1 Introduction

There is no inherent monetary value of the man-mSv for operators of Korean NPPs. So international practices and cases are referenced on a case by case basis. Therefore, setting a unique monetary value of the man-mSv of KHNPs is necessary as an essential means of decision-making in radiation protection optimization.

In this study, the risk aversion factor was analyzed based on a survey of NPP workers and the socioeconomic condition of Korea to evaluate the monetary value of the man-mSv that reflects the characteristics of NPPs in Korea. The monetary value according to the radiation exposure level is presented.

2 Materials and Methods

Model of monetary values of the man-mSv incorporating radiation aversion factor

Survey contents and calculation of the radiation aversion factor

Distribution of respondents for the survey

Korean specific factors and basic monetary value (α_base) as of 2009

Life expectancy in population (A) 79.4 years
Average age of cancer occurrence (B) 60.0 years
Loss of life expectancy induced by radiation exposure (C = A-B) 19.4 years
Average annual wage for electric worker (W) 56,000/yr
Nominal risk coefficient induced by radiation (P) 4.2E-5/yr
Basic Monetary Value (α_base = A + W + P) 45.4 $/mSv

3 Results and Discussion

4 Conclusion

A comparison of the internationally and domestically managed monetary values of man-mSv reveals that most values used by NPP operators are 2-10 times greater than the values used by regulatory agencies. This finding is interpreted to be due to the regulatory agencies using the gross domestic product per capita and NPP operators using the average annual wage of employees in calculating the basic monetary value (α_base).

The radiation aversion factors derived from the survey of NPP radiation workers are values based on the individual’s radiation exposure and underlying perception of radiation. These radiation aversion factors were used as an important basis in determining the monetary value of the man-mSv by the NPP operators.

The monetary value of the man-mSv is expected to contribute significantly in the NPP radiation protection optimisation of KHNPs.