

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°	2020/10/28	09:00	09:20	13.8	16.2	Sand	5Y3/2	None	5.50	>50 (1.5m)*
A-1(Bottom layer)				08:45		13.7						
A-2	37.5673°	140.3946°		11:10	11:25	13.4	13.4	Sand with gravel	10YR4/6	None	0.60	>50
B-2	37.8121°	140.5058°		14:50	15:02	16.8	16.0	Sand	10YR4/4	None	0.60	45
B-3	37.8182°	140.4679°		13:31	13:39	15.2	15.9	Sand with gravel	10YR4/6	None	0.45	>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°	2020/10/28	09:00	7.3	1.0	3.7	10.0	17.7	0.09	1.6	6	3.7	N.D.(0.0012)	0.0061	0.0010
A-1(Bottom layer)				08:45	7.4	1.2	4.0	10.1	18.2	0.09	1.6	7	3.7	0.0014	0.018	-
A-2	37.5673°	140.3946°		11:10	7.4	<0.5	2.2	10.9	10.9	0.06	0.9	1	1.1	N.D.(0.0011)	0.0046	-
B-2	37.8121°	140.5058°		14:50	7.4	<0.5	3.5	11.0	19.3	0.10	1.6	4	3.2	N.D.(0.0013)	0.022	-
B-3	37.8182°	140.4679°		13:31	8.3	<0.5	3.0	12.0	8.6	0.05	1.3	5	3.1	N.D.(0.00097)	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°	2020/10/28	09:20	7.1	10	43.7	5.2	16.8	2.667	0.0	0.2	27.5	27.7	24.6	20.0	0.12	4.8	25	450	0.21
A-2	37.5673°	140.3946°		11:25	7.5	380	19.0	1.6	2.7	2.735	20.7	35.8	38.4	3.8	1.3	0.98	9.5	4.4	85	-	
B-2	37.8121°	140.5058°		15:02	7.4	315	24.2	1.9	2.3	2.712	0.3	1.5	52.0	38.9	3.5	3.8	0.26	9.5	6.2	96	-
B-3	37.8182°	140.4679°		13:39	7.6	415	18.1	1.2	2.1	2.633	43.1	43.6	12.9	0.3	0.1	1.8	9.5	1.9	42	-	

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°	2020/10/22	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish	7	3.6	Immature fish	Empty stomach	Viscera removed	7.6	N.D.(1.3)	7.6	-	
A-2	Harase River	37.5673°	140.3946°	2020/10/21	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.016	-	-	-	71	N.D.(4.7)	71	-	
					Arthropoda	Insecta	Plecoptera	Perlidae	<i>Oyamia lugubris</i>	Oyamia lugubris	18	0.0059	Larva	-	-	-	N.D.	N.D.(3.4)	N.D.(1.9)	-
					Arthropoda	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	93	0.044	Larva(Dragonfly larva)	-	-	12	N.D.(2.3)	12	-	
					Arthropoda	Insecta	Odonata	Cordulegastriidae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Melligomphus viridicosus</i>	Melligomphus viridicosus										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Davidius sp.</i>	Davidius										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Asiagomphus melaenops</i>	Asiagomphus melaenops										
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	Protohermes grandis	23	0.0091	Larva	-	-	3.8	N.D.(3.8)	3.8	-	
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	2	0.49	Mature fish	Empty stomach	Viscera removed	15	N.D.(1.3)	15	-	
Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.24	-	-	-	9.0	N.D.(1.7)	9.0	-						
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2020/10/21	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	8	2.4	Mature fish	Obscure digesta	Viscera removed	5.9	N.D.(1.3)	5.9	0.22	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i>	Common carp	1	5.1	Mature fish	Obscure digesta	Viscera removed	6.5	N.D.(0.99)	6.5	0.38	
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	<i>Plecoglossus altivelis altivelis</i>	Sweetfish	2	0.27	Mature fish	-	-	3.0	N.D.(1.0)	3.0	-	
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus salmoides</i>	Largemouth bass	1	0.056	Immature fish	-	-	7.3	N.D.(3.0)	7.3	-	
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	3	4.2	Mature fish	Empty stomach	Viscera removed	7.7	N.D.(1.4)	7.7	0.18	
					Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish	2	5.1	Mature fish	Empty stomach	Viscera removed	7.6	N.D.(1.3)	7.6	-	
B-3	Surikami River	37.8182°	140.4679°	2020/10/23	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.020	-	-	-	51	N.D.(5.4)	51	-	
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	148	0.032	Larva	-	-	10	N.D.(3.4)	10	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Opsariichthys platypus</i>	Pale chub	12	0.10	Immature fish	-	-	3.2	N.D.(1.4)	3.2	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Candidia temminckii</i>	Dark chub	13	0.089	Immature fish,Mature fish	-	-	2.5	N.D.(1.4)	2.5	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i>	Common carp	1	2.6	Mature fish	Obscure digesta	Viscera removed	6.3	N.D.(1.5)	6.3	0.34	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbuis</i>	Hemibarbus barbuis	1	0.020	Immature fish	-	-	4.8	N.D.(2.0)	4.8	-	
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	1	0.021	Immature fish	-	-	1.4	N.D.(2.1)	1.4	-	
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.23	-	-	-	4.1	N.D.(1.7)	4.1	-	

*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.