Ensuring food safety

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Food Industry Affairs Bureau
Ministry of Agriculture, Forestry and Fisheries
(MAFF) JAPAN
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1. Basic knowledge of radioactive substances
The Standard limits for radionuclides in foods.

- Codex establishes the standard limit as less than 1,000 Bq/kg for radioactive caesium in food as the international standards.
- Japan establishes 100 Bq/kg (general foods) as the standard limit based on the international standard to ensure food safety strictly.

### The Standard limits for radionuclides in foods.

<table>
<thead>
<tr>
<th>Nuclear species</th>
<th>CODEX</th>
<th>EU</th>
<th>US</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio caesium</td>
<td>Infant foods</td>
<td>1,000</td>
<td>drinking water</td>
<td>1,000</td>
</tr>
<tr>
<td>(134Cs, 137Cs)</td>
<td>general foods</td>
<td>1,000</td>
<td>daily products</td>
<td>1,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>all foods</td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td>Infant foods</td>
<td>400</td>
<td>Infant foods</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>general foods</td>
<td>1,250</td>
<td>general foods</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Unit:** Bq/kg

**Note:**

Codex: establishing the standard limit based on the Operational Intervention Level 1 mSv, and assume 10% of all foods was harvested in radioactive contaminated area.

EU: establishing the standard limit based on personal additional exposed dose as not more than 1 mSv/Year, and assumed that 10% of all foods for human consumption in lifetime was harvested in the radioactive contaminated area.

USA: establishing the standard limit based on the collective effective dose 5 mSv, and assume 30% of all foods intake is radioactive contaminated.
People are exposed to radiation in our daily life. For example, we receive a dose of radiation during the airline flight. (0.2 mSv / a round trip from Japan to New York)
“Natural radiation” is defined as radiation which is originally present in nature. There are various kinds of radiation. We are exposed to natural radiation from both external and internal radioactive materials. We receive a dose of 2.4 mSv per year from natural radiation in our daily life.

Source: “Radiation and Life” from the Agency for Natural Resources and Energy
Decrease in dose rate of radioactive cesium (Cs134 & Cs137)

- There are two types of radioactive cesium (Cs-137: half-life of about 30 years, Cs-134: half-life of about 2 years).
- On the assumption that the ratio of cesium 137 and cesium 134 immediately after the Great East Japan Earthquake was about 1:1 and that the dose was not later decreased by movement of the radioactive substances, the dose rate of cesium was calculated taking only attenuation in the half-life into consideration. It is estimated as a result that the cesium dose rate will decrease to a half 3 years later, four ninths 4 years later, three eighths 5 years later, one fourths 9 years later, and one sevenths 30 years later.
- However, it is expected to decrease slightly faster than that due to the influences of rainfall, etc. (weathering effect).

Source: Created by MAFF based on experimental data supplied by Radiation Science Center of High Energy Accelerator Research Organization
2. Measures to ensure safety of food
Appropriate distribution management based on food monitoring

- Food monitoring inspection has been conducted based on standard limits in accordance with the international standard.
- Foods exceeding standard limits are restricted from being shipped and prevented from entering into the market.

<<Japan’s standard limits of radioactive cesium>>

<table>
<thead>
<tr>
<th>Food</th>
<th>standard limits* (Bq/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking water</td>
<td>10</td>
</tr>
<tr>
<td>Milk</td>
<td>50</td>
</tr>
<tr>
<td>Infant Foods</td>
<td>50</td>
</tr>
<tr>
<td>General Foods</td>
<td>100</td>
</tr>
</tbody>
</table>

(* Enforced in April 2012 based on the index of annual dose of 1 mSv adopted by CODEX committee)

- So far, About 1.4 million monitoring tests were implemented. About 43 million tests of all rice bags were also implemented in Fukushima prefecture.(as of Feb. 2016)
- Percentage of samples that exceed the limits are constantly decreasing to 0.12% (Jan. 2015 to Dec. 2015) (Most of the excesses were wild mushrooms and meats of wild birds and animals. The number of excesses in farm-grown products is extremely small.)
- Distribution of food exceeding the limits will be immediately prohibited, denying them entry into the markets.

Source: Created by MAFF
Restriction of Distribution and/or Consumption of Foods

Order by Act on Special Measures Concerning Nuclear Emergency Preparedness

“Restriction of Distribution”
When areas producing the items exceeding the limits have been spread out, relevant areas and items become subject to restriction.

“Restriction of Consumption”
When significantly high level of concentration is detected in items, the restriction of consumption is immediately established.

The requirements for establishing items and areas of restriction
- When it is considered that areas producing the items exceeding the limits have been spread out, relevant areas and items become subject to restriction.
- Unit of Restriction is prefecture basis. Prefectures can be divided into multiple number of areas if they can be administered by prefectures and municipalities.

The requirements for cancellation of restriction
- Based on the application of the relevant prefecture.
- Prefectures can be divided into a multiple zones, in the light of the actual situations of the shipments of the items.
- As a general rule, the results of radioactive cesium inspections conducted at 3 or more locations per municipality within the last month must all fall below the limits.

Monitoring ➔ Exceed the limits ➔ Restriction of Distribution ➔ Restriction of Consumption

Identify the spreading out
Identify the significantly high level

※ Monitoring of radioactive materials in food are mainly carried out before shipment. Most of the food items exceeding the limits are derived from areas where restrictions of distribution have been instructed.

Source: Ministry of Health, Labour and Welfare
The IAEA positively evaluated Japan in the assessments on a report provided by the Japanese government (Feb. 2016), and it says that “the measures taken (by Japan) to monitor and respond to issues regarding radionuclide contamination of food are appropriate, and that the food supply chain is under effective control”.

“Measurements of caesium radionuclides in foodstuffs, together with appropriate regulatory action and the publication of monitoring results are helping to maintain confidence in the safety of the food supply.”

“Food restrictions continue to be revised and updated as necessary, in line with food sampling and monitoring, and this indicates the continued vigilance of the authorities in Japan and their commitment to protecting consumers and trade.”

“Based on the information that has been made available, the Joint IAEA / FAO Division understands that the measures taken to monitor and respond to issues regarding radionuclide contamination of food are appropriate, and that the food supply chain is under effective control of the relevant authorities.”

Source: IAEA report