

Results of Radioactive Material Monitoring of Aquatic Organisms (Locations A and B along the Abukuma River)

<Locations A and B along the Abukuma River: Samples collected>

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

<Locations A and B along the Abukuma River: 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)	Transparency (cm)					
A-1(Surface layer)	37.6210°	140.5218°	2019/12/2	08:30	08:52	6.7	7.2	Fine sand	2.5Y3/3	Plant pieces	6.10	>50 (1.6m)*					
A-1(Bottom layer)				08:43													
A-2	10:24	10:34		7.5	7.6								Sand	10YR3/4	None	0.60	>50
B-2	13:17	13:25		8.6	9.7								Fine sand	2.5Y3/2	None	0.51	>50
B-3	12:18	12:25		9.9	10.1								Sand	2.5Y3/2	None	0.59	>50

* The number in parentheses indicates Secchi disk depth.

<Locations A and B along the Abukuma River: 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)												
A-1(Surface layer)	37.6210°	140.5218°	2019/12/2	08:30	7.0	0.9	2.9	11.9	18.7	0.09	1.4	4	2.5	N.D.(0.0014)	0.011	0.0012
A-1(Bottom layer)				08:43	7.2	0.9	2.8	12.2	18.4	0.09	1.3	3	2.6	N.D.(0.0015)	0.0054	-
A-2	10:24	7.3		<0.5	2.0	12.2	10.3	0.05	0.8	<1	0.7	N.D.(0.0013)	0.0041	-		
B-2	13:17	7.2		0.6	2.7	12.7	17.8	0.09	1.2	3	2.2	N.D.(0.0014)	0.0037	-		
B-3	12:18	7.4		<0.5	2.8	12.0	9.4	0.05	1.2	2	1.7	N.D.(0.0012)	0.0043	-		

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

<Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Sediment>

Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential E _{NHE} (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)			
A-1	37.6210°	140.5218°	2019/12/2	08:52	7.2	340	26.6	1.9	5.9	2.742	0.1	3.3	61.9	20.5	6.9	7.3	0.34	4.8	9.9	160	0.17
A-2	37.5673°	140.3946°		10:34	7.3	358	18.7	1.5	2.3	2.723	44.3	39.3	13.4	1.7	1.3		1.8	19	6.7	95	-
B-2	37.8121°	140.5058°		13:25	7.4	382	25.2	1.5	2.0	2.785	0.2	1.0	45.8	48.8	2.3	1.9	0.24	4.8	6.1	88	-
B-3	37.8182°	140.4679°		12:25	7.4	392	26.6	1.8	2.4	2.698	8.0	18.8	55.8	11.1	3.3	3.0	0.53	4.8	8.5	120	-

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

<Locations A and B along the Abukuma River: 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	
A-1	The main stream of the Abukuma River	37.6210°	140.5218°	2019/12/23	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	8	0.033	Immature fish	-	-	4.9	N.D.(2.0)	4.9	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Opsarichthys platypus</i>	Pale chub	366	2.0	Immature fish, Mature fish	-	-	3.8	N.D.(0.29)	3.8	0.19
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Carassius auratus</i>	<i>Carassius auratus langsdorffii</i>	3	0.065	Immature fish, Mature fish	-	-	2.7	N.D.(0.46)	2.7	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	<i>Hemibarbus barbus</i>	11	0.64	Immature fish	-	-	2.1	N.D.(0.28)	2.1	-
					Vertebrata	Amphibia	Anura	Ranidae	<i>Rana japonica</i>	Japanese brown frog	2	0.045	Imago	-	-	4.6	N.D.(1.2)	4.6	-
A-2	Harase River	37.5673°	140.3946°	2019/12/1	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.021	-	-	-	43.9	2.9	41	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	3	0.083	Immature fish, Mature fish	-	-	20.3	1.3	19	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Pseudogobio esocinus esocinus</i>	<i>Pseudogobio esocinus esocinus</i>	3	0.031	Immature fish	-	-	6.5	N.D.(1.4)	6.5	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	1	0.049	Immature fish	-	-	10	N.D.(0.74)	10	-
					Coarse Particulate Organic Matter	-	-	-	Bottom fallen leaves	-	0.24	-	-	-	4.5	N.D.(1.3)	4.5	-	
					Algae/plant	-	-	-	Riverbed Deposits (Include algae)	-	0.018	-	-	-	52.2	3.2	49	-	
B-3	Surikami River	37.8182°	140.4679°	2019/12/1	Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	<i>Stenopsyche marmorata</i>	52	0.014	Larva	-	-	9.8	N.D.(2.6)	9.8	-
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	<i>Protohermes grandis</i>	13	0.011	Larva	-	-	2.4	N.D.(2.7)	2.4	-
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.26	-	-	-	-	2.9	N.D.(1.1)	2.9

*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.