Lessons Learned from the Site of Chernobyl Nuclear Accident (Inspection Report)

How JA Shin Fukushima should deal with protective measures for radioactive contamination

Purposes of taking part in the inspection were to find out:

Achievement status of decontamination of life-sustaining forests and farmlands, and viability of agricultural restoration deals and newly applied promotional measures

Measures for maintaining good-health of the cooperative members

February 4, 2012
The International Science and Technology Centre (ISTC)
The Science and Technology Center in Ukraine (STCU)

Takashi Kan-no
Representative Executive Director
JA Shin Fukushima
The accident at the Fukushima Nuclear Plant is a problem to be addressed not only by a nation, but by the whole mankind

Summary

Unified management of measures against nuclear power plant accidents by single authority—Ministry of Emergency Situations
Health checks administered to 100% of population
Ensured establishment of a recuperation center for children
Free school lunch provided in the contaminated districts
1,000 centers set up for detecting radiation in food
11 million laboratory tests conducted per year
70% of exposure comes from food—preventive measures should be made available
Farm produce with more than standard value prevented from distribution
No information at all on the accident as of April 26
Primary evacuation in the afternoon of April 27
Evacuation of residents within the 10km radius of ground zero between 3 and 5 May
Evacuation zone expanded to the 30km radius in later days

Dialogue with residents is important—what is to be feared and what not should be made clear
Soil with higher acidity is more likely to contaminate agricultural produce
80,000 ha of farmland should be ready for animal feed and alcohol production
(not to be consumed directly by men)
Regulation levels have been tightened in phase (the lower restriction the better, but the cost has to be considered)
Alternative product—hemp
40% of forests in Belarus is contaminated (1.5 million ha)
11% of that area is now designated as no-entry zone—regional fire prevention measures are important

Importance of information disclosure
Lack of information available from USSR
Adequate information should be made available to the residents
50 information centers are set up in Gomel Province
Collection of residents' witness statements (important in designing how to provide care)
Section meeting for those involved in agriculture and forestry industry
(There are other participant parties: information and resident evacuation, health and medical treatment, and damages compensation)

- Polluted soil shall not be removed—removal of soil exacerbates dilapidation

- Parts of forests where 1 to 5 mSv of radioactivity is detected may be entered

  Map of contaminated soil distribution drawn for
  - Every 3 to 7 hectares of farmland (30 points on the average)
  - Every 70 hectares of forest (mostly on flat land)

- Contaminant transport coefficient for farm produce is checked every 4 years

The number of monitoring routines for food is varied according to the degree of soil contamination

Contaminated area is marked out—this should be dealt on the independent basis except for cases where the national government is held responsible.
Compound problems imposed on inhabitation in affected areas

Need for scientific solution by residents, the national government, and specialists

Responses—it is important that solution be dealt with by parties located in the vicinity of ground zero

Convergence of solution measures on Gomel by decree of the president

It is important that the scientific and political organizations work together

Scientific data and information of Chernobyl should be made as much available to Japan as possible
How JA Shin Fukushima should deal with protective measures for radioactive contamination

1. National and prefectural analysis results (including milk, marine product, meat, eggs, etc.) as of November 30, 2011

<table>
<thead>
<tr>
<th>Area</th>
<th>Sample</th>
<th>Detected</th>
<th>Undetected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
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<td></td>
<td></td>
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<tr>
<td>Fukushima city</td>
<td>281</td>
<td>216</td>
<td>65</td>
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<tr>
<td>Kawamata machi</td>
<td>12</td>
<td>12</td>
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<tr>
<td>Vegetables</td>
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<tr>
<td>Fukushima city</td>
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<td>24</td>
<td>109</td>
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<tr>
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<td>43</td>
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<tr>
<td>Rice</td>
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<tr>
<td>Fukushima city</td>
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<tr>
<td>Kawamata machi</td>
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<td>3</td>
<td>13</td>
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<tr>
<td>Total samples</td>
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<tr>
<td>Fukushima city</td>
<td>448</td>
<td>269</td>
<td>179</td>
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<tr>
<td>Kawamata machi</td>
<td>87</td>
<td>31</td>
<td>56</td>
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</table>

Analysis results in Fukushima City (as of November 30, 2011)

<table>
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<th>Area</th>
<th>Sample</th>
<th>Detected</th>
<th>Undetected</th>
</tr>
</thead>
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<td>Fruits</td>
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<td>226</td>
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<tr>
<td>Grains</td>
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<tr>
<td>Vegetables</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>165</td>
<td>23</td>
<td>122</td>
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<tr>
<td>Rice</td>
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<tr>
<td></td>
<td>434</td>
<td>99</td>
<td>335</td>
</tr>
<tr>
<td>Total analyzed</td>
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<td></td>
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<tr>
<td></td>
<td>830</td>
<td>287</td>
<td>543</td>
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<tr>
<td>Number of samples within the business district of JA Shin Fukushima</td>
<td>1,365</td>
<td>587</td>
<td>808</td>
</tr>
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</table>
2. Establishing a thoughtful system of farm product analysis

Soil analyzer – Introduction of two analytical instruments (now being in use for tests)
Farm product analyzers One analytical instrument (on loan from Fukushima City)
Another (installed on December 6)
It is scheduled to disclose results of as detailed tests as possible according to a test plan.

Soil analyzer Plans to introduce several analytical instruments (cylindrical easy-to-use type with GPS capability)
Implementation of soil survey for each lot of land – measures are being taken in phase, determined in accordance with classified results of survey by each of the farmland development association

Analytic instrument (with GPS capability) by Atomtex
3. Decontamination of trees—Experiments and implementation (Decontamination Conference was founded)

A total of 50,000 people took part in decontamination of 2,408 hectares of harvesting land for perennial crops.

Experimental decontamination by a high pressure washer

Experimental decontamination by shaving off of tree bark

Map of soil contamination within the business district of JA Shin Fukushima
For the restoration of New Fukushima

Decontamination and development of natural renewable energy by production

1. Area where planting is restricted – Exploitation of 8,500 hectares of rice paddies and other farming fields
   - Paddy fields...production of natural renewal energy from wet-field rice
   - Farming fields...production of natural renewable energy from sunflowers, rape, corn, etc.
   - High yield and high quality products (alcohol, oil), crops and species with decontamination effect
   - Specimens are obtained from all over the world
2. Target area for December — 500 Bq/kg (area of planting restriction?)
   - Area — 100 Bq/kg (isolated area)
   - *Isolation is possible due to testing of all bags of rice conducted by Fukushima Prefecture*
3. Concurrent implementation of decontamination measures such as use of soil improvement additive etc.
4. Introducing a system for providing jobs and maintaining good-health for workers affected by the disaster engaged in the farming and forestry industries

Bases of natural renewable energy production — Iidate and Yamakiya are designated

1. Alcohol production factory
2. Oil production factory
3. Contaminated waste (rice straw, hulls, stems and leaves, pruned branches, stems and leaves from forests, etc.) Bases of waste disposal by special incinerator and production of natural renewal energy
4. Operation of factories — conducted by national, prefectural, and municipal governments, local businesses, National Federation of Agricultural Cooperative Associations, Tokyo Electric Power Company, etc.
   - Mainly implemented by Tokyo Electric Power Company, which should be held socially responsible and therefore make contribute to community
   - Heat energy generated from waste disposal process can be utilized as power source
   - Protected horticulture such as greenhouse cultivation

Creation of 10,000 Jobs

Laying out of road network — placing roads in radial convergence on a factory
   - the roads laid to have highway access

Establishment of a Center for Research and Development of Protection from Nuclear Power Disasters

1. Research of crop species that do not cause contaminant transport
2. Research and development of efficient machinery for production, cultivation, harvesting etc.
3. Research and development center for health, welfare, medical treatment, industry etc.

Drawing up of the first (and second) 10-year plan for rebirth as a nation, and preparation of relevant laws