

*Radioactive  
Plymouth Rock*  
by Dan  
Borelli



# PILGRIM Nuclear Power Station

*holding 800 tons of irradiated spent fuel*

A RISK to the health and welfare of several million residents

- Insecure Storage Site
- Aging, Thin-walled Dry Casks
- Insufficient Monitoring

WHAT CAN WE DO ABOUT THIS?

*WE DESERVE BETTER. WE NEED TO DEMAND IT.*

# DICK CHENEY'S 1% DOCTRINE

*"If there's a 1% chance that Pakistani scientists are helping al-Qaeda build or develop a nuclear weapon, we have to treat it as a certainty in terms of our response. It's not about our analysis ... It's about our response."*

*Let's apply this doctrine to Pilgrim...*

**If there's a 1% chance ...**

that terrorists could breach the ISFSI

that casks will leak...

that monitors don't detect a leak in a timely manner...

**WE HAVE TO TREAT IT AS A CERTAINTY  
IN TERMS OF OUR RESPONSE**

“There is another way to think about risk:  
the risk a society runs when it falls into the habit of  
responding to long-term risks  
with short-term solutions.”

Michael Lewis, *The Fifth Risk*

SNF = long-term risk

Holtec Dry Casks = short-term solutions

# AMERICA'S HOMETOWN

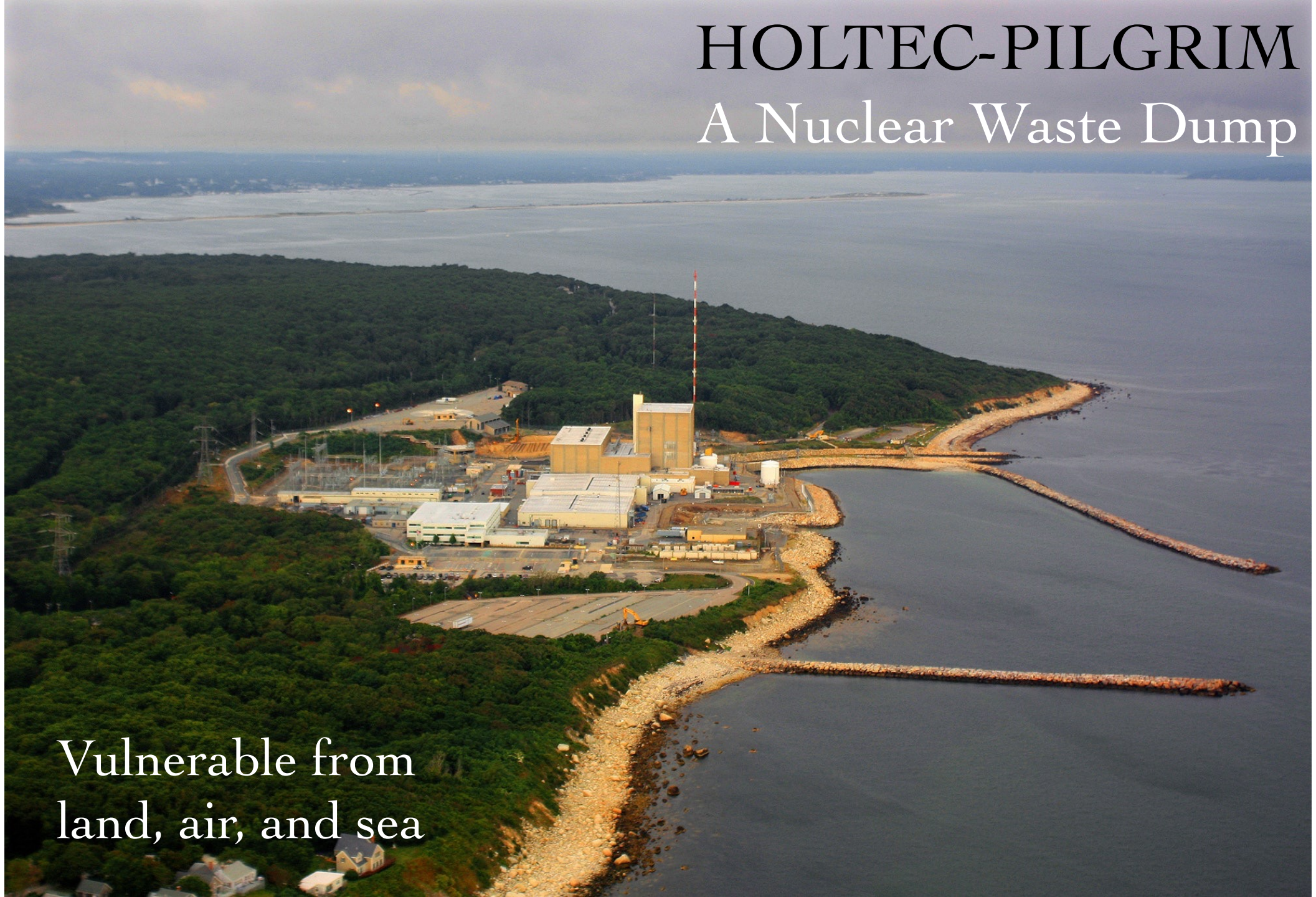
And just down  
the road...



# HOLTEC-PILGRIM

## A Nuclear Waste Dump

Vulnerable from  
land, air, and sea



*PHOTOS TAKEN BY  
'UNINVITED VISITORS'  
JUNE 2021*

*ISFSI II=  
Interim Spent  
Fuel Storage  
Installation #2*

*"Safety Starts  
Here"  
"Safety By Choice"*



*New  
Storage pad  
Visible from  
Rocky Hill Road*



*ISFSI II*



CASKS

*The wall to the left leads to this point.*

*ISFSI II*

*Earlier this summer there were 12 casks. By the end of November there will be 63.*

# CHAIN-LINK FENCES?

“Chain-link fences may ... protect postal carriers from fierce dogs, but they provide *scant protection for dry casks from determined malevolent actors.*”

*Dave Lochbaum, retired Director of the Nuclear Safety Project of the Union of Concerned Scientists (Webinar, August 26, 2021)*

*The threat of terrorism is greater now than it was on 911.*

Remember January 6<sup>th</sup>?

Who might want to do damage to America's HomeTown?

# *Protection from Guns, Grenades, Bombs...?*

Armor-penetrating weapons like this  
are available on the internet

From Rocky Hill Road to ISFSI pad:  
*362 feet.*

Firing range of the weapon here:  
*2296 feet.*

***THERE IS NO MEANINGFUL  
SECURITY FROM  
WEAPONS LIKE THIS.***

*And there is to date no meaningful legislation  
that would address this situation.*



To Protect the casks from terrorists, we need  
**HARDENED ON SITE STORAGE! (aka HOSS)**

In Europe, dry casks are typically out of sight:  
whether underground or  
inside a thick-walled, well-guarded building  
or *at least* behind a berm.

A berm is dirt cheap!

*While you  
contemplate the  
situation,  
let's follow  
the wall  
to the right*



*Round the corner to head to the upper parking lot*



# Upper Parking Lot.

(and beyond it, the  
reactor building &  
fuel pool. Behind  
chain link fences.)

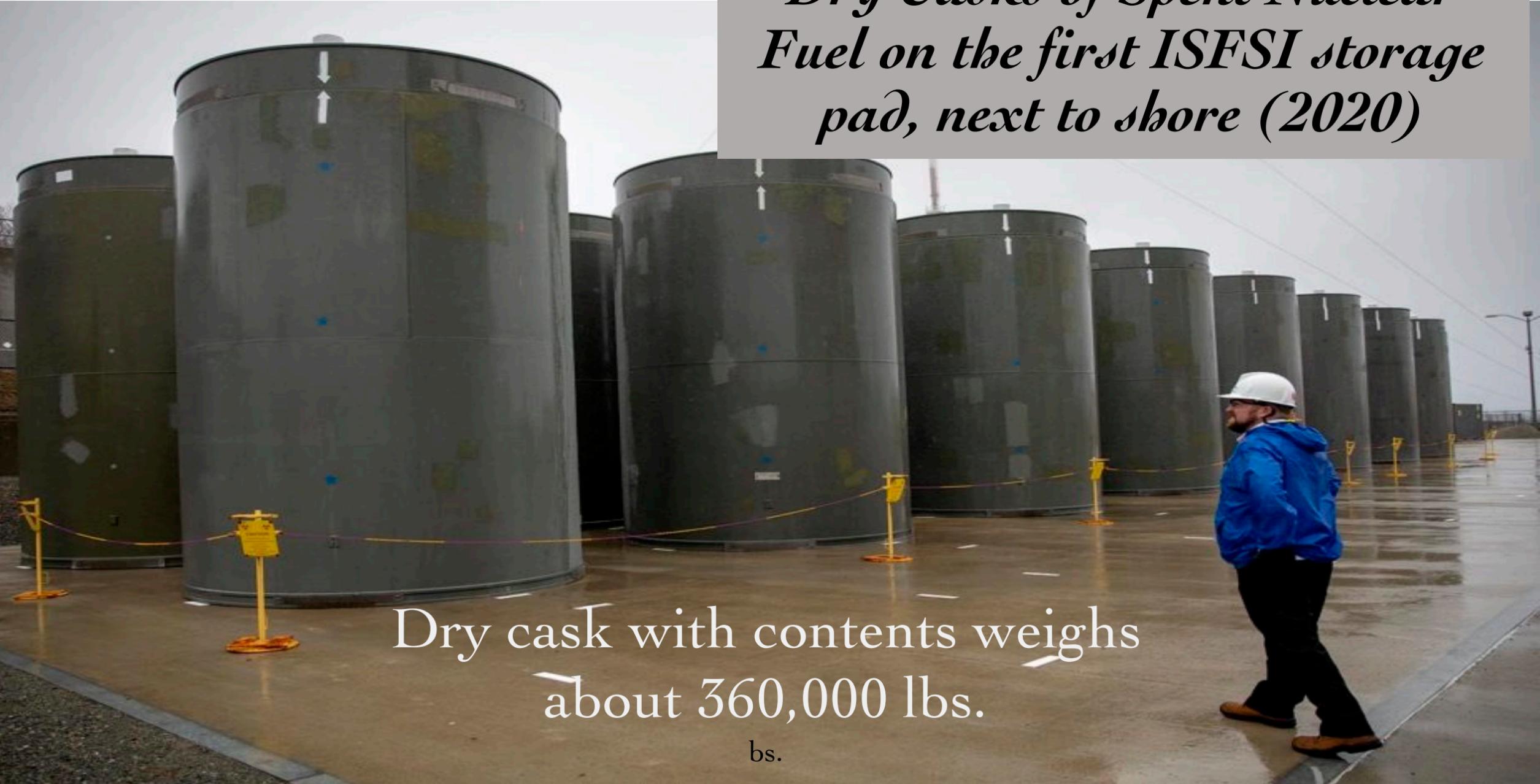
***No DOGS IN  
SIGHT.  
NO GUARDS  
EITHER.***



*Now imagine an ISFSI worker with a grudge...*

A change of license, granted to Holtec on August 5<sup>th</sup> of this year, *waives the necessity for non-security workers* (such as those dismantling the remaining buildings) *to have background checks* once all spent fuel is in dry storage—i.e. starting in late November.

**Certified Insanity?!**



*Dry Casks of Spent Nuclear  
Fuel on the first ISFSI storage  
pad, next to shore (2020)*

Dry cask with contents weighs  
about 360,000 lbs.

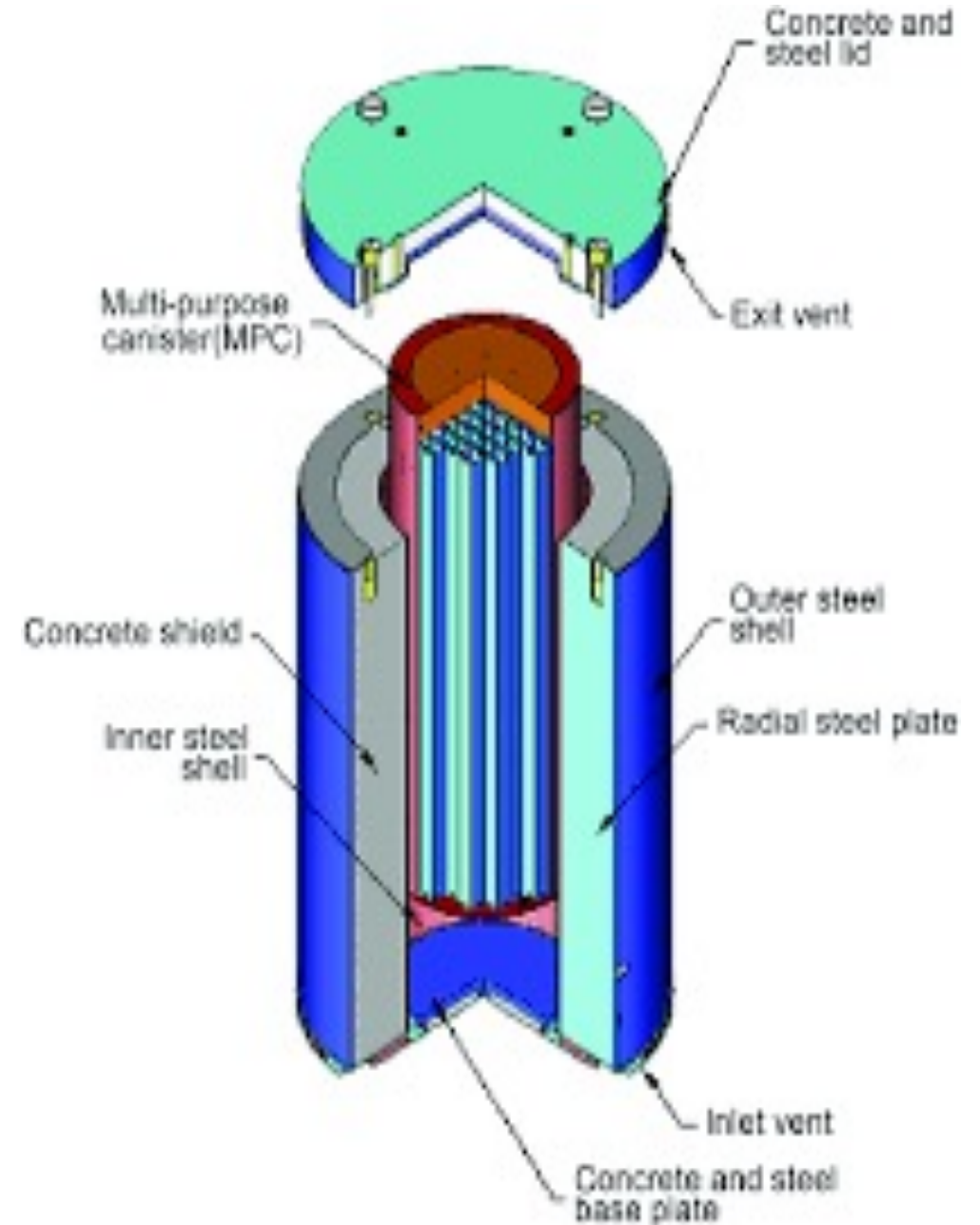
bs.

## *What's in a Dry Cask?*

An inner cylinder of  $\frac{1}{2}$ " steel (Multi Purpose Canister or MPC) holds up to 68 *highly radioactive* spent fuel rod assemblies.

This is encased in an outer pack of  $\frac{1}{2}$ " steel clad in 24" concrete.

A single dry cask contains least half as much *Cesium-137* as was released at *Chernobyl*



## *Nuclear Disasters in our lifetimes*

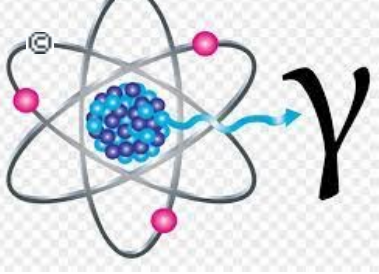
A nuclear reactor meltdown releases massive radioactivity *that was never supposed to reach our environment or our bodies*. Though we no longer worry about a meltdown at Pilgrim, **the same toxic isotopes are still sitting in dry cask and, in worst case scenarios, can be released**. *Cesium* and *strontium* play large parts in the impact on health, and both of these decay in a characteristic half-life of around 30 years. ***It takes 10-20 half-lives for these to be close-to-gone from our environment. That's 300–600 years.*** We are really only at the front-end of these impacts.

1979 — Three Mile Island (PA): 1.4 half-lives of strontium-90

1979 — Church Rock (NM): 1.8 half-lives of lead-210

1986 — Chernobyl (Ukraine): 1.1 half-life of cesium-137

2011 — Fukushima Daiichi (Japan): 0.3 cesium-137 half-lives ...



## *CESIUM-137*

- If ingested or inhaled, Cesium-137 can penetrate soft tissues, especially muscle tissue—large doses leading to cancer and death. Per the National Academy of Science, there is no safe dose of ionizing radiation.

THE CHERNOBYL MELTDOWN (April 1996) released 80,000 TeraBecquerels of C-137 into the atmosphere.

35 years later, radiation has greatly decreased. But scientists estimate the zone around the former plant will not be habitable for up to 20,000 years...

(<https://www.epa.gov/radiation/radionuclide-basics-cesium-137>).

# CAN THESE CASKS LEAK?

*YES. They can and they will.*

The outtake vents (just below the welded lid) are fitted with “duct photon attenuators” to diffuse the radiation that *regularly streams* through the overpacks. But when the casks are new and undamaged, leakage is minimal and non-threatening—within so-called ‘allowable’ measures.

**However, all material things deteriorate.**

Concrete wears out. Steel degrades. Welds fail.

*So – what’s the warranty?*

HOLTEC HI-STORM 100 CASK SYSTEM

WARRANTIED for 25 YEARS

(and only for manufacturer's defects).

LICENSED FOR 40 YEARS

Sure to corrode. And likely to LEAK within 30 years  
—especially in a marine environment.

INGREDIENTS TOXIC FOR EONS...

# CAN THEY BE REPAIRED?

# NO!!!

“It is not practical to repair a canister if it were damaged... You will have...millions of curies of radioactivity coming out of the canister...A canister that develops a microscopic crack (all it takes is a microscopic crack to get the release)...to precisely locate it.. is a tall order. And then if you try to repair it (remotely by welding)...the problem with that is you create a rough surface which becomes a new site for corrosion down the road...

*I don't advocate repairing the canister.”*

Dr. Kris Singh, CEO, Holtec International August 17, 2018 White Paper



## *Russian Doll Solution?*

Dr. Singh suggests the leaking cask could be capped with a larger cask.

*But ...*

- The larger overpack has not been authorized by the NRC
- Even if authorized, it would not fit in the given space on the ISFSI.
  - Even if it fit and were authorized, it wouldn't work...
- There are none available at Pilgrim.

***DOES THE NRC CARE??***

# ***THE NRC LOVES EXEMPTIONS***

It weakens existing standards in order to approve unsafe thin-wall nuclear waste storage and transport containers for the US nuclear utility industry.

*This makes the industry very happy.*

In 2019, the Sandia Lab (under the DoE) did an assessment of extended storage and transport of SNF.

They reported that:

Priority #1 was the problem of the risks of short-term through-wall cracks in thin-wall canisters.

But so far the DOE, NRC & US nuclear industry isn't seriously considering the only real solution — thick-wall casks that meet ASME N3 safety standards.\*

[\\*Gap Analysis to Guide DOE R&D in Supporting Extended Storage and Transportation of Spent Nuclear Fuel: An FY2019 Assessment SANDIA 2019-15479R, December 23, 2019](#)

# HOW WILL WE KNOW WHEN A CASK LEAKS?

## NRC & HOLTEC Inspection Plans

### NRC INSPECTIONS

- Now: every 2 yrs (not more than 3 yrs)
- From 2034: every 5 yrs (+/- 1.25 yrs), per *Aging Management* plan — 5 yrs from expiry of cask warranty & 15 yrs before expiry of cask license.
- Thereafter, inspections every 5 yrs (+/- 1.25 years) starting from the baseline date.

*NRC looks at the site programs, including radiation protection, corrective actions, and quality assurance. NRC also looks at the physical condition of the casks (exterior only) and the pad, examines any site-completed aging management reviews, and any required surveillances.*

### HOLTEC INSPECTIONS

- Daily visual inspection of vents. Quarterly instrumental soundings of heat emitted from outer cask walls.
- Some dosimeters placed around site aggregating radiation readings on a quarterly basis.
- Fuller inspection every 5 years (+/-1.25 years) (aging management plan) for the HI-STORM 100 license renewal.
- Proposes to inspect one cask onsite or alternatively take credit for an inspection done at a different site.

**SERIOUSLY?**

**NO REAL-TIME MONITORING of INDIVIDUAL CASKS**

MDPH (Mass Dept of Public Health)  
maintains 2 networks of monitors

### *Real-time Radiation Monitors*

15 real-time monitors scattered around town – 14 in Plymouth, 1 in Duxbury – to detect brief increases above background radiation levels. An increase triggers computer notification to MDPH & MEMA officials.

These are NOT on the Pilgrim site.

THEY DON'T REVEAL which cask the leak is coming from

### *Thermoluminescent Dosimeters (TLDs)*

39 TLDs: 36 in Plymouth, 1 each in Kingston, Duxbury, and Marshfield. Data from the ones located in the vicinity of Pilgrim are compared to data from a background location, to evaluate whether ambient radiation levels in communities near Pilgrim are consistent with background radiation levels.

DATA AGGREGATED over a 3-month period

## ***WHAT WE ACTUALLY NEED***

***Data*** from **every single dry cask** in **real-time**  
to be sent to MDPH and MEMA.

The state has the authority to demand this of Holtec!

### **LEGISLATION PROPOSING THIS:**

**S. 1507** (Senator O'Connor)

*An Act Relative to Monitoring Dry Casks of Spent Nuclear Fuel*

**H. 2254** (Reps. Cutler & LaNatra)

*An Act to Add Section 5K of Chapter 111*

This legislation was heard in Jt. Committee on Public Health this June  
**LET'S MOVE IT ALONG!**

# Collective Pilgrim advocacy — **TOMORROW!** *Wednesday 9/15*

*EMAIL the members of the Jt. Committee on Public Health and Safety*

- Sample letter—easy to copy and paste
- CC your local legislators (if you don't know who it is, use this link <https://malegislature.gov/Search/FindMyLegislator>)
- If your legislator sits on the Public Health committee, reaching him/her is all the more critical

*ASK them to Vote the bill out of committee favorably*

*KEEP issue in public spotlight*

- Like/share our social media via FB and Twitter: #NuclearSafetyMA

Does your legislator sit on  
the Joint Committee on Public Health?  
If so, please call or email him/her!

Sen. Jo Comerford, Senate Chair

Sen. Susan Moran, Vice Chair

Sen. Becca Rausch

Sen. Julian Cyr

Sen. Patrick O'Connor

Sen. Harriette Chandler

Rep. Marjorie Decker, House Chair

Rep. Brian Murray, Vice Chair

Rep. Brian Ashe

Rep. Paul Schmid

Rep. Kay Khan

Rep. Jack Lewis

Rep. Andy Vargas

Rep. Vanna Howard

Rep. Hannah Kane

Rep. Shawn Dooley

Rep. Jon Santiago

## Sample Email (Copy, Paste & Personalize):

***For impact, PLEASE PERSONALIZE!!***

To: [Jo.Comerford@masenate.gov](mailto:Jo.Comerford@masenate.gov), [Marjorie.Decker@mahouse.gov](mailto:Marjorie.Decker@mahouse.gov), [Becca.Rausch@masenate.gov](mailto:Becca.Rausch@masenate.gov), [Julian.Cyr@masenate.gov](mailto:Julian.Cyr@masenate.gov), [Patrick.OConnor@masenate.gov](mailto:Patrick.OConnor@masenate.gov), [Susan.Moran@masenate.gov](mailto:Susan.Moran@masenate.gov), [Harriette.Chandler@masenate.gov](mailto:Harriette.Chandler@masenate.gov), [Brian.Murray@mahouse.gov](mailto:Brian.Murray@mahouse.gov), [Brian.Ashe@mahouse.gov](mailto:Brian.Ashe@mahouse.gov), [Paul.Schmid@mahouse.gov](mailto:Paul.Schmid@mahouse.gov), [Kay.Khan@mahouse.gov](mailto:Kay.Khan@mahouse.gov), [Jack.Lewis@mahouse.gov](mailto:Jack.Lewis@mahouse.gov), [Andy.Vargas@mahouse.gov](mailto:Andy.Vargas@mahouse.gov), [Vanna.Howard@mahouse.gov](mailto:Vanna.Howard@mahouse.gov), [Hannah.Kane@mahouse.gov](mailto:Hannah.Kane@mahouse.gov), [Shawn.Dooley@mahouse.gov](mailto:Shawn.Dooley@mahouse.gov), [Jon.Santiago@mahouse.gov](mailto:Jon.Santiago@mahouse.gov)

Subject line: Support for S.1507/H.2254 *An Act Relative to Monitoring Dry Casks of Spent Nuclear Fuel*

Dear Chair Comerford, Chair Decker, and Members of the Joint Committee on Public Health:

As a League of Women Voters member, I strongly support S.1507/H.2254, *An Act Relative to Monitoring Dry Casks of Spent Nuclear Fuel*. To quote the League testimony, “We need comprehensive measures to protect human health and the environment from any adverse effects of the storage of radioactive materials produced by nuclear energy. Our health and welfare depend on storing spent nuclear fuel (SNF) correctly at the Pilgrim nuclear power plant. The SNF storage systems at the plant must include a monitoring plan that detects and reports leaks immediately. (Add info as to why this matters to you.)

Please help keep all residents of the Commonwealth safe from nuclear waste. Take action to report S.1507/H.2254 quickly and favorably out of committee. [IN YOUR OWN WORDS]

Thank you.

Sincerely ..... [FULL NAME, ADDRESS, PHONE #]

**ALTERNATIVELY –  
CALL Your Legislators!**

Maybe your legislator prefers calls to emails.

<https://malegislature.gov/Search/FindMyLegislator>

Put in the name of your town.

You will be given the names of your senator and your congressperson.

Click on their name and you will find *their email* and *their phone number*.

## *AT THE FEDERAL LEVEL*

DID YOU KNOW that included in the infrastructure bills are proposals to bail out aging nuclear plants, and to fund next generation Small Modular Reactors?

DID YOU KNOW that the National League of Women Voters has signed a letter along with over 200 other organizations, *opposing this bailout* ?

*You'll find a link to that letter in our toolkit (see chatbox)*

## Extra Credit! ACTIONS **at the FEDERAL level!!**

There are currently *two vacant seats* on the NRC Commission.

- Please urge President Biden to appoint Commissioners who *prioritize safety over industry interests*. These appointments require Senate confirmation.

Call **the WHITE HOUSE** (Tues-Thurs, 11AM-3PM): 1-202-456-1111

Call **Senator Markey** 1-202-224-2742 &

Call **Senator Warren**: 1-413-788-2690

- Please ask the NRC to enact *regulations to increase spent fuel security*; improve aging management and monitoring; and accelerate the development of dry/hot cell technology needed to repair cracked or failing casks.

Call **the NRC**: 1-800-368-5642