

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 >

Items 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 >

Items 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	Odor	Contaminants	Water depth (m)	Transparency (cm)	
A-1 (Surface layer)	37.621167°	140.522083°	2013/12/3	9:18	9:28	6.6	6.8	Sand	2.5Y4/3	None	Leaves, pebbles	6.1	>50	
A-1 (Deep layer)				9:03	6.7	7.9	6.7	Sand	2.5Y4/3	None	Small pebbles, Semisulcoospora	0.88	(2.5m)*	
A-2	37.565450°	140.394383°		10:55	11:08	7.9	7.9	Sand	2.5Y4/3	None	Some plant fragments	0.21	>50	
B-1	37.784150°	140.492083°		14:23	14:32	8.2	8.8	Fine sand	2.5Y4/4	None	None	0.31	>50	
B-2	37.812000°	140.505800°		13:37	13:42	8.7	9.5	Fine sand	2.5Y4/4	None	None	0.21	>50	
B-3	37.816350°	140.471933°		12:51	12:58	9.8	9.3	Sand	2.5Y4/2	None	Pebbles	0.53	>50	

* The numbers in () indicates the degree of transparency

< 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 (mg/L)	COD (mg/L)	DO (mg/L)	Electrical 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												
A-1 (Surface layer)	37.621167°	140.522083°	2013/12/3	9:18	7.6	0.5	2.9	12.5	19.1	0.09	1.3	2	1.3	0.0061	0.015	0.00095
A-1 (Deep layer)				9:03	7.6	0.6	2.8	12.2	20.2	0.10	1.3	2	1.4	0.0056	0.011	—
A-2	37.565450°	140.394383°		10:55	7.6	<0.5	1.7	12.5	11.4	0.06	0.7	2	1.0	0.023	0.057	—
B-1	37.784150°	140.492083°		14:23	8.1	<0.5	2.6	13.9	19.6	0.10	1.2	3	1.8	0.0054	0.013	—
B-2	37.812000°	140.505800°		13:37	7.9	<0.5	2.7	13.5	17.3	0.09	1.2	3	1.9	0.0090	0.021	—
B-3	37.816350°	140.471933°		12:51	7.7	<0.5	2.6	12.1	7.7	0.04	1.2	1	1.1	0.0035	0.0078	—

< 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 E _h (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							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	37.621167°	140.522083°	2013/12/3	9:28	7.5	160	21.0	0.9	<1	2.702	12.6	46.4	33.7	4.3	1.4	1.6	1.0	19	86	190	N.D.(<0.16)
A-2				37.565450°	140.394383°	11:08	7.3	131	25.0	2.4	3	2.696	16.4	60.6	20.7	1.1	0.5	0.7	1.2	9.5	95
B-1	37.784150°	140.492083°		14:32	7.6	126	31.1	2.6	4	2.726	7.5	18.6	24.5	37.7	4.6	7.1	0.25	19	200	480	—
B-2	37.812000°	140.505800°		13:42	7.5	128	30.2	1.5	<1	2.752	0	0.7	63.2	28.4	3.9	3.8	0.29	2	87	230	—
B-3	37.816350°	140.471933°		12:58	7.5	119	23.9	1.4	<1	2.682	31.4	44.8	20.0	1.7	1.2	0.9	1.4	9.5	120	280	—

Note) N.D. means to be below the detection limit.

<Locations A and B along the Abukuma River: Survey items Aquatic organisms >

Location	Latitude and longitude of the location		Sampling Date	Division	Class	Order	Family	Species name	English name	Population	Sample weight (kg-wet)	Note		Cs-134 (Bq/kg-wet)	Cs-137 (Bq/kg-wet)	Sr-90 (Bq/kg-wet)	
	Latitude	Longitude										Growth stage	Stomach contents				
A-2 (Harase River)	37.565450°	140.394383°	2013/12/6	Algae/plant	—	—	—	—	Attached algae	—	0.099	—	—	84	200	—	
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	269	0.064	Larva	—	—	13	28	—
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche sauteri</i>	Parastenopsyche sauteri	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Cordulegastriidae	<i>Anotogaster sieboldii</i>	<u>Anotogaster sieboldii</u>	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Asiagomphus melanocephalus</i>	Asiagomphus melanocephalus	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius nanus</i>	Davidius nanus	82	0.059	Larva	—	—	18	39	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius sp.</i>	Davidius	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	Onychogomphus viridicostus	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Aeshnidae	<i>Anax parthenope julius</i>	Anax parthenope	—	—	—	—	—	—	—	—
				Arthropod	Malacostraca	Malacostraca	Atyidae	<i>Neocaridina sp.</i>	Neocaridina sp.	998	0.13	Imago	—	—	11	26	—
				Mollusca	Gastropoda	Sorbocoencha	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	69	0.12	Imago	—	—	5.4	13	—
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagoskii steindachneri</i>	Amur Minnow	20	0.25	3-year-old fish	—	—	8.9	22	—
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	3	0.048	2-year-old fish	Some (details unknown)	—	13	32	—
				Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	35	0.035	Imago	—	—	6.3	16	—
				Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	6	0.23	1-year-old fish	Aquatic insects	—	11	27	—
				Vertebrata	Amphibia	Anura	—	—	—	21	0.015	Larva	—	—	100	230	—
				Vertebrata	Amphibia	Caudata	Salamandridae	<i>Cynops pyrrhogaster</i>	Cynops pyrrhogaster	10	0.069	Imago	—	—	5.9	14	—
				B-2	37.812000°	140.505800°	2013/12/10	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	1	1.5	5-year-old fish	Some (details unknown)
B-3 (Surikami River)	37.816350°	140.471933°	2013/12/7	Algae/plant	—	—	—	—	Attached algae	—	0.097	—	—	38	96	—	
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	274	0.012	Young larva	—	—	42	110	—
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	329	0.067	Oldest larva	—	—	15	35	—
				Arthropod	Insecta	Megaloptera	Corydalidae	<i>Parachauliodes continentalis</i>	Parachauliodes continentalis Weele	67	0.073	Larva	—	—	3.2	7.7	—
				Arthropod	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	<u>Protohermes grandis</u>	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius nanus</i>	Davidius nanus	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius sp.</i>	Davidius	47	0.014	Larva	—	—	22	51	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	Onychogomphus viridicostus	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sinogomphus flavolimbatus</i>	Sinogomphus flavolimbatus	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	—	—	—	—	—	—	—	—
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	10	0.31	3-year-old fish	—	—	13	31	—
Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	2	0.13	2-year-old fish	Aquatic insects	—	32	77	—				
				Coarse particulate organic matters	—	—	—	—	CPOMs (fallen leaves)	—	0.50	—	—	22	54	—	

Note 1) When multiple types of aquatic organisms were collected, a sample was prepared by mixing them.

Note 2) For species with stomach contents as indicated in the note column, all stomach contents were removed for conducting the analysis.

Note 3) Underlined names in the English name column indicate species largest in number in the respective samples.

Note 4) A statement in red in the "Growth stage" column shows the age assessed based on squama or otolith.

Note 5) N.D. means to be below the detection limit.