

PL 3.3

Risk Communication with the Public at Fukushima Dai-ichi.

Central Research Institute of Electric Power Industry

Haruyuki OGINO

IRPA13

15 May, 2012

Objective

- ◆ I would like to express my deepest sympathy to all those who suffered from the natural disaster and subsequent nuclear accident
- ◆ What actions were taken initially and in the longer term to engage and communicate with the affected people
- ◆ What approaches were taken and which ones were most effective and which ones did not work

Outline

1. Open Questions
2. Stakeholder Engagement in Decision Making Process
3. Q&A Activity by Japan Health Physics Society
4. Summary

Open Questions

◆ Reflection on Fukushima

- Who make decision and how?
- Who are stakeholders?
- What professionals can do?



◆ IRPA Guiding Principles (Ref: IRPA 08/08)

- for Radiation Protection Professionals on Stakeholder Engagement could help to provide answers

Characteristics

	Emergency Exposure Situation	Existing Exposure Situation
First concern	Urgent action to prevent deterministic effects	Long-term action to reduce risk of stochastic effects
Time frame	hours, days (weeks)	months, years (decades)
Countermeasure	<ul style="list-style-type: none"> • Evacuation and sheltering • Administration of stable iodine • Personal decontamination • Provisional restriction on foodstuffs • Deliberate evacuation, etc. 	<ul style="list-style-type: none"> • Amended restriction on foodstuffs • Environmental remediation • Waste management • Radiation measurement • Health surveillance • Dose reconstruction, etc.

Reflection on Fukushima

Emergency Exposure Situation

Misdirection of evacuation caused higher dose (Namie-town)

➤ To avoid social panic, computer-based prediction (SPEEDI) was decided not to disclose

Situation of administration of stable iodine has not been grasped

➤ Untransparent decision making process and complex system for instruction (official records are unavailable)

Evacuation lasted over months

➤ “Relocation” was not included in decision making of “Emergency Preparedness and Response”

Existing Exposure Situation

In general, stakeholders were not appropriately engaged in decision making process, such as

➤ Usage restriction of schoolyard (20 mSv/y for small children)

➤ Designation of deliberate evacuation area

(20 mSv/y for all inhabitants including elderly)

➤ Target dose in environmental remediation (1 mSv/y)

➤ New food restriction (1 mSv/y)
-> avertable dose is 0.008 mSv/y

Answer to “Who make decisions and how?”

Questions	Emergency Exposure Situation	Existing Exposure Situation
Who make decision?	Central government	<ul style="list-style-type: none"> • Local and central government • Inhabitants
and how?	<ul style="list-style-type: none"> • Run “Comprehensive Emergency Preparedness and Response” • Systematic instruction (practical training) • Credible records (post-accident verification) 	<ul style="list-style-type: none"> • Initiate “Decision Making Process” • Stakeholder involvement (Transparency)

Answer to “Who are stakeholders?”

◆ Description in IRPA Guiding Principles

The process should include all the relevant stakeholders, extending representation beyond the obvious candidates to all those perceived to have a share in or an impact associated with the risks of the endeavor under consideration (in Principle 3 of IRPA Guidance)

◆ Stakeholders who should have been involved

- “PTA, headmaster, Mayor, etc.” for usage restriction of schoolyard
- “Inhabitants, town headperson, Mayor, etc.” for designation of deliberate evacuation area and for environmental remediation
- “Consumer vs producer” for restriction of foodstuffs
 - People in “Affected vs Non-affected Area”
 - Nationwide solidarity

Japan Health Physics Society

- ◆ “Issues Associated with Radiation Protection after Fukushima Daiichi Nuclear Power Plant Disaster” – Responses of and Recommendations from JHPS –”
(Available in English at JHPS website, <http://www.jhps.or.jp/en/>)
 - Issue 1: Strategies for reducing anxiety and doubts of the general public regarding radiation risk

Fukushima Symposium
16 June 2011,
Univ. of Tokyo, Japan



Issues Associated with Radiation Protection after
Fukushima Daiichi Nuclear Power Plant Disaster
*- Responses of and Recommendations from
Japan Health Physics Society -*

17 April 2012

Japan Health Physics Society



JHPS Q&A Website

Available at <http://radi-info.com/>

Poster presentation (P12.64) by T. Kono etc.

◆ Establishment

- 25 March 2011: Voluntarily opened by retired experts (20 members)
- 24 August 2011: New official committee in Japan-HPS (53 members)
- Involvement of young researchers and University students

◆ Achievement

- 1,525 Q&A (As of 7 May 2012)
- >3,000,000 page access
- >5,000 Twitter Followers

◆ Publication of booklet

- Now under preparation

Question from questioners

Our answer

Tweet number about 5,000 (As of March 2012)

JHPS Q&A Procedure

- 1. Respect and carefully respond all questions**
 - Do not ignore a question even if it seems quite similar
 - Publish questioners' original sentences on website
- 2. State objective facts in plain language**
 - Calculate doses in each questioner's exposure situation
 - Compare with scientific data
 - Natural background radiation
 - Epidemiological studies (e.g., A-bomb survivors, HNBR)
- 3. Modestly add personal opinion of respondent**
 - Provide a basis for a commensurate response with risks
 - Assist questioner to make the final judgment (Do not force)
- 4. Do not defile the dignity of JHPS**
 - Do not annoy other JHPS members

Example-Question

I live in Kashiwa city (30 km north of central Tokyo) with 1 year-old child. We were afraid of earthquake and staying indoors since 11 March, so went outside to play at the park everyday. My child often ate the sand at the playground.

After several weeks later, it was found that it was heavily contaminated. Whenever I see his face, I fear the cancer and always blame myself. I have been sleepless from the anxiety these days.

Is he safe or not? What should I do?



Answer

(1: Respect and carefully respond all questions)

Thank you for posting the question and I sympathize the uneasiness.

(2: State objective facts in plain language)

The maximum dose rate in the city was 4.11 $\mu\text{Sv/h}$ according to report of Ministry of Environment.

Using the external dose conversion factor [IAEA-TECDOC-1162], the maximum activity concentration of the sand is about 15 Bq/g.

Assuming your child ate a tablespoon cup of sand (15 g), the effective dose is about 3.5 μSv using internal dose conversion coefficient [ICRP-Pub72].

Answer (Continue)

(2: State objective facts in plain language)

UNSCEAR 2000 reports shows that world average of natural background radiation is about 2.4 mSv/y (2,400 μ Sv/y).

Japanese epidemiological studies of A-bomb survivors in Hiroshima and Nagasaki prove that there is no statistical increase below 100 mSv (100,000 μ Sv) in acute dose.

In addition, recent epidemiological studies in high natural background radiation area (HNRA) show that there is no statistical increase below 600 mSv (600,000 μ Sv) in chronic dose.

Answer (Continue)

(3: Modestly add personal opinion of respondent)

I personally think that you don't need to worry about the health effects. Instead, I worry about the psychological influence, which may indirectly affect your child. Keeping usual public health can really benefit your daily life in the future.

I hope that this answer could be helpful for your life and your child could grow up healthy.

If you have any questions, please contact again, and I am willing to respond. Thank you.

Social Response

◆ Positive

- They are honest to all questions and reliable
- Each answer is provided by plain language, based on plenty of knowledge and expertise
- Quantitative answers sound reasonable, not just saying “Don’t worry”

◆ Negative

- All opinions saying “Don’t worry” stir up more anxiety
- Dose calculations are not reliable because the government might hide information
- Which is true? Different opinions about risks of exposure to low-dose radiation are provided by other experts in mass media

Summary

◆ Decision Making Process

- **Emergency: Central government should run comprehensive emergency preparedness and response**
- **Existing: Local/central government and inhabitants should initiate “Decision Making Process”**
 - **Transparency and traceability (records, minutes)**

◆ Engaging with Society by JHPS Q&A activities

- **Provide questioners objective information with personal opinion in plain language based on data and science**
- **Receive positive social responses (credibility and trust)**

Additional slides

IRPA Guiding Principles

Radiological protection professionals should endeavor to :

- 1. Identify opportunities for engagement and ensure the level of engagement is proportionate to the nature of the radiation protection issues and their context.**
- 2. Initiate the process as early as possible, and develop a sustainable implementation plan.**
- 3. Enable an open, inclusive and transparent stakeholder engagement process.**
- 4. Seek out and involve relevant stakeholder and experts.**
- 5. Ensure that the roles and responsibilities of all participants, and the rules for cooperation are clearly defined.**
- 6. Collectively develop objectives for the stakeholder engagement process, based on a shared understanding of issues and boundaries.**
- 7. Develop a culture which values a shared language and understanding, and favors collective learning.**
- 8. Respect and value the expression of different perspectives.**
- 9. Ensure a regular feedback mechanism is in place to inform current and future stakeholder engagement processes.**
- 10. Apply the IRPA Code of Ethics in their actions within these processes to the best of their knowledge.**

Trend of Questions

◆ March 2011

- Health effect of internal exposure in daily life
- Need of emergency evacuation

◆ April-June 2011

- Health effect by seasonal activities

◆ July-September 2011

- Low dose health effect (external and internal exposure)

◆ October-December 2011

- Health surveillance (pediatric thyroid, bioassay)

◆ January-March 2012

- Difference in experts' understandings
- Basic attitude of JHPS



Three Pillars of Sustainable Rehabilitation

◆ Radiation Monitoring System

- Airborne, carborne, local survey

◆ Health Surveillance Strategy

- 2M inhabitants in Fukushima prefecture
 - Prevention of development of disease
 - Reassurance of potential health impacts

◆ Transmission of Practical Knowledge

- Control of radiological situation
 - Dissemination of monitoring results through education system



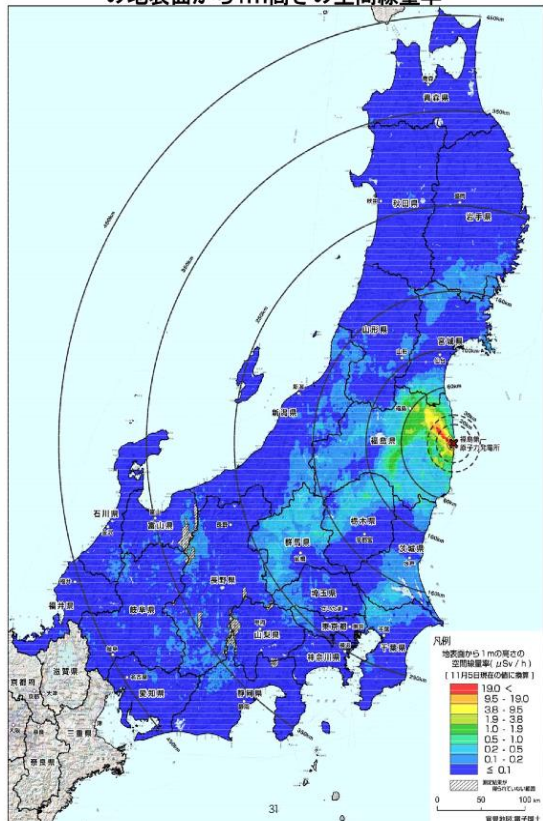
Radiation Monitoring

Airborne

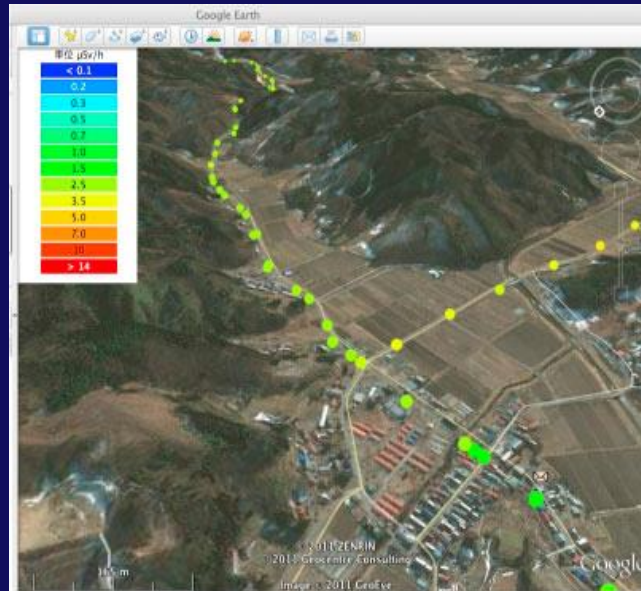
Carborne

Local survey

第4次航空機モニタリングの測定結果を反映した東日本全域の地表面から1m高さの空間線量率



※本マップには天然核種による空間線量率が含まれています。

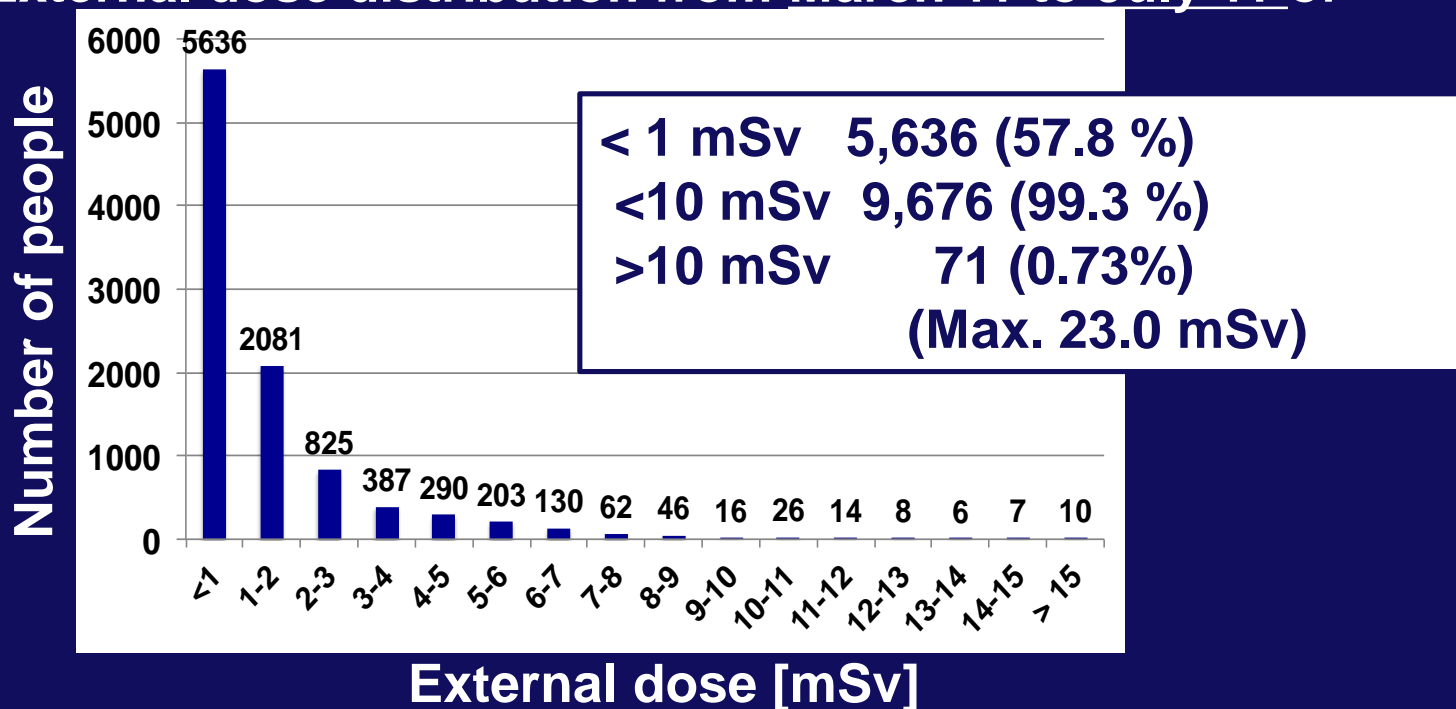


Health Surveillance

◆ Dose reconstruction based on behavior survey

- Recovered answers: 431,720 (21.1 % of 2M ships)
- Preceding survey: 9,747 people (Kawamata, Namie, Iitate)

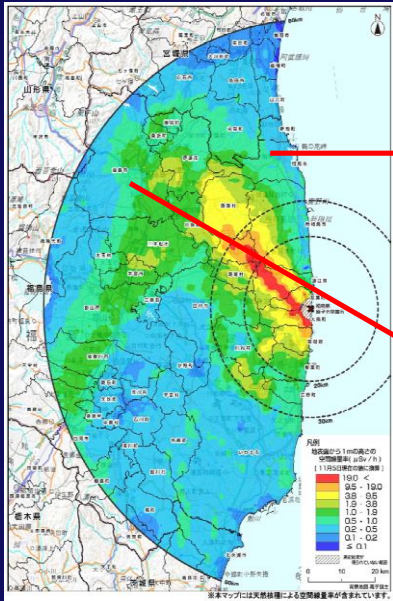
Fig. External dose distribution from March 11 to July 11 of 2011



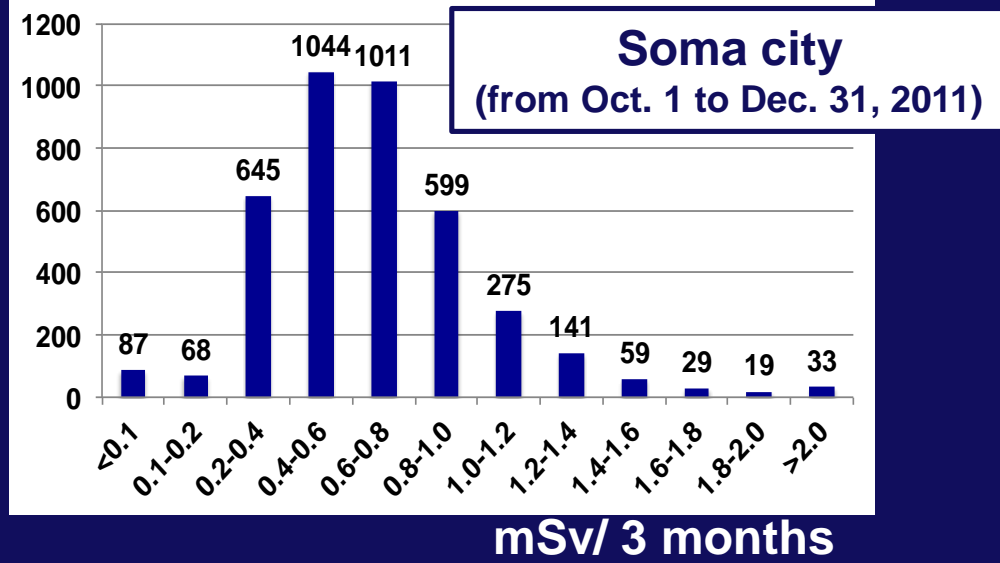
(Modified from Fukushima prefecture website,

<http://www.pref.fukushima.jp/imu/kenkoukanri/240220gaiyo.pdf>)

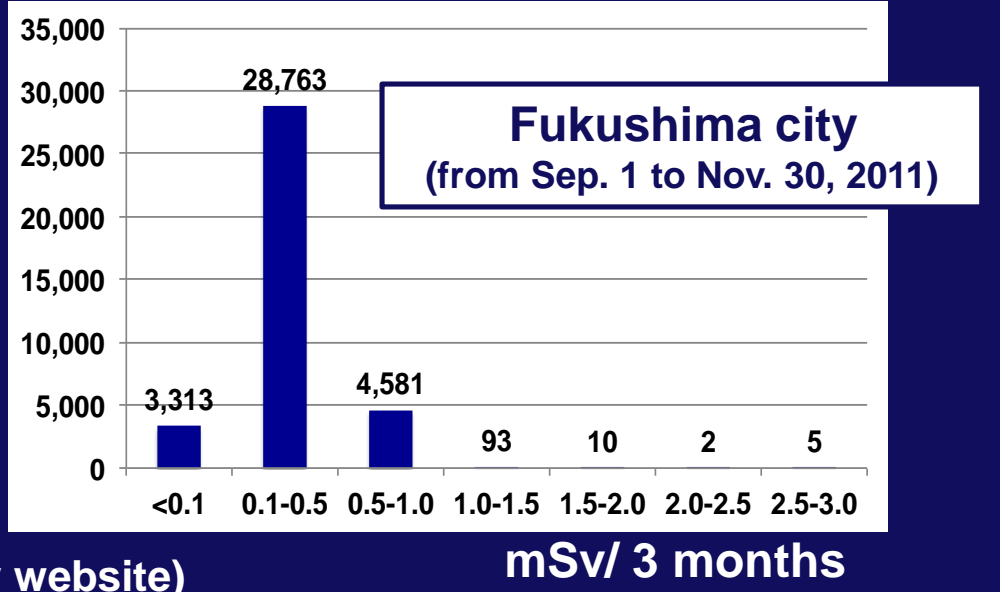
Personal Dosimetric Survey



number

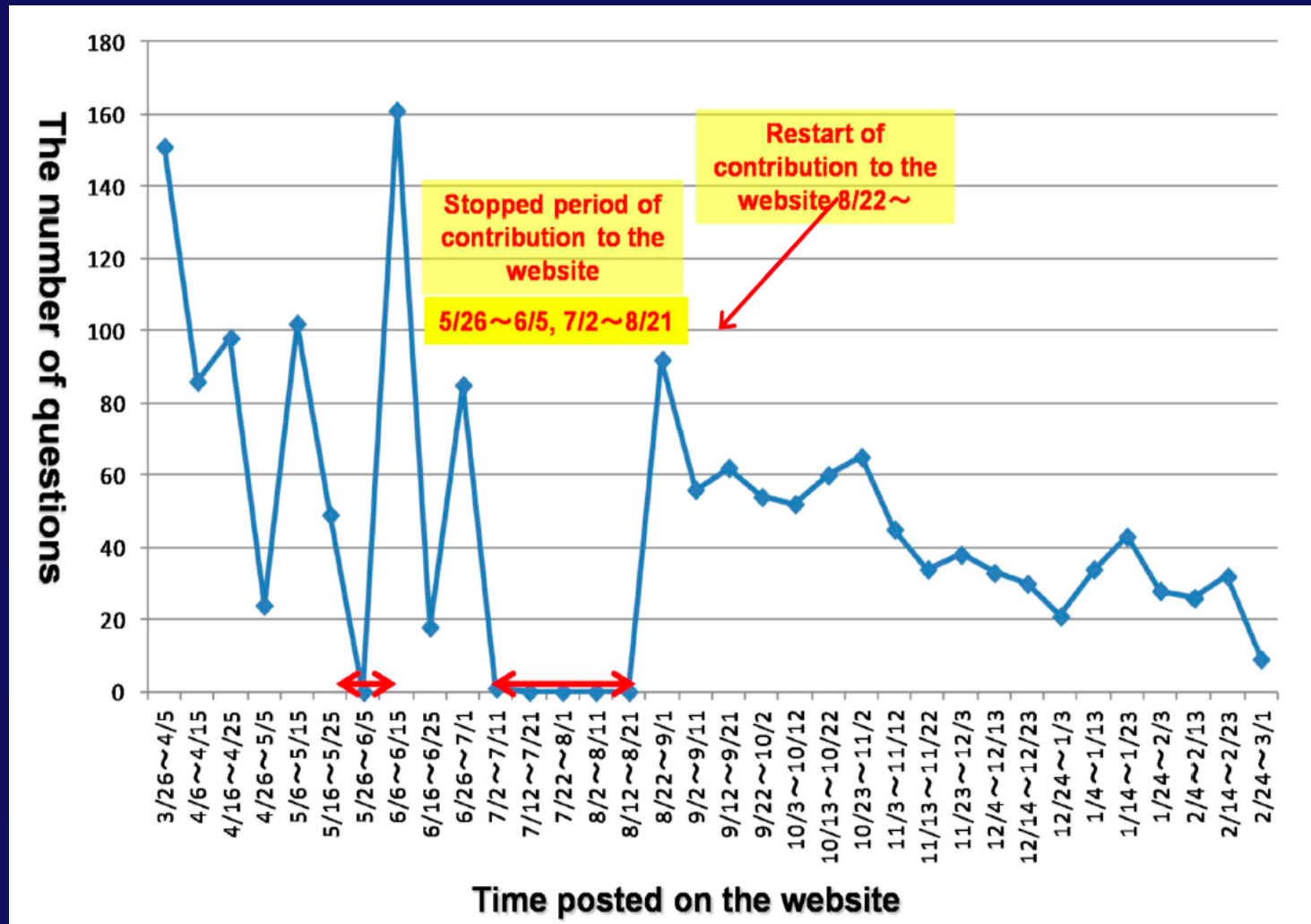


number



(Modified from Soma and Fukushima city website)

Numbers of Questions Posed



Cited from the Poster Presentation (P12.64) in IRPA13

T. Kono, H. Ogino, H. Hayakawa, H. Shimo, M. Taniguchi and N. Ban