



NUCLEAR INFORMATION AND RESOURCE SERVICE

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I am Michael Mariotte, Executive Director of Nuclear Information and Resource Service. I appreciate the opportunity to speak here today.

My colleagues today are speaking about Fukushima, about the effects of radiation, about dangerous nuclear reactors in the U.S. These are critically important issues.

I am going to talk about something a little different: what happens at the front end of the nuclear fuel chain—well before reactors and nuclear accidents come into play, and what happens at the back end.

Nuclear reactors cannot, of course, operate without uranium fuel. In that respect, nuclear power is much more like fossil fuels, which are extracted from the earth, than like renewable power, which produces energy from natural and omnipresent phenomena like wind and the sun.

Mining uranium, processing it, milling it, enriching it and producing uranium fuel pellets from gaseous enriched uranium is both carbon intensive and dirty business at every step of the way. Moreover, uranium mining kills.

Anyone who doesn't believe that; I would like to introduce to you some Navajo families who have lost loved ones to uranium mining. It's a dirty, deadly business and too many people have paid the ultimate price. But the nuclear industry doesn't want you to think about them.

Because of the widespread contamination and health effects caused by uranium mining on its land, the Navajo Nation has banned any more uranium mining. But to give you a scope of the problem, 500 to as many as 1300 abandoned uranium mines from the Cold War era remain on its land awaiting cleanup. At one mine abandoned years ago near Cameron, Arizona, for example, the EPA found in November 2010 that radiation levels were higher than its equipment could measure. That's the ongoing legacy of uranium mining.

I want to move now to the back end of the nuclear fuel chain. The radioactive fuel rods in nuclear reactors are, literally, millions of times more radioactive once used than they were as uranium fuel. Exposure to a nuclear fuel rod is lethal within seconds. This radioactive waste

needs to be isolated from the environment for its full hazardous life—which is again literally, millions of years.

Given that requirement, it is perhaps not surprising that the U.S.—as is the case with every other nuclear nation—has so far failed to come up with a scientifically-defensible, environmentally-responsible, and publicly-acceptable radioactive waste policy.

We tried Yucca Mountain, Nevada—a site chosen for political, not scientific reasons. That didn't work. And, for those who still think it is a viable solution, I have three words for you: it is not. And it never will be.

More than 60 years into the nuclear power age, we have no more idea what we're going to do with the radioactive waste than we did when the switch was first pulled at the Shippingport nuclear reactor in 1957.

The Obama administration, to its credit, ended the Yucca Mountain project and established a Blue Ribbon Commission (BRC) to re-examine U.S. radioactive waste policy. Unfortunately, this Commission was stacked with nuclear industry advocates and sympathizers and some of its recommendations are problematic. The administration is slated to release its own recommendations, based on the BRC's reports, in the near future.

I think everyone involved—the nuclear industry and environmentalists alike—agree that the next Congress will begin to undertake the first major overhaul of U.S. radioactive waste policy in 30 years. It's overdue.

This overhaul presents opportunity, and threat. Opportunity because we finally have the chance to get it right: to come up with a scientifically-defensible, environmentally-responsible, publicly-acceptable policy. A threat because the nuclear industry doesn't seem interested in any of those goals—they want an expedient policy that encourages the generation of still more radioactive waste without an actual solution.

What the industry wants most is called centralized, or consolidated, interim storage of radioactive waste. A parking lot of radioactive waste casks somewhere—they don't really care where—in the U.S. A program that would unleash the transportation of thousands of tons of lethal radioactive waste on our highways and railways all across our nation—to a site, or sites, that would use the exact same dry cask technology already in use. There is simply no technical, safety or environmental basis for this concept. For the environmental community, centralized interim storage is a non-starter.

This isn't the first time the industry has tried this idea. It came up in the 1990s; we dubbed it "Mobile Chernobyl." We pointed out that 100 million Americans live within ½ mile of the highways and railways that would have made up the likely transportation routes. Polls at the time showed most of those people didn't much like the idea of getting involuntary x-rays on their way to work, or sitting in their living rooms, but Congress passed a bill anyway. But President Clinton vetoed it, and the veto was upheld by the Senate. I suspect most people still don't want to sit in rush hour traffic next to a radioactive waste cask.

Mobile Chernobyl remains a good name for this concept, so does Stop Fukushima Freeways. Transporting radioactive waste from one location to another, simply to remove the burden of caring for that waste from the nuclear utilities that generated it, just is not going to fly.

And since it's not an option, we need to move on and reach a consensus on what real options may be. The environmental movement spent years, sometimes uncomfortably, arriving at a unified position on high-level radioactive waste, encapsulated in a document called Principles for Safeguarding Nuclear Waste at Reactors. That is an essential starting point for any new radioactive waste policy. It's supported by every national and regional organization, and just about every local group, that actually works on radioactive waste issues.

These principles include, very briefly:

***Require a low-density, open-frame layout for fuel pools**

***Establish hardened on-site storage (HOSS):** Irradiated fuel must be stored as safely as possible as close to the site of generation as possible. Waste moved from fuel pools must be safeguarded in hardened, on-site storage (HOSS) facilities. Transporting waste to interim away-from-reactor storage should not be done unless the reactor site is unsuitable for a HOSS facility and the move increases the safety and security of the waste. HOSS facilities must not be regarded as a permanent waste solution, and thus should not be constructed deep underground. The waste must be retrievable, and real-time radiation and heat monitoring at the HOSS facility must be implemented for early detection of radiation releases and overheating. The overall objective of HOSS should be that the amount of releases projected in even severe attacks should be low enough that the storage system would be unattractive as a terrorist target. Design criteria that would correspond to the overall objective must include:

- Resistance to severe attacks, such as a direct hit by high-explosive or deeply penetrating weapons and munitions or a direct hit by a large aircraft loaded with fuel or a small aircraft loaded with fuel and/or explosives, without major releases.
- Placement of individual canisters that makes detection difficult from outside the site boundary.

***Protect fuel pools**

***Require periodic review of HOSS facilities and fuel pools**

***Dedicate funding to local and state governments to independently monitor the sites**

***Prohibit reprocessing.** We appreciate that the BRC recommendations are also very skeptical about reprocessing—a dirty, dangerous and unnecessary technology.

The full document is available on NIRS website at:

<http://www.nirs.org/radwaste/policy/hossprinciples3232010.pdf>

The BRC recommendations, along with a recent bill from Senate Energy Committee Chair Jeff Bingaman S. 3469), and the expected new proposal from the Obama administration, bring up

some new issues—for example, creation of a new independent agency to handle radioactive waste; the idea of community consent for new waste sites, and more. These ideas are worthy of examination and debate, and we welcome the opportunity to do just that during the next Congress.

And we welcome the opportunity to finally get radioactive waste policy right, to remove it from its previously highly politicized state and begin the process of finding real solutions.

Centralized interim storage is a non-starter. Efforts to move ahead with that will poison the atmosphere and prevent the real possibility of progress. We can and must do better. We hope the next Congress will be up to the task.