

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	—	—	—	—	—	—

< Location A and B along the Abukuma River: Site measurement item >

Items Locations	Survey date and time		Latitude and longitude of the location		Water		Sediment					Other	
	Water	Sediment	Latitude	Longitude	Water temperature	Sediment temperature	Property	Color	Odor	Contaminants	Transparency	Water depth	
A-1	2012/8/21	9:05	9:18	37.62058	140.52195	26.0	25.6	Sand/sediment	2.5Y-4/3	Faint hydrogen sulfide	Plant	50<	7.5
A-2	-	-	-	37.56668	140.39467	-	-	-	-	-	-	-	-
B-1	2012/8/21	-	11:55	37.78448	140.49227	-	26.8	Fine sand	2.5Y-4/3	Faint hydrogen sulfide	Plant fragments, pebbles	50<	0.2
B-2	-	13:30	13:40	37.81190	140.50560	25.5	25.5	Fine sand	2.5Y-4/4	None	Pebbles	50<	0.5
B-3	-	-	-	37.81820	140.46788	-	-	-	-	-	-	-	-

< Location A and B along the Abukuma River: Analysis items - Water >

Items Locations	Survey date and time	Latitude and longitude of the location		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													
A-1	2012/8/21	9:05	37.62058	140.52195	7.6	1.4	4.2	7.7	17.8	0.09	1.1	5	4.5	0.084	0.13	0.0017
A-2	-	-	37.56668	140.39467	-	-	-	-	-	-	-	-	-	-	-	-
B-1	2012/8/21	-	37.78448	140.49227	-	-	-	-	-	-	-	-	-	-	-	-
B-2	-	13:30	37.81190	140.50560	8.0	1.2	3.7	9.6	16.7	0.08	1.1	6	4.3	0.072	0.11	-
B-3	-	-	37.81820	140.46788	-	-	-	-	-	-	-	-	-	-	-	-

< Location A and B along the Abukuma River: Analysis items - Sediment >

Items Locations	Survey date and time	Latitude and longitude of the location		pH	Redox potential E _{NHE} (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 (mm)						
A-1	2012/8/21	9:18	37.62058	140.52195	7.4	-6	43.3	5.1	7	2.665	2.6	10.0	43.7	9.9	13.8	20.0	0.29	9.5	1,800	2,900	0.53
A-2	-	-	37.56668	140.39467	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-1	2012/8/21	11:55	37.78448	140.49227	7.2	145	29.0	1.9	1	2.742	27.7	5.7	18.4	30.6	7.4	10.2	0.26	19	260	420	-
B-2	-	13:40	37.81190	140.50560	7.4	198	27.5	1.5	<1	2.698	2.5	4.5	63.5	26.1	0.2	3.2	0.33	9.5	190	310	-
B-3	-	-	37.81820	140.46788	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

< Locations A and B along the Abukuma River: Analysis items - Aquatic organisms >

Location	Sampling Date	Latitude and longitude of the location		Division	Class	Order	Family	Species name	English name	Population	Sample weight (kg wet)	Cs-134 (Bq/kg wet)	Cs-137 (Bq/kg wet)	Sr-90 (Bq/kg wet)	Note	
		Latitude	Longitude												Growth stage	Stomach contents
A-2 (Harase River)	2012/8/8	37.56668333	140.3946667	Vertebrata	Amphibia	Anura	Hylidae	<i>Hyla japonica</i>	Japanese tree frog	18	0.11	41	63	-	Imago	-
				Vertebrata	Amphibia	Anura	Ranidae	<i>Rana rugosa</i>	Wrinkled Frog							
				Vertebrata	Amphibia	Anura	Ranidae	<i>Rana porosa porosa</i>	Daruma pond frog							
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	36	0.081	19	32	-	Mature fish	-
				Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	36	0.054	27	43	-	Mature fish	-
				Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Noemacheilus barbatulus</i>	Stone loach	8	0.085	14	20	-	Mature fish	-
				Arthropod	Malacostraca	Decapoda	Potamidae	<i>Geothelphusa dehaani</i>	Japanese Freshwater Crab	6	0.011	44	63	-	Imago	-
				Arthropod	Malacostraca	Decapoda	Atyidae	<i>Atyidae</i>	Freshwater shrimp	511	0.12	62	94	-	Imago	-
				Mollusca	Gastropoda	Sorbeoconcha	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	41	0.049	15	24	-	Imago	-

				Arthropod	Insecta	Odonata	Calopterygidae	<i>Calopteryx cornelia</i>	Calopteryx cornelia											
				Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	Onychogomphus viridicostus											
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae											
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sinogomphus flavolimbatus</i>	Sinogomphus flavolimbatus	157	0.073	79	120	—	Non-adult	—				
				Arthropod	Insecta	Odonata	Cordulegastridae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii											
				Arthropod	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena											
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata											
				Arthropod	Insecta	Hemiptera	Belostomatidae	<i>Appasus sp.</i>	Ferocious water bug						Imago					
				Streptophyta	Zygnematomyceae	Zygnematales	Zygnemataceae	<i>Spirogyra sp.</i>	Spirogyra	—	0.03	38	56	—	—	—				
				—	—	—	—	—	CPOM (litter)	—	1.2	520	810	—	—	—				
B-3 (Surikami River)	2012/8/7	37.8182	140.4679	Vertebrata	Amphibia	Anura	Ranidae	<i>Rana rugosa</i>	Wrinkled Frog	3	0.036	34	53	—	Imago	—				
				Vertebrata	Amphibia	Anura	—	—	Tadpole	34	0.026	300	450	—	Non-adult	—				
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Nipponocypris temminckii</i>	Dark chub	5	0.066	32	47	—	Mature fish	—				
				Vertebrata	Osteichthyes	Siluriformes	Bagridae	<i>Pseudobagrus tokiensis</i>	Cut-tailed bullhead	6	0.17	25	41	—	Mature fish	—				
				Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	16	0.075	32	48	—	Mature fish	—				
				Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Noemacheilus barbatulus</i>	Stone loach	16	0.30	21	35	—	Mature fish	—				
				Arthropod	Malacostraca	Decapoda	Procambarus	<i>Procambarus clarkii</i>	Red swamp crawfish	6	0.14	56	83	—	Imago	—				
				Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	Onychogomphus viridicostus											
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae											
				Arthropod	Insecta	Odonata	Cordulegastridae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii											
				Arthropod	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	146	0.059	52	87	—	Non-adult	—				
				Arthropoda	Insecta	Neuroptera	Corydalidae	<i>Parachauliodes japonicus</i>	Parachauliodes japonicus											
				Arthropod	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	Protohermes grandis											
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata											
Arthropod	Insecta	Hemiptera	Belostomatidae	<i>Appasus sp.</i>	Ferocious water bug									Imago						
				Streptophyta	Zygnematomyceae	Zygnematales	Zygnemataceae	<i>Spirogyra sp.</i>	Spirogyra	—	0.16	140	220	—	—	—				
				—	—	—	—	—	CPOM (litter)	—	0.60	100	170	—	—	—				
B-2 (Abukuma River)	2012/8/29	37.8119	140.5056	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish	3	2.8	57	94	—	Mature fish	Some (details unknown)				
				Vertebrata	Osteichthyes	Anguilliformes	Anguillidae	<i>Anguilla japonica</i>	Eel	2	0.89	83	140	—	Mature fish	Some (details unknown)				
	Vertebrata			Osteichthyes	Siluriformes	Siluridae	<i>Silurus asotus</i>	Amur catfish	3	2.0	230	370	—	Mature fish	Some (details unknown)					
	Vertebrata			Osteichthyes	Perciformes	Centrarchidae	<i>Micropterus dolomieu</i>	Small mouth bass	10	3.2	210	330	0.34	Mature fish	Some (details unknown)					
	Vertebrata			Osteichthyes	Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i>	Common carp	2	4.6	55	80	—	Mature fish	Some (details unknown)					
	Vertebrata			Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	5	4.7	110	160	—	Mature fish	Some (details unknown)					
	Vertebrata			Osteichthyes	Cypriniformes	Cyprinidae	<i>Carassius sp.</i>	Carassius	2	1.4	90	150	—	Mature fish	Some (details unknown)					
	Vertebrata			Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon sp.</i>	Tribolodon	2	0.72	92	150	—	Mature fish	Some (details unknown)					
Vertebrata	Osteichthyes	Osmeriformes	Osmeridae	<i>Plecoglossus altivelis</i>	Sweetfish (natural upstream)	60	2.1	34	51	0.21	Mature fish	—								