

○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 >

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 >

Locations	Latitude and longitude of the location		Survey date and time			Water				Sediment		Other	
	Scheduled latitude	Scheduled 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°	2015/8/18	9:04	9:24	23.7	24.3	Sand with sediment	2.5Y5/2	Plant pieces a little	7.4	42 (0.6m)*	
A-1(Deep layer)	37.6210°	140.5218°		8:51		23.9							
A-2	37.5673°	140.3946°		11:18	11:10	23.8	23.8	Sand with	2.5Y4/4	Plant pieces a	0.76	48	
B-1	37.7843°	140.4924°		15:28	15:38	25.1	24.4	Sand	2.5Y4/3	Plant pieces a	0.13	49	
B-2	37.8121°	140.5058°		14:30	14:24	25.0	24.8	Fine sand	2.5Y5/4	None	0.48	43	
B-3	37.8182°	140.4679°		13:24	13:34	22.0	22.1	Sand	2.5Y4/2	Pebbles	0.28	>50	

*The numbers in () indicates the degree of transparency.

< Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Water >

Locations	Latitude and longitude of the location		Survey date and time		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)
	Scheduled latitude	Scheduled longitude	Date	Time (water)												
A-1(Surface layer)	37.6210°	140.5218°	2015/8/18	9:04	7.4	1.9	5.3	8.5	15.5	0.08	2.1	15	8.1	0.016	0.062	0.0011
A-1(Deep layer)	37.6210°	140.5218°		8:51	7.4	2.2	5.8	8.4	18.0	0.09	2.4	22	11.4	0.032	0.12	-
A-2	37.5673°	140.3946°		11:18	7.5	0.8	4.6	8.6	13.4	0.07	1.8	10	4.1	0.017	0.062	-
B-1	37.7843°	140.4924°		15:28	7.6	1.1	4.6	8.7	15.9	0.08	2.1	12	7.4	0.012	0.050	-
B-2	37.8121°	140.5058°		14:30	7.7	1.1	4.3	8.3	16.4	0.08	2.1	11	6.9	0.013	0.052	-
B-3	37.8182°	140.4679°		13:24	7.6	0.6	3.7	8.5	10.8	0.06	1.8	5	4.4	0.0049	0.020	-

< Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Sediment >

Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential EN,H.E (mV)	Water content (%)	IL (%)	TOC (mg/g-dry)	Soil particle density (g/cm3)	Grain size distribution							Cs-134 (Bq/kg-dry)	Cs-137 (Bq/kg-dry)	Sr-90 (Bq/kg-dry)	
	Scheduled latitude	Scheduled longitude	Date	Time (sediment)							Gravel (2-75mm) (%)	Coarse sand (0.85-2mm) (%)	Medium sand (0.25-0.85mm) (%)	Fine sand (0.075-0.25mm) (%)	Silt (0.005-0.0075mm) (%)	Clay (Less than 0.005mm) (%)	Median grain diameter				Maximum grain diameter
A-1	37.6210°	140.5218°	2015/8/18	9:24	7.2	116	20.0	1.1	1.9	2.664	16.7	44.3	32.3	3.1	1.3	2.3	1.0	19	32	120	N.D.(0.13)
A-2	37.5673°	140.3946°		11:10	6.9	118	30.8	2.8	6.2	2.641	7.9	25.8	39.9	10.3	8.4	7.7	0.58	9.5	95	370	-
B-1	37.7843°	140.4924°		15:38	7.3	286	14.7	1.2	2.2	2.666	29.4	42.4	14.5	8.0	2.3	3.4	1.4	19	18	91	-
B-2	37.8121°	140.5058°		14:24	7.2	289	27.1	2.0	2.3	2.691	0.1	1.0	44.0	47.5	3.1	4.3	0.23	4.8	66	290	-
B-3	37.8182°	140.4679°		13:34	7.1	225	14.2	1.1	1.9	2.631	33.0	43.9	19.6	1.6	0.7	1.2	1.5	9.5	21	91	-

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

Location	Sampling point	Latitude and longitude of the location		Sampling Date	Division	Class	Order	Family	Species 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	Cs-134	Cs-137					
A-2	Harase River	37.5673°	140.3946°	2015/8/25	Phycophyta	-	-	-	-	Macromia amphigena	-	0.071	-	-	-	35	140	-				
					Arthropod	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	-	-	-	-	-	-	-	-	-	-	-	
					Arthropod	Insecta	Odonata	Cordulegastridae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii	-	-	-	-	-	-	-	-	-	-	-	
					Arthropod	Insecta	Odonata	Gomphidae	<i>Meligomphus viridicostus</i>	Onychogomphus viridicostus	78	0.026	Larva (dragonfly larva)	-	-	-	-	5.1	20	-		
					Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae	-	-	-	-	-	-	-	-	-	-	-	
					Arthropod	Insecta	Odonata	Gomphidae	<i>Asiagomphus melaenops</i>	Asiagomphus melaenops	-	-	-	-	-	-	-	-	-	-	-	
					Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	70	0.027	Larva	-	-	-	-	-	5.7	22	-	
					Arthropod	Malacostraca	Decapoda	Atyidae	-	Neocaridina sp.	249,000	0.04	Imago	-	-	-	-	-	7.2	28	-	
					Mollusca	Gastropoda	Sorbeoconcha	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	40	0.026	Imago	-	-	-	-	-	3.3	14	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Candidia temminckii</i>	Dark chub	46	0.46	Mature fish (3-year-old)	-	-	-	-	-	2.6	10	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	10	0.043	Mature fish (1-year-old)	-	-	-	-	-	2.9	11	-	
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou masou</i>	Yamame trout	2	0.079	Mature fish (1-year-old)	4	Leeches, Formicidae, Moth Larva	Viscera removed	-	3.4	13	-		
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	46	0.033	Mature fish	-	-	-	-	1.9	12	-		
					Vertebrata	Amphibia	Anura	Ranidae	<i>Glandirana rugosa</i>	Wrinkled Frog	-	-	-	-	-	-	-	-	11	41	-	
					Vertebrata	Amphibia	Anura	Ranidae	<i>Pelophylax porosus porosus</i>	Daruma pond frog	4	0.015	Imago	-	-	-	-	-	-	-	-	
									Particulate Organic Matter	-	-	-	-	-	-	-	0.19	-	-	58	230	-
					B-2	Abukuma River	37.8121°	140.5058°	2015/8/21	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish	2	1.6	Mature fish	<i>Epiplatys japonicus</i> , <i>Heterotis niloticus</i> , <i>Alga</i> , <i>Melospiza</i>	Viscera removed	3.3	14
2015/9/6	Vertebrata	Osteichthyes	Siluriformes	Ictaluridae					<i>Ictalurus punctatus</i>	Channel catfish	3	6.1	Mature fish	Ephoron shigae (Large volume)	Viscera removed	5.1	22	0.15				
2015/8/23	Vertebrata	Osteichthyes	Osmeriformes	Osmeridae					<i>Plecoglossus altivelis altivelis</i>	Sweetfish	81	2.9	Mature fish	-	-	2.3	93	0.18				
2015/8/21	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae					<i>Tribolodon hakonensis</i>	Japanese dace	4	1.1	Mature fish (4.5-year-old)	Algae	Viscera removed	3.6	14	-				
2015/8/21	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae					<i>Tribolodon hakonensis</i>	Japanese dace	4	0.12	Mature fish (2-year-old)	Amorphous residue	Viscera removed	2.9	11	-				
2015/8/30	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae					<i>Hemibarbus barbus</i>	Hemibarbus barbus	14	0.16	Immature fish (1-year-old)	-	-	2.7	9.8	-				
2015/8/30	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae					<i>Hemibarbus barbus</i>	Hemibarbus barbus	2	1.9	Mature fish (6-year-old)	Empty stomach	Viscera removed	4.5	17	0.49				
2015/7/15	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae					<i>Cyprinus carpio</i>	Common carp	1	3.8	Mature fish (9-year-old)	Detritus	Viscera removed	13	45	0.35				
2015/8/21	Vertebrata	Osteichthyes	Perciformes	Centrarchidae					<i>Lepomis macrochirus macrochirus</i>	Bluegill	1	0.088	Mature fish (3-year-old)	Empty stomach	Viscera removed	2.6	11	-				
2015/8/4	Vertebrata	Osteichthyes	Perciformes	Centrarchidae					<i>Micropertus dolomieu dolomieu</i>	Small mouth bass	2.0	2	Mature fish (2.5-year-old)	Japanese mitten Crabs	Viscera removed	18	63.00	0.4				
2015/9/22	Vertebrata	Osteichthyes	Perciformes	Centrarchidae					<i>Lepomis macrochirus macrochirus</i>	Bluegill	2	0.21	Mature fish (4-year-old)	Polyzoan dormant bud	Viscera removed	2.3	9.3	-				
2015/9/6	Vertebrata	Osteichthyes	Siluriformes	Siluridae	<i>Silurus asotus</i>	Amur catfish	2	3.4	Mature fish (16-year-old)	Ephoron shigae (Large volume)	Viscera removed	26	110	0.17								
B-3	Surikami River	37.8182°	140.4679°	2015/8/25	Phycophyta	-	-	-	-	Riverbed Deposits (include algae)	-	0.016	-	-	-	26	97	-				
					Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae	21	0.015	Larva (dragonfly larva)	-	-	-	N.D.(2.6)	5.2	-			
					Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	221	0.058	Larva	-	-	-	9.9	41	-			
					Arthropod	Insecta	Megaloptera	Corvalidae	<i>Protohermes grandis</i>	Protohermes grandis	54	0.037	Larva	-	-	-	-	N.D.(1.4)	7.6	-		
					Arthropod	Malacostraca	Decapoda	Procambarus	<i>Procambarus clarkii</i>	Red swamp crawfish	3	0.088	Imago	-	-	-	-	4.7	18	-		
					Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	<i>Cottus pollux</i>	Japanese fluvial sculpin	3	0.024	Mature fish	-	-	-	-	3.3	8.4	-		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Opsariichthys platypus</i>	Zacco platypus	13	0.048	Mature fish (0-year-old)	-	-	-	-	3.1	12	-		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Candidia temminckii</i>	Dark chub	13	0.098	Mature fish (2-year-old)	-	-	-	-	2.3	9.1	-		
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	3	0.033	Mature fish (2-year-old)	-	-	-	-	2.8	14	-		
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou masou</i>	Yamame trout	11	0.17	Immature fish (0-year-old)	Stenopsyche marmorata	Viscera removed	1.7	7.3	-				
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou masou</i>	Yamame trout	2	0.21	Mature fish (2-year-old)	Empty stomach	Viscera removed	2	8.6	-				
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Nemacheilus toni</i>	Stone loach	13	0.031	Immature fish (0-year-old)	-	-	-	3	9.3	-			
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	9	0.022	Mature fish	-	-	-	-	4.7	14	-		
					Vertebrata	Amphibia	Anura	-	-	-	24	0.011	Larva (tadpoles)	-	-	-	-	2.3	88	-		
									Particulate Organic Matter	-	-	-	-	-	-	-	0.21	-	-	7.8	29	-

*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 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: A statement in red in the "Growth stage" column shows the age assessed based on squama or otolith.

*6: Plankton (suspended algae) is the residue remaining after the filtration of lake water or seawater with a plankton net (40µm-mesh).

*7: 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.

*8: N.D. means to be below the detection limit and figures in parentheses show the detection limit.

*9: Activity concentrations include counting errors, but the details are omitted here.