The Real Costs of Cleaning Up Nuclear Waste

Summary of Report Findings

The study evaluated two cleanup Alternatives presented in the Department of Energy's 2005 draft Draft Environmental Impact Statement (DEIS).
• Waste Excavation Alternative 1: Total exhumation of the wastes, off-site disposal, followed by complete site release for unrestricted use.
• Onsite Buried Waste Alternative 2: Partial waste removal, stabilization of buried wastes for permanent onsite disposal.

Findings and Recommendations

■ **Waste Excavation is less expensive than Buried Waste.** Over a 1000 year timeframe, Waste Excavation presents the least risk to a large population and the lowest economic social and project cost. Over 1000 years, the Waste Excavation approach costs $9.9 billion while the Onsite Buried Waste approach costs between $13 and $27 billion, depending on if a catastrophic release occurred accidentally or not.*

■ **Waste Excavation poses significantly lower risks to future generations after closure activities cease.** The Onsite Buried Waste approach poses a risk to residents long after closure activities have ended. In contrast, Waste Excavation leaves behind a contamination-free area after 73 years.

■ **The Onsite Buried Waste approach inadequately protects the health and environment of residents, and is an unrealistic cost.** It poses a risk to residents if controls fail while dangerous radionuclides are buried at West Valley.

■ Waste Excavation poses a risk to onsite workers during the relatively short period of time for remediation activities. It also does not “solve” the problem of West Valley's nuclear waste disposal, rather it prevents further contamination, prevents a catastrophic release that could cause severe damage to populations in the Great Lakes region, and mitigates the problem by transferring the waste to a less risk-prone site. (It is important, yet unfortunately beyond the scope of this analysis, to note that wastes which have left the site are not risk free. Rather, they will have to be stored somewhere else and may also pose a threat to future generations.)

■ **Based on these findings, we recommend that the Department of Energy and NYS agencies take the following actions for any new West Valley DEIS.**

• Reject current assumptions about timeframe, institutional controls and continuity, and budget requirements as presented in the 2005 DEIS due to their inability to adequately protect health and the environment as required by federal statute.

• Assume that, until shown otherwise, the safest and most economically viable option is to fully excavate the wastes buried at West Valley (Alternative 1).

• Explore other options for retrievable, monitored, above-ground storage of nuclear waste at a more stable site. In addition, the full costs of remediating West Valley must be factored in to decisions being made for new reprocessing and nuclear power.

• In the new DEIS, revisit the following topics more rigorously and with public input:
1) the probability of maintaining effective institutional controls over the expected lifetime of radioactive elements buried at the site; 2) the risk of erosion control failure with or without

the maintenance of controls; the rate of release and source of contamination should there be an erosion control failure; and 3) the potential for radioactively contaminated groundwater to move rapidly through sand layers in West Valley soils.

• In the new DEIS, revisit the following budget topics more rigorously, with public input: 1) the costs of addressing contaminated groundwater and drinking water for local populations and watersheds; 2) the costs of addressing contamination impacting Lake Erie; and 3) the economic opportunity cost of lost development ability at the site.

• Evaluate options for mitigating radioactive waste at West Valley based not only on project cost alone, but also on project and post-closure risks over the expected lifetime of radioactive elements buried at the site.

Additional Full Cost Accounting Analysis Results

1. **The Department of Energy's DEIS analysis of Alternatives 1 and 2 are unrealistic, and, more importantly, incomplete.** The DEIS uses a period of analysis far too short to reflect real costs and risks, and does not adequately address real harm risks as well as monetary costs to the public and the environment. With Waste Excavation, as soon as closure activities cease—in an estimated 73 years—the site is released to the public and there are no remaining costs. With Onsite Buried Waste, however, the site must be maintained into perpetuity. *In this case, perpetuity is not a dozen years, or even two or three generations—the buried radioactive waste would have to be monitored, tracked, and maintained in place for tens of thousands of years. Despite this basic axiom, the DEIS only allocates a skeleton budget for 200 years.*

2. **Extending the period of analysis to 1000 years, a first step in setting a period more in line with the decay times for high-risk radioactive waste (yet not nearly long enough for some of the most dangerous radionuclides), reveals that the long-term site maintenance costs are burdensome and expensive.**

3. **The total costs of this analysis must be taken as a whole, undiscounted cost.** In standard capital investments, a discount rate is applied to account for future interest earnings. Over periods of 1000 years, any substantial discount rate implies that the health and wellbeing of future generations has no present value (i.e. no worth to us today). Since the plans being considered are ostensibly meant to protect the public for many generations, we cannot reasonably assume that there is no value to public heath in the year 1000. Therefore, the discount rate must be zero, or near zero. While the choice of a discount rate for short term decisions is an economic question, the choice of an intergenerational discount rate is a matter of ethics and policy. The value of future lives and health is a strong argument for not using an economic discount rate in this analysis. **However, if standard federal Office of Management and Budget discount rates (3% and 7%) are employed, Alternatives 1 and 2 cannot be said to be significantly different from an economic standpoint.**

4. **As a practical necessity, we are compelled to use a precautionary approach at West Valley**. We cannot know the costs which may occur if wastes are left buried at West Valley, but we do know if a release occurred, it would have expensive and disastrous consequences. The costs of exhuming radioactive contamination will be expensive in the short-term, but the costs of maintaining buried waste in an attempt to thwart future disaster will be far more expensive and far less certain. In a precautionary sense, we should

excavate and move the wastes while we still know what is in the ground, how to handle it, and have some chain of responsibility still available.

5. **We adjusted the underlying budget assumptions and included enhanced erosion controls in Alternatives 1 and 2 to bring balance to their relative long term risks,** calling the new options Waste Excavation Alternative 1A and Buried Waste Alternative 2A. We considered that: 1) erosion would need to be kept rigorously under control at the site; 2) security would need to be held at a relatively rigorous level to ensure intruders could not access wastes; 3) a spreading plume of contaminated groundwater would have to be remediated to prevent contaminants from entering the local watershed; and 4) the inevitable and powerful forces of time and erosion could eventually expose wastes catastrophically, leading to high costs of remediation for water consumers.

(Excerpts from Executive Summary of ***The Real Costs of Cleaning Up Nuclear Waste)***

*Under the assumptions of a non-discounted future. This does not include all the societal costs due to resources or lack of data.