

Part 3: Other Radioactive Material Monitoring Conducted Nationwide (FY2016)

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 FY2016, which was conducted in FY2016 by the Nuclear Regulation Authority for the purpose of clarifying the existence or nonexistence of the influence of 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>)

1.2 Compilation methods

Measurement data are available on the website of Environmental Radioactivity and Radiation in Japan.¹¹

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

- (i) Period: April 2016 to March 2017 (Published on Feb 14, 2018)
- (ii) Coverage: Nationwide
- (iii) Targets: All radionuclides
- (iv) Targeted samples: Inland water (river water, lake water, freshwater), seawater, sediments (river sediments, sea sediments)

¹¹ Environmental Radioactivity and Radiation in Japan "Environmental Radiation Database" <http://search.kankyo-hoshano.go.jp/servlet/search.top>. (Japanese only, accessed Feb 14, 2018)

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

No.	Prefecture	Property	Sampling locations	Water	Sediments
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	Inogaikae 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	○	○

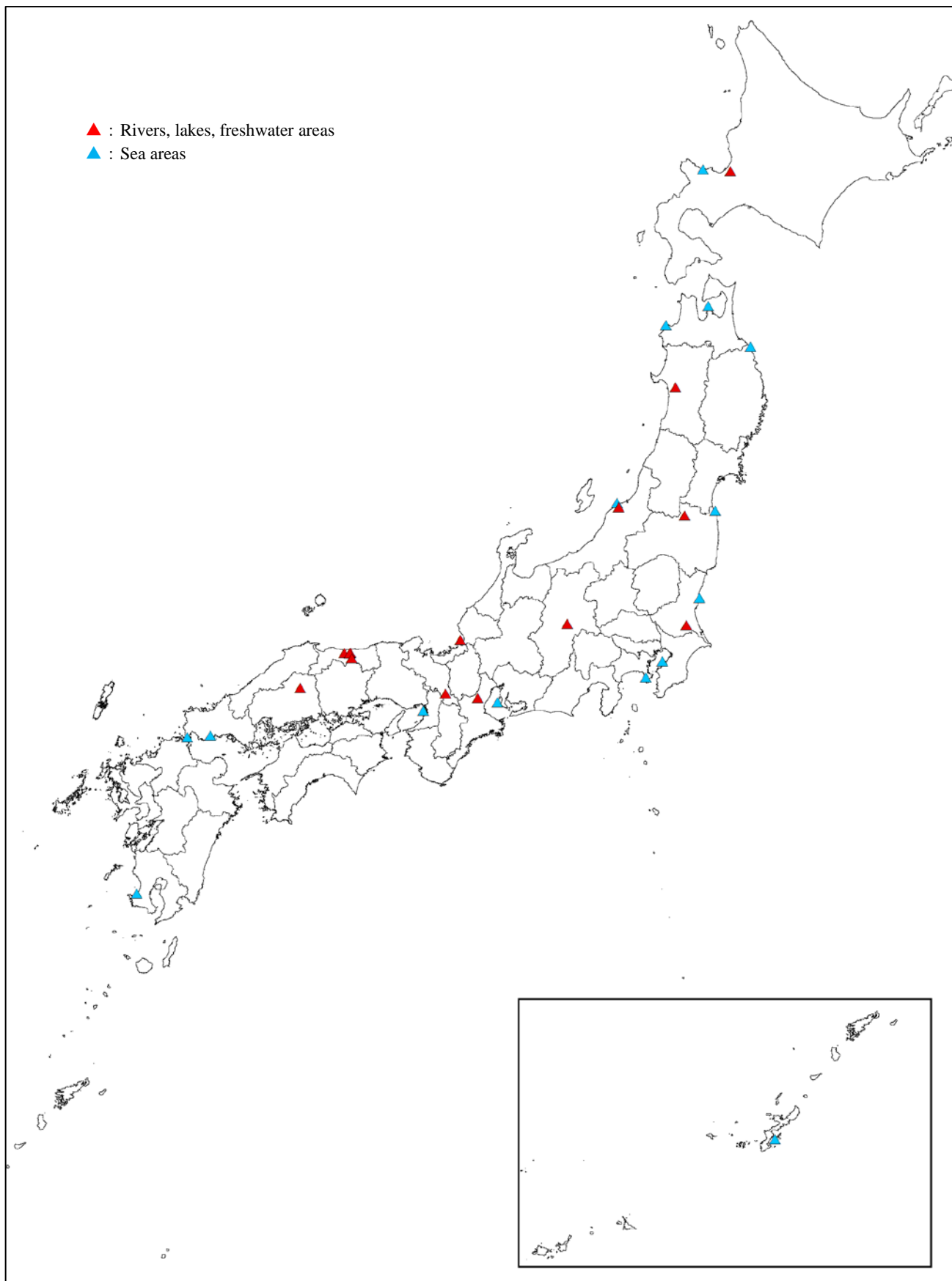


Figure 1.1-1 Locations for the Monitoring of Environmental Radioactivity Levels

2 Results

2.1 Water

(1) Inland water¹²

In the Monitoring of Levels in FY2016, inland water samples were reported for 9 radionuclides (Be-7, K-40, U-234, U-235, U-238, Cs-134, Cs-137, I-131 and Sr-90), as shown in Table 2.1-1.

A comparison with the results of the Monitoring of Levels for the last twenty years (excluding data from March 11, 2011, to March 10, 2013) revealed that although detected values for Be-7, which is a naturally occurring radionuclide, exceeded the range of past measurement values, all these radionuclides were considered to be within the past measurement trends since its maximum value in other environment monitoring is 0.18Bq/L¹³ (see Figure 2.1-1).

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

Nuclides		Number of reported data	Detection times	Range of measured values (Bq/L)	The range of past measurement records (Bq/L) (*1)
Naturally Occurring radionuclides	Be-7	7	4	ND - 0.034	ND - 0.021
	K-40	10	10	0.016 - 0.18	0.0067 - 0.30
	U-234	10	10	0.0015 - 0.0073	0.00042 - 0.015
	U-235	10	0	ND	ND - 0.00054
	U-238	10	10	0.00071 - 0.0055	ND - 0.013
Artificial radionuclides	Cs-134	9	1	ND - 0.0035	ND - 0.028
	Cs-137	9	4	ND - 0.019	ND - 0.055
	I-131	7	0	ND	ND - 0.013
	Sr-90	3	3	0.0013 - 0.0024	ND - 0.0050

(*1) Results of the Monitoring of Levels from FY1996 to FY2015 (excluding data from March 11, 2011 to March 10, 2013)

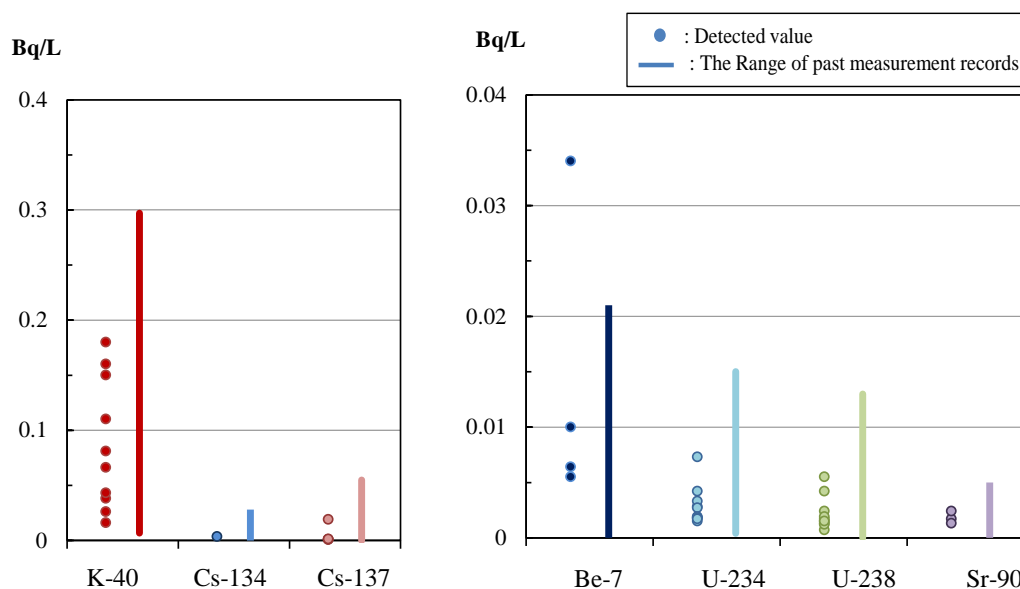


Figure 2.1-1 Detection of radionuclides in the Monitoring of Levels [inland water]

¹² This report only covers data for river water, lake water, and freshwater in the Monitoring of Levels.

¹³ Environmental Radioactivity and Radiation in Japan "Environmental Radiation Database" <http://search.kankyo-hoshano.go.jp/servlet/search.top>. (Japanese only, accessed Feb 14, 2018)

(2) Seawater

In the Monitoring of Levels in FY2016, 6 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 last twenty years (excluding data from March 11, 2011, to March 10, 2013) revealed that detected values for K-40 and Cs-137 exceeded the range of the past measurement trends (see Figure 2.1-2). K-40 is a naturally occurring radionuclide and is derived from potassium in seawater. The detected value for Cs-137 is the same level as the detection limit collected at the same location in recent years.

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

Nuclides		Number of reported data	Detection times	Range of measured values (Bq/L)	Range of past measurement records (Bq/L) (*1)
Naturally occurring radionuclides	Be-7	2	0	ND	ND
	K-40	16	16	0.18 - 15	0.078 - 14
Artificial radionuclides	Cs-134	16	0	ND	ND
	Cs-137	16	2	ND - 0.064	ND - 0.0034
	I-131	13	0	ND	ND
	Sr-90	15	15	0.00064 - 0.0011	ND - 0.0025

(*1) Results of the Monitoring of Levels from FY1996 to FY2015 (excluding data from March 11, 2011 to March 10, 2013)

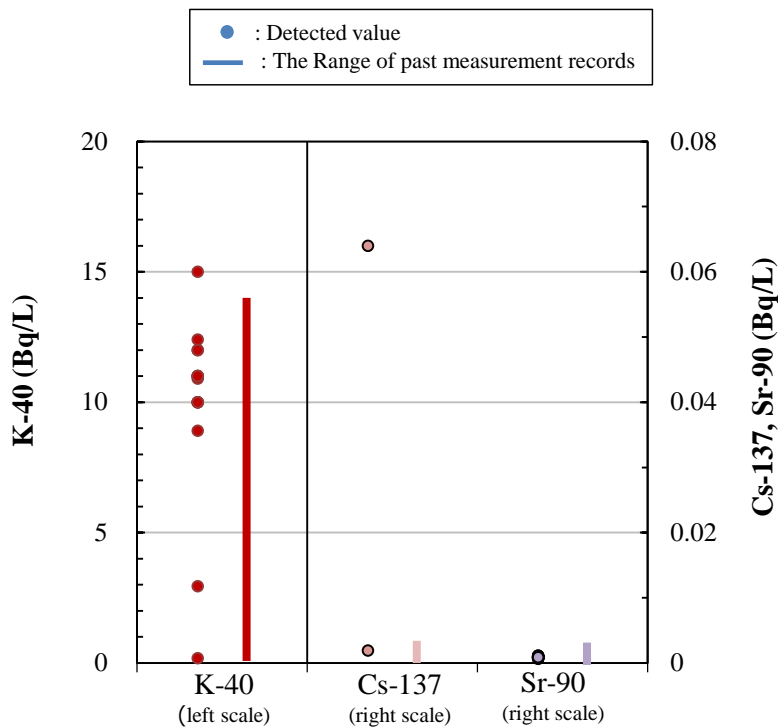


Figure 2.1-2 Detection of radionuclides in the Monitoring of Levels [seawater]

2.2 Sediments

(1) Inland water sediments (river sediments)

In the Monitoring of Levels in FY2016, 3 radionuclides (U-234, U-235 and U-238) were reported from inland water sediment samples (river sediments) as shown in Table 2.2-1.

A comparison with the results of the Monitoring of Levels for the last twenty years (excluding data from March 11, 2011, to March 10, 2013) revealed that detected values for all 3 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 sediments (river sediments)]

Nuclides		Number of reported data	Detection times	Range of measured values (Bq/L)	Range of past measurement records (Bq/L) (*1)
Naturally occurring radionuclides	U-234	5	5	12 - 27	6.5 - 76
	U-235	5	5	0.47 - 1.1	0.20 - 3.4
	U-238	5	5	11 - 28	6.6 - 94

(*1) Results of the Monitoring of Environmental Radioactivity Levels from FY1996 to FY2015 (excluding data from March 11, 2011 to March 10, 2013 and results reported in mg/kg units)

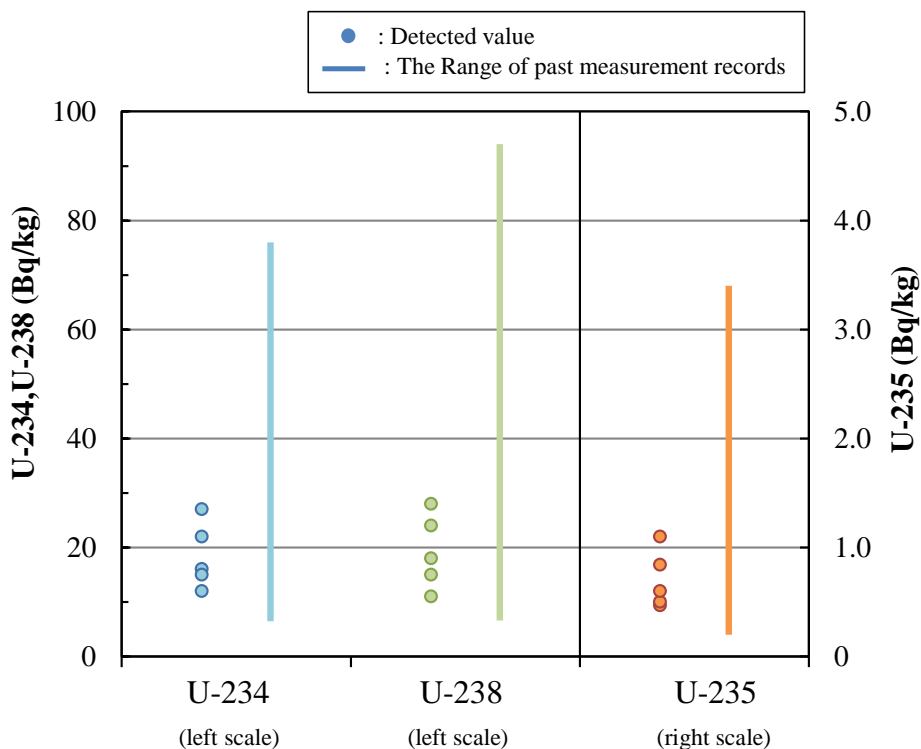


Figure 2.2-1 Detection of radionuclides in the Monitoring of Levels [Inland water sediments (river sediments)]

(2) Sea sediments

In the Monitoring of Levels in FY2016, 6 radionuclides (Be-7, K-40, Cs-134, Cs-137, I-131, and Sr-90) were reported from seawater sediment samples as shown in Table 2.2-2.

A comparison with the results of the Monitoring of Levels for the last twenty years (excluding data from March 11, 2011, to March 10, 2013) revealed that detected values for all these radionuclides were within the past measurement trends (see Figure 2.2-2).

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

Nuclides		Number of reported data	Detection times	Range of measured values (Bq/L)	Range of past measurement records (Bq/L) (*1)
Naturally occurring radionuclides	Be-7	4	0	ND	ND - 13
	K-40	15	15	86 - 690	33 - 750
Artificial radionuclides	Cs-134	15	3	ND - 1.9	ND - 35
	Cs-137	15	9	ND - 11	ND - 76
	I-131	8	0	ND	ND
	Sr-90	8	0	ND	ND - 0.41

(*1) Results of the Monitoring of Environmental Radioactivity Levels from FY1996 to FY2015 (excluding data from March 11, 2011 to March 10, 2013)

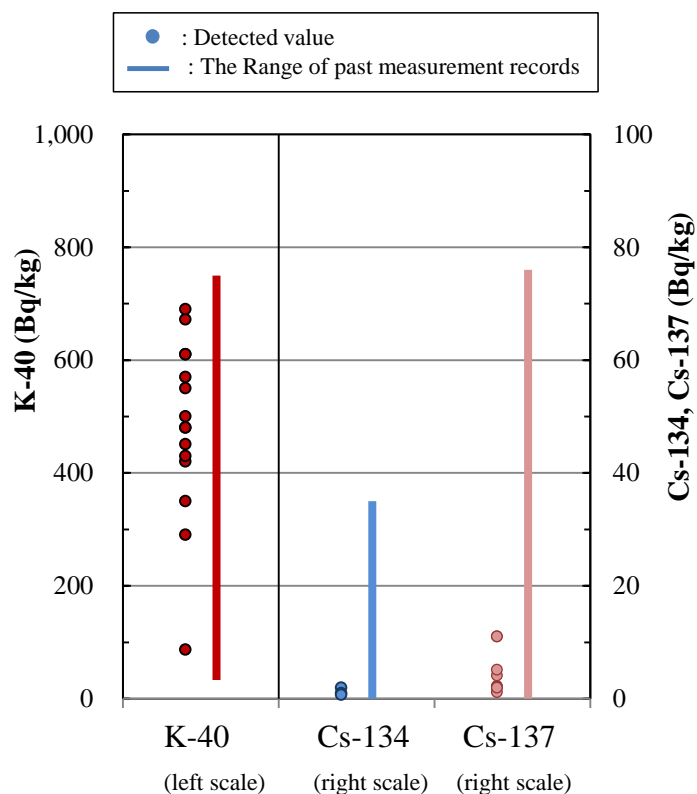


Figure 2.2-2 Detection of radionuclides in the Monitoring of Levels [Sea sediments]