Environmental Policy Analysis and Planning

Policy analysis and planning programs of the Argonne Environmental Science Division (EVS) integrate science, engineering, and law in studies that support development and implementation of environmental policy by federal agencies. These studies include evaluating regulatory, legislative, and compliance issues; preparing and implementing guidance and training programs; designing and implementing public involvement strategies; and conducting pilot studies.

PROBLEM/OPPORTUNITY

The EVS staff integrate science, engineering, and law for application in a wide range of federal, state, and international policy development and implementation issues related to energy and the environment. These data and analyses provide an objective, scientific basis for decisions related to the content of new energy and environmental policy concepts, the development of cost-effective regulatory requirements, the acceptance and use of new technology, and the development of compliance alternatives.

POLICY DEVELOPMENT

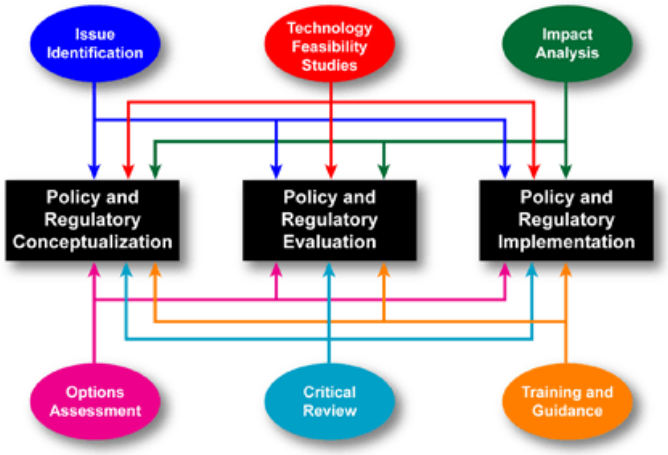
The technical and economic basis for the creation of updated or new energy and environmental policy is investigated. Typical examples of recent studies and related activities include:

Institutional Barriers to Natural Gas Development

Restrictions on access to gas fields and constraints to drilling, production, and transportation that apply to both federal and nonfederal lands — onshore and offshore — were evaluated by EVS staff. Existing and proposed regulations, permitting procedures, and agency processes were evaluated and found to significantly impede increased natural gas production. Results of the evaluation provide the basis for developing measures to mitigate the constraints.

Potential Nanotechnology ES&H Concerns

EVS staff are evaluating the policy options for addressing potential environment, safety, and health (ES&H) risks from nanotechnology. This includes an analysis of legislative and regulatory development internationally and domestically as well as development of awareness and communication tools for sharing information regarding ES&H policy issues with nanotechnology researchers and policy analysts.



ENVIRONMENTAL REQUIREMENTS

The technical, legal, and policy impacts of environmental actions, including national legislation, federal and state regulation, and executive and federal agency orders, are evaluated. Results often form the basis for sponsor comments on regulatory rulemakings for internal sponsor policy and for open debate on the intent and approach of requirements. Activities also include the development of guidance and training for field organizations.

Examples of recent evaluation topics include regulations for:

Coal Combustion Waste

EVS staff recently completed a study that evaluated the impacts of changes in management practices on waste generation and control for coal combustion wastes (CCWs) in landfills and surface impoundments over the past decade. The EVS investigations identified improvements during this period in generation and control as a result of new industrial management practices, tightening of state regulatory requirements for CCW management, and development of a more sound scientific basis for granting regulatory variances. The study will be used as part of the baseline for a reexamination by the EPA of existing CCW regulatory requirements.

Produced Water from Oil, Gas, and Coal Bed Methane Production

EVS staff have developed a reputation as a center of excellence regarding U.S. and international regulation of produced water. Staff have conducted analyses used in numerous EPA and state rulemakings and have developed information and decision tools related to offshore and onshore management of produced water.

Additional recent EVS evaluations have included ES&H regulatory requirements for:

- Oil and gas pipelines,
- Land disposal restrictions for chemical waste, and
- Oil refineries.

TECHNOLOGY EVALUATION

The EVS assesses the regulatory, economic, and environmental feasibility of innovative environmental and energy technologies. Results are disseminated to decision makers in industry and government and to other stakeholders and provide the basis for regulatory and policy change. Recent examples include:

Produced Water Management Technology

EVS developed the innovative Produced Water Management Information System (PWMIS) website. PWMIS provides an interactive structure and data necessary to evaluate technology and regulatory options for managing produced water.

Use of Impaired Waters

EVS has conducted several studies to evaluate the technical, regulatory, and economic feasibility of using alternate sources of water for cooling tower makeup at power plants. EVS first studied the use of water from underground coal mine pools, and more recently has developed a database of power plants that are using reclaimed water (treated municipal wastewater) for cooling.

FUTURE

Many of the future directions and opportunities for the EVS Policy Area are expected to come from an ongoing EVS strategic planning initiative in nuclear, non-nuclear, and renewable energy development and production. The search for new energy resources, better efficiency in the development and use of energy and related resources, and responsible management of energy by-products will drive policy development and implementation in the coming years.

A key policy program on which EVS expects to continue focusing is the Energy-Water Nexus Initiative. EVS is leading the collaboration of Argonne with scientists from other DOE national laboratories in implementing this initiative, which has the objective of examining the interdependent conflicts that threaten the availability of affordable water and energy supplies in the United States. Energy withdraws and consumes significant amounts of water in the United States with thermoelectric generation alone accounting for 39% of total U.S. water withdrawals. The Energy-Water Nexus Team is operating on the premise that science and engineering R&D, including assessment and basic science and technology innovation and transfer, can help mitigate conflicts arising from energy/water interdependencies.

Other major energy/environmental issues that are expected to involve EVS policy analysis and planning include:

- Advanced technology for alternative liquid fuels,
- Electricity generation from renewable sources,
- Alternate sources for petroleum, such as oil shale and tar sands, and
- Control of energy-related releases of carbon to the environment.