

Key Issues associated with Radiation Protection

~ **Brief Overview of Activities in JHPS** ~

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- ◆ The second set of recommendations from JHPS on Radiation Protection Issues after Fukushima Accident
(by Takatoshi HATTORI)

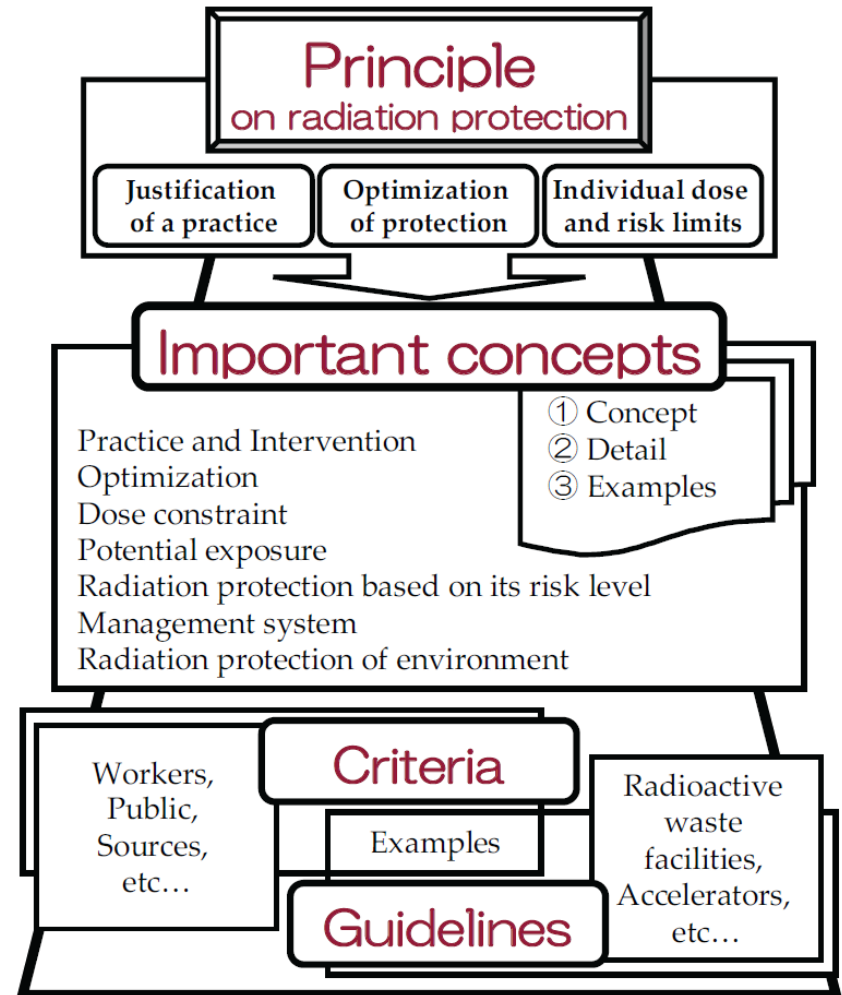
- ◆ Recent Activities of the Young Researchers Association of JHPS
(by Yuki MORISHITA)

Japanese Standardization Committee on Radiation Protection

Standardization Committee

- ◆ To understand radiation safety and its management effectively and easily, Japanese nuclear/radiation users as well as regulators have required the **fundamental Japanese standards on RP** based on the global standards.
- ◆ Standardization Committee on RP was organized in JHPS in **June 2006**.
- ◆ Standards on RP consist mainly of four classes; the **principle, important concepts, criteria** and **guidelines**.

Conceptual Image of Standard



Ongoing 4 working groups

1. Radioactive waste management in existing exposure situation
2. Management system
 - a. Daily survey of surface contamination
 - b. Screening level for reuse/recycle in existing exposure situation
3. Incorporation of ICRP 2007 recommendations
 - a. Recording, investigation and intervention levels for internal dose management
 - b. Necessity of special medical examination for radiation workers
 - c. Management of female workers during a pregnancy period
4. Safety for activated materials around accelerator

Activities of Expert Group on Development of the Standardization of *in vivo* measurements

What is this Expert Group?

Background

- A large number of whole-body measurements for residents (including children) have been performed in Fukushima and other prefectures in Japan.
- Many whole-body counters (WBCs) by several manufacturers have been installed. (~ 50 WBCs only in Fukushima).
- There is a growing need for demonstrating the concept for internal dose measurements for the public and the standardization of instruments for *in vivo* measurement in Japan.

Technical issues discussed

- Classification and requirements for the instruments for *in vivo* measurements
- Maintenance and calibration of the instruments (e.g., calibration phantom)
- Concept of internal dose assessments for members of the public
- Reports and explanation of measurement results

Members

Chief: O. Kurihara (NIRS), Organizer: T. Nakano (NIRS)
and other 24 experts (research scientists, manufacturers, users and so on)

Period of activity

June 2012 ~ March 2014 (two meetings between the members)

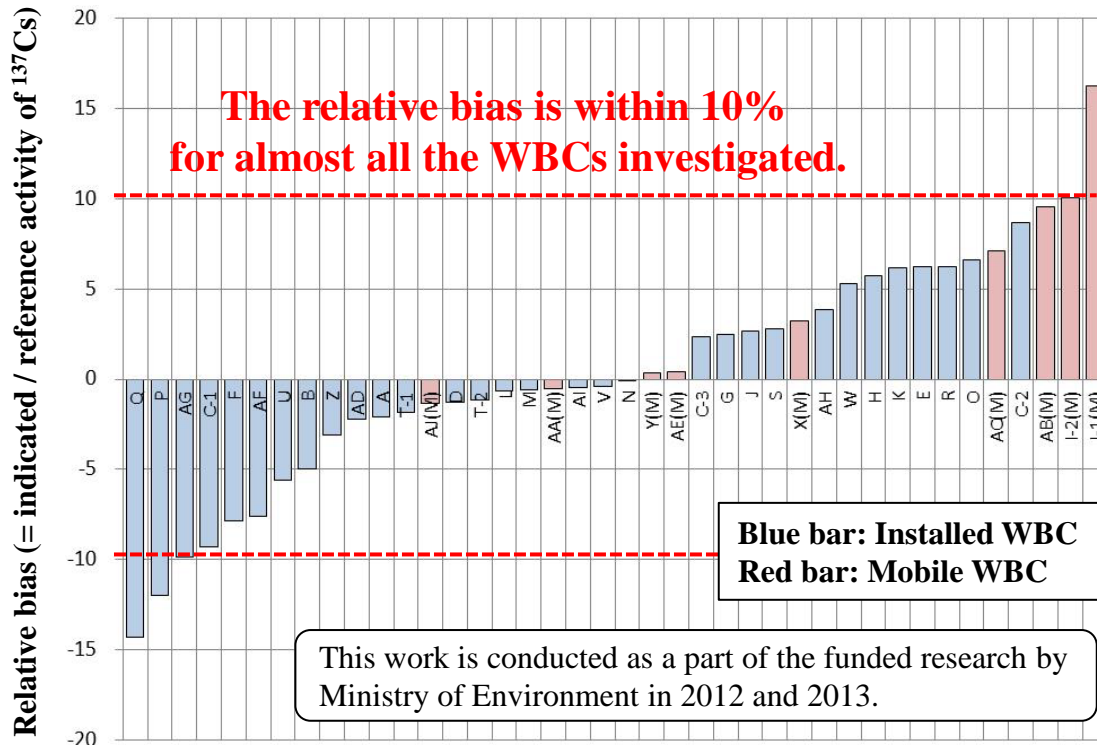
Outputs from this Expert Group (1)

Development of domestic standard (JIS) for *in vivo* counters (on going)

- Several members of the expert group have been involved in the development of a domestic standard for *in vivo* counters based on IEC 61582.

Accuracy survey of WBCs in Fukushima (by NIRS)

- Circulation of a set of BOMAB phantoms to WBC facilities in Fukushima (~40 WBCs in total) for the accuracy survey



BOMAB phantom could be utilized as a *de facto* standard with consensus from WBC users.
(*IEC does not give the specification of calibration phantoms.)

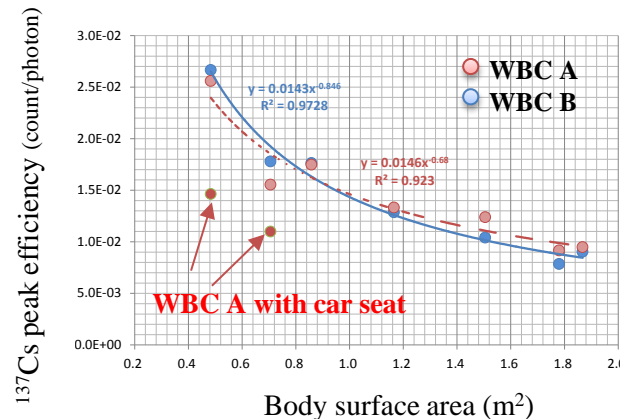
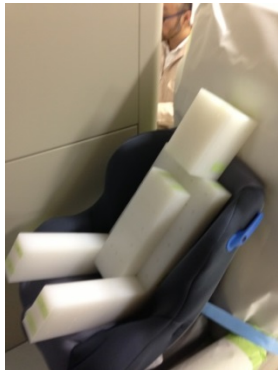
Outputs from this Expert Group (2)

Internal dose assessments based on WB measurements

- Compilation of datasets converting the body content of Cs to the effective dose based on a chronic intake scenario via ingestion for the use in WB measurements

Consideration on body size correction for WBCs

- Investigation on body size correction methods used in commercial WBCs
- Experiments using phantoms with different body sizes



The body surface area is a good parameter for building an eq. for the body size correction in WBCs. However, a car seat for supporting small children in measurements would be complicated in the correction...

Remained issues

- Peak area calculations for pulse height spectra from WBCs
- Guidelines for the maintenance of instruments (mainly for operators)

The report of this expert group is now preparing.

Activities of Expert Group on Radiation Protection for Eye Lens

What is this Expert Group?

Aim

To consider implication and implementation of the new ICRP dose limit of the lens of the eye to the Japanese regulations of radiation protection and safety

Members

Chief: K. Akahane (NIRS), Organizer: S. Yokoyama (Fujita Health Univ.)
and other 11 experts including health physicists, doctors and a medical physicist

Period of activity

April 2013 ~ March 2016

The committee started to investigate the present national and international conditions;

- ✓ Scientific evidences for the dose limit
- ✓ Development of dosimetry
- ✓ Exposure for high level radiation exposure workers

Activities

- | | |
|---------------|---|
| May 25, 2013 | Work shop for the implementation of new dose limit of the lens of the eye & The 1st Committee meeting |
| June 24, 2013 | Open meeting on The 46th JHPS annual meeting (Ciba, Japan) & The 2nd Committee meeting |
| Sep. 27, 2013 | The 3rd Committee meeting |
| Feb. 6, 2014 | The 4th Committee meeting |
| Mar. 25, 2014 | The 5th Committee meeting |



The Interim report of this expert group is now preparing.

Contents of Interim report (tentative)

1. Introduction
2. The lens of the eye and the cataract
3. History of ICRP dose limit of the lens of the eye and its scientific evidences
4. International actions concerned with new ICRP dose limit of the lens of the eye
5. Several project studies related with the dosimetry and exposure of the lens of the eye
6. Present monitoring and dosimetry of the lens of the eye for Japanese radiation workers in the medical, nuclear and industrial fields
7. Our future issues

Our future issues

- System of radiation protection of the lens of the eye and scientific evidence → Outside of our future work ?
 - Stochastic or Deterministic effect?
 - Animal experimental or human epidemiological results?
 - Standardization of human epidemiology study etc.
- Dosimetry of the lens of the eye
 - Conversion coefficients (particularly for neutron)
 - Applicable dosimeters
 - Measurement positions and incidence angles etc.
- Exposure of the lens of the eye for Japanese radiation workers
 - Lack of the data for Japanese radiation workers
 - Education and consideration of radiation protection etc.
- Radiation protection and dose estimation of the lens of the eye for recovery workers of Fukushima Daiichi Nuclear accident



Future analysis in the committee

Recommendation from the Expert Group

Summary

- ◆ JHPS have been identifying and discussing the important issues associated with radiation protection
- ◆ JHPS will further discuss those issues in cooperation with overseas associated societies such as AOARP, IRPA and HPS.