

Results of Radioactive Material Monitoring of Aquatic Organisms (Location M off Iwaki City)

<Location M off Iwaki City: Samples collected>

Locations	General items		Radioactive materials			
	Water	Sediment	Water (Cs)	Water (Sr)	Sediment (Cs)	Sediment (Sr)
M-1	-	○	-	-	○	-
M-2	○	○	○	○	○	○
M-3	-	○	-	-	○	-

<Location M off Iwaki City: Site measurement item>

Locations	Latitude and longitude of the location		Survey date and time			Water					Sediment		Other	
	Latitude	Longitude	Date	Time (water)	Time (sediment)	Water temperature (degrees C)	Sediment temperature (degrees C)	Property	Color	Contaminants	Water depth (m)	Secchi disk depth (m)		
M-1	37.1736°	141.0788°	2016/9/5	-	07:58	-	21.4	Fine sand	7.5Y3/1	Shell fragments	-	-		
M-2(Surface layer)	37.1996°	141.0853°		08:43	08:55	24.3	18.0	Fine sand	7.5Y3/1	Shell fragments	45.9	5.0		
M-2(Bottom layer)				08:16		17.7								
M-3	37.2324°	141.0935°		-	09:38	-	18.2	Fine sand	7.5Y3/1	Shell fragments	-	-		

<Location M off Iwaki City: General survey items/Analysis of radioactive materials Water>

Locations	Latitude and longitude of the location		Survey date and time		pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)	Electric conductivity (mS/m)	Salinity	TOC (mg/L)	SS (mg/L)	Turbidity (FNU)	Cs-134 (Bq/L)	Cs-137 (Bq/L)	Sr-90 (Bq/L)
	Latitude	Longitude	Date	Time (water)												
M-2(Surface layer)	37.1996°	141.0853°	2016/9/5	08:43	8.2	0.8	1.6	7.7	4980	32.68	1.0	2	0.4	0.0015	0.013	-
M-2(Bottom layer)				08:16	8.0	0.7	1.1	7.4	5120	33.78	0.9	3	0.8	0.0060	0.040	0.00096

<Location M off Iwaki City: General survey items/Analysis of radioactive materials Sediment>

Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential E _{NHLE} (mV)	Water content (%)	IL (%)	TOC (mg/g-dry)	Soil particle density (g/cm ³)	Grain size distribution								Cs-134 (Bq/kg-dry)	Cs-137 (Bq/kg-dry)	Sr-90 (Bq/kg-dry)
	Latitude	Longitude	Date	Time (sediment)							Gravel (2-75mm) (%)	Coarse sand (0.85-2mm) (%)	Medium sand (0.25-0.85mm) (%)	Fine sand (0.075-0.25mm) (%)	Silt (0.005-0.075mm) (%)	Clay (Less than 0.005mm) (%)	Median grain diameter (mm)	Maximum grain diameter (mm)			
M-1	37.1736°	141.0788°	2016/9/5	07:58	7.8	233	26.9	2.0	2.0	2.772	0.0	0.4	3.7	85.5	4.9	5.5	0.16	2.0	10	48	-
M-2	37.1996°	141.0853°		08:55	7.8	240	29.1	1.6	2.4	2.776	0.0	0.1	3.0	88.0	5.2	3.7	0.16	2.0	11	56	N.D.(0.13)
M-3	37.2324°	141.0935°		09:38	7.8	247	27.2	1.7	2.1	2.779	0.0	0.3	5.4	86.7	3.0	4.6	0.16	2.0	8.7	48	-

Note) N.D. means to be below the detection limit and figures in parentheses show the detection limit.

<Location M off Iwaki City: Analysis items Aquatic organisms>

Locations	Sampling point	Latitude and longitude of the location		Sampling date	Division	Class	Order	Family	Scientific name	English name	Population	Sample weight (kg-wet)	Note			Radioactive cesium (Bq/kg-wet)			Sr-90 (Bq/kg-wet)
		Latitude	Longitude										Growth stage	Stomach contents	Measurement site	Total	Cs-134	Cs-137	
M-1 M-2 M-3	Offshore of Hisanohama	37.1736° 37.1996° 37.2324°	141.0788° 141.0853° 141.0935°	2016/9/5	Arthropoda	Malacostraca	Decapoda	Portunidae	<i>Portunus trituberculatus</i>	Japanese blue crab	1	0.055	Imago	-	-	4.00	0.50	3.5	-
					Mollusca	Cephalopoda	Octopoda	Octopodidae	<i>Octopus vulgaris</i>	Common octopus	1	0.43	Imago	-	-	N.D.	N.D.(0.37)	N.D.(0.37)	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Triglidae	<i>Lepidotrigla microptera</i>	Searobin	27	2.4	Immature fish,Mature fish	Shrimp	Viscera removed	0.87	N.D.(0.34)	0.87	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Triglidae	<i>Chelidonichthys spinosus</i>	Gurnard	1	0.19	Mature fish	Empty stomach	Viscera removed	N.D.	N.D.(0.54)	N.D.(0.54)	-
					Vertebrata	Osteichthyes	Pleuronectiformes	Pleuronectidae	<i>Kareius bicoloratus</i>	Stone flounder	1	1.1	Mature fish	Empty stomach	Viscera removed	1.8	N.D.(0.33)	1.8	-
					Vertebrata	Osteichthyes	Pleuronectiformes	Pleuronectidae	<i>Pleuronectes yokohamae</i>	Marbled sole	2	0.87	Mature fish	Ragworm	Viscera removed	1.91	0.41	1.5	-
					Vertebrata	Osteichthyes	Pleuronectiformes	Paralichthyidae	<i>Paralichthys olivaceus</i>	Bastard halibut	3	4.6	Mature fish	Empty stomach	Viscera removed	1.1	N.D.(0.31)	1.1	-
					Vertebrata	Osteichthyes	Perciformes	Sparidae	<i>Eynnys japonica</i>	Crimson sea-bream	7	3.7	Immature fish,Mature fish	Crab	Viscera removed	0.97	N.D.(0.34)	0.97	N.D.(0.017)
					Vertebrata	Osteichthyes	Tetraodontiformes	Tetraodontidae	<i>Takifugu poecilonotus</i>	Pufferfish	12	2.7	Mature fish	Obscure digesta	Viscera removed	2.70	0.50	2.2	-
					Vertebrata	Osteichthyes	Zeiformes	Zeidae	<i>Zeus faber</i>	John Dory	5	3.2	Immature fish,Mature fish	Anchovy	Viscera removed	0.55	N.D.(0.36)	0.55	N.D.(0.017)
					Vertebrata	Chondrichthyes	Rajiformes	Rajidae	<i>Okamejei kenoei</i>	Common Skete	3	2.1	Immature fish	Shrimp,Shellfish,Crab	Viscera removed	5.84	0.74	5.1	-
					Vertebrata	Chondrichthyes	Carcharhiniformes	Triakidae	<i>Mustelus manazo</i>	Starspotted smooth-hound	3	3.7	Immature fish	Crab,Crustacea,Ragworm	Viscera removed	3.99	0.49	3.5	0.021
M-4	Hisanohama Coastal areas	-	-	2016/9/5	Algae/plant	Phaeophyceae	Laminariales	Laminariaceae	<i>Eisenia bicyclis</i>	Eisenia bicyclis	-	0.30	-	-	3.35	0.55	2.8	-	
					Mollusca	Gastropoda	Archaeogastropoda	Haliotidae	<i>Haliotis sp.</i>	Abalone	3	0.33	Imago	-	-	0.88	N.D.(0.29)	0.88	-
					Echinodermata	Echinoidea	Echinoidea	Strongylocentrotidae	<i>Strongylocentrotus nudus</i>	Northern sea urchin	6	0.45	Imago	-	-	0.43	N.D.(0.24)	0.43	-

*1: Organisms were collected in or around the targeted water areas.

*2: When multiple types of aquatic organisms were collected, a sample was prepared by mixing them.

*3: For a sample made of multiple types of aquatic organisms, the English name of the dominant one largest in number is underlined.

*4: Basically, measurement was conducted for all organism samples. Viscera (stomach and bowels) were removed for the measurement when possible so that undigested food and sediments, etc. in the digestive system would be excluded.

*5: Plankton (suspended algae) is the residue remaining after the filtration of lake water or seawater with a plankton net (40µm-mesh).

*6: River bottom materials (incl. algae) are algae, etc. that were scratched off stones with a brush, etc. and may include very fine particles such as inorganic silt and clay.

*7: N.D. means to be below the detection limit and figures in parentheses show the detection limit.

*8: Activity concentrations include counting errors, but the details are omitted here.