The Evolution of Nuclear Waste & Cleanup Law and the Failure to Arrive at Sustainable Outcomes

Geoffrey H. Fettus
Senior Attorney
Natural Resources Defense Council

National Academy of Sciences
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In the Beginning there was the Atomic Energy Act, 42 U.S.C. § 2011, *et seq*.

- Promotional … and prescriptive …
- "to protect the public and to encourage the development of the atomic energy industry." 42 U.S.C. §2012(i).
- "a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public." 42 U.S.C. §2013(d).

Waste and associated environmental impacts were not meaningfully considered until …

- 1957 National Academy of Sciences (NAS) report found that a deep geologic repository was the best available option for nuclear waste disposal and that salt was a likely medium in which to build such a repository.
- Cleanup at DOE and commercial sites were ignored almost in their entirety.

Energy Reorganization Act of 1974

- AEC split into NRC and ERDA (eventually DOE.
- Complicated and inadequate statutory and regulatory regimes became splintered and, if possible, less adequate.
- EPA (in 1970) acquires authority for radiation standards, setting stage for decades of internal agency-strife.

Other 1970s Happenings?

- Dream of reprocessing was failing;
- Waste and contamination at DOE weapons complex and commercial sites was becoming more significant and costly;
- Capital costs of reactors were rising;
- And the matter of nuclear waste was being vigorously debated in licensing commercial plants.

West Valley Demonstration Project

An economic failure that produced 600,000 gallons of high-level radioactive liquid waste

A Few Positive Developments

- Interagency Review Group (IRG)
- The Original Nuclear Waste Policy Act (NWPA)
- *LEAF v. Hodel*, 586 F.Supp. 1163 (D.C.Tenn.1984)

Inter Agency Review Group

- 1978 precursor to current Blue Ribbon Panel;
- Effort to develop a coherent national nuclear waste disposal policy,
- Comprised of 14 federal agencies and other key stakeholders
- Evaluated disposal in outer space, deep seabed, deep boreholes, and polar ice caps.
- Endorsed deep geological repository in different geologic environments" (including salt, shale and tuff)
- Suggested at least two (and possibly three) repositories "ideally in different regions of the country."

The Nuclear Waste Policy Act of 1982

- DOE sites and develops repository
- NRC licenses the repository
- EPA sets the environmental protection standards for which NRC licenses the repository
- At the time the NWPA was passed nearly 25 years ago, the U.S. Government enjoyed fairly widespread support from within the Congress, the environmental community and state governments for the site selection and development process.

LEAF v. Hodel, 586 F.Supp. 1163 (D.C.Tenn.,1984).

- DOE denied it was responsible for complying with major environmental laws.
- Specifically, those laws governing hazardous wastes.
- And thus, the term “mixed waste” was given legal status – DOE must comply with hazardous waste laws but was self-regulating with respect to management of radioactive waste.

What went wrong with HLW and Spent Fuel Disposal?

- Repeated narrowing and corrupting of the site selection process for the sake of political expedience.
- Repeated weakening of radiation standards to account for the projected failures of the site.

Nevada received the short straw

NRDC and others went to Court

- *See NRDC v. EPA*, 824 F.2d 1258 (1st Cir. 1987).
- *See Nuclear Energy Institute, et. al. v. EPA*, 373 F.3d 1251 (2004).

In the 90s and early 00s the weapons complex cleanup plugged along.

- Cost estimates in the hundreds of billions over decades (BEMR).
- Maintaining the weapons infrastructure rather than advancing cleanup (FFTF).
- Repeated failures with high cost projects (Pit 9, Hanford Vit Plant).
- Contentious wrangling with states over cleanup goals, end states, resulting in the long-term stewardship program.

Some sites concluded work, many continued with no meaningful end point on the horizon

- Stimulus $s resulted in footprint reduction.
- Rocky Flats & Fernald as examples of contaminated, compromise end points.
- Compare with ongoing difficulties and challenges at the Savannah River Site, Hanford, the Idaho National Engineering Laboratory, LANL, SSFL and other sites.

A Key Point to Understand Cleanup – the Budget

- DOE's risk-informed cleanup premise – there is limited funding and priorities must be set (hint – far from greenfield).
- But note DOE's source for funding and the directions associated (ie., defense account and congressional budget allocation).
- How much in landlord costs or subsidies to defense projects?

Also, this is not a Superfund cleanup program

- Self-regulating with respect to management of radioactive waste.
- EM program deals with some of the most sensitive non-proliferation and nuclear materials.
- Years of using EM funds to operate reprocessing canyons to produce weapons grade plutonium under guise of “stabilization,” or perpetuate a reprocessing technology in Idaho.

State of the Cleanup Program

- Footprint is reduced, but high cost, high environmental impact problems facing the complex remain unresolved (e.g., cleanup of the high level waste tanks, buried TRU waste at INEL, use WIR process).

- Final cleanup resolution and decisions at numerous sites are, at best, decades away, Congress is frustrated and budget allocation challenges remain.

So where do we find sustainability in these long running problems?

- Incorporating the "Sustainable Conceptual Site Model" as presented in the 2011 SURF paper could result in some substantial benefits.

- But make no mistake, a more holistic treatment of sustainability in DOE site remediation should not lead to more capping of radioactive contamination in place. To the contrary, implementation of sustainability metrics should lead to more thorough cleanups.

- Inattention to sustainability concepts is not at the root of DOE's cleanup challenges.

So what is at the root of DOE's cleanup problems?

- The BRC's Final Report states:
- *We recognize that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward, given that the Atomic Energy Act of 1954 provides for exclusive federal jurisdiction over many radioactive waste management issues. Nevertheless, we believe it will be essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful and thereby reduces rather than increases the potential for conflict, confusion, and delay*.
- Final Report at 56 (citation omitted).

Significant aspects of AEA remain unchanged over decades

- Besides EPA's limited standard setting role and states that assume "agreement" status …
- NRC enjoys the "exclusive authority to regulate radiation hazards associated with the materials and activities covered by the AEA" and near virtual pre-emptive authority.
- DOE is in large measure self-regulating with respect to nuclear safety and waste management in its cleanup efforts.

Limited application of environmental law to radioactive waste

- Objective of the Clean Water Act "is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."
- In CWA, Congress recognized "responsibilities and rights of States to prevent, reduce, and eliminate pollution…" 33 U.S.C. § 1251(a)-(b)
- But …Supreme Court has determined that "byproduct, and special nuclear materials" are not considered 'pollutants' governed by the Clean Water Act (CWA). Train v. Colorado Pub. Int. Research Group, 96 S.Ct. 1938 (1976)

The application of hazardous waste laws are similarly limited.

- The term “solid waste” is defined broadly but specifically exempts source, special nuclear, and byproduct material from RCRA provisions. 42 US.C.A § 6903(27).

NRDC's Prescription for Progress on both Nuclear Waste Disposal & Cleanup

- Congress should amend the Atomic Energy Act (AEA) to remove the express exemptions of radioactive material from environmental laws.
- Regulatory change would have to be harmonized with NRC licensing jurisdiction and EPA standard setting.
- Would allow for substantially improved clarity in the regulatory structure and a meaningful state oversight role.

Conclusion

- Once clear, enforceable cleanup standards are in place for the dozens of large or small DOE contaminated sites (as opposed to the current patchwork), a more holistic treatment of sustainable remediation decision-making can be implemented without risk of the process being abused to justify cost savings and less cleanup.

END