



Fukushima health management data: external radiation dose estimates

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[FUKUSHIMA RADIATION SYMPOSIUM 2013]

**FUKUSHIMA HEALTH MANAGEMENT DATA :
EXTERNAL RADIATION DOSE ESTIMATES**

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As a means of ensuring the close, ongoing health management of the citizens of Fukushima Prefecture in the years to come, we are conducting a radiation health management survey known as our Basic Survey. As a basis for this ongoing Basic Survey, we have estimated external radiation doses for the four-month period immediately after the disaster (March 11, 2011–July 11, 2011).

As of July 31, 2013, the response rate to the Basic Survey, designed to cover the entire population of the prefecture, has been 23.5% (483,088 responses from a total of 2,056,994 individuals surveyed). Despite a significantly higher response rate of 58.3% in a preceding survey of high-priority areas (the Yamakiya district of Kawamata, Namie, and Iitate), the response rate for the survey of the entire prefecture (other than the foregoing areas) was only 23.0%. Moreover, there were regional variations in response rate : e.g., as high as 42% for Soso in contrast to between 13% and 15% for Aizu and Minami-aizu.

Survey questionnaires were used to determine the movements of individual respondents during the four months immediately subsequent to the nuclear accident. The movement-related data were entered into a system developed by the National Institute of Radiological Sciences to assess individual external radiation doses.

As of July 31, 2011, effective external cumulative doses have been estimated for 445,015 respondents throughout the prefecture. These show that of 1,605 individuals with an estimated dose of ≥ 5 mSv, 515 had experienced an estimated dose of ≥ 10 mSv. Among these, the maximum estimated dose

was 66 mSv. Further, analysis of data from the 435,788 individuals other than radiation workers revealed that of 1,025 individuals with an estimated dose of ≥ 5 mSv, 515 had experienced an estimated dose of ≥ 10 mSv. Among these, the maximum estimated dose was 25 mSv. Moreover, analysis of the 74,259 respondents in the Soso area, where the response rate had been high, showed respective figures of 991 and 122, the maximum estimated dose being 25 mSv. Analysis of respondents other than radiation workers in terms of gender and age revealed that of 195,862 males, 572 had estimated doses of ≥ 5 mSv, of whom 76 showed doses of ≥ 10 mSv. Likewise, figures for 239,926 females were 453 and 45, respectively. In terms of age, respondents with doses of ≥ 5 mSv were : 66 between ages 0 and 19, 125 between ages 20 and 39, 361 between ages 40 and 59, and 473 aged 70 and over. External radiation doses were comparatively high for respondents in the Soso region's Namie and Iitate, where data for respondents other than radiation workers revealed that of 11,273 Namie residents, 135 had doses of ≥ 5 mSv, of whom 46 showed doses of ≥ 10 mSv, while the doses of 3,170 respondents from Iitate were 800 and 70, respectively.

The above results, based as they are solely on effective radiation doses estimated for the four months immediately following the accident, nonetheless lead us to conclude that, since epidemiological studies have revealed no significant effects on health at doses of ≤ 100 mSv, radiation doses estimated thus far are unlikely to affect health adversely.