후쿠시마 오염수 투기 전국민이 반대한다! 더불어민주당

보 도 자 료

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2023 / 07 / 24 (월)

수신: 각 언론사 외교,원전,환경 담당기자(산업부,외교부,환경부)	날짜: 2023년 7월 24일(월)
문의: 양이원영 의원실 (서영준 비서관 010-6427-9787)	총 분량: 13쪽

[기자회견문]

IAEA '안전은 국가(일본) 책임', 'ALPS 성능은 IAEA 평가 관련 요소 아니다', '방출 외 대안 검토하지 않았다'고 공식 답변

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국제원자력기구가 더불어민주당에 보내 온 서면 답변 내용을 분석공개합니다. 국제원자력기구는 6월 28일 더불어민주당이 보낸 서면질의에 대해 7월 9일 라파엘 그로시 사무총장과의 면담에서 서면 답변을 민주당에 제출했습니다. 그리고 이 날 민주당이 제기한 대한민국 국민의 우려에 대한 서면 답변을 7월 12일에 민주당에 보내 왔습니다.

국제원자력기구의 답변은 ' 안전은 국가(일본)의 책임 ', ' ALPS 성능은 IAEA 평가 관련 요소 아니다', '방출 외 다른 대안을 검토하지 않았다 '는 것입니다. 무책임하기 그지없었습니다. 그리고 일본으로부터 받은 지원액수를 묻는 질문에 대답하면서 ' 예산 외 재정 지원 '을 언급하였습니다. 오염수 방출 IAEA 보고서 작성을 위한 일본의 재정지원을 사실상 시인한 것입니다. 그밖에 본질적 문제점에 대해서는 동문서답을 하기 일쑤였습니다. 후쿠시마 오염수 해양투기 안전성 검증에 있어 IAEA의 한계를 명확하게 보여준 답변이었습니다.

IAEA의 안전성 검증 시 흔들어 섞은 시료 채취는 단 1회뿐이기 때문에 시료의 대표성 확보가 어렵지 않느냐는 질문에는 2022년 10월 채취한 섞지 않은 추가 시료를 분석하고 있다고 밝혔습니다.

이 뿐 아닙니다. 동경전력이 제출한 데이터를 신뢰하기 어렵고 방류 운영의 신뢰성도 보장하기 어렵지 않느냐는 지적에는 현재까지 IAEA의 작업은 시작에 불

과하고 지속적인 검토와 모니터링 활동을 계속 수행할 것이라는 원론적인 답변만 내놓았습니다. 그럴거면 왜 오염수 방류가 문제없다는 결론을 내렸습니까? 매우 성급하고 비과학적인 결론입니다.

IAEA의 검증과정의 한계도 명확하게 드러낸 답변도 확인했습니다.

일본의 오염수 방류가 그행위로 인한 이익이 피해보다 커야한다는 IAEA 안전지침 GSG-8 정당화 요건에 위배된다는 지적에는 정당화 결정은 경제적, 사회적 요인과 같이 기술적이지 않은 다른 고려사항을 포함하기 때문에 이에 대해 언급할 필요가 없다고 합니다. 그럴거면 왜 IAEA는 GSG-8 기준을 만들었습니까? 또한, 원자력 안전은 국가의 책임이기 때문에 오염수 방류 결정은 일본 정부가 내려야 한다고 답변했습니다.

후쿠시마 오염수 해양투기에 있어 가장 중요한 검증항목인 다핵종제거설비(ALPS)의 성능 검증 여부에 대해서는 ALPS 처리 공정의 성능은 국제안전기준 준수 여부에 대한 평가와 무관한 요소라고 말합니다. 후쿠시마 오염수가 국제기준에 맞게 처리되었다는 평가보고서를 낸 IAEA가 핵심 처리 설비 성능에 대해서는 자신의 평가와 무관한 요소라고 입장을 내는 것이 맞는 것입니까?

후쿠시마 오염수의 장기저장과 같은 대안을 고려했느냐는 질문에도 IAEA의 검토에는 다른 잠재적 대안의 타당성은 평가하지 않는다고 답했습니다.
IAEA의 부실한 종합보고서에 이어 또다시 부실하기 짝이 없는 답변이 돌아온 것입니다. 이런 상황에서 일본 정부는 IAEA의 용역보고서를 근거로 올 여름 해양투기를 공공연하게 주장하고 있습니다. 윤석열 정부 역시 IAEA 보고서 내용을 존중한다고 밝히고 있습니다.

더불어민주당은 결코 동의할 수 없습니다. 부실하기 짝이 없는 종합보고서, 성의없는 답변이지만 다시 한번 국민 안전을 위해 IAEA에 공개적인 질문을 드립니다. IAEA는 과학적 본질을 회피하지 마십시오.

첫째, IAEA는 일본정부와 동경전력이 제공한 데이터를 바탕으로 검증에 임했습니다. 이러한 데이터 신뢰성을 확보할 수 있는 소스데이터 및 데이터 생산과정에 대한 확인, 검증이 있었습니까? 있다면 소스 데이터와 데이터 생산과정을 공개하십시오

둘째, 후쿠시마 오염수 방출은 원전 사고 고준위폐기물에서 발생된 오염수 해양투기입니다. 그리고 국경을 초월하는 영향이 예상됩니다. 환경영향평가는 오염원

특화(source-specific), 현장 특화(site-specific)이어야 합니다. 이 특수한 오염수 투기가 해양환경에 미치는 환경영향평가에 구체적으로 어떤 프로그램과 참고사례를 적용했습니까? 단순한 오염수 배출평가가 아닌 플루토늄(Pu), 넵투늄(Np) 등 초장반감기핵종에 기인한 장기간 광역 해양생태계와 먹이사슬 축적 등으로 관련인접국 및 미래세대에 미치는 종합적인 방사선안전성 평가가 적용되었습니까?

셋째, 후쿠시마 오염수 처리방법에는 다양한 대안이 제시되었지만 이를 반영하지 않았습니다. 국제적으로 환경영향평가, 원전안전 등에 적용되는 최신가용기술(BAT)에 대한 적용은 있었습니까?

넷째, 후쿠시마 오염수 해양투기의 안전성을 확인하기 위해서는 다핵종제거설비(ALPS)의 성능이 반드시 담보되어야 합니다. IAEA 보고서를 통해서는 다핵종제거설비의 흡착성능, 제염계수, 운영관리절차서, 사용전 검사등에 대한 기본적인 검증내용도 확인할 수 없습니다.
또한, 배출기준 불만족 오염수의 다핵종제거설비의 추가처리규정 등이 명확하지 않아 추가처리 과정에서 발생할 수 있는 방사성 핵종 재오염 발생 등의 우려 역시 해소되지 않고 있습니다.
IAEA는 이러한 다핵종제거설비 사용에 따른 우려를 면밀하게 분석하고 검증할 계획이 없습니까?

다섯째, 종합방사선감시계획(CRMP:Comprehensive Radiation Monitoring Plan)은 실제 유출되는 방사성물질에 의한 장기간에 걸친 해양환경, 해양생태계에 미치는 축적영향을 기준치와 비교를 통해 평가하여야만 합니다. 하지만 IAEA의 종합보고서에는 제한적 지역의 단기간 후쿠시마 오염수의 배출계획에 대한 감시/평가만을 하고있습니다. 환경영향평가가 아니라 그저 배출영향평가에 지나지 않습니다. 동경전력의 종합방사선감시계획이 후쿠시마 오염수 배출에 따른 방사성환경영향평가에 어떻게 반영되었는가요?

여섯째, IAEA의 역할은 방사성 물질이 악의적으로 이전되는 것을 감시하고 차단하는 데에 있습니다. 현재 후쿠시마 원전 사고 지역에서는 통제되지 않는 방사선 물질이 후쿠시마 바다로 흘러나오고 이전되고 있습니다. 이에 대한 IAEA의 대책이 무엇입니까? 그리고 이러한 방사성 물질의 해양 유입에 대하여 어떻게 조사하여 이를 이번 안전성 평가에 반영하였나요?

일곱째, 후쿠시마 오염수 해양투기계획은 필연적으로 후쿠시마 사고원전 폐로계획과 연결되어 있습니다. 후쿠시마 사고원전에서 지속적으로 발생하는 후쿠시마

오염수 때문입니다. 일본 정부는 후쿠시마 오염수를 30년간 해양에 투기할 계획을 수립했으나 후쿠시마 사고원전 폐로가 계획대로 진행되었을 때를 전제한 계획에 불과합니다. 동경전력의 후쿠시마사고원전 해체계획서를 검토한 적은 있는지, 계획대로 폐로계획이 이루어질 수 있다고 판단하는 근거는 무엇입니가?

여덟째, 후쿠시마 오염수 해양투기는 해양환경과 인류의 건강문제와 직결되는 문제입니다. IAEA는 자신이 유일한 안전성 검증기구라고 생각하는가요? 지금까지 한국의 과학자들과 전문가들이 제기한 문제를 포함하여, IAEA 안전기준이 완전하게 충족되도록, WHO 등 국제기구와 같이 추가적인 검증과 평가를 진행해야 합니다. 그리고 이 2차 평가가 종료될 때까지 오염수 방출 중단을 일본에 촉구해야 합니다. 이를 IAEA는 수용해야 합니다. 이에 대한 입장은 무엇인가요?

아홉번째, 동경전력의 방사성환경영향평가에는 개인피폭최대선량기준을 평가하는 부지경계를 정상원전과 달리 10Km 밖으로 확장하였습니다. 이는 후쿠시마 원전 부지가 여전히 방사성물질에 고농도로 오염되어 있어 원전 부지경계 1mSv 이하 국제기준을 맞추기 위한 편법 동원으로 보입니다. 대규모 방사성물질 유출 사고에 대해서 IAEA 앞으로 이와 같은 부지경계 확장의 편법 평가를 계속 적용하고 정당화할 것인가요?

열번째, 마지막으로 후쿠시마 오염수 모니터링TF에 참여한 독립적인 외부전문가 11명의 검토의견은 무엇입니까? 그리고 이 검토의견은 어떻게 종합보고서에 반영되었습니까?

IAEA는 과학적 본질을 회피하지 마십시오. 전문가 기술과학토론을 공식 제안합니다.

2023.7.24.

더불어민주당 후쿠시마원전오염수해양투기저지총괄대책위원회

#붙임1. 6.28. 공개질문 답변

(In regards to reviewing the discharge plan as requested by Japan)

1. The samples collected by the IAEA are not seen as fully representative of the radioactive water in the Fukushima nuclear power plant as the sampling was done only once during the IAEA's safety review. What is the response of the IAEA to this concern?

   As well as the corroboration that has already been reported, the IAEA is currently in the process of analysing additional samples of ALPS treated water that were taken in October 2022 and plans to conduct analyses on additional tanks of ALPS treated water as they are readied for the planned discharges. Under the discharge plan, TEPCO is required to conduct source monitoring of all batches of ALPS treated water before a given batch is diluted and discharged; this work is independently verified by NRA. The IAEA will also sample this water in order to corroborate the results of the analyses and TEPCO's measurement capabilities. The IAEA's safety review will continue for many years and the sampling and analysis activities of the IAEA laboratories are a key part of this work. Furthermore, the IAEA plans to continue involving third-party laboratories in Member States in the future analysis efforts.

   Furthermore, the IAEA is also conducting corroboration of environmental monitoring. In November 2022 the IAEA participated in a sampling mission in Japan to collect environmental samples (e.g., seawater, marine sediment, fish, seaweed) for the first ILC to corroborate environmental monitoring related to discharges of ALPS treated water. Following the evaluation of all submitted data, the results of the ILC will be made available by the IAEA in the second half of 2023. The results of future monitoring of environmental samples will be compared against this baseline to assess any measurable impacts from the future discharges of ALPS treated water.

   Additional information regarding the IAEA's corroboration activities can be found in the comprehensive report released on 4 July 2023, as well as the 3rd ALPS report published on 29 December 2022 and the 1st ILC results published in May 2023. Links to these and other reports can be found on the IAEA's ALPS website.

   https://www.iaea.org/topics/response/fukushima-daiichi-nuclear-accident/fukushima-daiichi-alps-treated-water-discharge

2. How much financial support is the IAEA receiving from Japan for the safety review? If the IAEA is receiving financial support from Japan, the neutrality of the review cannot be easily assured. What is the response of the IAEA to this concern?

   The IAEA is an autonomous organization within the UN system that carries out its technical and scientific work in an impartial and objective manner. In everything we do, we represent all our 176 Member States.

   In addition to their regular budget contributions, many Member States provide the IAEA with extra-budgetary funding to further support and strengthen nuclear safety worldwide. For example, generous external funding is enabling the IAEA to help prevent a serious nuclear accident in Ukraine during the ongoing military conflict in the country. Additional resources have also allowed the IAEA to assist Japan in enhancing nuclear safety in that country following the 2011 Fukushima Daiichi accident, benefiting other Member States in the region and beyond.

   As with all our work, the IAEA has been carrying out an independent, scientific and objective review of the safety of Japan's plan to discharge treated water from the Fukushima Daiichi plant. In addition to our own experts, the Task Force conducting the review consists of leading non-Agency specialists from 11 countries, including South Korea. There is no possibility for any external party to unduly influence the IAEA's findings.

3. Considering the many past instances where TEPCO manipulated data and provided false statements such as concealing the core meltdown of the Fukushima nuclear power plant, that the ALPS does not filter Carbon-14, and the functioning failure of ALPS, it is difficult to trust the data submitted by TEPCO and ensure the reliability of its operation of the discharge plan. What is the response of the IAEA to this concern?

Throughout the IAEA's safety review, Agency staff as well as independent external experts, who are all members of the IAEA Task Force established in 2021 by IAEA Director General, have conducted a range of technical activities including regular visits to the FDNPS and multiple technical missions to Japan focused specifically on the responsibilities and activities of TEPCO, METI, and NRA. These activities have provided the IAEA with the necessary insights and information to draw its conclusions that are included in the recent comprehensive report released on 4 July; namely that the approach and activities to the discharge of ALPS treated water taken by Japan are consistent with relevant international safety standards. However, the IAEA's work is just beginning. The ongoing review and monitoring activities will continue and will provide transparency and reassurance to the international community by continuously providing for the application of relevant international safety standards.

4. The safety of the Fukushima radioactive water ocean discharge plan cannot be guaranteed because no review has been conducted on the influence of tritium and other radionuclides on the marine environment and ecosystem of the neighbouring countries. What is the response of the IAEA to this concern?

One key element of the IAEA's safety review is assessing TEPCO's radiological environmental impact assessment (REIA) against the relevant international safety standards. An REIA is an important tool in helping licensees and regulatory bodies estimate and control the radiological effects on the public and the environment from radioactive discharges from activities and facilities. Based on its review, the IAEA concluded that TEPCO's approach was consistent with the relevant international safety standards. These safety standards take into account the findings of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the recommendations of international expert bodies such as the International Commission on Radiological Protection (ICRP). Furthermore, the IAEA has concluded that the controlled, gradual discharges of the treated water to the sea, as currently planned and assessed by TEPCO, would have a negligible radiological impact on people and the environment. However, an REIA is not a static document and should be updated over time considering factors such as updates to models and simulations, changing environmental conditions (e.g., weather), the results of environmental monitoring, and changes in the habits of nearby populations. These and other technical elements will continue to be considered by the IAEA as part of its ongoing safety review.

(From the perspective of international law, the IAEA Charter, and the protection of life and property of people around the world)

1. Japan's decision to release the radioactive water violates the justification requirement of the IAEA's safety guideline GSG-8, which requires "the expected benefits to individuals and to society from introducing or continuing the practice to outweigh the harm resulting from the practice." Therefore, the release must be halted until this problem is resolved. What is the response of the IAEA to this concern?

In the *IAEA Comprehensive Report on the Safety Review of the ALPS-Treated Water at the Fukushima Daiichi Nuclear Power Station*, issued on 4 July, the issue of justification is considered and addressed. For the reasons stated in its comprehensive report, the IAEA noted that a decision-making process was followed by the Government of Japan, and which justified the final choice of how to manage the ALPS treated water stored at FDNPS.

Furthermore, as explained in the IAEA's comprehensive report, the justification decision goes far beyond the scope of radiation protection, and also involves other considerations, many of which are not technical in nature, such as economic and societal factors and therefore it is not for the IAEA to comment on and analyse the non-technical aspects of this decision.

It is also important to highlight that justification applies to the overall practice and not to individual aspects of the practice. Therefore, it is clear that the issue of justification of the discharge of ALPS treated water is inherently linked with the overall justification of the decommissioning activities taking place at the FDNPS and thus is influenced by broader and more complex considerations. Decisions regarding justification should be taken at a sufficiently high governmental level to enable all the considerations that may be related to the benefits and detriments to be taken into account. As nuclear safety is a national

responsibility, it is a decision for the Government of Japan to take.

2. In order to comply to the IAEA's safety guideline GSG-8's optimization criterion that requires "the harm of justified actions to be kept as low as reasonably achievable", Japan should review alternative methods such as solidifying the water by mixing with concrete or storing in massive storing tanks. What is the response of the IAEA to this concern?

   In the *IAEA Comprehensive Report on the Safety Review of the ALPS-Treated Water at the Fukushima Daiichi Nuclear Power Station*, issued on 4 July, the issue of optimization is considered and addressed. ALARA which stands for "as low as reasonably achievable" refers to the concept of making every reasonable effort to keep exposures to ionizing radiation as low as practicable considering relevant societal, economic, and other considerations. Through its safety review, the IAEA has been able to conclude that the optimization of protection and safety has been required by NRA and considered by TEPCO, taking into account the prevailing circumstances. The IAEA also noted that if there is any decision to change parameters related to the discharges in the future, further studies looking at the optimization of protection should be conducted and evaluated, by TEPCO and NRA respectively. Therefore, this topic, and others, will continue to be considered by the IAEA as part of its ongoing safety review.

3. The capability of the ALPS is questioned due to its past record of experiencing 46 breakdowns during the last 10 years, but no investigations regarding this issue have taken place. The need for conducting an international review on the functional capability and operating system of the ALPS is being recognized in order to assure the safety of the ocean discharge plan. What is the response of the IAEA to this concern?

   Under the IAEA's safety review, the performance of the ALPS treatment process was not a relevant factor for assessing conformity with the relevant international safety standards. This is because, under the discharge plan, TEPCO will conduct an analysis of all batches of ALPS treated water before a given batch is diluted and discharged; this work is independently verified by NRA. The analysis conducted by TEPCO must show that the radiological characteristics of the treated water meet the relevant regulatory requirements before it can be discharged; as supported by the REIA, these regulatory requirements ensure the safety of people and the environment. This is explained in detail in the IAEA's comprehensive report issued on 4 July. Therefore, given that every batch of treated water must undergo verification of its radiological content before it can be discharged, the performance of the ALPS treatment process is not a concern for the purposes of considering the safety of the discharges. If a batch of treated water does not meet the relevant regulatory requirements, then it would be treated further until it does meet those requirements.

4. The safety of the Fukushima radioactive water cannot be assured because no review has been conducted on the discharge plan's influence on the marine environment and ecosystem of the neighbouring countries. What is the response of the IAEA to this concern?

   Please refer to the response to Question 4 above.

5. As radionuclides created from a normally functioning nuclear power plant and a nuclear power plant that has experienced an accident are different, there must be a separate international guideline on managing nuclear power plants that have experienced an accident to decide whether to release the radioactive water. What is the response of the IAEA to this concern?

   The IAEA safety standards are broad and include requirements and guidance for many different types of facilities and activities that involve ionizing radiation. Three different types of exposure scenarios are defined: a planned exposure, an emergency exposure, and an existing exposure. The IAEA safety standards provide requirements and guidance applicable to the different exposure situations, including an emergency exposure situation which could be the result of an accident (e.g., the accident at FDNPS in 2011). As explained in the IAEA's comprehensive report issued on 4 July, the FDNPS is now managed as an existing exposure situation in the Japanese regulatory framework; however, the discharges of ALPS treated water into the sea, which are controlled discharges, are viewed as a planned exposure situation by NRA, consistent with relevant international safety standards. Given that these discharges are controlled, and planned exposure situations are controlled, the discharges should conform to the requirements of the Japanese regulatory framework, consistent with the international safety standards relevant for planned exposure

situations.

It is important to note that the requirements for protection of people and the environment applicable to a planned exposure situation, as found in relevant international safety standards, are stricter than those applied to an existing exposure situation or an emergency exposure situation.

6. The IAEA's safety guideline GSG-9 underlines the "need for a survey of these additional radionuclides in the environment to determine pre-existing levels." However, there are views that the discharge plan violates the GSG-9 guidelines because no review has been conducted on the accumulation of the radioactivity in sediments and its influence on organisms inhabiting the sediments. What is the response of the IAEA to this concern?

The IAEA laboratories, as well as a participating third-party laboratory, are currently analysing environmental samples (e.g., seawater, seaweed, sediment, fish) that were taken in November 2022, and which will serve as a baseline of radioactivity levels in the environment before the start of ALPS treated water discharges. These measurements can be used to observe any changes in the radioactivity levels in sediments and marine organisms. These baseline measurements are an important part of the future corroboration of environmental monitoring conducted by the IAEA. Additionally, the IAEA has included the monitoring programmes in place by TEPCO and the Government of Japan, such as the Comprehensive Radiation Monitoring Plan (CRMP), as a key technical area in its review. These monitoring programmes will continue to be an important element for review by the Task Force in the future as well. Previous reports published by the IAEA highlight this work, and the recent comprehensive report published on 4 July also includes significant detail on the environmental monitoring programme in place at FDNPS and the surrounding area.

It is important to note that since 2014 the IAEA has been part of a technical support activity with Japan focused on ensuring the high quality and comparability of the results of environmental monitoring around the FDNPS. While this work is broader than the current ALPS safety review (it encompasses all aspects of marine environmental monitoring around FDNPS), it nonetheless has resulted in significant quantities of publicly available data that helps to provide further clarity on the existing environmental baseline.

Information on this activity can be found at the following IAEA website:

https://www.iaea.org/about/organizational-structure/department-of-nuclear-sciences-and-applications/division-of-iaea-marine-environment-laboratories/marine-monitoring-confidence-building-and-data-quality-assurance

Additionally, the IAEA Marine Radioactivity Information System (MARIS) provides open access to comprehensive data on current and historical levels of marine radioactivity across the globe, including around FDNPS. One useful function of MARIS is that it facilitates comparison of radioactivity levels for different locations and time periods providing useful context for the consequences of the ALPS treated water discharges.

https://maris.iaea.org/home

7. Japan's decision to release radioactive water into the ocean violates the United Nations Convention on the Law of the Sea, which states the duty to preserve the marine environment, as well as the London Convention and Protocol, which prohibits the dumping of waste at sea. What is the response of the IAEA to this concern?

As you know, dumping of radioactive material at sea from vessels, aircraft, platforms or other man-made structures at sea is strictly prohibited further to UNCLOS, and the 1972 London Dumping Convention and its 1996 Protocol. A "discharge", on the other hand, is in principle not prohibited but is rather a planned, controlled and authorised release - within regulatory limits - of liquid or gaseous radioactive materials from a land-based activity or source.

We understand that Japan only plans to discharge the ALPS-treated water if it concludes, based on all scientific evidence, that there would be no adverse impact to environmental or human health, in Japan or other states. Based on the scientific and technical evidence assessed by the IAEA, the planned discharges of ALPS-treated water into the sea from a

land-based activity or source do not appear to give rise to any violation of the relevant international legal instruments.

That said, the instruments you mentioned have not been adopted under IAEA auspices and the IAEA is also not a Party to them. Furthermore, matters of treaty interpretation and application are for the Parties to the relevant instrument to address in accordance with its relevant provisions.

8. A detailed understanding of the reality and implementation of control measures regarding unplanned leakage of radioactive substances is highly necessary, as we are already witnessing rock fish containing 180 times more caesium than normal standards. What is the response of the IAEA to this concern?

Since the accident at FDNPS occurred in 2011, TEPCO has implemented measures to reduce any further transfer of radioactive material from the site to the environment. However, it is known that during the accident, radioactive contamination was released from the site into the environment. There are ongoing programmes for environmental remediation taking place around FDNPS. Fish caught in the surrounding area are still routinely monitored for any residual radioactive contamination. Occasionally some samples with elevated levels of certain radionuclides are detected (e.g., Cs-137); however, this is the exception rather than the norm.

With respect to the planned discharges of ALPS treated water, the IAEA has reviewed the relevant technical documents that make up the safety assessment, such as the revised Implementation Plan, including the radiological environmental impact assessment. The IAEA has noted that TEPCO has incorporated relevant operational conditions and limits in their safety assessment as well as the consideration of important concepts such as redundancy for safety related systems, potential failure modes, and the planned maintenance of facilities and equipment. As noted in the IAEA's comprehensive report issued on 4 July, TEPCO has included multiple checks throughout the system to avoid any unintended release of ALPS treated water.

It should be further noted that the activity concentrations in the marine environment estimated in the REIA are very low compared to the available measured values in the region. It is expected that the results from the monitoring undertaken by TEPCO and within Japan's Comprehensive Radiation Monitoring Plan (CRMP) will not be statistically distinguishable from the 'background' values, at distances of a few kilometres from the FDNPS. Therefore, any measurable concentrations of tritium, or other radionuclides in the Asia Pacific region (or beyond) should not automatically be attributed to the discharged water from the FDNPS.

9. There exists an opinion that it will take at least 100 to 300 years to complete the decommissioning of the Fukushima nuclear power plant. The additional safety issues and treatment issues arising at the decommissioning stage must be reviewed to decide whether to release it or not. What is the response of the IAEA to this concern?

As the decommissioning of the FDNPS progresses, the IAEA will continue its work in a manner that is consistent with its statutory functions. This includes technical activities such as decommissioning missions, the ongoing ALPS safety review, and quality assurance of environmental monitoring data. Over time, these activities will change to suit the progress and developments of decommissioning at the FDNPS; however, the focus of the IAEA on responding to requests by Member States to be involved in the activities at the FDNPS will not change.

10. What additional reviews, aside from those requested by Japan related to the discharge plan, does the IAEA believe should be completed to eliminate any concerns or problems of the discharge plan?

The IAEA's safety review of the discharge of ALPS treated water from FDNPS uses consensus based international safety standards that serve as a global reference for protecting people and the environment and contribute to a harmonized high level of safety worldwide. By nature of its statutory mandate and global reach, the IAEA can use these standards as an objective blueprint for assessing the safety of the planned discharges. The IAEA's safety review is comprehensive and serves as an impartial,

science-based assessment for the international community that will cover the entire period before, during, and after the discharge of ALPS treated water. The IAEA's comprehensive report issued on 4 July, in particular Part 5 of the report, contains additional details regarding the next steps of the IAEA's safety review.

12 July 2023

#붙임2. 7.9. 그로시 총장 면담시 질문 답변

Additional questions

Received on 9 July 2023

- On mentions to “the discharge of contaminated water”.

The contaminated water stored in the tanks is treated to remove most of the radioactive content, except for tritium, which cannot be removed by the ALPS system, or any other industrial scale system (based on existing technology) given the volume of water and low tritium concentrations involved. Multiple steps are involved in the treatment process. Prior to being treated by the ALPS system, the contaminated water has caesium and strontium removed periodically through the KURION and SARRY systems; caesium and strontium account for most of the radioactivity from the contaminated water.

Therefore, what Japan plans to discharge is the ALPS treated water and not the contaminated water. The ALPS treated water composition is far below the international safety standards.

The maximum tritium concentration planned to be discharged is 1,500 Bq/L, while the WHO guidance level for tritium in drinking-water is 10,000 Bq/L.

- Water from an accident is different in terms of nucleoids from normal release

The discharges of ALPS treated water into the sea are controlled with a regulatory authorization as a planned activity, consistent with relevant international safety standards. The discharges of radionuclides comply with the regulations that NRA apply to normal releases from NPP and are much lower that the limits placed on discharges. Many of the radionuclides that can be detected or have been identified by TEPCO as being potentially present in ALPS treated water are the same as for normal releases; some are different. However, the important point is that the discharges of all radionuclides are far below the operational discharge limits set for NPPs, which have been authorised after a safety assessment by the regulatory authority.

- Report does not validate or review ALPS

The IAEA has reviewed the systems and equipment that were included in the design for the ALPS facilities and the Implementation Plan, which is approved by NRA, and includes the various technical specifications of the equipment and processes in place for the ALPS discharges. The IAEA safety review has concluded that the approach and activities undertaken by TEPCO and NRA are consistent with the relevant international safety standards. The IAEA has noted that the systems and processes in place to control the discharges of ALPS treated water are robust and adequate for the expected low doses and the low risk arising from the discharge process.

However, independently of this review of the ALPS process or systems, the water that is ready to be released has to meet the regulations and standards.

- Report does not examine long term effects on marine ecosystem

The IAEA has reviewed the approach taken by TEPCO in the radiological environmental impact assessment (REIA) to include the accumulation of radionuclides in the environment in the long term and the impact on people and the environment.

The REIA produced is compliant with the international safety standards and follows the assessment approach given in IAEA GSG-10 for protection of the public and the environment for discharges to the environment. For the assessment of the radiological impact of accumulation of radionuclides in seabed sediments, relatively simple models are applied in the REIA. However, the approach taken ensures that the resulting annual doses over the period of the planned discharge are not underestimated. The estimated dose rates to the three marine representative animals and plants considered are more than 1 million times lower than the derived consideration reference levels set by ICRP.

- The water is nuclear waste

The ALPS’ treated water has to be considered as radioactive effluent (rather than nuclear waste),

radioactive effluent which is planned to be discharged of under stringent control measures ensuring the optimal protection of people and the environment with conditions authorized by the NRA, including the monitoring of the environment to ensure compliance with the established limits, authorization granted after a thorough safety assessment.

The IAEA has concluded, based on its comprehensive assessment, that the discharge of the ALPS treated water, as currently planned by TEPCO, will have a negligible radiological impact on people and the environment.

- The safety standards are/should be different as a result of an accident

The IAEA safety standards provide requirements and guidance applicable to the different exposure situations, including an emergency exposure situation which could be the result of an accident (e.g., the accident at FDNPS in 2011). The discharges of ALPS treated water into the sea, which are controlled discharges, are a planned exposure situation, consistent with relevant international safety standards. The requirements for protection of people and the environment applicable to a planned exposure situation, as found in relevant international safety standards, are stricter than those applied to an emergency exposure situation.

- IAEA did not review UNCLOS, London Convention, GSG 8 and 9 which forces Japan to review the damage and environmental impact

The IAEA technical review assessed whether the actions of TEPCO and the Government of Japan to discharge the ALPS treated water over the coming decades are consistent with international safety standards. In particular, this included the relevant requirements and recommendations in GSG-8 and GSG-9.

Dumping of radioactive material at sea from vessels, aircraft, platforms or other man-made structures at sea is strictly prohibited further to UNCLOS, and the 1972 London Dumping Convention and its 1996 Protocol. A “discharge”, on the other hand, is in principle not prohibited but is rather a planned, controlled, and authorised release - within regulatory limits - of liquid or gaseous radioactive materials from a land-based activity or source. The IAEA understands that Japan only plans to discharge the ALPS-treated water if it concludes, based on all scientific evidence, that there would be no adverse impact to environmental or human health, in Japan or other states.

Based on the scientific and technical evidence assessed by the IAEA and since the planned discharges of ALPS-treated water into the sea from a land-based activity or source are consistent with national (i.e. Japanese) and international standards (i.e. IAEA), the IAEA does not see a violation of UNCLOS.

- PIF experts panel alternatives were not considered like long term storage

The request of the Government of Japan to the IAEA to review the application of relevant international safety standards to the discharge of ALPS treated water into the sea was submitted after the Government’s decision was made to discharge ALPS treated water to the sea. The IAEA’s review is focused on assessing whether Japan’s chosen method for handling ALPS treated water (i.e., controlled discharges into the sea) is consistent with international safety standards and does not assess the feasibility of other potential methods.

- Report does not study impact on neighbouring countries

The international safety standards apply not only to local populations but also to populations remote from the discharge activities. The operating organization should make an assessment of the radiological impacts of the discharges if the discharge could cause significant public exposure outside the territory. The results of the radiological environmental impact assessment show that the estimated dose to populations in Japan and neighbouring countries will be negligible. Based on the results of the marine dispersion model used by TEPCO, activity concentrations in international waters will not be influenced by the discharge of ALPS treated water into the sea and the transboundary impacts are therefore negligible. However, the environmental monitoring in place around the FDNPS and in the surrounding area of the Pacific Ocean is extremely important to verify the findings of the REIA.

- Report avoids responsibility by IAEA, puts all responsibility on Japan and avoids responsibility for standards implementation / who assumes responsibility if something bad

happens?

Safety is a national responsibility. The Government of Japan has the final decision-making authority to determine how to handle the treated water. The IAEA also reviewed the hypothetical or postulated accidental scenarios and the measures for controlling radiation risks that must ensure that no individual bears an unacceptable risk of harm. Within the REIA, the assessment of potential exposures has been made and estimates of dose to members of the public resulting from postulated accident scenarios identified through the safety assessment estimated. The potential exposure scenarios include the characteristics of the events or sequences of events that may lead to any unintended exposure. As conclusion, the results of the impact of the discharge treated water to the human and the environment are consistent with the international safety standards.

- Why not include an assessment by WHO, UNDP, WMO, UNEP?

The establishment of the international safety standards applied by the IAEA are approved by the all the co-sponsoring international organizations, in particular the European Commission (EC), the Food and Agriculture Organization of the United Nations (FAO), the IAEA, the International Labour Organization (ILO), the OECD Nuclear Energy Agency (OECD/NEA), the Pan American Health Organization (PAHO), the United Nations Environment Programme (UNEP) and the World Health Organization (WHO) (the Sponsoring Organizations).

The IAEA technical review assessed whether the actions of TEPCO and the Government of Japan to discharge the ALPS treated water over the coming decades are consistent with international safety standards. Based on its comprehensive assessment, the IAEA has concluded that the approach to the discharge of ALPS treated water into the sea, and the associated activities by TEPCO, NRA, and the Government of Japan, are consistent with relevant international safety standards. The results of radiological environmental impact assessment show that the impact on the public and animals and plants in the sea from the discharge of ALPS treated water under normal operations is negligible.

- Report lacks an assessment model for long term effects

The IAEA has reviewed the approach taken by TEPCO in the radiological environmental impact assessment to include the accumulation of radionuclides in the environment in the long term and the impact on people and the environment. The REIA produced is compliant with the international safety standards and follows the assessment approach given in IAEA GSG-10 for protection of the public and the environment for discharges to the environment in the long term. For the assessment of the radiological impact of accumulation of radionuclides in seabed sediments, relatively simple models are applied in the REIA. However, the approach taken ensures that the resulting annual doses over the period of the planned discharge are not underestimated.

Following a decision of the United Nations General Assembly (UNGA), the levels and effects of ionizing radiation are estimated by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). The UNSCEAR estimates are provided yearly to UNGA and can be considered as the scientific and epistemological basis of the International Safety Standards. Furthermore, an internationally recognized paradigm or model has been elaborated by the International Commission on Radiological Protection (ICRP) since its foundations in 1928. Following a formal decision of the IAEA intergovernmental policy making organs the IAEA's Safety Standards are developed taking into account the recommendations of the ICRP; the latest general recommendations of ICRP can be found on their website and are published regularly.