

Overview of the Radiation Epidemiology Analysis System

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[Background, Aim] The Radiation Effects Association (REA) has been conducting epidemiological studies on low-dose radiation effects since 1990. Previously, only cause of death as an endpoint and effective dose were used to estimate radiation risk, but in 2015, it was decided to use cancer incidence information and organ doses. The Radiation Epidemiology Analysis System (hereafter "the system") was completely replaced to handle this improvement. In this report, we provide an overview of the system.

[Overview of the system] The data used for analyses are based on residents' registration cards, cause of death and cancer incidence information provided by the Ministry of Health, Labour and Welfare, and radiation doses provided by Radiation Dose Registration Center in the REA. The system generates scripts for analysis according to conditions such as dose, cause of death (cancer site) and lag period. The data of survey subjects are managed using SQL Server, while MS Office and SAS are used for the conversions from effective doses to organ doses. EPICURE is used for calculating person-years and risk analyses.

[Strength, Future plans] The system was built using widely available software (MS Office, SAS, etc.), which made it possible to modify the system easily and to reduce development costs. Improving work efficiency through batch processing and the automatic execution of scripts using RPA (Robotic Process Automation) should be considered in the future.

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