

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°	2017/11/8	09:30	09:40	11.1	11.3	Sand	2.5Y4/4	None	7.90	>50 (2.0m)*
A-1(Bottom layer)				08:58		10.8						
A-2	37.5673°	140.3946°		11:07	11:13	10.7	10.7	Sand	2.5Y4/6	None	1.00	>50
B-2	37.8121°	140.5058°		14:30	14:37	11.6	11.8	Fine sand	2.5Y4/3	None	0.52	>50
B-3	37.8182°	140.4679°		13:22	13:32	11.7	11.8	Sand	2.5Y3/3	Plant pieces a little	0.50	>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°	2017/11/8	09:30	7.2	0.6	2.7	10.6	14.8	0.08	1.2	4	2.6	N.D.(0.0011)	0.0073	0.0011
A-1(Bottom layer)				08:58	7.4	0.6	2.9	10.9	15.1	0.08	1.2	4	2.6	0.0024	0.015	-
A-2	37.5673°	140.3946°		11:07	7.3	<0.5	2.2	11.3	9.5	0.05	0.7	2	1.3	0.0017	0.014	-
B-2	37.8121°	140.5058°		14:30	7.3	<0.5	2.7	10.9	13.6	0.07	1.1	4	3.1	0.0013	0.012	-
B-3	37.8182°	140.4679°		13:22	7.4	<0.5	2.8	11.2	8.1	0.05	1.1	2	2.2	0.0011	0.0087	-

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°	2017/11/8	09:40	7.5	318	24.6	1.4	1.6	2.701	0.1	2.7	75.7	18.7	1.4	1.4	0.39	4.8	20	140	0.20
A-2	37.5673°	140.3946°		11:13	7.2	330	25.0	1.6	2.4	2.738	15.8	37.3	40.7	4.1	1.3	0.8	0.91	4.8	17	140	-
B-2	37.8121°	140.5058°		14:37	7.4	327	24.2	1.7	1.6	2.727	0.1	0.8	56.6	39.4	1.4	1.7	0.27	4.8	18	130	-
B-3	37.8182°	140.4679°		13:32	7.2	316	23.6	1.4	1.8	2.707	17.7	36.5	33.7	6.7	3.6	1.8	0.94	9.5	13	110	-

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-2	Harase River	37.5673°	140.3946°	2017/10/17	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.0065	-	-	-	120	20	100	-
					Arthropoda	Malacostraca	Decapoda	Potamidae	<i>Geothelphusa dehaani</i>	Japanese Freshwater Crab	3	0.0054	Juvenile	-	-	9.5	N.D.(8.7)	9.5	-
					Arthropoda	Malacostraca	Decapoda	Atyidae	<i>Neocaridina sp.</i>	Neocaridina	404	0.28	Juvenile	-	-	17.1	2.1	15	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	25	0.17	Immature fish, Mature fish	-	-	8.75	0.95	7.8	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Nipponocypris temminckii</i>	Dark chub	15	0.069	Immature fish	-	-	7.63	0.83	6.8	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Noemacheilus barbatulus</i>	Stone loach	10	0.16	Immature fish	-	-	6.23	0.93	5.3	-
					Vertebrata	Amphibia	Caudata	Salamandridae	<i>Cynops pyrrhogaster</i>	Cynops pyrrhogaster	12	0.093	Imago	-	-	6.3	N.D.(0.55)	6.3	-
	Coarse Particulate Organic Matter	-	-	-	-	-	-	Bottom fallen leaves	-	-	0.25	-	-	-	43.5	4.5	39	-	
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2017/10/22	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	3	0.94	Mature fish	Bryophyte	Viscera removed	23.0	2.0	21	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	3	3.8	Mature fish	Empty stomach	Viscera removed	7.38	0.88	6.5	0.36
					Vertebrata	Osteichthyes	Siluriformes	Siluridae	<i>Silurus asotus</i>	Amur catfish	1	0.89	Mature fish	Empty stomach	Viscera removed	18.7	1.7	17	-
B-3	Surikami River	37.8182°	140.4679°	2017/10/19	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.018	-	-	-	117	17	100	-
					Algae/plant	Monocotyledoneae	Najadales	Potamogetonaceae	<i>Potamogeton crispus</i>	Curly-leaf pondweed	-	0.043	-	-	-	10.1	1.4	8.7	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	314	0.083	Larva	-	-	15.7	1.7	14	-
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	Protohermes grandis	50	0.044	Larva	-	-	3.2	N.D.(1.5)	3.2	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	<i>Cottus pollux</i>	Japanese fluvial sculpin	5	0.065	Immature fish	-	-	3.0	N.D.(0.80)	3.0	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	14	0.18	Mature fish	-	-	6.13	0.63	5.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Noemacheilus barbatulus</i>	Stone loach	20	0.27	Immature fish	-	-	4.43	0.53	3.9	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	8	0.19	Immature fish	Stenopsyche marmorata	Viscera removed	2.6	N.D.(0.55)	2.6	-
					Vertebrata	Amphibia	Anura	Ranidae	<i>Rana catesbeiana</i>	American Bullfrog	4	0.068	Imago	-	-	12.5	1.5	11	-
					Vertebrata	Amphibia	Anura	Ranidae	<i>Rana rugosa</i>	Wrinkled Frog									
	Coarse Particulate Organic Matter	-	-	-	-	-	-	Bottom fallen leaves	-	-	0.25	-	-	-	5.10	0.70	4.4	-	

*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.