

Korean public's understanding and perception on the issue

Yong Hoon Jeong

Nuclear and Quantum Engineering
KAIST

Quantitative facts understood by experts
based on publicly available data

Worldwide natural production of tritium
200g or more per year

Tritium contained in the rain on the East Sea
3g or more per year

3g total tritium
stored in Fukushima

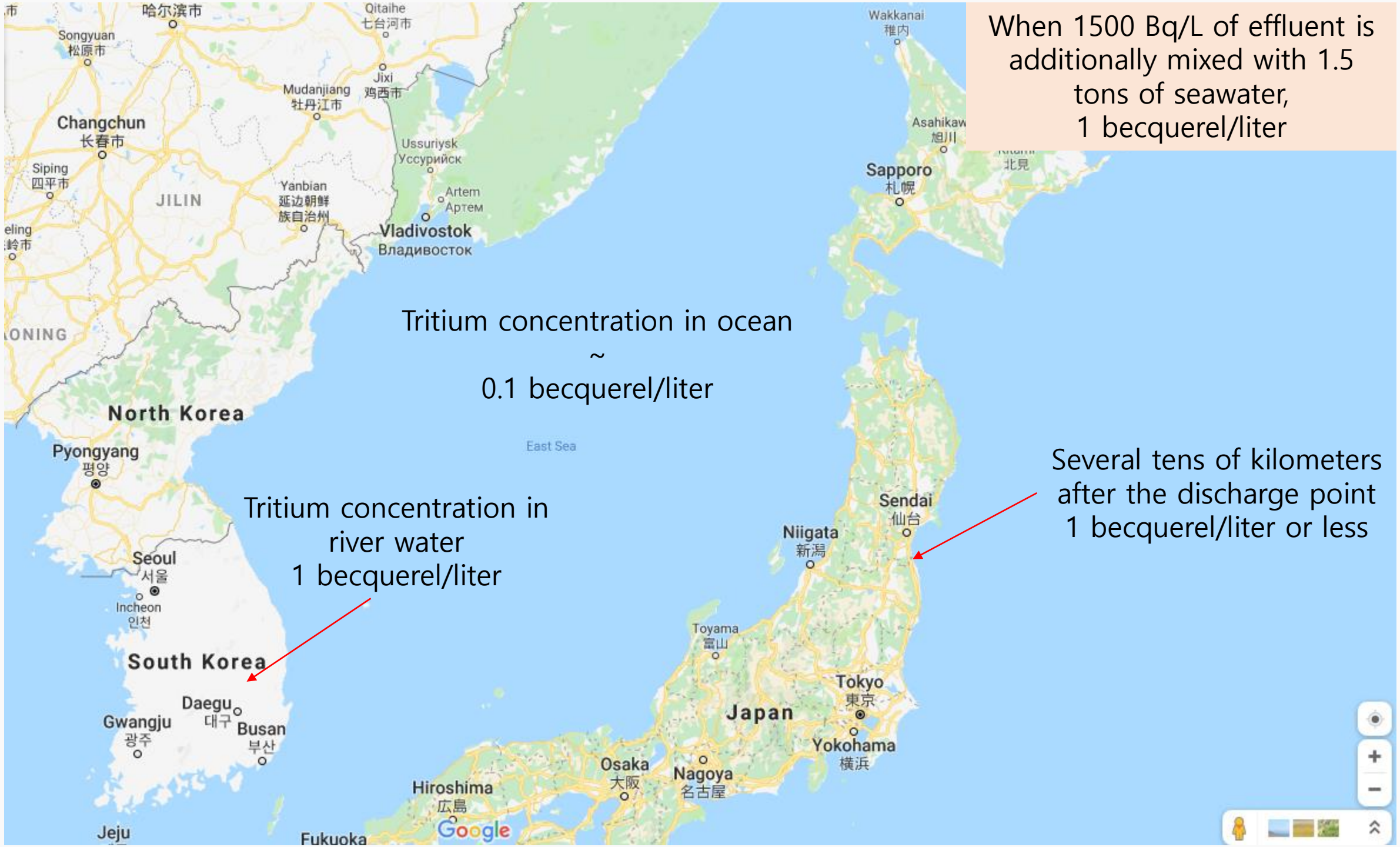


When 1500 Bq/L of effluent is additionally mixed with 1.5 tons of seawater, 1 becquerel/liter

Tritium concentration in ocean
~
0.1 becquerel/liter

Tritium concentration in river water
1 becquerel/liter

Several tens of kilometers after the discharge point
1 becquerel/liter or less



해양환경방사능조사 Marine Environmental Radioactivity Survey

2017. 12

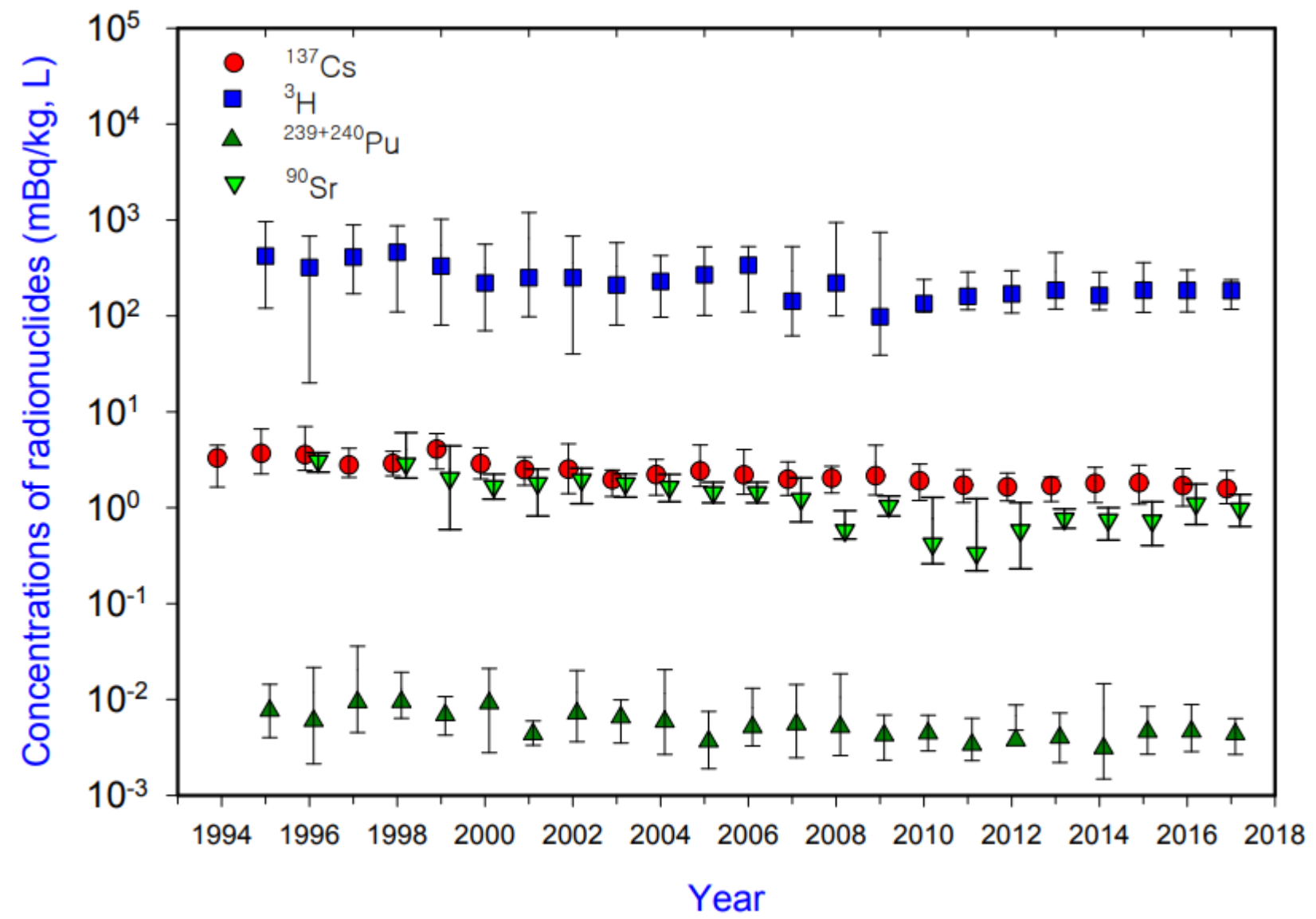


그림 2.6 표층 해수의 핵종별 연평균 방사능농도 변화

The amount of cesium, strontium and carbon-14 is minimal.

- ❖ Compared to the amount of Cs and Sr released immediately after the accident, the amount currently stored in the tank is 1/1,000,000 to 1/1,000
- ❖ Since there was no change in concentration in our waters after the Fukushima accident, a change in concentration cannot be expected this time as well. In addition, additional filtration will be done.
- ❖ The total amount of C-14 is about 0.3 g
 - Approximately 10 kg of C-14 produced in nature each year
 - about 1 ton in the atmosphere
 - The highest concentration in the tank is 215 Bq/kg
 - C-14 in living organisms is about 200 Bq/kg-C
 - 1 kg of meat contains about 60-70 becquerels



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Original Article

Assessment of public radiation dose due to marine and atmospheric release of the Fukushima treated water

Dong-Kwon Keum^{*}, Hyojoon Jeong, In Jun, Kwang-Muk Lim, Won-Tae Hwang

989-111 Daedeokdaero, Yuseong, Daejeon, 34057, the Republic of Korea

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ABSTRACT

The projected radiation dose to the public due to the release into the environment of the Fukushima treated water was assessed using the methodology of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). The assessment was carried out for ten key radionuclides (^3H , ^{60}Co , ^{125}Sb , ^{90}Sr , ^{106}Ru , ^{129}I , ^{134}Cs , ^{137}Cs , ^{14}C , and ^{99}Tc) in the treated water, and the mean measured radioactivity concentration of each radionuclide was used as the source term. The release scenario assumed was that all of the radionuclides in the tanks were released continuously into the marine or atmosphere for one year without additional purification.

In the case of the marine release, the estimated public exposure dose in Japan and in the Republic of Korea was $0.85 \mu\text{Sv/y}$ and $1.4\text{E-}5 \mu\text{Sv/y}$, respectively. In the case of atmospheric release, the estimated public dose at 5 km from the release point (FDNPS) and in Busan, the Republic of Korea (about 1090 km from FDNPS) was $40.6 \mu\text{Sv/y}$ and $0.061 \mu\text{Sv/y}$, respectively. The exposure dose level arising from both release options is unlikely to have a harmful radiological effect on the public because it is much lower than the annual dose limit for the public ($1000 \mu\text{Sv/y}$).

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Description of the negligible risk of negligible exposure

❖ 1 μSv



- An increase of 6 m above the ground adds 1 μSv per year
- Eating 10 bananas adds 1 microsievert
- 1 μSv by eating banana = 1 μSv by drinking tritiated water
- 400 μSv of natural exposure to food per year

❖ 1 nSv

- An increase of 6 mm above the ground adds 1 nSv per year
- $10^{-5} \mu\text{Sv} = 0.06 \text{ mm}$
- It can be expressed as a non-zero number, but it is a meaningless number

Government Position

The official position of the Korean government

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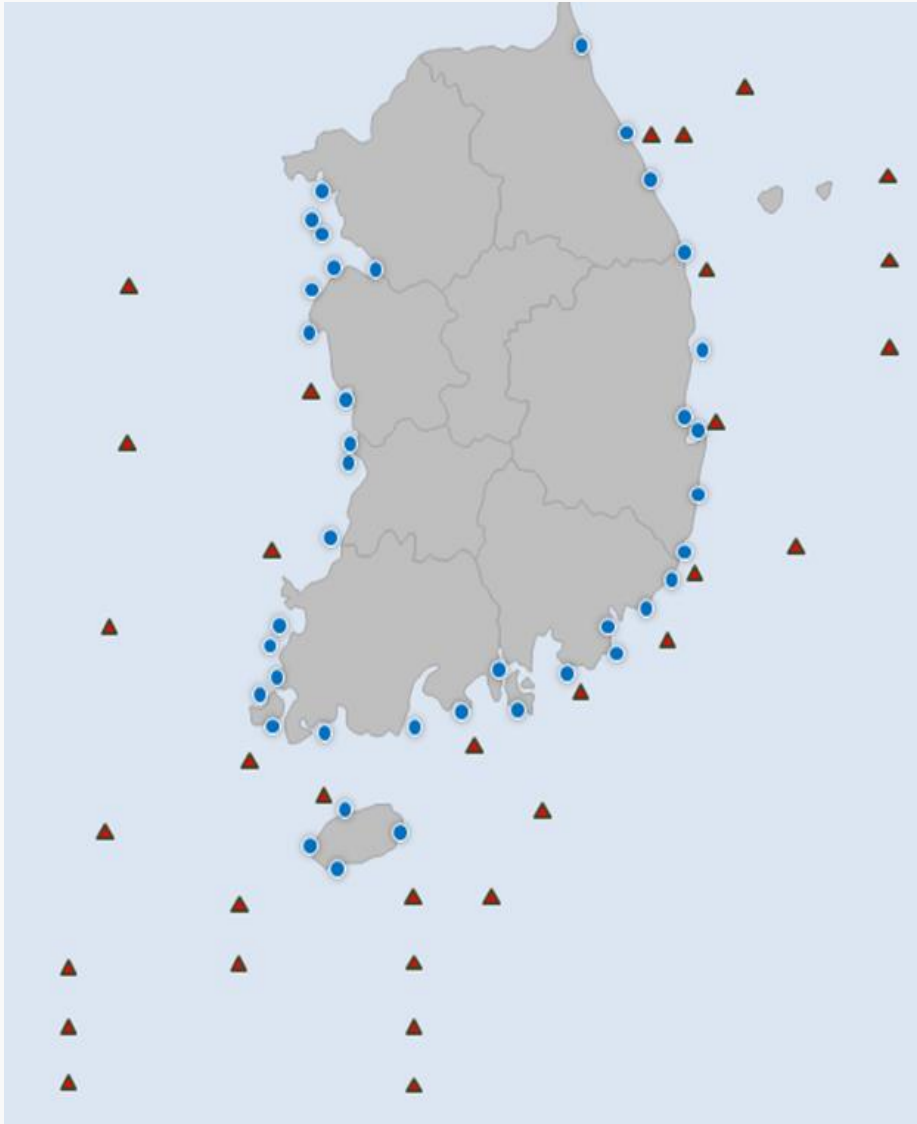
주요내용

- ▶ 후쿠시마 원전 오염수 방출대응 관계부처 TF 설치·운영
- ▶ 이중 삼중의 방사능 감시체계 구축, 국제공조와 국제사회 객관적 검증 요구

The government expresses strong opposition and concern with respect to the decision of the Japanese government on April 13 (Tuesday) to discharge radioactively contaminated water stored at the Fukushima nuclear power plant site into the ocean.

- Establishment and operation of task force for related ministries in response to the discharge of contaminated water from the Fukushima nuclear power plant
- Establishment of multiple radiation monitoring system
- Request international cooperation and objective verification by international community

Location of domestic seawater radioactivity monitoring



- ▲ Nuclear Safety and Security Commission
- Ministry of Oceans and Fisheries

Imported food radiation safety information website

구분	수입업체	제출명(한국)	제출명(영문)	해외제조업소/해외판매업소/수출업소		수입일자	제조국	수출국
				주소				
저급식품	주식회사신영인합	학대왕송편	HWANGSOLBUN	KAWAKA JARDONARY 111-2, NAKANO, TOKUBA (SHIBUYA)	2020-01-18	일본	일본	
저급식품	사계이제일제당부	맛군밤	맛군밤	HEKILYON FOODS CO., LTD. TONGHAIWEST FRESH MARKET, HANGZHOU CITY, ZHEJIANG PROVINCE, CHINA	2020-04-12	중국	중국	

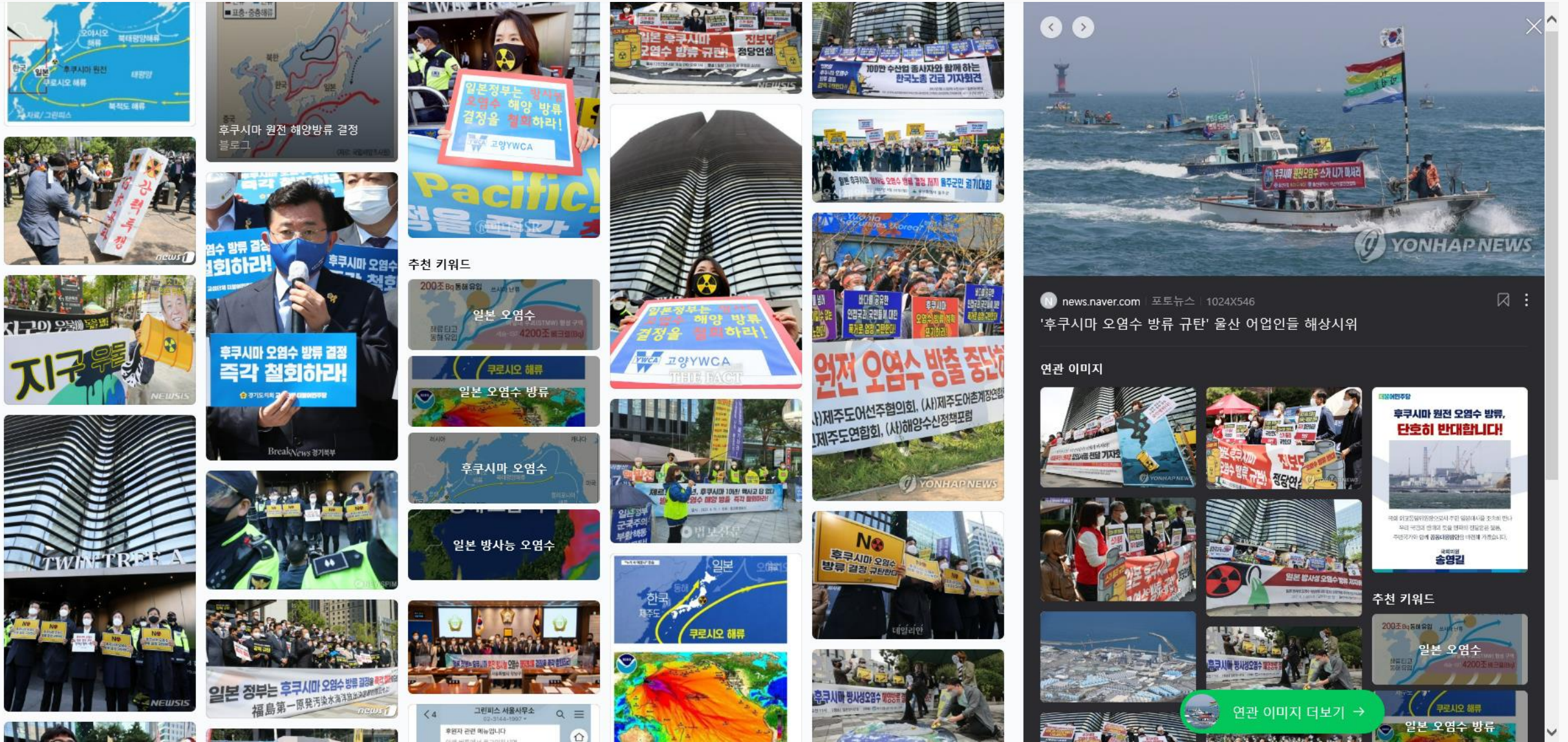
Perception by public

no change = something huge is coming



Reaction by public

- Resolutely oppose the discharge of contaminated water from FK-1 site
- Immediately withdraw the discharge of contaminated water from FK-1 site



Some so-called experts say

- “Can you drink contaminated water? Please make Fukushima beer.”
- How do you believe the Japanese government's announcement?
- Fukushima contaminated water cannot be purified. - The properties are different from those of tritium in other countries.
- Contains over 200 radioactive contaminants. Tritium is not filtered out. There are cases where ALPS does not completely filter.
- Even if diluted, the total amount is the same.
- When it comes to radiation, no matter how much we worry about it, we cannot overdo it.
- We need to look for other alternatives besides releasing.
- It affects Jeju after 6 months.
- It's out there just to save money. There is a better way, but I don't want to.

What is not true is definitely not true.

Even statements that contain facts may not be true.

Suggestions to solve the problem

- ❖ There is a limit to obtaining the consent of the Korean people for the analysis because it is only possible to analyze the data that TEPCO discloses. Japan should make an more effort to make the data public.
- ❖ Increase the scope and frequency of information disclosure so that it becomes common knowledge that it is openly disclosed.
- ❖ Descriptive language should be translated into everyday language so that quantitative facts can be easily understood.

- ❖ Comparison of effluents and nuclear power plants in operation can be misleading, so it is reasonable to compare them with background radiation that is easily accepted and lived in nature.
- ❖ A convincing explanation is needed for the claim that the release was chosen because it was the cheapest.
- ❖ We need to accept the fact that there is anti-Japanese sentiment as a fact and find a solution. It is impossible to find a solution by dissolving anti-Japanese sentiment.