

Lessons Learned in Fukushima Environmental Remediation in the standpoint between Governmental Bodies and Local Residents - from viewpoint of one engineer involved –

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The Accident of the Fukushima Dai-ichi Nuclear Power Plant posed a wide range of environmental contamination by mainly radioactive cesium-134, and -137. After 5 years passed, hundred thousands of residents are still evacuated, though the remediation activity has been progressing. Before the accident, Japan never expected such catastrophic disaster and never prepared for remediation and storage of a large volume of radioactive materials. Up to the present, effective lessons learned are summarized in the IAEA review mission reports, IEM-4 Conference report, and so on by studying the remediation activities in Fukushima. This paper describes supplemental points of lessons learned, which are drove from the activities in the academic society and in the role of advisor to local governments.

Lesson learned 1: Responsible parties to manage/govern all activities for remediation including monitoring should be required.

At primitive stage of remediation just after the accident, wide range of players, such as scientists, engineers, NPOs, etc., engaged in the remediation individually, which caused to uniformity on remediation and storage of contaminated material. In addition, radiation dose and radioactivity of soils were measured independently, which caused a feeling of insecurity on local residents. After this stage, Japanese government has taken these roles, that is, integration of the remediation works and integration of monitoring data. Guideline published by MOE is an effective for making a uniform remediation and waste management.

Lessons learned 2: Effective decontamination means should be selected

Even if the same remediation means could be applied, the decontamination factor changes within a wide range depending on the characterization of the contamination. A hard remediation method, such as top-soil removal, produces a large amount of radioactive materials to be stored and disposed of. Decontamination method should be selected based on the cost and benefit with the acceptance of local residents.

Lesson learned 3: Effective application of reference level should be required

The ICRP recommends applying on a reference level in the range of 1 –20 mSv as an annual effective dose. The IAEA safety guide suggests that “if the projected annual effective dose for the representative person falls between 1 and 20 mSv/y the benefits of remediation should be justified and a reference level established within that range”. In case of the Fukushima accident, the target of the remediation is determined with 1 mSv/y additionally for a long-term goal. A certain number between 1 –20 mSv/y should be applied in the wide range contamination based on the cost and benefit. In the meanwhile, we have to notice the public has a doubt why the number is different in a short-term and a long-term goal, if the certain number in 1 –20 mSv/y is a safe number.

Lesson learned 4: Priority of the remediation is a strategic issue and should be determined along the real situation

- Most high priority area for remediation should be an area where residents are living and, then, an area where evacuee will return after the remediation

- High contamination area may not be a target of the first remediation activity due to the fact radiation dose does not decrease enough after one-step remediation, that means the mid- and long term activity for homing.

- Public building, such as schools, municipality office, etc. should be a high priority.

Lesson learned 5: Acceptance of community and property owner is essential for the progress of remediation

- Provided by receiving the acceptance from local community/municipality, PTA, etc. smoothly progressed is the remediation of public building, sport field, park and so on

- The acceptance of private owners for houses, gardens, is crucial and critical, and consumes a time.

Lesson learned 6: Role of academia

Local residents feel uneasy what the governmental bodies said, and have various voices for requirements. In addition, they are worried which opinions they should trust among various ones. Therefore, the academia

should play a role to transfer the correct knowledge based on the authorized scientific evidence with comprehensive manner, and to take an interface between governmental bodies and residents.

At last, the followings also come up for the issues to be concerned,

- Different voices by scientists and engineers should be avoided due to making confusion and distrust for residents.
- Spread of noise and rumor should be avoided. Some of peoples living outside Fukushima give negative influence by spreading bad rumor.

References

1. The follow-up IAEA International Mission on remediation of large contaminated areas off-site the FDNPP, 14-21 October 2013.
2. IAEA Report on Decommissioning and Remediation after a Nuclear Accident, Int. Exp. Mtg, 28 Jan. –1 Feb. 2013, Vienna, Austria.

Country or International Organization

Japan

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