

1. Background

- International Commission on Radiological Protection (ICRP) issued “Statement on Tissue Reactions (the Seoul Statement)” in 2011 on occupational exposure in planned exposure situations, and the Commission recommended an equivalent dose limit for the lens of the eye of “20 mSv in a year, averaged over defined periods of 5 years, with no single year exceeding 50 mSv” .
- The radiation protection regulation (acts and ordinance) is stipulated in each ministry in Japan. Therefore, the Radiation Council established according to “Act on technical standards for prevention of radiation hazards” has the authority to make recommendations to related ministries or agencies, in order to harmonize technical standards for the prevention of radiation hazards.
- The Radiation Council established “The subcommittee on Radiation Protection of the Lens of the Eye” in July 2017, and discussed the feasibility of smoother implementation of the recommendation and other related issues, held hearings of the concerned parties.
- The final report has been approved at the 7th meeting of the subcommittee in February 2018, subsequently approved at the 140th meeting of the general assembly of the Radiation Council in March in the original form, and recommended to related ministries and agencies.

2. Current domestic situation of exposure of lens

- According to the data of equivalent dose of the lens of the 500,000 radiation worker in Japan which have been taken by the private-sector measurement service operators, most of them were not greater than 20 mSv per year, on the other hand, 2,400 workers exceeded 20mSv per year, and 400 among them exceeded 50 mSv per year. Most of these exceeded workers belonged to the medical sector.
- According to hearings of concerned parties in medical sector, they showed outlook that it would be achievable to follow the new dose limit by taking a combination of appropriate protection measures (such as using ceiling-suspended shields, or wearing protective glasses, etc.) and adopting suitable measurement method. On the other hand, there were opinions that the protective shielding or protective glasses are not used enough in the sector of other than Interventional Radiology and Cardiology (IVR) though they are prevailing to a significant extent in IVR area, or careful consideration should be needed not to interfere with the medical treatments.
- For the decommissioning activity in Fukushima Daiichi Nuclear Power Plant, there are high dose radiation working places of not only gamma-ray but also beta-ray, and 40 workers exceeded 20 mSv per year among 16,000 workers, and 21 workers exceeded 50 mSv per year in fiscal year 2016. According to a hearing of Tokyo Electric Power Company Holdings, they will introduce voluntary management value of 50 mSv per year, and also introduce 100 mSv per 5 years after considering managing method.
- For other areas, such as nuclear power plants, MOX fuel fabrication facilities, non-destructive inspection, and decontamination work, hearings are held and found that there were a small number of workers exceeding 20 mSv per year of exposure of the lens, and it would be achievable for the new dose limit of equivalent dose of the lens.

3. Future orientation

- Recommendation has been made to related administrative organizations as follows. Hereafter, measures would be taken at each organization, and the Radiation Council will follow up on progress of consideration.
- It is appropriate to revise current stipulations in each act or ordinance, as recommended in the Seoul Statement: equivalent dose limit of the lens should be 20 mSv in a year, averaged over defined periods of 5 years, with no single year exceeding 50 mSv.
- In relation to monitoring of doses to the lens of the eye due to external radiation, measuring the personal dose equivalent at 3mm depth, $H_p(3)$, which is not stipulated in current acts or ordinances should be available so as to monitor the equivalent dose to the lens of the eye more accurately.
- Current equivalent dose limit of the lens for emergency workers should be retained at this moment, and further consideration should be done paying attention to latest knowledge or international trends, and should be reviewed as necessary.
- There are various exposure situations in the medical sector, therefore it is expected that related academies will establish guidelines or some documents and administrative organizations will support them.