

OResults of Radioactive Material Monitoring of Aquatic Organisms (Location O along the Tomioka River)

<Location O along the Tomioka River: Samples collected>

Locations	General items		Radioactive materials			
	Water	Sediment	Water (Cs)	Water (Sr)	Sediment (Cs)	Sediment (Sr)
O-1	○	○	○	○	○	○
O-2	○	○	○	-	○	-

<Location O along the Tomioka 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)
O-1	37.3547°	140.9780°	2022/6/21	08:30	08:40	18.7	16.4	Sand sediment	7.5Y5/3	Plant pieces	0.40	>100
O-2	37.3624°	140.9612°		11:45	11:55	19.3	19.2	Sand gravel	7.5Y5/2	Plant pieces	0.30	>100

<Location O along the Tomioka 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)												
O-1	37.3547°	140.9780°	2022/6/21	08:30	7.0	0.8	2.1	9.0	7.6	0.05	0.7	4	1.9	N.D.(0.0013)	0.013	0.00094
O-2	37.3624°	140.9612°		11:45	7.2	2.6	3.7	9.3	7.5	0.04	0.9	3	2.4	N.D.(0.0016)	0.010	-

Note) N.D. means to be below the detection limit and figures in parentheses show the detection limit.

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

Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential E _{Ni/LE} (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)			
O-1	37.3547°	140.9780°	2022/6/21	08:40	7.2	228	31.3	3.4	8.2	2.600	1.2	3.3	16.4	40.1	31.4	7.6	0.098	9.5	18	670	0.37
O-2	37.3624°	140.9612°		11:55	7.5	222	19.7	2.5	4.7	2.670	14.9	18.0	24.6	25.9	11.7	4.9	0.37	19	9.6	380	-

Note) N.D. means to be below the detection limit and figures in parentheses show the detection limit.

<Location O along the Tomioka 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	
O-1	The main stream of the Tomioka River	37.3547°	140.9780°	2022/6/21	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.0029	-	-	-	75	N.D.(21)	75	-
					Arthropoda	Insecta	Ephemeroptera	Isonychiidae	<i>Isonychia valida</i>	<i>Isonychia valida</i>	74	0.0072	Larva	-	-	21	N.D.(4.5)	21	-
					Arthropoda	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	<i>Macromia amphigena amphigena</i>	35	0.012	Larva (Dragonfly larva)	-	-	11	N.D.(2.8)	11	-
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Stylogomphus suzukii</i>	<i>Stylogomphus suzukii</i>									
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	<i>Sieboldius albardae</i>									
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Davidius</i> sp.	Davidius									
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Asiagomphus melaenops</i>	<i>Asiagomphus melaenops</i>									
					Arthropoda	Insecta	Odonata	Libellulidae	<i>Orthetrum albistylum speciosum</i>	Common skimmer									
					Arthropoda	Insecta	Odonata	Aeshnidae	<i>Polycanthagyna melanictera</i>	<i>Polycanthagyna melanictera</i>									
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	<i>Protohermes grandis</i>	43	0.027	Larva	-	-	3.3	N.D.(1.4)	3.3	-
					Arthropoda	Malacostraca	Decapoda	Palaemonidae	<i>Palaemon paucidens</i>	Common prawn	165	0.23	Imago	-	-	7.9	N.D.(1.5)	7.9	-
					Arthropoda	Malacostraca	Decapoda	Atyidae	<i>Paratya improvisa</i>	Freshwater shrimp	132	0.036	Juvenile,Imago	-	-	25	N.D.(4.9)	25	-
					Arthropoda	Malacostraca	Decapoda	Varunidae	<i>Eriocheir japonica</i>	Japanese mitten crab	19	0.14	Juvenile	-	-	15	N.D.(2.0)	15	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	15	0.25	Immature fish, Mature fish	Obscure digesta	Viscera removed	49.4	1.4	48	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Candidia temminckii</i>	Dark chub	13	0.15	Immature fish, Mature fish	-	-	21	N.D.(1.7)	21	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Cobitis biwae</i>	<i>Cobitis biwae</i>	11	0.015	Immature fish, Mature fish	-	-	13	N.D.(3.3)	13	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Nemacheilus toni</i>	Stone loach	1	0.026	Immature fish	-	-	11	N.D.(2.5)	11	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Lefua echigonia</i>	<i>Lefua echigonia</i>	3	0.0085	Mature fish	-	-	12	N.D.(5.0)	12	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou</i>	Yamame trout	1	0.010	Immature fish	-	-	12	N.D.(4.0)	12	-
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Rhinogobius fluviatilis</i>	<i>Rhinogobius fluviatilis</i>	6	0.032	Immature fish, Mature fish	-	-	22	N.D.(3.7)	22	-
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Rhinogobius mizunoi</i>	<i>Rhinogobius mizunoi</i>									
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Tridentiger brevispinis</i>	Dusky tripletooth goby	5	0.091	Mature fish	-	-	34	N.D.(2.6)	34	-
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Sicyopterus japonicus</i>	Monk goby	1	0.0089	Immature fish	-	-	30	N.D.(6.3)	30	-
					Vertebrata	Cephalaspidomorphi	Petromyzontiformes	Petromyzontidae	<i>Lethenteron reissneri</i>	Far eastern brook lamprey	12	0.029	Ammocoetes (larva)	-	-	5.2	N.D.(1.4)	5.2	-
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.26	-	-	-	101.4	3.4	98	-
O-2	The main stream of the Tomioka River	37.3624°	140.9612°	2022/6/21	Algae/plant	-	-	-	-	Riverbed Deposits (Include algae)	-	0.0028	-	-	-	160	N.D.(28)	160	-
					Arthropoda	Insecta	Ephemeroptera	Isonychiidae	<i>Isonychia valida</i>	<i>Isonychia valida</i>	134	0.013	Larva	-	-	24	N.D.(5.8)	24	-
					Arthropoda	Insecta	Odonata	Corduliidae	<i>Macromia amphigena amphigena</i>	<i>Macromia amphigena amphigena</i>	10	0.014	Larva (Dragonfly larva)	-	-	N.D.	N.D.(4.9)	N.D.(4.3)	-
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	<i>Sieboldius albardae</i>									
					Arthropoda	Insecta	Odonata	Gomphidae	<i>Davidius</i> sp.	Davidius									
					Arthropoda	Insecta	Odonata	Aeshnidae	<i>Boyeria maclachlani</i>	<i>Boyeria maclachlani</i>									
					Arthropoda	Insecta	Odonata	Aeshnidae	<i>Planaeschna milnei milnei</i>	<i>Planaeschna milnei milnei</i>									
					Arthropoda	Insecta	Megaloptera	Corydalidae	<i>Protohermes grandis</i>	<i>Protohermes grandis</i>	30	0.016	Larva	-	-	3.4	N.D.(1.9)	3.4	-
					Arthropoda	Malacostraca	Decapoda	Palaemonidae	<i>Palaemon paucidens</i>	Common prawn	101	0.15	Imago	-	-	9.8	N.D.(1.2)	9.8	-
					Arthropoda	Malacostraca	Decapoda	Atyidae	<i>Paratya improvisa</i>	Freshwater shrimp	81	0.027	Juvenile,Imago	-	-	14	N.D.(2.2)	14	-
					Arthropoda	Malacostraca	Decapoda	Varunidae	<i>Eriocheir japonica</i>	Japanese mitten crab	18	0.21	Juvenile	-	-	14	N.D.(1.5)	14	-
					Vertebrata	Osteichthyes	Anguilliformes	Anguillidae	<i>Anguilla japonica</i>	Japanese eel	1	0.095	Immature fish	Empty stomach	Viscera removed	11	N.D.(1.4)	11	-
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	221	1.5	Immature fish, Mature fish	Obscure digesta	Viscera removed	20	N.D.(1.1)	20	0.31
					Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Candidia temminckii</i>	Dark chub	48	0.64	Immature fish, Mature fish	-	-	35	N.D.(1.1)	35	-
					Vertebrata	Osteichthyes	Cypriniformes	Cobitidae	<i>Cobitis biwae</i>	<i>Cobitis biwae</i>	9	0.017	Immature fish, Mature fish	-	-	8.8	N.D.(2.2)	8.8	-
					Vertebrata	Osteichthyes	Salmoniformes	Osmeridae	<i>Plecoglossus altivelis altivelis</i>	Sweetfish	21	0.43	Immature fish, Mature fish	-	-	22	N.D.(1.2)	22	-
					Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus masou masou</i>	Yamame trout	32	1.4	Immature fish, Mature fish	Obscure digesta	Viscera removed	28	N.D.(1.3)	28	0.25
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Rhinogobius fluviatilis</i>	<i>Rhinogobius fluviatilis</i>	10	0.074	Immature fish, Mature fish	-	-	17	N.D.(2.5)	17	-
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Rhinogobius kurodai</i>	<i>Rhinogobius kurodai</i>									
					Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Tridentiger brevispinis</i>	Dusky tripletooth goby	2	0.020	Mature fish	-	-	14	N.D.(2.0)	14	-
					Vertebrata	Cephalaspidomorphi	Petromyzontiformes	Petromyzontidae	<i>Lethenteron reissneri</i>	Far eastern brook lamprey	10	0.021	Ammocoetes (larva)	-	-	9.6	N.D.(1.8)	9.6	-
					Vertebrata	Amphibia	Anura	Rhacophoridae	<i>Buergeria buergeri</i>	Kajika frog	4	0.016	Imago	-	-	150	N.D.(11)	150	-
					Coarse Particulate Organic Matter	-	-	-	-	Bottom fallen leaves	-	0.21	-	-	-	52.9	1.9	51	-

*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, 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.