

Conversion of the personal Dose Reading System and Having a View of the Localize Reading System Development

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1. Introduction

Most internal atomic energy related companies are using the imported radiation measuring instruments, personal dosimeter or radiation survey-meter.

Film, which has been used widely in industry, is decreasing, since it is influenced by the digital product. Therefore, the stopping of its use becomes well-known to everybody, and the question, whether Film will be used continually or not as an original material for a personal dosimeter, is being raised.

2. Main title

2.1 Dose reading system's diversification

Internationally, in case of Japan, the dose reading by Film was stopped and changed to Glass Dosimeter(GD) or thermoluminescence dosimeter(TLD). And in case of Europe, in France and Germany, the mass reading system has been maintained, having each 300 thousands Film wearers, but it is planned to change to GD or TLD within 2 ~ 3 years or 3 ~ 4 years. In case of USA, the existing TLD is being changed to Optically Stimulated Luminescence(OSL) and other countries are using TLD or electrical dosimeter.

In case of the internal, since the license system to radiation dose reading business was introduced in 1994, the special reading institute has supplied the personal dose reading service by using Film Badge(FB), the self-reading institutions including the nuclear power plant has measured the personal dose for radiation-related operators by using TLD, and the special reading institutions also has used TLD since 1995.

Before that, the legal dosimeter was limited to Film Badge and TLD, but the kinds of the available personal dosimeter became more, as being classified by the action principle on the Ministry of Education & Science Technology Notice. [1]

2.2 Film reading system status and need for change

Internationally, the film manufacturers' changes, for example AGFA Photo., image Film manufacturer in Germany, went bankrupt, are occurring according to the digital industry's growth. [2]

The imported monitoring Film's cost has been raised since 2007, and still it is still being raised now. Since the biggest demanding countries, Germany and France,

are planning to change the system, the internal Film Badge reading system needs to be changed to other system.

The internal number of persons wearing Film Badge is 10,000 at most. Whereas, in France there is still about 300,000 and in Germany 300,000 also. They will be changed to other system when other system is ready, therefore the demand of monitoring Film will be decreased rapidly and manufacturers can't help stopping the film manufacturing.

Therefore, the internal film reading system also has to be changed complying with the international trend. They have to complete the change to other system within 3 years which is the minimum period for Germany's system change, namely until end of 2010 at latest.

2.3 Reading system conversion direction

Iljin Radiation Engineering Co. Ltd. is planning to develop TLD reading system.

Korea Atomic Energy Research Institute (KAERI) Radiation Management Team developed already the element of the high performance TLD. And, Iljin succeeded in commercializing it in 2008, after receiving the technology, and is preparing the mass production, as all kinds of test are completed.

Namely, Iljin will construct a main reading system, which is TLD system that Iljin provides all operators wearing Film Badge with the localized high performance TLD.

But, the compatibility problem between the before and the after system should be solved, when system is changed.

Also, problems in keeping not only the computerized data but also Film or documents should be solved. Now, the legal keeping period is until the film reading registration is expired.[3] If the film reading company stops the film reading business, the corresponding business registration becomes expired. So, it becomes impossible to keep, and those will be wasted or transferred to the regulating institutions.

3. Conclusion

Film industry is shrinking, as industry advances and becomes digital-oriented. Therefore it is supposed to change to TLD, the alternative dosimeter.

Regarding the problems that can be occurred when system changing, the criteria on the documents transfer, etc. should be prepared at the government level.

The dependency on import should be minimized by the dose reading system localization, and it is expected to be exported through the development by themselves.

References

- [1] Reading business registration criteria and regulations for inspection. Ministry of Education & Science Technology Notice 2008-48 (2008)
- [2] Agfa Photo. petition for bankruptcy, Donga ilbo, (2005.5.30)
- [3] [Attatched table 5] The contents recorded . kept <Amended in 2006. 7.7>, the Atomic Energy Law, Enforcement Regulations 120th Article (2006)