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Experience of Environmental Remediation in Date City

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On March 11, 2011, I got the news on TV that the Fukushima Daiichi NPS had got into a critical situation after the massive earthquake and tsunami. At that time, I understood that there would be no impact on Date City, 60km away from the station, and informed that to citizens.

However, the SPEEDI results that were suddenly made public for the first time 10 days after the accident revealed that Date City would also have the possibility of radioactive contamination. We did not have any practical knowledge or measurement devices of radiation. We did not get any concrete instructions either from Fukushima Prefecture or from the national government in that unprecedented emergency situation. Thus, I decided to take measures on my own judgment and considered evacuation and decontamination, reviewing the records of the Chernobyl accident.

By the mid-April of 2011, public anxiety about health effects of radiation on children had grown. However, the government instruction at that time was simply to keep children indoors if the radiation dose rates exceeded 3.8μSv/h (20mSv/a) on the school grounds. We consulted experts, and based on their suggestion, took our own emergency actions including decontamination of all the school grounds and swimming pools, and provision of glass badges to all students of the elementary and junior high schools in the city. We took all these emergency measures with our own decision and allocated budget of JP\1.0B.

An evacuation order was issued to our neighboring village. As it turned out that the adjacent area in Date City also had high radiation level, we helped the residents to evacuate in June 2011. However, evacuation is an urgent measure. In view of considerable detriments of evacuation, I decided that we should decontaminate the living area immediately. For immediate decontamination, we divided the city into three zones (A, B, and C) based on the monitoring results and implemented decontamination according to the level of radiation. That decision led to the completion of decontamination of about 23,000 houses in about two years and minimized the cost, about JP\25B(JP\15B was spent for decontamination of 2,600 houses in the zone A with the highest radiation level among the zones).

The largest challenge in decontamination was how to secure temporary storage sites for generated soil and wastes, due to the NIMBY problem. We held a series of discussions with residents in each community. Ultimately, the city has had more than 100temporary storage sites.

In parallel with decontamination, we provided glass badges to 15,000children since June 2011 and to all the 65,000citizens since July 2012to manage their exposure and to mitigate their concerns. One-year accumulated data till June 2013 were collected from about 50,000 people. The data show that annual additional exposure was less than 1mSv for about 66%and less than 2mSv for about 94% of them. While our practical criterion for remediation was 5mSv/a, nobody below 15 years old received more than 4mSv/a. Thus, our actions for children can be accounted a success. We also provided all citizens with WBC examination and food inspection whenever needed.

As of July 2015, the average additional exposure dose of citizens is 0.59mSv/a, and 84.3%of citizens receive less than 1mSv/a additionally. The situation can be regarded as safe; however, concerns still remain among some people. Their long-lasting concerns can be attributed to the national policies including the decontamination target and food regulation. The Government set the long term decontamination goal as the additional dose of 1mSv/a in November 2011, still in the midst of the accident response. It also set the standard limits of radionuclide in food as 100Bq/kg in April 2012, by revising the former tentative criterion 500Bq/kg. These hard targets may have further increased people's anxiety. It is also an issue that the long term target of 1mSv/a tends to be mistaken as if it has to be immediately achieved to secure safety.

The Government also converted the annual additional exposure of 1 mSv into the air dose rate of 0.23μSv/h. 0.23μSv/h is a criterion to designate survey areas but has been mistaken as an absolute standard for decontamination. Our data show, however, that the annual additional exposure doses fall below 1mSv even if the air dose rates are around 0.50μSv/h. Based on the fact, I made a proposal that the Government should review the criterion of 0.23μSv/h so that municipalities focus on truly required decontamination. However, the Government has been reluctant to formally accept it.

We have made certain progresses in radiation protection; however, we still face challenges to address people'

s persistent anxieties and reputational damages.

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