Introduction

Occupational exposures at nuclear power plants have steadily decreased since the early 1990s. Regulatory pressures, technological advances, improved plant designs and operational procedures, ALARA (as low as reasonably achievable) culture and experience exchange have contributed this trend. However, based on the LNT (linear-non-threshold) hypothesis, the task of ensuring that occupational exposures are as low as reasonably achievable taking into account operational costs and social factors continues to present challenges. KHNP (Korea Hydro & Nuclear Power Co., Ltd.) is operating all nuclear power plants in Korea and has accumulated radiation protection and management experiences since 1978. These operational experiences can help to establish radiation protection plans for newly adopted as well as repeated radiation related works. But most of these radiation protection experiences were written-typed documents and not have been fully shared among nuclear power plant sites. Also monetary value of worker's radiation dose has been needed to analyze the cost benefit effects of radiation protection. For the purpose of effective application of radiation protection experiences and reasonable achievement of radiation dose reduction, the ALARA Center Program was developed.

ALARA Center Program

Scope

KHNP ALARA Center Program was designed in the frame of KHNP's radiation work management system. It consists of 6 stages of loop structure as 1. Assessment of radiation fields, 2. Set up the dose constraints, 3. Application of radiation protection, 4. Decision of radiation protection plan, 5. Implementation and management, and 6. Result feedback. Also, it provides special tools of radiation protection as "ALARA core item" for reference.

Main function

The KHNP ALARA Center Program has three main functions. One is to provide all available information to decision makers at ALARA meeting for high dose expected works. The information includes radiation monitoring data, expected radiation field at the working place, past experiences related to the target work, available recent techniques, suggestions for radiation protection method.

Using this program, suggested radiation protection methods for target works can be reviewed respectively by cost benefit effect analysis based on KHNP' monetary value of dose reduction and the best radiation protection plan can be selected.

This program also gives a foundation of radiation protection database management. Through the loop of ALARA program, the implementation of selected radiation protection plan can be monitored by the link of real time worker's dose data provided from radiation work management system. The process and results of each applied dose reduction technique can be stored and reported for future use.

Discussions

For the effective use of this ALARA Center Program, some additional efforts should be needed. Plenty of written documents and other recent information of good experiences reported to ISOE should be added or linked to the program by the type of works not just various batched cases. Also a compensation policy for the user's voluntary attempts to radiation dose reduction and protection activities should be considered.

Conclusions

For the reasonable dose reduction and effective radiation work plan, the KHNP ALARA Center Program was developed. The program can provide web-based various useful radiation protection experiences for the establishment of appropriate dose reduction work plans and decision making tools based on radiation dose monetary values for selection of an optimized radiation dose reduction technique. However, user's voluntary efforts and cooperation of sharing good experiences are still needed for effective use of the program.