○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	Contaminants	Water depth (m)	Transparency (cm)
A-1(Surface layer)	37.6210°	140.5218°	2016/5/26	08:58	09:17	20.5	20.3	Sediment with sand	2.5Y3/1	None	6.80	48 (1.0m)*
A-1(Bottom layer)				08:49		20.2						
A-2	37.5673°	140.3946°		10:57	11:05	20.1	20.2	Sand	2.5Y4/3	Plant pieces	0.74	>50
B-1	37.7843°	140.4924°		15:27	15:36	23.0	23.5	Sediment with sand	2.5Y4/3	Plant pieces a little	0.20	>50
B-2	37.8121°	140.5058°		14:22	14:27	22.1	22.6	Sand	2.5Y4/4	Plant pieces a little	0.31	>50
B-3	37.8182°	140.4679°		13:22	13:28	19.6	19.6	Sand	2.5Y4/2	Plant pieces a little	0.38	>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°	2016/5/26	08:58	7.4	1.7	4.9	8.8	20.6	0.10	1.9	7	4.2	0.0062	0.030	0.0017
A-1(Bottom layer)				08:49	7.4	1.8	5.3	8.9	20.8	0.10	2.0	10	4.8	0.0054	0.028	-
A-2	37.5673°	140.3946°		10:57	7.5	<0.5	3.1	9.5	12.7	0.07	1.0	4	2.4	0.0037	0.020	-
B-1	37.7843°	140.4924°		15:27	7.5	1.1	4.9	9.5	21.0	0.10	1.8	7	4.2	0.0051	0.025	-
B-2	37.8121°	140.5058°		14:22	7.5	1.1	4.3	9.4	19.5	0.10	1.7	5	3.6	0.0066	0.026	-
B-3	37.8182°	140.4679°		13:22	7.7	0.7	3.4	10.0	8.9	0.05	1.1	3	2.7	0.017	0.082	-

<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°	2016/5/26	09:17	6.9	61	52.9	9.8	19.1	2.658	0.2	0.1	2.4	12.4	45.3	39.6	0.0099	4.8	120	590	0.83
A-2	37.5673°	140.3946°		11:05	7.1	276	24.1	2.6	3.5	2.743	15.4	33.8	39.2	6.2	2.5	2.9	0.84	4.8	53	290	-
B-1	37.7843°	140.4924°		15:36	7.1	264	32.8	3.4	5.4	2.717	15.1	10.1	27.9	35.4	7.1	4.4	0.26	4.8	92	590	-
B-2	37.8121°	140.5058°		14:27	7.1	273	24.0	1.6	2.1	2.835	6.1	8.4	60.7	19.5	2.3	3.0	0.38	9.5	40	190	-
B-3	37.8182°	140.4679°		13:28	7.2	298	20.2	1.9	2.3	2.672	24.7	35.2	30.0	7.0	1.4	1.7	1.1	4.8	41	200	-

<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-1	The main stream of the Abukuma River	37.6210°	140.5218°	2016/6/29	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	*Ictalurus punctatus*	Channel catfish	6	3.4	Immature fish	Ephoron shigae,Polyzoan	Viscera removed	10.0	1.5	8.5	0.19
A-2	Harase River	37.5673°	140.3946°	2016/6/4	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.020	-	-	-	278	38	240	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	36	0.011	Larva	-	-	30.5	6.5	24	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	37	0.026	Larva (Dragonfly larva)	-	-	11.9	1.9	10	-
					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	*Asiagomphus melaenops*	Asiagomphus melaenops									
					Arthropoda	Malacostraca	Decapoda	Cambaridae	*Procambarus clarkii*	Red swamp crawfish	4	0.033	Imago	-	-	26.9	3.9	23	-
					Arthropoda	Malacostraca	Decapoda	Atyidae	*Neocaridina sp.*	Neocaridina	215	0.043	Imago	-	-	26.1	5.1	21	-
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	*Semisulcospira libertina*	Semisulcospira libertina	30	0.022	Imago	-	Molluscous part	11	N.D.(1.8)	11	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur Minnow	10	0.11	Mature fish	-	-	8.7	1.6	7.1	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	13	0.033	Immature fish	-	-	11.5	1.9	9.6	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Pseudogobio esocinus*	Pseudogobio esocinus	5	0.11	Immature fish,Mature fish	Obscure digesta	Viscera removed	11.1	1.6	9.5	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Nipponocypris temminckii*	Dark chub	8	0.024	Immature fish	-	-	8.2	1.9	6.3	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Cobitis biwae*	Cobitis biwae	3	0.014	Mature fish	-	-	13.9	2.9	11	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	21	0.048	Immature fish,Mature fish	-	-	11.6	1.7	9.9	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Noemacheilus barbatulus*	Stone loach	21	0.20	Immature fish	-	-	6.7	1.0	5.7	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	1	0.076	Immature fish	Terrestrial insect	Viscera removed	21.1	3.1	18	-
					Vertebrata	Amphibia	Anura	-	-	Frog	24	0.020	Larva (Tadople)	-	-	177	27	150	-
					Vertebrata	Amphibia	Anura	Ranidae	*Rana rugosa*	Wrinkled Frog	7	0.061	Imago	-	-	15.4	2.4	13	-
					Vertebrata	Amphibia	Anura	Ranidae	*Rana porosa porosa*	Tokyo Daruma pond frog									
					Vertebrata	Amphibia	Anura	Ranidae	*Rana japonica*	Japanese Brown Frog									
					Vertebrata	Amphibia	Caudata	Salamandridae	*Cynops pyrrhogaster*	Cynops pyrrhogaster	6	0.050	Imago	-	-	10.6	2.1	8.5	-
					Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.19	-	-	-	80	12	68	-
B-2	The main stream of the Abukuma River	37.8121°	140.5058°	2016/6/7	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	8	2.5	Mature fish	Obscure digesta	Viscera removed	14.4	2.4	12	0.23
				2016/7/31	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Zacco platypus*	Pale chub	19	0.32	Immature fish,Mature fish	-	-	16.3	2.3	14	-
				2016/6/7	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Carassius auratus*	Carassius auratus langsdorfii	1	0.96	Mature fish	Obscure digesta	Viscera removed	17.9	2.9	15	0.43
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Hemibarbus barbus*	Hemibarbus barbus	3	5.5	Mature fish	Amorphous Residue	Viscera removed	15.8	2.8	13	0.34
				2016/6/1	Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis*	Sweetfish	65	2.0	Immature fish,Mature fish	-	-	17.0	3.0	14	0.096
				2016/6/26	Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis*	Sweetfish	49	1.4	Immature fish,Mature fish	-	-	60.4	8.4	52	0.14
				2016/6/7	Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	1	1.4	Mature fish	Empty stomach	Viscera removed	32.3	5.3	27	0.41
				2016/6/14	Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	1	1.3	Mature fish	Fish	Viscera removed	89	14	75	0.41
				2016/7/10	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	*Ictalurus punctatus*	Channel catfish	3	4.1	Immature fish,Mature fish	Ephoron shigae	Viscera removed	16.0	3.0	13	0.21
				2016/6/7	Vertebrata	Osteichthyes	Siluriformes	Siluridae	*Silurus asotus*	Amur catfish	3	5.5	Mature fish	Fish	Viscera removed	63.2	9.2	54	0.23
				2016/6/20	Vertebrata	Osteichthyes	Siluriformes	Siluridae	*Silurus asotus*	Amur catfish	2	2.6	Mature fish	Empty stomach	Viscera removed	46.2	7.2	39	0.35
B-3	Surikami River	37.8182°	140.4679°	2016/6/4	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.028	-	-	-	193	33	160	-
					Algae/plant	Monocotyledoneae	Najadales	Potamogetonaceae	*Potamogeton crispus*	Curly-leaf pondweed	-	0.16	-	-	-	46.5	7.5	39	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	*Stenopsyche marmorata*	Stenopsyche marmorata	305	0.094	Larva	-	-	41.6	6.6	35	-
					Arthropoda	Insecta	Odonata	Corduliidae	*Macromia amphigena amphigena*	Macromia amphigena	50	0.030	Larva (Dragonfly larva)	-	-	13.7	2.7	11	-
					Arthropoda	Insecta	Odonata	Cordulegastridae	*Anotogaster sieboldii*	Anotogester sieboldii									
					Arthropoda	Insecta	Odonata	Gomphidae	*Sieboldius albardae*	Sieboldius albardae									
					Arthropoda	Insecta	Odonata	Gomphidae	*Gomphidae*	Gomphidae									
					Arthropoda	Insecta	Megaloptera	Corydalidae	*Protohermes grandis*	Protohermes grandis	22	0.029	Larva	-	-	18.5	3.5	15	-
					Arthropoda	Malacostraca	Decapoda	Cambaridae	*Procambarus clarkii*	Red swamp crawfish	11	0.12	Imago	-	-	15.2	2.2	13	-
					Arthropoda	Malacostraca	Decapoda	Varunidae	*Eriocheir japonica*	Japanese mitten crab	1	0.031	Imago	-	-	5.4	N.D.(1.8)	5.4	-
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	*Cottus pollux*	Japanese fluvial sculpin	25	0.30	Immature fish	-	-	6.50	0.90	5.6	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Phoxinus lagowskii steindachneri*	Amur Minnow	50	0.42	Immature fish,Mature fish	-	-	7.9	1.3	6.6	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Tribolodon hakonensis*	Japanese dace	12	0.048	Immature fish	-	-	6.7	N.D.(1.2)	6.7	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	*Nipponocypris temminckii*	Dark chub	7	0.097	Immature fish,Mature fish	Obscure digesta	Viscera removed	6.74	0.94	5.8	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Cobitis biwae*	Cobitis biwae	1	0.0073	Mature fish	-	-	14	N.D.(8.2)	14	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Misgurnus anguillicaudatus*	Oriental weatherfish	17	0.11	Immature fish,Mature fish	-	-	16.9	2.9	14	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	*Noemacheilus barbatulus*	Stone loach	38	0.36	Immature fish	-	-	6.7	1.3	5.4	-
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	*Plecoglossus altivelis*	Sweetfish	1	0.018	Immature fish	-	-	2.5	N.D.(2.4)	2.5	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	*Oncorhynchus masou*	Yamame trout	14	0.14	Immature fish	-	-	5.46	0.86	4.6	-
					Vertebrata	Osteichthyes	Perciformes	Centrarchidae	*Micropterus dolomieu*	Small mouth bass	1	0.046	Immature fish	Empty stomach	Viscera removed	16.6	2.6	14	-
					Vertebrata	Osteichthyes	Siluriformes	Bagridae	*Pseudobagrus tokiensis*	Cut-tailed bullhead	1	0.074	Mature fish	Obscure digesta	Viscera removed	16.7	2.7	14	-
					Vertebrata	Amphibia	Anura	-	-	Frog	10	0.030	Larva (Tadople)	-	-	50.1	9.1	41	-
					Vertebrata	Amphibia	Anura	Ranidae	*Rana catesbeiana*	American Bullfrog	2	0.54	Imago	-	-	7.8	1.2	6.6	-
					Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.21	-	-	-	29.8	4.8	25	-

*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.