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## No end to nuclear disaster

By Nancy Braus, Brattleboro

Here's the thing about the Fukushima nuclear disaster: as we approach the 5th anniversary, there is still no end in sight. We are no closer to a date, a year, or even a decade when we can say "Fukushima is no longer a dangerous toxic waste site." After five years of failure, no one can say with certainty when radioactive water will stop polluting the Pacific Ocean with tritium and other nastier elements, or how to decommission and clean up the irradiated debris from multiple reactors whose cores have melted into the earth.

On March 11, 2011, when the earthquake and resulting tidal wave struck the coast of Northern Japan, the world watched in horror and fear. Fear for the future of those living and working in the area of Fukushima, and fear for all of us. Most people had no idea that a technologically advanced country like Japan would cram six nuclear reactors into an ocean site that is a seismic time bomb. When we watched the reactor fires and hydrogen explosions, the buildings crumbling, and saw how helpless the disaster management professionals appeared, it was clear that this environmental crisis was not going to be solved quickly, or maybe not at all.

One thing about splitting the atom: it generates a huge amount of heat and radiation. There is a fundamental need to control every aspect of nuclear power. When this cannot happen, as happened at Fukushima, when the electrical power failed, and the back-up power failed, the results are lethal.

The area immediately surrounding Fukushima was heavily radiated and became uninhabitable forever. Imagine a landscape that begins in Northfield, Mass., continues through Vernon and Brattleboro and north through Putney, Vermont, and includes the Connecticut River. It is difficult to see how the area will ever recover, as its economy was primarily tourism, fishing, and agriculture. The water, and soil in fields and the surrounding hills for many miles around, is radioactive. None of the forests are decontaminated, so radiation runs downhill with rain into local fields and rivers that have supposedly been cleaned up. In many towns, clean up consists of scraping two inches of top soil off the land, putting it in plastic ag bags, and leaving it in piles around town.

Water might be the most pervasive and ongoing problem. Like all nuclear waste, there is really no good solution to water disposal. Hundreds of millions of gallons of radioactive water is accumulating in tanks, some leaky, around the area. Against the protests of the fishing businesses, environmental groups, and area citizens, some of this water has already been dumped into the ocean. 320 tons a day circulate through the four reactors to cool them. Additional water pours through the reactor site and becomes radiated, like the water that is being contaminated with tritium by getting into the buildings at Vermont Yankee. Much of that will make its way to the Pacific Ocean, some into groundwater. Until the basic problem of cleaning up the melted down reactor cores occurs, this water will continue to accumulate.

The cores are too dangerous for humans to do the necessary work. Robots fail after hours; one, for four days. Each of four reactors is damaged differently so there are four unique decommissioning projects; three are in different states of melt down or melt through. The nuclear industry has never faced a disaster of this magnitude and complexity, and it does not yet have the technology to deal with it. And then there is the problem of dismantling the spent fuel pools; the fuel rods have melted through and lie in masses on the floors of the reactors, not in pools above them. No one knows how far into the earth

below three reactors the rods have melted through. This is a first – no, three firsts -- in nuclear power history.

Once those challenges are met, what will they do with the intensely radioactive waste that were once the fuel rods? One heavily contested proposal by the government is to actually construct a burial site 13 miles offshore, under the bed of the sea. The government says they will reach this dumping ground through tunnels- in an area of constant earthquakes, what could go wrong?

I have followed the news coming from Japan for the past five years because I live in Putney, just outside Vermont Yankee's nuclear evacuation zone, and because I have been a strong opponent of nuclear energy for my adult life. I will not pretend to be technologically savvy, with an immense grasp of all that has gone wrong, will go wrong, and how, when, and if the Fukushima disaster will finally be resolved. However, I know that placing our air, land, water, food, people, animals, and plant life - really, all that matters in the world - in jeopardy to produce electricity that could be produced sustainably is not sane or smart. We all need to bear witness to Fukushima's endless catastrophe, and work for no more Fukushimas.

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