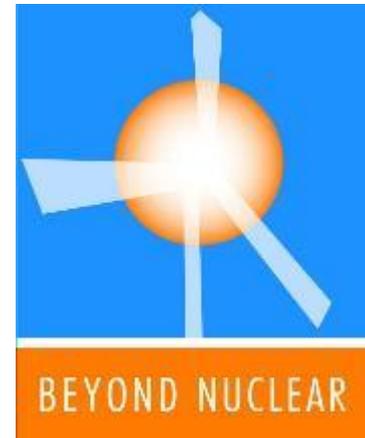


Fukushima Lessons Unlearned for Defense-In-Depth:

Example of Regulatory Treatment of ^{131}I Iodine Containment and Emergency Planning

**Commission Briefing
U.S. Nuclear Regulatory Commission
May 17, 2016**

**Paul Gunter
BeyondNuclear.org**



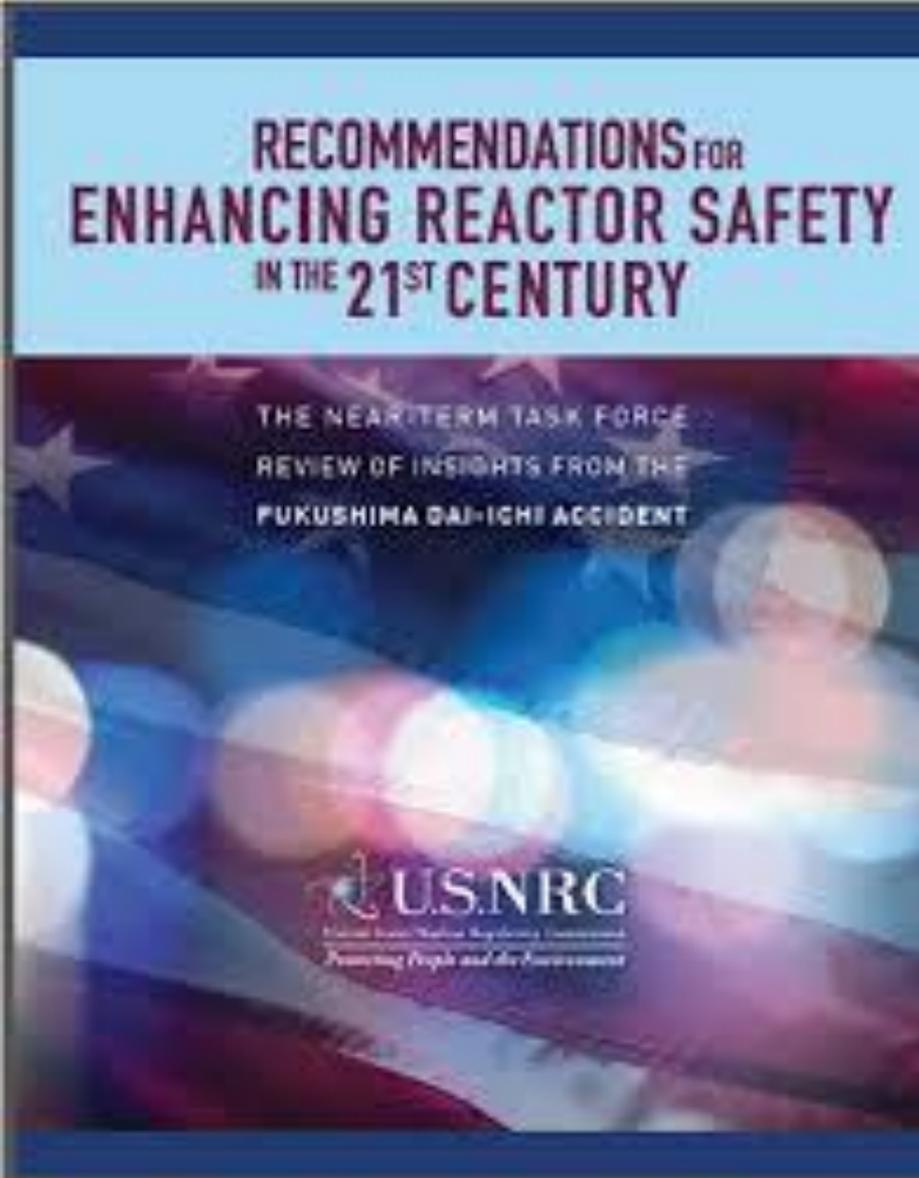
Historically Unreliable Fukushima-Style Containment Systems [GE Mark I and II Boiling Water Reactors]



Focus on radioactive iodine released by severe accidents and sabotage

- ☐ ^{131}I iodine radioactive half-life of 8 days and recognized as adverse risk to public health**
- ☐ Filtration during reactor containment venting can reduce uncontrolled radioactive releases to the environment and population exposure**
- ☐ Safe, effective prophylactic potassium iodide (KI) can be predistributed to protect the thyroid gland particularly young children**

Post-Core Damage Containment Protection

The image shows the cover of a report titled "RECOMMENDATIONS FOR ENHANCING REACTOR SAFETY IN THE 21ST CENTURY". The cover features a background of an American flag with stars and stripes. The text is in white and red. At the bottom, the U.S. NRC logo is visible, with the tagline "Protecting People and the Environment".

RECOMMENDATIONS FOR ENHANCING REACTOR SAFETY IN THE 21ST CENTURY

THE NEAR-TERM TASK FORCE
REVIEW OF INSIGHTS FROM THE
FUKUSHIMA DAI-ICHI ACCIDENT

 **U.S. NRC**
United States Nuclear Regulatory Commission
Protecting People and the Environment

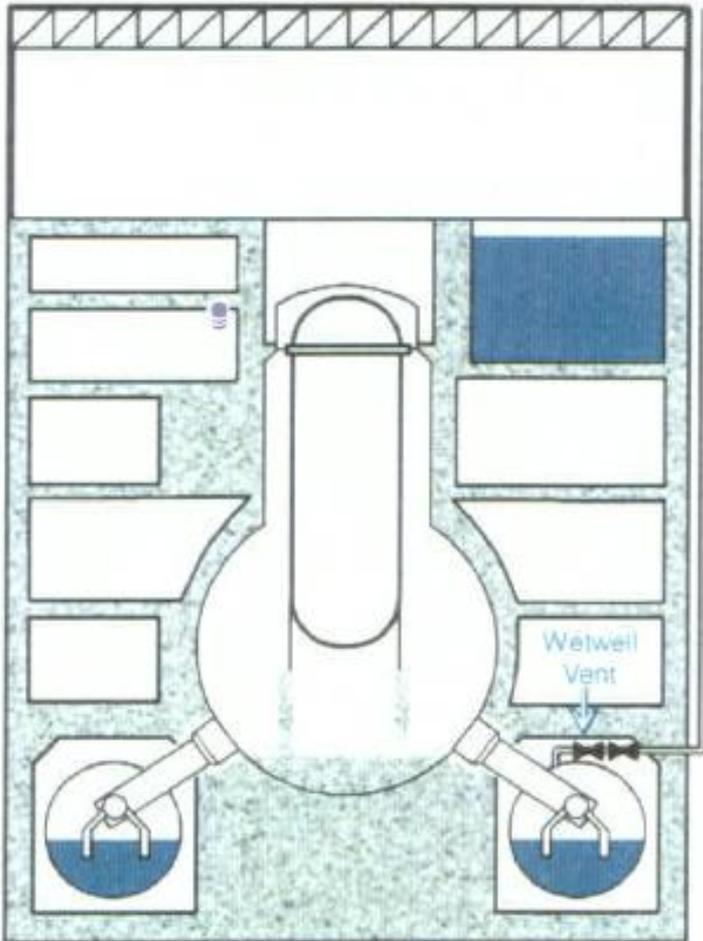
- ❑ **Commission rejects its staff recommendation to order external engineered filters on Hardened Containment Vents per SECY12-0157**
- ❑ **Commission abandons proposed rulemaking for Containment Protection and Release Reduction (CPRR) and staff effort to set performance criteria for Severe Accident Water Addition (SAWA)**

Base Case for NRC Enforcement Action (EA 13-109)

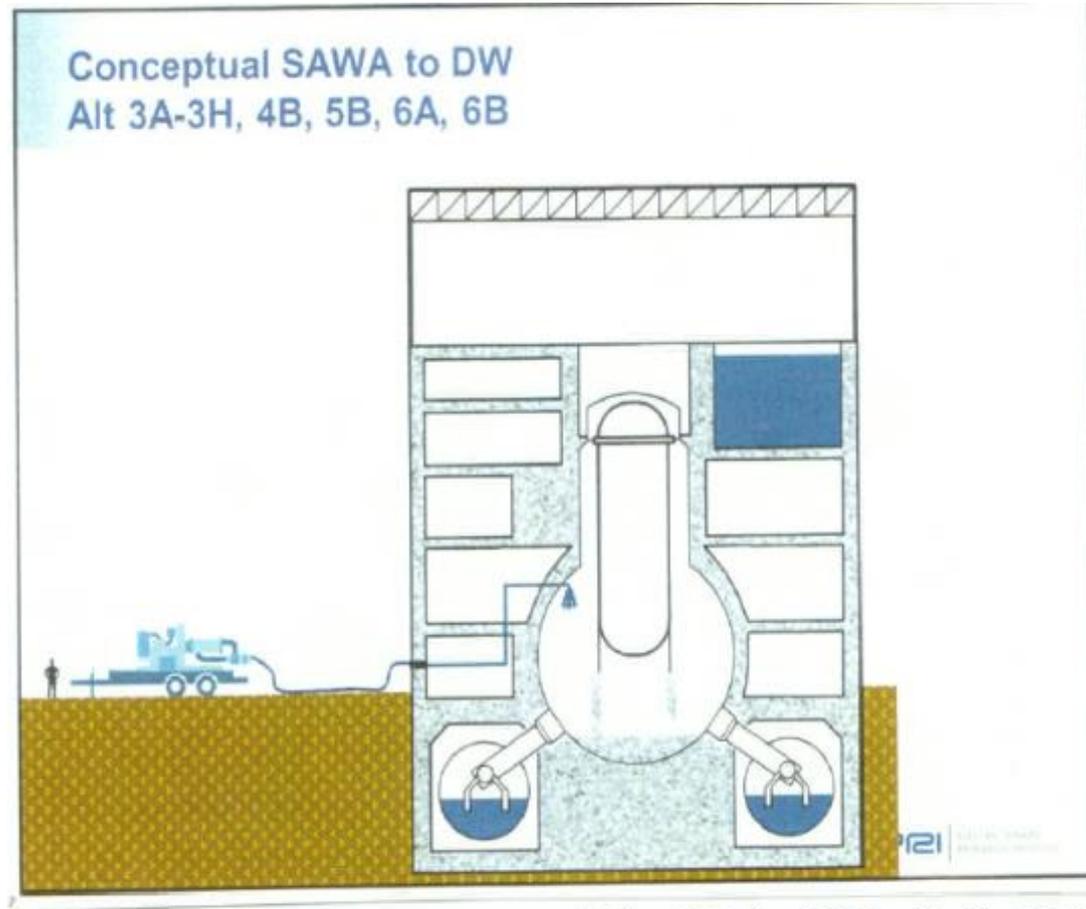
Phase 1 Hardened Containment Vent on the Wet Well

Phase 2 Severe Accident Water Addition into the Dry Well

Base Case – SAC WW Vent Only



Conceptual SAWA to DW
Alt 3A-3H, 4B, 5B, 6A, 6B

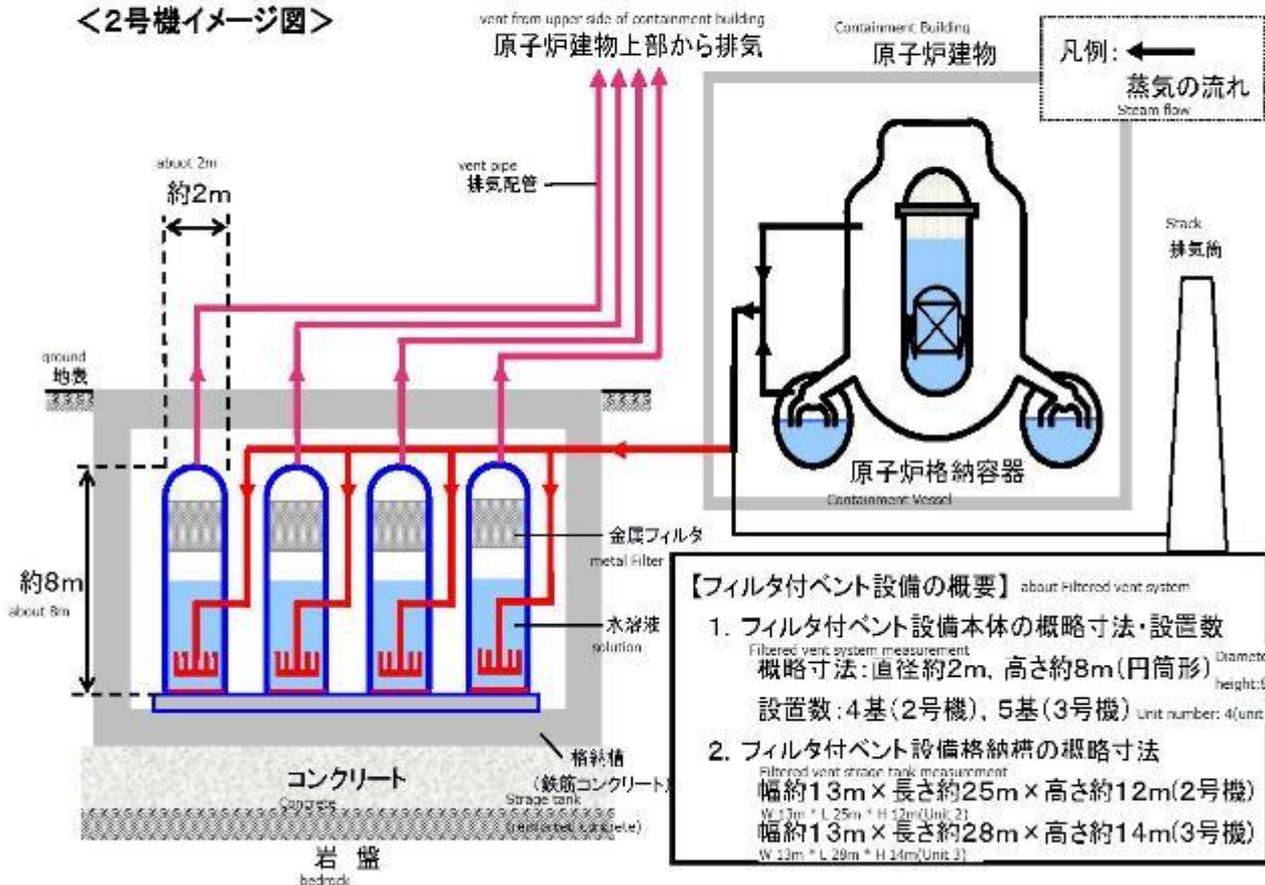


External Filtered Hardened Containment Vents are a prerequisite for reactor restarts in Japan

添付資料

フィルタ付VENT設備の概要

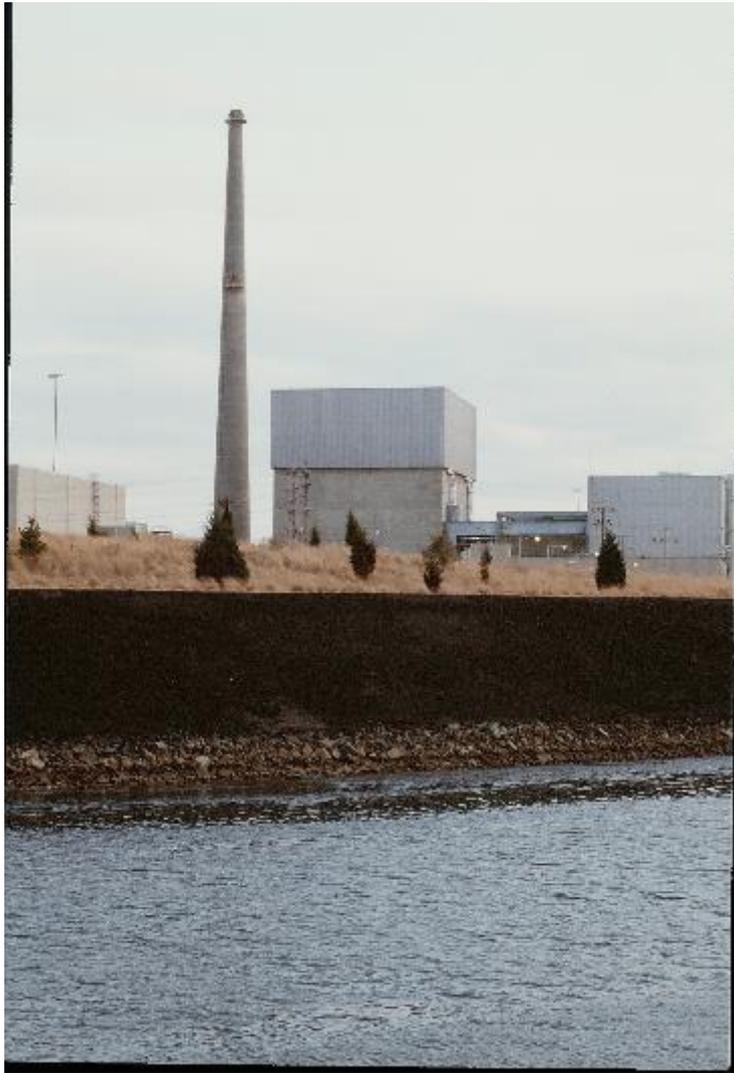
<2号機イメージ図>



凡例: ← 蒸気の流れ
Stream flow

- 【フィルタ付VENT設備の概要】 about Filtered vent system
1. フィルタ付VENT設備本体の概略寸法・設置数
Filtered vent system measurement
 概略寸法: 直径約2m, 高さ約8m(円筒形) Diameter 2m, height: 8m (cylinder)
 設置数: 4基(2号機), 5基(3号機) Unit number: 4(unit 2), 5(unit 3)
 2. フィルタ付VENT設備格納槽の概略寸法
Filtered vent strack tank measurement
 幅約13m × 長さ約25m × 高さ約12m(2号機) W 13m * L 25m * H 12m (Unit 2)
 幅約13m × 長さ約28m × 高さ約14m(3号機) W 13m * L 28m * H 14m (Unit 3)

NRC grants “Extension to Comply” with EA 13-109



Oyster Creek, NJ

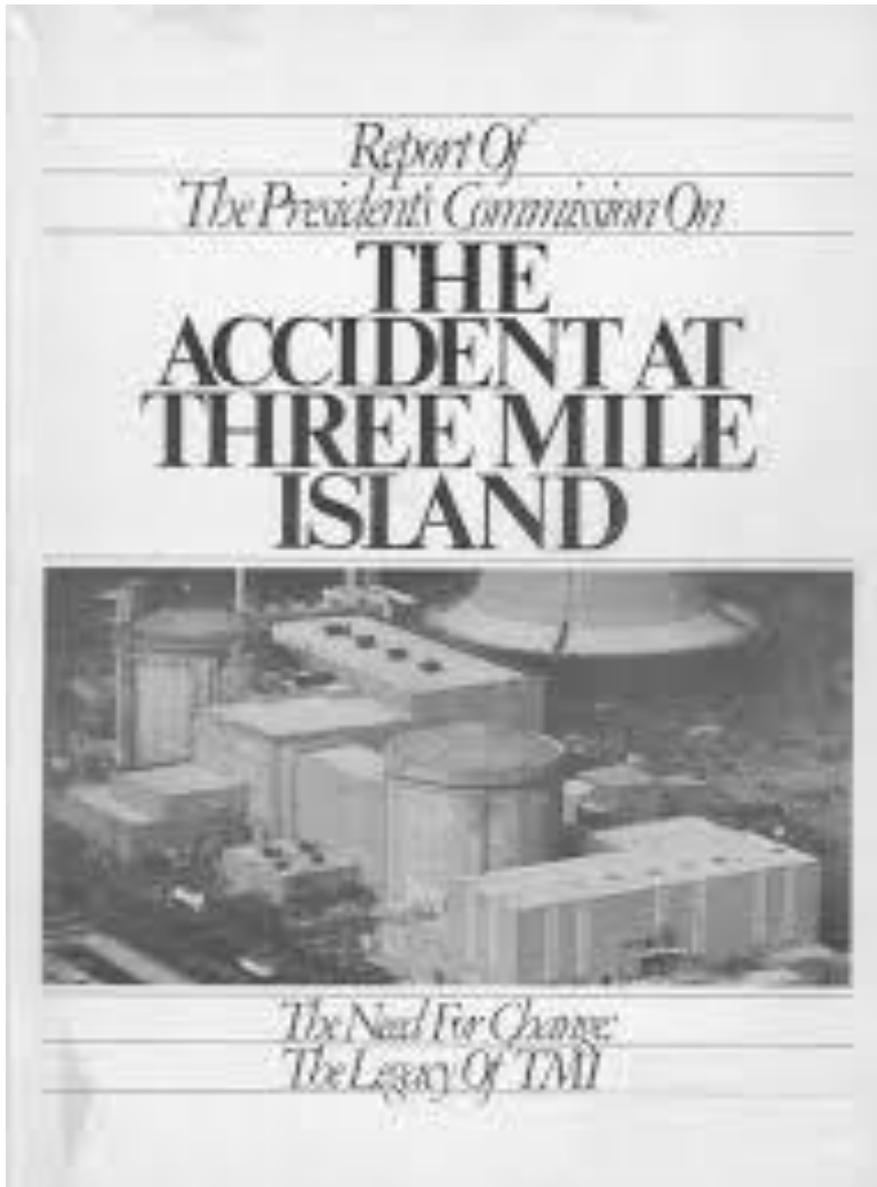
NRC waives enforcement of Order for world’s first Fukushima-style reactor without a single public meeting (2015)



More waivers of Order anticipated

Emergency Planning and Radioactive Iodine

The potassium iodide lesson learned from Three Mile Island (1979)



Feb. 2016, Commission voted to not expand voluntary KI distribution despite inadequacies



**AMA Publication of
Disaster Medicine and
Public Health
Preparedness
(October 2012)
“Nuclear Power Plant
Emergency Preparedness
Results from an
Evaluation of Michigan
Potassium Iodide
Distribution Program”**

- ❑ 25 of 34 eligible states participate in KI distribution within the 10-mile Emergency Planning Zone of nuclear power stations**
- ❑ Michigan Department of Community Health surveyed residents in the state’s three radiological Emergency Planning Zones finding that the current voluntary distribution plan to redeem vouchers for KI only “5.3% of eligible residences took advantage of the opportunity to secure a free supply of KI for their households.”**

A Lesson Unlearned for the United States: NRC Failure to Act on Effective Prophylactic Protection with Potassium Iodide (KI)



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The ATA has recommended

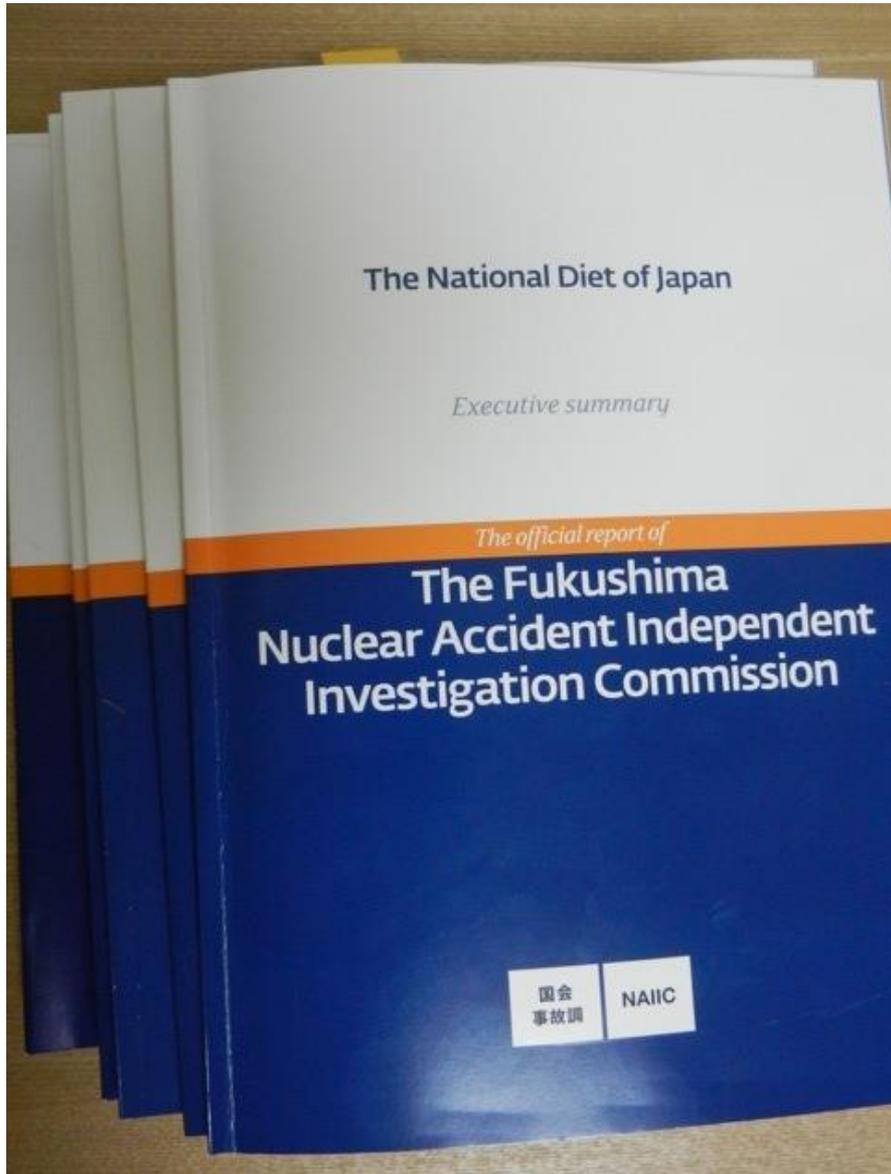
- Pre-distribution of KI by direct delivery to every resident within the radius of 50-miles of nuclear reactors**
- Stockpiling KI in hospitals, police stations and fire departments within a radius of 200-miles of nuclear reactors**

Canadian Nuclear Safety Commission



- ❑ **December 31, 2015, CNSC required the completion of predistribution by direct delivery of KI to every resident within 6 miles of all Canadian nuclear power stations**
- ❑ **May 10, 2016, Canada expands public health awareness campaign for KI predistribution out to 31 mile radius of all nuclear power stations**

Nuclear “regulatory capture”



Findings of Japan National Diet’s independent investigation determined that Fukushima was “a profoundly manmade disaster” involving

- “willful negligence”**
- “regulatory capture”**
- “collusion of government, regulator and TEPCO”**
- “letting operators apply regulations on a voluntary basis”**