

The Result of RFI for Addressing the Contaminated Water Issue

For the purpose of call upon expertise from around the world to address the issue of contaminated water at the Fukushima Dai-ichi NPS, we have conducted request for information (RFI) over September 25 through October 23.

As a result, we have received a total of **780**

responses from Japan and international community as shown below. We would like to express our deep gratitude for kind support and cooperation provided to us.

Responses to RFI has been classified into associated items, sub-items and major categories of each area of technology requested by the IRID's contaminated water technology review team, which was then reviewed with comments by the Expert Review Panel (ERP) consisting of 8 experts in the relevant fields including 3 international experts. [Appendix 1]

(See attachment for the members and schedule of the ERP.)

Please refer to Appendix 2 for the list of responses to the RFI for contaminated water issues.

➤ Responses to the RFI

Areas of Technologies Requested	# of responses
1: Accumulation of contaminated water (Storage tanks, technology for minor leak detection, etc.)	206
2: Treatment of contaminated water (Technology of tritium removal, method of storing tritium stably for a long term, etc.)	182
3: Removal of radioactive materials from the seawater in the harbor (Technology of removing radioactive Cs, Sr from the seawater, etc.)	151
4: Management of contaminated water inside the buildings (Technology of blocking water inside the building, technology of ground improvement, etc.)	107
5: Management measures to block groundwater from flowing into the site (Technology of impermeable wall construction, technology of facing, etc.)	174
6: Understanding the groundwater flow (Geology/groundwater data measurement system, water analysis technology, etc.)	115
Others (those that don't fall into any of the categories 1 thru 6, or those with no mentioning of it)	34

(Note 1) The number of responses for each area has been classified based on the information provided by the submitters.

(Note 2) The grand total of the number of the above table is larger than the actual number of information received as some of the responses are classified into multiple relevant categories.

➤ **Notes of categorization**

The governmental “Committee on Countermeasures for Contaminated Water Treatment” is expected to examine each technology items in terms of the effectiveness to mitigate further risks concerning contaminated water issues. As a reference for the judgment if they can be applied to Fukushima Daiichi NPS within a few years and if they will effectively function, we have classified responses as objectively as possible from the following notes based on the information provided by the submitters.

[Note 1] Most relevant areas of technologies requested

As some of the responses are related to multiple areas, we have noted in Appendix 1 the areas that are most relevant.

As for responses suggested for the contaminated water issue but didn't fall into any of the topic 1 thru 6, such as contaminated water treatment that is not focusing tritium or exposure reduction for workers, they have been categorized into their specially-relevant fields in topic 7.

[Note 2] Experience of using the technology (Technology readiness levels explained)

Based on the experience and expertise explained in the forms provided by the submitters, we have noted one of the following 4 categories.

1. Those that are explained as having accomplished practical applications in an environment similar to Fukushima Daiichi NPS.
2. Those that are explained as having accomplished practical applications in other fields.
3. Those that are explained as having established the principles, and accomplished certain validation at a research level.
4. Those that are explained as conceptual proposals, etc.

➤ **Appendix**

- Appendix 1: Summary of major responses to the RFI (Area 1 to 7)
- Appendix 2: List of responses to the RFI for contaminated water issues

Expert Review Panel

1. Members

➤ International Expertise and Experience WG

Vincent Bret

Head of Service, Encapsulation and Decontamination Processes Service
Nuclear Energy Division, Waste Treatment and Conditioning Research Department
CEA, FRANCE

Mike James

Head of Technical, Technical and Engineering Directorate
Sellafield Ltd, UK

Brian Looney

Senior Advisory Engineer, Savannah River National Laboratory
Department of Energy, USA

➤ Radio-nuclides Detection, Analysis and Decontamination WG

Tadashi Inoue

Research Advisor to Central Research Institute of Electric Power Industry (CRIEPI)
Chair, Clean-up Committee of the Atomic Energy Society of Japan

Akira Kirishima

Associate Professor, Institute of Multidisciplinary Research for Advanced Materials,
Tohoku University

Satoru Tanaka

Professor, Department of Nuclear Engineering and Management,
School of Engineering, University of Tokyo

➤ Groundwater Management and Civil Engineering WG

Takeshi Katsumi

Professor, Faculty of Environmental Infrastructure Engineering
Graduate School of Global Environmental Studies, Kyoto University

Yuichi Suzuki

Professor, Department of Environmental Systems, Faculty of Geo-environmental
Science, Rissho University

➤ Secretariat

Kazuhiro Suzuki

Team leader, IRID Contaminated Water Technology Review Team (also serving as
Executive Director of IRID)

Toshihiko Fukuda

Vice-team leader, IRID Contaminated Water Technology Review Team (also serving
as Director of IRID)

Kentaro Funaki

Deputy team leader, IRID Contaminated Water Technology Review Team (also
serving as General Manager of Research Strategy, IRID)

2. Actions

➤ General session

2 General sessions (on Oct.28 and Oct.31).

➤ Working Group session

Review session on each area of expertise performed separately by the following working groups of:

- International Review
- Radio-nuclides Detection, Analysis and Decontamination
- Groundwater Management and Civil Engineering

International experts stayed in Japan for 7 days from Oct.27 to Nov.2 for extensive reviews, and thereafter made suggestions and comments via emails, etc.

➤ Site visit to Fukushima Daiichi NPS

Visited Fukushima Daiichi NPS, etc. on Oct.29. for further understanding of ongoing actions against the contaminated water issue on site and discussion on issues to be addressed and possible further attentions to mitigate risks with TEPCO.