

OResults 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>

Items 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>

Items	Latitude and longitude of the location		Survey date and time			Water	Sediment				Other	
Locations	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°	2018/12/7	08:59	09:19	9.6	11.1	Silt	2.5Y4/1	None	7.20	>50 (1.9m)*
A-1(Bottom layer)				08:40		9.5						
A-2	37.5673°	140.3946°		10:46	10:50	9.5	9.8	Sand	2.5Y4/3	None	0.88	>50
B-2	37.8121°	140.5058°		14:05	14:20	10.5	12.5	Sand	2.5Y4/2	None	0.50	>50
B-3	37.8182°	140.4679°		13:00	13:10	10.1	10.1	Sand	2.5Y4/3	None	0.65	>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>

Items Locations	Latitude and longitude of the location		Survey date and time		pH	BOD	COD	DO	Electric conductivity	Salinity	TOC	SS	Turbidity	Cs-134	Cs-137	Sr-90
	Latitude	Longitude	Date	Time (water)		(mg/L)	(mg/L)	(mg/L)	(mS/m)		(mg/L)	(mg/L)	(FNU)	(Bq/L)	(Bq/L)	(Bq/L)
A-1(Surface layer)	37.6210°	140.5218°	2018/12/7	08:59	7.3	2.6	4.0	10.7	22.7	0.12	1.9	2	2.1	N.D.(0.0013)	0.011	0.00087
A-1(Bottom layer)				08:40	7.3	2.9	4.1	11.1	22.1	0.12	1.9	4	2.2	N.D.(0.0013)	0.012	-
A-2	37.5673°	140.3946°		10:46	7.2	0.7	2.3	12.0	11.8	0.07	0.9	1	1.1	N.D.(0.0012)	0.0083	-
B-2	37.8121°	140.5058°		14:05	7.3	1.4	3.4	11.6	19.6	0.10	1.4	5	2.8	0.0011	0.014	-
B-3	37.8182°	140.4679°		13:00	7.5	0.5	2.4	13.0	8.7	0.05	1.0	1	1.0	N.D.(0.0012)	0.0039	-

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>

Items Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential	Water content	IL	TOC	Soil particle density	Grain size distribution								Cs-134	Cs-137	Sr-90
	Latitude	Longitude	Date	Time (sediment)		E _h (mV)	(%)	(%)	(mg/g-dry)	(g/cm ³)	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)	(Bq/kg-dry)	(Bq/kg-dry)	(Bq/kg-dry)
A-1	37.6210°	140.5218°	2018/12/7	09:19	7.5	26	70.7	14.1	44.9	2.510	0.0	0.0	1.4	4.7	41.3	52.6	0.0043	0.85	160	1800	0.66
A-2	37.5673°	140.3946°		10:50	7.2	319	18.6	1.6	1.9	2.711	45.8	33.3	16.6	2.0	2.3		1.9	9.5	9.5	140	-
B-2	37.8121°	140.5058°		14:20	7.5	287	25.1	1.6	2.7	2.733	0.1	1.8	67.9	28.4	1.8		0.31	4.8	14	160	-
B-3	37.8182°	140.4679°		13:10	7.6	320	17.7	0.9	1.2	2.677	36.1	39.1	22.9	1.3	0.6		1.5	9.5	4.3	51	-

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°	2018/12/1	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	27	0.42	Immature fish, Mature fish	-	-	6.7	N.D.(1.3)	6.7	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Opsarichthys platypus</i>	Pale chub	4	0.013	Immature fish	-	-	3.9	N.D.(3.0)	3.9	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Carassius auratus</i>	Carassius auratus langsdorffii	6	2.0	Mature fish	Obscure digesta	Viscera removed	4.0	N.D.(1.3)	4.0	0.36
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	149	2.3	Immature fish	-	-	3.0	N.D.(1.1)	3.0	0.27
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	4	3.7	Mature fish	Obscure digesta	Viscera removed	3.7	N.D.(1.1)	3.7	0.35
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	2	2.2	Mature fish	Fish	Viscera removed	9.7	N.D.(1.2)	9.7	0.25
A-2	Harase River	37.5673°	140.3946°	2018/12/2	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish	2	4.3	Mature fish	Fish, Red swamp crawfish	Viscera removed	108.0	8.0	100	0.24
					Arthropoda	Insecta	Ephemeroptera	Ephemeridae	<i>Ephemera strigata</i>	Mont mayfly	142	0.010	Larva	-	-	23	N.D.(4.2)	23	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	234	0.071	Larva	-	-	14.3	1.3	13	-
					Arthropoda	Insecta	Odonata	Cordulidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	89	0.034	Larva (Dragonfly larva)	-	-	17	N.D.(1.8)	17	-
					Arthropoda	Insecta	Odonata	Cordulegastridae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii									
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Meligomphus viridicostus</i>	Meligomphus viridicostus									
					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									
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	30	0.014	Imago	-	Molluscan part	5.8	N.D.(3.5)	5.8	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	9	0.12	Immature fish	-	-	14.1	1.1	13	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Opsarichthys platypus</i>	Pale chub	15	0.040	Immature fish	-	-	6.8	N.D.(1.4)	6.8	-
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2018/12/5	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	2	3.1	Mature fish	Obscure digesta	Viscera removed	4.8	N.D.(1.2)	4.8	0.27
B-3	Surikami River	37.8182°	140.4679°	2018/12/1	Arthropoda	Insecta	Ephemeroptera	Ephemeridae	<i>Ephemera strigata</i>	Mont mayfly	654	0.046	Larva	-	-	12.3	1.3	11	-
					Arthropoda	Insecta	Plecoptera	Perlidae	<i>Kamimura tibialis</i>	Kamimura tibialis	107	0.0053	Larva	-	-	N.D.	N.D.(5.4)	N.D.(4.8)	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	325	0.097	Larva	-	-	9.87	0.87	9.0	-
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Prototermes grandis</i>	Prototermes grandis	27	0.023	Larva	-	-	2.8	N.D.(1.9)	2.8	-
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	30	0.0075	Imago	-	Molluscan part	17	N.D.(4.2)	17	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	<i>Cottus pollux</i>	Japanese fluvial sculpin	11	0.042	Immature fish	-	-	2.2	N.D.(1.9)	2.2	-

*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.