

IEWS ON THE NEW ICRP RECOMMENDATIONS FROM THE JAPANESE UTILITIES

Kunio Miyamaru

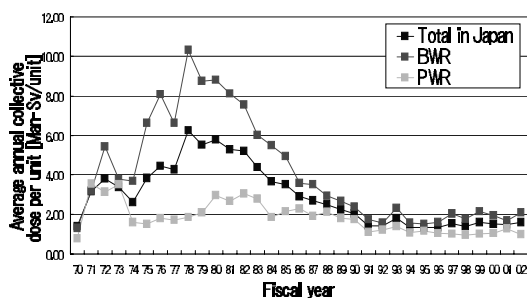
General Manager & Group Manager, Radiation Safety,
Tokyo Electric Power Company, Japan

Views on the New ICRP Recommendations from the Japanese Utilities

NEA Conference
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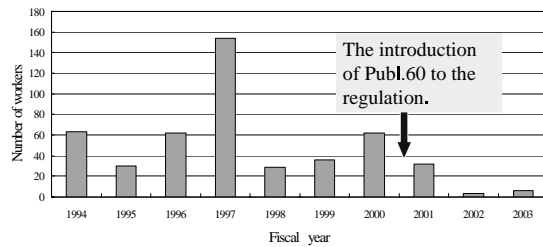
Tokyo Electric Power Company
Kunio Miyamaru

Average annual collective dose per unit



ICRP recommendations are the fundamental view when we carry out radiation protection in nuclear power plants, and we have respected the recommendations so far. The Man-Sv/unit of Japanese LWRs has been sharply reduced to present levels by various measures based on the principle of ALARA. However, in order to decrease levels further, longer operation periods and reduction of periodical inspection items, etc. are the most effective measures. Traditional measures also should be adopted as appropriate.

Number of workers exceeded 20mSv/year



This graph shows the number of workers whose dose exceeded 20 mSv/y. Publication 60 was introduced into Japanese regulations in April 2001. Following this, 20 mSv/y averaged over five years became a management target. Although the number of workers who exceeded 20 mSv/y decreased, the managing effort was not an easy job in the plant where large-scale modification works, such as primary system piping replacement (SG replacement, and shroud replacement) were performed.

Dose limits should be maintained as the main system

- ICRP's decision to maintain dose limits in the new recommendations is welcome.
- Best of all, the dose limit of 50mSv/y is essential to perform effective work with having flexibility in the plants.

In the new recommendations, it is said that the public and worker dose limits will remain as it is in Publication 60. We welcome ICRP's decision on this. We hope these dose limits should be taken in the new recommendations, as well as maintaining the radiation protection system based on dose limits. Specifically, 50 mSv/y is an important limit to allow excellent work with flexibility in the plants.

About dose constraint for workers(1)

- Every worker has dosimeter.
But...Why dose constraint?
- What are the merits of introducing that ?
- Dose constraint of 20mSv/y will cause many difficulties for plant operation.

As for the worker, individual dose monitoring is carried out using a dosimeter, unlike the public, and the data is totalled nationwide in Japan. Therefore there is no necessity to introduce the dose constraint in order to respect the dose limit of 50 mSv/y. Moreover, if 20 mSv/y is introduced into Japanese regulation, about 15-18 mSv/y will be set as a management target in the facilities, and plant operation will become very difficult.

About dose constraint for workers(2)

- In what case dose constraint for workers should be applied, and in what case not?
- The clear criterion for usage of dose constraint is needed for better understanding.
- Dose constraint for workers, if necessary, must be 50mSv/y in accordance with dose limit.

About dose constraint for public(1)

- In Japan, target dose 0.05mSv/y, like dose constraint, has been applied to the periphery of nuclear power station by NSC for about three decades.
- So even if multi stations, It is certain <1mSv/y.
- And the problem has not occurred by the management based on dose limit until now.
- Do we need to apply new system in Japan?

About dose constraint for public(2)

- People might think “Radiation risk has increased because dose limit value was reviewed smaller” It’s misunderstanding but possible.
- So enough explanation to the public will be needed to avoid them having mistakes.
- In what case dose constraint for public should be... ? Same Q as workers(2)

Although we think it’s appropriate to continue to use the conventional dose limits of 50 mSv/y and 100 mSv over 5 years for workers, we would like to confirm the following point: in what case should dose constraints for workers be applied, and in what case should they not be applied? A clear criterion for usage of the dose constraint is needed for better understanding. The meaning of the single source is also ambiguous for a nuclear power station consisting of two or more plants.

In accordance with ALARA principles, the public dose is far less than 1 mSv/y. In the case of close location of multiple stations, we can carry out dose evaluation individually and check that the 1 mSv/y dose limit is respected. It is not appropriate to apply the dose constraint of, for example, 0.3 mSv/y to stations in Japan. The target dose of 0.05 mSv/y has been applied at the periphery of the nuclear power station by the Nuclear Safety Commission for about three decades. It has served as a substantial dose constraint on the plant design until now.

When a dose constraint value of one or less is recommended, people might think that radiation risk has increased because the dose limit value has been decreased. Sufficient explanation to the public will be needed to avoid misunderstandings. I think it is appropriate for us to continue to use the conventional dose limit of 1 mSv/y. However, with regards to the dose constraint for the public, it is not clear how the new values should be applied.

LNT and radiation risk

- By applying LNT hypothesis strictly, the very small quantity of exposure also gives the public unnecessary feeling of fear to radiation.
- As suggested by research of HBRA, certain exposure level (several mSv/y) in which no radiation influences are observed is not important as a matter of radiation protection.
- Paying attention to the results of comprehensive researches, we expect to reflect these to the ICRP recommendations.

Environmental radiation protection

- Realistic parameters and assumptions should be adopted to the study to avoid overestimation.
- The fact that no radiation influences on fauna and flora are observed in the HBRA might be valuable data for the study.
- A balanced discussion concerning radiation and other materials(e.g.chemicals) as a environment effect factors is expected.

Summary

- **No needs for dose constraints in Japan.**
- **The clear criteria for usage of constraints.**
- **The main system= dose limits. It's practical.**
- **What's the single source?**
- **Paying more attention to the results of comprehensive researches is expected.**
- **A well-balanced discussion is expected for the study of environmental radiation protection.**

By strictly applying the LNT hypothesis, a very small quantity of exposure also gives the public an unnecessary feeling of fear towards radiation. As suggested by the research of high background radiation areas (HBRA), exposure levels of a few mSv/y in which no radiation effects are observed are not an important radiation protection matter. ICRP recommendations should reflect the results of comprehensive research such as epidemiology investigations, animal experiments, cell experiments etc.

Concerning environmental protection, we hope that realistic parameters and assumptions should be adopted. The fact that no radiation influences on fauna and flora are observed in the HBRA might be valuable data for the study. Furthermore, a well-balanced discussion is expected. Nuclear power is the most environment-friendly generation system today. ICRP says that "the primary aim of radiological protection is to provide an appropriate standard of protection for man without unduly limiting the beneficial actions giving rise to radiation exposure".

To summarise:

- It is unnecessary to introduce the dose constraint in Japan.
- Clear criteria for usage of dose constraints are needed.
- The dose limits should be adopted in the final recommendations as the main system of protection.
- The meaning of a single source should be clarified.
- More attention should be given to the results of comprehensive research.
- A well-balanced discussion is expected for the study of environmental radiation protection.

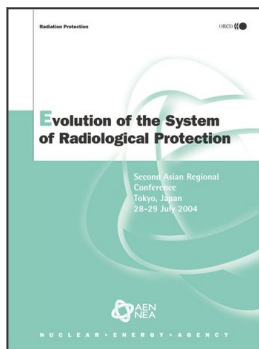
Acronyms

AFMP	Agreement on the Free Movement of Persons
AI	Disability insurance
APW	Average production worker
AVS	Pension scheme
CHF	Swiss franc
CPI	Consumer price index
CSIAS	<i>Conférence suisse des institutions d'action sociale</i>
CTI	Commission for research co-operation between universities and businesses
DI	Disability insurance
DMA	Domestic Market Act
EPF	Poly-technical institutes
EPO	European Patent Office
Espa	Labour force survey
EU	European Union
GEM	Global Entrepreneurship Monitor
GDP	Gross domestic product
GNI	Gross national income
ICT	Information and communication technology
JPO	Japanese Patent Office
LAMAL	Revision of the health insurance system
LIBOR	London InterBank Offered Rate
OFS	<i>Office Fédéral de la Statistique</i>
PRO	Public research organisations
R&D	Research and development
RPT	<i>Réforme de la Péréquation Financière et de la Répartition des Tâches</i>
S&E	Science and engineering
SECO	State Secretariat for Economic Affairs
SME	Small and medium-sized enterprises
SNB	Swiss National Bank
Statem	Employment statistics
TTO	Technology transfer offices
VAT	Value-added tax
UAS	Universities of applied sciences
USPTO	US Patent and Trademark Office

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