

Spent Nuclear Fuel Management Recommendations

Recommendations

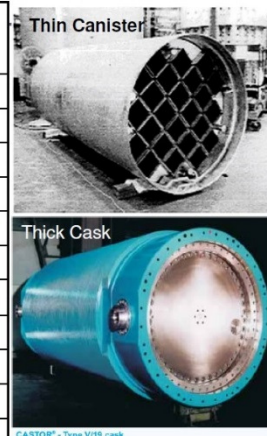
The Nuclear Regulatory Commission (NRC) is misusing their authority by exempting licensees from complying with critical storage and transport safety regulations and laws. That exemption authority should be removed. Decommissioning Trust Funds should be frozen until these issues are resolved.

Unsafe thin-wall canister systems must be replaced with containers that meet Nuclear Waste Policy Act (NWPA) safety requirements, Nuclear Waste Technical Review Board (NWTRB) safety recommendations, and American Society of Mechanical Engineers ASME N3 Nuclear Pressure Vessel certification.

Current proposed legislation makes the problems worse and does not address these safety and funding issues.

Ten reasons to use thick nuclear waste storage casks

Safety Features	Thin canisters	Thick casks
1. Thick walls	1/2" - 5/8"	10" - 19.75"
2. Won't crack		✓
3. Ability to repair, replace seals		✓
4. Ability to inspect (inside & out)		✓
5. Monitor system prevents leaks		✓
6. ASME container certification		✓
7. Defense in depth (redundancy)		✓
8. Store in concrete building		✓
9. Gamma & neutron protection	Need overpack	✓
10. Transportable w/o add'l cask		✓
Market leader	U.S.	World



Details

- **The Nuclear Regulatory Commission (NRC) approves thin-wall stainless steel storage canisters (only 1/2" to 5/8" thick) that do not meet Nuclear Waste Policy Act of 1986 (NWPA) storage and transport safety requirements for monitored retrievable fuel storage and transport.**
- **Instead of solving this problem, proposed Senate legislation, Nuclear Waste Policy Act of 2019, and the similar 2018 H.R. 3053 Shimkus bill, make the problem worse.** These bills
 - Eliminate critical storage and transport safety requirements.
 - Eliminate site specific environmental impact requirements.
 - Eliminate oversight and transparency requirements.
 - Allow the Department of Energy (DOE) to take ownership of the nuclear waste at existing sites.
 - Eliminate or jeopardize numerous state and public rights through federal preemption.
 - Change current mandatory nuclear waste funding to discretionary with Congress, with no adequate funding source.
 - Ignore current transportation infrastructure safety and funding issues.
- **The NRC uses their exemption authority to approve thin-wall canisters that do not meet ASME N3 Nuclear Pressure Vessel standards, increasing risks for major radiation releases and hydrogen gas explosions.**
 - ASME N3 are minimum American mechanical engineering standards for pressure vessels to ensure they are designed to be maintained and monitored in a manner to prevent explosions, such as hydrogen gas explosions.
 - Only thick-wall metal casks (the standard in most of the world) can meet ASME N3 nuclear pressure vessel certification.
 - The thick-wall casks and fuel assemblies at Fukushima survived the 2011 tsunami and 9.0 earthquake. They are designed to be monitored, maintained and transported. They are about 10" thick. Other thick-wall metal cask designs are up to 19.75" thick.
 - Thick casks are stored in hardened buildings for additional environmental and security protection.

SanOnofreSafety.org

- **The NRC uses their exemption authority to eliminate off-site emergency planning requirements and to reduce licensee liability requirements.** The NRC falsely claims nothing can go wrong once reactors are shut down and nothing can go wrong once spent nuclear fuel is in dry storage. The opposite is true based on NRC's own evidence.
- **The NRC allows elimination of spent fuel pools – the only current on-site method to replace failing containers, and the only current on-site method to inspect and manage the spent fuel to ensure it is safe for both storage and transport.**
 - A dry fuel handling facility (hot cell) is the only other method to handle spent nuclear fuel.
 - The only US hot cell large enough to do this, the Idaho Test Area North (TAN) Hot Cell facility, was destroyed in 2007.
 - No hot cells are planned and no funding is allocated for hot cells.
- **The NRC approves dry storage of hotter fuel assemblies and use of fuel with higher burnup (longer burning time in the reactors) in spite of knowing it damages the fuel rods and can make them too brittle for safe storage and transport.**
- **The NRC ignores transport safety regulations because they have approved thin-wall canisters that cannot be inspected or maintained (inside or out) to meet transport safety regulations.**

10 CFR § 71.85 Packaging and Transportation of Radioactive Materials. Preliminary determinations. Before the first use of any packaging for the shipment of licensed material — (a) The certificate holder shall ascertain that there are no cracks, pinholes, uncontrolled voids, or other defects that could significantly reduce the effectiveness of the packaging.
- **The US Nuclear Waste Technical Review Board (NWTRB) December 2017 report to Congress and the DOE Secretary recommends all spent nuclear fuel and its containment must be designed to be maintained, monitored and retrievable in a manner to prevent radioactive releases and hydrogen gas explosions.**
 - Most current U.S. spent nuclear fuel storage containers (defense and commercial) do not meet those requirements.
 - Containers build up hydrogen gas due to the radiation of the residual water remaining in the containers after drying. However, NRC approves thin-wall canisters without pressure monitors and without pressure relief valves, so we will only know **after** they explode.
 - Each container holds roughly the radioactivity released from the 1986 Chernobyl nuclear disaster.
 - The NWTRB only has authority to review and make recommendations for DOE managed nuclear waste. They have no enforcement authority. Their recommendations are frequently ignored.
- **The Holtec dry storage systems have made the problem worse due to their inferior imprecise canister downloading system that unavoidably scrapes and gouges the walls of every canister stored. The NRC refuses to cite Holtec for this violation of their NRC license certificate.**
 - Once cracks start in these thin-wall canisters, cracks continue to grow through the wall in about 16 years (according to the NRC). In hotter canisters, crack growth rate doubles for every 10 degree increase in temperature.
 - Partially cracked canisters have no seismic earthquake rating.
 - Partially cracked canisters can have structural failure.
 - The NRC continues to approve Holtec canisters in spite of these unresolved problems.
 - The 45 to 55-ton stainless steel canisters scrape against a carbon steel canister guide ring or canister vertical channels. The canisters are scraped and gouged the entire length of the walls.
 - The NRC states the carbon particles deposited on the canister walls causes galvanic corrosion, one of many conditions that cause premature cracking and corrosion of these thin-wall canisters.
- **See whistleblower statements on Holtec mismanagement of the San Onofre Holtec HI-STORM UMAX canister system. This is the same system proposed for New Mexico.** <https://youtu.be/fnM9rfhWmic>
 Transcript: <https://sanonofresafety.files.wordpress.com/2018/08/davidfritchcep08-09-2018transcriptdg.pdf>