

# Nuclear Accident at the Fukushima Dai-ichi Nuclear Power Station

Embassy of Japan in the UK

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# A. Japan Faces an Unprecedented Challenge

(Enormous Earthquake, Tsunamis and Nuclear Accident)

1. Damage
2. Rescue Efforts and Foreign Assistance
3. Nuclear Power Stations

# A. Japan Faces an Unprecedented Challenge

(Enormous Earthquake, Tsunamis and Nuclear Accident)



## Earthquakes:

M - 9.0 quake (March 11)  
M - 7 class 5 times  
M - 6 class 72 times  
M - 5 class 423 times

## 1. Casualties : over 27,000

Dead over 13,000

Missing over 14,000

## 2. Evacuees : over 136,000

(As of April 17<sup>th</sup>)

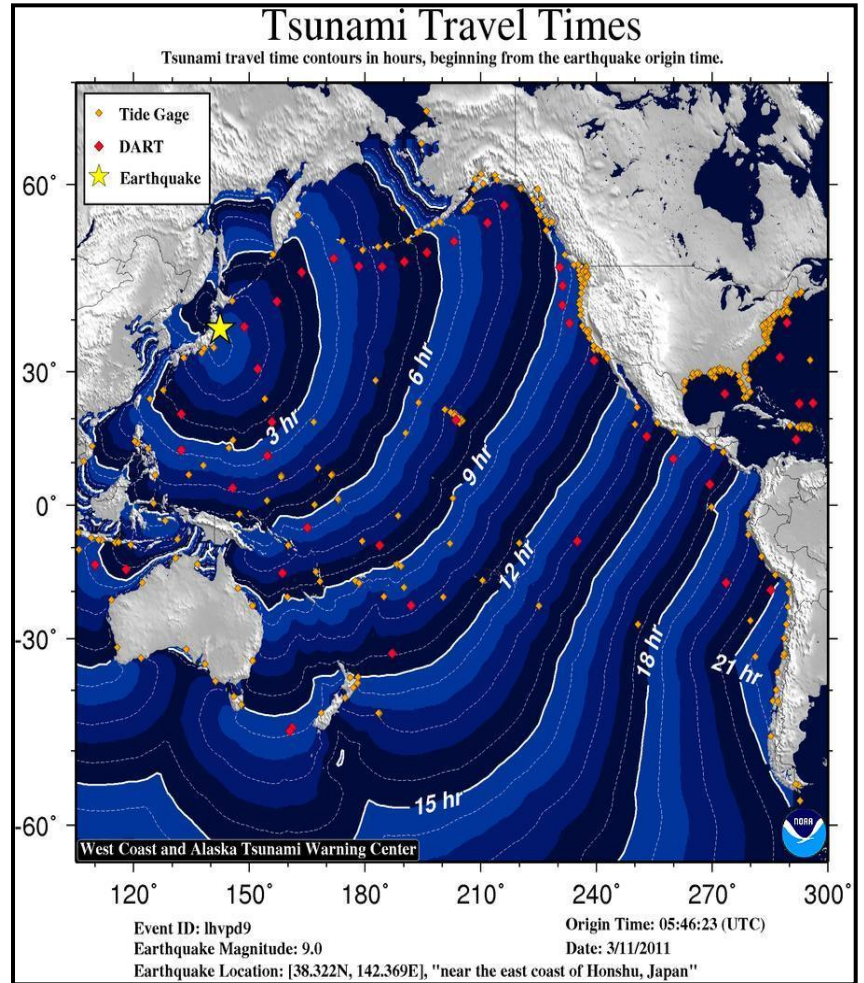
# 1. Damage



KYODO NEWS



KYODO NEWS



## 2. Rescue Efforts and Foreign Assistance



KYODO NEWS

Japan deeply appreciates the assistance offered from  
142 countries and regions and  
39 international organizations  
(Rescue teams were sent from 24 countries, regions and  
international organizations)



Ministry of Defense



US Navy/US Pacific Command  
(Operation Tomodachi)

# 3. Nuclear Power Stations

## Nuclear Reactors near Epicenter of the Earthquake

### 4 Nuclear Power Stations with 14 Units

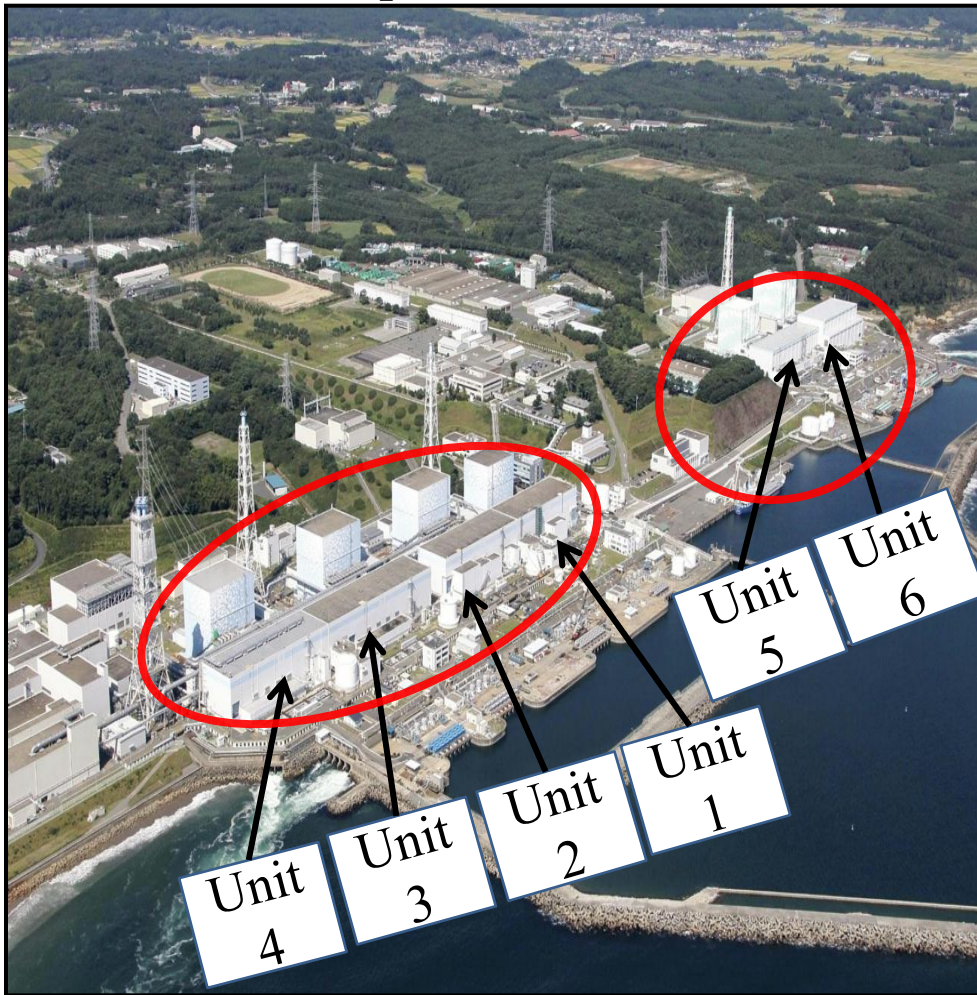


		automatic shut down	cold shut down
Onagawa			
Unit 1	524 MW, 1984-	✓	✓
Unit 2	825 MW, 1995-	✓	✓
Unit 3	825 MW, 2002-	✓	✓
Fukushima Dai-ichi			
Unit 1	460 MW, 1971-	✓	
Unit 2	784 MW, 1974-	✓	
Unit 3	784 MW, 1976-	✓	
Unit 4	784 MW, 1978-	Periodical inspection	✓
Unit 5	784 MW, 1978-		
Unit 6	1,100 MW, 1979-		✓
Fukushima Dai-ni			
Unit 1	1,100 MW, 1982-	✓	✓
Unit 2	1,100 MW, 1984-	✓	✓
Unit 3	1,100 MW, 1985-	✓	✓
Unit 4	1,100 MW, 1987-	✓	✓
Tokai Dai-ni			
Unit 1	1,100 MW, 1978-	✓	✓

# 3. Nuclear Power Stations

## Fukushima Dai-ichi Nuclear Power Station

Before the Earthquake and Tsunamis



TEPCO

After the Earthquake and Tsunamis



Air Photo Service Inc (Myoko, Niigata Japan)



# 3. Nuclear Power Stations

## Fukushima Dai-ichi Nuclear Power Station

### Huge Tsunami



GE Hitachi Nuclear Energy

Tsunami (estimated 14m)

Breakwater

5.4 ~5.7m

Seawater level

Seawater Pump

Elevation:  
about 10m

### Cause of the Damage

Grid Line

① Loss of Off-site Power  
due to the Earthquake

Reactor Building  
Turbine Building

About  
20M

About  
40M

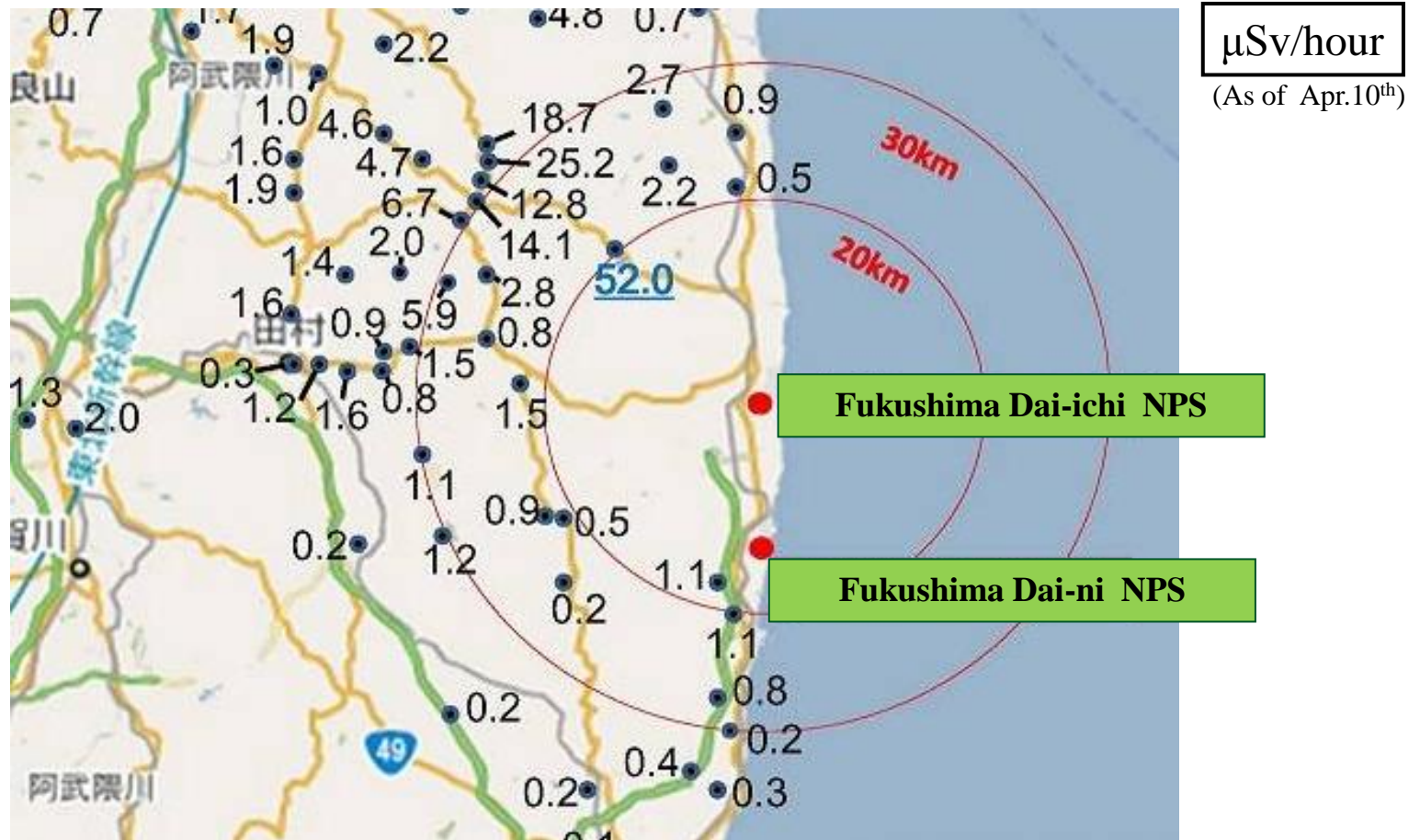
Diesel Generator

② Diesel Generator Inoperable  
due to the Tsunami

All Motion Operated Pumps including  
ECCS became Inoperable

# 3. Nuclear Power Stations

## Fukushima Dai-ichi Nuclear Power Station







- 20 km radius of the plant **and other designated areas**
  - to evacuate
- 20 to 30 km radius of the plant
  - to shelter indoors

## B. Key Challenges

1. Cool Down the Reactors
2. Contain the Spread of Radioactive Substances  
(sea, soil and atmosphere)
3. Rigorous and Intensive Monitoring
4. Ensure the Safety of Food, Drinking Water, On-site Workers, Industrial Products, Ports and Airports

# 1. Cool Down the Reactors

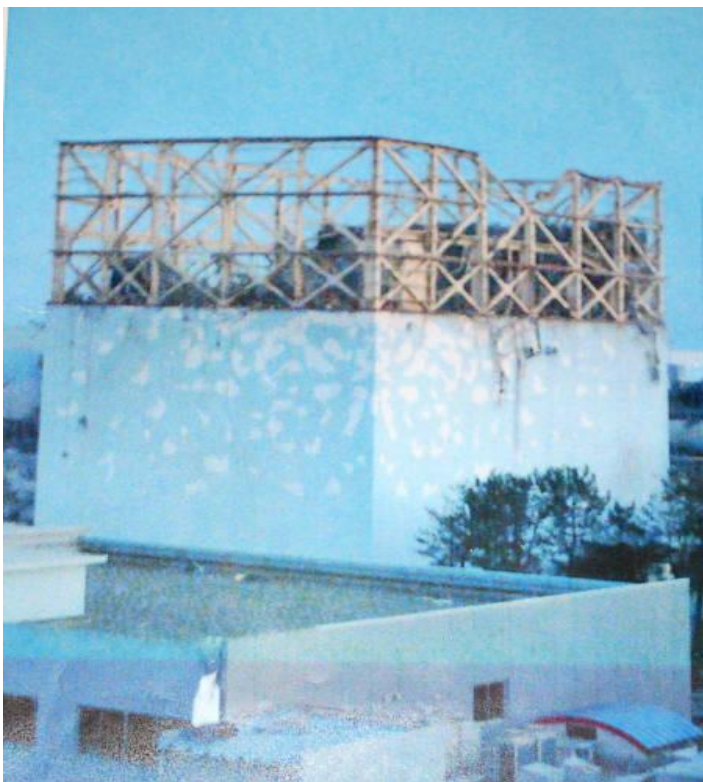
(As of April 18)

	Unit 1	Unit 2	Unit 3	Unit 4	
					
Type / MW / Commercial Operation	BWR / 460 / Mar 71-	BWR / 784 / Jul 74-	BWR / 784 / Mar 76-	BWR / 784 / Oct 78-	
Status at time of Earthquake	In Service	In Service	In Service	Periodical Inspection Outage	
Automatic Shutdown	✓	✓	✓	—	
Fresh Water Injection	✓	✓	✓	—	
RPV	Water Level [mm] (distance from the top of fuel)	-1,650 (A)	-1,500 (A)	-1,800 (A)	—
		-1,650 (B)	-2,100 (B)	-2,250 (B)	—
	Reactor Pressure [Mpa g]	0.428 (A)	-0.023 (A)	-0.034 (A)	—
		1.035 (B)	-0.032 (D)	-0.081(C)	—
Temperature	— Feedwater Nozzle	170.2°C	140.8°C	101.5°C	—
	— Bottom Head of RPV	115.2°C	N/A	112.7°C	—
SFP	Fresh Water Injection	✓	✓	✓	✓
	Temperature	Not available	71°C	Not available	Not available
Building	Damage	Slight Damage	Damage	Damage	
AC Power (Lighting of Central Operation Room <sup>*</sup> )	✓	✓	✓	✓	

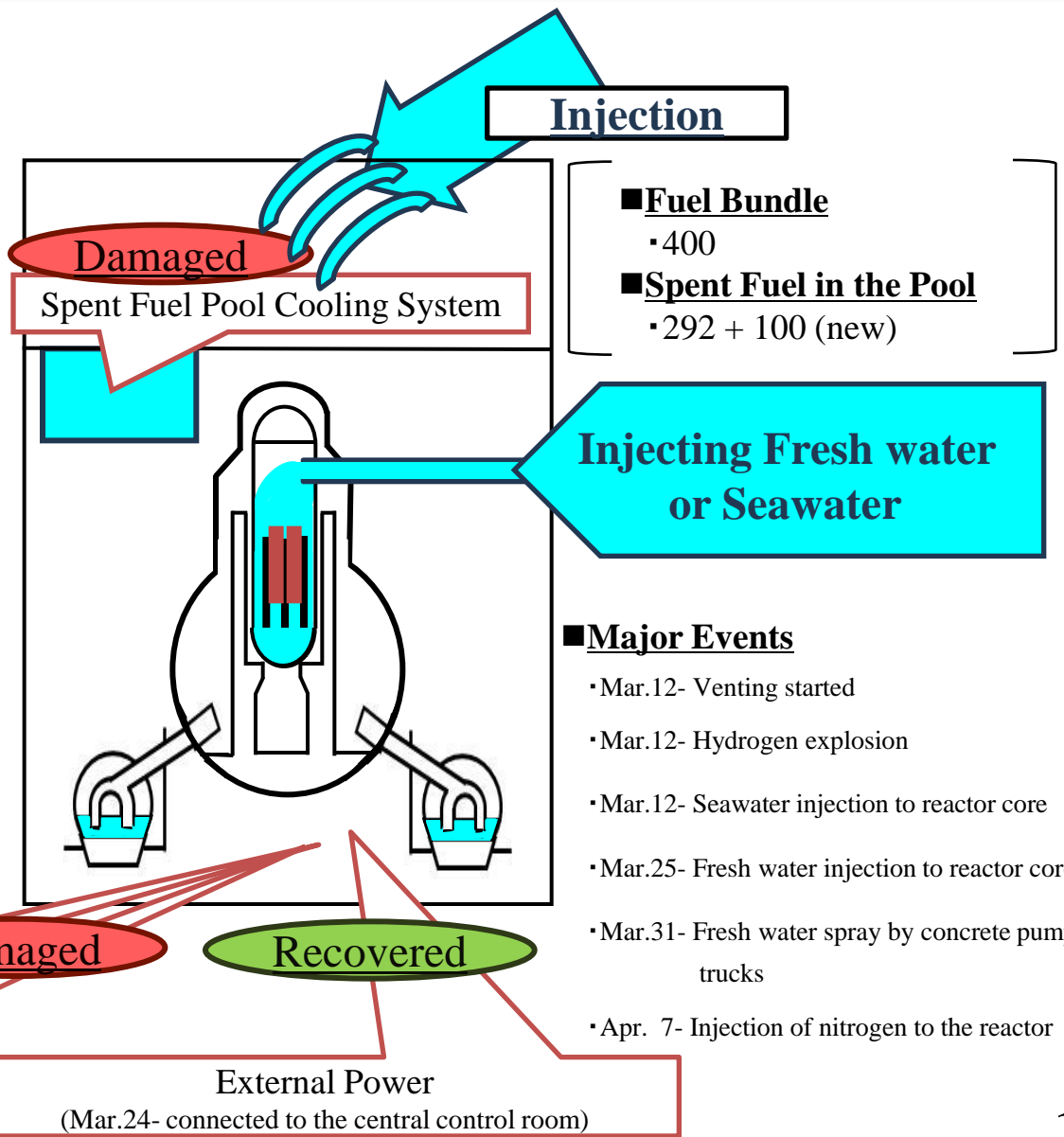
\* Facilities are under-checking.

# 1. Cool Down the Reactors (Unit 1)

(As of April 17, 2011)



TEPCO

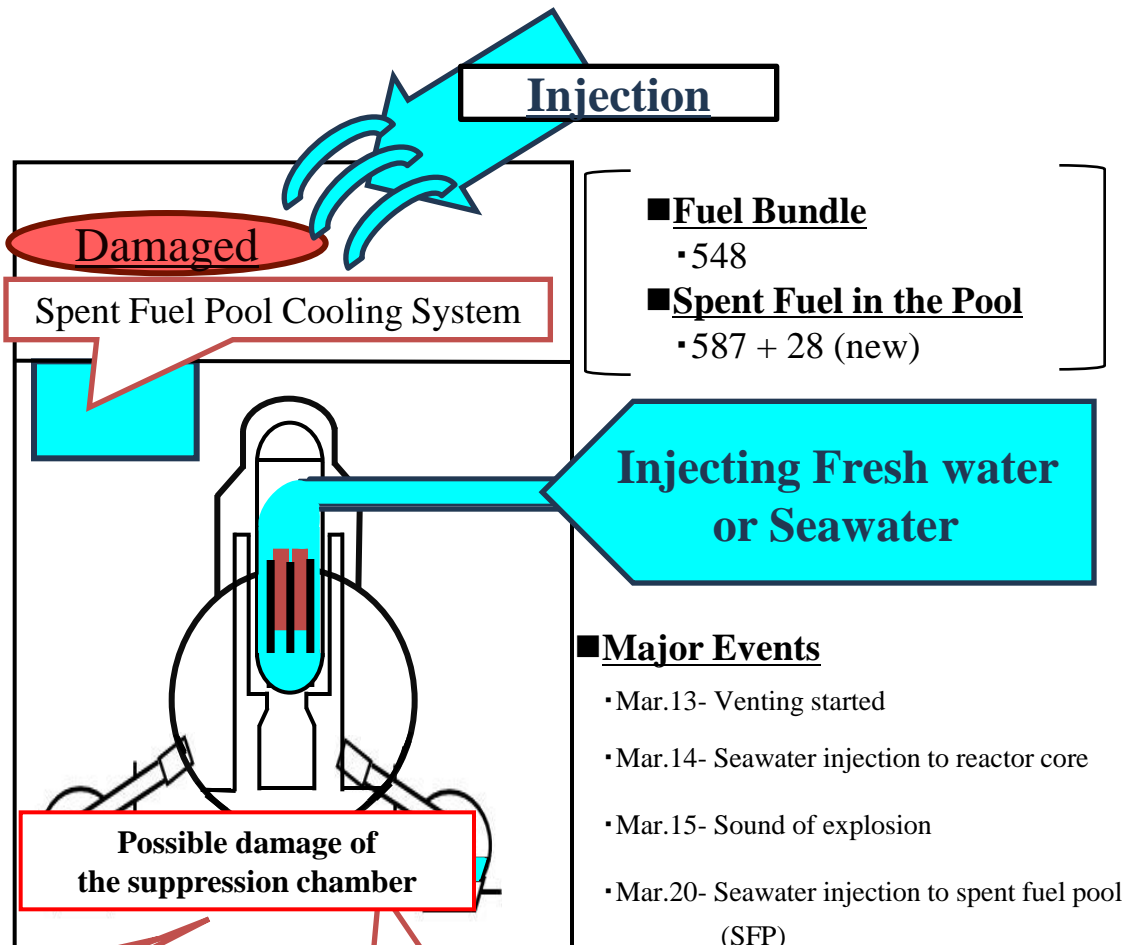


# 1. Cool Down the Reactors (Unit 2)

(As of April 17, 2011)



Ministry of Defense



## ■ Fuel Bundle

- 548

## ■ Spent Fuel in the Pool

- 587 + 28 (new)

**Injecting Fresh water  
or Seawater**

## ■ Major Events

- Mar.13- Venting started
- Mar.14- Seawater injection to reactor core
- Mar.15- Sound of explosion
- Mar.20- Seawater injection to spent fuel pool (SFP)
- Mar.26- Fresh water injection to reactor core
- Mar. 29- Fresh water injection to SFP

**Damaged**

**Recovered**

Emergency Diesel Generator

Residual Heat Removal System

External Power

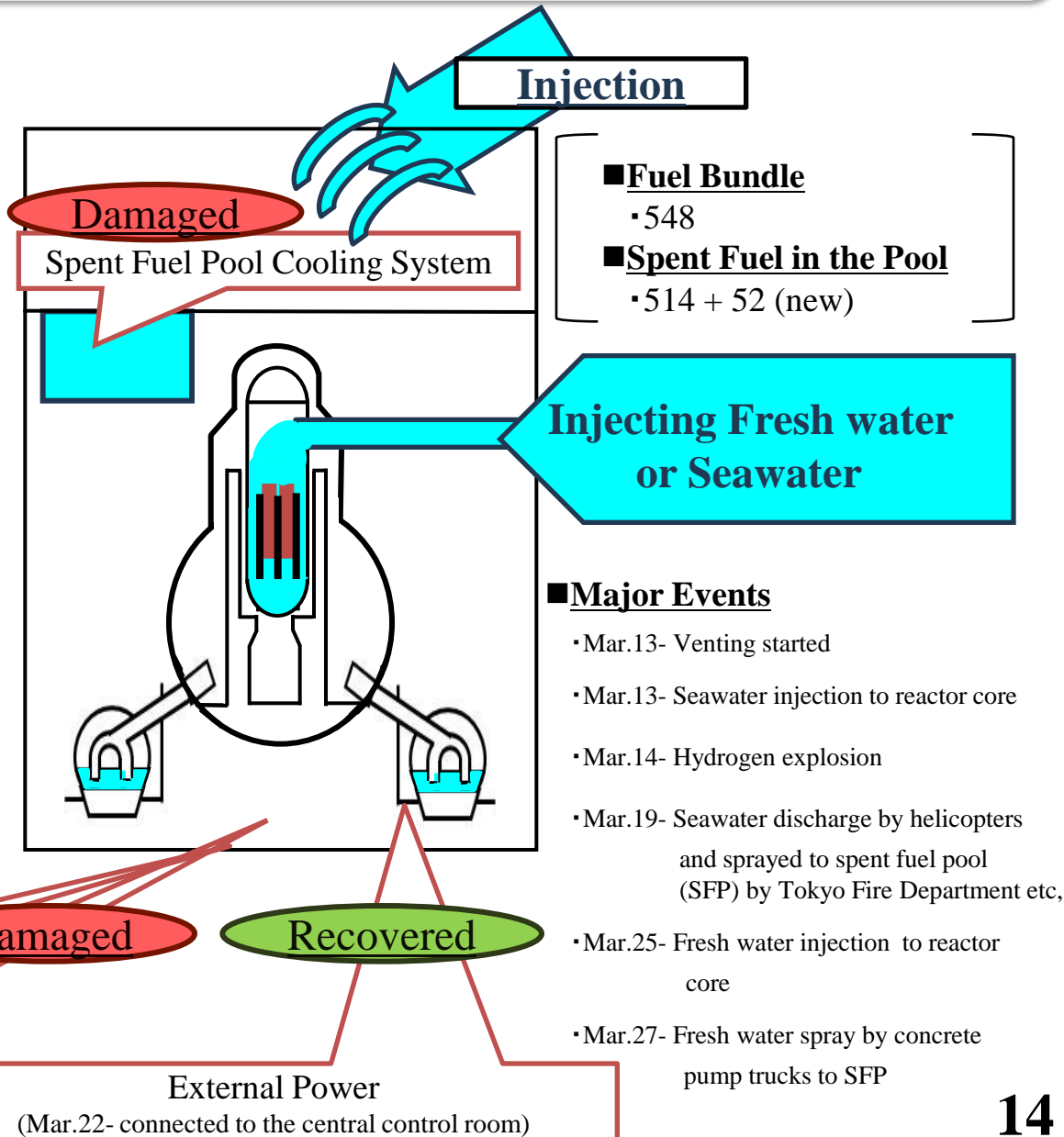
(Mar.26- connected to the central control room)

# 1. Cool Down the Reactors (Unit 3)

(As of April 17, 2011)



Air Photo Service Inc (Myoko, Niigata Japan)



Emergency Diesel Generator

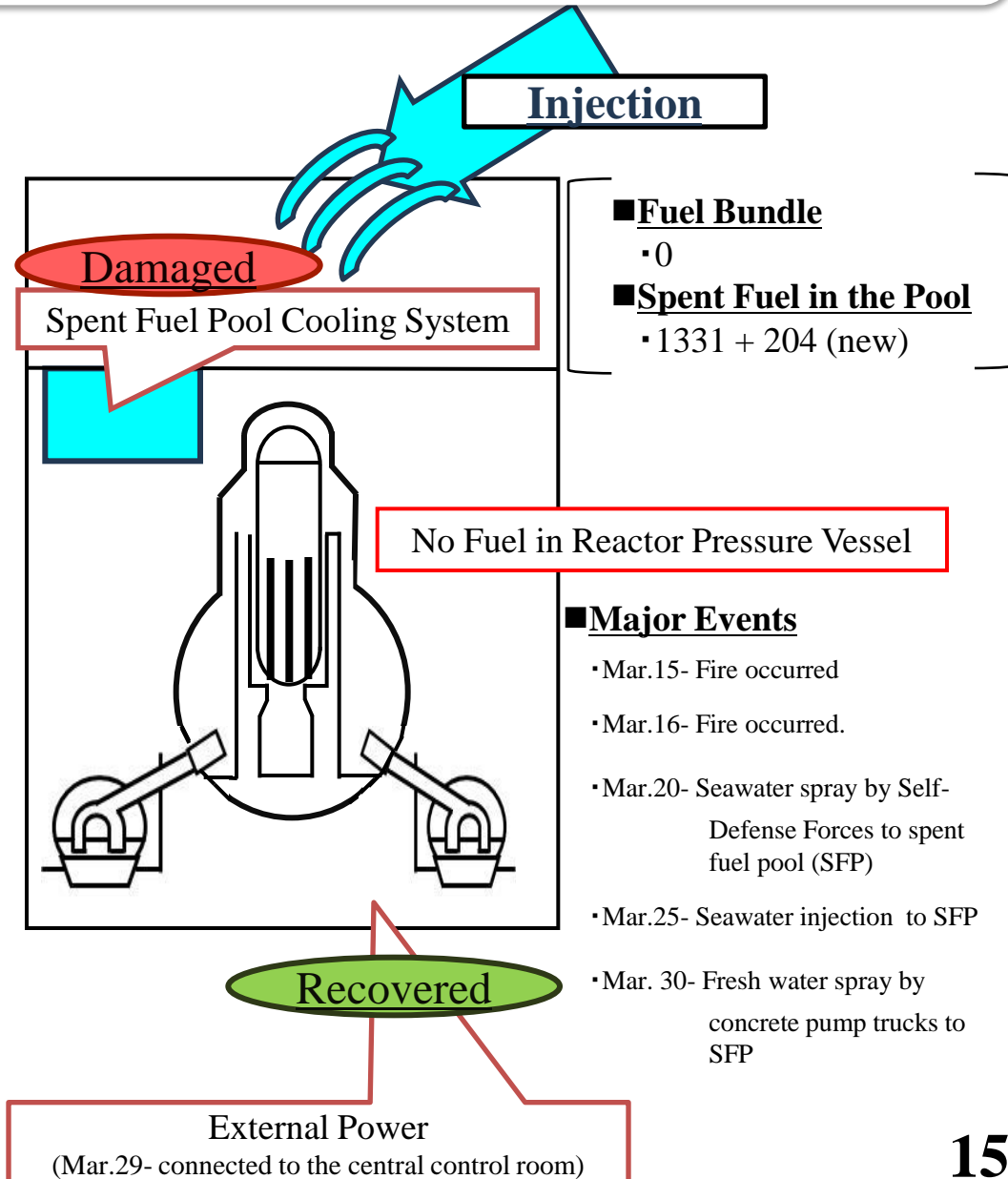
Residual Heat Removal System

# 1. Cool Down the Reactors (Unit 4)

(As of April 17, 2011)



Air Photo Service Inc (Myoko, Niigata Japan)





# 1. Cool Down the Reactors (Unit 5&6)

(As of April 17, 2011)

## ■ Fuel Bundle

• Unit 5 : 548

## ■ Spent Fuel in the Pool

• Unit 5 : 946 + 48 (new)

## ■ Fuel Bundle

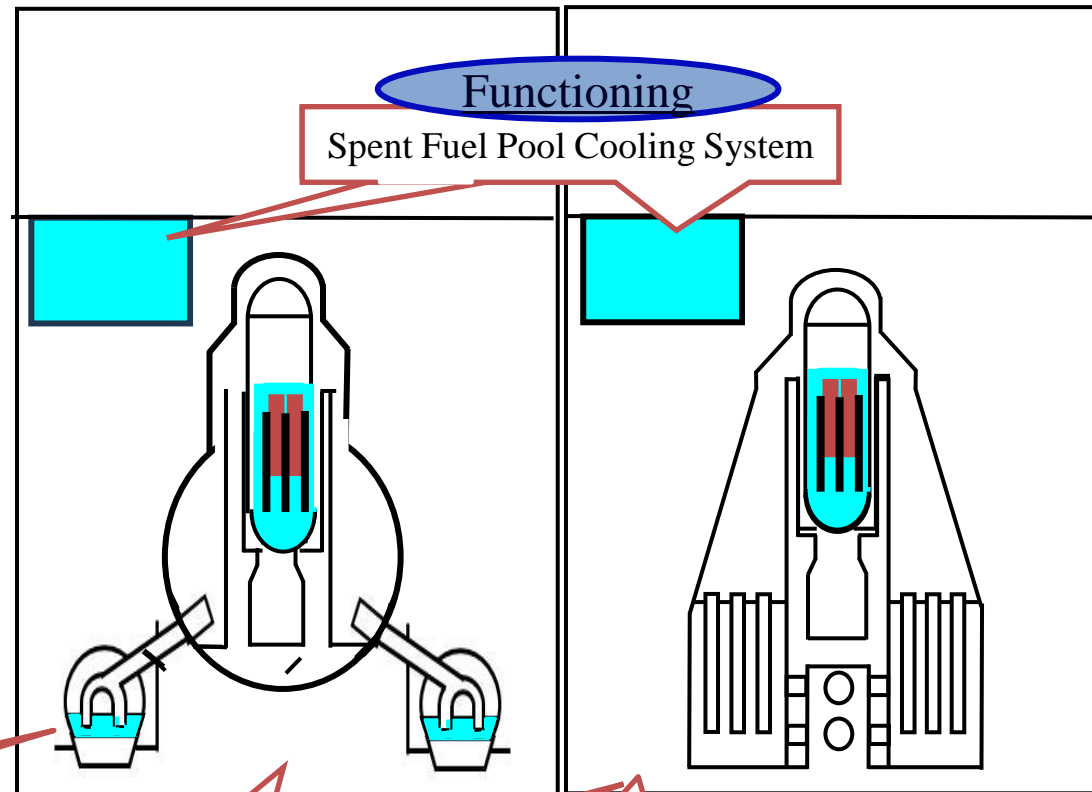
• Unit 6 : 764

## ■ Spent Fuel in the Pool

• Unit 6 : 876 + 64 (new)



KYODO NEWS



**Functioning**

External Power [Unit 5]

Emergency Diesel Generator

Residual Heat Removal System

**Recovered**

External Power [Unit 6]

(Mar.22- connected to the central control room)

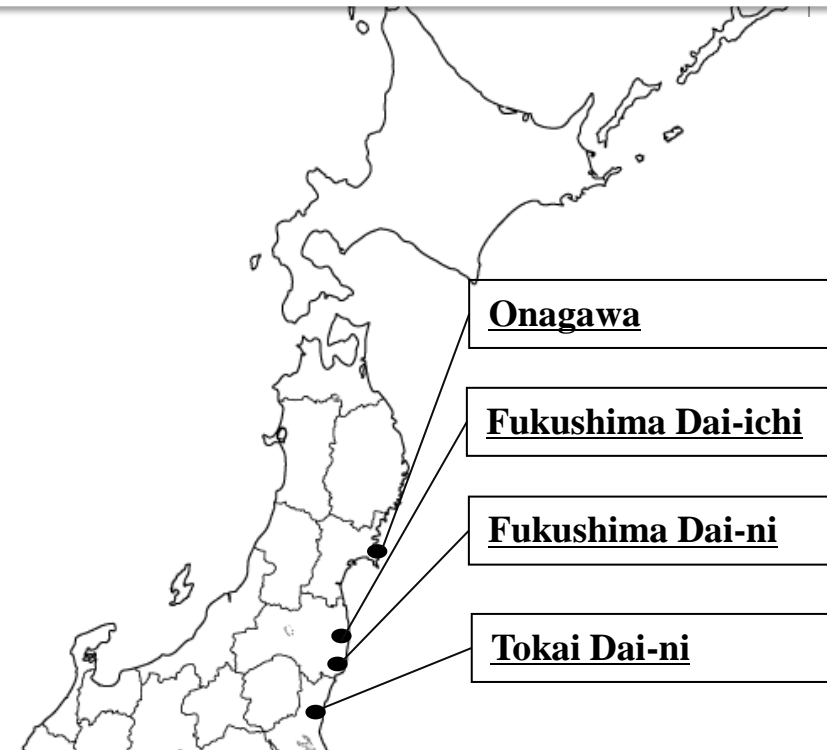
# Other Nuclear Power Stations in the Tohoku Area

## Onagawa (3 Units)



Tohoku Electric Power Co., Inc

All units (Units 1-3) were immediately shut down automatically, then safely went into cold shutdown.



**Onagawa**

**Fukushima Dai-ichi**

**Fukushima Dai-ni**

**Tokai Dai-ni**

## Fukushima Dai-ni (4 Units)

All units (Units 1-4) were immediately shut down automatically, then safely went to cold shutdown.



TEPCO

## Tokai Dai-ni (1 Unit)

The unit was immediately shut down automatically, then safely went to cold shutdown.

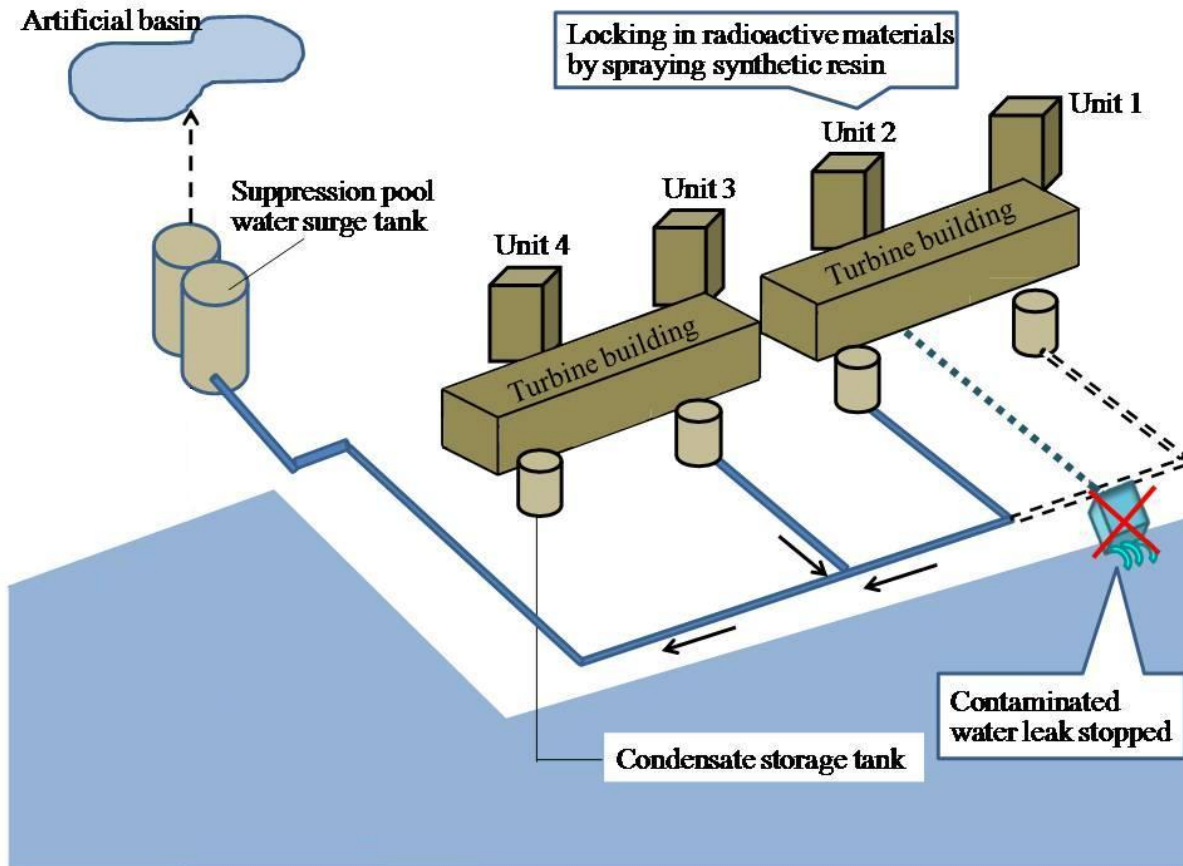


The Japan Atomic Power Company

## 2. Contain the Spread of Radioactive Substances

(sea, soil and atmosphere)

The Japanese Government and TEPCO are making the utmost efforts to prevent the dispersion of flow-out radioactive contaminated water.



### ■ Major Events

- Mar. 27  
Stagnant water on the basement floor of the turbine of Unit 2 and in the trenches found to be highly contaminated.
- Mar. 29  
Stagnant water in the trenches and the turbine building transferred to the storage tank, then to the surge tank.
- Apr. 1  
Highly contaminated water discovered leaking into the sea.
- Apr. 6  
Leak of contaminated water into the sea was stopped.
- Apr. 19  
Transfer of stagnant water in the trench of Unit 2 was started

## 2. Contain the Spread of Radioactive Substances

(sea, soil and atmosphere)

Experts are making the utmost efforts to prevent dispersing radioactive substances contained in dust, debris and vapor.

**Spraying synthetic materials on the surface of the ground and debris to prevent radioactive substances dispersion**

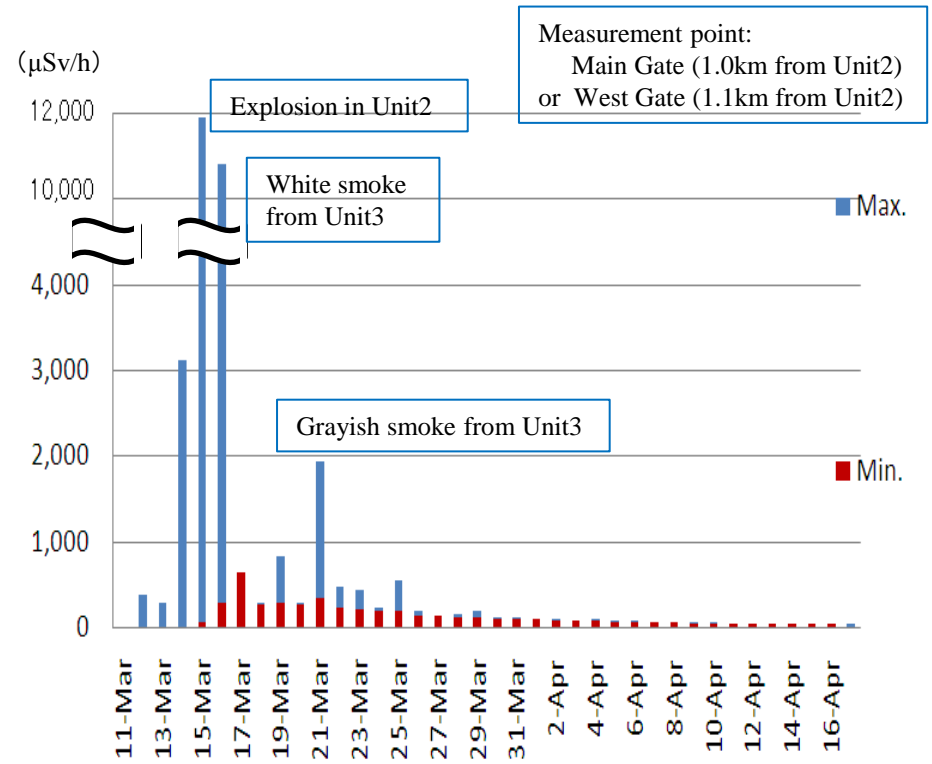
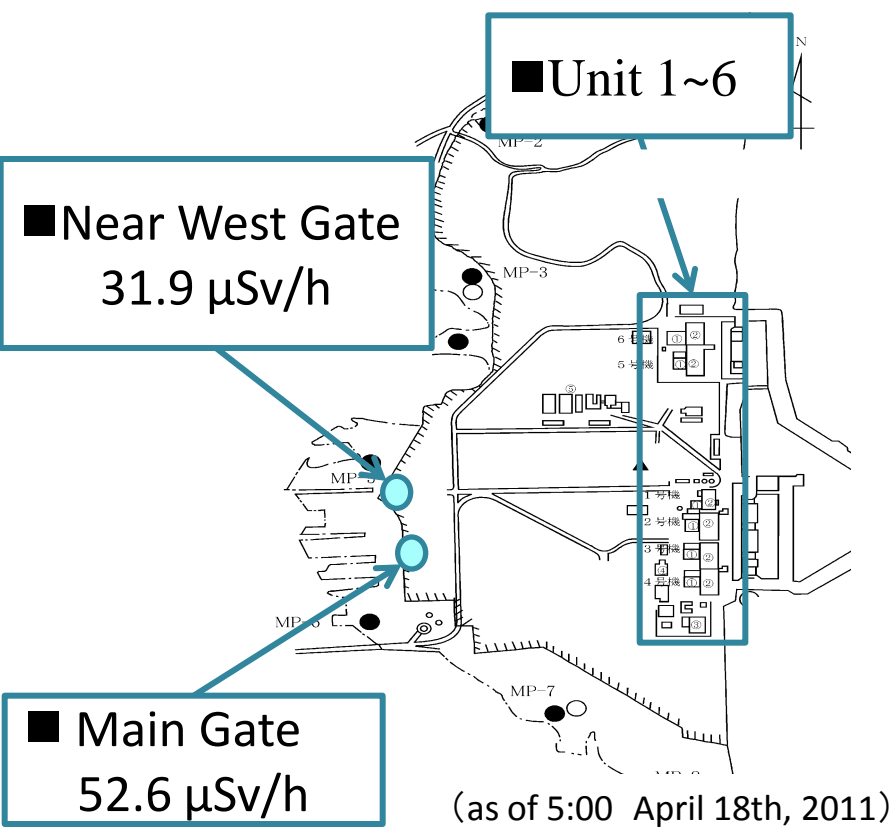


# 3. Rigorous and Intensive Monitoring

TEPCO monitors radioactivity levels every ten minutes and releases the results immediately. Radioactivity levels rose on March 15th, but have since fallen and remain low.

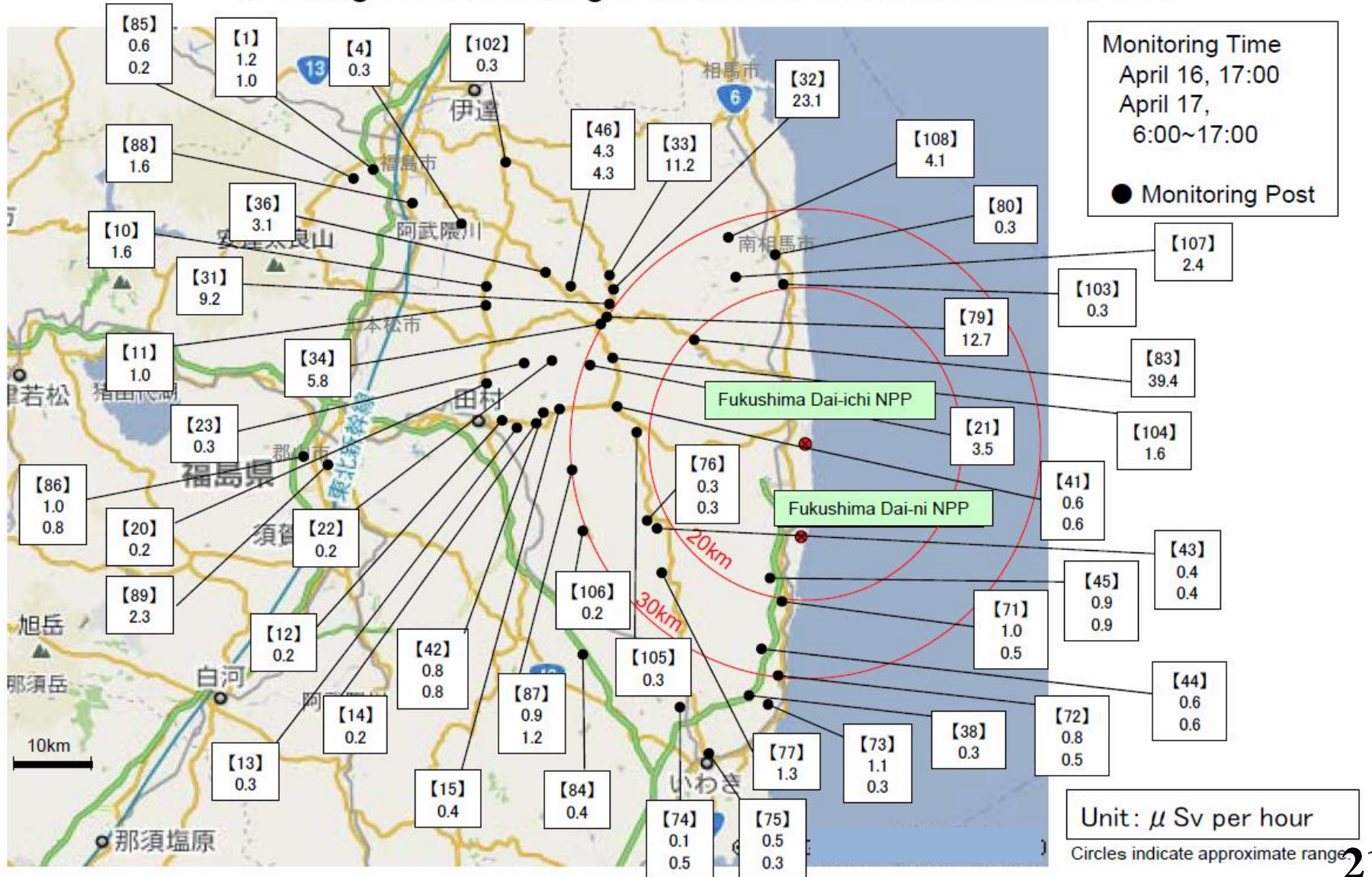
Monitoring posts and the readings at the Fukushima Dai-ichi NPS

Environmental Radioactivity Level at the Fukushima Dai-ichi NPS

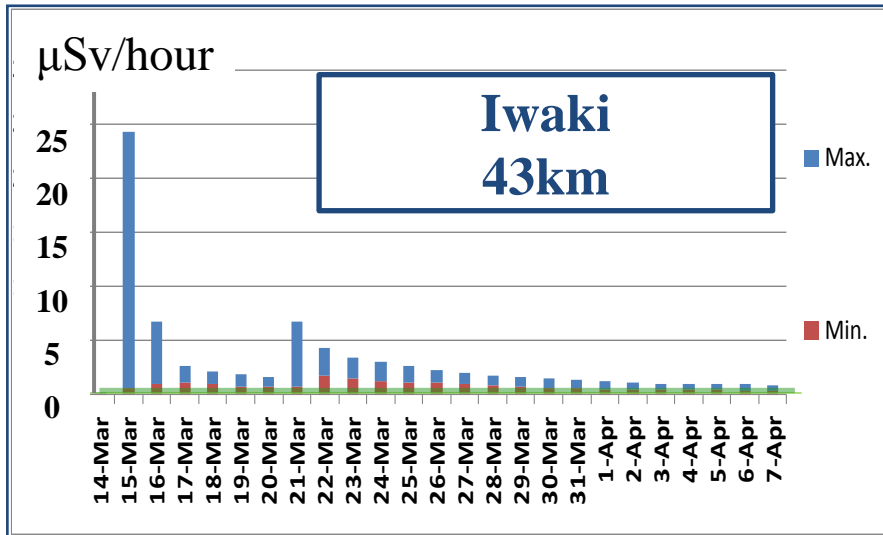
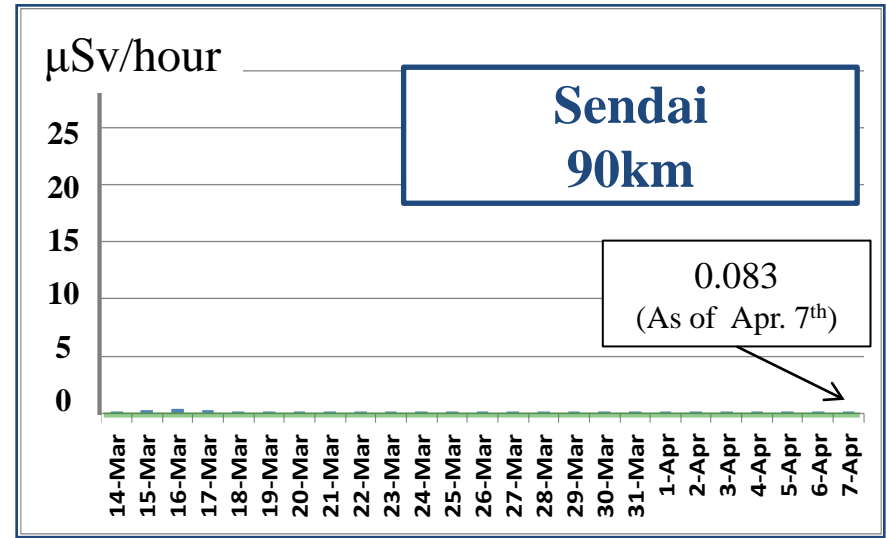
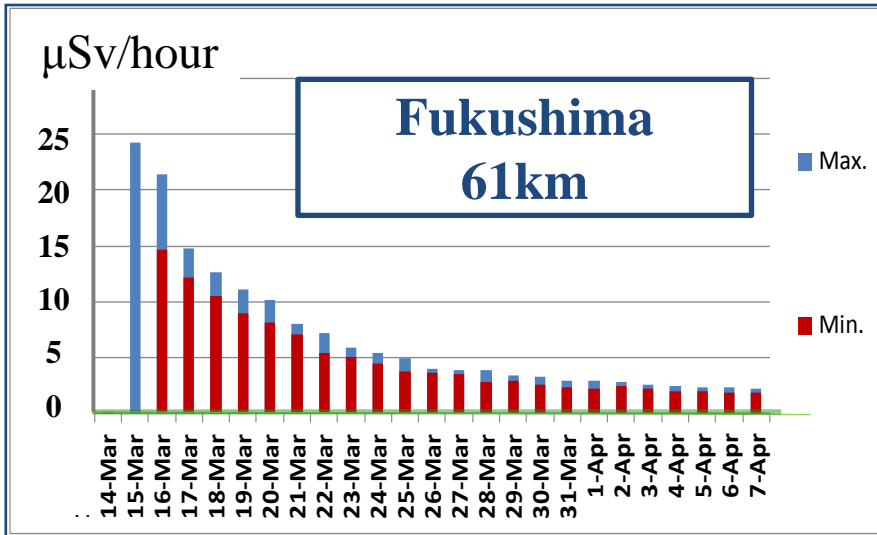


# Readings at Monitoring Posts out of Fukushima Dai-ichi NPS

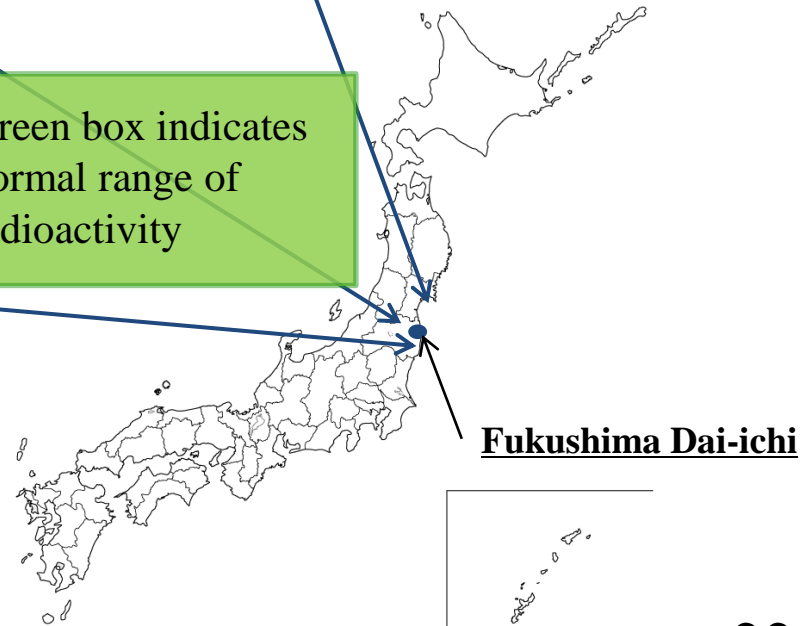
## Readings at Monitoring Post out of Fukushima Dai-ichi NPP



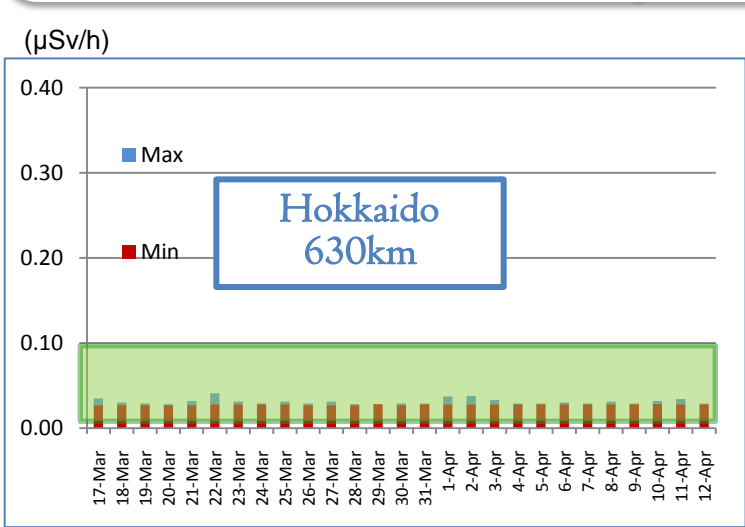
# Atmospheric Readings within 100km



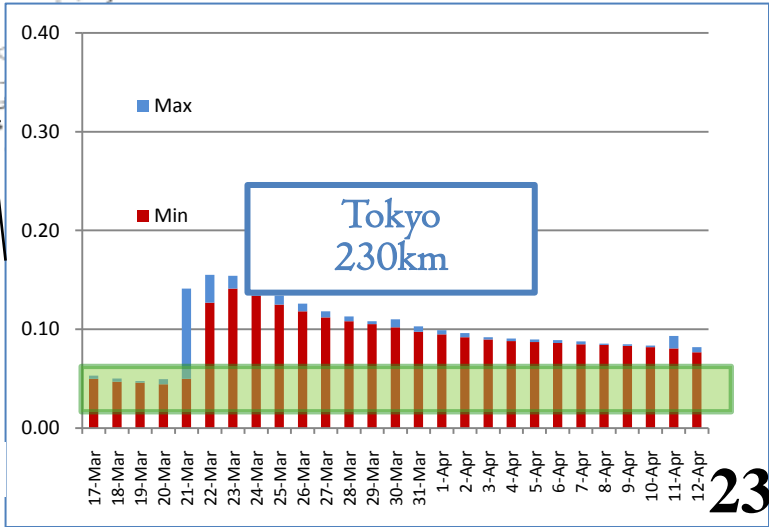
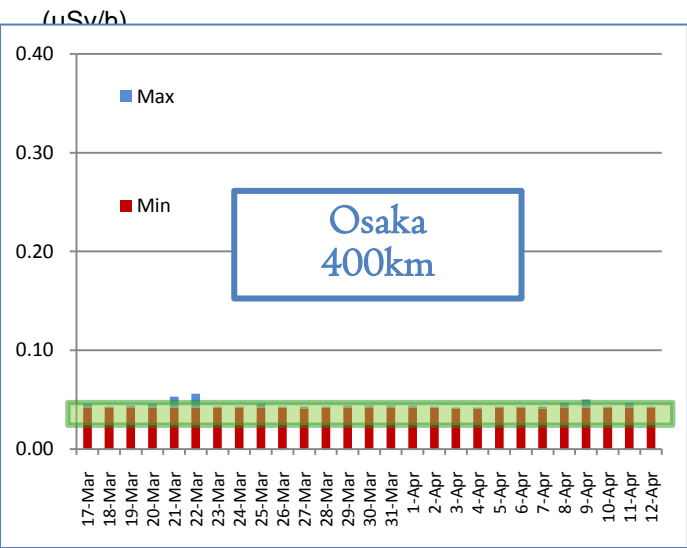
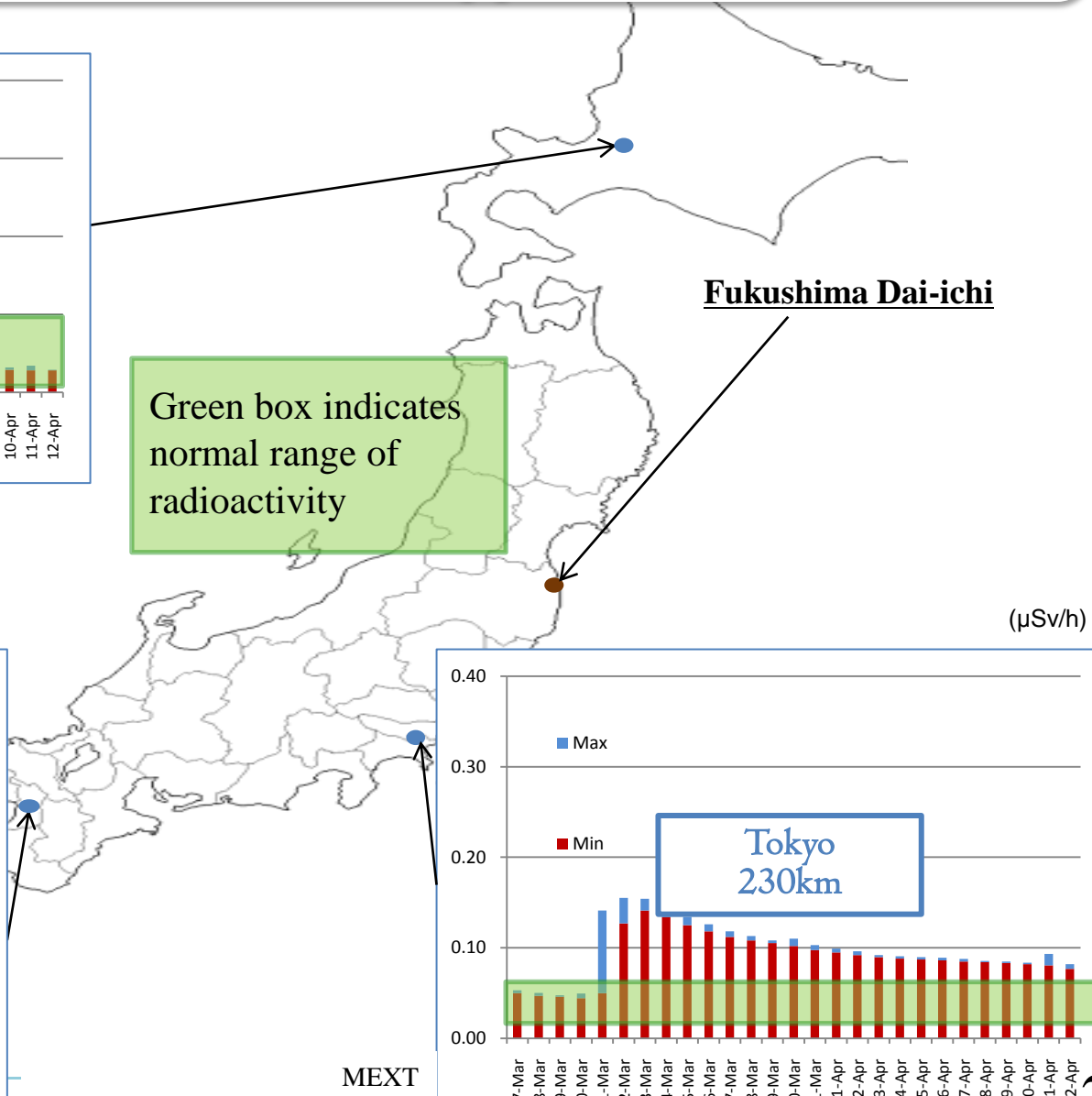
Green box indicates normal range of radioactivity



# Atmospheric Readings in Tokyo, Osaka and Sapporo



Green box indicates normal range of radioactivity





## 4. Ensure the Safety of Food, Drinking Water, On-site Workers, Industrial Products, Ports and Airports

### Ensure the Safety of Food

Japan inspects radioactivity in food every day, and restricts distribution of food that fails to meet provisional regulation values taking into consideration the spread of contamination.

#### Instructions (as of 20 April 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)
- Juvenile (baby) fish of Japanese sand lance

##### \* Ibaraki Prefecture

- Spinach

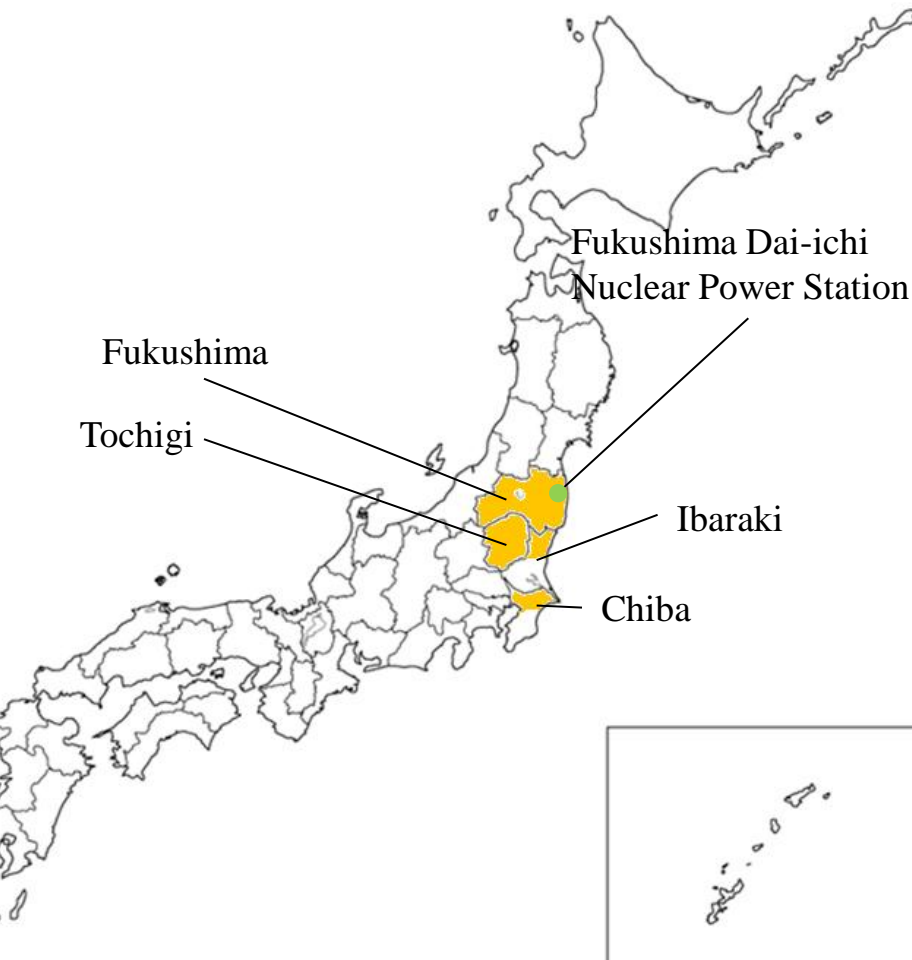
##### \* Tochigi Prefecture

- Spinach

##### \* Chiba Prefecture

- Spinach etc.

Please refer to the next slide for the details of the Instructions.



# The instructions associated with food by Director-General of the Nuclear Emergency Response Headquarters

as of 20April 2011

			Restriction of distribution							
			Fukushima		Ibaraki		Tochigi	Gunma	Chiba	
			Whole area	Individual areas	Whole area	Individual areas	Whole area	Whole area	Whole area	Individual areas
raw milk			3/21~ <i>(excluding areas listed on the right cells)</i>	3/21~4/8 Kitakata-shi, Bandai-machi, Inawashiro-machi, Mishima-machi, Aizumisato-machi, Shimogo-machi, Minamiaizu-machi	3/23~ 4/10	-	-	-	-	
				3/21~4/16 Fukushima-shi, Nihonmatsu-shi, Date-shi, Motomiya-shi, Kunimi-machi, Otama-mura, Koriyama-shi, Sukagawa-shi, Tamura-shi (excluding miyakoji area), Miharu-machi, Ono-machi, Kagamiishi-machi, Ishikawa-machi, Asakawa-machi, Hirata-mura, Furudono-machi, Shirakawa-shi, Yabuki-machi, Izumizaki-mura, Nakajima-mura, Saigo-mura, Samekawa-mura, Hanawa-machi, Yamatsuri-machi, Iwaki-shi						
Vegetable	non-head type leafy vegetables, e.g. spinach, komatsuna	spinach	3/21~	3/21~4/17 (excluding areas listed on the	3/21~ <i>Kitaibaraki-shi, Takahagi-shi</i>	3/21~	3/21~ 4/8	-	4/4~ <i>Asahi-shi, Katori-shi, Tako-machi</i>	
		kakina	3/21~	3/21~4/17		3/21~ 4/14	3/21~ 4/8	-	-	
		garland chrysanthemum (shungiku)	3/23~	-	-	-	-	-	4/4~ <i>Asahi-shi</i>	
		qing-geng-cai	3/23~	-	-	-	-	-	4/4~ <i>Asahi-shi</i>	
		sanchu asian lettuce	3/23~	-	-	-	-	-	4/4~ <i>Asahi-shi</i>	
		all the other	3/23~	-	-	-	-	-	-	
		head type leafy vegetables, e.g. cabbage	3/23~	-	-	-	-	-	-	
	flowerhead brassicas, e.g. broccoli, cauliflower	3/23~	-	-	-	-	-	-		
	turnip	3/23~	-	-	-	-	-	-		
	parsley	-	3/23~4/17	-	-	-	-	4/4~ <i>Asahi-shi</i>		
	celery	-	-	-	-	-	-	4/4~ <i>Asahi-shi</i>		
	log-grown shiitake (grown outdoor)	-	4/13~ <i>Shinchi-machi, Date-shi, Iitate-mura, Soma-shi, Minamisoma-shi, Namie-machi, Futaba-machi, Okuma-machi, Tomioka-machi, Naraha-machi, Hirono-machi, Kawamata-machi, Katsurao-mura, Tamura-shi, Kawauchi-mura, Iwaki-shi</i>	-	-	-	-	-		
			4/18~ <i>Fukushima-shi</i>							
fishery product	sand lance (juvenile)	4/20~	-	-	-	-	-			

\* Instructions still imposed are expressed in Italic type.

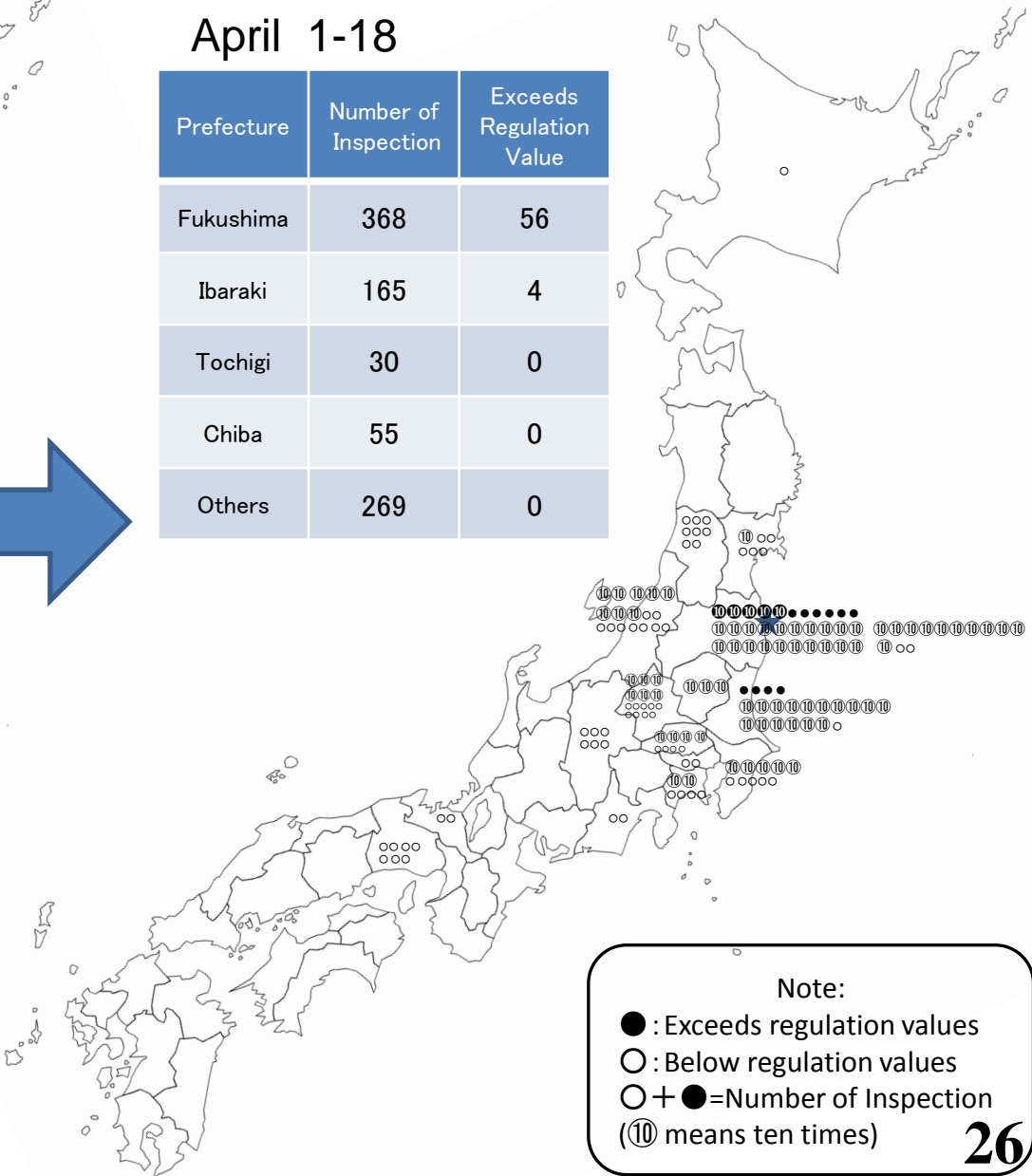
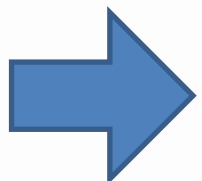
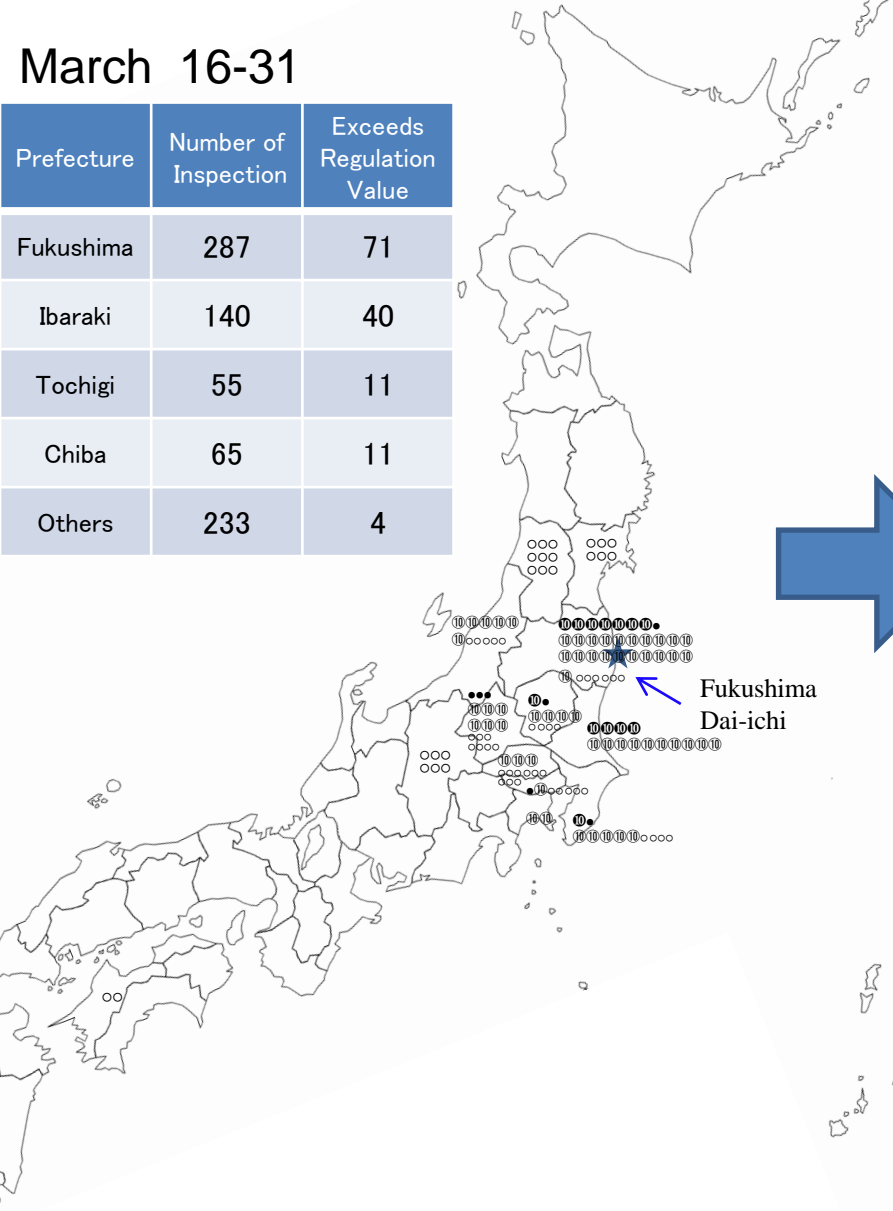
# Test Result of Radionuclide in Fresh Produce

## March 16-31

Prefecture	Number of Inspection	Exceeds Regulation Value
Fukushima	287	71
Ibaraki	140	40
Tochigi	55	11
Chiba	65	11
Others	233	4

## April 1-18

Prefecture	Number of Inspection	Exceeds Regulation Value
Fukushima	368	56
Ibaraki	165	4
Tochigi	30	0
Chiba	55	0
Others	269	0



**Note:**  
 ● : Exceeds regulation values  
 ○ : Below regulation values  
 ○+●=Number of Inspection  
 (10 means ten times)

# Declaration for the import into the EU of food and feeds from Japan

## Fresh food

Harvested before 11 March 2011

Harvested after 11 March 2011 and originating from a prefecture other than 12 prefectures(※)

Harvested after 11 March 2011 and originating from the 12 prefectures

Production Date

Production place

Attesting radioactivity test

※prefectures concerning to the accident at the Fukushima Daiichi nuclear plant

## Processed food

Processed before 11 March 2011

Processed after 11 March 2011

Processed in a prefecture other than the 12 prefectures

Processed in the 12 prefectures

Main raw material has been produced before 11 March 2011

Main raw material was produced in a prefecture other than the 12 prefectures

Main raw material was produced after 11 March 2011 in the 12 prefectures

Production date

Production place

Production place

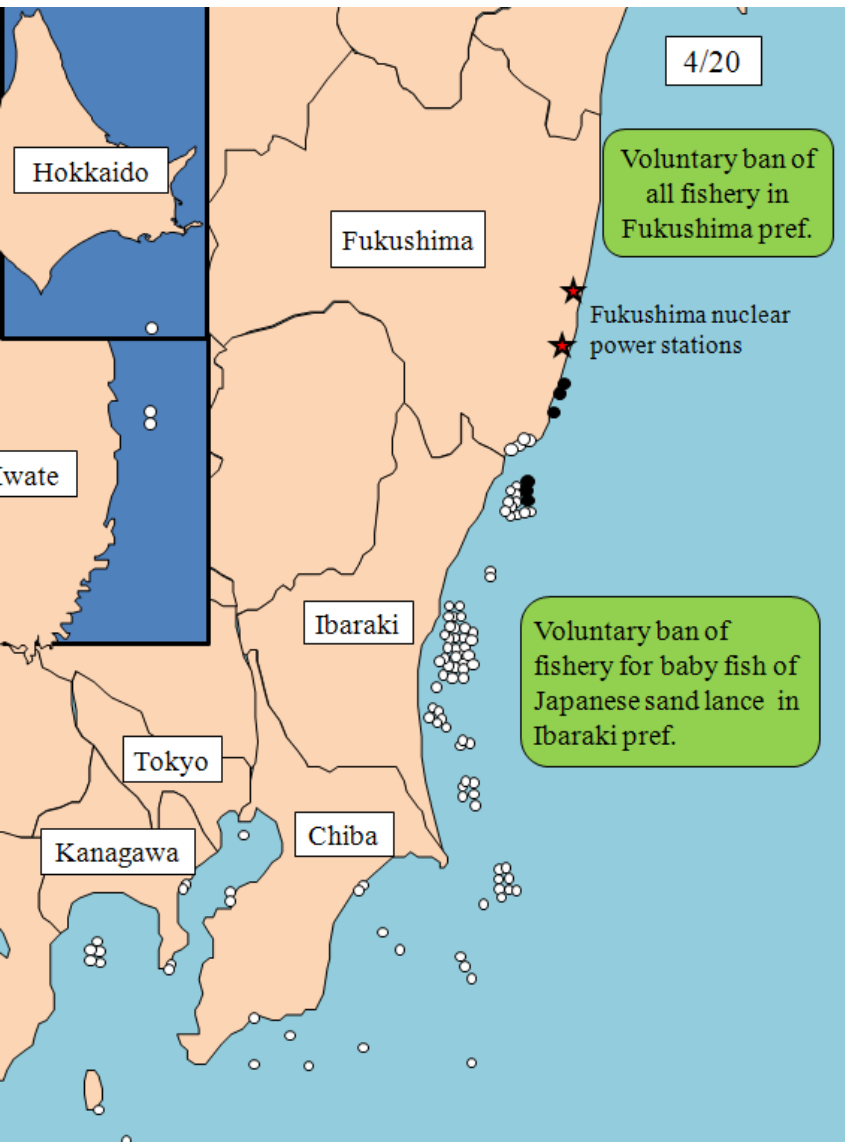
Production place

Attesting radioactivity test



: To issue declaration on production place, confirmation of the analytical report on levels of the radionuclide is prerequisite.

# Safety of Marine Food



- Over provisional regulation values: 6 samples
- Below provisional regulation values: 119 samples

All 6 samples over provisional regulation values: Juvenile (baby) fish of “Japanese sand lance”, which inhabits in very surface water influenced by radionuclides

Fisheries of this fish species :  
**not conducted** in Fukushima prefecture and Ibaraki prefecture

All fisheries:  
**not conducted** in Fukushima prefecture

# Safety of Drinking Water

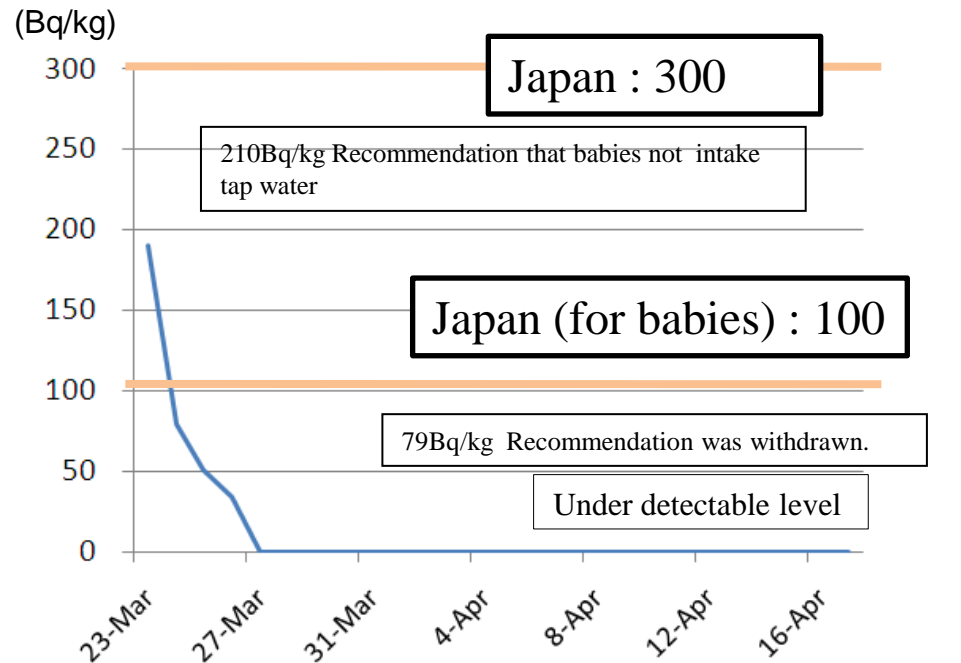
The Japanese Government has been implementing necessary measures based on its stringent criteria for radionuclides in drinking water, and monitoring radionuclide levels every day.

## Guidance Levels for Radionuclides in Drinking Water

(Bq/kg)	Japan	EU
radioactive iodine(I131)	300	500
radioactive iodine(I131) (for babies)	100	
radioactive cesium	200	1,000

Ministry of Health, Labour and Welfare, EURATOM

## Radioactive Iodine(I131) in Drinking-Water in Tokyo (Kanamachi filter plant)



Bureau of Waterworks Metropolitan Tokyo Government

\*On March 23, the Japanese Government recommended that the residents in Tokyo area refrain from having their babies intake tap water, but it withdraw the recommendation in two days.

# Safety of On-site Workers

The Japanese Government closely supervises on-site workers' health conditions, limiting the level of their maximum exposure to radiation to 250mSv.

No workers in Fukushima NPS have been exposed to 250mSv or more.

## Emergency Dose Limit

mSv	JAPAN
emergency dose limit	100 ↓ 250  (limit raised for Fukushima emergency workers)

Ministry of Health, Labour and Welfare, Nuclear and Industrial Safety Agency, ICRP

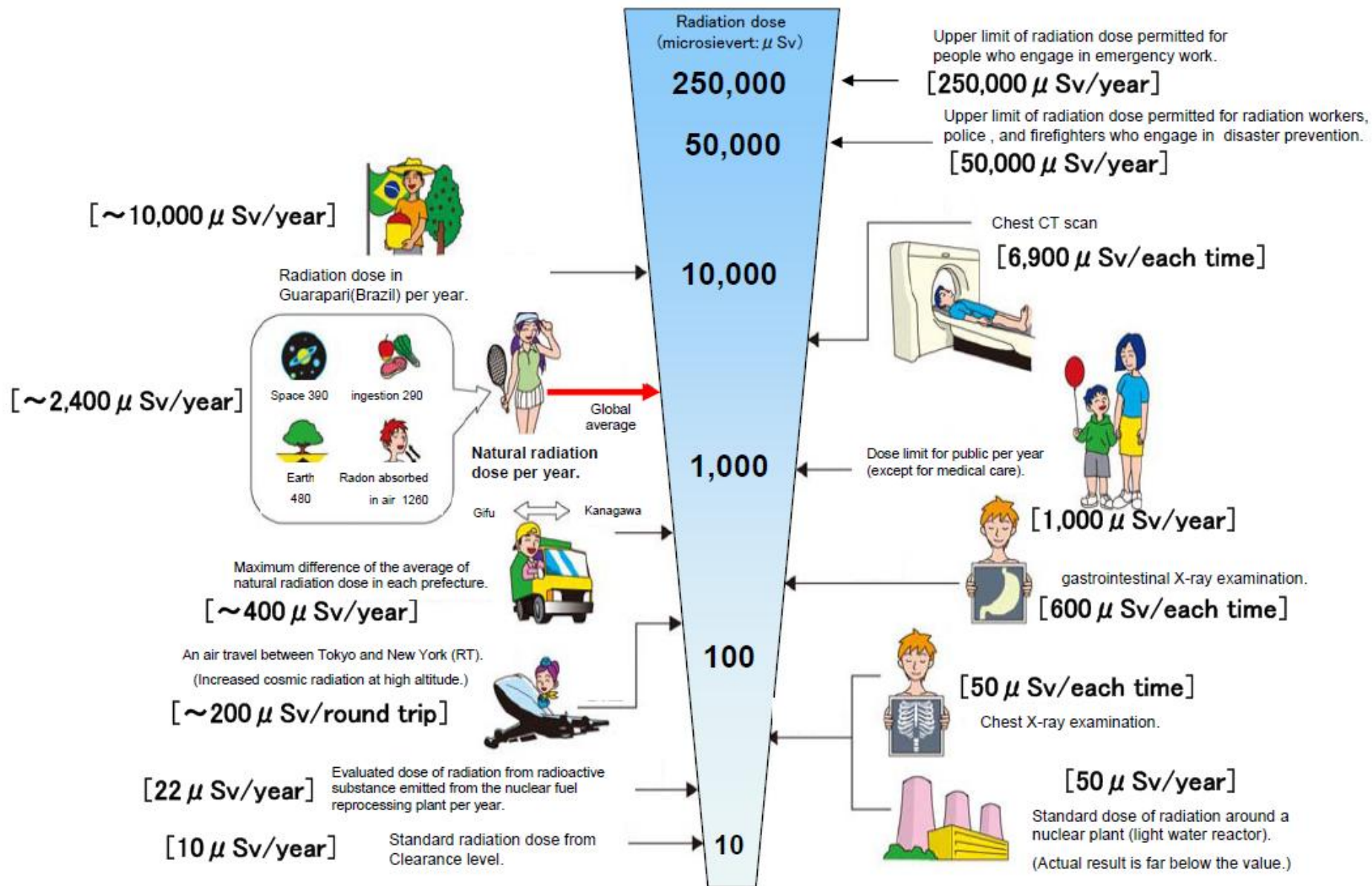
## Workers Exposed to Radiation in Fukushima Dai-ichi NPS, as of April 5

level of exposure	number of workers
more than 100mSv	21
more than 250mSv	0

Nuclear and Industrial Safety Agency

\*On March 24, three workers exposed to more than 170mSv were hospitalized, but were released four days later after no health problems were found.

# Radiation in Daily-life



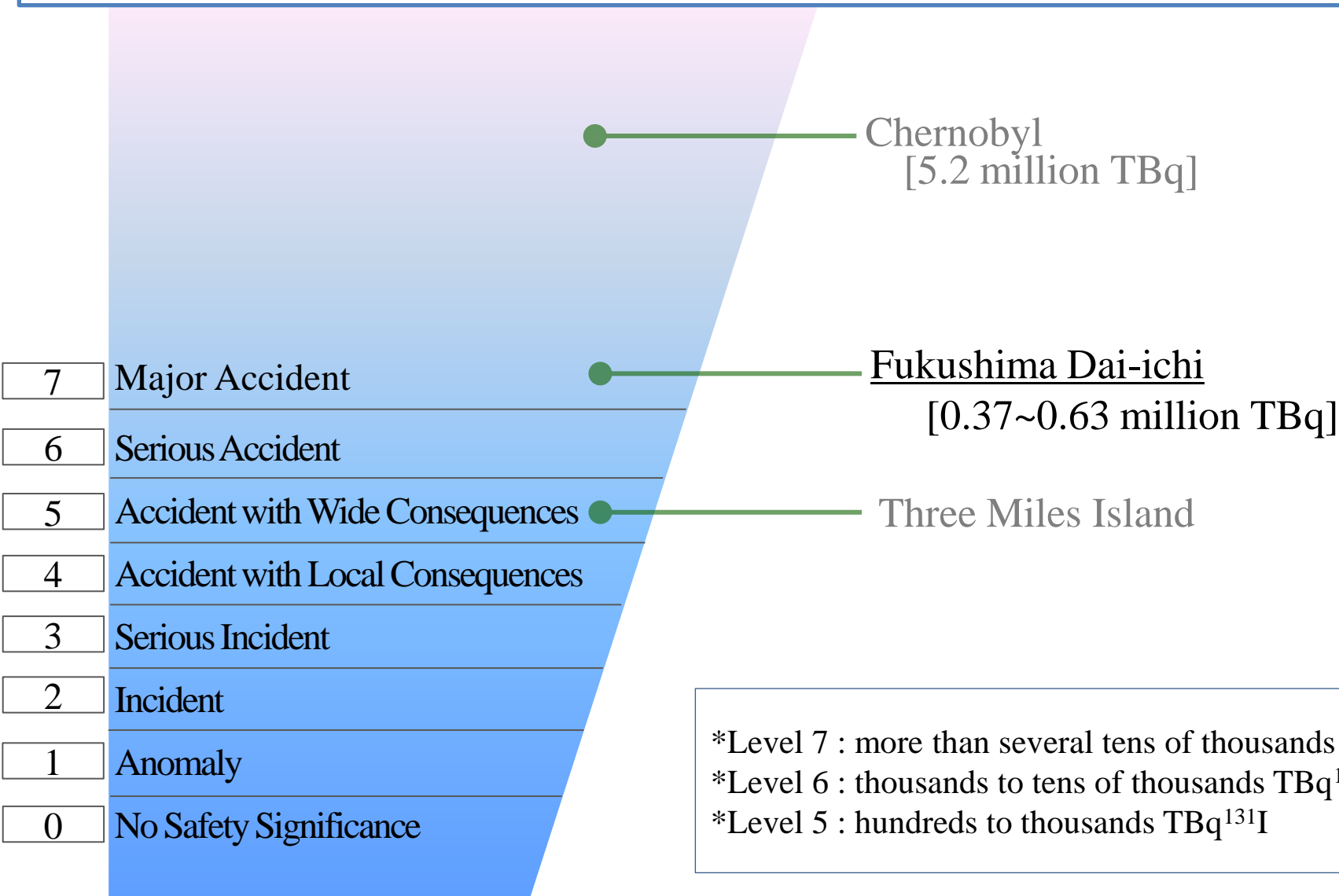
※ Sv [Sievert] = Constant of organism effect by kind of radiation (※) × Gy [gray]

※ It is 1 in case of X ray and  $\gamma$  ray.



# INES Rating on the Events in Fukushima Dai-ichi NPS

The Rating of the International Nuclear and Radiological Event Scale (INES) on Fukushima Dai-ichi Nuclear Power Station (NPS), is temporarily assessed as Level 7.



\*Level 7 : more than several tens of thousands TBq<sup>131I</sup>

\*Level 6 : thousands to tens of thousands TBq<sup>131I</sup>

\*Level 5 : hundreds to thousands TBq<sup>131I</sup>

# Safety of Industrial Products

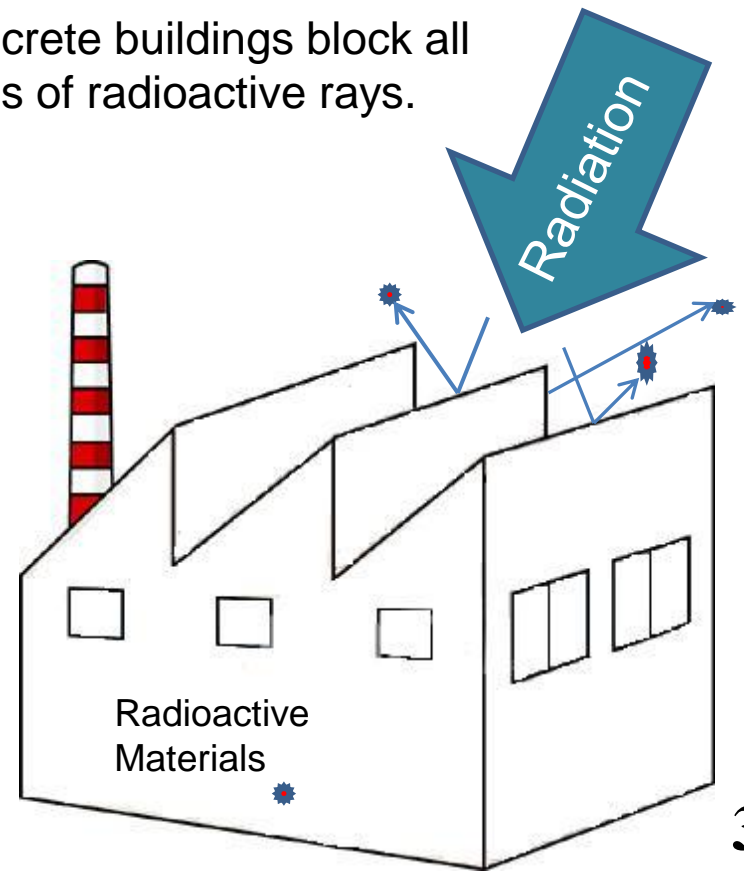
- All factories have suspended their operation in the evacuation zone(20 km radius and other designated areas)
- Walls and roofs of factories block radioactive materials and rays.
- Fukushima Dai-ichi is located at least 150 km away from Japanese major industrial zones.

All the operating factories are off the evacuation zone.

Concrete buildings block all kinds of radioactive rays.

## Evacuation Zone

(Adjacent area which may be affected by radioactive materials)



# Measurement of Radiation Dose around the Metropolitan Airports

The current level of radiation dose of airports in the Tokyo Metropolitan area(Narita and Haneda airports) is at very safe level to health.

Measured dose

[http://www.mlit.go.jp/koku/koku\\_tk7\\_000003.html](http://www.mlit.go.jp/koku/koku_tk7_000003.html)

		Measurement points	Apr.14 AM	Apr.14 PM	Apr.15 AM		Annual exposure calculation
Narita Airport	○	Narita Airport	0.116 $\mu$ Gy/h 10:00	0.117 $\mu$ Gy/h 19:00	0.119 $\mu$ Gy/h 10:00	$\cong$ 0.000119mSv/h	1.04mSv
Haneda Airport	☆	Haneda Airport (Ukishimacho,Kawasaki City.)	0.085 $\mu$ Gy/h 10:00	0.086 $\mu$ Gy/h 19:00	0.082 $\mu$ Gy/h 10:00	$\cong$ 0.000082mSv/h	0.72mSv

1) According to the website of Tokyo-Electric Power Company, the unit is converted as follows;

1 micro-Gray/hour ( $\mu$ Gy/hr)  $\cong$  1 micro-Sievert /hour ( $\mu$ Sv/hr).

2) "Annual exposure calculation" is the estimation under the condition that the hourly radiation dose measurement at the measurement point is accumulated for 24 hours throughout the year.

3) 1 mili-Sievert (mSv) = 1000 micro-Sievert ( $\mu$ Sv)

According to the Ministry of Education, Culture, Sports, Science and Technology, examples of exposure level of radiation in daily life is as below.

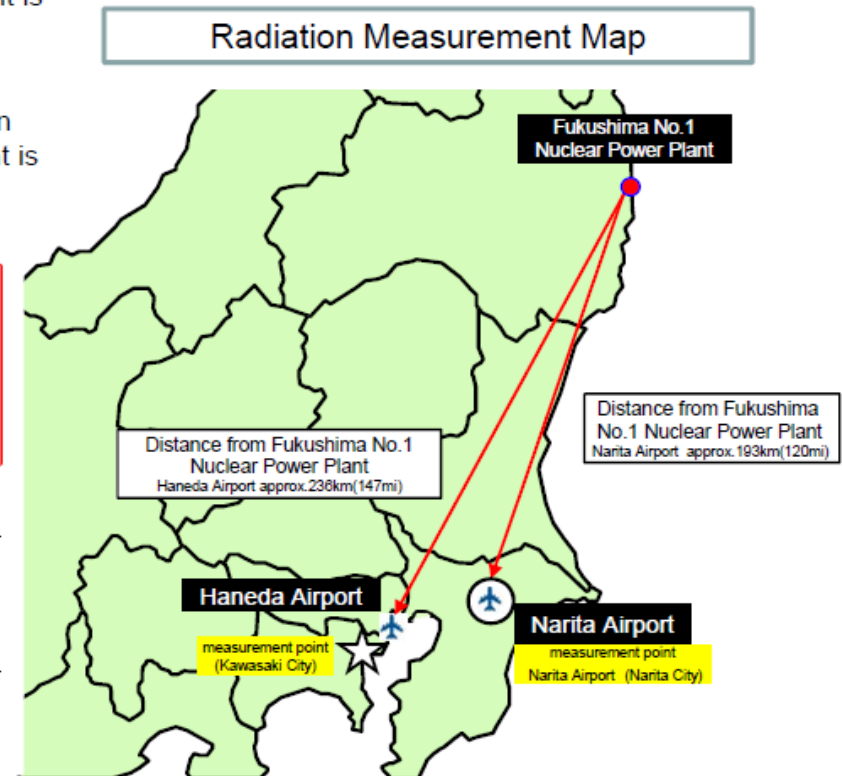
- Chest X-ray (once) 0.05 mSv
- 1 roundtrip between Tokyo and New York by air 0.2 mSv
- Stomach X-ray (once) 0.6 mSv

According to the WHO, a person is exposed to approximately **3.0mSv/year** on average.

References;

○	NARITA INTERNATIONAL AIRPORT CORPORATION Website <a href="http://contents.narita-airport.jp/narita/en/222.pdf">http://contents.narita-airport.jp/narita/en/222.pdf</a>
☆	Kanagawa Environmental-radiation Monittoring-system Website(Japanese only) <a href="http://www.atom.pref.kanagawa.jp/cgi-bin2/telemeter_dat.cgi?Area=1&amp;Type=W">http://www.atom.pref.kanagawa.jp/cgi-bin2/telemeter_dat.cgi?Area=1&amp;Type=W</a>

Source: Ministry of land, infrastructure and transportation[



# Measurement of Radiation Dose in the Ports around Tokyo Bay

The current level of radiation dose of seaports of Tokyo Bay (Ports of Tokyo, Yokohama, Kawasaki and Chiba) is at very safe level to health.

## Measured dose

[http://www.mlit.go.jp/kowan/kowan\\_fr1\\_000041.html](http://www.mlit.go.jp/kowan/kowan_fr1_000041.html)

	Measurement points (Address)	Apr.14 AM	Apr.14 PM	Apr.15 AM		Annual exposure calculation
Port of Tokyo	☉ Tokyo Metropolitan Institute of Public Health (Hyakunin-cho, Shinjuku-ku, Tokyo)	79nGy/h 8:00	77nGy/h 17:00	78nGy/h 8:00	$\cong 0.000078$ mSv/h	<b>0.68mSv</b>
Port of Yokohama	☆ Environmental Science Research Institute (Takigashira, Isogo-ku, Yokohama, Kanagawa)	38nGy/h 8:00	37nGy/h 17:00	37nGy/h 8:00	$\cong 0.000037$ mSv/h	<b>0.32mSv</b>
Port of Kawasaki	△ Kawasaki Municipal Research Institute for Environmental Protection (Tajima-cho, Kawasaki-ku, Kawasaki, Kanagawa)	54nGy/h 8:00	54nGy/h 17:00	53nGy/h 8:00	$\cong 0.000053$ mSv/h	<b>0.46mSv</b>
Port of Chiba	□ Chiba Prefectural Environmental Research Center (Iwasaki-Nishi, Ichihara, Chiba)	55nGy/h 8:00	53nGy/h 17:00	53nGy/h 8:00	$\cong 0.000053$ mSv/h	<b>0.46mSv</b>

- 1) According to the website of Tokyo-Electric Power Company, the unit is converted 1 nano-Gray/hour (nGy/hr)  $\cong$  1 nano-Sievert /hour (nSv/hr).
- 2) "Annual exposure calculation" is the estimation under the condition that the hourly radiation dose measurement at the measurement point is accumulated 24 hours throughout the year.
- 3) 1 milli-Sievert (mSv) = 1000 micro-Sievert ( $\mu$ Sv)  
1 micro-Sievert ( $\mu$ Sv) = 1000 nano-Sievert (nSv)

According to the Ministry of Education, Culture, Sports, Science and Technology, examples of exposure level of radiation in daily life is as below.

- Chest X-ray (once) 0.05 mSv
- 1 roundtrip between Tokyo and New York by air 0.2 mSv
- Stomach X-ray (once) 0.6 mSv

According to the WHO, a person is exposed to approximately **3.0mSv/year** on average.

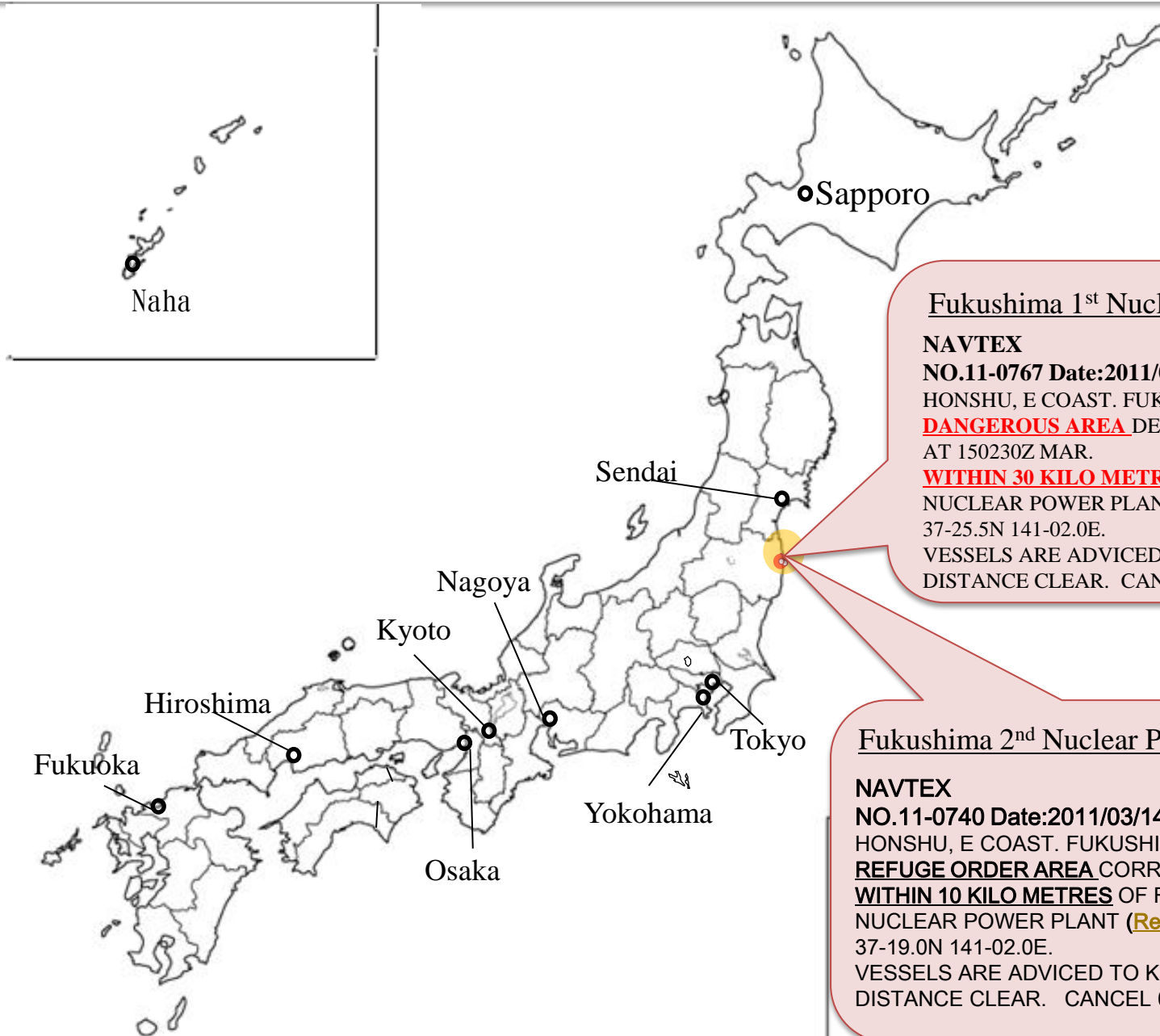
## Distance from Fukushima No1 Nuclear Plant



## References;

☉	Tokyo Metropolitan Institute of Public Health Website (Japanese only) <a href="http://www.tokyo-eiken.go.jp/monitoring/index.html">http://www.tokyo-eiken.go.jp/monitoring/index.html</a>
☆	City of Yokohama, Environmental Planning Bureau Website (Japanese only) <a href="http://www.city.yokohama.lg.jp/kankyo/saigai/">http://www.city.yokohama.lg.jp/kankyo/saigai/</a>
△	City of Kawasaki Website (Japanese only) <a href="http://www.city.kawasaki.jp/e-news/info3715/index.html">http://www.city.kawasaki.jp/e-news/info3715/index.html</a>
□	Chiba Prefecture Government Website (Japanese only) <a href="http://www.pref.chiba.lg.jp/index.html">http://www.pref.chiba.lg.jp/index.html</a>

# Navigational Warnings (Vessels)



## Fukushima 1<sup>st</sup> Nuclear Power Plant

NAVTEX

NO.11-0767 Date:2011/03/15 12

HONSHU, E COAST. FUKUSHIMA PREF COAST.

**DANGEROUS AREA** DESIGNNATED

AT 150230Z MAR.

**WITHIN 30 KILO METRES** OF FUKUSHIMA NR 1

NUCLEAR POWER PLANT (**Yellow Circle**),

37-25.5N 141-02.0E.

VESSELS ARE ADVISED TO KEEP ENOUGH  
DISTANCE CLEAR. CANCEL 0741/11.

## Fukushima 2<sup>nd</sup> Nuclear Power Plant

NAVTEX

NO.11-0740 Date:2011/03/14 10

HONSHU, E COAST. FUKUSHIMA PREF COAST.

**REFUGE ORDER AREA** CORRECTED ON 14 MAR.

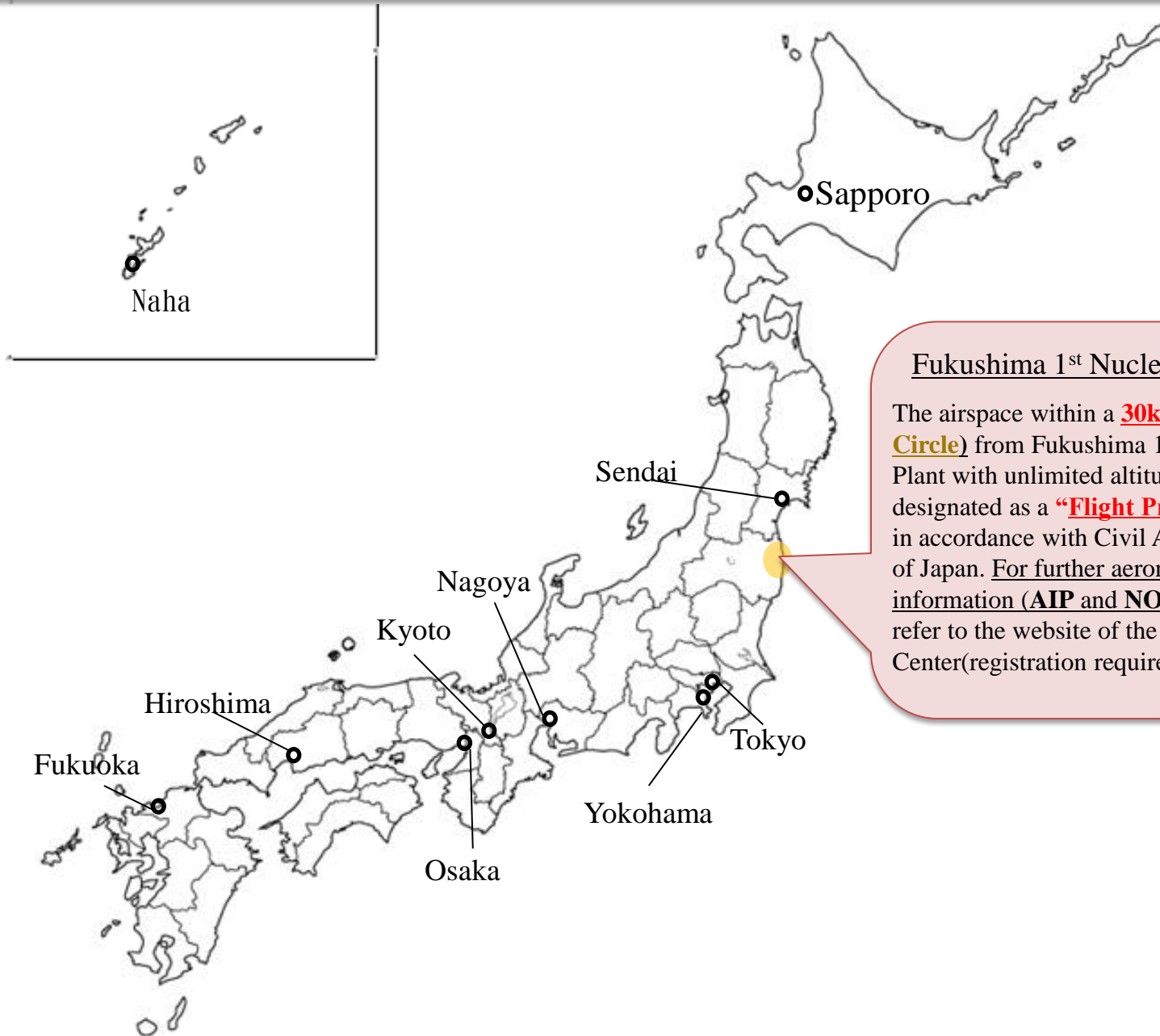
**WITHIN 10 KILO METRES** OF FUKUSHIMA NR 2

NUCLEAR POWER PLANT (**Red Circle**),,

37-19.0N 141-02.0E.

VESSELS ARE ADVISED TO KEEP ENOUGH  
DISTANCE CLEAR. CANCEL 0697/11.

# Flight Routes and Airspace



## Fukushima 1<sup>st</sup> Nuclear Power Plant

The airspace within a **30km-radius (Yellow Circle)** from Fukushima 1<sup>st</sup> Nuclear Power Plant with unlimited altitude has been designated as a **“Flight Prohibited Area”** in accordance with Civil Aeronautics Law of Japan. For further aeronautical information (AIP and NOTAM), please refer to the website of the AIS Center(registration required).

## C. Impact on Japanese Economy

1. Estimated Economic Damage of the Tohoku-Pacific Ocean Earthquake and Plan for Reconstruction
2. Impact on Energy Supply/Demand in Japan

# 1. Estimated Economic Damage of the Tohoku-Pacific Ocean Earthquake and Plan for Reconstruction

## Damaged Stocks in Disaster Areas

\*estimated by the Cabinet Office of Japan

**16~25 trillion Yen**  
(US\$195~305 billion)

**(Reference) Japan's GDP : 500 trillion Yen (US\$5.9 trillion)**

## Plan for Recovery and Reconstruction

\*from the speech of Prime Minister Kan on Apr. 1 and Apr. 12

Short-term: clearing debris, erecting temporary housing,  
rehabilitating industrial facilities

Mid and long-term: creating disaster-resilient local community,  
eco-friendly social system, and welfare-oriented society

“Reconstruction Planning Council” established

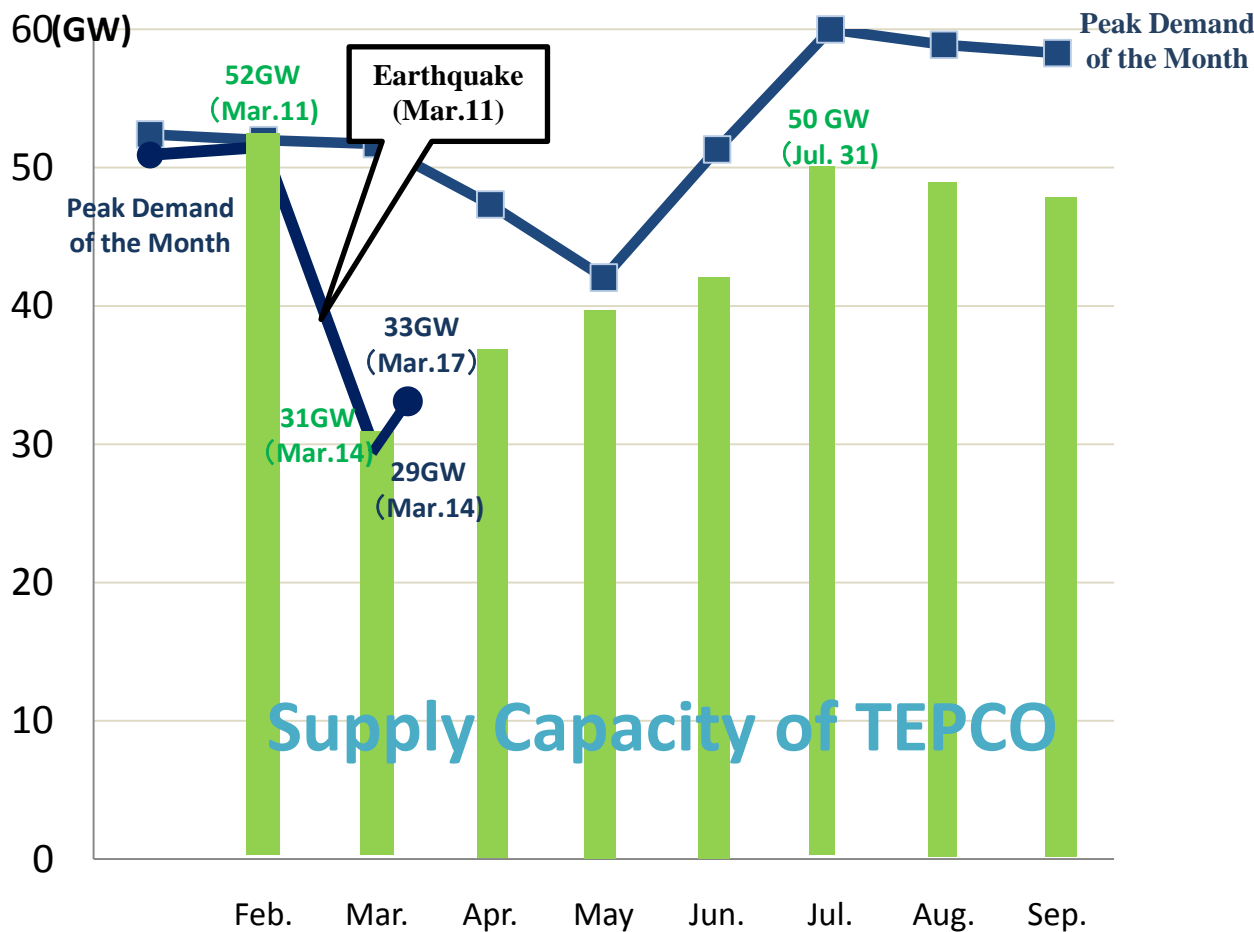
Compiling supplementary budgets and enacting/amending relevant laws



## 2. Impact on Energy Supply/Demand in Japan

Tokyo Electric Power Company (TEPCO) normally supplies electricity to an area with a population of over 42 million responsible for almost 40% of Japan's GDP, but lost 40% of its generation capacity after the earthquake and tsunami.

We are making the utmost efforts to match supply and demand during the peak-load summer on both the demand side (intensive energy saving and scheduled rolling blackouts) and supply side (capacity expansion of thermal plants).



## D. Cooperation and Information sharing with the International Community

1. Cooperation with International Organizations
2. Speedy Dissemination of Accurate Information

# Cooperation with the IAEA

## 1. Information Sharing

- (1) Japan has been providing facility-related and other relevant information to the IAEA.
- (2) Nuclear Industry Safety Agency (NISA) provided updates on situations of the Fukushima Dai-ichi Nuclear Power Station at the IAEA Technical Briefing (21<sup>st</sup> March) and at the side event of the Fifth Review Meeting of the Contract Parties to the Convention on Nuclear Safety (4<sup>th</sup> April).

## 2. IAEA Expert Missions

- (1) The IAEA has extended to Japan upon the request of the Government of Japan, in connection with the incidents involving the nuclear power plants in Japan by dispatching a series of the IAEA experts to Japan mainly in the field of radiation monitoring. Such dispatch of experts includes :
  - (a) Radiation Monitoring Teams, totaling up to 16 members who have been taking measurements mainly in Fukushima since 19 March;
  - (b) one marine expert from the IAEA's laboratory in Monaco, who boarded Research Vessel "MIRAI" during 2 -4 April to observe and provide advice for Japanese experts on their method of collection and analysis of seawater samples; and
  - (c) A Joint FAO/IAEA Food Safety Assessment Team, who met with local government officials, farmers etc. in Fukushima, Ibaraki, Tochigi and Gunma prefecture.
- (2) In addition, IAEA experts in BWR technology met with Japanese officials and operators including NISA and the Tokyo Electric Power Company (TEPCO) and visited the Fukushima Dai-ichi Nuclear Power Plant on 6 April.

## Airports

### **ICAO (International Civil Aviation Organization):**

***“No Restrictions on Travel to Japan”*** ( News release: March 18 )

<http://www2.icao.int/en/NewsRoom/Lists/News/DispForm.aspx?ID=37>

***“Current Radiation Levels in Japan and Travel Advice”*** ( News release: April 1 )

<http://www2.icao.int/en/NewsRoom/Lists/News/DispForm.aspx?ID=39>

***“Current Situation for Travel and Transport to and from Japan”*** ( News release: April 14 )

<http://www2.icao.int/en/NewsRoom/Lists/News/DispForm.aspx?ID=40>

### **IATA (International Air Transport Association):**

***“No Restrictions on Air Travel to Japan”*** ( News release: March 19 )

<http://www.iata.org/pressroom/pr/Pages/2011-03-18-02.aspx>

***“UN Confirms Safety of Japan Operations - No Recommendation for Passenger Screening”*** ( News release: April 1 )

<http://www.iata.org/pressroom/pr/Pages/2011-04-01-01.aspx>

## Ports

### **IMO (International Maritime Organization):**

***“Current situation for travel and transport to and from Japan”*** ( News release: April 15 )

<http://www.imo.org/MediaCentre/PressBriefings/Pages/22-japan-update.aspx>

***“Current radiation levels in Japan and travel advice”*** ( News release: April 4 )

<http://www.imo.org/MediaCentre/PressBriefings/Pages/17-radiation-.aspx>

***“Shipping advised to comply with relevant NAVAREA warnings off Japan”*** ( News release: March 24 )

<http://www.imo.org/MediaCentre/PressBriefings/Pages/13-navigation-off-japan.aspx>

***“No Restrictions on Travel to Japan”*** ( News release: March 21 )

<http://www.imo.org/MediaCentre/PressBriefings/Pages/No-restrictions-on-travel-to-Japan.aspx>

### **IAPH ( The International Association of Ports and Harbours ) :**

***“Japanese ports are safe”*** ( News release: March 25 ) <http://www.iaphworldports.org/#>

### **PIANC ( The World Association for Waterborne Transport Infrastructure ) :**

***“No fear on port function and people's health”*** ( News release: April 4 )

<http://www.pianc.org/downloads/events/Message%20from%20PIANC%20Japan.pdf>

# Speedy Dissemination of Accurate Information

- Japan is committed to the speedy dissemination of accurate information.
- All necessary information can be found at the following websites.

## Japan's Countermeasures

- 1. <http://www.kantei.go.jp/foreign/incident/index.html>
- 2. <http://www.meti.go.jp/english/index.html>
- 3. <http://www.nisa.meti.go.jp/english/>

## Measurement of Radioactivity Level

- 1. [http://www.mext.go.jp/english/radioactivity\\_level/detail/1303962.htm](http://www.mext.go.jp/english/radioactivity_level/detail/1303962.htm)
- 2. <http://www.nisa.meti.go.jp/english/>
- 3. [http://www.worldvillage.org/fia/kinkyu\\_english.php](http://www.worldvillage.org/fia/kinkyu_english.php)
- 4. <http://www.tepco.co.jp/en/press/corp-com/release/index-e.html>

## Drinking Water Safety

- 1. <http://www.mhlw.go.jp/english/topics/2011eq/index.html>
- 2. <http://www.waterworks.metro.tokyo.jp/press/shinsai22/press110324-02-1e.pdf>

## Food Safety

- 1. <http://www.maff.go.jp/e/index.html>
- 2. <http://www.mhlw.go.jp/english/topics/2011eq/index.html>

## Ports and Airports Safety

- 1. [http://www.mlit.go.jp/page/kanbo01\\_hy\\_001428.html](http://www.mlit.go.jp/page/kanbo01_hy_001428.html)
- 2. [http://www.mlit.go.jp/koku/flyjapan\\_en/index.html](http://www.mlit.go.jp/koku/flyjapan_en/index.html)
- 3. [http://www.mlit.go.jp/page/kanbo01\\_hy\\_001411.html](http://www.mlit.go.jp/page/kanbo01_hy_001411.html)