○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-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	Contaminants	Water depth (m)	Transparency (cm)
A-1(Surface layer)	37.6210°	140.5218°	2017/8/30	09:55	10:22	24.0	23.1	Silt	2.5Y3/3	Plant pieces	6.40	>50 (1.2m)*
A-1(Bottom layer)				09:37		24.2						
A-2	37.5673°	140.3946°		12:25	12:35	20.2	20.0	Sand with silt	2.5Y4/3	Plant pieces	0.87	>50
B-2	37.8121°	140.5058°		15:36	15:40	21.6	21.2	Sand	2.5Y4/4	None	0.50	>50
B-3	37.8182°	140.4679°		14:27	14:35	19.1	20.1	Sand	2.5Y3/3	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>

Items / 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°	2017/8/30	09:55	7.4	0.8	4.0	8.5	16.2	0.09	1.6	8	3.3	0.0025	0.021	0.0012
A-1(Bottom layer)				09:37	7.4	1.1	5.0	8.5	16.5	0.10	1.9	11	4.6	0.0043	0.033	-
A-2	37.5673°	140.3946°		12:25	7.2	0.6	3.4	9.7	10.8	0.06	1.2	7	2.8	0.0033	0.025	-
B-2	37.8121°	140.5058°		15:36	7.3	0.8	3.7	8.8	14.2	0.08	1.6	8	3.6	0.0032	0.022	-
B-3	37.8182°	140.4679°		14:27	7.4	<0.5	3.5	10.0	8.2	0.05	1.4	4	1.8	0.0020	0.016	-

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 $E_{N.H.E}$ (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)
											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)			
	Latitude	Longitude	Date	Time (sediment)																	
A-1	37.6210°	140.5218°	2017/8/30	10:22	7.2	201	69.9	13.6	42.5	2.548	0.0	0.1	0.2	11.3	45.7	42.7	0.0091	2.0	250	1900	0.71
A-2	37.5673°	140.3946°		12:35	7.1	298	35.3	4.0	5.4	2.702	2.7	10.4	55.2	15.5	6.3	9.9	0.38	9.5	42	340	-
B-2	37.8121°	140.5058°		15:40	7.3	362	28.6	2.1	2.4	2.710	3.9	2.3	58.5	29.8	2.0	3.5	0.31	19	27	200	-
B-3	37.8182°	140.4679°		14:35	7.3	300	17.5	1.4	1.4	2.688	42.5	36.9	18.9	1.1	0.0	0.6	1.7	19	10	85	-

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-2	Harase River	37.5673°	140.3946°	2017/8/19	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.021	-	-	-	128	18	110	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	25	0.017	Larva (Dragonfly larva)	-	-	33.9	3.9	30	-
					Arthropoda	Insecta	Odonata	Cordulegastridae	*Anotogaster sieboldii*	Anotogester sieboldii									
					Arthropoda	Insecta	Odonata	Gomphidae	*Onychogomphus viridicostus*	Melligomphus viridicostus									
					Arthropoda	Insecta	Odonata	Gomphidae	*Sieboldius albardae*	Sieboldius albardae									
					Arthropoda	Insecta	Odonata	Gomphidae	*Davidius sp.*	Davidius									
					Arthropoda	Insecta	Odonata	Gomphidae	*Asiagomphus melaenops*	Asiagomphus melaenops									
					Arthropoda	Malacostraca	Decapoda	Atyidae	*Neocaridina sp.*	Neocaridina	191	0.043	Juvenile,Imago	-	-	11.8	1.8	10	-
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	*Semisulcospira libertina*	Semisulcospira libertina	30	0.028	Imago	-	Molluscous part	13.9	1.9	12	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur Minnow	11	0.054	Immature fish,Mature fish	-	-	7.3	1.0	6.3	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	16	0.19	Immature fish,Mature fish	-	-	10.2	1.3	8.9	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Zacco platypus*	Pale chub	1	0.0044	Immature fish	-	-	11	N.D.(6.0)	11	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Nipponocypris temminckii*	Dark chub	21	0.20	Immature fish	-	-	7.7	1.0	6.7	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	19	0.098	Immature fish,Mature fish	-	-	9.79	0.79	9.0	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Noemacheilus barbatulus*	Stone loach	12	0.068	Immature fish	-	-	7.33	0.93	6.4	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	8	0.15	Immature fish	-	-	9.63	0.93	8.7	-
					Vertebrata	Amphibia	Anura	-	-	Frog	5	0.0035	Larva (Tadpole)	-	-	95	17	78	-
					Vertebrata	Amphibia	Anura	Ranidae	*Rana rugosa*	Wrinkled Frog	10	0.052	Imago	-	-	17.0	2.0	15	-
					Vertebrata	Amphibia	Anura	Ranidae	*Rana porosa porosa*	Tokyo Daruma pond frog									
					Vertebrata	Amphibia	Anura	Ranidae	*Rana japonica*	Japanese Brown Frog									
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.24	-	-	-	33.2	4.2	29	-
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2017/8/18	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	1	0.48	Mature fish	Obscure digesta	Viscera removed	7.45	0.95	6.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Hemibarbus barbus*	Hemibarbus barbus	3	4.3	Mature fish	Obscure digesta	Viscera removed	10.8	1.1	9.7	0.42
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis*	Sweetfish	102	3.5	Immature fish,Mature fish	-	-	25.1	3.1	22	0.13
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	2	2.2	Mature fish	Fish	Viscera removed	26.2	3.2	23	0.27
					Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	*Ictalurus punctatus*	Channel catfish	3	5.0	Immature fish,Mature fish	Ephoron shigae	Viscera removed	27.5	2.5	25	0.18
					Vertebrata	Osteichthyes	Siluriformes	Siluridae	*Silurus asotus*	Amur catfish	1	1.0	Mature fish	Empty stomach	Viscera removed	24.9	2.9	22	0.33
B-3	Surikami River	37.8182°	140.4679°	2017/8/25	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.012	-	-	-	60.0	8.0	52	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	197	0.056	Larva	-	-	32.4	4.4	28	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	88	0.046	Larva (Dragonfly larva)	-	-	3.9	N.D.(1.3)	3.9	-
					Arthropoda	Insecta	Odonata	Gomphidae	*Onychogomphus viridicostus*	Melligomphus viridicostus									
					Arthropoda	Insecta	Odonata	Gomphidae	*Sieboldius albardae*	Sieboldius albardae									
					Arthropoda	Insecta	Odonata	Gomphidae	*Davidius sp.*	Davidius									
					Arthropoda	Insecta	Megaloptera	Corydalidae	*Protohermes grandis*	Protohermes grandis	12	0.0089	Larva	-	-	N.D.	N.D.(4.6)	N.D.(3.9)	-
					Arthropoda	Insecta	Megaloptera	Corydalidae	*Parachauliodes japonicus*	Parachauliodes japonicus									
					Arthropoda	Malacostraca	Decapoda	Cambaridae	*Procambarus clarkii*	Red swamp crawfish	1	0.011	Imago	-	-	6.5	N.D.(3.2)	6.5	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	*Cottus pollux*	Japanese fluvial sculpin	7	0.067	Immature fish	-	-	3.1	N.D.(1.2)	3.1	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur Minnow	16	0.13	Immature fish,Mature fish	-	-	12.5	1.5	11	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	10	0.33	Immature fish,Mature fish	Obscure digesta	Viscera removed	13.8	1.8	12	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Nipponocypris temminckii*	Dark chub	12	0.068	Immature fish,Mature fish	-	-	7.29	0.79	6.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	38	0.079	Immature fish,Mature fish	-	-	9.3	1.5	7.8	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Noemacheilus barbatulus*	Stone loach	48	0.26	Immature fish	-	-	5.28	0.48	4.8	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	2	0.24	Mature fish	Stenopsyche marmorata	Viscera removed	12.4	1.4	11	-
					Vertebrata	Osteichthyes	Siluriformes	Bagridae	*Pseudobagrus tokiensis*	Cut-tailed bullhead	3	0.019	Immature fish	-	-	3.8	N.D.(2.5)	3.8	-
					Vertebrata	Amphibia	Anura	-	-	Frog	9	0.0092	Larva (Tadpole)	-	-	58.9	7.9	51	-
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.17	-	-	-	40.7	4.7	36	-

*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.