

HANFORD: PRESENT AND FUTURE

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ABSTRACT

Even though the direct impacts of the Nuclear Waste Policy Act of 1982 on the Hanford Site were greatly diminished by the decision to concentrate characterization studies on the Nevada Site, the Act still indirectly affects many of our activities.

INTRODUCTION

In 1984, the President made the decision to commingle defense and commercial high-level waste in our national repository (or repositories). That immediately meant the Hanford Site would be one of the major contributors to the high-level waste repository since a significant fraction of the United States defense high-level waste is being stored at the Hanford Site.

The Act also played a major role in elevating the public awareness of the Hanford Site in the Pacific Northwest. The repository program drew intense interest from the media and the general public. Today, the intensity of that interest remains, although it has shifted to other programs such as the environmental cleanup and defense activities.

In addition, there are a number of other actions that have occurred since 1982 that have affected the way we do business. The key ones are:

- DOE has made a top-level commitment to comply with all environmental and safety regulations and to move ahead with cleanup of past practices.
- Major mission changes have occurred with a shift away from defense production at the Hanford Site to an increased emphasis on waste management and environmental cleanup along with other ongoing efforts in science, energy, and R&D.
- More and more sensitive monitoring techniques have been developed and used that can often detect chemicals at values below EPA detection limit criteria. This allows us to do a better job with a higher level of assurance. It also sometimes means we must react to "pollution" that may not be a risk problem as much as a perception problem.
- Significant changes and increases in regulations, particularly in the environmental area have evolved. The number of environmental regulations has increased about tenfold in the last 5 years alone, and more are anticipated. Many of the requirements are beneficial; most are expensive to implement. Unfortunately, funding authorizations to implement these regulations are not keeping pace with the multitude of changes affecting Hanford and other federal facilities.

The impacts of these actions are significant when one considers that an estimated five billion cubic yards of solid and dilute liquid wastes have been generated at the Hanford Site.

What Have We Accomplished Since 1982?

We have accomplished a number of very positive things in the past seven years. Many of these will set the direction

for our efforts into the 21st century. One is completion and issuance of a major environmental impact statement on waste management (the Hanford Defense Waste-Environmental Impact Statement). An affirmative Record of Decision has led to our initiation of two very important projects -- Grout Treatment Facility and the Hanford Waste Vitrification Plant. Wastes now stored in double-shell tanks will be fractionated into a high-volume, low activity stream and a low-volume, high activity stream which will be permanently disposed of using the Grout Treatment Facility and the Hanford Waste Vitrification Plant, respectively. We have also made great strides at initiating site cleanup activities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund") and the Resource Conservation and Recovery Act (RCRA). Progress is also being made in the Decontamination and Decommissioning area. Other major environmental and waste management accomplishments include the following:

- We stabilized 71 of 149 single-shell tanks (SST) since 1981, removing over 2 3/4 million gallons of liquid wastes. This brings the total number of stabilized SSTs to 98.
- We surface stabilized or cleaned up 880 acres (out of 1060 acres) of outdoor radiation areas.
- We dismantled 32 support facilities (laboratories, effluent systems, pump stations, etc.).
- We significantly upgraded liquid and stack effluent monitoring systems.
- We took on a major leadership role in disseminating information to the states of Washington and Oregon, the general public and the media, initiated meetings with the states and public interest groups in 1985, and maintained this leadership role in the current negotiations on cleanup.
- We are maintaining the bulk of the Hanford Site as an environmental refuge for plants, birds, and animals.

Building to Manage, Immobilize, and Dispose of Wastes

What we have accomplished in the last few years is setting the course for the next 30 to 50 years. Implementation of the Hanford Defense Waste- Environmental Impact Statement Record of Decision is being accomplished via startup of the Grout Treatment Facility and design of the Hanford Waste Vitrification Plant.

Much work has been accomplished with the State of Washington and the U.S. Environmental Protection Agency to define and prioritize as part of a comprehensive agreement the work to be done under RCRA and CERCLA relative to hazardous, radioactive, and mixed hazardous and radioactive wastes. There are currently 58 Treatment,

Storage or Disposal Facilities to be permitted for operation or closed under RCRA. In addition, there are approximately 950 waste sites to be addressed under CERCLA. Approximately 75% of the waste sites at Hanford are classified as mixed waste sites. The remaining 25% are evenly split between being hazardous, radioactive or nonhazardous/nonradioactive. RCRA only addresses the hazardous portion of the wastes, whereas, CERCLA addresses both hazardous and radioactive wastes. The complex interfaces that exist between RCRA work to be performed under State authority and CERCLA work under authority of EPA dictate the need for a single comprehensive and coordinated agreement between the State, EPA and DOE. An example of such complexity is the RCRA liquid disposal sites, which are to be closed, that are located adjacent to inactive liquid disposal sites to be addressed under CERCLA.

Where Do We Go from Here?

We still have a number of challenges ahead of us. Some of the key challenges are:

Getting and maintaining citizen support of cleanup activities. Without this support, progress toward cleanup of the Site will be hindered.

Using risk-based methodology as a key to the selection for remediation and reclamation technology alternatives. Such analysis must be based on sound science and technology that is accepted by independent authorities such as the National Academy of Sciences.

Maintaining our "Good Neighbor" policy. We owe it to the neighboring farmers and communities to do the best job possible to ensure that our facilities and processes are operated in the safest, most environmentally sound manner possible and to communicate to them what we are doing.

Continue developing quality working relationships with the states of Washington and Oregon and other Federal regulatory agencies. We have made a great deal of progress in this area in the last several years and we must build on the level of trust and understanding that has been established. As with the public support, cleanup will be difficult to achieve without the support of the key states and agencies.

We must make sure that operating facilities (many 30 to 40 years old) will be in compliance with environmental regulations or they will not operate.

We must obtain increased funding for site cleanup activities.

How Do We Get There?

Environmental cleanup of the Hanford Site over the next 30 to 50 years is estimated to cost tens of billions of dollars and will be extremely difficult to obtain. An integrated and comprehensive agreement between the State, EPA and DOE should provide us a vehicle to properly optimize efforts between RCRA and CERCLA. Such optimization should help minimize costs. An integrated agreement would also provide the vehicle to properly prioritize work within available funding. But most important, an integrated and comprehensive agreement will

provide the basis for determining and obtaining needed funds.

We should and will focus more of our efforts on developing new technology for effective cleanup that is less costly. Work on such items as the in situ vitrification process, including the commercialization of this work, is a key technology step that will carry us into the 21st century. Efforts to create and fund the Pacific Northwest Laboratory's "Environmental Center for Excellence" and continuing the efforts of the Hazardous Waste Remedial Action Program (HAZWRAP) at Oak Ridge, Tennessee, will materially contribute toward achieving this goal. The technology effort will be coupled with more intensive efforts at understanding risk of the existing radioactive and mixed wastes that form the Hanford legacy. Serious attention will be given to early risk and hazards analyses to support decisions on the degree of site-specific risk posed for various alternative levels of cleanup and/or stabilization. This could lead to regulatory agreement of alternate concentration limits that would maintain public safety while minimizing the need for extremely expensive solutions. Such analyses would go far toward focusing the remediation and restoration programs toward cost-effective solutions for Hanford hazardous and mixed wastes.

Findings and Recommendations to Date:

As you can see, there is no shortage of challenges and opportunities ahead. Most of the Department of Energy defense sites will be facing similar challenges and opportunities -- the concern about compliance and cleanup will not diminish. The Hanford Site has been involved in cleanup issues longer than most sites and has identified a number of findings, observations and recommendations.

- Achieve an integrated/comprehensive agreement. Make every effort to maintain progress against the agreed to plan.
- Recognize you will never meet all desires or funding levels recommended. There are groups, often very vocal, who will always demand more. Spend the bulk of your energies on the reasonable and workable approaches. Focus on good budget quality five year plans based upon reasonable expectations and track your progress against these plans.
- Communication and coordination are essential for cost effective cleanup. Don't expect the public and other agencies to accept proposed actions based just on some published documents. Talk to people. Send people out who can communicate complex technical issues in an understandable manner to non-technical audiences. This can and must be done. Coordinate all your actions with state and affected federal agencies. Nothing will stop progress quicker than lack of communication and coordination.
- Avoid technical arrogance. We have all seen the jokes about the "perfect" nuclear industry. We have a track record that is commendable but it is less than 50 years old. We are addressing materials that will be around for tens of thousands of years. Listen to the public; understand their suggestions and their concerns. We

may not believe some of the fears are well-founded, but the fears are real.

- The role of standards is critical in determining the cost of cleanup. We must press to make the standards technically defensible, realistic understandable and consistent. Recognize we will always be held to a higher standard at federal facilities than at private industries. We must work together with private industries and environmental groups to establish sound, workable standards. Real cleanup cannot occur without this.
- Look hard at the research and investigation efforts. More data can always be collected, but we have got to learn when to say "enough" and move on with real cleanup.
- The fact that Hanford does not impose an immediate threat is not an excuse to delay. A lot of work needs

to be done and we must get on with it to deal with the effort in a reasonable period of time.

SUMMARY/CONCLUSIONS

We have learned that there are issues, that in terms of the influence on public policy, are as important as science and engineering. Such issues as fear, secrecy, and arrogance must be addressed. These are the 1980's and not the 1950's. C. P. Snow pointed out in his book, "Two Cultures," that the gulf between the scientific community and the non-scientific community must be bridged. This requires communications, and the demystifying of our industry. As that gulf is bridged, then we believe these programs will be implemented with full public support. We are on our way.