

## ***Reshaping the Nuclear Waste Dialogue at the Stimson Center***

SpentFUEL 22 | JUN | 2018

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VOL 24 | NO 1216

### **Innovation in nuclear waste disposal**

The start-up company, Deep Isolation, has been in existence for about 2.5 years, according to co-founder and CEO Elizabeth Muller, who said that she and the other co-founder Richard Muller (her father) were advised not to get into the business of nuclear waste disposal because “nothing ever changes.” They were told not to even try because “you will fail.” Muller pointed out that the entire industry has expressed “frustration and depression and an inability to move forward in a major way since the 1980s.” As an outsider, they understood that the status quo is not working, and that since decisions made in the 1980s have not moved this issue forward, they saw an opportunity for something new.

Muller noted that the “incredibly rapid innovation” in other industries such as the shale gas revolution “came out of nowhere.” Many things from that industry can apply to nuclear waste disposal, such as the ability to robotically drill a mile deep into the earth, which is now routine, thanks to the shale gas revolution. Even if something gets jammed, such as the pipe, specialists can pull it back out. Industry has moved past the idea that once something is put deep into a hole it cannot be retrieved. Furthermore, shale has been in the earth for millions of years, so in terms of licensing, this is beneficial because when a company would apply for a license, it would have to demonstrate that what is put in that borehole will be safe for the long term.

Deep Isolation’s method would be to construct smaller repositories in a modular approach, so that instead of one repository for all the spent nuclear fuel and HLW in the country, several sites could be identified. This would reduce the transportation of the spent fuel and HLW and would address the environmental justice concerns of emplacing all the nuclear waste in the country in a single location. The waste could stay in the same state or area in which it was generated.

Muller has no illusions of having all the answers to the nuclear waste disposal issue, but the company does want to offer another option, while not asking for money or any changes to regulations or laws at this point. The company is currently building partnerships and listening to communities.

The Mullers have generated some interest from politicians, and in fact, Muller had to leave the event right after her presentation to meet with a senator. The politicians recognize that the status quo is not working, she said. Having another option in addition to Yucca Mountain could be helpful in moving spent fuel off the reactor sites sooner rather than later. In addition, this approach would be “dramatically” less expensive than a mined repository. The idea would be to take the spent fuel assemblies out of the pool or repackage assemblies currently in dry storage, place them in a disposal canister, and place that disposal canister in the borehole. Every site would need a license.

Deep Isolation is actively looking at dozens of potential sites across the country. Community support, state support, and appropriate geology are all important. When asked how the rock would be qualified for disposal, she pointed out that one of the best parts of working with a very mature industry – the oil and gas industry – is the large amount of research in understanding shale at these depths, and all the data and research already conducted by that industry is public. So, the company has a great starting point to identify sites.

(See *SpentFUEL* No. 1213, June 1, 2018 and No. 1203, March 23, 2018 for more information about Deep Isolation.)