

Importance of Communication on the System of Radiological Protection

Lessons learned from 10 years of Radiological
Protection after the Fukushima Daiichi Nuclear
Accident

Michiaki KAI, PhD

**President, JHPS
Professor, Nippon Bunri University
Japan**



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the Environment in the Event of a
Large Nuclear Accident

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What happened after the accident?

1. Just days after 11 March 2011, ICRP sent an open letter saying the recommendations can be helpful.
2. In March 2011, several newspapers said **ICRP relaxed the dose limits** for emergency countermeasure.
3. Japanese government made a decision;
 - ✓ To evacuate people in the area over 20 mSv/y
 - ✓ To allow workers to receive the dose over 250 mSv
4. It was beginning of communication among people.



What was at stake in 2011 ?

1. **Ethical experts** claimed the legal criteria, 1 mSv/y, based on a normal situation should be followed even in emergency.
2. **Chemical experts** said there is no distinction between normal and emergency, hard to understand.
3. **Regulatory authorities** tried to explain that the emergency criteria follow the ICRP recommendations.
4. **Some scientists** said there are no significant health effects below 100 mSv.

The ICRP recommends that **situation-based reference level should be used** to guide the implementation of protective actions.



What happened for food management ?

1. Japanese government made a decision;
 - ✓ Not to distribute contaminated food over 500 Bq/kg
 - ✓ Foodstuff regulation started using the provisional regulation values on 17 March 2011.
2. The MHLW made a request to the Food Safety Commission.
 - ✓ This situation led to a heated debate at national level about what should be considered as a safe level.
 - ✓ The Food Safety Commission reported that there was no evidence that lifetime doses below 100 mSv.
 - ✓ Finally, the MHLW decided to select 100Bq/kg based on 1 mSv/y.



What was at stake ?

1. **Food experts** claimed there is no distinction between normal and emergency, hard to understand.
 2. **Regulatory authorities** tried to follow the International standards like the Codex guideline.
 3. **Most members of the public**, other than Fukushima's farmers and their supporters, welcomed the new criteria.
 4. **The Radiation Council** emphasised that the new criteria may not contribute to decrease the contamination levels, as most foodstuffs already met the new criteria
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Current foodstuff produced in Fukushima is little contaminated. Keeping the criteria of 100 Bq/kg seem to make misunderstand the food product in Fukushima. **What happened in 2021 ?**



Results of food management

- Food monitoring provided decrease of concentrations in most of foods in 2011,
- Until Aug. 2011, the annual doses of 0.099 mSv in all ages, 0.135 mSv in children were estimated if chronic ingestion of foods with medium concentration

Percentage of Foods over 100 Bq/kg

	2011	2012	2013	2014	2015	2016
Vegetable	3.3%	0.07%	0%	0%	0%	0%
Fruits	5.8%	0.4%	0%	0%	0%	0%
Rice	0.3%	1.0%	0.8%	0%	0.2%	0%
Bean	1.9%	0.5%	0.7%	0.06%	0.1%	0%
Meat	0.4%	0.005%	0%	0%	0%	0%
Milk	0.2%	0%	0%	0%	0%	0%

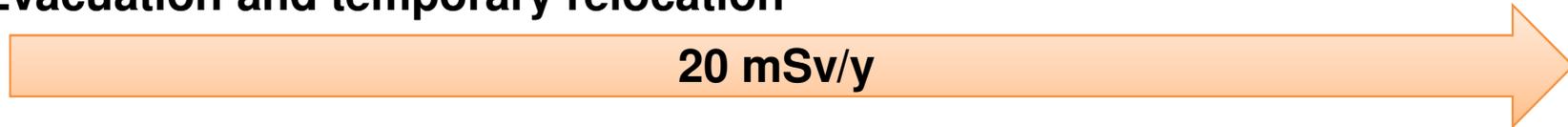
- **Most of foods over the criteria have not been detected in Dec. 2018, except wild mushroom, freshwater fish and wild meat.**



Need to share the role radiological criteria

Mar 2011

Evacuation and temporary relocation



Ambient dose rate



School playground

Jan. 2012



Reference for decontamination

Food concentration



200 Bq/kg for milk
and drinking water

50Bq/kg for infant diet, 10Bq/kg for drinking water, etc.



Risk communication: Facing anxiety or trust

1. Radiation risk is primary concern
2. Regulatory authorities tried to mitigate the anxiety and concern about radiation risk.
3. A lot of **booklet and brochure** on the Internet have been created.
4. This is one way approach to inform some knowledge of science.
5. It should be stressed that there is few information on RP system.
6. Importantly, there are a lack of communications like a dialogue.

Common Risk Communication aims to mitigate anxiety, not to try to build the trust.



The latest paper says

1. *The results suggest that the psychological effects in mothers and children living in low-dose radiation contaminated areas continued for at least five years after the accident.*
2. *Furthermore, psychological effects in children born after the incident were likely to have been triggered by the parental behavior of mothers who were negatively affected by anxiety and stress.*

Tsutsui, Y. et al. PLOS One, 2020

This suggests risk communication in Fukushima does not seem to succeed



Lessons from the treated water to be released

1. Japanese government has decided to release treated water into sea from the Fukushima plant.
2. It was featured in the news from the world media.

Washington Post said:

[Who's against a release? For it?

Fishing groups in Fukushima prefecture are strongly opposed, fearing it could further taint the reputation of their catch and affect their livelihoods.

South Korean officials renewed their "grave concern" about the release in April, though ocean currents are unlikely to bring any contaminated water near its shores. China urged Japan to act prudently, while the U.S. said the release was in line with global standards.]

3. I had an opportunity to dialogue with a Korean embassy minister.

He was concerned that no dialogue may cause poor understanding.

Dialogue is hoped to change the situation of the treated water issues.



CONCLUSIONS

1. The large nuclear accident has made us realize the **importance of communication on RP** rather than risk communication on scientific information.
2. A key point is to emphasize that RP system is not only based on science but also **social judgement**.
3. **Risk communication** is unlikely to work after the accident, although most of experts tend to stress the importance of risk communication.
4. **More dialogue** is needed to promote understanding and build trust with talking about RP system.
5. Whether RP will succeed or not would depend on communication rather than building more simplified system

