December 19, 2022

Results of ALPS Treated Water Marine Monitoring:
Seawater survey (seven major nuclides) (June, 2022)

1. Outline of survey

(1) Date of sampling
June 22-23, 2022

(2) Sampling points
3 sampling points on the coastal waters in the Fukushima Prefecture (within 3 km of the proposed location of the ALPS treated water discharge outlet)

(3) Detail of the survey
Measurements of radioactive material concentration (seven major nuclides) in seawater
* Seven major nuclides: cesium-134, cesium-137, cobalt-60, ruthenium-106, antimony-125, strontium-90 and iodine-129.

2. Outline of results

(1) Seawater survey (3 sampling points [6 samples] in coastal waters in the Fukushima Prefecture)
Two of the seven major nuclides were detected in the seawater, cesium-137 and strontium-90.
Concentrations of cesium-137 in seawater (with a target lower limit of detection of 0.001 Bq/L) range from 0.0038 Bq/L to 0.014 Bq/L.
Concentrations of strontium-90 in seawater (with a target lower limit of detection of 0.001 Bq/L) range from 0.00060 Bq/L to 0.00083 Bq/L.
Concentrations of cesium-134, ruthenium-106, antimony-125, cobalt-60 and iodine-129 in seawater correspond to below the lower limits of detection in all samples. The target lower limits of detection of the nuclides are shown below.

Nuclide	Target lower limit of detection (Bq/L)
Cesium-134	0.001
Cesium-137	0.001
Ruthenium-106	1.2
Antimony-125	0.5
Cobalt-60	0.3
Strontium-90	0.001
Iodine-129	0.01

*A target lower limit of detection means a value that is set for quality control to assure at least the detection up to the value when analysis is conducted. Each actual lower limit of detection differs according to samples, and is equal to or lower than a target lower limit of detection.

(Detailed are attached)

(Maps attached)

Attachement

Analysis results for the seven major nuclides in seawater at sampling points within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration*1,*2	Unit
E-S3	2022/06/22	Surface layer	1.5	Cs-134	< 0.0008	Bq/L
E-S3	2022/06/22	Surface layer	1.5	Cs-137	0.0057 ± 0.00049	Bq/L
E-S3	2022/06/22	Surface layer	1.5	Ru-106	< 0.6	Bq/L
E-S3	2022/06/22	Surface layer	1.5	Sb-125	< 0.2	Bq/L
E-S3	2022/06/22	Surface layer	1.5	Co-60	< 0.08	Bq/L
E-S3	2022/06/22	Surface layer	1.5	Sr-90	0.00070 ± 0.00010	Bq/L
E-S3	2022/06/22	Surface layer	1.5	I-129	< 0.004	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	Cs-134	< 0.0008	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	Cs-137	0.0076 ± 0.00060	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	Ru-106	< 0.6	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	Sb-125	< 0.2	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	Co-60	< 0.08	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	Sr-90	0.00063 ± 0.00010	Bq/L
E-S3	2022/06/22	Bottom layer	6.0	I-129	< 0.004	Bq/L
E-S10	2022/06/23	Surface layer	1.5	Cs-134	< 0.0006	Bq/L
E-S10	2022/06/23	Surface layer	1.5	Cs-137	0.0038 ± 0.00034	Bq/L
E-S10	2022/06/23	Surface layer	1.5	Ru-106	< 0.6	Bq/L
E-S10	2022/06/23	Surface layer	1.5	Sb-125	< 0.3	Bq/L
E-S10	2022/06/23	Surface layer	1.5	Co-60	< 0.07	Bq/L
E-S10	2022/06/23	Surface layer	1.5	Sr-90	0.00060 ± 0.00010	Bq/L
E-S10	2022/06/23	Surface layer	1.5	I-129	< 0.004	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	Cs-134	< 0.0006	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	Cs-137	0.0046 ± 0.00039	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	Ru-106	< 0.6	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	Sb-125	< 0.2	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	Co-60	< 0.07	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	Sr-90	0.00063 ± 0.00012	Bq/L
E-S10	2022/06/23	Bottom layer	11.5	I-129	< 0.004	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., "<10 Bq/L" indicates a value below 10 Bq/L).

Analysis results for the seven major nuclides in seawater at sampling points within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration*1,*2	Unit
E-S15	2022/06/22	Surface layer	1.5	Cs-134	< 0.0008	Bq/L
E-S15	2022/06/22	Surface layer	1.5	Cs-137	0.014 ± 0.0010	Bq/L
E-S15	2022/06/22	Surface layer	1.5	Ru-106	< 0.5	Bq/L
E-S15	2022/06/22	Surface layer	1.5	Sb-125	< 0.2	Bq/L
E-S15	2022/06/22	Surface layer	1.5	Co-60	< 0.06	Bq/L
E-S15	2022/06/22	Surface layer	1.5	Sr-90	0.00083 ± 0.00012	Bq/L
E-S15	2022/06/22	Surface layer	1.5	I-129	< 0.004	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	Cs-134	< 0.0008	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	Cs-137	0.0074 ± 0.00060	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	Ru-106	< 0.5	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	Sb-125	< 0.2	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	Co-60	< 0.06	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	Sr-90	0.00073 ± 0.00011	Bq/L
E-S15	2022/06/22	Bottom layer	4.8	I-129	< 0.004	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value lower than 10 Bq/L).

(Attachment)

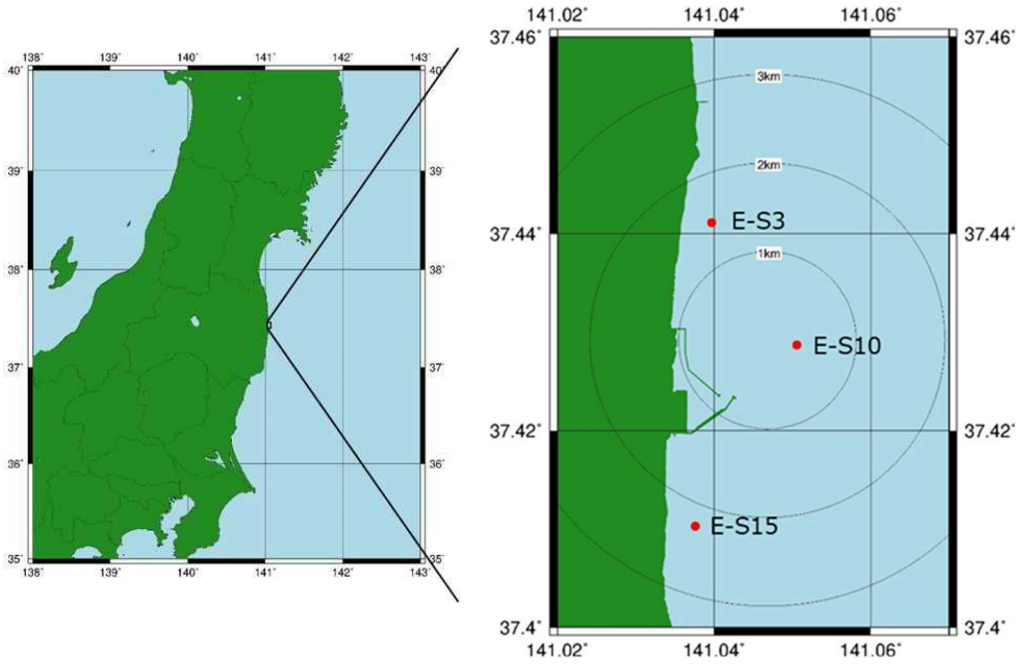

Fig. 1 Sampling points within 3 km of the proposed location of the ALPS treated water discharge outlet