

24 MARCH 2011 06:00 UTC



IAEA

International Atomic Energy Agency

Incident and Emergency Centre

Subject: Status of the Fukushima Daiichi nuclear power plant

The Incident and Emergency Centre (IEC) is continuing to monitor the status of the nuclear power plants in Japan following the earthquake.

Based on information received by 06:00 UTC on March 24, 2011 the following updated information related to the reactor units at the Fukushima Daiichi Nuclear Power Plant is provided:

Status of the Fukushima Daiichi Nuclear Power Plant

AC Power—Units 1 to 4

The restoration work of off-site power is still in progress. Power distribution panels (Power Center) in Units 2 and 4 have been connected to off-site electricity supply. Individual components are being checked prior to being energized. The lighting in unit 3 control room has been restored. Some instrumentation was recovered for units 1, 2 and 4. Workers for Unit 3 and 4 were temporarily evacuated due to black smoke which appeared from Unit 3 at 07:20 UTC. Workers returned to work from 20:35 UTC on March 23 when no more smoke was confirmed. Due to the extent of damage inflicted by the earthquake and tsunami, it is not possible to estimate when equipment may be returned to service.

AC Power—Units 5 and 6

Power has been restored to a transformer and is being provided to Unit 5 and Unit 6 houseloads.

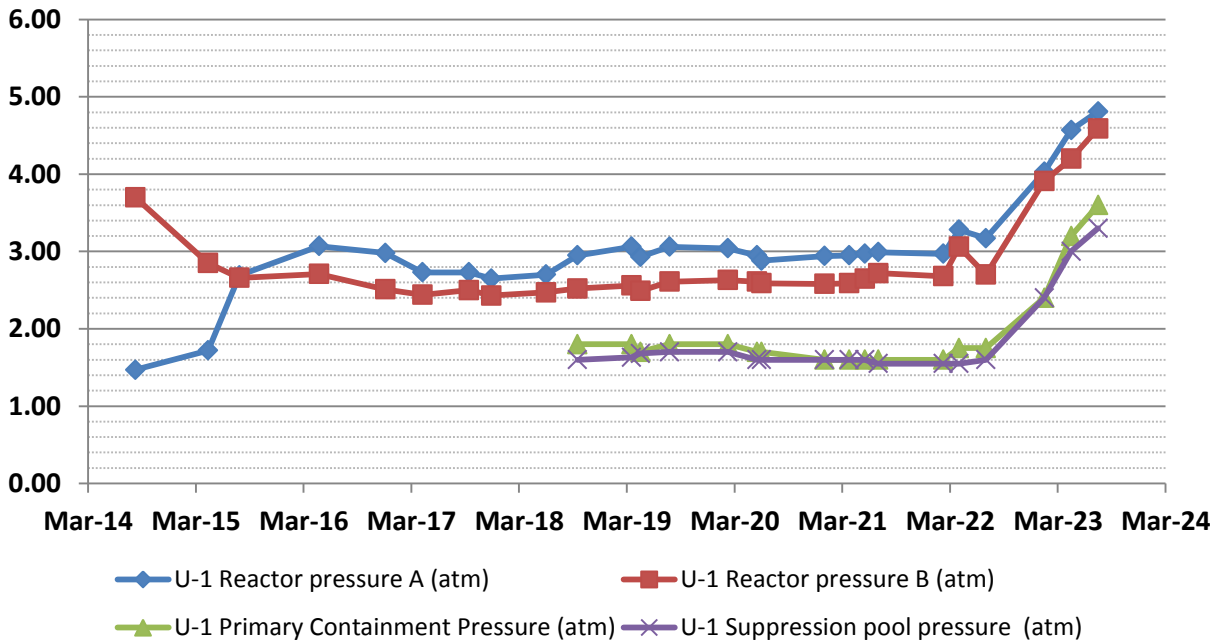
Unit 1

Seawater continues to be injected into the reactor pressure vessel (about 10 m³/h as of 17:35 UTC on March 23). The temperature at the feed water nozzle of Reactor Pressure Vessel (RPV) is decreased to 243°C and at the bottom of RPV to 229 °C (previous measurements 305 °C and 306 °C respectively).

The dose rate in containment vessel (D/W) and suppression chamber (S/C) has decreased slightly to 44 Sv/h and 27.9 Sv/h, respectively.

The pressure history in the RPV and Containment Vessel and presented in the following graph.

Fukushima Daiichi Unit-1 Reactor Vessel, Containment Vessel & Suppression Pool Pressure



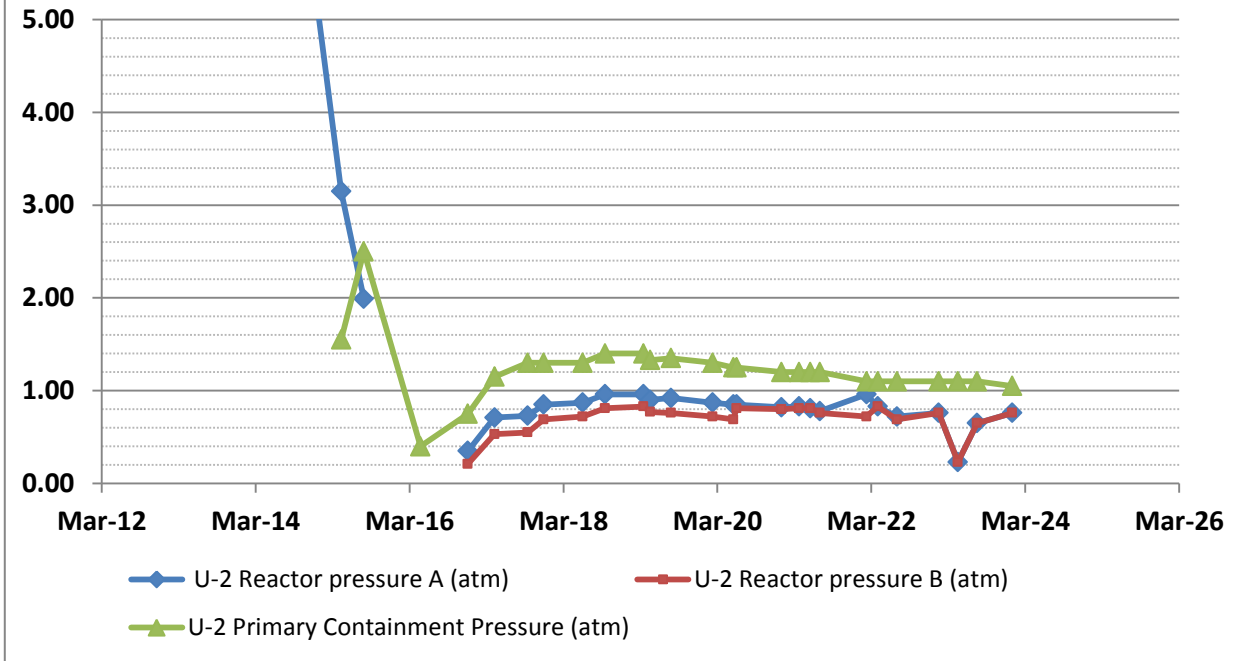
Unit 2

Injection of seawater (18 ton) to the Spent Fuel Pool was carried out. The cumulative total amount of water sprayed is now 58 t. Seawater injection to RPV continues with a flow rate of 11 m³/h. The RPV temperature at the feed water nozzle and at the bottom head of RPV are stable (102 °C and 109 °C respectively).

The dose rates in the containment vessel (D/W) and the suppression chamber (S/C) are decreased slightly to 49.3 Sv/h and 1.49 Sv/h, respectively.

The RPV and Containment Vessel pressure is shown in the following graph.

Fukushima Daiichi Unit-2 Reactor Vessel and Containment Vessel Pressure

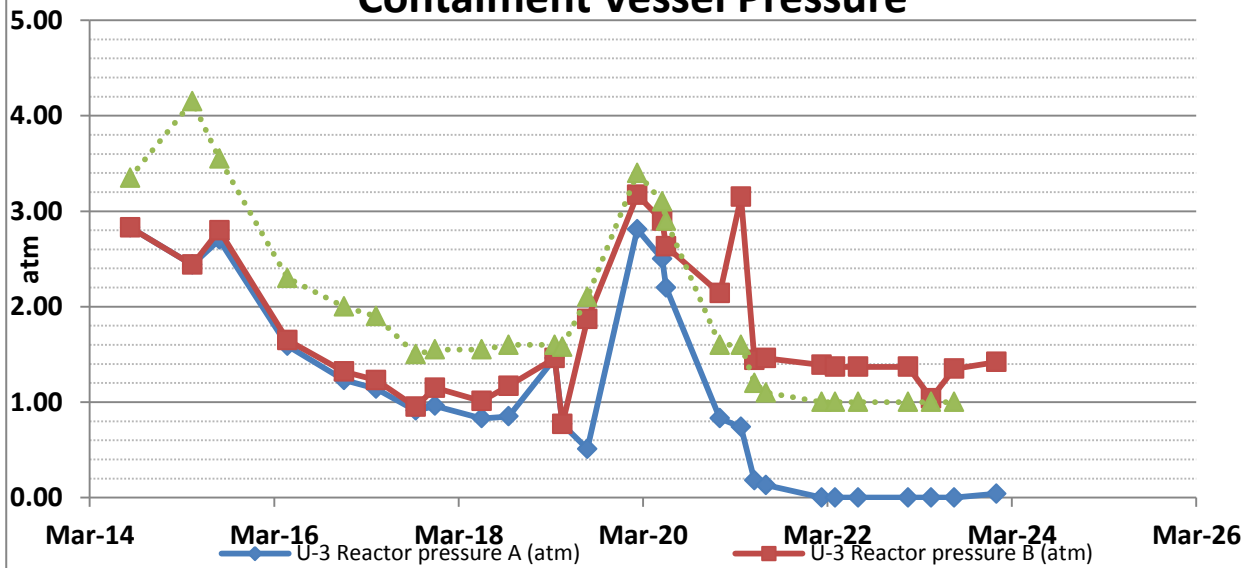


Unit 3

Seawater continues to be injected into the RPV and sprayed over the spent fuel pool as needed. The cumulative amount of water sprayed to Unit 3 is 3927t. The RPV temperature at feed water nozzle decreased to 80.7°C and at the bottom of RPV to 185.4°C (previous measurement 304.8°C and 225.5°C respectively).

The RPV and Containment Vessel pressure is presented in the graph below.

Fukushima Daiichi Unit-3 Reactor Vessel and Containment Vessel Pressure



Unit 4

Water was poured into the spent fuel pool at a rate of 50 m³/h using a concrete pump for 3 hours on 22nd March . Starting from 01:00 UTC till 04:02 UTC on March 23, 130 t of water was poured in using a concrete pump truck at 50 m³/h. The cumulative amount of water sprayed to Unit 4 is 535 t.

Unit 5

The reactor remains in cold shutdown. The reactor water temperature increased to 71.4°C as RHR pump has stopped when power was switched from temporary to normal. Spent Fuel Pool water temperature increased slightly to 45.1°C.

Unit 6

The reactor remains in cold shutdown. Power was switched from the diesel generator to off-site power. The RPV water temperature decreased to 24.1 °C. Spent Fuel Pool water temperature is increased slightly to 23.5°C.

Units 1, 2, 3, 4, 5 and 6 - Plant Status

Parameter / Indications	Unit	Fukushima Daiichi					
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Reactor Pressure Vessel Pressure	MPa	<u>0.511</u> (A) <u>0.488</u> (B)	<u>0.076</u> (A) <u>0.076</u> (B)	<u>0.004</u> (C) <u>0.142</u> (A)	-	0.108	0.109
	atm	<u>5.11</u> (A) <u>4.88</u> (B)	<u>0.76</u> (A) <u>0.76</u> (B)	<u>0.04</u> (A) <u>1.42</u> (B)	-	1.08	1.09
Containment Vessel (Drywell) Pressure	kPa	<u>385</u>	<u>105</u>	<u>Below the scale</u>	-	-	-
	atm	<u>3.85</u>	<u>1.05</u>	<u>Below the scale</u>	-	-	-
Reactor Pressure Vessel Level	mm (above the top of active fuel)	<u>-1700</u> (A) <u>-1700</u> (B)	<u>-1200</u> (A) (B) not available	-1800 (A) -2300 (B)	-	<u>1846</u>	<u>2397</u>
Suppression Pool Temperature	°C	No Data	No Data	No Data	No Data	No Data	No Data
Suppression Pool Pressure	kPa	<u>370</u>	Below the scale	Below the scale	-	-	-
	atm	<u>3.70</u>					
Adding water to Reactor Pressure Vessel	<ul style="list-style-type: none"> • Adding • Not adding • Unknown 	Seawater continues to be injected into the reactor pressure vessels as needed.			-	Injection to RPV and the Spent Fuel Pool using make up water	Injection to RPV and the Spent Fuel Pool using make up water
Date/Time of Data Acquisition		<u>March 23</u> <u>16:00 UTC</u>	<u>March 23</u> <u>16:00 UTC</u>	<u>March 23</u> <u>17:40 UTC</u>	-	<u>March 23</u> <u>20:00 UTC</u>	<u>March 23</u> <u>20:00 UTC</u>

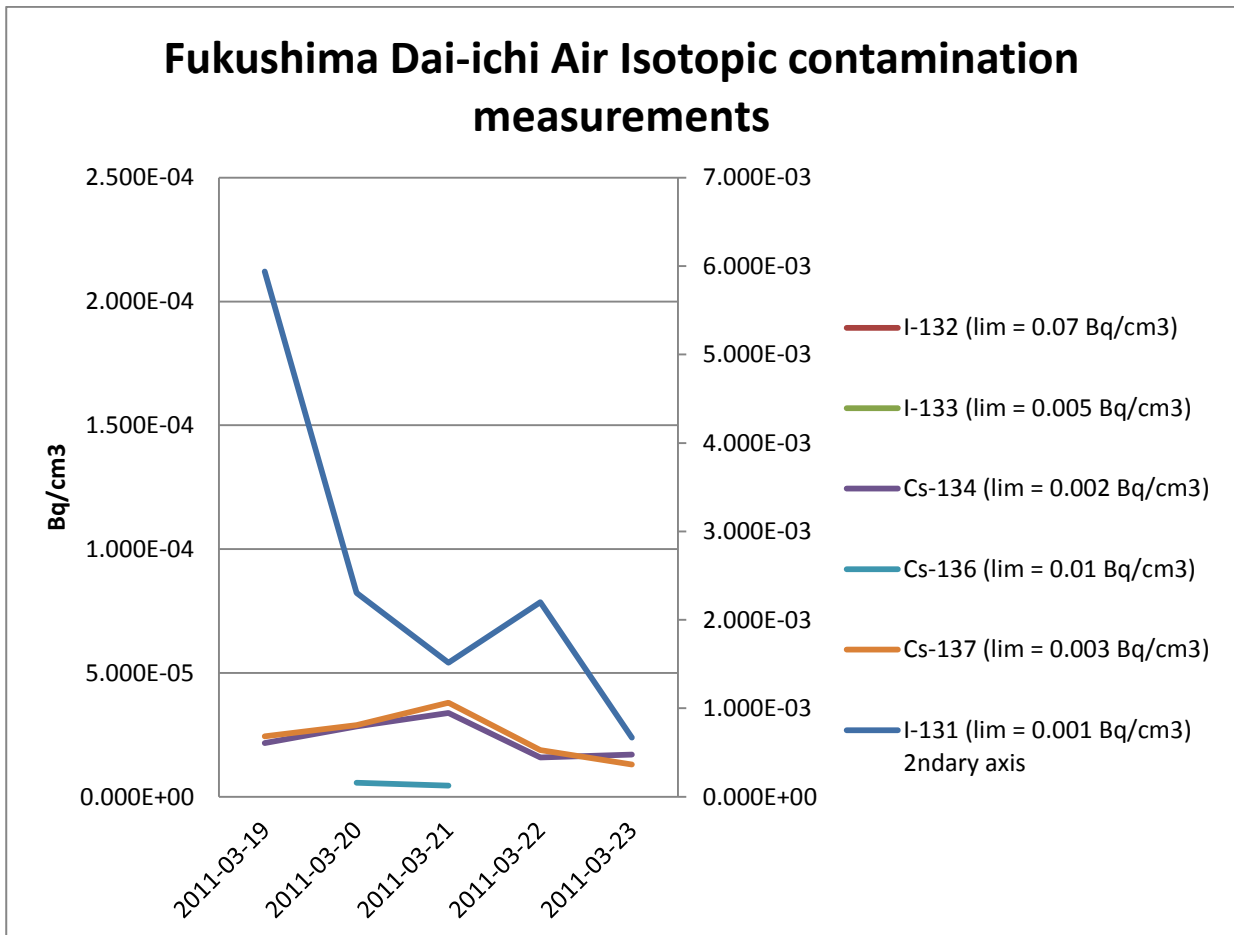
* All pressures are absolute pressure (pressure including normal atmospheric pressure)

** (A) and (B) refer to two measurement channels

Radiation Monitoring Data

Daiichi NPP – On-Site Monitoring

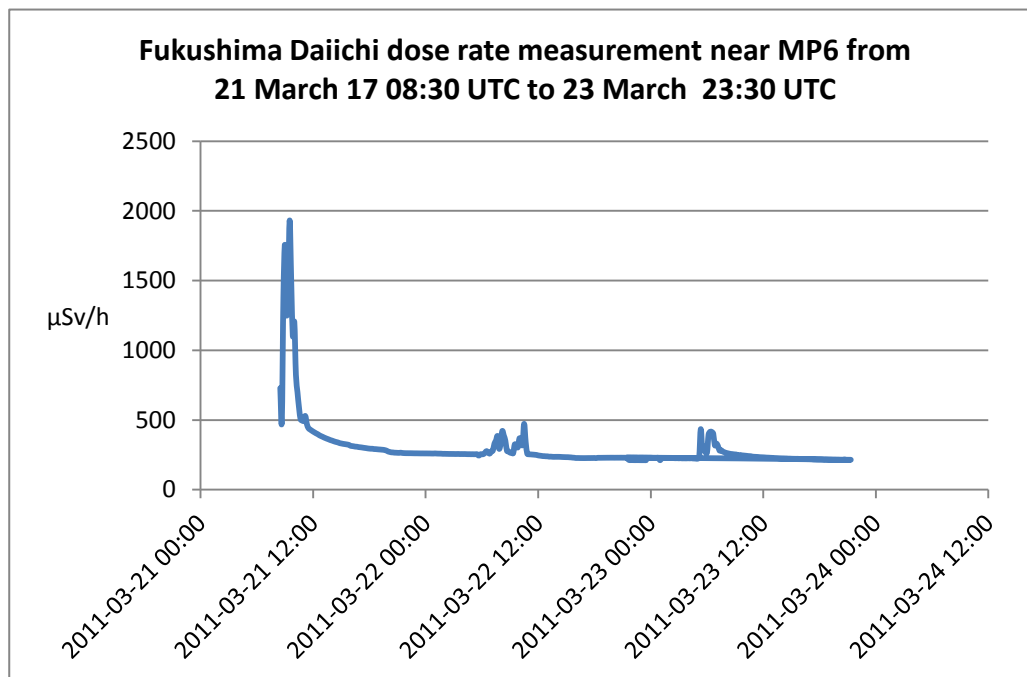
New data from 23rd March has come in for radionuclide concentrations in air at the Daiichi site. Samples were collected north of the Administration Building in the midday period on each of March 19, 20, and 21; and from the main gate on March 22 and 23. Concentrations of I-131, I-132 and I-133 were measured as well as concentrations of Cs-134, Cs-136 and Cs-137. NISA's concentration limits in air for each of these radionuclides is shown in parenthesis.



Note 1: The data for I-131 should be read from the right hand scale; the other radionuclides should be read from the left hand scale.

Note 2: Monitoring point for 19-21 March was the administrative building north; for 22-23 March the measurement point was close to the main gate.

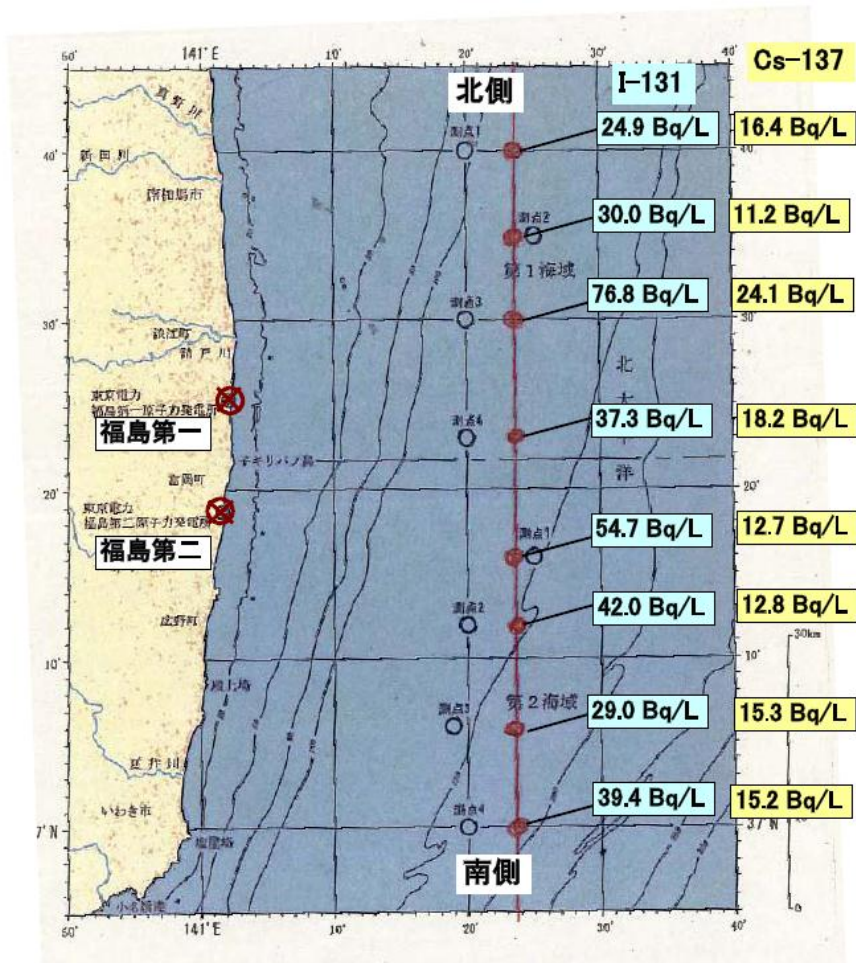
Overall the dose rates reported on-site appear to be trending downwards. The dose rates measured between March 21 to March 23 near MP6 are displayed on the chart below.



Monitoring in the Marine Environment

On March 22, MEXT announced an action plan for monitoring coastal waters near the Fukushima Daiichi NPP site. Air and seawater samples were collected on March 23 in coastal waters along transects that are separated by 10 kilometer intervals – sampling was performed along each transect to a distance of about 30 kms offshore. The results published on March 24 03:00 UTC are presented below.

Sampling Point	Sampling Date and Time (UTC)	Seawater concentration (Bq/L)		Dose Rate (microSv/h)	Dust in Air Radionuclide Concentration (Bq/m ³)	
		I-131	Cs-137		I-131	Cs-137
1-1	22-Mar 23:10	24.9	16.4	0.034	0.133	0.00676
1-2	23-Mar 00:00	30.0	11.2	0.038	0.0623	0.0694
1-3	23-Mar 00:30	76.8	24.1	0.049	0.0936	--
1-4	23-Mar 01:15	37.3	18.2	0.054	0.0866	0.016
2-1	23-Mar 02:20	54.7	12.7	0.035	--	--
2-2	23-Mar 03:00	42.0	12.8	0.030	--	--
2-3	23-Mar 03:37	29.0	15.3	0.040	--	--
2-4	23-Mar 04:32	39.4	15.2	0.040	--	--



The maximum permissible concentration in water are 40 Bq/L for I-131 and 90 Bq/L for Cs-13. Results have been sent to IAEA experts from the Marine Environmental Laboratory in Monaco for analysis.

Deposition Data by Prefecture

Deposition of I-131 and Cs-137 have been reported in about 10 prefectures. As the Table below illustrates, deposition rates vary appreciably from one day to the next. If rainfall occurs, there can be substantial changes in deposition (i.e. wet deposition). This may explain the increased deposition in Tokyo between the March 20-21 and March 21-22 measurements. New and updated data is underlined.

Deposition (Bq/m²) measured during a 24 hour period, from 9:00 to 9:00

Location	Mar 18-19		Mar 19-20		Mar 20-21		Mar 21-22	
	I-131	Cs-137	I-131	Cs-137	I-131	Cs-137	I-131	Cs-137
Iwate(Morioka)	ND	ND	ND	0.24	4800	690	ND	ND
Yamagata(Yamagata)	ND	ND	22	20	58000	4300	590	140
Ibaraki	-	-	490	48	93000	13000	85000	12000
Tochigi(Utsunomiya)	1300	62	540	45	5300	250	25000	440
Gunma(Maebashi)	230	84	190	63	990	87	1500	72
Saitama(Saitama)	64	ND	66	ND	7200	790	22000	1600
Chiba(Ichihara)	21	ND	44	3.8	<u>1100</u>	<u>110</u>	<u>14000</u>	<u>2800</u>
Tokyo(Shinjyuku)	51	ND	40	ND	2900	560	32000	5300
Yamanashi(Kouhu)	175	ND	ND	ND	ND	ND	4400	400

Deposition (Bq/m²) measured during a 24 hour period, from 9:00 to 9:00

Location	Mar 22-23			
	I-131	Cs-137		
Iwate(Morioka)	<u>23</u>	<u>13</u>		
Yamagata(Yamagata)	<u>2100</u>	<u>1900</u>		
Ibaraki	<u>27000</u>	<u>420</u>		
Tochigi(Utsunomiya)	<u>23000</u>	<u>99</u>		
Gunma(Maebashi)	<u>310</u>	<u>ND</u>		
Saitama(Saitama)	<u>22000</u>	<u>320</u>		
Chiba(Ichihara)	<u>22000</u>	<u>360</u>		
Tokyo(Shinjyuku)	<u>36000</u>	<u>340</u>		
Yamanashi(Kouhu)	<u>110</u>	<u>26</u>		

ND = not detected.

Radioactivity in food, milk and drinking water

New data for radionuclide concentration data for food, milk and drinking water is being accumulated. Sampling is most extensive within Fukushima and Ibaraki prefectures. The sampling frequencies and locations, as well as the type of foodstuff sampled are, by necessity, not uniform. Hence, reporting on radionuclide concentrations in foodstuffs is ad hoc. Since the last status report (23 March 17:00 UTC), the following new foodstuff monitoring data is noted:

Spinach (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs-137 Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-18	Ibaraki	Takahagi-city	54100	1 931
		Hitachi- city		
		Hitachioota- city		
		hitachiomiya-city		
		Daigo-city		
		Toukai-mura		
		Hitachinaka-city		
		kitaibaraki-city		
		Nakaminato-city		
		Hokota-city		
		Moriya-city		
		Koga-city		
2011-03-19	Tochigi	Utsunomiya-city	5700	790
		Kamimikawa-machi		
		Shimono-city		
		Mibu-machi		
2011-03-19	Ibaraki	Takahagi-city	11000	586
	Gunma	Isezaki-city	2630	
2011-03-20	Ibaraki	Tsukuba-city	4100	
		Ibaraki-machi		
Result released on 2011-03-21	Ibaraki	Hokota-machi	4100	
2011-03-21	Fukuachima	Izumisaki-mura	19000	20000
		Ono-machi		
		Tamura-city		
		Nakashima-mura		
		Sakai-machi		
		Hirata-mura		
		Yabuki-machi		
	Nihonmatsu-city			
	Minamisouma-city			
	Miharu-machi			
	Motomiya-city			
2011-03-21	Ibaraki	Hokota-city	12000	2110
		Maikata-city		
2011-03-22	Ibaraki	Hokota-city	12000	2100
Kabu (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Ibaraki	Hokota-city	12000	2110
		Maikata-city		
	Fukushima	Sukagawa-city		420
Kakina (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-19	Tochigi	Sano-city	2000	
2011-03-20	Gunma	Takasaki-city		555
cabbagy (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Minamisouma-city	5200	1400

Buroccory (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	litate-mura	17000	7000
		Iwaki-chity		
		Kagami-city		
		Kunimi-machi		
		Kuwaori-machi		
		Date-city		
		Miharu-machi		
Kukitana (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Ootama-mura	15000	41000
		Motomiya-city		
Aburana (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Shirakawa-city	8200	4600
		Tamagawa-mura		
Chijirena (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Tanakura-machi	3700	4600
Koutaisai (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Nihonmatsu-city	5400	5400
Santona (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Saigou-mura	4900	12000
Shinobufuyuna (I>2000Bq/kg , Cs>500Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs Bq/kg
	Prefecture	City/machi/cyo/Mura		
2011-03-21	Fukushima	Kawamata-machi	22000	14000

Water, I-131 exceeded permissible level of food (>300Bq/kg)				
Sampling date and time	Sampling point		I-131 Bq/kg	
	Prefecture	City/machi/cyo/Mura		
2011-03-17 13:04	Fukushima	Tamura-city	348	
2011-03-18 11:50		Tamura-city	317	
2011-03-20 12:30		litate-mura		965
2011-03-21 08:30				492
2011-03-21				450
			430	
Water, I-131 exceeded permissible level for baby (>100Bq/kg)				
Sampling date and time	Sampling point		I-131 Bq/kg	
	Prefecture	City/machi/cyo/Mura		
2011-03-18 11:45	Fukushima	Kawamata-machi	293	
		Minamisouma-city	105	
2011-03-19 11:00	Fukushima	Kawamata-machi	130	
2011-03-19 13:00	Fukushima	Minamisouma-city	185	
2011-03-19	Fukushima	Tamura-city	161	
Result released on 2011-03-21	Fukushima	Date-city	120	
		Kooriyama-city	150	
2011-03-21	Fukushima	Kawamata-machi	174	
		Minamisouma-city	137	
		Iwaki-city	103	
2011-03-22	Tokyo	Kanamachi water supply plant area	210	
2011-03-23	Ibaraki	Toukaimura	188.7	

Milk (I-131>300Bq/kg , Cs>200Bq/kg)				
Sampling date	Sampling point		I-131 Bq/kg	Cs-137 Bq/kg
	Prefecture	City/machi/Cyo/Mura		
2011-03-16	Fukushima	Kawamata machi	1190	
2011-03-17	Fukushima	Kawamata machi	1510	
2011-03-18	Fukushima	Kawamata machi	932	
2011-03-19	Fukushima	Iwaki-city	5200	210
		Kunimi-tyou		
		Shinti-machi		
		Fukushima-litate-mura		
2011-03-20	Fukushima	Fukushima-Kawamata-machi	5300	
2011-03-19~21	Ibaraki	Ibaraki-Mito-City	1700	
		Ibaraki-Kawauchi-machi		

IAEA Radiation Monitoring

On March 23, the IAEA radiation monitoring team took additional measurements at distances from 30 to 73 km from the Fukushima nuclear power plant. Results from gamma dose-rate measurements in air ranged from 0.2 to 6.9 microsievert per hour. The beta-gamma contamination measurements ranged from 0.02 to 0.6 Megabecquerel per square meter.

The second IAEA monitoring team has now arrived in Japan. The two teams in Japan will continue to work closely with the Japanese authorities. Monitoring will be undertaken in the areas of Fukushima and Tokyo. Measurements will be taken to determine more precisely the actual composition of the radionuclides that have been deposited.

Canada radiation monitoring data

Health Canada has started to share its environmental monitoring data with the IEC. Data has been provided from the Canadian CTBT radionuclide stations, noble gas and aerosols (filters) and the Fixed Point Surveillance (FPS) network of dose rate monitors located throughout Canada. These data are being analysed by the IEC. Canada will also share the results of the weekly filter samples from the regular Canadian sites, first results from these are expected by the end of the week.

Hilaire Mansoux

Emergency Response Manager

24-March-2011 06.00 UTC