

•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	Survey date and time			Latitude and longitude of the location		Water		Sediment				Other	
	Date	Time (Water)	Time (Sediment)	Latitude	Longitude	Water temperature (degrees C)	Sediment temperature (degrees C)	Property	Color	Odor	Contaminants	Water depth (m)	Transparency (cm)
A-1 (Surface layer)	2012/10/23	9:11	9:45	37.621000°	140.521783°	18.2	18.4	Sand/sediment	2.5Y-2/1	Faint hydrogen sulfide	Plant	7.0	>50
A-1 (Deep layer)	2012/10/23	9:20	—			18.2	—	—	—	—	—	—	—
A-2	2012/10/23	7:35	7:48	37.567333°	140.394567°	16.8	16.9	Sand gravel	10YR-2/3	Muddy odor	Pebbles	0.5	>50
B-1	2012/10/23	14:47	14:52	37.784333°	140.492417°	15.9	15.8	Fine sand	2.5Y-4/3	Faint hydrogen sulfide	Plant	0.2	>50
B-2	2012/10/23	13:56	14:04	37.812100°	140.505783°	16.0	16.2	Fine sand	2.5Y-4/4	None	Pebbles	0.6	>50
B-3	2012/10/23	12:29	12:37	37.818200°	140.467883°	19.0	19.3	Sand gravel	5Y-4/2	Muddy odor	Branches, pebbles	0.5	>50

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

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)
	Date	Time	Latitude	Longitude												
A-1 (Surface layer)	2012/10/23	9:11	37.621000°	140.521783°	7.5	1.4	4.3	9.8	19.4	0.09	1.7	6	2.5	0.069	0.11	0.0012
A-1 (Deep layer)	2012/10/23	9:20			7.6	1.2	4.8	9.7	19.7	0.11	1.8	8	3.0	3.0	0.018	0.031
A-2	2012/10/23	7:35	37.567333°	140.394567°	7.3	<0.5	3.3	9.9	10.9	0.07	1.0	5	1.9	0.041	0.067	—
B-1	2012/10/23	14:47	37.784333°	140.492417°	7.2	1.0	4.8	10.3	20.0	0.10	1.8	7	2.6	0.065	0.10	—
B-2	2012/10/23	13:56	37.812100°	140.505783°	7.6	1.5	5.0	10.2	18.6	0.09	1.8	7	2.7	0.050	0.085	—
B-3	2012/10/23	12:29	37.818200°	140.467883°	7.6	0.8	3.9	10.1	9.0	0.04	1.3	2	1.4	0.028	0.045	—

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

Locations	Survey date and time		Latitude and longitude of the location		pH	Redox potential E <sub>NHE</sub> (mV)	Water content (%)	IL (%)	TOC (mg/g-dry)	Soil particle density (g/cm <sup>3</sup> )	Grain size distribution						Cs-134 (Bq/kg-dry)	Cs-137 (Bq/kg-dry)	Sr-90 (Bq/kg-dry)			
	Date	Time	Latitude	Longitude							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)	
											(%)	(%)	(%)	(%)	(%)	(%)						
A-1	2012/10/23	9:45	37.621000°	140.521783°	7.4	-30	59.9	8.8	25	2.609	—	0.5	12.7	13.3	40.4	33.1	0.017	2.00	3,400	5,500	—	0.82
A-2	2012/10/23	7:48	37.567333°	140.394567°	7.2	220	21.9	2.0	3	2.739	33.1	27.6	27.5	5.6	2.6	3.6	1,200	19.00	280	470	—	—
B-1	2012/10/23	14:52	37.784333°	140.492417°	7.4	91	43.8	3.2	5	2.702	9.1	1.8	36.7	35.2	8.0	9.2	0.240	19.00	640	1,100	—	—
B-2	2012/10/23	14:04	37.812100°	140.505783°	7.3	193	29.2	1.7	<1	2.687	2.4	5.8	72.6	15.8	2.0	1.4	0.410	9.50	170	270	—	—
B-3	2012/10/23	12:37	37.818200°	140.467883°	7.0	229	21.0	1.7	1	2.631	31.9	28.4	28.7	7.9	1.7	1.4	1,100	19.00	85	140	—	—

<Locations A and B along the Abukuma River: Survey 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-1 (Abukuma River)	2012/10/30	37.621000°	140.521783°	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Carassius</i> sp.	Carassius	2	1.4	13	20	0.34	Mature fish	Some (details unknown)	
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Hemibarbus barbus</i>	Hemibarbus barbus	63	0.72	13	22	—	Immature fish	—	
A-2 (Harase River)	2012/10/29	37.567333°	140.394567°	Streptophyta	Zygnematales	Zygnematales	Zygnemataceae	<i>Spirogyra</i> sp.	Spirogyra	—	0.088	3.3	6.0	—	—	—	
				Arthropod	Insecta	Odonata	Cordulidae	<i>Macromia amphigena amphigena</i>	<u>Macromia amphigena</u>	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Cordulegasteridae	<i>Anotogaster sieboldii</i>	<u>Anotogaster sieboldii</u>	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Calopterygidae	<i>Calopteryx</i> sp.	Calopteryx	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Asiagomphus melanocephalus</i>	<u>Asiagomphus melanocephalus</u>	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius nanus</i>	Davidius nanus	203	0.14	21	33	—	Larva	—	
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius</i> sp.	Davidius	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	<u>Onychogomphus viridicostus</u>	—	—	—	—	—	—	—	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	<u>Sieboldius albardae</u>	—	—	—	—	—	—	—	—
				Arthropod	Malacostraca	Decapoda	Aysidae	<i>Aysida</i>	Freshwater shrimp	291	0.19	12	18	—	Adult	—	
				Mollusca	Gastropoda	Sorbecoconcha	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	58	0.046	9	15	—	Adult / non-adult	—	
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	95	0.27	21	36	—	Mature fish	—	
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	14	0.21	25	43	—	Mature fish/Immature fish	—	
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Nipponocypris temminckii</i>	Dark chub	26	0.40	36	64	—	Mature fish	—	
				Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Noemacheilus barbatus</i>	Stone loach	34	0.46	25	40	—	Mature fish	—	
				Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	16	0.43	62	110	—	Immature fish	—	
				Vertebrata	Amphibia	Anura	—	—	Tadpole	21	0.012	270	450	—	Larva	—	
				Vertebrata	Amphibia	Caudata	Salamandridae	<i>Cynops pyrrhogaster</i>	Cynops pyrrhogaster	14	0.089	19	33	—	Adult	—	
				—	—	—	—	—	CPOM (litter)	—	0.58	130	220	—	—	—	
				B-3 (Surikami River)	2012/11/1	37.818200°	140.467883°	Chlorophyta	Chlorophyceae	Oedogoniales	Oedogoniaceae	<i>Oedogonium</i> sp.	Oedogonium	—	0.031	27	41
Arthropod	Insecta	Plecoptera	Perlidae					<i>Acroneturia</i> sp.	Acroneturia	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Calineuria</i> sp.	Calineuria	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Kamimuria quadrata</i>	Kamimuria quadrata	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Kamimuria tibialis</i>	<u>Kamimuria tibialis</u>	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Kamimuria uenoi</i>	Kamimuria uenoi Kohno	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Neoperla</i> sp.	Neoperla geniculata	—	—	—	—	—	—	—	
Arthropoda	Insecta	Plecoptera	Perlidae					<i>Oyamia</i> sp.	Oyamia sp.	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Paragnetina suzuki</i>	Paragnetina suzuki Okamoto	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Paragnetina tinclipennis</i>	Paragnetina tinclipennis	—	—	—	—	—	—	—	
Arthropod	Insecta	Plecoptera	Perlidae					<i>Paragnetina</i> sp.	<u>Paragnetina</u>	—	—	—	—	—	—	—	
Arthropod	Insecta	Trichoptera	Stenopsychidae					<i>Stenopsyche marmorata</i>	<u>Stenopsyche marmorata</u>	—	—	—	—	—	—	—	
Arthropod	Insecta	Trichoptera	Stenopsychidae					<i>Stenopsyche sauteri</i>	Parastenopsyche sauteri	1,528	0.19	78	130	—	Larva	—	
Arthropod	Insecta	Trichoptera	Stenopsychidae					<i>Stenopsyche</i> sp.	Stenopsyche	—	—	—	—	—	—	—	
Arthropod	Insecta	Odonata	Cordulidae					<i>Macromia amphigena amphigena</i>	<u>Macromia amphigena</u>	—	—	—	—	—	—	—	
Arthropod	Insecta	Odonata	Calopterygidae					<i>Calopteryx atrata</i>	Calopteryx atrata	—	—	—	—	—	—	—	
Arthropod	Insecta	Odonata	Calopterygidae					<i>Calopteryx</i> sp.	Calopteryx	—	—	—	—	—	—	—	
Arthropod	Insecta	Odonata	Gomphidae					<i>Anisogomphus maacki</i>	Anisogomphus maacki	—	—	—	—	—	—	—	
Arthropod	Insecta	Odonata	Gomphidae					<i>Davidius nanus</i>	Davidius nanus	147	0.054	8.1	16	—	Larva	—	
Arthropod	Insecta	Odonata	Gomphidae					<i>Davidius</i> sp.	Davidius	—	—	—	—	—	—	—	
Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	<u>Onychogomphus viridicostus</u>	—	—	—	—	—	—	—					
Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	<u>Sieboldius albardae</u>	—	—	—	—	—	—	—					
Arthropod	Insecta	Odonata	Gomphidae	<i>Stylogomphus suzuki</i>	Stylogomphus suzuki	—	—	—	—	—	—	—					
Arthropod	Insecta	Odonata	Aeshnidae	<i>Planaeschna milnei</i>	Planaeschna milnei	—	—	—	—	—	—	—					
Arthropod	Insecta	Megaloptera	Corydalidae	<i>Parachauliodes continentalis</i>	Parachauliodes continentalis Weede	—	—	—	—	—	—	—					
Arthropod	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	<u>Protohermes grandis</u>	143	0.051	9.2	14	—	Larva	—					
Arthropod	Malacostraca	Decapoda	Procambarus	<i>Procambarus clarkii</i>	Red swamp crayfish	35	0.18	19	35	—	Adult	—					
2012/10/28	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
2012/11/1	Mollusca	Gastropoda	Sorbecoconcha	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	434	0.20	22	41	—	—	—	—			
	Vertebrata	Osteichthyes	Scorpaeniformes	Cottidae	<i>Cottus pollux</i>	Japanese fluvial sculpin	2	0.046	13	22	—	Mature fish	—				
	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	18	0.076	17	28	—	Mature fish/Immature fish	—				
	Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	6	0.022	24	37	—	Immature fish	—				
	Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	8	0.040	24	42	—	Mature fish	—				
	Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	3	0.089	38	65	—	Immature fish	—				
	Vertebrata	Amphibia	Anura	—	—	Tadpole	38	0.022	180	290	—	Larva	—				
—	—	—	—	—	CPOM (litter)	—	0.80	87	150	—	—	—					

(Note) The Japanese name of the underlined, indicating that in the sample is the most harvested species.