

OResults of Radioactive Material Monitoring of Aquatic Organisms (Location D along the Mano River)

<Location D along the Mano River: Samples collected>

Locations	General items		Radioactive materials			
	Water	Sediment	Water (Cs)	Water (Sr)	Sediment (Cs)	Sediment (Sr)
D-1	o	o	o	o	o	o
D-2	o	o	o	-	o	-
D-3	o	o	o	-	o	-
D-4 a	o	o	o	-	o	-
D-4 b	o	-	o	-	-	-
D-5	o	o	o	-	o	-

<Location D along the Mano River: Site measurement item>

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)		
D-1	37.7331°	140.9254°	2016/9/5	12:40	13:10	23.1	23.8	Sand with gravel	2.5Y3/2	None	0.43	>50		
D-2	37.7095°	140.9566°		14:05	14:18	24.0	23.5	Sand	2.5Y3/3	None	0.68	>50		
D-3	37.7051°	140.9623°		14:58	15:28	24.0	24.0	Gravel with sand	2.5Y3/2	None	0.71	>50		
D-4 a	37.7308°	140.9081°		09:33	09:50	20.9	21.9	Gravel with sand	2.5Y4/2	None	0.60	>50		
D-4 b	37.7312°	140.9096°		10:35	-	21.4	-	-	-	-	0.68	>50		
D-5	37.7214°	140.8889°		08:15	08:43	20.2	21.0	Sand	2.5Y4/3	None	0.73	>50		

<Location D along the Mano 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)	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)												
D-1	37.7331°	140.9254°	2016/9/5	12:40	7.4	0.7	3.5	9.4	7.7	0.04	1.6	3	3.6	0.012	0.066	0.0014
D-2	37.7095°	140.9566°		14:05	7.3	0.8	3.5	8.6	8.9	0.05	1.4	4	3.6	0.013	0.067	-
D-3	37.7051°	140.9623°		14:58	7.2	0.8	3.2	8.3	9.8	0.05	1.3	3	2.9	0.0071	0.036	-
D-4 a	37.7308°	140.9081°		09:33	7.4	0.8	3.6	9.0	7.5	0.04	1.5	3	3.7	0.0082	0.041	-
D-4 b	37.7312°	140.9096°		10:35	7.4	1.3	3.6	8.8	7.5	0.04	1.5	4	3.8	0.014	0.069	-
D-5	37.7214°	140.8889°		08:15	7.5	0.9	3.5	9.4	7.0	0.04	1.6	3	4.0	0.015	0.081	-

<Location D along the Mano River: General survey items/Analysis of radioactive materials Sediment>

Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential E _{NHLE} (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)
	Latitude	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 (0.005-0.075mm) (%)	Clay (Less than 0.005mm) (%)	Median grain diameter (mm)	Maximum grain diameter (mm)			
D-1	37.7331°	140.9254°	2016/9/5	13:10	7.6	347	10.7	1.6	1.7	2.732	83.0	13.8	1.9	1.1	0.0	0.2	3.5	9.5	32	170	0.76
D-2	37.7095°	140.9566°		14:18	7.5	356	21.9	2.1	2.3	2.726	9.5	9.6	56.7	20.3	1.5	2.4	0.38	9.5	68	380	-
D-3	37.7051°	140.9623°		15:28	7.6	366	14.6	1.5	1.6	2.711	53.9	27.9	12.6	4.2	0.3	1.1	2.2	9.5	11	89	-
D-4 a	37.7308°	140.9081°		09:50	7.6	368	16.9	1.9	1.7	2.725	41.2	23.5	31.7	2.5	0.2	0.9	1.5	9.5	72	400	-
D-5	37.7214°	140.8889°		08:43	7.7	378	22.6	2.4	1.8	2.730	15.8	41.3	38.7	2.3	0.4	1.5	0.97	9.5	83	470	-

<Location D along the Mano 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					
D-4b	-	37.7312°	140.9096°	2016/8/24	Algae/plant	Monocotyledoneae	Najadales	Potamogetonaceae	<i>Potamogeton berchtoldii</i>	Small pondweed	-	0.22	-	-	-	660	100	560	-				
					Arthropoda	Insecta	Odonata	Cordulegastriidae	<i>Anotogaster sieboldii</i>	Anotogaster sieboldii													
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	Melligomphus viridicostus													
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	Sieboldius albardae													
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Davidius sp.</i>	Davidius													
					Arthropoda	Insecta	Odonata	Aeshnidae	<i>Boyeria maclachlani</i>	Boyeria maclachlani													
					Arthropoda	Malacostraca	Decapoda	Cambaridae	<i>Procambarus clarkii</i>	Red swamp crawfish	6	0.045	Imago	-	-	-	76	13	63	-			
					Arthropoda	Malacostraca	Decapoda	Atyidae	<i>Paratya improvisa</i>	Freshwater shrimp	187	0.019	Imago	-	-	-	67.4	9.4	58	-			
					Arthropoda	Malacostraca	Decapoda	Varunidae	<i>Eriocheir japonica</i>	Japanese mitten crab	1	0.0040	Imago	-	-	-	45	N.D.(10)	45	-			
					Mollusca	Bivalvia	Unionoida	Unionidae	<i>Inversunio yokohamensis</i>	Inversunio jokohamensis	4	0.022	Imago	-	Molluscos part	36.4	5.4	31	-				
					Mollusca	Gastropoda	Discopoda	Pleuroceridae	<i>Semisulcospira libertina</i>	Semisulcospira libertina	36	0.033	Imago	-	Molluscos part	248	38	210	-				
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Phoxinus lagowskii steindachneri</i>	Amur Minnow	8	0.010	Immature fish,Mature fish	Obscure digesta	Viscera removed	14	N.D.(6.1)	14	-				
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	4	0.048	Immature fish	Obscure digesta	Viscera removed	27.9	4.9	23	-				
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Zacco platypus</i>	Pale chub	4	0.014	Immature fish	Obscure digesta	Viscera removed	28.4	4.4	24	-				
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Cobitis biwae</i>	Cobitis biwae	7	0.013	Immature fish,Mature fish	-	-	25.9	4.9	21	-				
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	36	0.056	Immature fish,Mature fish	Obscure digesta	Viscera removed	15.2	3.2	12	-				
					Vertebrata	Osteichthyes	Siluriformes	Bagridae	<i>Pseudobagrus tokiensis</i>	Cut-tailed bullhead	2	0.011	Immature fish	Obscure digesta	Viscera removed	26.3	6.3	20	-				
					Vertebrata	Amphibia	Anura	Ranidae	<i>Rana japonica</i>	Japanese Brown Frog	1	0.0049	Imago	-	-	6.3	N.D.(9.2)	6.3	-				
					Particulate Organic Matter	-	-	-	-	-	-	-	-	Bottom fallen leaves	-	0.14	-	-	-	21.6	3.6	18	-

*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.