

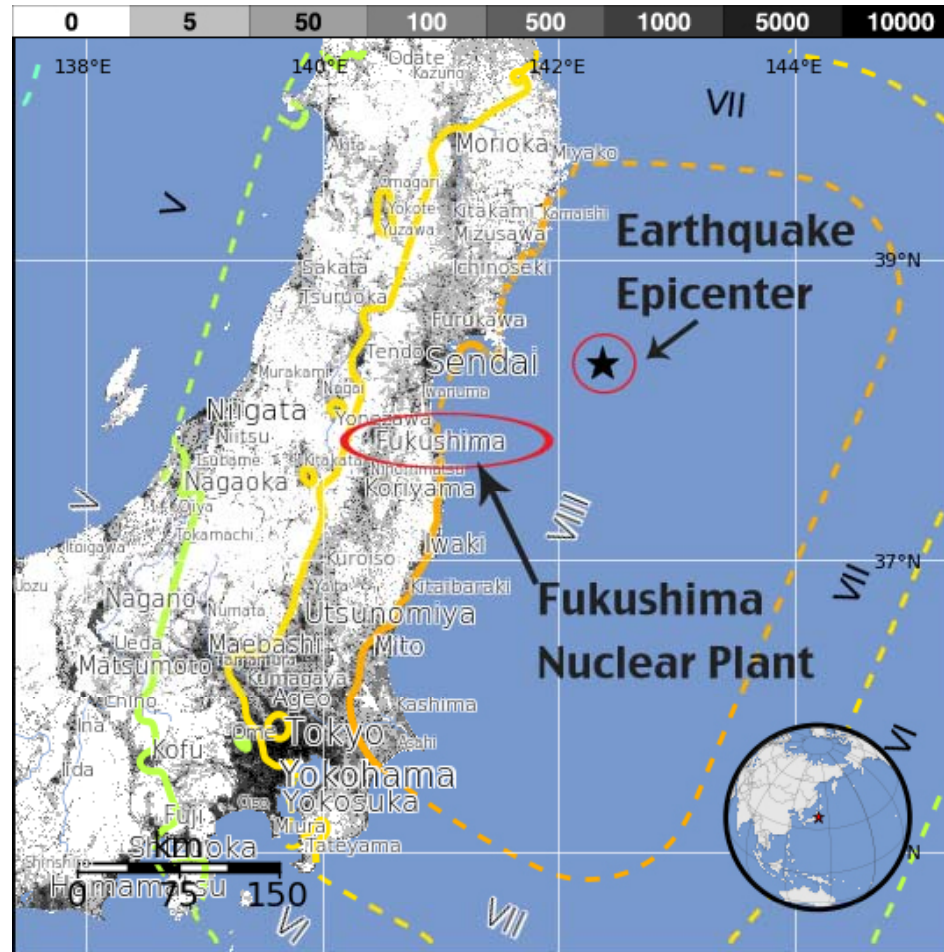
Radioactive Waste Risks
to the Great Lakes:
Lessons from Fukushima

Kevin Kamps

Beyond Nuclear

May 14, 2011

Japan: earthquake, tsunami, nuclear catastrophe



Before



Tsunami



Fukushima cross section

Anatomy of Fukushima Daiichi blasts



- Unit 1: Roof blown off by hydrogen gas explosion on 12 March
- Unit 2: Torus under reactor exploded on 15 March
- Unit 3: Roof blown off by hydrogen gas explosion on 14 March
- Unit 4: Two-hour fire at the spent fuel storage pond on 15 March and another fire on 16 March

After...Fukushima Units 4 & 3



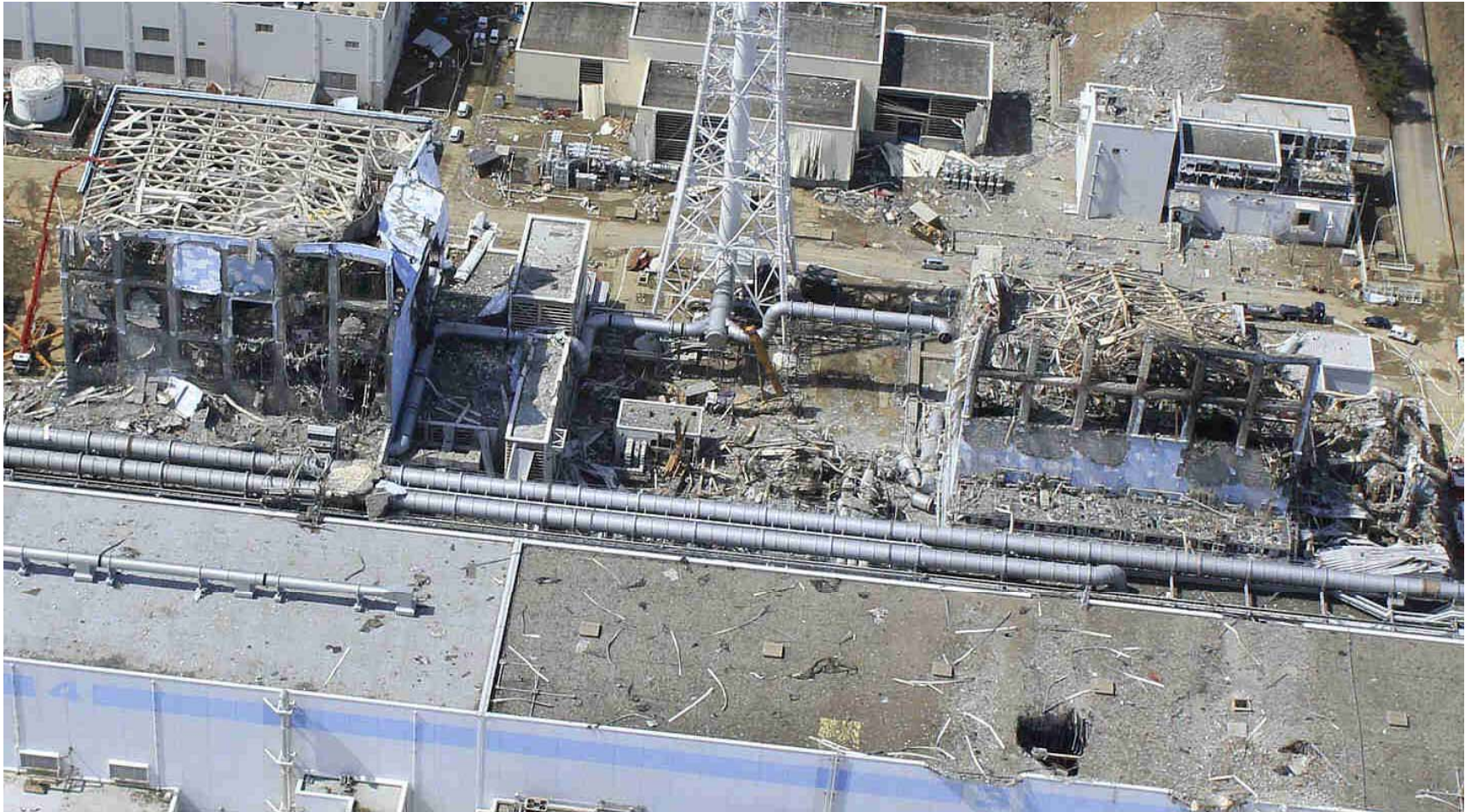
Fukushima Unit 4, mid March



Fukushima Units 2, 3, 4



Fukushima Unit 4 & 3



Fukushima Units 4, 3, 2, and 1



Fukushima Units 1, 2, 3, 4



Units 3 and 4



Units 2, 3, 4



Unit 4 pool, April 28



Unit 4 pool, April 28



Fukushima helicopter drops



Aborted Fukushima water drops



Chernobyl helicopter drops



Chernobyl pilots



Radioactive waste risks in Great Lakes: Accidents, Attacks, “Rust”



High-Level Radiocative Waste Risks

No Longer an Abstraction...

- Cooling water boiled away, irradiated nuclear fuel caught on fire
- Fire in Unit 4 pool (130 tons)
- Radioactive steam from Unit 2 pool
- Heat up of other pools (Units 1, 3, 5, 6)
Heat up of “common pool”?
- Damage or even complete destruction from massive hydrogen explosions in Units 1, 2, 3, and 4?
- One or more pools leaking cooling water?
- Unit 3’s pool collapsed?
- Unit 4 listing and at risk of collapse?

Quantities in Great Lakes region

U.S.:

13,825 metric tons

Plus

West Valley

Canada:

Dec. 31, 2009

2.2M bundles X

26kg/bundle =

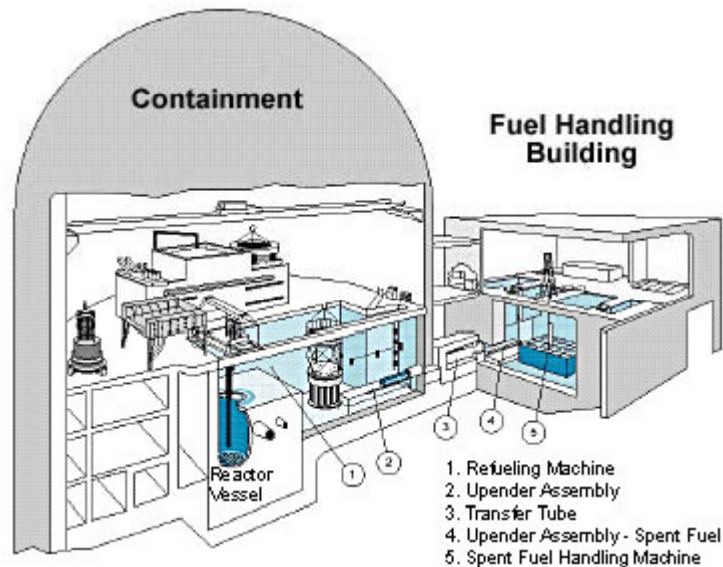
57,200 metric tons

Over time (ON 40 yrs, QC 30
yrs, NB 25 yrs)

3.6M bundles,

93,600 MT

On-site pools

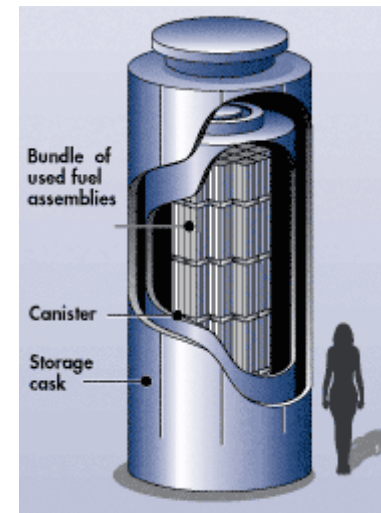
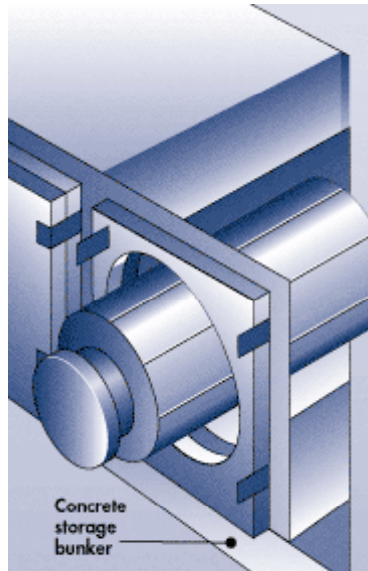


- Outside containment
- Cooling water must be present and circulating 24/7/365
- Risk of slow motion boil off, or fast motion drain down
- Pool fire could release enough hazardous radioactivity to cause tens of thousands of latent cancer deaths up to 500 miles downwind

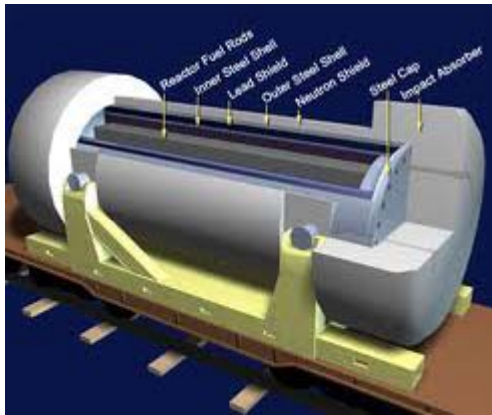
Pool drain downs



On-site dry casks

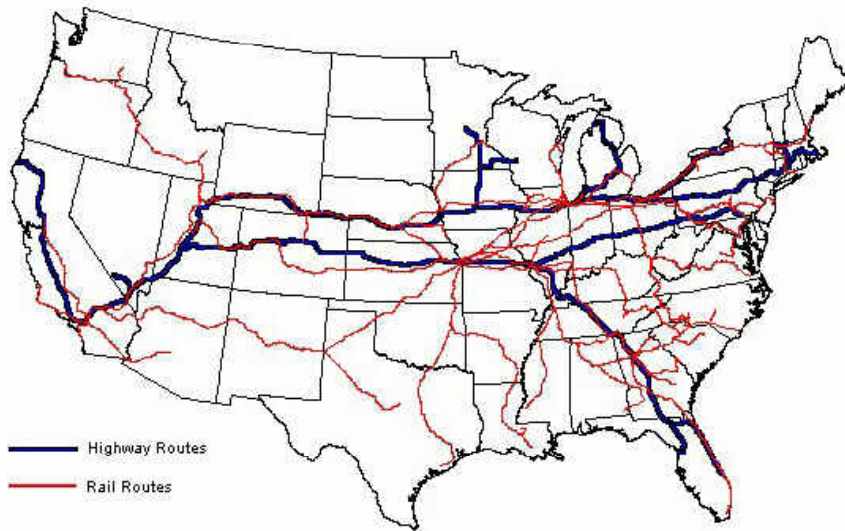


Rad. waste transport risks



Transport risks

Nuclear Waste Shipment Routes



Roads

Rails

Waterways

Bruce radioactive steam generator shipment

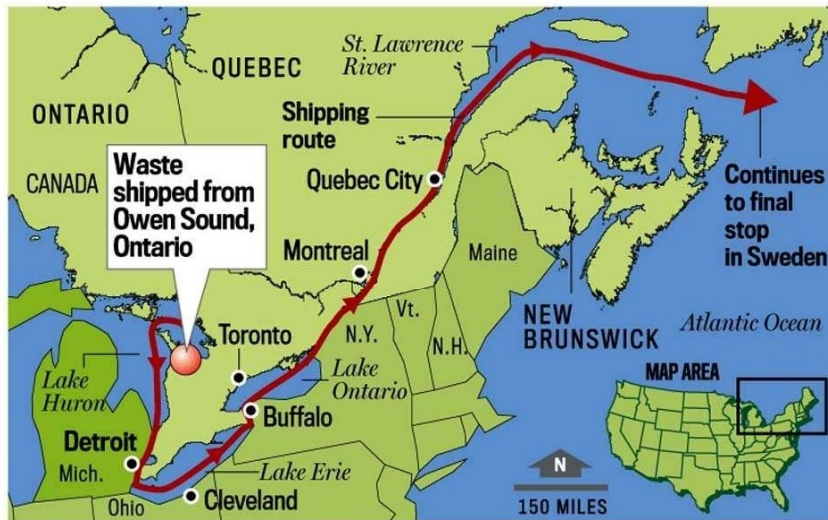


- 16 radioactive 100 ton steam generators
- 2006 EA: indefinite on-site storage
- 2009 mind change
- Spring 2010 discovery
- GLU resolution
- Sept. 28-29, 2010 CNSC hearings in Ottawa, ON

What's in them?
Mostly plutonium!



Where would they travel?



The Detroit News



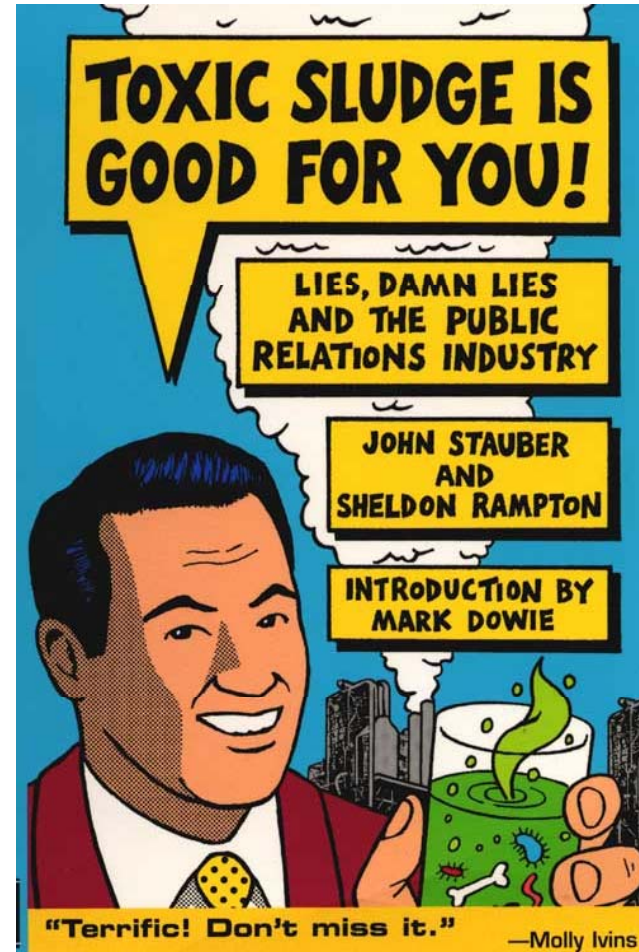
Duncan Hawthorne



“...it’s as if Chernobyl just happened yesterday for these people...”

PR v. emergency preparedness

the
RIGHT thing to do

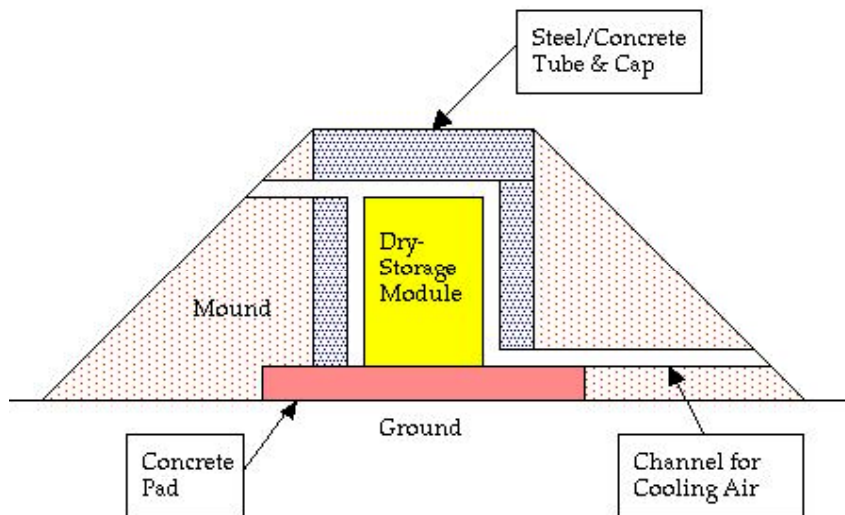


What can be done?!



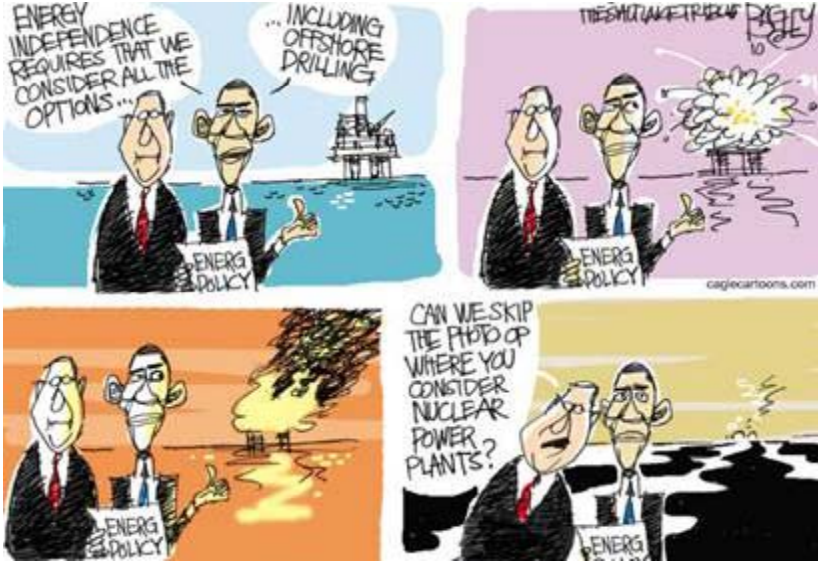
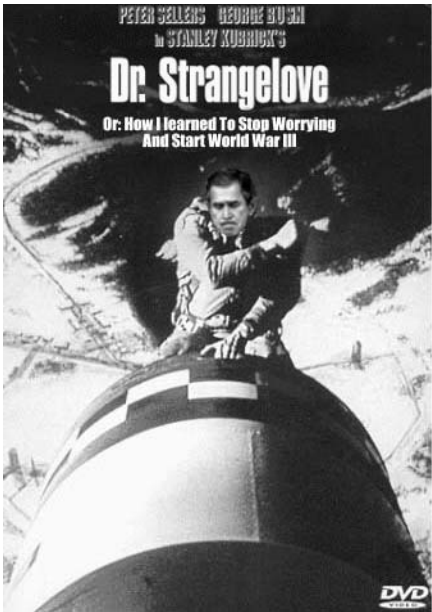
- CNSC approved shipment 2/4/11
- US DOT PHMSA must still approve shipment
- Call for PEIS on all water-borne radioactive waste transport
- Members of Congress can make this happen

Hardened On-Site Storage (HOSS)



- Empty pools
- Fortify dry casks against attack
- Safeguard dry casks against accidents
- Quality dry casks, monitored, retrievable, for eventual re-casking

New rad. waste disposal contracts

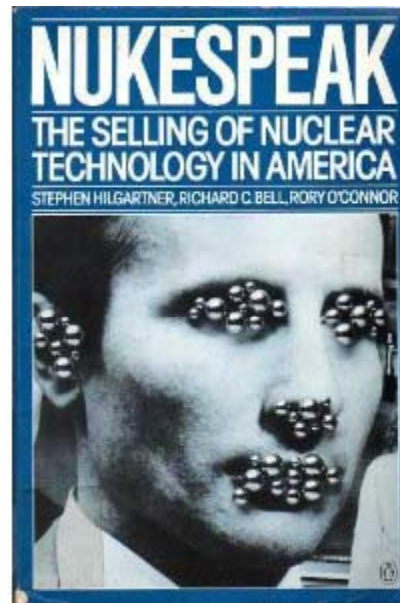


Financial risks



- Ratepayers
CWIP
- Taxpayers:
EPACT 2005
Nuclear loan guarantees
Other subsidies

Nuclear Waste Con Game



Blue Ribbon Commission on America's Nuclear Future

- Rowe
- Domenici
- Meserve
- Centralized interim storage (DOE sites, Native American reservations, nuclear power plants)
- Reprocessing
- Decommissioned nuclear power plants (BRP, Zion, West Valley)

What's at stake?

