

12 Dec 2023

Publication of a report on Interlaboratory Comparison (ILC) conducted jointly with the IAEA

At the request of the Government of Japan (GOJ), the International Atomic Energy Agency (IAEA) has organized Interlaboratory Comparisons (ILCs) since 2014 to assist the GOJ in ensuring that the results of Sea Area Monitoring in Japan are credible and transparent. These ILCs are part of the project which was initiated following recommendations made on sea area monitoring in the report by the IAEA in 2013 related to the decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station.

The IAEA released the report summarizing of the results of ILC 2022, in which IAEA-designated ALMERA^{*1} laboratories from Finland and the Republic of Korea also participated.

In the report, the IAEA concludes that the results obtained demonstrate a continued high level of accuracy and competence on the part of the Japanese laboratories involved in the analyses of radionuclides in marine samples as part of the Sea Area Monitoring Plan.

In addition to above ILC since 2022, as part of its review of the safety related aspects of handling ALPS treated water stored at TEPCO's FDNPS, ILC to corroborate the results of Sea Area Monitoring undertaken by Japan has been conducted and this report will be published separately.

- Report on ILC 2022("Marine Monitoring: Confidence Building and Data Quality Assurance")
 - ◆ Summary report (attachment)
- The ALMERA network (Analytical Laboratories for the Measurement of Environmental Radioactivity) is a network established in 1995 and comprising 200 member laboratories globally that is coordinated by the IAEA to maintain and develop capability

on the determination of radionuclides in environmental samples.

- *² Available in the IAEA website. A video introducing the ILC is also available. (Refer to URLs below).
- • Full report:
https://www.iaea.org/sites/default/files/23/12/12_japan_ilc_2022_report.pdf
- • Video introducing the ILC:
<https://www.iaea.org/newscenter/multimedia/videos/the-fukushima-data-checkers-monitoring-the-monitors>

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(The following is quoted from the IAEA report.)

Interlaboratory comparisons 2022:
Determination of radionuclides in seawater, sediment and fish
Marine Monitoring: Confidence Building and Data Quality Assurance

SUMMARY REPORT

The IAEA Marine Environment Laboratories in Monaco are assisting the Government of Japan in ensuring that its regularly updated Sea Area Monitoring Plan is comprehensive, credible and transparent through the project "Marine Monitoring: Confidence Building and Data Quality Assurance". During the period 2014 – 2021, 11 interlaboratory comparisons (ILCs) and 8 proficiency tests (PTs) were organised within this project to test the sampling and analytical performance of Japanese laboratories monitoring radionuclides in seawater, sediment and fish as part of the Sea Area Monitoring Plan.

This report focuses on the ILC which was organised in 2022. As for previous ILCs in this project, a joint sampling campaign to collect seawater, sediment and fish samples was undertaken. In this case, sampling was conducted in November 2022 with observers from the IAEA and Japanese authorities involved in the Sea Area Monitoring Plan. Additionally, two experts from laboratories in Finland and the Republic of Korea, both from member laboratories of the IAEA ALMERA network (Analytical Laboratories for the Measurement of Environmental Radioactivity), participated. Seawater and sediment samples were collected at offshore locations close to TEPCO's Fukushima Daiichi Nuclear Power Station. Several species of fish were sampled from a market in Fukushima Prefecture. The samples were then homogenised, split and sent to each participating laboratory for analysis. The results of the analyses of each participating laboratory – 11 from Japan (participating on behalf of the Japanese authorities); the IAEA Marine Environment Laboratories; and the two ALMERA laboratories from Finland and the Republic of Korea – were subsequently collected and evaluated by the IAEA.

Comparisons of the results received for each sample and radionuclide demonstrate that the overwhelming majority are not significantly different from each other. A statistical analysis of the results shows that over 95% of the statistical tests applied passed with a high level of confidence (99%).

It can therefore be concluded with confidence that participating laboratories reported reliable and comparable results for the tested radionuclides in seawater, sediment, and fish samples, prepared and analysed according to each laboratory's regularly used methods (although levels of ^{134}Cs and ^{238}Pu are close to the limits of detection in all sample types and thus difficult to intercompare).

On the basis of the results of ILC 2022, the IAEA can report that Japan's sample collection procedures continue to adhere to the appropriate methodological standards required to obtain representative samples. The results, as for those from other ILCs and PTs in this project, demonstrate a continued high level of accuracy and competence on the part of the Japanese laboratories involved in the analyses of radionuclides in marine samples as part of the Sea Area Monitoring Plan.

(The following table and figures are quoted from the IAEA report as example results for seawater, sediment and fish samples.)

TABLE A. LABORATORIES PARTICIPATING IN ILC 2022

Identifier	Participant
IAEA	IAEA Marine Environment Laboratories, Monaco
ENS	Eurofins Nihon Soken K.K., Fukushima, Japan
FP	Fukushima Prefectural Centre for Environmental Creation, Fukushima, Japan
JAEA	Japan Atomic Energy Agency, Ibaraki, Japan
JCAC	Japan Chemical Analysis Center, Chiba, Japan
KAKEN	KAKEN Co. Ltd., Ibaraki, Japan
KANSO	KANSO TECHNOS Co., Ltd., Osaka, Japan
KEEA	Kyushu Environmental Evaluation Association, Fukuoka, Japan
KINS	Korea Institute of Nuclear Safety, Daejeon, Republic of Korea
MERI	Marine Ecology Research Institute, Onjuku, Japan
STUK	Radiation and Nuclear Safety Authority, Finland
SWRI	SOUGOUMIZU Institute, Ltd., Osaka, Japan
TPT	Tokyo Power Technology Ltd., Fukushima, Japan
TRK	Tohoku Ryokka Kankyohozen Co. Ltd., Miyagi, Japan

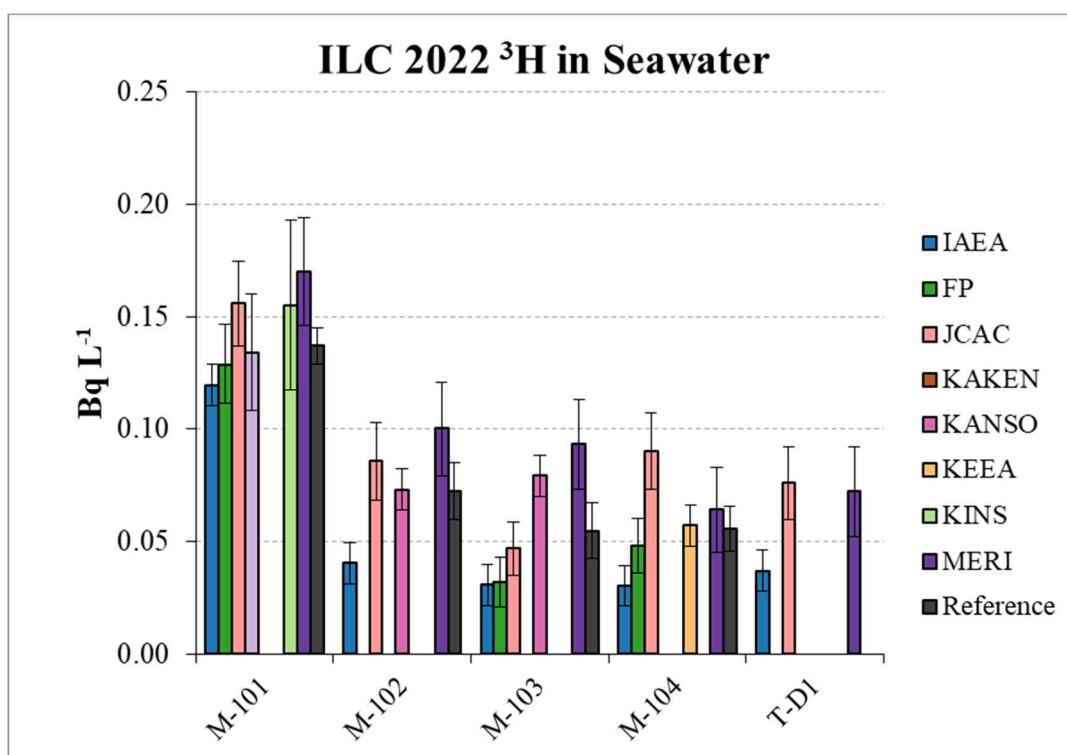


FIG. A. Activity concentrations of ³H in seawater samples.

Note by Nuclear Regulation Authority

1. The horizontal axis indicates the sampling points as the names in the Comprehensive Radiation Monitoring Plan.
2. Laboratories submitting a value less than the detection limit are not indicated.

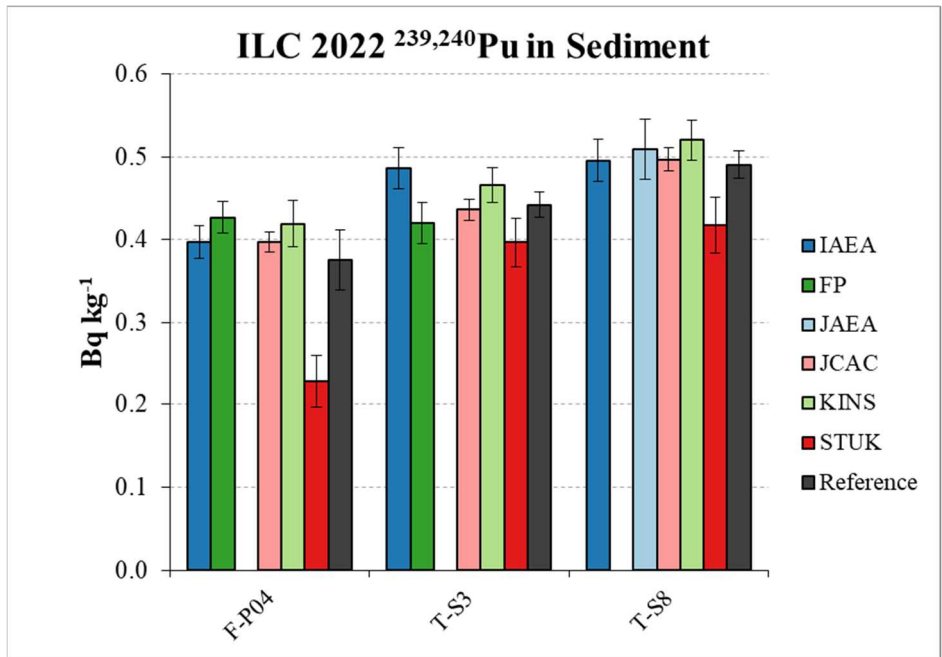


FIG. B. Massic activities of ^{239,240}Pu in sediment samples.

Note by Nuclear Regulation Authority

1. The horizontal axis indicates the sampling points as the names in the Comprehensive Radiation Monitoring Plan.

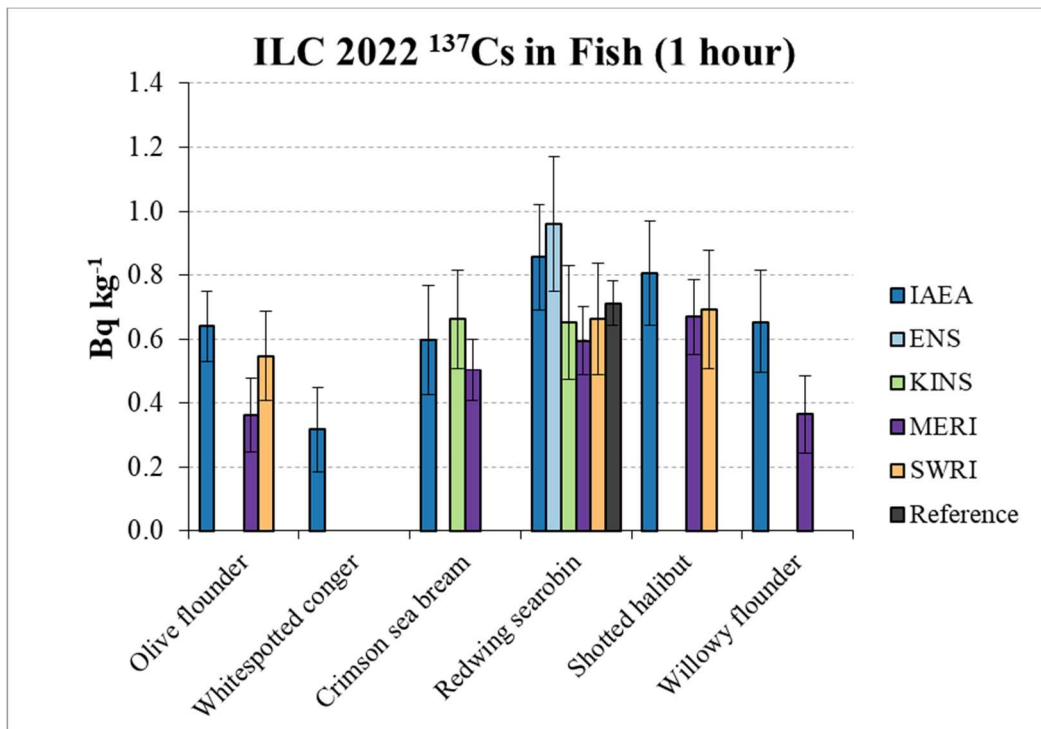


FIG. C. Massic activities of ¹³⁷Cs in fish samples (1 hour measurement time).

Note by Nuclear Regulation Authority

1. The horizontal axis indicates fish species.