

**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>

Locations	General items		Radioactive materials			
	Water	Sediment	Water (Cs)	Water (Sr)	Sediment (Cs)	Sediment (Sr)
A-1	○	○	○	○	○	○
A-2	○	○	○	-	○	-
B-1	○	○	○	-	○	-
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°	2016/12/9	09:01	09:25	6.0	8.6	Sand with sediment	2.5Y3/1	None	5.80	>50 (1.9m)*
A-1(Bottom layer)				08:50		5.9						
A-2	37.5673°	140.3946°		10:54	11:05	6.4	6.8	Sand with gravel	2.5Y4/3	None	0.78	>50
B-1	37.7843°	140.4924°		15:31	15:53	7.3	8.4	Sediment with sand	2.5Y4/2	Plant pieces a little	0.28	>50
B-2	37.8121°	140.5058°		14:27	14:41	8.7	11.5	Sand	2.5Y4/3	None	0.33	>50
B-3	37.8182°	140.4679°		13:23	13:35	9.0	9.0	Sand with gravel	2.5Y4/2	None	0.40	>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°	2016/12/9	09:01	7.4	1.9	3.3	12.4	19.5	0.10	1.3	3	2.6	0.0010	0.0069	0.00090
A-1(Bottom layer)				08:50	7.5	2.0	3.2	12.4	19.9	0.10	1.4	3	2.7	0.0026	0.013	-
A-2	37.5673°	140.3946°		10:54	7.5	0.8	2.0	12.7	11.5	0.06	0.7	2	1.0	0.0012	0.0082	-
B-1	37.7843°	140.4924°		15:31	7.6	1.6	3.3	12.8	20.6	0.11	1.3	4	3.3	0.0017	0.0098	-
B-2	37.8121°	140.5058°		14:27	7.6	1.2	3.0	12.6	17.2	0.09	1.2	4	3.0	0.0011	0.0064	-
B-3	37.8182°	140.4679°		13:23	7.6	0.6	2.7	11.8	8.3	0.04	1.2	2	2.2	0.0023	0.011	-

<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 <sub>NHE</sub> (mV)	Water content (%)	IL (%)	TOC (mg/g-dry)	Soil particle density (g/cm <sup>3</sup> )	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°	2016/12/9	09:25	7.2	59	66.0	10.6	32.9	2.562	0.0	0.4	2.6	21.4	36.9	38.7	0.011	2.0	300	1800	0.52
A-2	37.5673°	140.3946°		11:05	7.3	287	20.9	1.8	2.8	2.747	29.3	37.8	24.6	5.1	0.8	2.4	1.3	9.5	34	220	-
B-1	37.7843°	140.4924°		15:53	7.4	217	45.9	3.6	9.2	2.710	9.2	4.7	13.0	46.1	14.8	12.2	0.16	9.5	63	400	-
B-2	37.8121°	140.5058°		14:41	7.2	264	31.5	2.1	2.4	2.703	0.0	0.9	69.2	26.5	0.0	3.4	0.32	2.0	27	150	-
B-3	37.8182°	140.4679°		13:35	7.4	302	20.0	1.2	2.2	2.694	32.4	35.8	27.4	2.4	0.2	1.8	1.3	9.5	28	150	-

<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°	2016/12/2	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.052	-	-	-	180	30	150	-	
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	76	0.018	Larva	-	-	-	26.3	4.3	22	-
					Arthropoda	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	68	0.045	Larva (Dragonfly larva)	-	-	-	17.8	2.8	15	-
					Arthropoda	Insecta	Odonata	Cordulegastriidae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	Melligomphus viridicostus										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae										
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Davidius sp.</i>	Davidius	498	0.13	Imago	-	-	-	16.6	2.6	14	-
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Asiagomphus melaenops</i>	Asiagomphus melaenops										
					Arthropoda	Malacostraca	Decapoda	Atyidae	<i>Neocaridina sp.</i>	Neocaridina	29	0.024	Imago	-	-	Molluscos part	16.9	2.9	14	-
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	28	0.081	Immature fish	Obscure digesta	Viscera removed	9.3	1.3	8.0	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Nipponocypris temminckii</i>	Dark chub	32	0.022	Immature fish	-	-	-	10.9	1.7	9.2	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	2	0.017	Imago	-	-	-	20.6	2.6	18	-
					Vertebrata	Amphibia	Caudata	Salamandridae	<i>Cynops pyrrhogaster</i>	Cynops pyrrhogaster	-	0.28	-	-	-	-	26.7	3.7	23	-
					Particulate Organic Matter	-	-	-	-	-	-	-	-	Bottom fallen leaves	-	-	-	-	-	-
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2016/12/8	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	2	3.1	Mature fish	Amorphous Residue	Viscera removed	15.1	2.1	13	-	
B-3	Surikami River	37.8182°	140.4679°	2016/12/2	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.039	-	-	-	125	15	110	-	
					Arthropoda	Insecta	Ephemeroptera	Ephemeridae	<i>Ephemera sp.</i>	Ephemera	203	0.013	Larva	-	-	-	30.3	4.3	26	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	272	0.068	Larva	-	-	-	30.5	4.5	26	-
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	Protohermes grandis	11	0.0075	Larva	-	-	-	N.D.	N.D.(4.8)	N.D.(4.1)	-
					Arthropoda	Malacostraca	Decapoda	Cambaridae	<i>Procambarus clarkii</i>	Red swamp crawfish	2	0.0083	Imago	-	-	-	9.2	N.D.(4.7)	9.2	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	<i>Cottus pollux</i>	Japanese fluvial sculpin	7	0.092	Immature fish	Obscure digesta	Viscera removed	4.15	0.65	3.5	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	4	0.039	Immature fish	Obscure digesta	Viscera removed	7.9	1.2	6.7	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Zacco platypus</i>	Pale chub	34	0.53	Immature fish, Mature fish	Obscure digesta	Viscera removed	8.21	0.91	7.3	-	
					Vertebrata	Amphibia	Anura	-	-	Frog	2	0.0068	Imago	-	-	-	5.2	N.D.(4.2)	5.2	-
					Particulate Organic Matter	-	-	-	-	-	-	-	-	Bottom fallen leaves	-	-	-	-	-	28.8

\*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.