

**Testimony of Henrietta Cosentino on behalf of the League of Women Voters (LWV) of the Plymouth Area, in conjunction with the Leagues of the Cape Cod Area (LWVCC) and of Falmouth (LWVF), in Favor of S. 1507 (Senator O'Connor), An Act Relative to Monitoring Dry Casks of Spent Nuclear Fuel, and H. 2254 (Reps. Cutler & LaNatra), An Act to Add Section 5K of Chapter 111.**

*Henrietta Cosentino sits on the board of directors of the League of Women Voters of the Plymouth Area and chairs its Nuclear Affairs Subcommittee.*

The safe storage of Spent Nuclear Fuel (SNF) storage has emerged as a major issue nationwide, as an aging generation of plants undergoes decommissioning. The storage of high-level nuclear wastes is of concern to the League because it could threaten public health and the environment. The issues addressed by this bill are among many serious challenges that every single nuclear plant in the country will have to face. Plymouth is at the forefront of this drama. Our health and welfare depend on doing it right.

Nuclear fuel may be “spent” but its radioactivity lasts hundreds of thousands of years. Radioactive emissions are especially insidious because they are impalpable: they cannot be seen, smelled, tasted or touched. **Therefore any SNF storage system must include a monitoring plan that detects & reports leaks immediately.**

In a forest of casks, how would you know which cask is the source of a leak detected by a sensor at the periphery? You wouldn't. Daily visual inspection of vents in the overpack—as planned by Holtec—cannot reveal a crack in the internal cask containing the spent fuel rods.



Dry Casks on the original ISFSI storage pad (c. 2 years ago). Dry casks look like giant silos. Each stands near 20 ft tall, 11 ft in diameter. A multi-purpose inner canister (MPC) with steel 1/2” walls holds the fuel assemblies. The overpack is a steel shell, clad with a 24-inch concrete shield. When filled, a single cask can weigh up to 300,000 pounds—almost twice as much as a fully loaded 737 airplane. (See <https://www.wbur.org/earthwhile/2019/05/30/plymouth-nuclear-plant-decommissioning>). **Despite their robust appearance, casks are vulnerable (see p. 2). By November there will c. 62 of them.**

### **HOW MUCH RADIATION IN A SINGLE CASK?**

More than you'd think. A single canister holds more than half the Cesium-137 (Cs-137)\* released at Chernobyl, Ukraine, in 1986. That's a huge amount of toxicity.

*\* “Cs-137 is an especially dangerous fission product thanks to its high yield during fission, moderate half-life, high-energy decay pathway, and chemical reactivity). Because of these properties, cesium-137 is a major contributor to the total radiation released during nuclear accidents. Internal exposure to Cs-137 through ingestion or inhalation allows the radioactive material to be distributed in the soft tissues, especially muscle tissue, which increases cancer risk” (<https://www.epa.gov/radiation/radionuclide-basics-cesium-137>).*

## HOLTEC'S HI-STORM 100 CASK SYSTEM—NOT AS ROBUST AT IT LOOKS.

- **Canisters** with half-inch stainless steel walls **may CRACK within 30 years** per the **Nuclear Regulatory Commission (NRC)**.
- **Stress Corrosion is *always* a problem—especially in a marine environment.** A fully **welded system is not impregnable**. The oldest Holtec cask is less than 30 years old so there is no basis for claiming that they will remain safe for over a century. Per **Holtec's own technical bulletin HTB-020**. See Holtec president Dr. Kris Singh's presentation on YouTube, December 14th, 2018. See exact citations on page 3 of James Lampert's testimony.
- **Concrete (used in the overpack as a shield) corrodes.** The condition of our bridges and overpasses attests to that fact.
- There is **no known technology to inspect, repair or replace cracked canisters**. (See Dr. Singh's White Paper of 2018).
- **Canisters are warranted for 25 years.** Its ingredients are **toxic for 250,000 years**.

### *Logic? or Magical Thinking?*

*The stainless steel will stay strong for 250,000 years?  
The welds (defying all previous known weld behavior) will never fail?*

## THE ROLE OF HELIUM

Helium, an inert gas, is pumped into the inner cask before it is sealed in order to

- retard corrosion of the fuel rod cladding
- conduct heat from the fuel rod assemblies to the cask's cylindrical wall
- prevent combustion of the spent fuel and the fuel rod cladding

If helium leaks from a cask, especially if the lost helium is replaced by air, cask failure is likely.

If a cask gets too hot, it probably means that:

- there's a nuclear reaction in the canister
- passive air flow between the inner pack and the overpack is blocked or overwhelmed

How can helium and heat be effectively monitored? *Only by instruments affixed to each individual cask.*

## HOLTEC'S FLAWED MONITORING PLANS

*No individual cask monitoring for helium, heat or radiation.*

*Between now and 2034...*

- **Daily visual inspections of the overpack vents.**
- **Thermoluminescent dosimeters (TLDs)** around the perimeters of the storage pad, to be read every few months to see how much total radiation has been emitted.

*From 2034 to some time in the remote future...*

- **Inspection of one cask every 5 years.** Always the same cask—and not even necessarily in Plymouth.

**In other words, as the casks deteriorate, the inspections decrease.**

**DOES THIS MAKE SENSE?**

## WHO WILL PAY FOR PROPER MONITORING?

Pilgrim's owner, Holtec-Pilgrim, can be expected to sue the Department of Energy (DOE) for all costs associated with spent fuel management. This is standard practice for reactor operators. And the DOE will reimburse Holtec-Pilgrim for spent fuel management, as it does all plant owners, because it breached its contract to remove all spent fuel. Monitoring costs will be recovered. Holtec's profits will not be affected in the slightest. The cost of proper monitoring is no excuse for cutting corners.

## IN CONCLUSION

The Plymouth Area LWV, together with the Cape Cod and Falmouth Leagues, support storage of Spent Nuclear Fuel (SNF) and Greater than Class C (GTCC) *only* when it is implemented in a manner that protects public health, safety, and the environment; and when it is in compliance with all state and federal laws and regulations. Current plans miss the mark.

It should go without saying that when dealing with high-level nuclear waste, we need comprehensive measures to provide protection of human health and the environment from any adverse effects of the storage of radioactive materials produced by nuclear energy, including SNF and GTCC. Holtec's current plan for SNF storage fails to implement the comprehensive measures needed. It fails to maximize protection of the public and the environment. Holtec's dry casks are virtually certain to corrode, crack and start leaking within two to three decades—or earlier, if there are manufacturing defects. The current monitoring plan does not guarantee that a leak will be detected or reported in a timely manner. It offers no way to pinpoint the specific source of a leak. The NRC has authorized a shoddy and dangerous plan. That is why the state needs to step in. These companion bills are a solid start.

Respectfully,

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