○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°	2020/8/26	09:15	09:43	27.2	26.8	Sand	5Y3/2	Plant pieces	5.00	>50 (1.8m)*
A-1(Bottom layer)				08:54		27.1						
A-2	37.5673°	140.3946°		11:42	11:58	25.5	25.8	Gravel	10YR4/6	None	0.60	>50
B-2	37.8121°	140.5058°		15:40	15:58	28.7	27.3	Sand	10YR4/4	None	0.75	>50
B-3	37.8182°	140.4679°		14:05	14:11	25.2	26.9	Gravel with sand	10YR4/4	None	0.50	>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°	2020/8/26	09:15	7.3	1.2	4.4	7.6	17.0	0.09	1.9	4	3.0	N.D.(0.0014)	0.013	0.0011
A-1(Bottom layer)				08:54	7.4	1.2	4.6	7.8	17.5	0.09	1.9	6	3.2	N.D.(0.0015)	0.029	-
A-2	37.5673°	140.3946°		11:42	7.6	0.7	2.9	9.3	11.2	0.06	1.0	4	2.8	N.D.(0.0015)	0.012	-
B-2	37.8121°	140.5058°		15:40	7.6	1.2	4.4	9.4	19.0	0.11	1.6	10	3.7	0.0018	0.026	-
B-3	37.8182°	140.4679°		14:05	8.1	0.7	3.5	10.2	8.9	0.05	1.4	3	1.9	N.D.(0.0015)	0.0042	-

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	Cs-137	Sr-90
											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)															(Bq/kg-dry)	(Bq/kg-dry)	(Bq/kg-dry)
A-1	37.6210°	140.5218°	2020/8/26	09:43	7.4	192	22.9	2.5	5.5	2.696	0.7	19.5	42.1	30.0	4.1	3.6	0.42	4.8	6.5	120	0.17
A-2	37.5673°	140.3946°		11:58	7.3	481	17.6	1.4	2.1	2.773	28.7	40.4	25.5	3.6	1.8		1.3	9.5	1.9	40	-
B-2	37.8121°	140.5058°		15:58	7.3	469	22.1	1.3	1.8	2.762	0.0	0.5	59.4	37.8	2.3		0.28	4.8	4.2	64	-
B-3	37.8182°	140.4679°		14:11	7.4	490	17.0	1.0	1.2	2.646	22.5	58.2	17.5	1.5	0.3		1.4	9.5	1.7	29	-

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°	2020/8/3	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Carassius auratus*	Carassius auratus langsdorfii	5	3.3	Mature fish	Obscure digesta	Viscera removed	2.8	N.D.(0.34)	2.8	0.32
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Hemibarbus barbus*	Hemibarbus barbus	3	1.6	Immature fish,Mature fish	Obscure digesta	Viscera removed	3.2	N.D.(0.27)	3.2	0.24
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	2	0.96	Mature fish	Fish	Viscera removed	7.22	0.62	6.6	0.19
					Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	*Ictalurus punctatus*	Channel catfish	4	4.2	Immature fish,Mature fish	Large brown cicada,Drone beetle	Viscera removed	23	N.D.(1.3)	23	0.25
					Vertebrata	Osteichthyes	Siluriformes	Siluridae	*Silurus asotus*	Amur catfish	1	2.3	Mature fish	Empty stomach	Viscera removed	11.52	0.52	11	0.23
A-2	Harase River	37.5673°	140.3946°	2020/8/2	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.013	-	-	-	76.4	5.4	71	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	46	0.015	Larva	-	-	13	N.D.(3.9)	13	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	103	0.045	Larva(Dragonfly larva)	-	-	5.0	N.D.(2.5)	5.0	-
					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	Libellulidae	*Sympetrum sp.*	Sympetrum									
					Arthropoda	Insecta	Megaloptera	Corydalidae	*Protohermes grandis*	Protohermes grandis	13	0.0055	Larva	-	-	N.D.	N.D.(3.5)	N.D.(2.0)	-
					Arthropoda	Malacostraca	Decapoda	Cambaridae	*Procambarus clarkii*	Red swamp crawfish	5	0.016	Juvenile	-	-	14	N.D.(4.0)	14	-
					Arthropoda	Malacostraca	Decapoda	Potamidae	*Geothelphusa dehaani*	Japanese freshwater crab	15	0.030	Juvenile	-	-	9.4	N.D.(1.8)	9.4	-
					Arthropoda	Malacostraca	Decapoda	Atyidae	*Neocaridina sp.*	Neocaridina	133	0.031	Juvenile,Imago	-	-	6.6	N.D.(4.4)	6.6	-
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	*Semisulcospira libertina*	Semisulcospira libertina	30	0.025	Imago	-	Molluscous part	6.0	N.D.(3.3)	6.0	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur minnow	42	0.20	Immature fish,Mature fish	-	-	6.9	N.D.(1.1)	6.9	-
				2020/8/4	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	1	0.015	Immature fish	-	-	14	N.D.(2.8)	14	-
				2020/8/2	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Opsariichthys platypus*	Pale chub	53	0.50	Immature fish,Mature fish	-	-	16.98	0.98	16	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Pseudogobio esocinus esocinus*	Pseudogobio esocinus esocinus	7	0.088	Immature fish,Mature fish	-	-	6.5	N.D.(1.0)	6.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Candidia temminckii*	Dark chub	10	0.075	Immature fish	-	-	7.2	N.D.(2.4)	7.2	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	46	0.27	Immature fish,Mature fish	-	-	5.9	N.D.(0.32)	5.9	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Nemacheilus toni*	Stone loach	121	0.84	Immature fish	-	-	3.4	N.D.(1.9)	3.4	0.18
				2020/8/4	Vertebrata	Cephalaspidomorphi	Petromyzontiformes	Petromyzontidae	*Lethenteron reissneri*	Far eastern brook lamprey	3	0.013	Ammocoetes(larva)	-	-	N.D.	N.D.(6.7)	N.D.(5.7)	-
				2020/8/2	Vertebrata	Amphibia	Anura	-	-	Frog	11	0.012	Larva(Tadpole)	-	-	52	N.D.(3.6)	52	-
					Vertebrata	Amphibia	Anura	Hylidae	*Hyla japonica*	Japanese tree flog	3	0.0071	Imago	-	-	8.2	N.D.(5.6)	8.2	-
					Vertebrata	Amphibia	Anura	Glandirana	*Glandirana rugosa*	Wrinkled frog									
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.24	-	-	-	22	N.D.(0.83)	22	-
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2020/8/5	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	6	1.7	Mature fish	Obscure digesta	Viscera removed	5.7	N.D.(0.50)	5.7	0.20
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Hemibarbus barbus*	Hemibarbus barbus	2	2.2	Mature fish	Empty stomach	Viscera removed	4.1	N.D.(0.33)	4.1	0.53
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis altivelis*	Sweetfish	1	0.059	Mature fish	-	-	2.4	N.D.(1.2)	2.4	-
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	3	0.46	Immature fish	Obscure digesta	Viscera removed	4.4	N.D.(0.96)	4.4	-
					Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	*Ictalurus punctatus*	Channel catfish	6	6.5	Immature fish,Mature fish	Red swamp crawfish,Terrestrial insect	Viscera removed	11.75	0.75	11	0.21
B-3	Surikami River	37.8182°	140.4679°	2020/8/21	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.0087	-	-	-	34	N.D.(4.3)	34	-
				2020/8/5	Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	100	0.027	Larva	-	-	8.4	N.D.(2.9)	8.4	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	89	0.030	Larva(Dragonfly larva)	-	-	N.D.	N.D.(4.9)	N.D.(2.8)	-
					Arthropoda	Insecta	Odonata	Gomphidae	*Stylogomphus suzukii*	Stylogomphus suzukii									
					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	Libellulidae	*Sympetrum sp.*	Sympetrum									
					Arthropoda	Insecta	Odonata	Aeshnidae	*Boyeria maclachlani*	Boyeria maclachlani									
					Arthropoda	Insecta	Megaloptera	Corydalidae	*Protohermes grandis*	Protohermes grandis	13	0.0071	Larva	-	-	13	N.D.(7.0)	13	-
					Arthropoda	Malacostraca	Decapoda	Cambaridae	*Procambarus clarkii*	Red swamp crawfish	10	0.12	Juvenile,Imago	-	-	4.9	N.D.(0.46)	4.9	-
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	*Semisulcospira libertina*	Semisulcospira libertina	26	0.0078	Imago	-	Molluscous part	4.0	N.D.(4.2)	4.0	-
				2020/8/21	Vertebrata	Osteichthyes	Anguilliformes	Anguillidae	*Anguilla japonica*	Japanese eel	1	0.079	Immature fish	Obscure digesta	Viscera removed	1.9	N.D.(1.3)	1.9	-
				2020/8/5	Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	*Cottus pollux*	Japanese fluvial sculpin	10	0.076	Immature fish	-	-	5.2	N.D.(1.5)	5.2	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur minnow	27	0.21	Immature fish,Mature fish	-	-	4.3	N.D.(0.34)	4.3	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	28	0.13	Immature fish	-	-	5.4	N.D.(1.1)	5.4	-
				2020/8/21	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Opsariichthys platypus*	Pale chub	5	0.029	Immature fish	-	-	3.0	N.D.(3.0)	3.0	-
				2020/8/5	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Candidia temminckii*	Dark chub	29	0.067	Immature fish	-	-	5.6	N.D.(2.1)	5.6	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	42	0.20	Immature fish,Mature fish	-	-	3.5	N.D.(1.1)	3.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Nemacheilus toni*	Stone loach	49	0.48	Immature fish	-	-	3.9	N.D.(1.1)	3.9	-
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis altivelis*	Sweetfish	41	1.5	Immature fish,Mature fish	-	-	1.4	N.D.(0.92)	1.4	0.047
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	1	0.12	Immature fish	Terrestrial insect	Viscera removed	6.9	N.D.(1.6)	6.9	-
					Vertebrata	Osteichthyes	Siluriformes	Bagridae	*Tachysurus tokiensis*	Cut-tailed bullhead	1	0.0056	Immature fish	-	-	8.5	N.D.(7.9)	8.5	-
					Vertebrata	Amphibia	Anura	-	-	Frog	12	0.0064	Larva(Tadpole)	-	-	101.6	6.6	95	-
					Vertebrata	Amphibia	Anura	Lithobates	*Lithobates catesbeianus*	American bullfrog	2	0.45	Imago	-	-	5.3	N.D.(1.2)	5.3	-
					Vertebrata	Amphibia	Anura	Glandirana	*Glandirana rugosa*	Wrinkled frog	8	0.036	Imago	-	-	10	N.D.(3.0)	10	-
					Vertebrata	Amphibia	Anura	Pelophylax	*Pelophylax porosus porosus*	Tokyo daruma pond frog									
				2020/8/21	Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.23	-	-	-	3.8	N.D.(0.49)	3.8	-

*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.