (CTUIR) spoke at the November CRESP-West meeting about his Native American Subsistence Scenario and Tribal Risk Assessment Model (NASS). This model was designed to address challenges to current risk evaluation tools in incorporating traditional tribal values and lifestyles in analysis. By using the NASS, risk analysts are able to modify existing tools to fit tribal values. Harris emphasized that using the appropriate tool will maximize both protection of the tribe and tribal benefits.

The Data Characterization, Analysis and Statistics (DCAS) Task Group of CRESP-West is continuing work on their project: World Wide Web Tools for Collaborative Design and Development of Geographical Imaging System (GIS) Databases. While there are many datasets describing DOE sites, the DCAS Task Group realized that there was no uniform way to describe the datasets themselves. Summaries of data are now being compiled to efficiently index and access these datasets. The DCAS Task Group hope is to do the legwork on organizing large sets of data, and then make them available both to CRESP and to the world via the Internet.

The 1997 American Association for the Advancement of Science (AAAS) Annual Meeting and Science Innovation Exposition is scheduled for February

13-18, 1997, in Seattle, Washington. CRESP-West is sponsoring a symposium, organized by Elaine Faustman and Richard Fenske, which will be held on Friday, February 14, from 2:30 - 5:30 pm. The title of this session is Risk-Influenced Decision-making at DOE Sites: Time for Holistic Thinking?

The Stakeholder Outreach Task Group hosted an informal working meeting of Hanford community Stakeholders and regulators on January 15, 1997 at the University of Washington. The meeting was designed to share information and identify potential areas for increased collaboration. A more detailed summary of this meeting will be included in a future CRESP UPDATE.

## Other Notes

### EOHSI Seminars

During November and December, several invited speakers presented seminars on topics related to environmental risk.

On November 13, Dr. Georgia Johnson, Executive Director, Environmental Justice Program, USDOE, presented a seminar entitled, "The Challenge of Integrating Environmental Justice with Community and Health Priorities."

On November 15, Dr. Frank Parker, Professor, Department of Civil and Environmental Engineering, Vanderbilt University presented a seminar entitled, "Remediating Cheliabinsk: The Most Radioactively Contaminated Place on Earth."

Dr. Curtis C. Travis, President, Informatica International, Knoxville, Tennessee, presented a seminar entitled, "Environmental Restoration: A Global Perspective," on December 17, 1996.

### CRESP Presentations

A joint meeting of the Society for Risk Analysis and the International Society of

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Exposure Assessment held in New Orleans in December, 1996 included fourteen presentations from CRESP-sponsored research. The presentations reflected research activities from many of the Task Groups and CRESP management personnel.

### New CRESP Publication

CRESP anticipates publication by February 1 of a second version of its November, 1996 draft document "Improving DOE/EM Risk Information: Content and Format." This 65-page draft was initially produced as a product of two workshops conducted by CRESP in October 1996 to determine whether the three primary risk categories (public health, worker and environment) used by Environmental Management in its risk evaluations could be more clearly and usefully defined. The CRESP effort was requested by Alvin L. Alm, Assistant Secretary for Environmental Management, in a September, 1996 letter to CRESP Science Coordinator, John A. Moore. It sought to build on two earlier reviews of EM risk processes (the Tier 2 and Tier 3 reviews requested by the Environmental Management Advisory Board - see the September, 1996 Savannah River CRESP UPDATE) used in the formulation of the 1998 EM budget. The purpose is both to improve EM budget and planning processes and make them more available to stakeholder input. The report emphasizes that in assessing risk, the effects of risk reduction activity on all three types of risk (public health, site personnel and ecology) must be understood. Hence, it is important that information for all three categories of risk be obtained for all three phases of activity (before, during and after the proposed activity) and that all be understood and effectively communicated. The report suggests that, particularly in respect of

ecological and worker risks, the types of risks that exist before a risk mitigation activity begins are often quite different than those which occur during the activity or remain after it is completed. The report also proposes specific changes to the risk evaluation framework currently used by the Department. It urges that examples be used to make the meanings of risk framework categories clear to all who use or review them. Finally, it strongly recommends that the Department pilot risk evaluation processes with both involved personnel and stakeholders to assure their clarity. Because CRESP, like the Department, views the risk evaluation process as an interactive one, it sought stakeholder input in response to this draft document and welcomes comment on the new version. Copies of the revised document should be available from CRESP offices after February 1.

### CRESP

The Consortium for Risk Evaluation with Stakeholder Participation (CRESP) is a university-based national organization created specifically to develop a credible strategy for providing information needed for risk-based cleanup of complex contaminated environments, especially those for which the Department of Energy is responsible. The Consortium specifically responds to the request by the Department of Energy and the National Research Council for the creation of an independent institutional mechanism capable of integrating risk evaluation work. As a result of a national competition, a five-year cooperative agreement was awarded to CRESP in March of 1995. With the agreement of Citizens Advisory Board members, "CRESP UPDATE" is one approach that we are using to share research plans and programs with SRS stakeholders.

### CRESP UPDATE

If you would like to be added to the mailing list for this publication, please send you name, address and telephone number to:

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