

## Part 3: Other Radioactive Material Monitoring Conducted Nationwide (FY2018)

### 1 Outline of the Monitoring

#### 1.1 Covered monitoring

As other radioactive material monitoring activity conducted nationwide, the results of the Monitoring of Environmental Radioactivity Levels in FY2018, which was conducted in FY2018 by the Nuclear Regulation Authority for the purpose of clarifying the existence or nonexistence of the effects from nuclear facilities, etc. nationwide, are compiled here.

Monitoring locations are as shown in Table 1.1-1 and Figure 1.1-1. See the relevant website for more details. (<http://www.env.go.jp/air/rmcm/result/nsr.html>; Japanese only)

#### 1.2 Compilation methods

Measurement data are available on the website of Environmental Radioactivity and Radiation in Japan.<sup>13</sup>

Data for this report were collected from this website under the following search criteria.

- (i) Period: April 2018 to March 2019 (Published on Mar 23, 2020)
- (ii) Coverage: Nationwide
- (iii) Targets: All radionuclides
- (iv) Targeted samples: Inland water (river water, lake water, freshwater), seawater, sediment (river sediment, sea sediment)

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<sup>13</sup> Environmental Radioactivity and Radiation in Japan "Environmental Radiation Database"  
<http://search.kankyo-hoshano.go.jp/servlet/search.top>. (Japanese only, accessed on Mar 23, 2020)

Table 1.1-1 Locations for the Monitoring of Environmental Radioactivity Levels (30 in total)

No.	Prefecture	Property	Sampling locations	Water	Sediment
1	Hokkaido	Lake	Oyafuru, Ishikari City (Lake Barato)	○	-
2		Coastal area	Yoichi Town, Yoichi County (Yoichi Bay)	○	○
3	Aomori	Coastal area	Fukaura Town, Nishitsugaru County (off Kasose)	○	○
4		Coastal area	Hiranai Town, Higashitsugaru County (Mutsu Bay)	○	○
5	Iwate	Coastal area	Hirono Town, Kunohe County (off Taneichi)	○	○
6	Akita	River	Asahikawa, Akita City	○	-
7	Fukushima	Coastal area	Soma City (off Haragama Beach)	○	○
8		River	Zainiwasaka, Fukushima City	○	-
9	Ibaraki	Lake	Kasumigaura	○	-
10		Coastal area	Tokai Village, Naka County (off the NPS)	○	○
11	Chiba	Coastal area	Tokyo Bay (off Sodegaura City)	○	○
12	Kanagawa	Coastal area	Yokosuka City (Odawa Bay)	○	○
13	Niigata	Lake	Shichikuyama, Chuo Ward, Niigata City	○	-
14		Coastal area	off Niigata Port	○	○
15	Fukui	Lake	Inogaik Pond, Tsuruga City	○	-
16	Nagano	Lake	Lake Suwa	○	-
17	Aichi	Coastal area	Tokoname City (off Kosugaya)	○	○
18	Mie	River	Seki Town, Kameyama City (Suzuka River)	○	-
19	Kyoto	Freshwater	Tenno, Ogura Town, Uji City	○	-
20	Osaka	Coastal area	Osaka City (Entrance to Osaka Port)	○	○
21	Tottori	River	Katamo (Katamo River System)	○	○
22		River	Kawakami (Kawakami River System)	○	○
23		River	Hotani (Iwakura River System)	○	○
24		River	Bessho (except for Katamo River System)	○	○
25		River	Kannokura (Oshika River System)	○	○
26	Hiroshima	River	Kawate Town, Shobara City (Saijo River)	○	-
27	Yamaguchi	Coastal area	Ajisu, Yamaguchi City (Yamaguchi Bay)	○	○
28	Fukuoka	Coastal area	Higashiminato Town, Moji Ward, Kitakyushu City (off Chichisaki)	○	○
29	Kagoshima	Coastal area	Minamisatsuma City (off the mouth of Manose River)	○	○
30	Okinawa	Coastal area	Katsuren White Beach, Uruma City	○	○

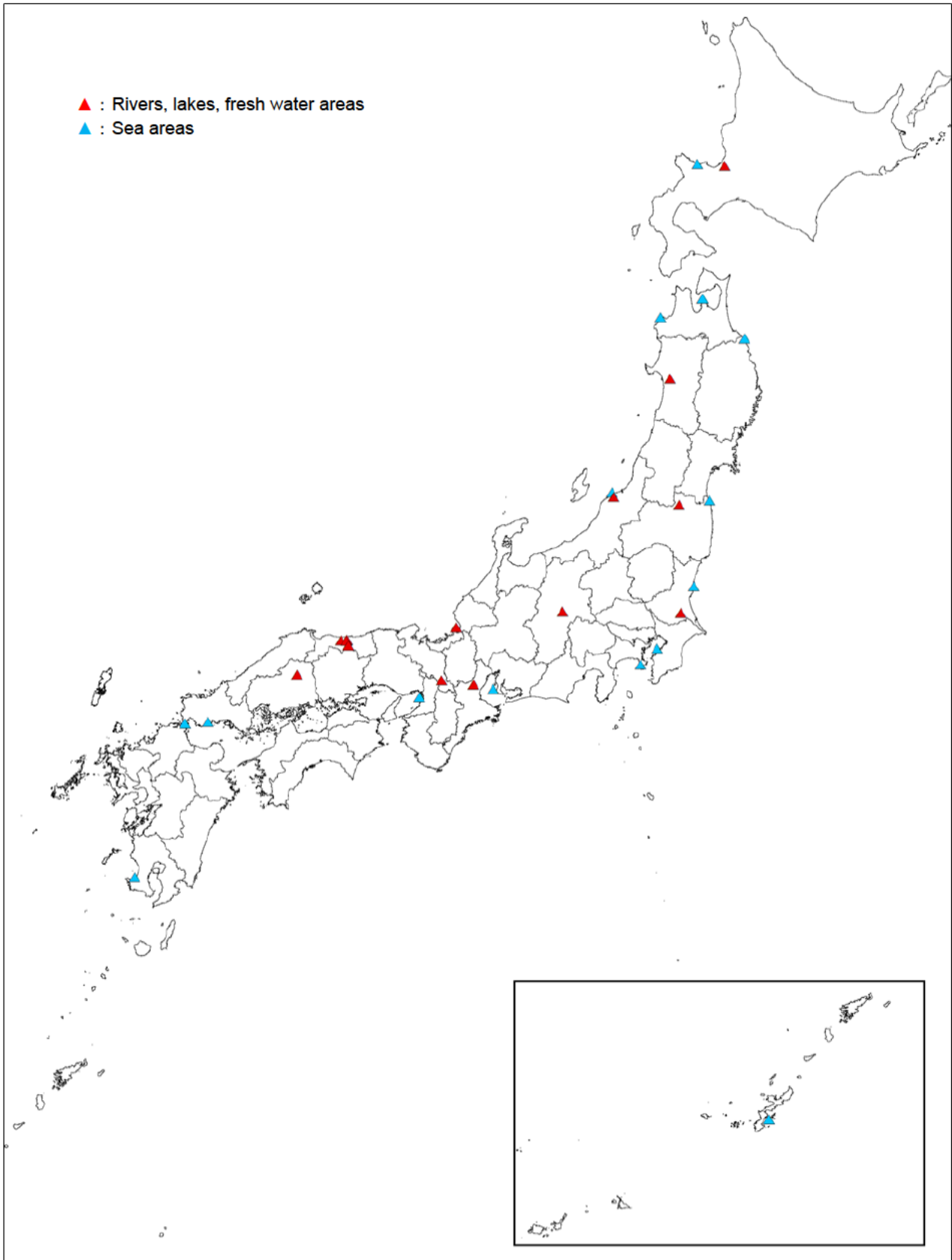


Figure 1.1-1 Locations for the Monitoring of Environmental Radioactivity Levels

## 2 Results

### 2.1 Water

#### (1) Inland water<sup>14</sup>

In the Monitoring of Levels in FY2018, nine radionuclides (Be-7, K-40, U-234, U-235, U-238, Cs-134, Cs-137, I-131 and Sr-90) were reported from inland water samples, as shown in Table 2.1-1.

A comparison with the results of the Monitoring of Levels for the past twenty years (excluding data of artificial radionuclides from Mar 11, 2011 to Mar 10, 2014) revealed that all these radionuclides were considered to be within the past measurement trends (see Figure 2.1-1).

Table 2.1-1 Detection of radionuclides in the Monitoring of Levels [inland water]

Nuclides		Number of reported data	Number of detections	Range of measured values (Bq/L)	Range of the past measurement records (Bq/L) (*1)
Naturally Occurring radionuclides	Be-7	7	4	ND - 0.0095	ND - 0.034
	K-40	10	10	0.019 - 0.17	0.0067 - 0.30
	U-234	10	10	0.0011 - 0.0057	0.00042 - 0.015
	U-235	10	0	ND	ND - 0.00054
	U-238	10	10	0.00086 - 0.0048	ND - 0.013
Artificial radionuclides	Cs-134	9	1	ND - 0.0017	ND - 0.015
	Cs-137	9	5	ND - 0.014	ND - 0.041
	I-131	9	0	ND	ND - 0.013
	Sr-90	10	8	ND - 0.0023	ND - 0.0050

(\*1) Results of the Monitoring of Levels from FY1998 to FY2017 (excluding data of artificial radionuclides from Mar 11, 2011 to Mar 10, 2014)

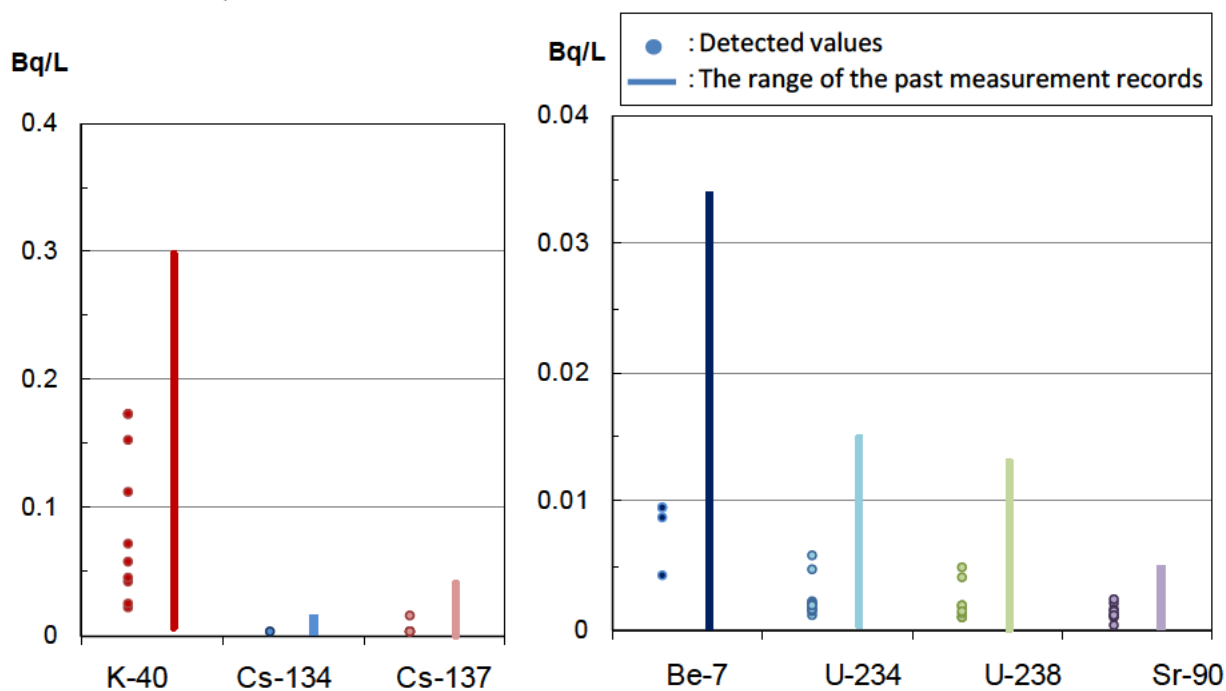


Figure 2.1-1 Detection of radionuclides in the Monitoring of Levels [inland water]

<sup>14</sup> This report only covers data for river water, lake water, and freshwater in the Monitoring of Levels.

(2) Seawater

In the Monitoring of Levels in FY2018, six radionuclides (Be-7, K-40, Cs-134, Cs-137, I-131 and Sr-90) were reported from seawater samples, as shown in Table 2.1-2.

A comparison with the results of the Monitoring of Levels for the past twenty years (excluding data of artificial radionuclides from Mar 11, 2011 to Mar 10, 2014) revealed that detected values for all above-mentioned radionuclides were within the past measurement trends (see Figure 2.1-2).

Table 2.1-2 Detection of radionuclides in the Monitoring of Levels [seawater]

Nuclides		Number of reported data	Number of detections	Range of measured values (Bq/L)	Range of the past measurement records (Bq/L) (*1)
Naturally occurring radionuclides	Be-7	2	0	ND	ND
	K-40	16	16	0.16 - 12	0.078 - 15
Artificial radionuclides	Cs-134	16	0	ND	ND
	Cs-137	16	1	ND - 0.0018	ND - 0.064
	I-131	12	0	ND	ND
	Sr-90	15	15	0.00076 - 0.0014	ND - 0.0022

(\*1) Results of the Monitoring of Levels from FY1998 to FY2017 (excluding data of artificial radionuclides from Mar 11, 2011 to Mar 10, 2014)

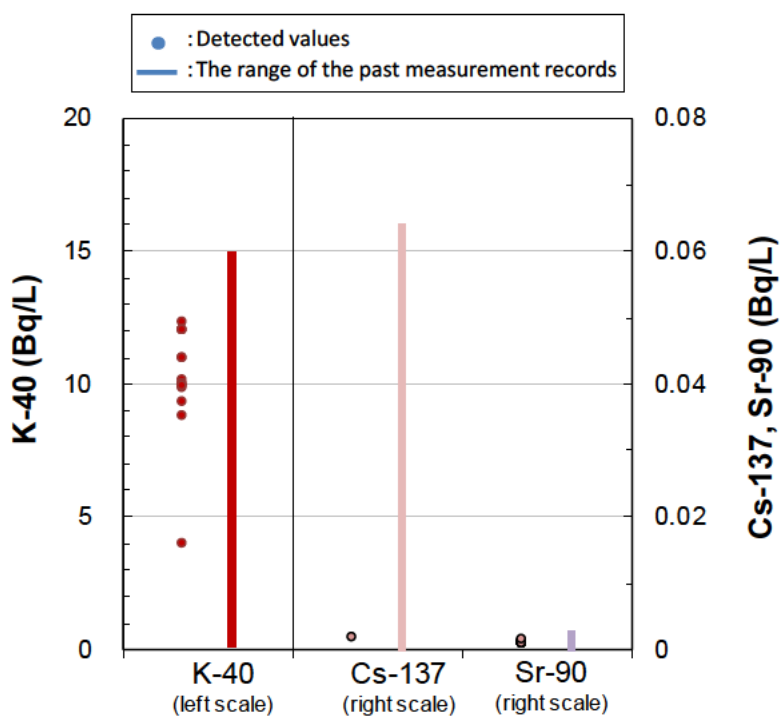


Figure 2.1-2 Detection of radionuclides in the Monitoring of Levels [seawater]

## 2.2 Sediment

### (1) Inland water sediment (river sediment)

In the Monitoring of Levels in FY2018, three radionuclides (U-234, U-235 and U-238) were reported from inland water sediment samples (river sediment), as shown in Table 2.2-1.

A comparison with the results of the Monitoring of Levels for the past twenty years revealed that detected values for all three detected radionuclides were within the past measurement trends (see Figure 2.2-1).

Table 2.2-1 Detection of radionuclides in the Monitoring of Levels [Inland water sediment (river sediment)]

Nuclides		Number of reported data	Number of detections	Range of measured values (Bq/kg)	Range of the past measurement records (Bq/kg) (*1)
Naturally occurring radionuclides	U-234	5	5	17 - 29	6.5 - 64
	U-235	5	5	0.55 - 1.0	0.20 - 2.7
	U-238	5	5	17 - 30	6.6 - 66

(\*1) Results of the Monitoring of Levels from FY1998 to FY2017 (excluding the results reported in mg/kg units)

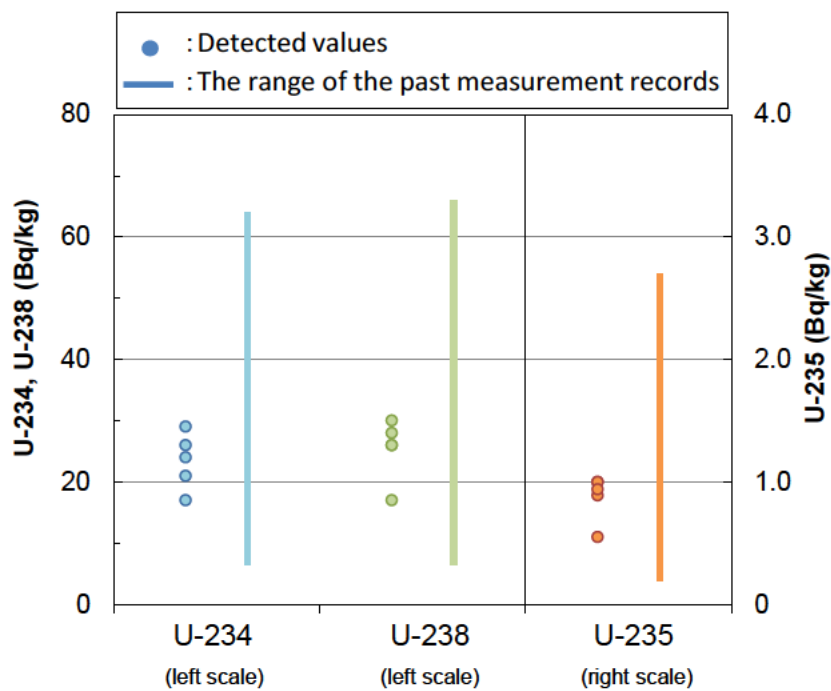


Figure 2.2-1 Detection of radionuclides in the Monitoring of Levels [Inland water sediment [(river sediment)]]

(2) Sea sediment

In the Monitoring of Levels in FY2018, six radionuclides (Be-7, K-40, Cs-134, Cs-137, and I-131) were reported from seawater sediment samples as shown in Table 2.2-2.

Comparison with the results of the Monitoring of Levels for the past twenty years (excluding data of artificial radionuclides from Mar 11, 2011 to Mar 10, 2014) revealed that detected values at two sampling locations for Cs-137 exceeded the range of the past measurement (see Figure 2.2-2). However, both values are at the same level as those of the past detected values and measurements in the vicinity<sup>15</sup>, and were within the past measurement trends.

Table 2.2-2 Detection of radionuclides in the Monitoring of Levels [Sea sediment]

Nuclides		Number of reported data	Number of detections	Range of measured values (Bq/kg)	Range of the past measurement records (Bq/kg) (*1)
Naturally occurring radionuclides	Be-7	4	1	ND - 5.2	ND - 13
	K-40	15	15	78 - 930	33 - 750
Artificial radionuclides	Cs-134	15	2	ND - 3.1	ND - 4.4
	Cs-137	15	10	ND - 33	ND - 13
	I-131	8	0	ND	ND
	Sr-90	15	0	ND	ND - 0.41

(\*1) Results of the Monitoring of Levels from FY1998 to FY2017 (excluding data of artificial radionuclides from Mar 11, 2011 to Mar 10, 2014)

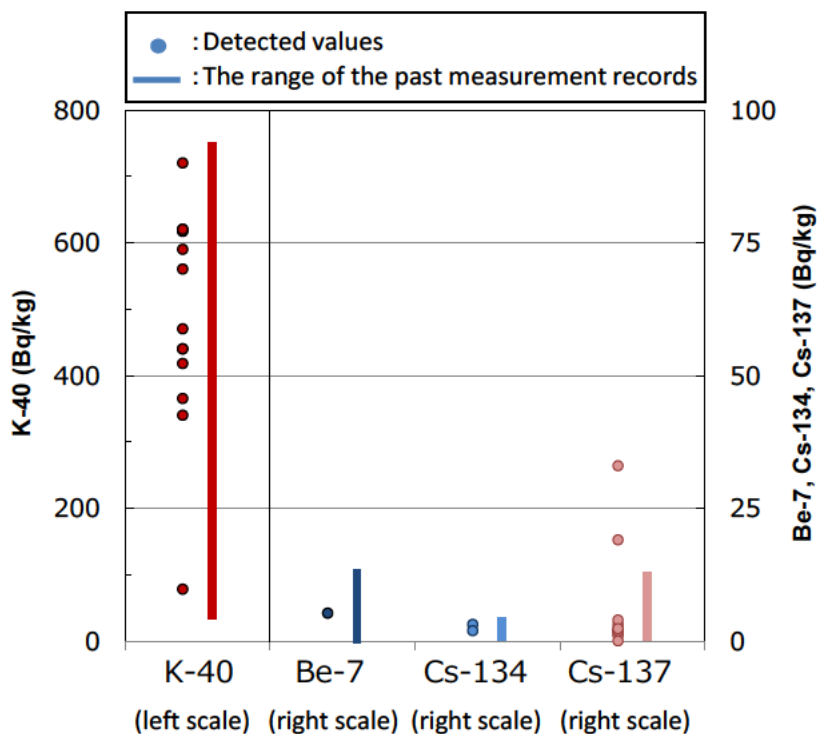


Figure 2.2-2 Detection of radionuclides in the Monitoring of Levels [Sea sediment]

<sup>15</sup> Post-Earthquake Monitoring and Sea Area Monitoring (conducted by NRA)