

◦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	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	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)	37.62063°	140.52205°	2014/8/26	9:28	9:44	23.2	23.9	Sediment with sand	2.5Y4/3	Leaves	7.1	28.0 (0.7m)*
A-1 (Deep layer)	37.62063°	140.52205°		9:11		23.2						
A-2	37.56542°	140.39438°		11:30	11:47	20.9	21.3	Sediment with sand	2.5Y3/3	Plant	0.81	35.0
B-1	37.78475°	140.49213°		16:00	16:08	23.3	23.2	Sediment with sand	2.5Y5/2	Plant	0.57	27.5
B-2	37.81195°	140.50575°		14:48	14:58	22.3	22.0	Sand	2.5Y5/4	Pebbles	0.78	37.0
B-3	37.81630°	140.47173°		13:45	13:05	20.5	20.5	Sand	2.5Y4/4	Pebbles	0.61	>50.0

\* 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	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)	37.62063°	140.52205°	2014/8/26	9:28	7.5	1.1	4.7	8.9	14.1	0.08	1.7	16	4.1	0.028	0.076	0.00099
A-1 (Deep layer)	37.62063°	140.52205°		9:11	7.5	1.3	5.7	9.3	14.1	0.08	1.8	18	5.3	0.028	0.078	—
A-2	37.56542°	140.39438°		11:30	7.2	1.2	4.8	8.6	16.6	0.06	1.8	16	3.9	0.030	0.087	—
B-1	37.78475°	140.49213°		16:00	7.6	0.8	5.7	8.7	13.6	0.07	1.9	20	6.7	0.037	0.11	—
B-2	37.81195°	140.50575°		14:48	7.5	1.0	4.1	9.0	12.9	0.07	1.6	14	3.8	0.043	0.12	—
B-3	37.81630°	140.47173°		13:45	7.5	0.6	4.5	9.4	8.2	0.05	1.7	4	1.9	0.017	0.049	—

<Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Sediment >

Items	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							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	37.62063°	140.52205°	2014/8/26	9:44	7.3	198	60.1	11.4	33.2	2.578	0.0	0.2	0.6	14.8	25.2	59.2	—	2	840	2,600	0.64
A-2	37.56542°	140.39438°		11:47	6.9	263	36.7	5.6	13.0	2.680	0.8	13.5	45.0	16.4	10.2	14.1	0.33	9.5	230	700	—
B-1	37.78475°	140.49213°		16:08	7.2	191	19.8	2.0	1.8	2.743	40.4	18.2	14.9	18.5	3.3	4.7	1.4	19	97	310	—
B-2	37.81195°	140.50575°		14:58	7.2	234	23.2	1.4	1.0	2.786	1.7	3.3	69.0	23.5	1.0	1.5	0.34	9.5	57	150	—
B-3	37.81630°	140.47173°		13:05	7.3	245	21.5	1.5	1.7	2.678	30.9	31.4	32.7	3.0	0.8	1.2	1.1	19	66	180	—

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. 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	Measurement site							
A-2	Harase River	37.56542°	140.39438°	2014/8/28	Algae/plant	—	—	—	River bottom materials (incl. algae)	Considerable number	0.056	—	—	—	54	160	—				
					Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	82	0.028	Larva	—	—	—	13	44	—		
					Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius Albaridae</i>	Albardae	54	0.027	Larva (dragonfly larva)	—	—	—	6.7	15	—		
					Arthropod	Malacostraca	Decapoda	Atyidae	<i>Neocaridina sp.</i>	Neocaridina sp.	753	0.13	Imago	—	—	—	8.1	26	—		
					Mollusca	Gastropoda	Sorbeoconcha	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	66	0.11	Imago	—	—	—	6.4	19	—		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Nipponocypris temminckii</i>	Dark chub	46	0.42	Mature fish (2-year-old)	Some (details unknown)	—	—	—	4.2	14	—	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	21	0.057	Mature fish (1-year-old)	Some (details unknown)	—	—	—	3.6	9.3	—	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	3	0.048	Mature fish (1-year-old)	Some (details unknown)	—	—	—	8.6	24	—	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Zacco platypus</i>	Pale chub	19	0.31	Mature fish (2-year-old)	Some (details unknown)	—	—	—	4.5	14	—	
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	43	0.080	Mature fish	—	—	—	3.8	11	—		
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	12	0.23	Immature fish (1-year-old)	Aquatic insects	—	—	—	5.9	17	—	
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	1	0.13	Mature fish (2-year-old)	Weatherfish	—	—	—	7.5	25	—	
					Vertebrata	Amphibia	Anura	—	—	Frogs	35	0.021	Larva (tadpoles)	—	—	—	6.7	190	—		
					Vertebrata	Amphibia	Anura	Ranidae	<i>Rana porosa porosa</i>	Pelophylax porosus porosus	8	0.031	Imago	—	—	—	18	54	—		
					Vertebrata	Amphibia	Caudata	Salamandridae	<i>Cynops pyrrhogaster</i>	Daruma pond frog	4	0.036	Imago	—	—	—	5.1	14	—		
									Coarse particulate organic matters	—	—	—	fallen leaves	Considerable number	0.48	—	—	—	46	130	—
B-2	Abukuma River mainstream	37.81195°	140.50575°	2014/8/5	Vertebrata	Osteichthyes	Osmeriformes	Osmeridae	<i>Plecoglossus altivelis</i>	Sweetfish	30	0.68	Immature fish	Some (details unknown)	—	—	4.2	12	—		
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	2	0.37	Mature fish (2-year-old)	Some (details unknown)	—	—	4.8	14	—		
				2014/8/7	Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	3	1.3	Mature fish (3-year-old)	—	—	—	13	39	0.27		
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus salmoides</i>	Largemouth bass	1	0.24	Mature fish (2-year-old)	Some (details unknown)	—	—	7.1	20	—		
				2014/8/25	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish	2	1.0	Mature fish	Coleopteran	—	—	6.8	21	—		
					Vertebrata	Osteichthyes	Osmeriformes	Osmeridae	<i>Plecoglossus altivelis</i>	Sweetfish	30	1.1	Immature fish	Some (details unknown)	—	—	4.7	14	—		
				2014/9/4	Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	2	0.23	Mature fish	Fish	—	—	6.9	22	—		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	2	2.8	Mature fish (6-year-old)	Some (details unknown)	—	—	9.2	25	0.33		
2014/9/6	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i>	Common carp	1	4.0	Mature fish (9-year-old)	Some (details unknown)	—	—	13	38	0.30						
	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	5	1.4	Mature fish (4-year-old)	Some (details unknown)	—	—	7.1	21	0.26						
B-3	Surikami River	37.81630°	140.47173°	2014/8/29	Algae/plant	—	—	—	River bottom materials (incl. algae)	Considerable number	0.059	—	—	—	39	110	—				
					Angiospermae	Monocotyledonae	Alismatales	Potamogetonaceae	<i>Potamogeton crispus</i>	Curly-leaf pondweed	Considerable number	0.38	—	—	—	—	7.3	23	—		
					Arthropoda	Insecta	Ephemeroptera	Isonychidae	<i>Isonychia japonica</i>	Isonychidae	101	0.0078	Larva	—	—	—	17	50	—		
					Arthropod	Insecta	Ephemeroptera	Heptageniidae	<i>Heptageniidae</i>	Heptageniidae	431	0.0086	Larva	—	—	—	N.D.(4.1)	12	—		
					Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	256	0.0092	Larva	—	—	—	41	120	—		
					Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	530	0.040	Larva	—	—	—	32	93	—		
					Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius Albaridae</i>	Albardae	81	0.042	Larva (dragonfly larva)	—	—	—	N.D.(1.7)	5.3	—		
					Arthropod	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	Protohermes grandis	30	0.022	Larva	—	—	—	4.3	12	—		
					Arthropod	Malacostraca	Decapoda	Procambarus	<i>Procambarus clarckii</i>	Red swamp crawfish	2	0.045	Imago	—	—	—	7.6	20	—		
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	<i>Cottus polux</i>	Japanese fluvial sculpin	2	0.043	Mature fish (2-year-old)	Aquatic insects	—	—	2.7	6.8	—		
					Vertebrata	Osteichthyes	Osmeriformes	Osmeridae	<i>Plecoglossus altivelis</i>	Sweetfish	11	0.41	Immature fish	Some (details unknown)	—	—	5.1	15	—		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Nipponocypris temminckii</i>	Dark chub	16	0.22	Mature fish (2-year-old)	Algae	—	—	3.3	10	—		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	8	0.075	Mature fish (2-year-old)	Some (details unknown)	—	—	5.1	15	—		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	7	0.40	Mature fish	Some (details unknown)	—	—	9.3	28	—		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Zacco platypus</i>	Pale chub	5	0.056	Mature fish (2-year-old)	Some (details unknown)	—	—	—	5.3	16	—	
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	19	0.044	Mature fish	—	—	—	2.6	8.4	—		
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	33	0.44	Immature fish (under 1-year-old)	Aquatic insects	—	—	2.5	7.3	—		
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	15	0.49	Immature fish (1-year-old)	Fish, aquatic insects	—	—	—	4.2	12	—	
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	2	0.21	Mature fish (2-year-old)	Aquatic insects	—	—	—	9.6	28	—	
					Vertebrata	Actinopterygii	Siluriformes	Bagridae	<i>Pseudobagrus tokiensis</i>	Cut-tailed bullhead	3	0.31	Mature fish	Some (details unknown)	—	—	—	3.6	11	—	
					Vertebrata	Amphibia	Anura	—	—	Frogs	42	0.028	Larva (tadpoles)	—	—	—	6.8	200	—		
					Vertebrata	Amphibia	Anura	Rana	<i>Rana catesbeiana</i>	American Bullfrog	2	0.030	Imago	—	—	—	13	34	—		
					Vertebrata	Amphibia	Anura	Ranidae	<i>Rana rugosa</i>	Wrinkled Frog	4	0.023	Imago	—	—	—	7.7	21	—		
									Coarse particulate organic matters	—	—	—	Fallen leaves	Considerable number	0.64	—	—	—	31	89	—
					2014/9/23	Vertebrata	Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	1	1.9	Mature fish	Fish	—	—	—	30	87	0.29

\*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 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: A statement in red in the "Growth stage" column shows the age assessed based on squama or otolith

\*6: Plankton (suspended algae) is the residue remaining after the filtration of lake water or seawater with a plankton net (40µm-mesh).

\*7: 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.

\*8: N.D. means to be below the detection limit and figures in parentheses show the detection limit.

\*9: Activity concentrations include counting errors, but the details are omitted here.