

## LEGISLATIVE IMPACTS ON SAVANNAH RIVER WASTE MANAGEMENT OPERATIONS

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### ABSTRACT

Today everyone has to be prepared to meet the challenges presented by new legislative actions. The Savannah River Plant is also impacted by this legislation as the exclusive nature of the Atomic Energy Act slowly erodes. This paper discusses the management of three types of radioactive waste from the production of defense nuclear materials and the impacts of major environmental legislation on the handling of these wastes. The paper will briefly discuss the major environmental statutes, cover the statutes impact on the technical processes and, finally, consider the nontechnical impact of the statutes.

### INTRODUCTION

Although many statutes impact closure of the defense nuclear fuel cycle, this paper is concentrating on major environmental statutes that affect this closure. The Atomic Energy Act of 1954 (AEA) (1) was the first environmental statute to affect waste management at nuclear facilities. The Act requires all operations at a nuclear facility to be managed in a manner that protects the health and safety of the public. (2) The Act left the decisions on how to best achieve those nebulous goals in the case of waste management at defense nuclear materials production facilities to the Department of Energy (DOE) and its predecessors. Since the passage of the AEA, many other environmental statutes have been passed and applied to defense nuclear facilities. These environmental statutes are restrictive in nature rather than incentive statutes. They set limits and conditions on releases to the environment. Failure to meet these conditions or limits results in penalties. Also, the regulations implementing these statutes often fail to recognize the unique problems of handling radioactive wastes.

### THE MAJOR ENVIRONMENTAL LAWS

The National Environmental Policy Act of 1970 (NEPA) (3) is recognized as the first major environmental statute. The Act requires consideration of the effects on the environment before making a decision. NEPA does not require the environmentally preferred alternative to be selected, only that environmental consequences are considered before acting. The other major environmental laws affecting closing the fuel cycle are: the Clean Air Act (CAA), (4) the Clean Water Act (CWA), (5) and the Resource Conservation and Recovery Act (RCRA). (6) These statutes do not directly regulate radionuclides at DOE facilities, except for the CAA under which EPA finally set limits in 1985. (7) However, the statutes do control nonradioactive wastes associated with the fuel cycle.

In 1972 Congress enacted the Federal Water Pollution Control Act, which contained the basic framework for water pollution control. In 1977 the act was significantly modified and renamed the Clean Water Act. The CWA sets limits on the amounts of

pollutants that can be discharged to surface streams. This is accomplished through a permitting process known as the National Pollution Discharge Elimination System.

The CAA passed in 1963 and amended many times, among other things, sets up limits on pollutants that can be discharged into the air. This is also handled by a permitting process. Although enacted prior to NEPA, it did not have "teeth" until amended in 1970.

The last and, right now, most troublesome of the major environmental statutes affecting closure of the fuel cycle is RCRA. This act was passed in 1976 with major amendments in 1984. This act affects the disposal of wastes and goes beyond just limiting disposal to also requiring cleanup of wastes sites and permitting of "hazardous" waste storage. Potentially, this could be the most expensive environmental statute as well as the most difficult to comply with in closing the fuel cycle.

### PERMIT ISSUING AUTHORITY

The authority to issue permits under these statutes has most often been delegated from the Environmental Protection Agency (EPA) to the states, with EPA retaining oversight authority. This has led to inconsistent standards because a state can make their requirements more restrictive than the EPA Program. In South Carolina, the Department of Health and Environmental Control, which has been delegated authority under RCRA, has made waste oil a hazardous waste, even though EPA does not consider waste oil to be a hazardous waste. This has to confusion in answering EPA inquiries on designation of hazardous waste sites and the listing of hazardous wastes disposed of in those sites.

### RADIOACTIVE WASTES

Closing the Defense Nuclear Fuel Cycle at a defense nuclear materials production facility must address the storage and disposal of the three main types of radioactive waste from the fuel cycle:

1. High Level Liquid Wastes (HLLW)
2. Low Level Radioactive Wastes (LLRW)
3. Transuranic Wastes (TRU)

The rest of the paper will look at how the major environmental statutes have affected the decisions affecting these wastes.

#### HIGH LEVEL LIQUID WASTES

NEPA first impacted the HLLW stored at the Savannah River Plant (SRP) when an Environmental Impact Statement (EIS) was completed in 1977. (8) This EIS considered the impact on the environment of high level waste management practices. In 1982 another EIS resulted in the Record of Decision, (9) wherein the Defense Waste Processing Facility (DWPF) was selected as the best alternative for treating the HLLW to place it in a final form for ultimate disposal. Part of the problem in doing an EIS early in the decision-making process is that, many times, the environmental data on new or innovative ideas are not well established. The writers of the EIS must make worst-case assumptions to make sure the impacts of a project are bounded in the EIS. If the environmental impacts are not bounded in an EIS then, at a later date, the NEPA process will have to be reopened by amending the EIS. This reopens the whole decision-making process. Unfortunately, by bounding the environmental impacts, the worst-case analysis is usually unappealing and creates controversy even though those impacts may never be approached when the project is completed and operating.

After the EIS, the DWPF project managers then considered permitting under the various environmental statutes. In South Carolina, the state has been granted permitting authority under CWA, CAA, and RCRA. (10) Permitting under these statutes requires construction approval as well as operating approval. (11)

In an innovative project such as the DWPF, real data on emissions such as air emissions can only be estimated. This resulted in submitting enormous amounts of data to the regulators to assure them that the projected emissions are supported by the data before they authorize construction approval. Simultaneously, any discharges of water had to be considered under the NPDES portion of the CWA. Over 40 various permits were obtained for the project without considering radionuclide emissions. Recently, the limitations for radionuclides under the CAA have required a permit that is issued by EPA because the authority for radionuclides has not been delegated to the state. This additional requirement has resulted in a Federal Facility Compliance Agreement in order to allow the project to proceed in a timely manner while complying with the EPA requirements for data and data analysis.

RCRA also entered into the DWPF environmental decision making because the process will result in a discharge of solid waste that will not go to the projected underground repository. The wasteform has been shown to be nonhazardous, but the disposal was required to be permitted under RCRA as an industrial waste. The requirements for this type of disposal are much less restrictive than if the wasteform were hazardous. The wasteform will contain minute quantities of radioactivity. Because DOE does not have a de minimus level for radioactivity, this could be considered permitting of a LLRW disposal site. This phase of the project is the only one where a permit-

ting requirement has changed the original project. In all of the other phases, permitting was just a matter of getting approval for an already designed feature, but permitting of this discharge resulted in a design change for the disposal facility. Originally, the discharge was going to be combined with concrete and flyash and disposed of in engineered, unlined trenches. As a result of permitting, the discharge will still be combined with concrete and flyash, but will be disposed of in concrete vaults.

#### LOW LEVEL RADIOACTIVE WASTES

Another wasteform that must be handled is LLRW. The selection of disposal sites and their construction must be considered under NEPA. An EIS is currently being prepared at SRP to support selection of a new disposal site and the method of disposal of the wasteform. Depending upon the disposal method selected for this type of waste, CAA, CWA, or RCRA permits may need to be obtained prior to construction of the disposal site. The waste may have to be segregated to separate out any hazardous components and to restrict the size of a permitted hazardous waste disposal facility. Still, a wasteform that is nonhazardous but does contain LLRW may need to be placed in a permitted industrial waste disposal site.

The active LLRW burial ground (LLRWBG) at SRP has undergone substantial operational changes as a result of RCRA. Only LLRW that does not contain a potential hazardous waste is currently disposed of. All other LLRW is stored aboveground in RCRA-permitted storage sites.

#### TRANSURANIC WASTES

TRU waste also presents environmental problems. Although the Waste Isolation Pilot Project (WIPP) is exempt from complying with the requirements of RCRA, (12) it is not clear whether this exemption extends to the storage or processing of the waste prior to shipping the waste to WIPP. It is clear that NEPA procedures must be fulfilled for building facilities to package the material. The facilities needed for processing the waste for shipping will have to consider whether CAA or CWA permits are necessary and incorporate required permits into the project schedules.

#### NONTECHNICAL ISSUES

Despite the technical problems presented by these environmental statutes, there are two other problems that do not involve the technical issues. These two problems may prove to be more troublesome to handling the waste than the technical challenges.

One of the main nontechnical stumbling blocks is time. The EIS process may take two or more years to complete. Permits also may take two or more years. Fortunately, the permits can be obtained concurrently, but they must still be figured into the project schedules. However, it is difficult, if not impossible, to start the permitting process before completion of the NEPA process. One of the requirements of NEPA is that action cannot be taken while the NEPA process is pending that would foreclose an option being considered under NEPA. (13) Starting the permitting process while processing a NEPA action could be considered selecting an option prior to the completion of NEPA, which would have the effect of foreclosing valid consideration of the other options.

The other nontechnical stumbling block is "citizen lawsuits". (14) Although NEPA does not specifically address citizen lawsuits, citizen's groups have successfully delayed or stopped projects with lawsuits alleging noncompliance with NEPA. The other major environmental statutes considered here do allow for citizen lawsuits for noncompliance with the statutes. These lawsuits can be very time consuming and can effectively delay projects or stop ongoing operations if the statutes have not been considered adequately. Citizen's groups are very knowledgeable of the law and are aggressive in seeing that the laws are satisfied.

At SRP, a citizens lawsuit has been filed alleging violation of RCRA. (15) Because this lawsuit is still in litigation, the merits of the suit cannot be discussed. However, the sites alleged to be in violation of RCRA include both active and inactive facilities. If the plaintiffs are successful, certain operations such as the LLRWBG could be closed and other sites such as the Savannah River Laboratory Seepage Basins could be required to undergo expensive cleanup operations.

#### CONCLUSION

It has been incumbent upon project managers to get the legal office involved early in the project in order to adequately consider the effect of the environmental laws on these projects. The laws require approval prior to the initiation of construction and again before operation. Failure to consider these laws may lead to delays and violations of the law. Failure to consider all permitting needs at the start may lead to inconsistent permitting strategies later on.

At the Savannah River Plant, even with environmental legislation requiring additional work, we are on our way to completing closure of the fuel cycle. The DWPF is well on its way with only one permitting hurdle left. The new LLRW is also complying with the legislative requirements but is further away from completion. TRU waste is being readied for WIPP, but there is still an unanswered question as to the applicability of RCRA to the storage of the waste pending its shipment to WIPP.

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