



# Citizens and cities facing new hazards and threats

30<sup>th</sup> November to 4<sup>th</sup> December 2020

Session 7 :  
Smart resilient cities

Yukako KOMASA



# What to do when facing the uncertainty: Implications from the seven years of health protection practices at schools in the affected area of Fukushima Daiichi nuclear power plant accident

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Session 7  
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What to do when facing the uncertainty: Implications from the seven years of health promotion practices at schools in the affected area of Fukushima Daiichi nuclear power plant accident



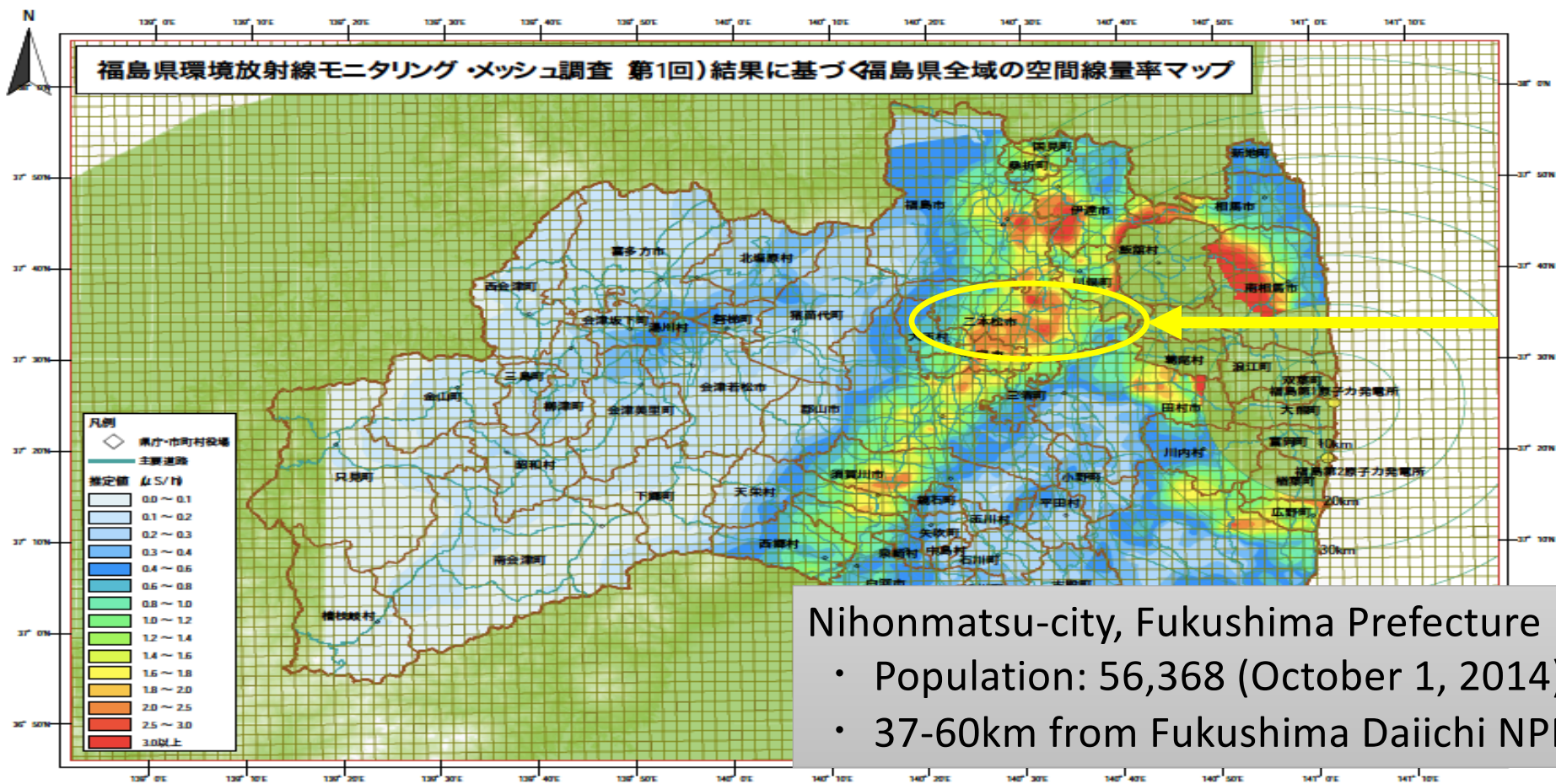


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# Nihonmatsu City




Nihonmatsu-city, Fukushima Prefecture

- Population: 56,368 (October 1, 2014)
- 37-60km from Fukushima Daiichi NPP

この地図は、国土院発行、数値地図50mメッシュ(標高)、国土数値情報(行政区域)を使用したものである。  
 ※この空間線量率マップは、道路(主要路)上のモニタリング結果を元に作成している。  
 ※測定地点間の補正については、0.05km以内を補正している。  
 ※道路幅が不明な部分については、補正できないため表示されていない。  
 ※メッシュ(50m)は、UTM投影系を基準として作成されています。

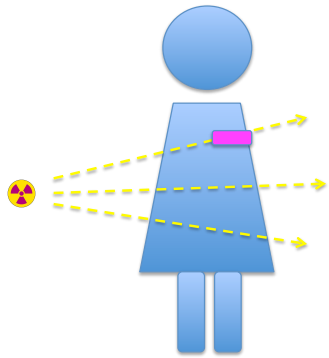
Air dose rate of 12-16 April, 2011 (MEXT)

An aerial photograph of a town with a mix of residential and commercial buildings. In the background, a range of mountains is visible, with the highest peaks covered in snow. The sky is a clear, pale blue.

Is it safe to continue to live here?  
Can I drink water?  
Is it possible to take care of children in this region?

We could only to investigate  
to find the evidence for next step.

## Survey 1 : Level of external radiation exposure



### Purpose:

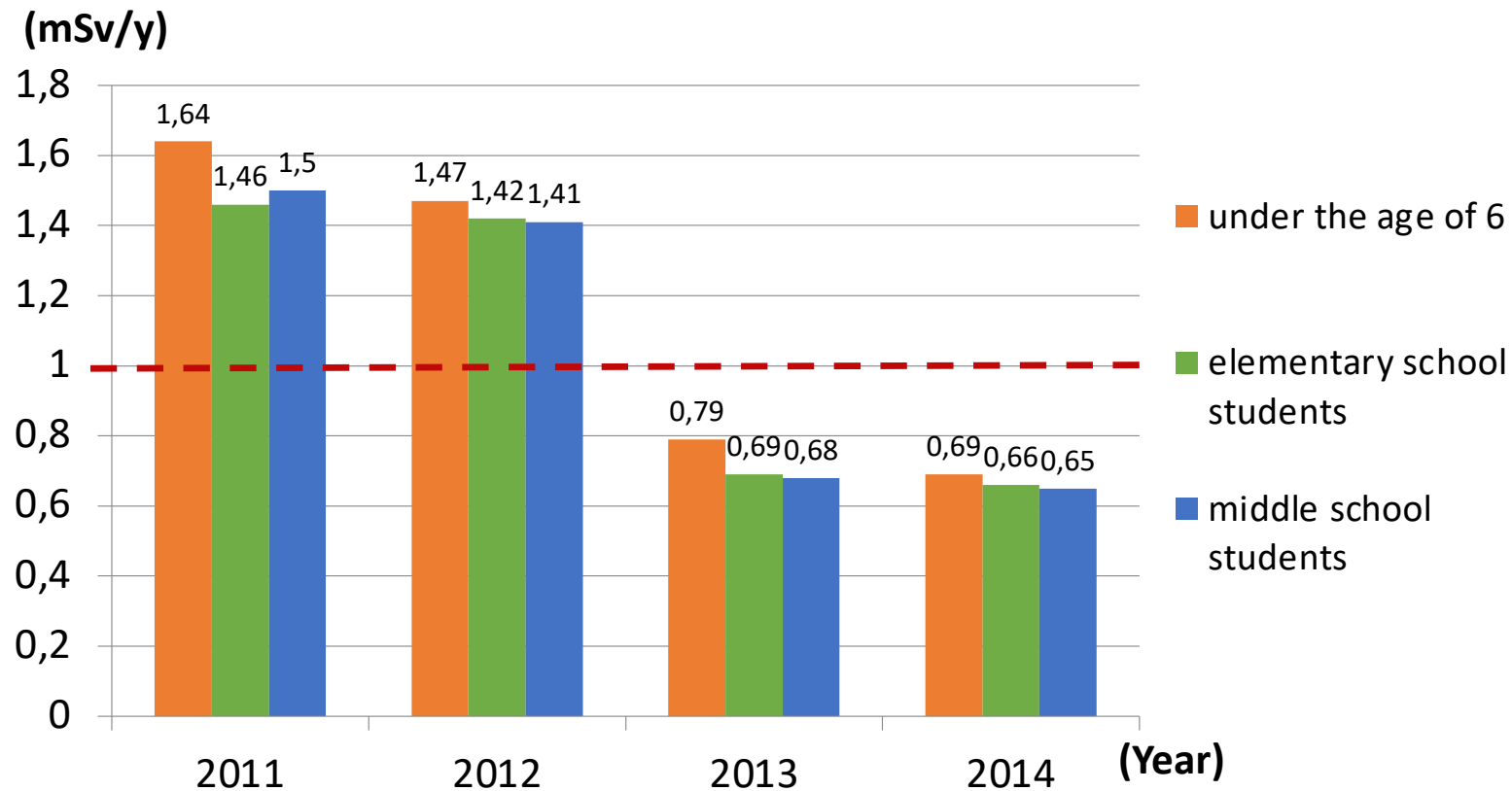
- ✓ To measure the dose of individual external exposure using dosimeter
- ✓ To explore the possible determinants of higher exposure

### Participants:

- ✓ Children under the age of 6, elementary school students and middle school students
- ✓ Total of 7,738 (2011), 7,376 (2012), 5,702 (2013) and 5,227 (2014) participated

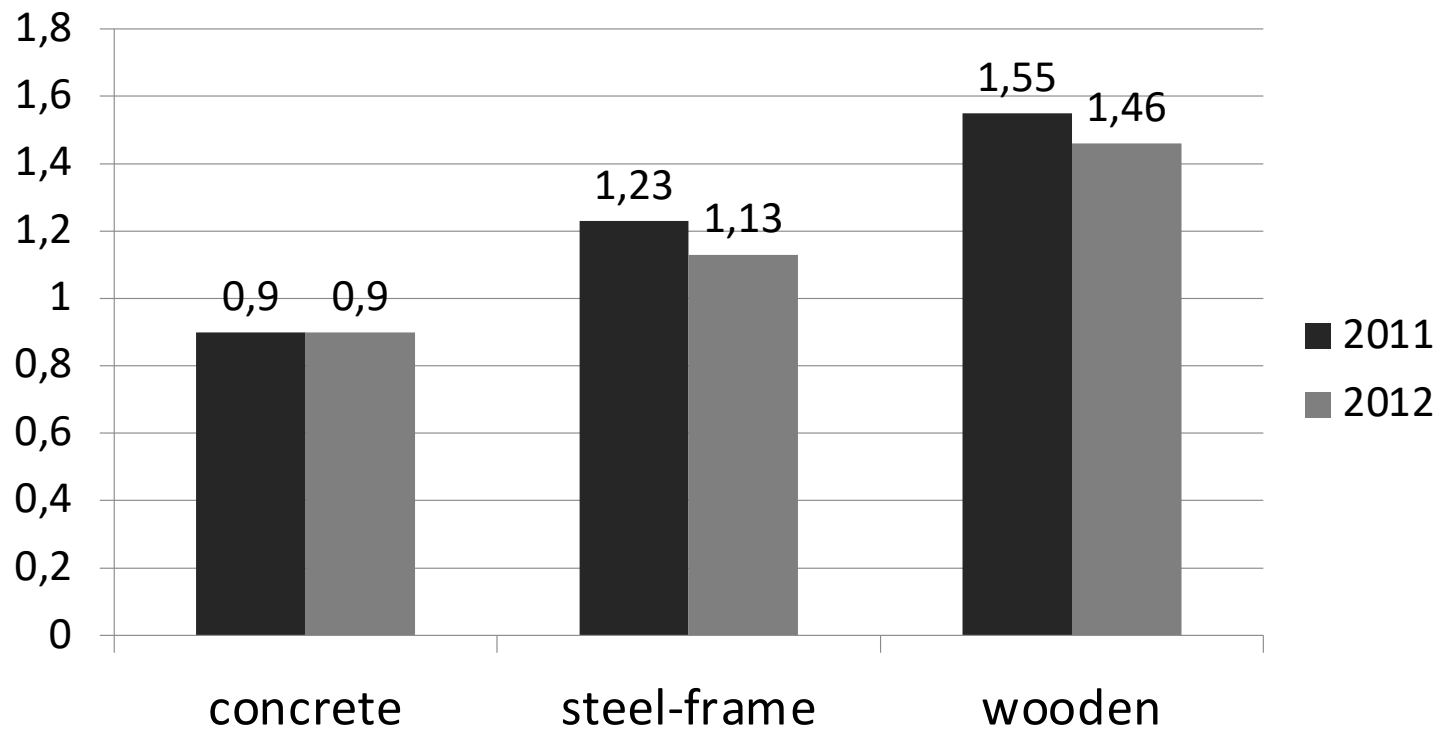


## Results : Level of external radiation exposure

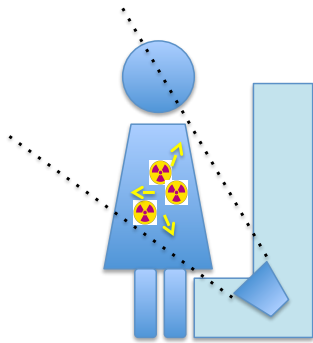




## Results : Difference of the level of external radiation exposure by building materials of children's houses



## Survey 2 : Level of internal radiation exposure



### Purpose:

- ✓ To measure the dose of individual internal exposure using whole body counter
- ✓ To explore the possible determinants of higher exposure by interview using a questionnaire .



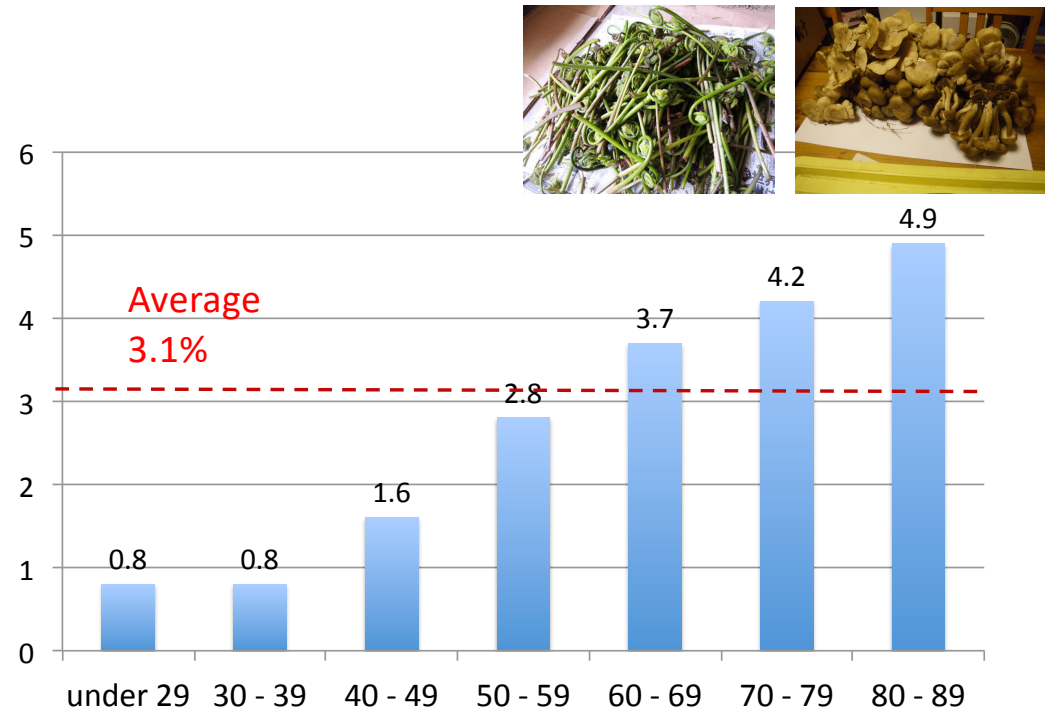
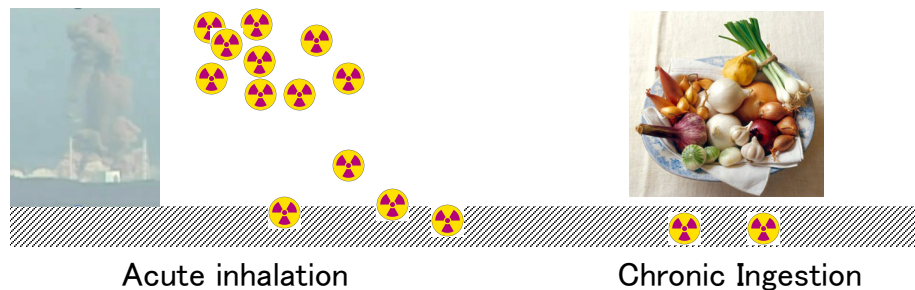
### Participants:

- ✓ **10,924** residents of Nihonmatsu-city (17.7% of population)
- Period 1** (Nov 2011- Jan 2012) : **798**
- Period 2** (Feb 2012 - Aug 2013) : **10,126**

\*As of September 2020, 30,545 residents participated

## Results : Level of internal radiation exposure

- Positive Cs137 detection rate – 3.1%
- Mean committed effective dose
  - **Period 1**: 0.201 mSv (0.12-0.35)
  - **Period 2**: 0.053 mSv (0.01-0.37)



## Survey 3 : Level of radioactivity in foods for home consumption (home-harvested, natural and wild foods)



### Purpose:

✓ to explore the levels of radioactivity of foods for home consumption.

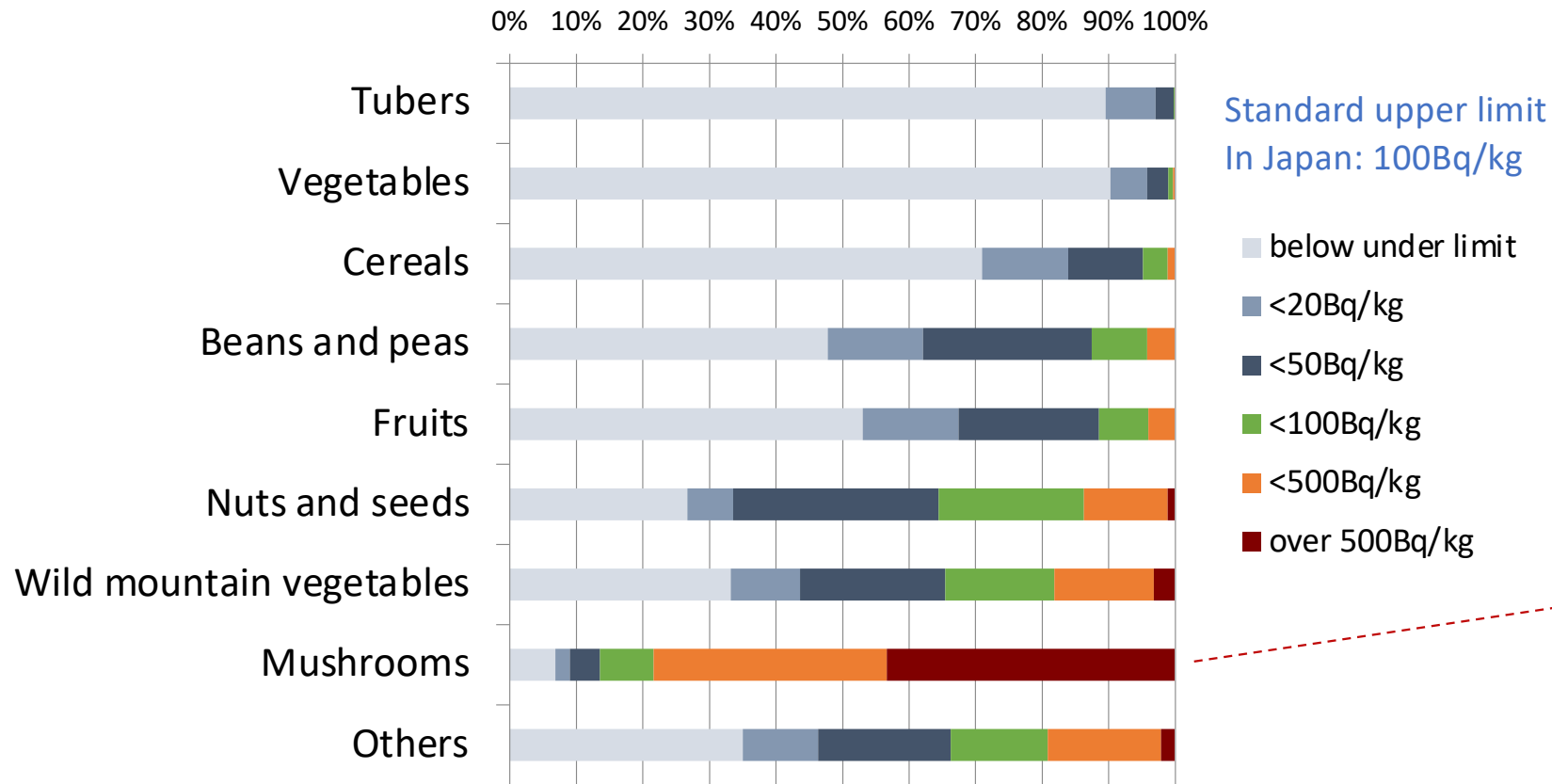
### No. of samples:

✓ Total of 39,494 samples (1,672 in 2011, 19,063 in 2012, 11,238 in 2013 and 7,521 in 2014) measured.

### Device:

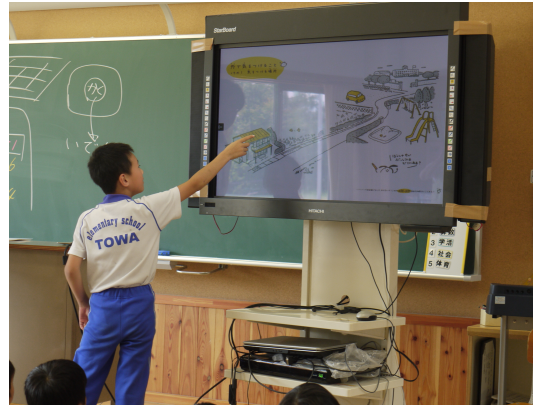
✓ NaI scintillation counter settled in 22 regional offices of Nihonmatsu city local government.

## Survey 3: Level of radioactivity in foods for home consumption (39,494 samples)



## For health protection – Learning at schools

Work with municipal education board and school teachers to improve health literacy of students  
“Protect our health by ourselves”



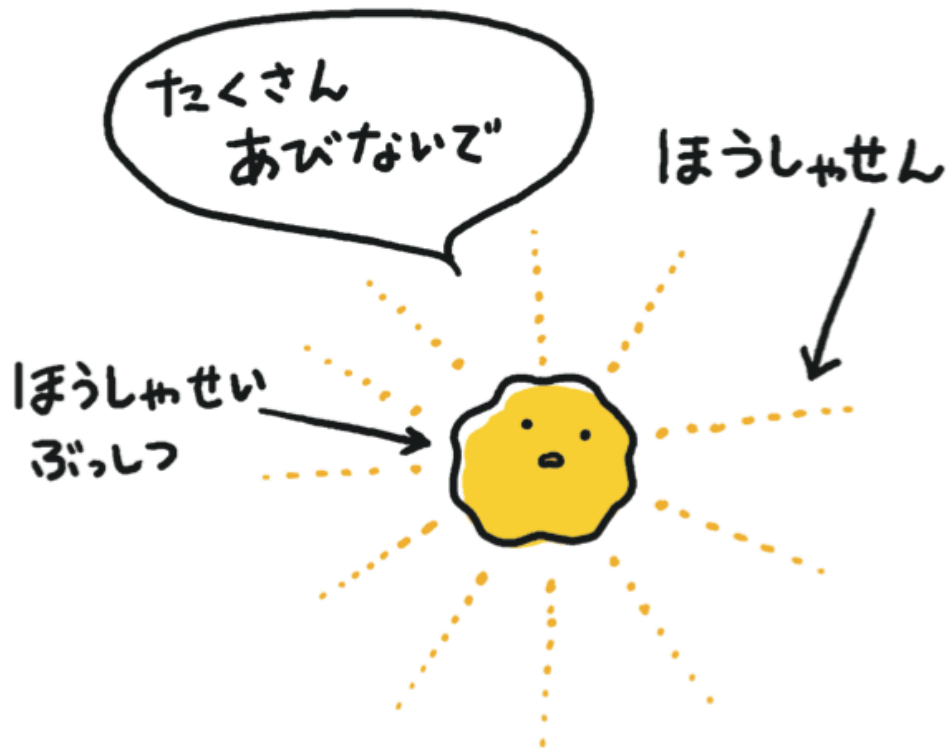
# Textbook for local students (Elementary schools, Junior-high schools)



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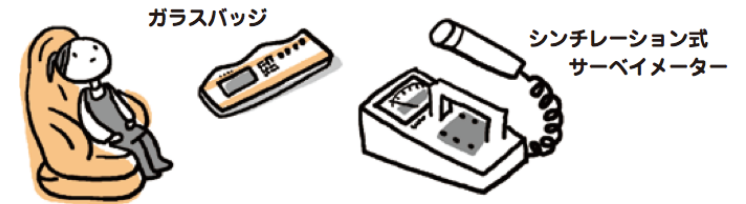
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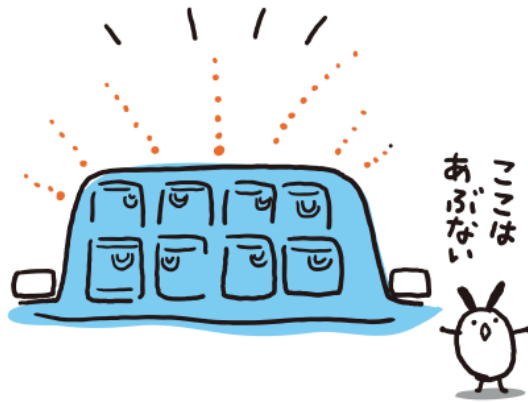








ホウシャセイブツツのおそうじもしているよ。  
つちに くっついてる ホウシャセイブツツを  
あつめる。  
みんなは ホウシャセイブツツが あつめられている  
ところには ちかよらないでね。  
おそうじが すんだばしよで あそぼう。





How we can protect our health at the time of nuclear emergency



RESEARCH ARTICLE

# Roles of children and their parents in the reduction of radiation risk after the 2011 Fukushima Daiichi Nuclear Power Plant accident

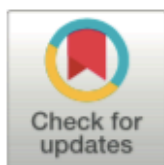
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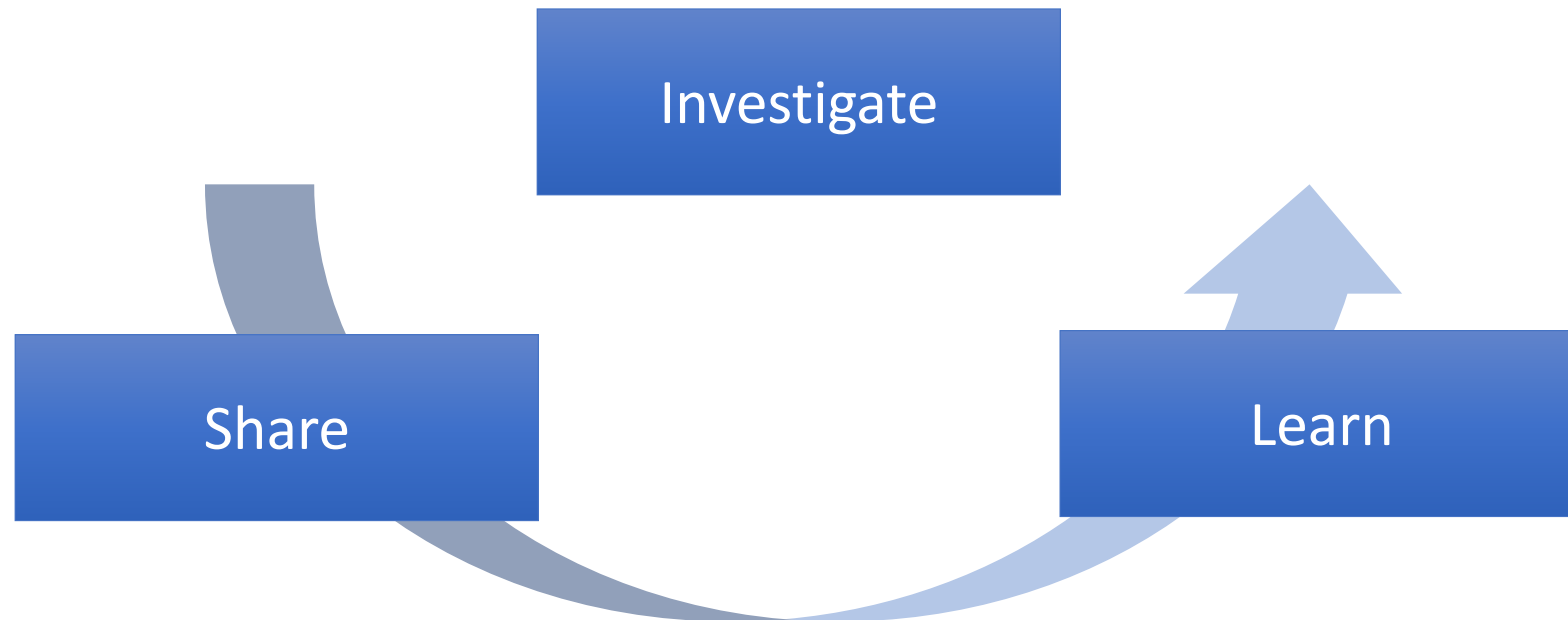


## Survey in 2014 – Level of cautiousness and reduction of radiation risk Effects on the attitude and behavior toward radiation

		n	%	Mean (mSv)	SD	p-value	
<b>Level of cautiousness towards radiation (n = 3,999)</b>	0-5-year-olds	Very much	137	19.4	0.63	0.23	0.016
		A little	439	62.0	0.65	0.26	
		Not so much	66	9.3	0.75	0.28	
		Not at all	8	1.1	0.72	0.30	
	Elementary school	Very much	631	24.3	0.64	0.29	0.148
		A little	1437	55.4	0.66	0.26	
		Not so much	215	8.3	0.65	0.31	
		Not at all	25	1.0	0.76	0.19	
	Middle school	Very much	245	23.5	0.60	0.24	0.005
		A little	658	63.2	0.66	0.26	
		Not so much	120	11.5	0.69	0.31	
		Not at all	18	1.7	0.68	0.26	



## Lessons learned to survive the situation



Do not conclude so early, keep investigating



# Thank you for listening!

