

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	○	○	○	○	○	○
D-2	○	○	○	-	○	-
D-3	○	○	○	-	○	-
D-4 a	○	○	○	-	○	-
D-4 b	○	-	○	-	-	-
D-5	○	○	○	-	○	-

<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°	2016/12/5	10:54	11:10	10.1	10.5	Gravel with sand	2.5Y3/2	None	0.20	>50	
D-2	37.7095°	140.9566°		12:22	12:38	11.8	12.0	Gravel with sand	2.5Y4/3	None	0.34	>50	
D-3	37.7051°	140.9623°		14:13	14:31	13.4	13.5	Gravel with sand	2.5Y4/3	None	0.63	>50	
D-4 a	37.7308°	140.9081°		09:20	09:30	9.2	9.3	Gravel with sand	2.5Y4/2	None	0.35	>50	
D-4 b	37.7312°	140.9096°		10:08	-	9.3	-	-	-	-	0.34	>50	
D-5	37.7214°	140.8889°		08:15	08:37	8.2	8.4	Sand	2.5Y4/3	None	0.50	>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°	2016/12/5	10:54	7.6	<0.5	2.1	12.5	8.6	0.05	0.9	<1	0.7	0.0019	0.0093	0.00092
D-2	37.7095°	140.9566°		12:22	7.3	0.7	2.3	10.8	11.7	0.07	0.8	2	2.2	0.0090	0.050	-
D-3	37.7051°	140.9623°		14:13	7.1	0.5	2.1	11.3	12.4	0.07	0.7	2	1.8	0.0024	0.014	-
D-4 a	37.7308°	140.9081°		09:20	7.4	<0.5	1.9	11.3	9.5	0.05	0.9	<1	0.8	0.0019	0.0090	-
D-4 b	37.7312°	140.9096°		10:08	7.5	<0.5	2.2	11.8	9.6	0.05	0.9	<1	1.0	0.0031	0.017	-
D-5	37.7214°	140.8889°		08:15	7.6	<0.5	2.2	11.9	9.0	0.06	1.1	<1	0.9	0.0024	0.012	-

<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)			
											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°	2016/12/5	11:10	7.5	341	15.5	1.3	1.5	2.703	42.5	28.4	24.4	4.0	0.4	0.3	1.7	9.5	29	240	0.76
D-2	37.7095°	140.9566°		12:38	7.4	334	15.4	1.3	1.5	2.701	27.1	26.0	40.3	5.5	0.6	0.5	0.94	9.5	41	210	-
D-3	37.7051°	140.9623°		14:31	7.4	329	14.6	1.4	1.8	2.690	35.5	32.4	25.1	5.8	0.8	0.4	1.4	9.5	25	170	-
D-4 a	37.7308°	140.9081°		09:30	7.5	334	17.3	1.6	1.6	2.701	36.0	37.3	24.7	1.8	0.1	0.1	1.5	19	39	290	-
D-5	37.7214°	140.8889°		08:37	7.6	326	17.8	1.7	2.0	2.720	25.7	31.9	37.5	4.0	0.5	0.4	1.0	9.5	75	430	-

<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°	2016/12/7	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.022	-	-	-	365	55	310	-	
					Arthropoda	Insecta	Plecoptera	Perlidae	<i>Kamimuria tibialis</i>	Kamimura tibialis	146	0.014	Larva	-	-	-	4.0	N.D.(2.6)	4.0	-
					Arthropoda	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	Stenopsyche marmorata	276	0.069	Larva	-	-	-	89	11	78	-
					Arthropoda	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	Macromia amphigena	29	0.0084	Larva (Dragonfly larva)	-	-	-	25.7	4.7	21	-
					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	27	0.021	Larva	-	-	-	23.6	3.6	20	-
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	Dobsonfly	27	0.13	Immature fish	-	-	-	16.4	2.4	14	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	1	0.087	Mature fish	Obscure digesta	Viscera removed	15.9	1.9	14	-	
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Carassius auratus</i>	Carassius auratus langsdorffii	23	0.065	Mature fish	-	-	38.1	6.1	32	-	
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Rhinogobius sp. CB</i>	Rhinogobius nagoyae	-	0.24	-	-	-	20.3	3.3	17	-	
					Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.24	-	-	-	20.3	3.3	17	-	
					D-5	-	37.7214°	140.8889°	2016/12/7	Algae/plant	Zygnematomyxaceae	Zygnematales	Zygnemataceae	<i>Spirogyra sp.</i>	Spirogyra	-	0.35	-	-	-

*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.