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EXTERNAL RADIATION DOSE ESTIMATION BY THE BASIC SURVEY

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The Basic survey consists of a questionnaire to ask residents about their behavior (whereabouts, time spent indoors and outdoors, types of dwellings, etc) for the first four months after the Fukushima Daiichi Nuclear Power Plant accident. Individual external doses for the four months have been estimated by superimposing the behavior data of the residents with daily gamma ray dose rate maps on a computer program. The target population of the Basic survey is approximately 2.05 million.

A common method for estimating external dose is to measure ambient gamma ray dose rate with a survey meter and estimate personal dose from the ambient dose assuming time spent outdoors a day and a shielding factor for each dwelling type. However, most of evacuees moved among areas with different gamma ray dose rates. Also, time spent indoors and outdoors could be different from person to person. Thus, one of the features of the Basic survey is to estimate individual doses considering records of moves and activities on a personal basis.

In an early stage after the accident, personal dosimeters or survey meters were not generally available for the public. Thus, many people seemed to worry about radiation dose they received. The Basic survey was designed to inform each respondent of the estimated individual dose. In this respect, the Basic survey is different from other dose estimation studies. Dose estimation studies have been conducted by international authorities such as UNSCEAR and WHO or domestic research groups. However, no other studies than the Basic survey inform each resident of the estimated individual dose on a large scale. As of the end of June 2014, dose estimation of more than 500,000 respondents has been conducted, and the results have been informed to more than 490,000 respondents.

Also, the results of the Basic survey have been updated and reported periodically to meetings of the Fukushima Prefectural Oversight Committee (open to the public). A dose distribution for all respondents (excluding radiation workers) was : 94.0%, <2 mSv ; 99.8%, <5 mSv. An average dose for all respondents was 0.8 mSv and the maximum was 25 mSv. A dose distribution for each municipality has also been reported to the meetings. It was found that even Soso area with relatively high gamma ray dose rate had an average dose of 0.8 mSv for all respondents from that area.

The Basic survey was considered to be helpful for reducing people's concerns about radiation by giving the estimated doses as scientific information. Also, it revealed a distribution of external doses received by the residents in Fukushima Prefecture.

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