

## Information Circular

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# Communication dated 1 June 2022 received from the Permanent Missions of the People's Republic of China and the Russian Federation to the Agency

1. The Secretariat has received a letter dated 1 June 2022 from the Permanent Missions of the People's Republic of China and the Russian Federation to the Agency.
2. As requested, the letter and its attachment are herewith circulated for the information of all Member States.

H.E. Mr. Rafael Mariano Grossi  
Director General  
International Atomic Energy Agency  
Vienna

Vienna, 1 June 2022

Dear Director General,

We have the honour to inform Your Excellency that China and Russia have recently presented to the Japanese Government the Joint List of Technical Questions by the People's Republic of China and the Russian Federation on the Disposal of the Japanese Fukushima Nuclear Contaminated Water. Given its particular relevance to the IAEA activities, we would like to share this document with Your Excellency, and ask the Secretariat of the IAEA to circulate this letter and the attachment to it as an Information Circular (INFCIRC) for information of all Member States.

Accept, Excellency, the assurances of our highest consideration.



Wang Qun  
Ambassador Extraordinary and  
Plenipotentiary and  
Permanent Representative of the  
People's Republic of China to the  
United Nations and other International  
Organizations in Vienna



Mikhail Ulyanov  
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Vienna

## Attachment

### Joint List of Technical Questions by the People's Republic of China and the Russian Federation on the Disposal of the Japanese Fukushima Nuclear Contaminated Water

#### I. Questions about Nuclear Contaminated Water Disposal

- 1、 Is the “Basic Policy on the Handling of Advanced Liquid Processing System ( ALPS ) Treated Water from the Fukushima Daiichi Nuclear Power Station” set by Tokyo Electric Power Company Holdings, Inc. (TEPCO) and the Ministry of Economy, Trade and Industry of Japan about disposal plan of the nuclear contaminated water in 30 to 40 years, consistent with the Decommissioning Project (the Road-map) of Units 1 to 4?
- 2、 Please explain the decision-making procedure of the disposal plan of the nuclear contaminated water, from the comparison and selection to final determination and the judgement basis for choosing the discharge of nuclear contaminated water into the sea as the best disposal option. If the Japanese side believes the treated nuclear contaminated water is safe, why not discharge it within Japan's own territory? Will the Japanese side analyse other technical options of the treatment of the nuclear contaminated water?
- 3、 After treated by the ALPS, 70% of the nuclear contaminated water still exceeds the discharge limits values of Japan. Since the operation of the ALPS, the activity concentrations of iodine-129 and other nuclides has exceeded the discharge limits by many times. Please clarify the processing parameters, performance indicators and operation status, and explain the causes of the above problems. What will be done if there is an abnormality or the processing capacity decreases? How can the Japanese side ensure that the large-scale secondary treatment of the substandard nuclear contaminated water can achieve the expected results? Will the Japanese side make evaluations on the capacity of ALPS to purify the additional nuclear contaminated water, generated during the decommissioning of units 1 to 4 of Fukushima Daiichi nuclear power plant, to meet international safety standards before discharging into the sea?

- 4、 The radioactivity monitoring before, during and after disposal of nuclear contaminated water is the basis for judging the effectiveness of the technology and treatment. Please explain how to determine the scope and location of monitoring, and the types of nuclides to be monitored? Whether the early warning level of monitoring is set, and what are the response measures for abnormalities? How are monitoring records kept?
- 5、 The volume of the storage tanks for nuclear contaminated water is up to 1000 cubic meters. It needs long and continuous stirring to be homogeneous. The results of sampling and monitoring before discharge are the basis for determining whether discharge is allowed, but Japanese side has not yet released information about the representativeness of sampling. Please indicate whether the storage tanks are equipped with agitation devices? If not, how to sample in different layers and different areas? And how to consider monitoring programmes and records for storage tanks?
- 6、 At present, Japan published several sets of monitoring results and detection limits for 64 nuclides, but has not released the key information such as specific detection methods and uncertainties. Please clarify the measurement methods and their conformity with relevant standards.
- 7、 The criterion on whether the contaminated water from nuclear accident meets the emission standards in Japan is that the sum of ratios of activity concentrations of 63 radionuclides except for tritium to the emission concentration thresholds should be less than 1. Japan sets the sum of ratios for 55 radionuclides among them to be fixed at 0.3. Measurement data used to determine the sum of ratios for these 55 radionuclides is too little, since there are just three sets of data currently which say 0.553, 0.193 and 0.165. It lacks conservatism to set the sum of ratios to be 0.3 on this basis. Please explain the sufficiency of the reasons for setting the ratio at 0.3.
- 8、 It is an international practice to monitor each nuclide with a set limit when discharging liquid effluents from nuclear power plants. Japan has set limits for 64 nuclides in the nuclear contaminated water, but only tritium and 9 nuclides including cesium-134, cesium-137, strontium-90, cobalt-60, antimony-125, rubidium-106, technetium-99, carbon-14 and iodine-129 are measured, which is inconsistent with the international practice. Please explain

the scientific basis.

- 9、 For ensuring that the monitoring procedures, methods and results are all authentic, the TEPCO should explain whether it has made the quality control programme suited to the monitoring programme of the contaminated water from nuclear accident, and whether it has retained samples for subsequent remeasurement and verification. Will the Japanese government conduct the supervisory monitoring? Will the Japanese side allow experts from the relevant countries to sample the nuclear contaminated water discharged into the sea on site?
- 10、 Did Japan disclose all the relevant monitoring data to the stakeholders? Would Japan invite the stakeholders to make evaluations, whole-process supervision and independent monitoring?
- 11、 Japan should explain the detailed discharge programme for the contaminated water from nuclear accident, including the overall design of the discharge system, the discharge sequence, the discharge location, the discharge amount and frequency, the measures for discharge safety, the monitoring programme in each stage, the discharge process control and the review.
- 12、 Internationally, liquid effluent emissions from nuclear facilities are usually monitored online. Please specify whether Japan has set up an online monitoring device. Does the lower detectable limit of online monitoring device meet the requirements of emission control? Can online monitoring control measures ensure that the emission of contaminated water from nuclear accident meet the emission requirements in Japan?
- 13、 Before the emission of contaminated water from nuclear accident, detailed marine environment monitoring programme and marine ecological monitoring programme should be developed to provide long-term follow-up monitoring of seawater, sediments, marine organisms, coastal organisms, seabed areas, etc., in order to assess the impact of contaminated water from nuclear accident emission on the marine environment and marine ecology. Please specify whether Japan has developed a programme and made it public? Who is responsible for developing the programme? Who is responsible for supervising the implementation of the programme? What role does the Japanese Government play in the monitoring process? Has

the programme consulted stakeholders and neighbouring countries? Whether they are invited to participate in the verification of the implementation of programme? Will Japanese side monitor carbon-14 and other nuclides in sediments at the bottom of the sea where the nuclear contaminated water is discharged as well as the discharged water itself?

14、 Please specify whether Japan intends to disclose all data on emission of contaminated water from nuclear accident and marine monitoring to the international community, including monitoring data while discharging the contaminated water from nuclear accident and marine monitoring data before and after the discharge? Will key samples be retained and adopted for remeasuring by international agencies, stakeholders and neighbouring countries?

15、 Operation and decommissioning of ALPS will generate secondary waste, such as waste resin, waste adsorption filter, waste equipment, etc.. Please specify the generation and management of such waste. How to deal with such waste? Please specify the generation and storage of solid waste after the Fukushima Daiichi Nuclear Accident and whether such wastes has been characterized? How does Japan consider the final disposal of such waste, and does it have corresponding disposal acceptance criteria? How does Japan consider the disposal of contaminated soil and waste from decommissioning? How to deal with the storage tanks and related piping facilities after nuclear contaminated water being treated?

16、 According to Japanese media reports, in October 2021, the temperature of some areas of the frozen soil (water retaining) wall of Fukushima Daiichi Nuclear Power Station increased abnormally. Please specify the current status of the frozen soil wall and whether it has an emergency plan to deal with the outflow of contaminated groundwater from the plant area after the thaw of the frozen soil wall?

## **II. Questions about Radiological Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea**

1、 When assessing the environmental impact of radionuclides, will the additional nuclear contaminated water generated during the decommissioning of Units 1 to 4 of the Fukushima Daiichi Nuclear Power Station be taken into account? What is the cumulative volume of water planned to discharge for the future?

- 2、 In addition to the radioactive factors, has the Japanese side analyzed all the factors and consequences arising from the choice of this nuclear contaminated water treatment methods, such as social, economic, ecological and other impacts.
- 3、 Does the Japanese side plan to include an optimization process for radiation protection of the public in the radiological impact assessment report as required by the IAEA Safety Standards (General Safety Guide GSG No.9 "Regulatory Control of Radioactive Discharges to the Environment") ? To prevent or reduce uncontrolled discharges of nuclear contaminated water and to prevent or reduce radiation exposure to the public and workers in the accident, what emergency response plans have been considered by the Japanese government to ensure that necessary protective measures are taken in a timely manner?
- 4、 Why does TEPCO set the simulation time at one year, not a decade or more decades? How does Japan evaluate the impact of contaminated water from nuclear accident on global marine food chain and ecosystem, as well as the long-term impact of radionuclides on the marine environment after depositing to the bottom of the sea?
- 5、 Why does the Report limit the calculated range of the transport diffusion of nuclides in seawater to the coastal waters of Japan, instead of to the North Pacific Ocean, or even all global waters? Does the Japanese government have any data related to the simulation of water flow with radioactive isotopes at a distance of 100km from Honshu Island and the east coast of Hokkaido?
- 6、 Why does the Report set the tritium concentration at the discharge outlet at 30Bq/L, which is far below the diluted goal 1500Bq/L as claimed? Please explain if this will lead to underestimated radiological impact of tritium exposure.
- 7、 Japan's evaluation is based on the assumption that the treated contaminated water can meet the standard. Why didn't it evaluate the impact of the contaminated water if it would not reach the standard? Such assumption lacks credibility. Will Japan invite the stakeholders and international agencies to evaluate collectively?
- 8、 The "dilution" method which Japan applies only reduces discharge concentrations without

substantially reducing total amount, how could it prove that dilution can reduce the impact on the overall marine environment? If it does not reduce the radiological impact, what is the purpose of dilution?

9、 At present, there are new studies on the combined exposure toxicity of radionuclides and other pollutants. It indicates that the public health effect caused by the combined exposure of radionuclides and other pollutants in seafood is an issue that needs to be paid attention to in health risk assessment. How does the Japanese side consider the health effects of combined exposure of tritium and other toxin substances? If yes, please provide relevant detailed data. At the same time, the report should not only provide dose estimation, but also assess the health effects.

10、 In terms of radiation weight factor and relative biological efficiency of tritium and carbon, the assessment report should take full account of the latest research results and evaluate the risk of long-term health effects caused by Auger electrons of tritium and carbon-14. How does the Japanese side consider this?

11、 With regard to the concentration effect of radionuclides in marine organisms, the assessment report should take full account of the enrichment of radionuclides in certain foods and their long-term health effects caused by biological chain transfer following the discharge of the nuclear contaminated water. How does the Japanese side plan to assess that?

12、 Please explain the basis for the assessment of radiological impacts only in the coastal areas within 10 km. Why not assess the northwest fishing area of the North Pacific fishing ground and many fishing grounds on the west coast of North America, which are located on the radionuclides transport path, and why not consider the impact on public psychology and the resulting impact on fisheries?

13、 What is the monitoring plan about radiation environment and marine ecology of surrounding sea area during the control and discharge process of nuclear contaminated water? How to identify and respond to the abnormal conditions through monitoring?

14、 Different nuclides and different exposure pathways have different effects on human and



marine ecology. Using the total ratio of each radionuclide seems to be qualified, however the actual dose will be higher than the ideal assessment dose. What is the basis for this dose calculation method? Why are conservative assumptions not made for some nuclides with large dose contributions such as Iodine-129?

15、 Please explain the scientific basis of the marine radionuclides transport model and transfer parameters of radionuclides in marine environment.

16、 The report lacks basic information on the environment directly related to the radiological impact assessment, such as the potential maximum exposure residential areas and their population distribution, food sources, offshore operations, etc. Why didn't the Japanese side provide this information?

17、 The information related to ecological surveys in the report is incomplete, why does it lack justification for the selection of representative plant and animal samples? Does the Japanese government have information on water samples collected and processed at a distance of 100km from the coast of Japan? And are there any analysis data on radioisotope potassium in the aquatic biota samples?

18、 The Report should identify the key population groups and evaluate the maximum effective dose those were subjected to. Please explain why the Report chose only two specific population groups' annual seafood consumption data.

19、 Please explain the representativeness of the use of meteorological ocean data in 2014 and 2019 to calculate the ocean dispersion. Did Japan consider the impact of the climate conditions on a global scale (like El Nino and La Nina phenomenon) and the changing ocean currents?

20、 Why didn't the Japanese side invite independent third parties to carry out the radiological impact assessment? The sponsor and the leader of assessment members of the radiological impact assessment report are both from TEPCO, how can their objectivity and impartiality be ensured? Why is the company in charge of specific tasks for discharge, instead of the Japanese nuclear safety regulatory authorities, to confirm that the discharge is safe?