

HELPING LEGISLATORS DEAL WITH TECHNICAL ISSUES: AN ENGINEER'S ROLE

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ABSTRACT

When the Ohio General Assembly considered a bill to establish a low-level radioactive waste disposal facility for the Midwest Compact, a nuclear engineer from The Ohio State University was the first person to testify at the hearing on the bill before the House Committee on Energy and the Environment. The Committee Chairman asked the engineer to give a seminar on radiation and low-level radioactive waste (LLRW) for the committee members before they began hearing from the bill's proponents and opponents. This was one of many ways that faculty members participating in a Statewide LLRW Education Project were able to provide information to Ohio's citizens and their elected officials as they dealt with issues related to LLRW.

This paper provides some background information on LLRW, outlines the Statewide LLRW Education Project, discusses how the project team earned the trust of many of Ohio's citizens and elected officials, and describes methods by which the project supported lawmakers as they dealt with issues related to low-level radioactive waste.

BACKGROUND

When commercial use of nuclear power began in the late 1950s, very little commercial low-level radioactive waste was being generated. The Atomic Energy Commission (AEC), a predecessor of the Department of Energy (DOE), generated a great deal of low-level radioactive waste (LLRW) in its weapons program and could easily dispose of the commercial LLRW along with its own. However, by the early 1960s, commercial use of radioactive materials, including those used in nuclear power plants, had increased, and disposal facilities for commercial LLRW had to be built. In all, six national disposal facilities were built. By the late 1970s, only three remained open. They were in the states of Washington, Nevada, and South Carolina. In 1979, the governors to those states claimed that it was unfair for commercial LLRW to be buried only in their states when people in all states benefitted from the use of radioactive materials. Those governors thought that each state should be responsible for its own commercial LLRW. The National Governors' Association agreed with them and made their position known to the U.S. Congress.

The U.S. Congress responded by passing the Low-Level Radioactive Waste Policy Act of 1980. This legislation made each state responsible for disposal of its own LLRW. The law said states could form Compacts, i.e. groups of states that would work together to find ways to dispose of commercial LLRW. To encourage compacts, the law specified that if a state belonging to a compact built a commercial LLRW disposal facility, only other states in that compact could send waste to the disposal facility. If an unaffiliated state, that is a state not in a compact, built a disposal facility, any state could send LLRW to it. The law called for compacts to have disposal facilities operating by 1986.

The LLRW Policy Act of 1980 put state legislators in the position of dealing with a technical issue most of them knew little about. In addition, issues related to the environment in general, and to radioactive materials in particular, were becoming more controversial, and the discussions surrounding them, more emotional. Disposal of commercial LLRW was a difficult issue for most State Legislatures to resolve. by 1985 most states had joined a compact, but selecting a site for a disposal facility proved to be more difficult. In fact, no sites had been selected, and clearly, no new disposal facilities would be operating by 1986. Therefore, in 1985, the U.S. Congress passed the Low-Level Radioactive Waste Policy Amendments Act which extended the deadline for building new commercial low-level radioactive waste disposal facilities and established intermediate milestones with penalties for compacts that did not meet those milestones.

As of 1996, no new commercial low-level radioactive waste disposal facilities had been built. However, most compacts had agreed on a plan for dealing with commercial low-level radioactive waste, and legislatures of member states had enacted those plans as state statutes. Ohio was one such state.

Ohio is a member of the Midwest Compact. Other members are Indiana, Iowa, Minnesota, Missouri, and Wisconsin. When the Midwest Compact was formed in 1984, Michigan was also a member. All of the, then seven, state legislatures enacted the Midwest Compact Agreement into state statute. Among the articles of the agreement was one stipulating that responsibility for hosting the disposal facility would rotate among the member states with each state operating a disposal site for 20 years. Based on the amount of LLRW each state was projected to generate in the first 20 years and on minimization of the transportation distances, Michigan was selected to be the first host state, and Ohio was selected as the first alternate.

By 1991, Michigan still had not selected a site for the first disposal facility. Because milestones established in the 1985 federal legislation had been missed, all generators of LLRW in the Midwest Compact were paying surcharges to dispose of their LLRW at national disposal facilities. At its July 1991 meeting, the Midwest Compact Commission voted to revoke Michigan's membership in the Midwest Compact. Ohio became the host state. The job of defining a process for finding a disposal site and establishing a state agency to oversee siting, construction, operation, and long-term care of the disposal facility fell to Ohio's state government.

DEVELOPING THE LLRW EDUCATION PROGRAM

When Ohio became host state for the Midwest Compact's commercial LLRW disposal facility in 1991, a small group of faculty members at The Ohio State University (OSU) recognized that there would eventually be a heated discussion of issues related to LLRW in Ohio. The faculty members believed that the people of Ohio and their elected officials would want a source of accurate, unbiased, easily accessible, and easily understood information on LLRW. The team of faculty from OSU's Nuclear Engineering Program and OSU Extension* wrote a proposal to develop a Statewide LLRW Education Program and sought support. (OSU Extension is the outreach arm of The Ohio State University. With offices in each of Ohio's 88 counties, OSU Extension is the link that makes expertise and information on the University campus available to all Ohioans.) In April 1992, the Midwest Compact Commission voted to fund the OSU proposal.

The Statewide Education Program had two components: (1) development of educational materials, and (2) distribution of those materials. The first materials developed were 27 fact sheets on radiation and LLRW. Each fact sheet consisted of one or two sheets of paper and addressed one question related to LLRW. The fact sheets presented detailed information but were written for people who had no technical or legal training. Each fact sheet was reviewed by more than 20 people. Some reviewers were experts on the topic being covered, but most were not. The reviewers included environmental activists, educators, elected officials, and members of the general public with a variety of backgrounds and opinions on the use of nuclear materials. Comments of every reviewer were carefully considered, and the fact sheets were revised numerous times with the goals of ensuring accuracy and removing bias. The final products were widely regarded as having met those goals. Using the information and illustrations from the fact sheets, the Project Team developed additional educational materials including table-top exhibits to be used at civic meetings, mall shows, or fairs, a slide/tape program, a video, overhead transparencies for live presentations on LLRW, and large exhibits which were used at the Ohio State Fair and other outside events.

Fact sheets and many other educational materials were distributed to the public through OSU Extension, a well-established and highly respected organization. Extension Agents in each county carried sets of the fact sheets to each County Commissioner and to local libraries, health departments, and newspapers. Availability of sets of fact sheets through the County Extension Office was advertised. In addition, County Extension Agents attended day-long in service sessions in which they learned about low-level radioactive waste and about dealing with controversial and highly emotional issues. Finally, County Extension Agents responded to requests for information from local elected officials, civic organizations, and interested citizens by arranging public meetings at which a nuclear engineering faculty member could make a presentation on LLRW and answer questions.

From the main OSU campus, members of the LLRW Education Project Team distributed educational materials to university faculty, high school science and social studies teachers,

health professionals, environmental groups, reporters, and civic groups. Hot lines were set up to provide quick answers to questions from the press and the public. The nuclear engineer who led the faculty team responded to requests from across the state to present information on LLRW and answer questions. A significant amount of time was spent providing information to state government agencies and to the state legislature.

PROVIDING INFORMATION FOR STATE LEGISLATORS AND STATE AGENCIES

When the fact sheets were completed in September 1993, the LLRW Education Project Leader was invited to speak at briefings for state legislators and their aides. She was asked to outline the process through which the educational materials were developed and describe how the legislators' constituents could get access to those materials. A set of fact sheets was delivered to each legislator's office along with a cover letter encouraging the legislator to make photocopies of the fact sheets if that might help to answer a constituent's question.

Legislators' staff members deal with many of the constituents' questions and often need to be aware of technical details related to issues being considered by the legislature. The nuclear engineer leading the LLRW Education Project was invited to present a half-day seminar on LLRW for members of legislators' staffs. Topics covered in that seminar included the basic science related to radiation, a description of low-level radioactive waste and its sources, laws and regulations governing LLRW, and alternatives available for treating, transporting, and disposing of that waste.

Several state agencies expected to be involved in carrying out or regulating the disposal of LLRW. They included the Ohio Department of Health, the Ohio Environmental Protection Agency, the Ohio Department of Natural Resources, and the Ohio Department of Transportation. The liaisons from these departments to the Ohio Legislature anticipated that they might be asked to provide information to the Legislature regarding their departments' involvement with the management of LLRW. The LLRW Education Project Leader was asked to present a half-day seminar for selected employees of these state agencies to provide them with the background information they would need to begin preparing to respond to legislators' requests.

In late 1994, legislation was introduced in the Ohio General Assembly to define the process for the siting, construction, operation and long-term care of a Midwest Compact LLRW disposal facility and to establish a state agency to oversee that process. Nuclear engineers participating in the LLRW Education Project were able to offer assistance to the legislature in three ways as they considered this bill. First the engineers continued to make presentations to the public and to provide technical information for reporters as they prepared their stories. Second, one legislator held a town meeting in his district to provide information to his constituents and to learn their thoughts on the topic. He structured his town meeting in four parts: (1) basic scientific and historical information on LLRW presented by a nuclear engineer from the LLRW Education Program, (2) comments by a proponent of the legislation, (3) comments

from an opponent of the legislation, and (4) questions and comments from the audience. He thought that it was important for the first speaker to be one who could provide the attendees with a basic understanding of the issues involved and one who would be perceived by nearly all as credible and unbiased.

The third way in which a nuclear engineer from the LLRW Education Project could be of help to the legislature was to testify at hearings on the legislation. When the House Committee on Energy and the Environment began its hearings on the LLRW legislation, the Committee Chairman asked the nuclear engineer to be the first to testify. However, the testimony was not to offer comments in favor of or opposed to the legislation. The Chairman asked the engineer to present a seminar on radiation, sources and characteristics of LLRW, and options currently available for managing that waste. The seminar was designed to provide Committee members with background information that might be useful to them as they weighed testimony on the bill. Two months into the hearings, the Chairman invited the engineer back to provide "a refresher course" and to answer questions that had arisen during the hearings.

CONCLUDING REMARKS

The LLRW legislation discussed in this paper was passed by the Ohio Legislature and signed by the Governor in the summer of 1995. The vote on the legislation was almost strictly along party lines, and the outcome certainly cannot be attributed to the work of the LLRW Education Project. It was likely due to the skill and perseverance of those who wrote the bill and guided it through the legislative process. However, the work of the LLRW Education Project may well have contributed to a better understanding of the technical issues and to a more rational and focused discussion of those issues.

Legislators usually do not have scientific or technical backgrounds, and neither do many of their constituents. Yet legislators are being asked to deal with an increasing number of technical issues. Many of these issues are highly controversial, and debates on them can be quite emotional. Decisions may be made on the basis of emotions unless knowledgeable people are willing to step forward and present sound information. Even then, good information may be ignored unless it is presented in the right way and at the right time.

Some observations made by engineers working on the LLRW Education Project may be of use to those who would like to contribute to the discussions of other technical issues. They include:

1. Prepare written information early - before the debate heats up and people have taken positions that they cannot abandon without appearing to back down. There is time to do this. People working in a technical area usually know what issues will arise well

before the public begins debating them. Members of the OSU team began work on a proposal for a LLRW Education Program in the summer of 1991 when Ohio became the host state for the Midwest Compact. In the spring of 1992, the Midwest Compact Commission recognized the importance of the program and funded the work. (It is not always easy to find a farsighted funding agency.) By the time that LLRW legislation was being discussed, in 1995, the educational materials had been available for nearly two years.

2. Listen carefully to all sides in the debate and respect people with all views, but don't try to support a particular position. Rather, work hard to present complete, accurate, research-based, unbiased information. Be a credible source to which anyone may turn for sound information. This is more difficult than it sounds. If you are participating in a discussion of a highly controversial issue, everyone assumes that you support one "side" or the other. It can take several years to establish your team as being truly unbiased. Two ways to avoid being viewed as supporting a particular position are: (1) do not participate in meetings with a "debate" format and (2) when answering questions, watch carefully for bias in the questions and address that before answering the question.
3. Remember that the tone of the information can be as important as the content. To be credible, the information must be easy to understand but not watered down, authoritative but not condescending, and professional looking but not slick. Most people are quite capable of understanding scientific and technical concepts, and in fact, they appear to be interested in understanding "how things work." However, most members of the public are not familiar with technical jargon, and they are almost certainly not comfortable with mathematical equations. When discussing a technical topic with the general public, be sure to include all of the relevant information in a way that allows people to understand the material and use it in reaching their own conclusions.

Most people with technical training have little experience and no instruction in presenting technical topics to the public. Yet that skill is becoming increasingly important as introduction of new technologies or even new industrial complexes using proven technologies requires permits by regulatory authorities or approval by elected officials and the accompanying public hearings. Students in technical fields need to develop an understanding of the public's role in approving the use of technology, an appreciation of their concerns, and the skills necessary to communicate technical information to the public. There is not room in most engineering curricula for a course devoted to technical communications. However, integrating this type of communication into a required English course or into existing engineering courses would be of great benefit to the students.

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