FINANCIAL RESPONSIBILITY ISSUES RELATED TO LOW-LEVEL WASTE MANAGEMENT, TRANSPORTATION AND DISPOSAL IN WASHINGTON STATE

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ABSTRACT

The objectives and methods of a case study in Washington state related to liability insurance coverage for the in-state management, transportation, and disposal of low-level radioactive waste (LLW) are presented. Projected results of the case study are reviewed and Washington's case study objectives are compared with federal financial assurance objectives for the activities of concern.

INTRODUCTION

The state of Washington is committed to minimizing the risk of radioactive contamination which could result in bodily injury or property damage to the public, or which could result in environmental impairment. Because the state hosts one of the nation's three low-level radioactive waste (LLW) disposal sites and plays a significant role in regulating LLW disposal activities, and because of greater environmental concern in recent years with the practice of land disposal of hazardous and radioactive waste, Washington has become aware of the need to develop a realistic appraisal of the risks involved with the operation of a LLW disposal facility, as well as in the transportation and management of such waste.

As a result of these concerns, the Washington State Legislature enacted legislation (RCW 43.200.190, RCW 43.200.200) in 1986 requiring the Washington Department of Ecology to "assess the adequacy of insurance coverage [...] for the [Hanford low-level radioactive waste disposal] facility" and "to review the potential for bodily injury and property damage in the packaging, shipping, transportation, treatment, storage, and disposal of commercial low-level radioactive materials under licenses or permits issued by the state." The Low-Level Radioactive Waste Program (program) within the department's Office of Nuclear Waste is charged with implementation of this legislation.

The program's objective will be met through the execution of a study and through the promulgation of appropriate rules. This paper will describe the objectives of the study and its methods, and will review the roles of the U.S. Environmental Protection Agency and U.S. Nuclear Regulatory Commission in developing financial assurance requirements for the disposal of the waste which they respectively regulate. The program views these federal requirements as important for several reasons: they demonstrate a concern for the same or similar liabilities and risks of concern to the program, they are the result of much research, deliberation, and experience, and the interrelated nature of the state and federal jurisdictions in the LLW field indicate the need for close coordination.

BACKGROUND

The state of Washington hosts one of the nation's three low-level radioactive waste (LLW) disposal sites. In 1986, this site accepted approximately 665,000 cubic feet of LLW or about 42 percent of all the LLW disposed of that year at the three sites. The waste is accepted for burial at a 100 acre site within the Hanford Nuclear Reservation in eastern Washington. The 100 acre site is part of a 1000 acre tract leased to the state by the U.S. Department of Energy.

The state of Washington subleases the 100 acre tract to US Ecology, Inc., and licenses the firm to operate the site. Radioactive waste has generally been disposed of using conventional shallow land burial techniques. Trench dimensions vary, with the largest measuring 1000 feet long by 150 feet wide by 45 feet deep. The site currently has 14 trenches filled with approximately 9.8 million cubic feet of waste. The Hanford site will no longer accept waste from outside of the seven-state Northwest Interstate Compact region after January 1, 1993.

In addition to site subleasing and licensing activities, the state issues site use permits to approximately 1500 waste generators and brokers and, in 1986, monitored 1087 shipments of low-level radioactive waste to the Hanford LLW site (1).

Although only two accidents involving the transportation of radioactive materials have been reported to the state's Office of Radiation Protection in the past ten or so years (2) -- neither of which resulted in radioactive releases -- and no offsite contamination associated with disposal activities at the Hanford LLW site is known to exist, the program believes that the risk of serious accidents and of off-site contamination exists. For example, the presence of unknown quantities of uranium, plutonium, and other transuranics in trenches one through eight, from a time when regulatory controls were far less stringent than they are now, is cause for concern insofar as "risk" is a product of "probability" and "consequence" (or "severity"). Thus, a very low risk of a severe contamination problem could be as serious as a higher risk of a less severe contamination problem.

PROGRAM OBJECTIVES AND METHODS

The program's objective is to determine the amount of financial assurance that is sufficient to:

1. Offset the risk, to the extent possible, of third party bodily injury and property damage, and of environmental impairment associated with the generation, storage, brokering, processing, transportation, and disposal within Washington State of low-level radioactive waste; and

2. Protect the state and its citizens from all claims, suits, losses, damages, or expenses on account of third party injury or property damage, or on account of environmental damage.

Stated another way, the program must investigate both a risk problem and a liability problem and, upon completion of these investigations, is required to base financial assurance requirements on its assessment of risk. If a risk problem is found to exist, the program will require the risk to be reduced to the extent possible (through corrective actions) and will require that any unavoidable risk be adequately insured. If a liability problem is found to exist, the program must determine whether its causes are due to the failure of individuals and entities involved in the management, transportation, and disposal of LLW to buy available insurance or whether its causes are due to the unavailability of insurance. If insurance is available, the program will simply require that persons licensed or permitted to dispose of LLW carry liability insurance. If insurance is not readily available, the program will develop alternative financial assurance requirements.

Risk Assessment

The adequacy of liability coverage depends not only upon coverage limits but upon the risks at issue. Therefore, an important step in this study will be to determine the extent of risk associated with the licensed and permitted activities of concern. Contractors will be used to conduct risk assessments of the Hanford LLW site and of in-state management activities, and of LLW transportation within the state.

Risk assessment for the disposal site will include several elements. First, a site specific investigation will be conducted that will include waste analysis, site characterization, pollution pathway analysis, and a management review. The level of detail for this kind of investigation can range from a broad-brush qualitative assessment, such as those performed by and for insurance companies providing "environmental impairment liability" insurance, to highly detailed quantitative assessments, such as those performed to characterize "Superfund" sites. The program's initial investigation will be broad-brush. A determination will then be made as to whether sufficient information has been developed upon which to base financial assurance requirements. If not, a follow-up investigation will be conducted.

To the extent possible, the site-specific investigation will be based upon existing records, particularly documentation of past disposal practices. Accident and pollution history at similar facilities will also be used to determine accident frequency and severity and to assign costs for both liability and cleanup. Finally, plausible contamination scenarios will be developed which combine the results of the site investigation with unusual occurrences such as fire or flash floods to determine the overall risk of off-site radioactive contamination.

A risk assessment related to the generation and transportation of LLW will also be performed. Because previous accident and incident history is associated with actual liability and cleanup costs, such history provides the best data for projecting potential liabilities and costs. In the absence of concrete cost data, an attempt will be made to develop alternative methods of assigning costs to risks.

Liability

To investigate whether the state is faced with a liability problem, the program is reviewing the availability of insurance. To this end, it has requested and is reviewing insurance coverage carried by the state's permittees and licensees. Responses received are currently being analyzed and entered into a computer data base with the help of analysts from Washington's State Office of Risk Management. Although it is too early to fully analyze the computer data, general liability policies held by permittees all appear to have "pollution exclusions"; a standard clause found in nearly all general liability policies written after January 1, 1986. It is not yet clear to what extent this development presents uninsured risks to the state of Washington.

To further review the availability of commercial insurance coverage for state licensees and permittees, the program is surveying insurance providers to determine available insurance limits and conditions for the risks of concern, and to identify any liabilities for which insurance may not presently exist. This is part of a larger objective: to compare various financial mechanisms which will relieve the state and its citizens from assuming financial responsibility for third party injury or damage and/or for environmental cleanup.

Because the program will be promulgating financial responsibility requirements, coordination is required between Washington's LLW program and other federal and state agencies with jurisdiction over LLW generation, management, and disposal in order that information may be exchanged and to promote consistency. It should be noted that most LLW generators shipping to Hanford are not based in Washington and may be either U.S. Nuclear Regulatory Commission licensees or other agreement state licensees.

EPA AND NRC FINANCIAL RESPONSIBILITY REQUIREMENTS

A variety of federal initiatives attempt to place financial responsibility for third party liability and environmental cleanup on the entities involved in the activities that produce the liability or environmental damage. For example, federal agencies have enacted requirements pursuant to the Motor Carrier Act (Pub.L. 96-296), the Resource Conservation and Recovery Act (RCRA) (Pub.L. 94-580), the Surface Mining Control and Reclamation Act (Pub.L. 95-87), and others. The stipulated dollar requirements vary in these acts, as do acceptable methods of demonstrating compliance with the requirements.

EPA Rules

The U.S. Environmental Protection Agency's (EPA) financial assurance requirements are noteworthy because third party liability is among the coverages required. Pursuant to the authority provided to it in RCRA, the EPA, in 1981, required owners and operators of treatment, storage, and disposal (TSD) facilities to assure funding for closure and post-closure care of the facilities. In 1982, the EPA amended those regulations to require demonstration of the ability to pay claims to

third parties who suffer bodily injury or property damage as a result of accidents at operating facilities (40 CFR Part 264, Subpart H). At present, the EPA is developing requirements for the demonstration of financial assurance for the cost of corrective actions (that is, the cleanup of known releases) at TSD facilities (51 Fed Reg. 37854, October 24, 1986).

In regard to liability for sudden accidental occurrences, the EPA requires owners and operators of TSD facilities to maintain at least $1 million in insurance per occurrence with an annual aggregate of at least $2 million. For non-sudden accidental occurrences, owners and operators must maintain at least $3 million per occurrence with an annual aggregate of at least $6 million. The only currently allowable funding mechanisms for liability coverage are insurance, a financial test, and a corporate guarantee. Although compliance has been spotty, federal agencies appear to be refining their requirements, rather than backing away from them.

Advanced Notice of Proposed Rulemaking By The U.S. Nuclear Regulatory Commission

In June of 1985, the U.S. Nuclear Regulatory Commission (NRC) issued an "advanced notice of proposed rulemaking" (50 Fed. Reg. 23960, June 7, 1985) in order to solicit public comments on the advisability of requiring financial responsibility in the amount of $2 million for prompt cleanup of radioactive materials both on-site and off-site after accidental or unexpected contamination by both fuel cycle and other materials licensees. Responses to the advanced notice indicated the need to develop more information regarding the frequency, severity, and cost associated with licensee incidents. As a result, the NRC has obtained technical assistance to prepare a risk assessment. The results of this assessment will be used by the staff to develop a financial responsibility coverage schedule for different categories of licensees.

The EPA and NRC are both committed to the concept of ensuring the availability of funds for potential liabilities associated with the management and disposal of regulated waste, but the intended scope of coverage varies under rules promulgated by the two agencies. The EPA's existing requirements target closure and post-closure and third party liability, and the agency is proposing rules that would assure funding for corrective action at sites with hazardous waste releases. The NRC's existing requirements, found in different subparts of the Code of Federal Regulations, target closure and post-closure and implement the Price-Anderson Act, which provides for coverage of third party liability for risks associated with the production of nuclear energy. Third party indemnity under the Price-Anderson Act for other than NRC license nuclear reactors, and plutonium processing and fuel fabrication plants, is not required by the NRC. Both agencies appear similarly interested in quantifying to the extent possible the economic risks presented by waste generation and disposal.

The federal agencies have also done a considerable amount of work to determine which mechanisms are best suited to provide financial assurance for the liabilities of concern. Bearing in mind that financial responsibility requirements are an expression of a public policy that seeks to assign the costs of waste management and disposal on the entities that benefit financially from that management or disposal, the EPA perceives the "marketplace" to be both more equitable and more efficient than government assurance programs.

For example, commercial insurance is considered an attractive regulatory option for several reasons: the regulated community is provided with incentives to minimize risk or pay higher premiums, transaction costs are absorbed by the private sector, and the expertise necessary to develop and manage financial programs is not traditionally found within pollution control agencies (4). Unfortunately, liability insurance may not be sufficiently available under present market conditions to offset the risks of concern to regulatory agencies. As a result, much interest is being generated in alternative forms of financial responsibility, such as risk retention groups and captive insurance companies.

Washington State Coordination With Federal and State Efforts

Washington's LLW program is simultaneously developing financial assurance requirements for closure and post-closure care (as part of a separate study whose primary purpose is to develop technical requirements for closure and post-closure care), third party liability, and cleanup costs for prospective incidents. The program is also vitally interested in developing efficient and equitable financial assurance mechanisms.

Host states for new LLW disposal sites are currently investigating the need to develop and, in some cases, are developing financial assurance requirements for LLW disposal site operators. In keeping with the notion that states are laboratories for social research, Washington's LLW program will, in addition to monitoring federal financial responsibility requirements, review the liability and financial responsibility standards promulgated in other states.

The program has also identified the following research questions:

1. In the absence of cost data, which risk-to-cost conversion factors can be applied to the risks of concern?

2. In light of the difficulty the regulated public faces in obtaining commercial insurance, how can the insurance industry be encouraged and motivated to provide coverage for a broader share of this public?

3. Because nuclear energy liability policies are not intended to provide cleanup costs for LLW disposal site operators and because environmental impairment liability insurance contains nuclear exclusions, what kind of financial assurance program should be developed for owners and operators of LLW disposal sites and how should it be structured?

Providing answers to these questions will require close and continuous coordination with federal and state agencies, insurance providers, and the regulated public.

SUMMARY

This paper has reviewed the scope of a liability and risk assessment study currently in progress in the state of Washington. The purpose of this study is to lay the groundwork for regulatory requirements which serve to reduce health and safety risks, as well as economic risks. This paper has also briefly reviewed the content of actual and proposed federal rulemaking for financial assurance requirements and indicated

where Washington's LLW program may be in a position to provide new information. For example, a risk assessment of an operating low-level radioactive waste site, for financial assurance purposes, has never been performed. This site-specific analysis will not only enable the state of Washington to promulgate more closely risk-based financial assurance requirements than would be the case in the absence of such an assessment, but may assist other regions in developing financial assurance requirements for their LLW sites.

REFERENCES

1. Conversation with NANCY P. KIRNER, Office of Radiation Protection, Washington Department of Social and Health Services, January 1987.

2. Conversation with NANCY P. KIRNER, op cit., January 1987.

3. See, for example, 50 Fed. Reg. 33902, August 21, 1985.