Ministry of Health, Labour and Welfare

Food safety response to Fukushima nuclear power plant incident in Japan

Regional Symposium
1-2 June 2011, Hong Kong

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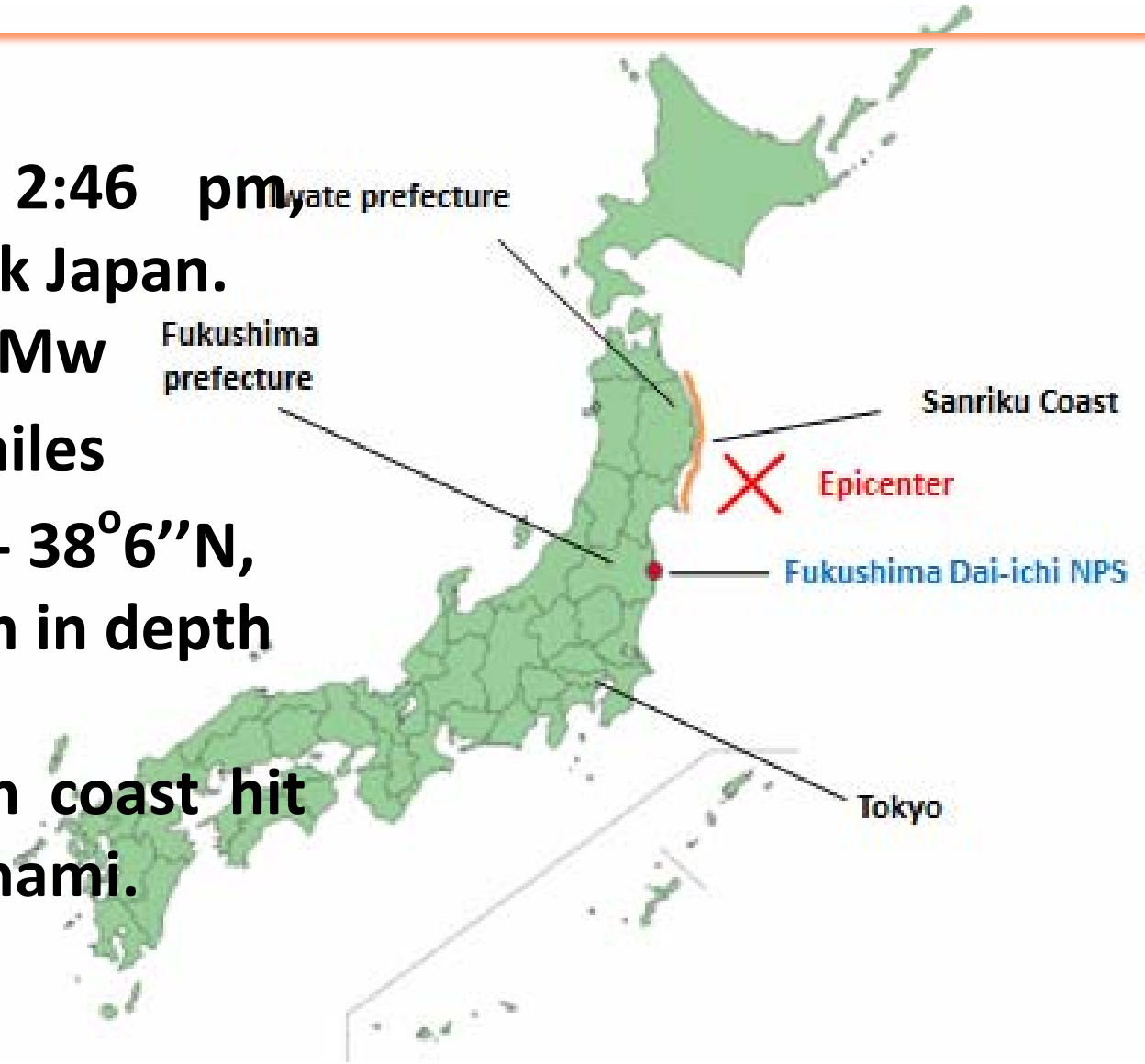
The Great East Japan Earthquake

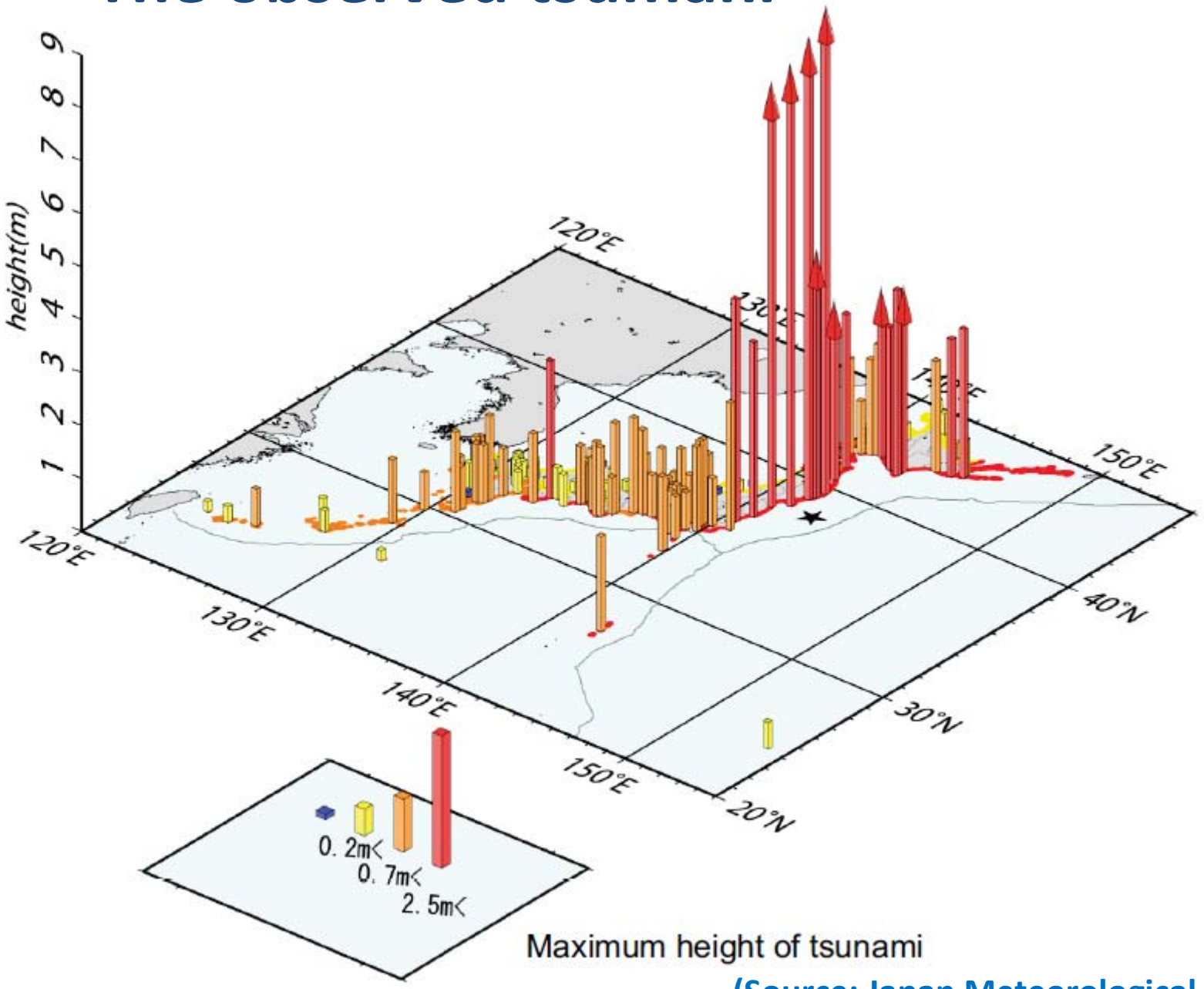
11 March, at 2:46 pm, earthquake struck Japan.

- **Magnitude 9.0 Mw**
- **Epicenter: 81 miles east of Sendai - 38°6''N, 142°51''E, 24km in depth**

North east Japan coast hit by a massive tsunami.



The observed tsumani



Maximum height of tsunami

(Source: Japan Meteorological Agency)

Disaster victims

- Death toll: 15,234
- Missing: 8,616
  (not include unknown)
- Injured: 5,339
- Evacuees at shelters:
  102,484

Source:
Cabinet office, 26 May

Earthquake disaster and Damage of Nuclear Power Plants

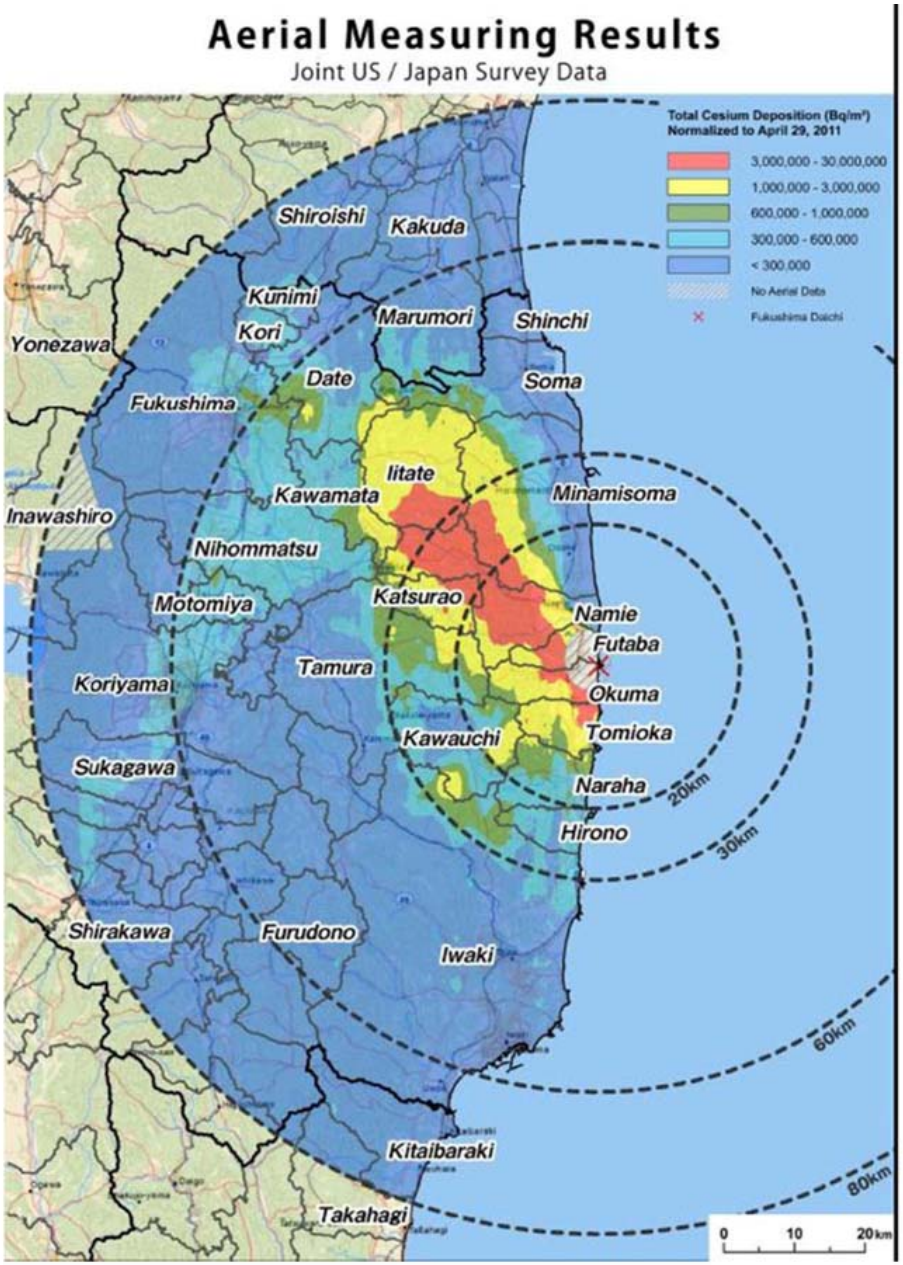
- 11 March, magnitude 9 earthquake struck;
- Over 14 meter (estimated by TEPCO) tsunami attacked Fukushima Nuclear Power Plant, resulting in failure of the reactor-cooling systems;
- 12 March, 15.36: a hydrogen explosion hit reactor No.1 of Fukushima Daiichi;
- 14 March, 11.01: another explosion hit reactor No.3, and 15 March, Reactor No.4 on fire.

Fukushima Dai-ichi NPS (Before the earthquake)

Fukushima Dai-ichi NPS (After the earthquake)


#2R/B
#3R/B
#4R/B
(Source: TEPCO)

Deposition of radiocaesium (sum of Cs-134 and Cs-137) for the land area within 80 km of the Fukushima Daiichi plant (as reported on 6 May by MEXT)



http://www.mext.go.jp/component/english/__icsFiles/afieldfile/2011/05/10/1304797_0506.pdf

Key challenges

- **Cool down of the reactors and contain the spread of radioactive substances (sea, soil and atmosphere);**
- **Protection of people's health, including on-site workers;**
- **Rigorous and intensive monitoring;**
- **Ensure safety of food and products.**

Environmental Radiation Monitoring at the time of Emergency

- **Basic Act on Disaster Control Measures; and**
- **Act on Special Measures Concerning Nuclear Emergency Preparedness**

↓

In case of the accident at the NPP and the emission of radioactive materials and/or radiation at an abnormal level or its threat, the State and local authorities and nuclear operators must implement their own Emergency Action plans.

【Monitoring at 1st Step - Start immediate after the accident】

Monitoring Items

- **Space radiation dose rate ;**
- **Radio-density in the air;**
- **Radiation-density in environmental materials, i.e. drinking water, leafy vegetables, raw milk and rainwater;**

Environmental Radiation Monitoring at the time of Emergency

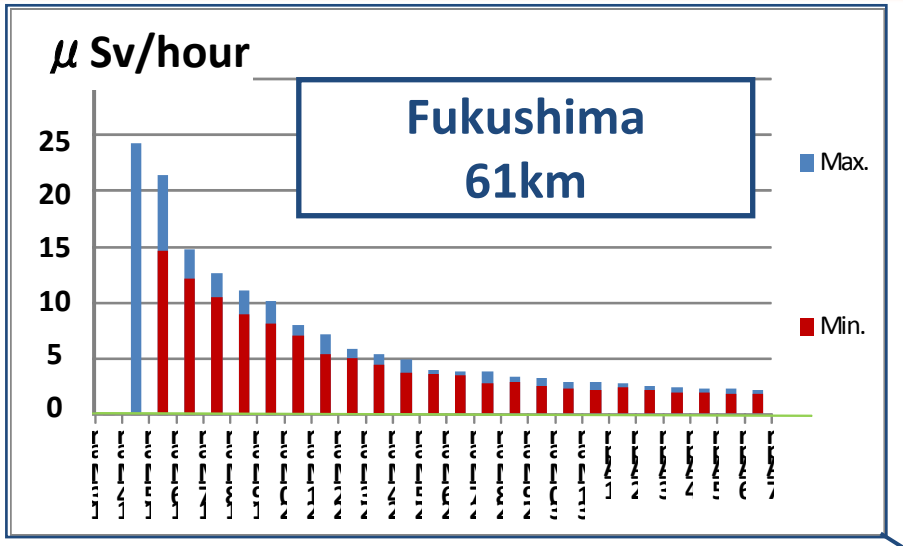
【Monitoring at 2nd Step】

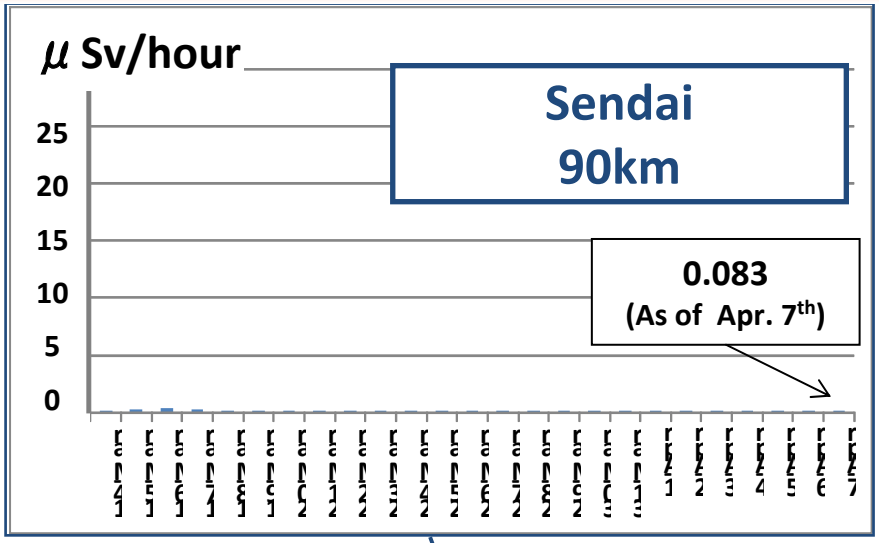
Evaluate and reassure the whole effects of radioactive materials and radiation in the wider area than at the 1st Step

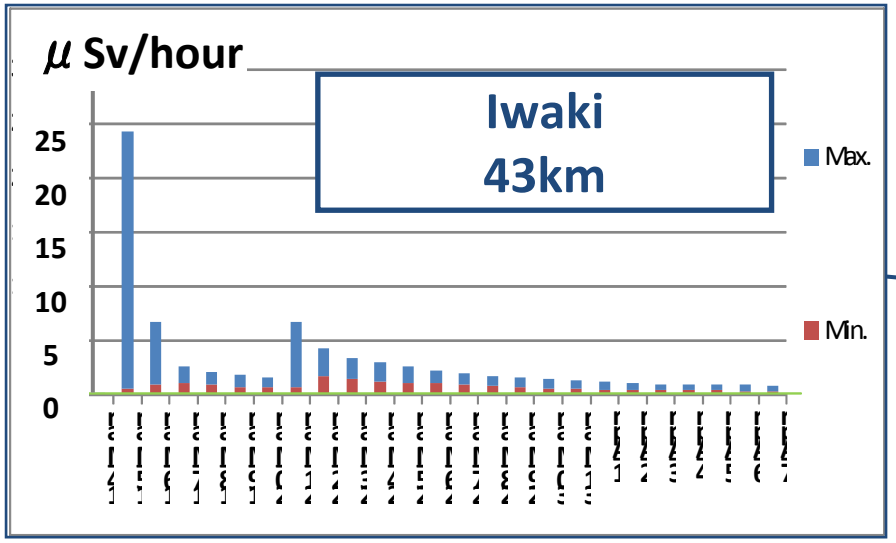
Monitoring Items (extended)

- Space radiation dose rate
- Radio-density in the air
- Radiation-density in the environmental materials
  - Drinking water, leafy vegetables, raw milk and rainwater
  - Soils and plants
  - Agricultural products
  - Raw water (water from a river, a filtration plant etc.)
  - Fish and fishery products

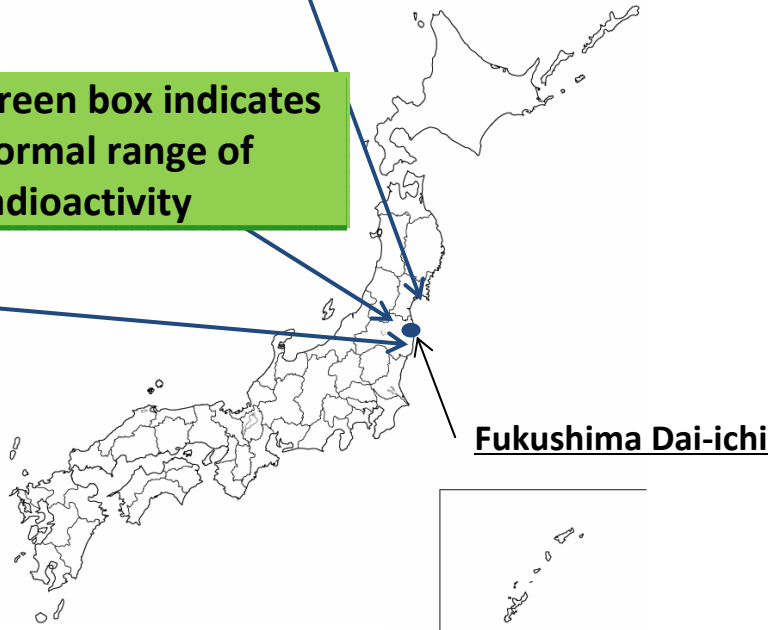
Atmospheric Readings within 100km





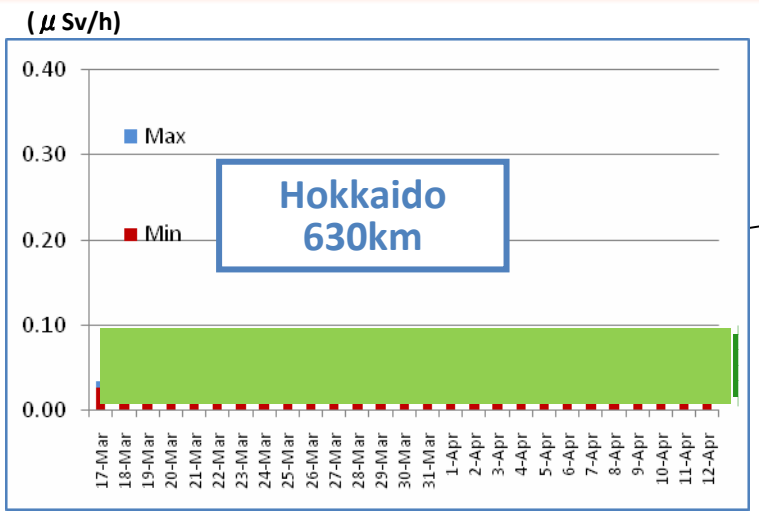


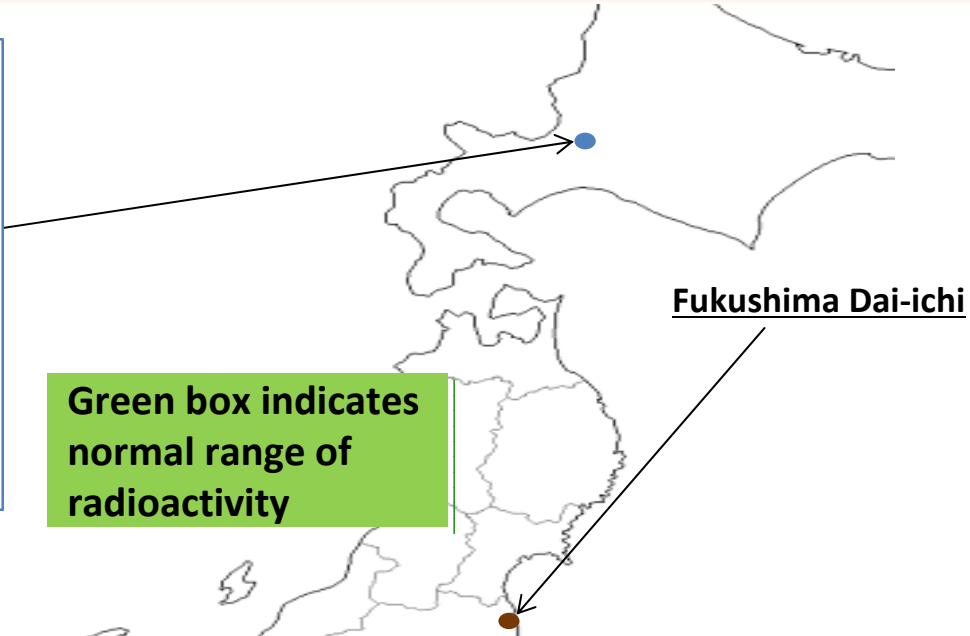
Green box indicates normal range of radioactivity

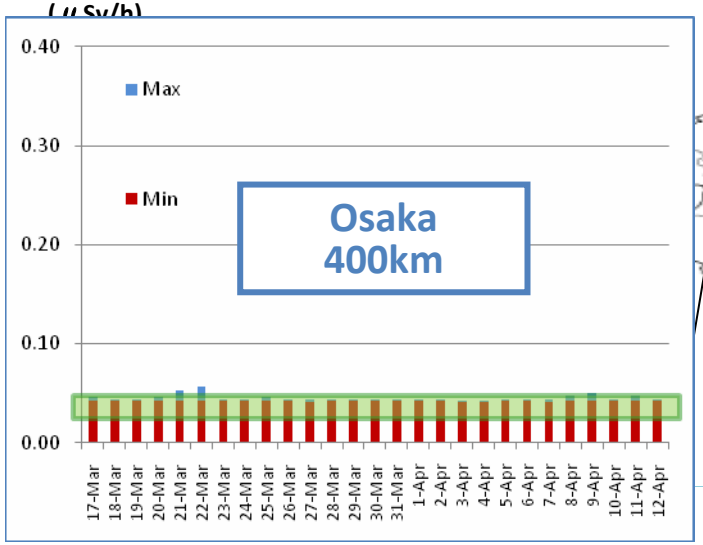


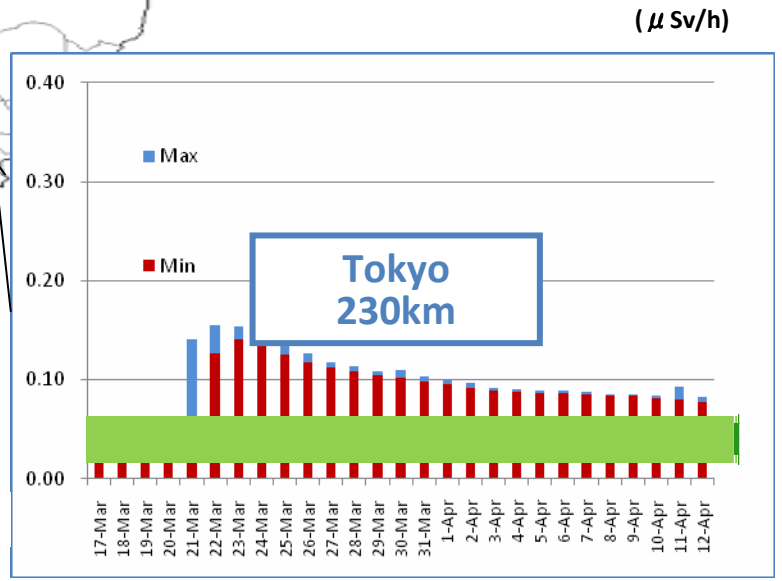
MEXT, Fukushima Prefectural Government

Atmospheric Readings in Tokyo, Osaka and Sapporo





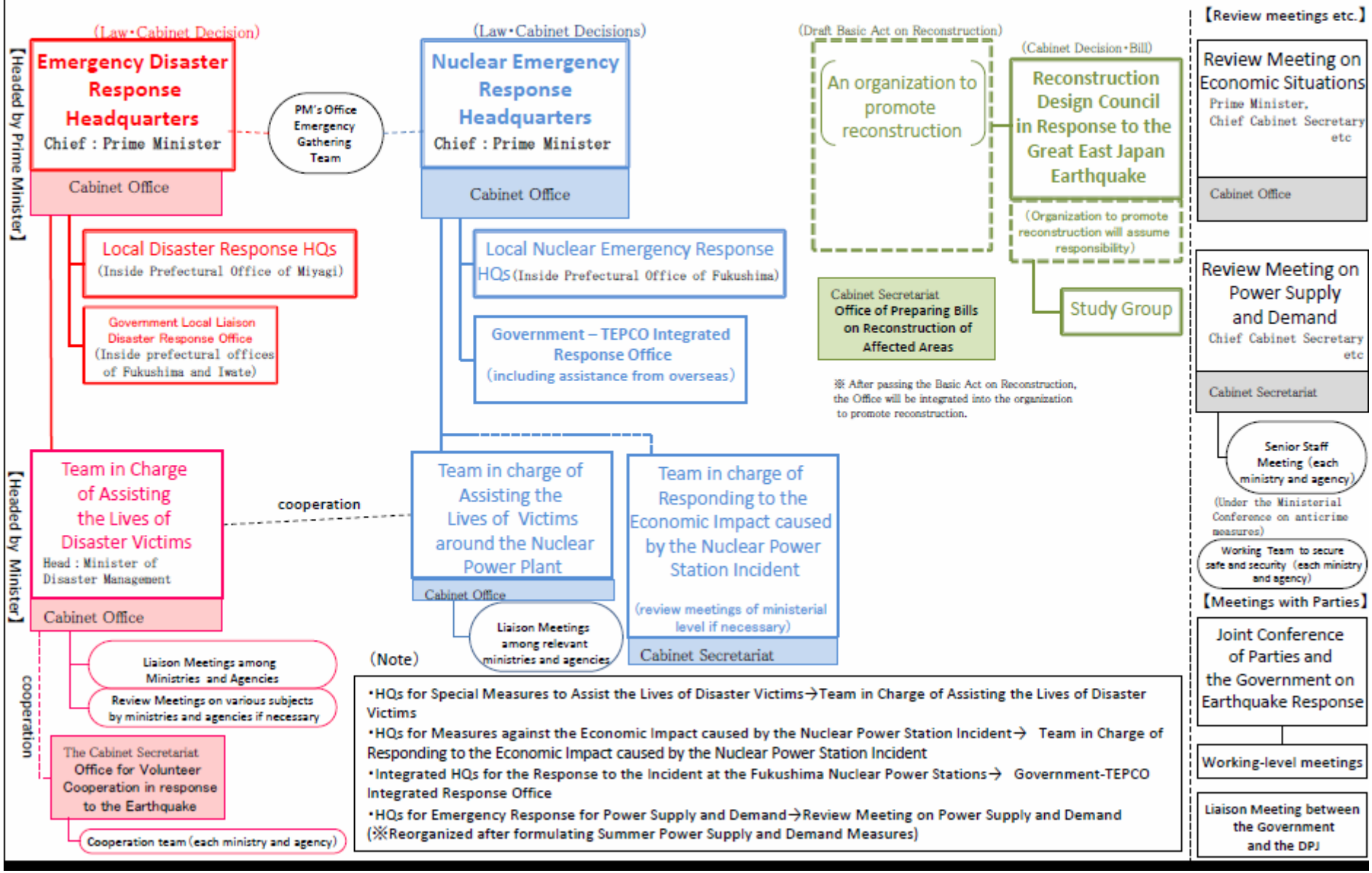




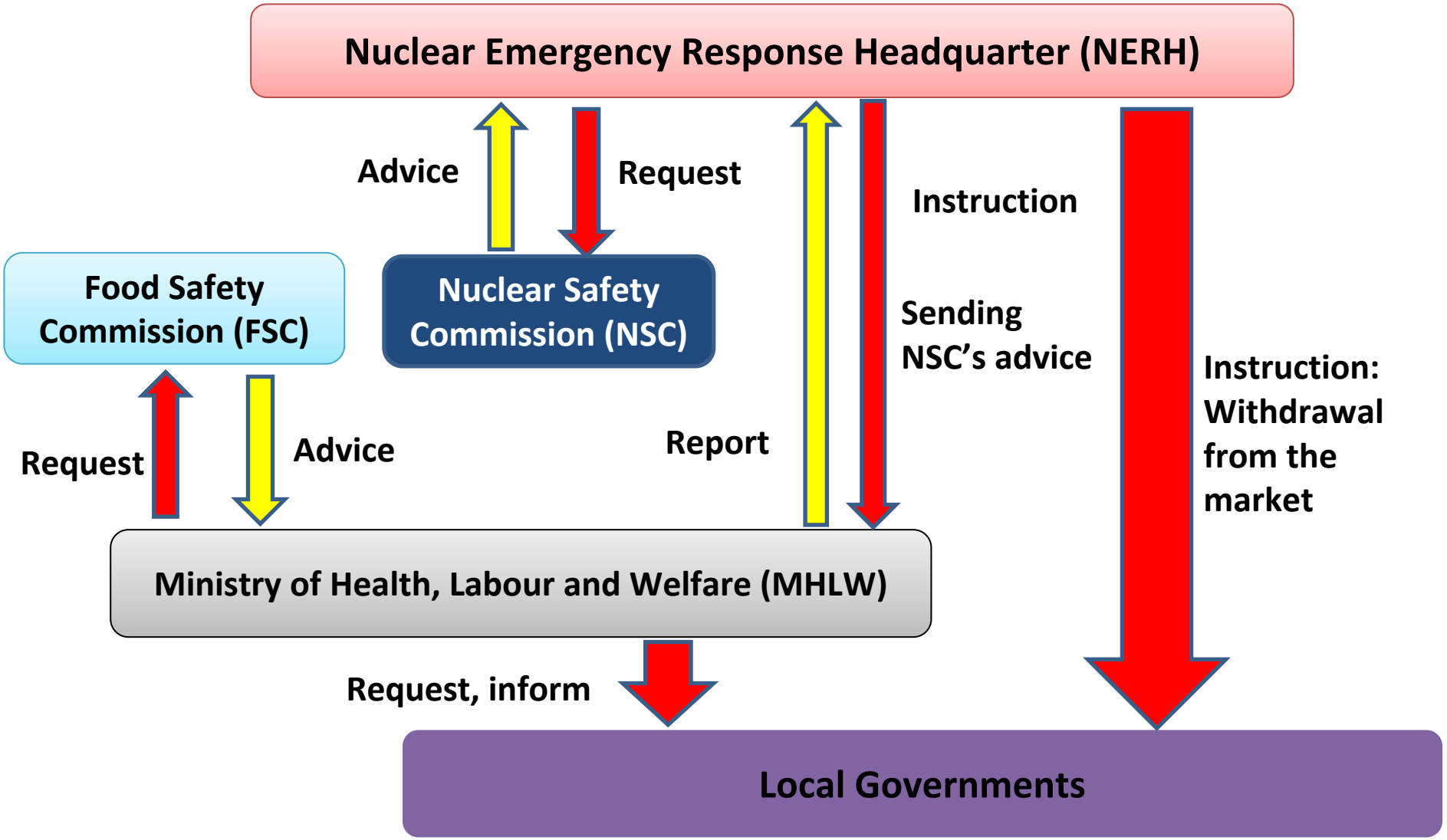
MEXT

Outline of Government Headquarters in response to the Great East Japan Earthquake

(As of 9th May 2011)



Response for food safety in the situation of nuclear emergency



Response for food safety

March 11 ・Declaration of state of emergency at nuclear plant,
・ Set up NERH to carry out evacuation of residents, emergency environment monitoring, etc.

March 17 ・MHLW enforced regulation levels of radioactivities in foods;

March 21 ・NERH ordered withdrawal of some foods produced in Fukushima, Tochigi, Ibaraki and Gunma;
・ MAFF requested to protect animals from contaminated foods and environments;

March 22 ~ Now
・Continue monitoring to check radiation levels in foods;
・Control restriction of foods in markets.
・Continue restriction on consumption and/or distribution of milks, some leafy vegetables, etc. in prefectures concerned;

Provisional regulation values

Provisional Regulation Values

Nuclide	Index values relating to ingestion limits in guidelines for coping with disasters at nuclear facilities etc. (Bq/kg)	
Radioactive iodine (Representative radio-nuclides among mixed radio-nuclides: ^{131}I)	Drinking water*	300 *100 for infant
	Milk, dairy products*	
	Vegetables (Except for root vegetables and tubers)	2,000
	Fish	
Radioactive cesium	Drinking water	200
	Milk, dairy products	
	Vegetables	500
	Grains	
	Meat, eggs, fish, etc.	
Uranium	Infant foods	20
	Drinking water	
	Milk, dairy products	
	Vegetables	100
	Grains	
	Meat, eggs, fish, etc.	
Alpha-emitting nuclides of plutonium and transuranic elements (Total radioactive concentration of ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{42}Pu, ^{241}Am, ^{242}Cm, ^{243}Cm, ^{244}Cm)	Infant foods	1
	Drinking water	
	Milk, dairy products	
	Vegetables	10
	Grains	
	Meat, eggs, fish etc.	

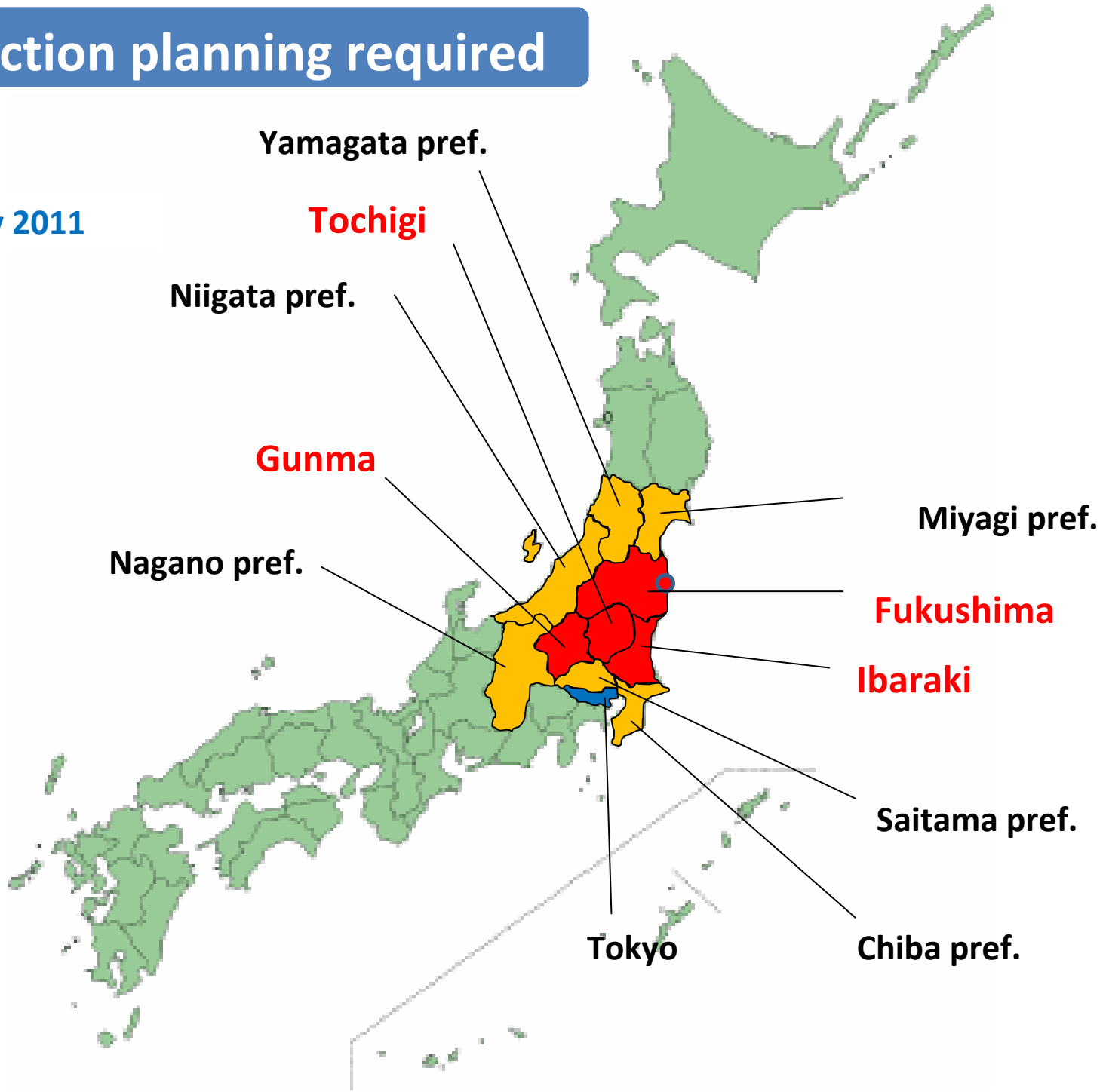
Comparison of regulation values

（Bq/kg）

Radionuclides	Food categories	Japan	EU (3954/87 Euratom)	USA Compliance Policy Guide Sec. 560.750	CODEX
Radioactive iodine (^{131}I)	Drinking water, Milk, dairy products*	300 (*100 for infant)	500 (150 for infant)	170	100
	Vegetables （Except root vegetables and tubers)	2,000	2,000		
Radioactive cesium(sum of ^{134}Cs and ^{137}Cs)	Drinking water , Milk, dairy products	200	1,000 (400 for infant)	1200	1000
	Vegetables, Grains, meat, eggs, fish, etc.	500	1,250		

Inspection planning required

As of 20 May 2011



Inspection/monitoring required

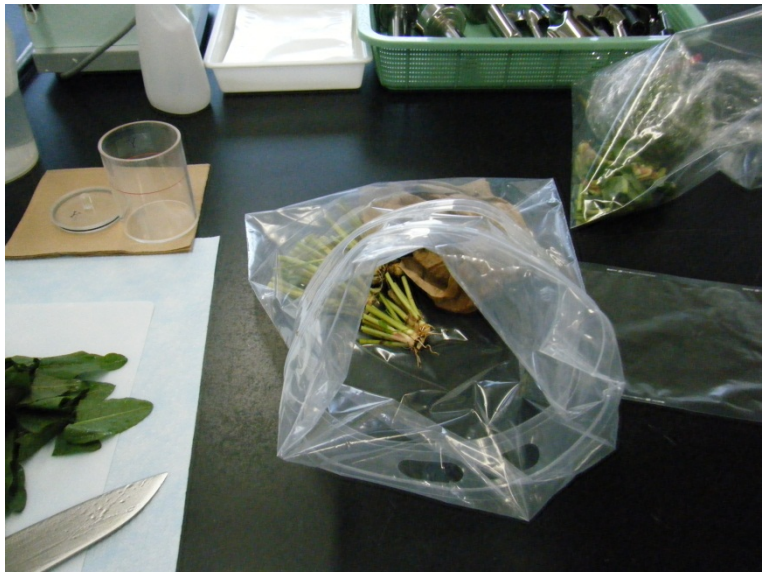
1. Prefectures applied:
Fukushima, Ibaraki, Tochigi, Gunma, Miyagi, Yamagata, Niigata, Nagano, Saitama, Chiba, Tokyo

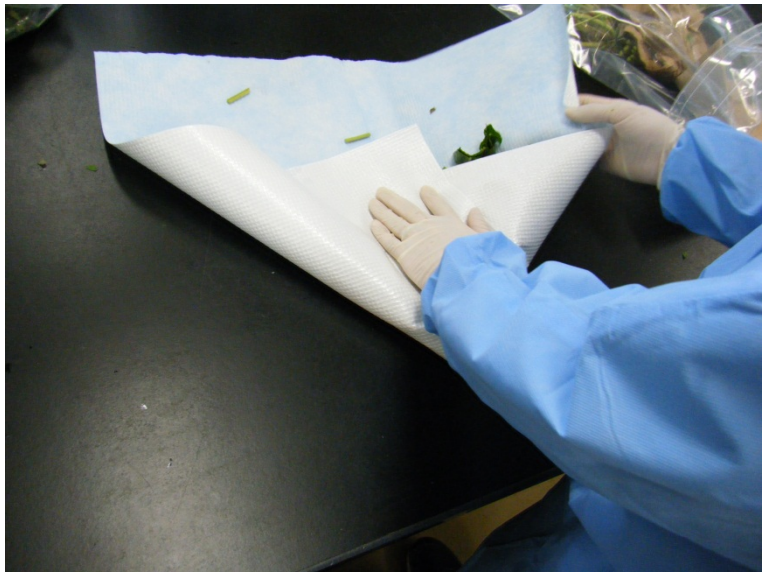
2. Targeted foods:
(1) Leafy vegetables, ,spinach, Garland chrysanthemum, kakina, mizuna, komatsuna
(2) raw milk
(3) others

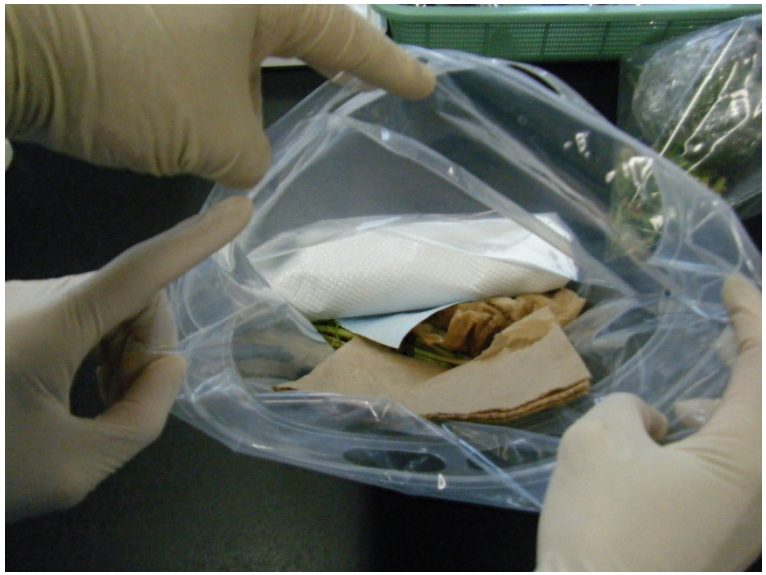
3. Frequency of sampling and test : Once a week for each species

4. The detailed areas where the food monitoring is performed
The food monitoring must be performed in the proper areas which consist of cities, towns and villages.


2:38







Laboratories testing radionuclide in food

Miyagi
university
Yamagata
prefecture lab
university
Fukushima
private lab
prefecture lab
Ibaraki
prefecture Lab
private lab
national lab
Fishery Industries
prefecture Lab
Fishery Agency
national lab
Tochigi
private lab
Gunma
private lab
national lab

Saitama
private lab
prefecture lab
Chiba
private lab
national lab
Tokyo
prefecture lab
national lab
Kanagawa
prefecture lab
private lab
national lab
Niigata
prefecture lab
Nagano
prefecture lab
private lab

Foods restricted






Number of Samples and Positive Results by Prefecture

Source: INFOSAN/WHO

(May 26, 2011)

Prefecture	Samples	Positives	%Positives
Fukushima	1580	208	13.2
Ibaraki	632	57	9.0
Tochigi	198	13	6.6
Chiba	313	17	5.4
Kanagawa	134	7	5.2
Tokyo	58	1	1.7
Gunma	295	4	1.4
Saitama	183	0	0.0
Niigata	319	0	0.0
Nagano	43	0	0.0
Miyagi	86	0	0.0
Yamagata	41	0	0.0
Shizuoka	35	0	0.0
Yamanashi	5	0	0.0
Hokkaido	5	0	0.0
Aomori	11	0	0.0
Iwate	4	0	0.0
Others	19	0	0.0
Total	**3961**	**307**	**7.8**

Proportions of samples exceeds the action levels for withdrawal from market

Source: INFOSAN/WHO

(May 26, 2011)

Food Category	Samples	Positives	%Positive
vegetable	2845	235	8.3
milk	420	23	5.5
fishery products	406	23	5.7
meat	110	0	0.0
egg	34	0	0.0
others	146	26	17.8
Total	**3961**	**307**	**7.8**

Test results in Fresh produce

March 16-31

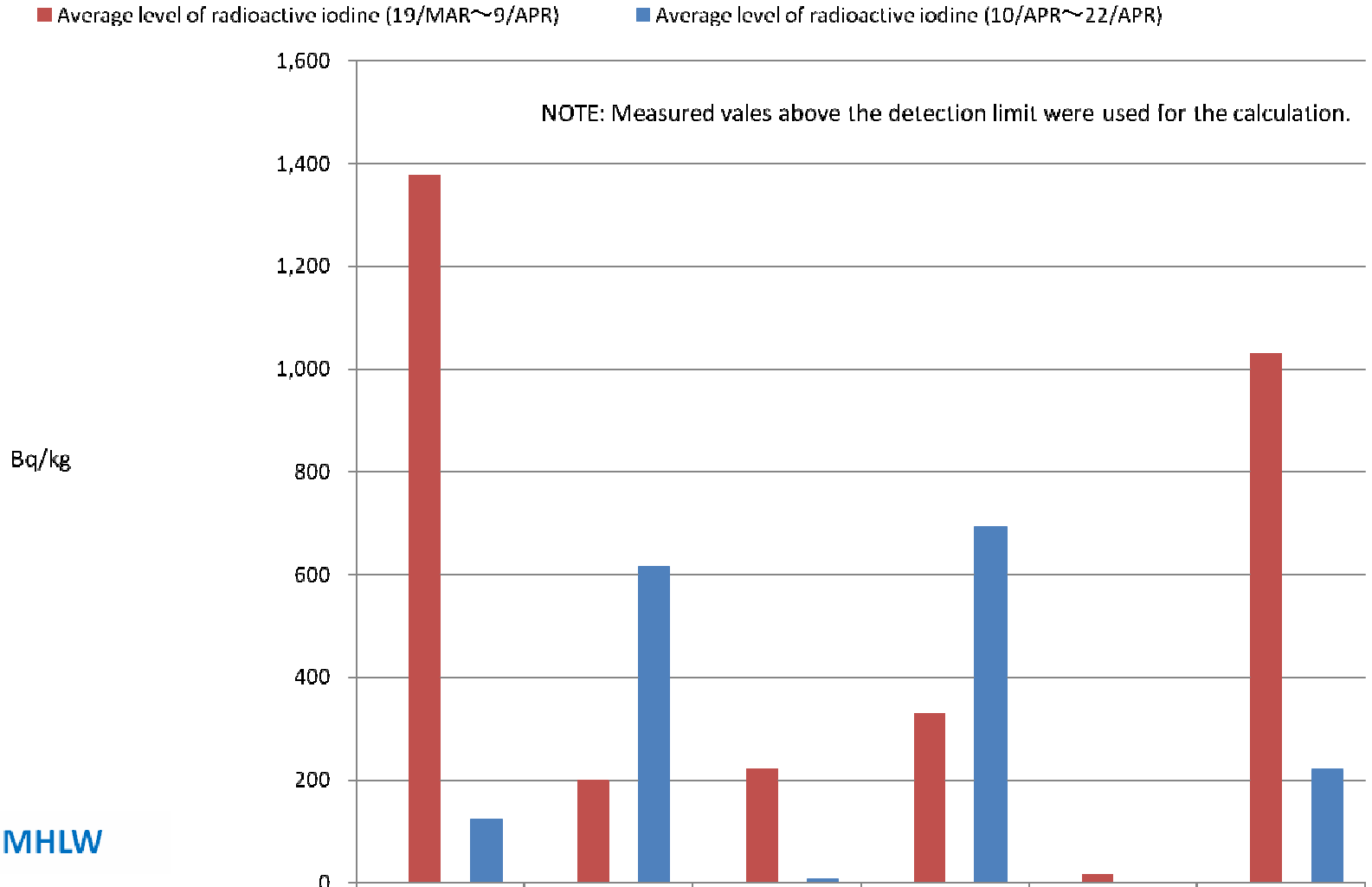
Prefecture	No. food tested	No. Positive
Fukushima	287	71
Ibaraki	140	40
Tochigi	55	11
Chiba	65	11
Gunma	70	3
Others	163	1

⇒

April 1 – May 18

Prefecture	No. food tested	No. Positive
Fukushima	1,077	113
Ibaraki	409	10
Tochigi	114	0
Chiba	195	0
Gunma	198	0
Others	627	7

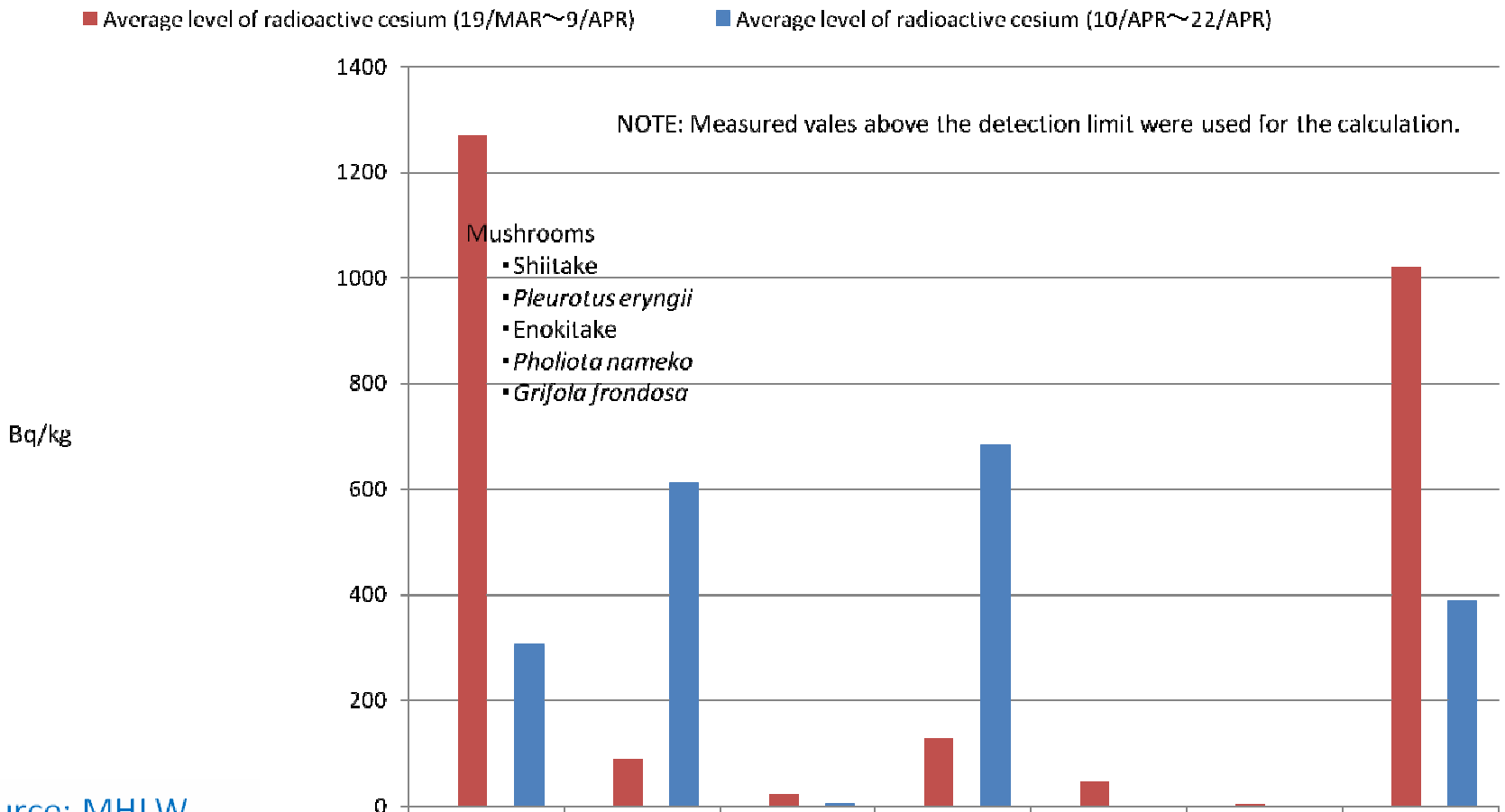
The trend of average levels of radioactive iodine 131 in foods



Source: MHLW

	Vegetables (excluding mushroom)	Mushrooms	Milk / Dairy products	Fishery products	Meat and Egg	Total
No. samples tested (19/MAR～9/APR)	607	26	176	40	19	868
Average level of radioactive iodine (19/MAR～9/APR)	1,377.14	200.96	222.35	329.81	15.85	1,029.70
No. samples tested (10/APR～22/APR)	244	33	28	35	0	340
Average level of radioactive iodine (10/APR～22/APR)	122.92	615.10	6.43	692.46	0.00	219.72

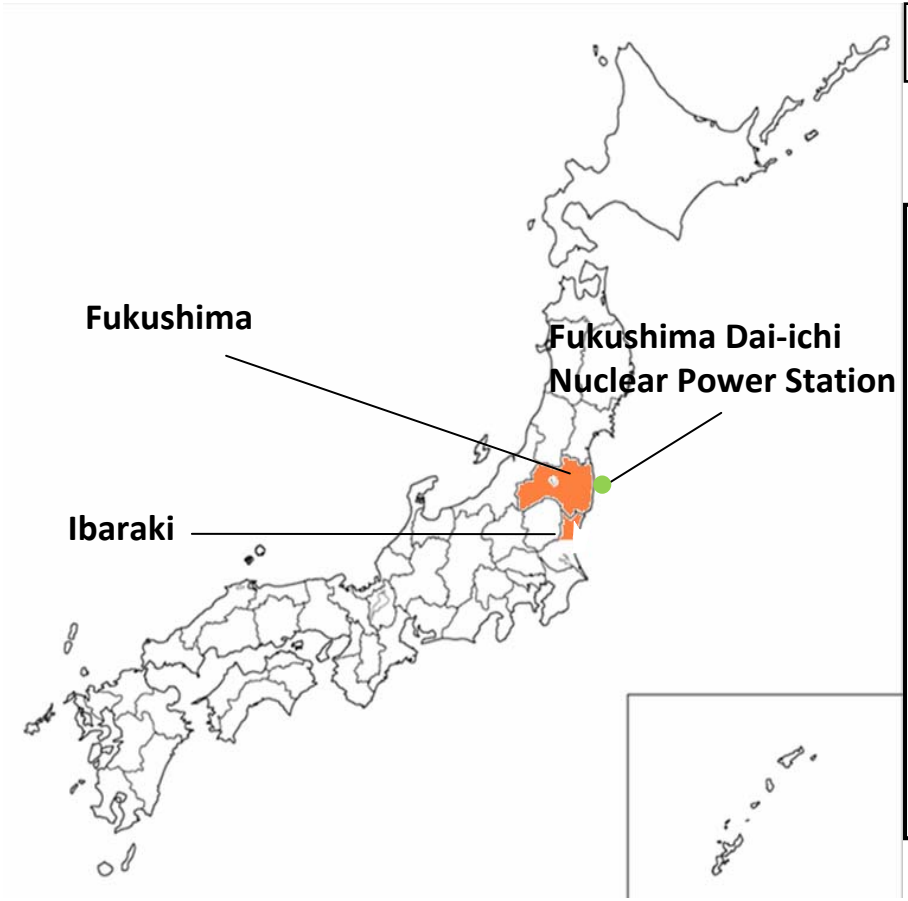
The trend of average levels of radioactive cesium 134 and 137 in foods



Source: MHLW

	Vegetables (excluding mushroom)	Mushrooms	Milk / Dairy products	Fishery products	Meat and Egg	Others	Total
No. samples tested (19/MAR～9/APR)	486	15	65	27	17	1	611
Average level of radioactive cesium (19/MAR～9/APR)	1,270.06	89.15	23.10	128.36	46.67	4.00	1,021.85
No. samples tested (10/APR～22/APR)	234	46	10	44	0	0	334
Average level of radioactive cesium (10/APR～22/APR)	306.19	612.36	4.56	684.38	0.00	0.00	389.15

Restriction of distribution and/or consumption of foods



Instructions (as of 16 May 2011)

Not to Distribute

＊ Fukushima Prefecture

- Raw milk
- Non-head type leafy vegetables (e.g. spinach)
- Head type leafy vegetables (e.g. cabbage)
- Flowerhead brassicas (e.g. broccoli, cauliflower)
- Turnip
- Log grown shiitake (grown outdoor)
- Bamboo shoot
- Ostrich fern
- Juvenile（baby) fish of Japanese sand lance

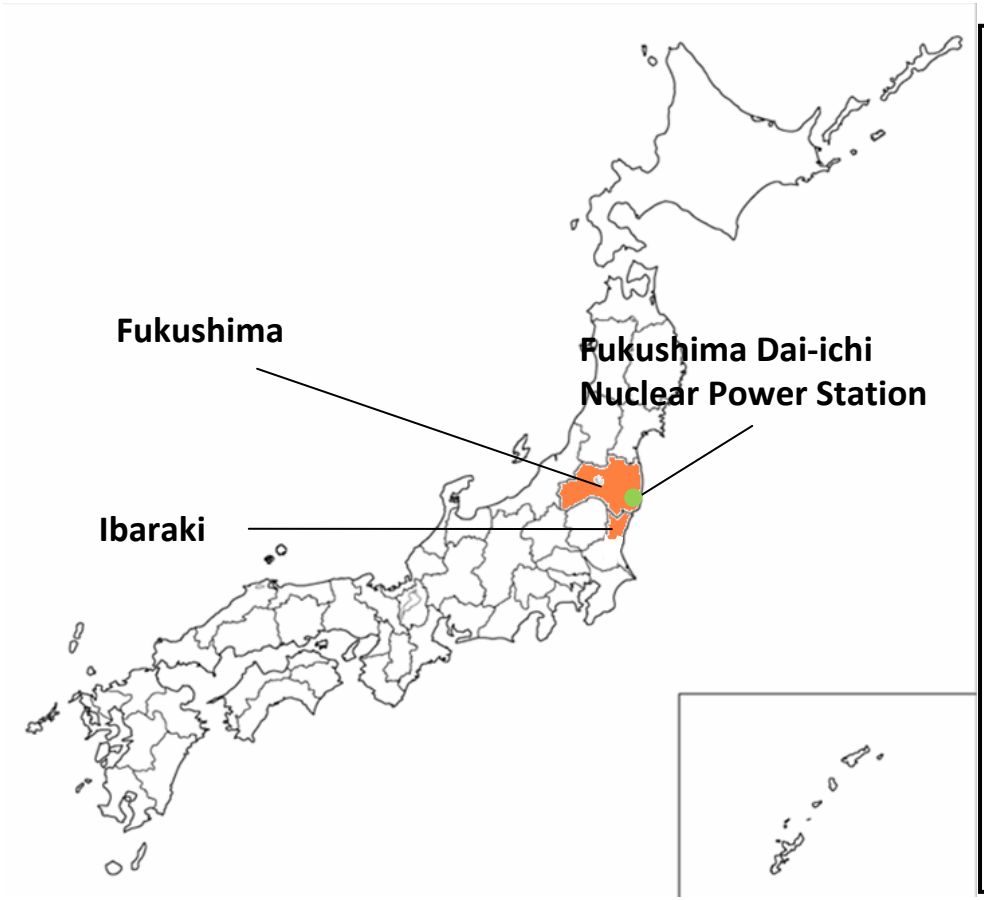
＊ Ibaraki Prefecture

- Spinach

Source: MHLW, @METI

Restriction of distribution and/or consumption of foods

As of 30 May



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＊ Ibaraki Prefecture

- Spinach

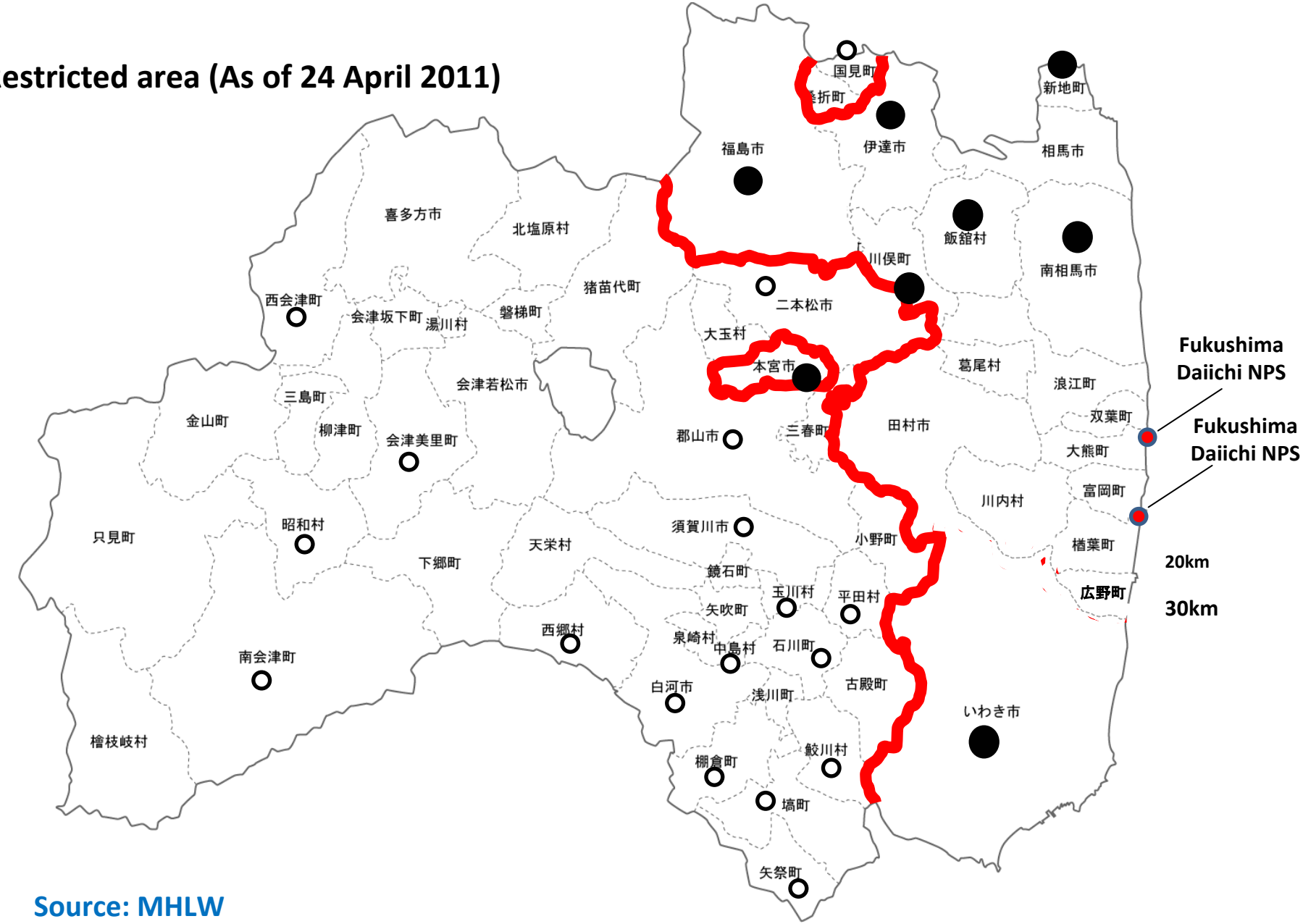
Please refer to the following URL for the details of the Instructions.

http://www.mhlw.go.jp/english/topics/2011eq/index.html

Source: MHLW

Cultivation areas of Shiitake mushrooms in Fukushima

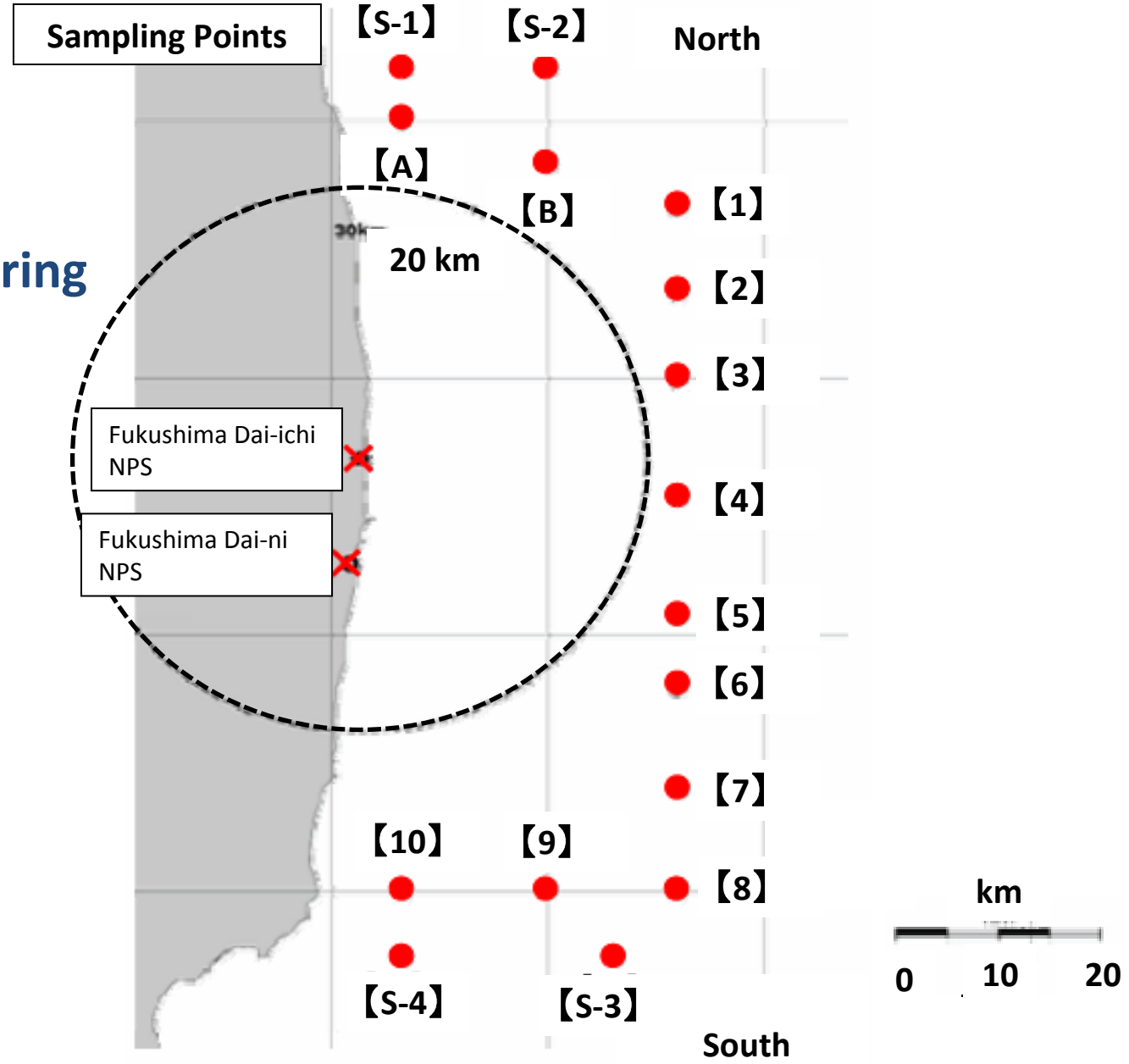
- **Restricted area (As of 24 April 2011)**



Source: MHLW

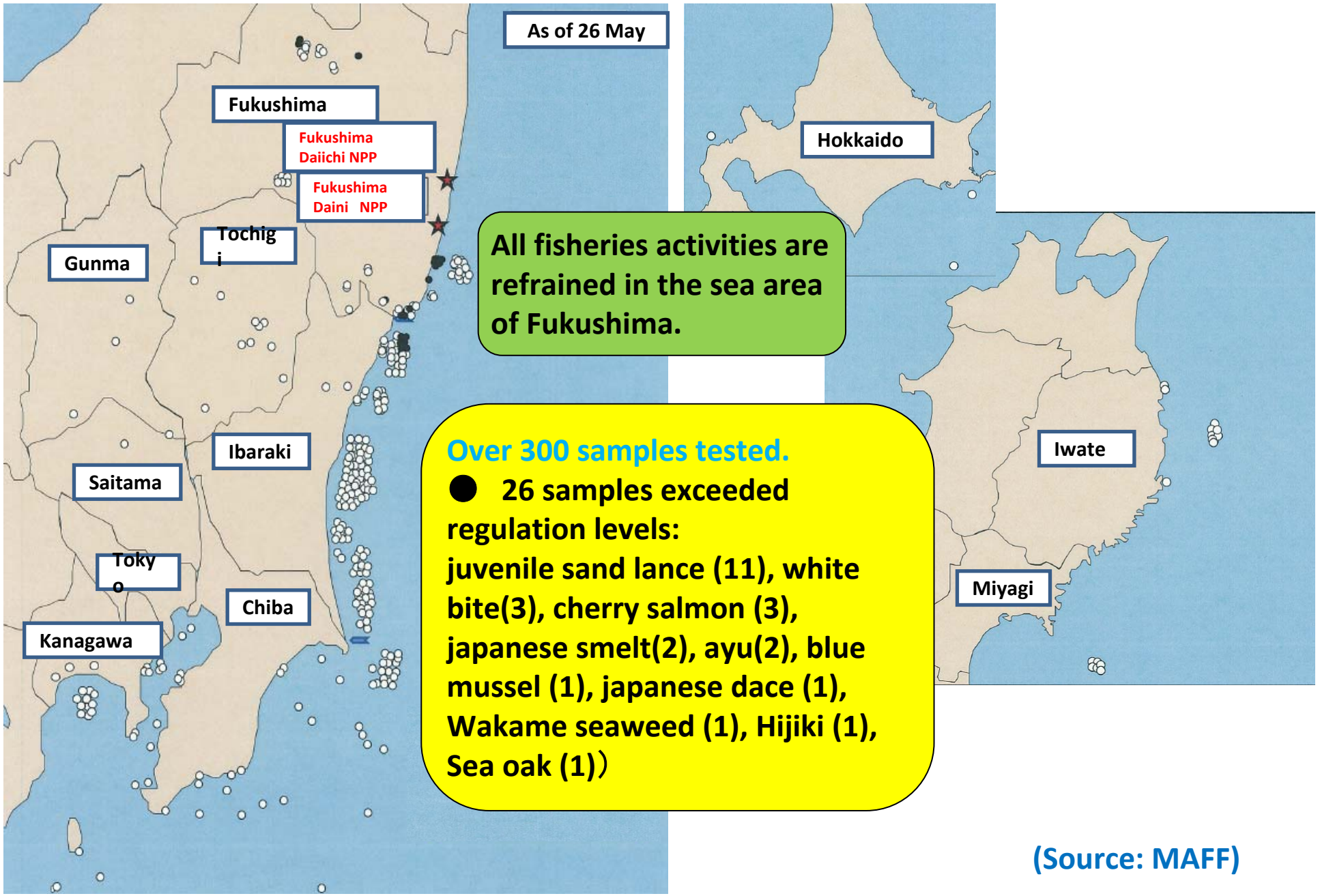
Safety of Marine Food

Sea area monitoring Sampling points



Source: MEXT

Monitoring of Marine Products



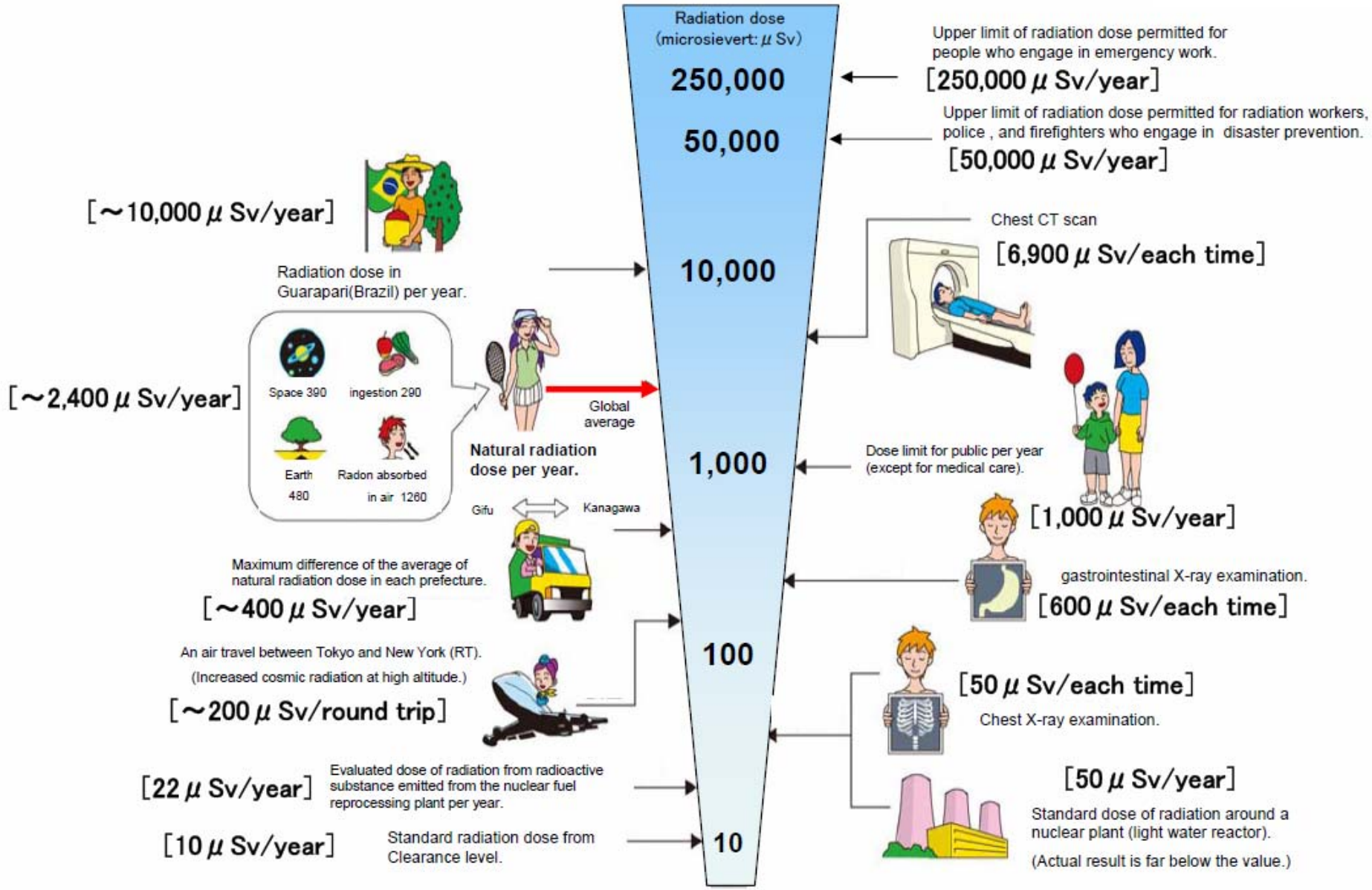
All fisheries activities are refrained in the sea area of Fukushima.

Over 300 samples tested.

● **26 samples exceeded regulation levels:**
juvenile sand lance (11), white bite(3), cherry salmon (3), japanese smelt(2), ayu(2), blue mussel (1), japanese dace (1), Wakame seaweed (1), Hijiki (1), Sea oak (1)）

(Source: MAFF)

Radiation in Daily-life



※ Sv【Sievert】=Constant of organism effect by kind of radiation(※) × Gy【gray】

※ It is 1 in case of X ray and γ ray.

MEXT makes this, based on "Nuclear power 2002" made by Agency of Natural Resources and Energy.

Thank you

codexj@mhlw.go.jp