○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°	2020/7/3	09:20	09:34	24.0	24.0	Silt	5Y3/2	None	7.00	38 (0.7m)*
A-1(Bottom layer)				09:05								
A-2	37.5673°	140.3946°		11:10	11:25	22.9	23.0	Gravel	10YR4/6	None	0.56	>50
B-2	37.8121°	140.5058°		14:50	15:10	25.3	25.4	Sand	10YR3/4	None	0.60	35
B-3	37.8182°	140.4679°		13:40	13:50	22.4	22.7	Sand with gravel	10YR3/4	None	0.58	>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°	2020/7/3	09:20	7.1	1.2	5.5	8.2	16.0	0.06	2.6	16	7.5	0.0022	0.036	0.0011
A-1(Bottom layer)				09:05	7.2	1.5	6.2	8.3	16.1	0.08	2.5	23	9.3	N.D.(0.0016)	0.030	-
A-2	37.5673°	140.3946°		11:10	7.3	0.7	3.2	9.4	13.0	0.06	1.2	6	3.0	N.D.(0.0015)	0.022	-
B-2	37.8121°	140.5058°		14:50	7.3	0.9	5.0	8.8	15.2	0.09	2.2	14	6.9	N.D.(0.0013)	0.024	-
B-3	37.8182°	140.4679°		13:40	7.6	<0.5	2.7	10.7	9.3	0.05	1.2	2	1.4	N.D.(0.0015)	0.0062	-

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°	2020/7/3	09:34	7.4	42	30.5	3.3	9.8	2.708	0.0	0.7	39.4	34.2	13.5	12.2	0.21	9.5	9.4	170	0.18
A-2	37.5673°	140.3946°		11:25	7.2	411	18.3	1.5	2.5	2.707	40.5	35.6	19.1	3.1	1.7		1.6	4.8	5.9	110	-
B-2	37.8121°	140.5058°		15:10	7.2	407	25.6	1.6	2.9	2.657	0.0	0.7	50.5	45.8	1.5	1.5	0.25	4.8	5.6	85	-
B-3	37.8182°	140.4679°		13:50	7.3	448	21.2	1.6	2.5	2.672	19.1	37.8	37.0	4.4	1.7		0.99	9.5	3.7	55	-

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
		Latitude	Longitude										Growth stage	Stomach contents	Measurement site	Total	Cs-134	Cs-137	(Bq/kg-wet)
A-1	The main stream of the Abukuma River	37.6210°	140.5218°	2020/7/4	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Carassius auratus*	Carassius auratus langsdorfii	1	0.38	Mature fish	Obscure digesta	Viscera removed	3.0	N.D.(0.36)	3.0	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Cyprinus carpio*	Common carp	1	0.42	Immature fish	Obscure digesta	Viscera removed	2.2	N.D.(0.41)	2.2	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Hemibarbus barbus*	Hemibarbus barbus	1	0.73	Mature fish	Obscure digesta	Viscera removed	3.1	N.D.(0.47)	3.1	-
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	1	0.14	Immature fish	Empty stomach	Viscera removed	4.1	N.D.(0.40)	4.1	-
					Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	*Ictalurus punctatus*	Channel catfish	3	1.6	Immature fish	Algae,Chironomus,Common prawn,Protohermes grandis,Terrestrial insect,Stenopsyche marmorata,Plant piece	Viscera removed	4.0	N.D.(0.38)	4.0	0.20
A-2	Harase River	37.5673°	140.3946°	2020/7/4	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.012	-	-	-	74.0	4.0	70	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	24	0.0087	Larva	-	-	23	N.D.(4.3)	23	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	59	0.024	Larva(Dragonfly larva)	-	-	4.2	N.D.(2.0)	4.2	-
					Arthropoda	Insecta	Odonata	Cordulegastridae	*Anotogaster sieboldii*	Anotogester sieboldii									
					Arthropoda	Insecta	Odonata	Gomphidae	*Melligomphus 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	Insecta	Odonata	Aeshnidae	*Boyeria maclachlani*	Boyeria maclachlani									
					Arthropoda	Malacostraca	Decapoda	Atyidae	*Neocaridina sp.*	Neocaridina	147	0.036	Juvenile,Imago	-	-	9.7	N.D.(1.6)	9.7	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur minnow	80	0.49	Immature fish,Mature fish	-	-	9.92	0.42	9.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	12	0.32	Immature fish,Mature fish	Obscure digesta	Viscera removed	19.98	0.98	19	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Opsariichthys platypus*	Pale chub	33	0.24	Immature fish	-	-	9.86	0.56	9.3	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Pseudogobio esocinus esocinus*	Pseudogobio esocinus esocinus	11	0.11	Immature fish	-	-	4.0	N.D.(0.62)	4.0	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Candidia temminckii*	Dark chub	80	0.39	Immature fish,Mature fish	-	-	5.3	N.D.(0.28)	5.3	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	10	0.039	Immature fish,Mature fish	-	-	6.0	N.D.(1.6)	6.0	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Nemacheilus toni*	Stone loach	145	0.98	Immature fish	-	-	4.1	N.D.(0.33)	4.1	0.20
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou masou*	Seema	1	0.27	Immature fish	Worm,Tadpole	Viscera removed	7.71	0.41	7.3	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	1	0.14	Mature fish	Tadpole	Viscera removed	14.84	0.84	14	-
					Vertebrata	Cephalaspidomorphi	Petromyzontiformes	Petromyzontidae	*Lethenteron reissneri*	Far eastern brook lamprey	3	0.012	Ammocoetes(larva)	-	-	N.D.	N.D.(2.3)	N.D.(2.1)	-
					Vertebrata	Amphibia	Anura	-	-	Frog	24	0.028	Larva(Tadpole)	-	-	56.2	2.2	54	-
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.20	-	-	-	10.31	0.81	9.5	-
B-3	Surikami River	37.8182°	140.4679°	2020/7/4	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.0053	-	-	-	37	N.D.(12)	37	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	190	0.021	Larva	-	-	18	N.D.(2.7)	18	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	95	0.034	Larva(Dragonfly larva)	-	-	N.D.	N.D.(1.4)	N.D.(1.3)	-
					Arthropoda	Insecta	Odonata	Gomphidae	*Nihonogomphus viridis*	Nihonogomphus viridis									
					Arthropoda	Insecta	Odonata	Gomphidae	*Sieboldius albardae*	Sieboldius albardae									
					Arthropoda	Insecta	Odonata	Gomphidae	*Davidius sp.*	Davidius									
					Arthropoda	Insecta	Megaloptera	Corydalidae	*Protohermes grandis*	Protohermes grandis	29	0.025	Larva	-	-	N.D.	N.D.(1.7)	N.D.(1.7)	-
					Arthropoda	Malacostraca	Decapoda	Cambaridae	*Procambarus clarkii*	Red swamp crawfish	7	0.12	Imago	-	-	4.2	N.D.(0.65)	4.2	-
					Vertebrata	Osteichthyes	Anguilliformes	Anguillidae	*Anguilla japonica*	Japanese eel	1	0.25	Mature fish	Protohermes	Viscera removed	4.5	N.D.(0.48)	4.5	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	*Cottus pollux*	Japanese fluvial sculpin	62	0.44	Immature fish	-	-	2.4	N.D.(0.30)	2.4	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur minnow	61	0.32	Immature fish,Mature fish	-	-	2.2	N.D.(0.26)	2.2	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	1	0.023	Immature fish	-	-	2.8	N.D.(1.9)	2.8	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Cyprinus carpio*	Common carp	1	1.4	Mature fish	Obscure digesta	Viscera removed	6.3	N.D.(1.1)	6.3	0.47
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Cobitis biwae*	Cobitis biwae	20	0.066	Immature fish,Mature fish	-	-	5.4	N.D.(1.1)	5.4	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	2	0.017	Mature fish	-	-	3.2	N.D.(2.4)	3.2	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Nemacheilus toni*	Stone loach	67	0.66	Immature fish	-	-	2.1	N.D.(0.30)	2.1	-
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis altivelis*	Sweetfish	57	2.3	Mature fish	-	-	8.3	N.D.(0.36)	8.3	0.20
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	4	0.065	Immature fish	Diptera,Baetidae(larva),Midge(larva),Ephemerellidae(larva),Stenopsyche marmorata,Plant piece,Ecdyonurus,Aquatic insect	Viscera removed	1.6	N.D.(0.95)	1.6	-
					Vertebrata	Osteichthyes	Siluriformes	Bagridae	*Tachysurus tokiensis*	Cut-tailed bullhead	2	0.015	Immature fish	Obscure digesta	Viscera removed	4.3	N.D.(3.0)	4.3	-
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.27	-	-	-	8.26	0.36	7.9	-

*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.