
# Japan's 2011 Earthquake and Tsunami: Food and Agriculture Implications

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# Summary

The March 11, 2011, earthquake and tsunami in Japan caused widespread devastation that affected many of the country's agricultural and fishery areas. The nuclear crisis that followed at the Fukushima Daiichi Nuclear Plant, and the subsequent detection of radioactive contamination of food produced near the disabled facility, further raised fears about the safety of Japan's food production systems and its future food exports. Most reports acknowledge that Japan's current production and supply shortages, along with rising food safety concerns and possible longer-term radiation threats to its food production, could limit Japan's food exports while possibly increasing its need for food imports in the future. It is still not clear what effect, if any, Japan's current food supply and demand situation will have on world farm commodity markets and food prices.

Following initial reports about possible radioactive contamination of foods, many countries increased their surveillance of food imports from Japan. In addition to the United States, others imposing heightened surveillance measures include the European Union, Canada, Australia, New Zealand, India, and most Asian nations, such as China and Hong Kong, Indonesia, Malaysia, Singapore, Korea, and Thailand, among others. Import restrictions vary by country but broadly cover milk and milk products, vegetables and fruit, and seafood and meat from those prefectures with a perceived risk of contamination, specifically Fukushima, Ibaraki, Tochigi, and Gunma. Several international organizations, including the various organizations of the United Nations, are closely monitoring global concerns about the safety of foods produced in Japan.

The Japanese government has taken steps to monitor and restrict, if necessary, the distribution of contaminated foods. Testing has been conducted nearly daily to detect possible radioactive contaminants on a wide range of plant and animal products, including fish, and also tap water in some of the coastal prefectures as well as in southern prefectures near the disabled Fukushima facility. In March 2011, Japan's government made a series of announcements restricting the distribution and consumption of certain vegetables harvested in Fukushima, Ibaraki, Tochigi, and Gunma prefectures, and fresh raw milk produced in Fukushima prefecture. In April 2011, there were additional announcements regarding possible contaminated fish products, and also an announcement restricting spinach and leafy greens from Chiba prefecture.

In the United States, the two principal agencies that regulate U.S. food imports—the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA)—have taken steps to address these concerns. Following Japan's announcement that some foods had been contaminated by radiation, FDA issued an "Import Alert" for certain milk products and fresh vegetables produced or manufactured in the Japanese prefectures of Fukushima, Ibaraki, Tochigi, and Gunma. As of early April, FDA's import alert does not cover Japanese seafood. Both FDA and USDA have announced that they are taking extra steps to better track U.S. food imports from Japan, working in conjunction with existing border inspectors at the Department of Homeland Security's U.S. Customs and Border Protection (CBP).

Other U.S. agencies are also addressing concerns about whether radiation from Japan might affect food production in the United States or in U.S. territories in the Pacific. The Environmental Protection Agency (EPA) is continuously monitoring the nation's air and is regularly monitoring drinking water, milk, and precipitation for environmental radiation. To date, the results of EPA's drinking water, precipitation, and milk sampling and air monitoring have shown detected radiation below levels that are a public-health concern.

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# Introduction

The widespread devastation from the March 11, 2011, earthquake and tsunami affected many agricultural and fishery areas in Japan. In addition, detected radioactive contamination of food produced near the disabled Fukushima Daiichi Nuclear Plant has raised fears about the safety of Japan's food production systems and its future food exports. Many countries increased their surveillance of food products from Japan, and the Japanese government has taken steps to monitor and restrict, if necessary, the distribution of contaminated foods. In the United States, the two primary agencies that regulate U.S. food imports—the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA)—have taken steps to address these concerns. Other U.S. agencies are also working to address this situation, as well as concerns about whether radiation leaks from Japan might possibly affect food production in the United States or U.S. territories in the Pacific.[1] Various international organizations, including those within the United Nations, are closely monitoring global concerns about the safety of foods produced in Japan.

# Japan's Food Industry

## Production

Japan's agricultural and fisheries industries account for a small share (less than 2%) of its total yearly GDP, but are an important part of the country's overall economy. Agricultural output, measured at the farm level, totals about $70 billion annually.[2] The value of Japan's fisheries accounts for another $14 billion.[3] Principal food commodities produced in Japan include fish and seafood, rice, vegetables, fruits and nuts, and dairy and poultry products.[4]

Despite its size, Japan has roughly the same number of commercial farms as the United States—estimated at about 2 million. These farms are spread across an estimated 11.4 million acres of cultivated farmland (a fraction of that in the United States, estimated at more than 400 million acres).[5] Japan's marine fisheries industry has about 115,200 business enterprises and another 6,500 "inland water" (aquaculture) operations.[6]

## Trade

Japan is a net food importer (**Table 1**). Imports of agricultural and fisheries products totaled $59.3 billion in 2010.[7] Nearly half of the value of Japan's food imports consisted of fish and meat

[1] For more information, see CRS Report R41702, *Japan's 2011 Earthquake and Tsunami: Economic Effects and Implications for the United States.*

[2] Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF), *84th Statistical Yearbook* (2008-2009), http://www.maff.go.jp/%20e/tokei/kikaku/nenji_e/index.html; MAFF, "Summary of Agricultural Production," http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0030e.pdf. Converted from yen to dollars (2007). By comparison, the farm value of U.S. agricultural products sold is about $300 billion (Source: USDA, *Census of Agriculture*, 2007).

[3] Ibid. MAFF, "Summary of Fishery Production," http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0031e.pdf.

[4] FAOSTAT Production, http://faostat.fao.org/site/339/default.aspx.

[5] MAFF, "Summary of Agricultural Production," http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0030e.pdf. 2008 data. Converted to acres (1 hectare = 2.47 acres). U.S. cropland is reported at 406.4 million acres (2007).

[6] MAFF, "Summary of Fishery Production," http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0031e.pdf. 2008 data.

[7] Global Trade Atlas, http://www.gtis.com/gta/. Harmonized System (HS) codes in chapters 01-22. Excludes food (continued...)

products. Other imports include grains and bakery goods (23% of total value), and vegetables and fruits (8%). The United States was the leading supplier, accounting for about one-fourth of food imports ($14.1 billion in 2010). About half of the value of U.S. food exports to Japan consisted of cereal grains, including corn ($3 billion in 2010, accounting for 30% of all U.S. corn exports).[8] Other U.S. exports were seafood, meat and dairy products (21%), and fruits and nuts (5%).

**Table 1. Japan's Agricultural Imports, Exports, and Net Trade, 2010**

| HS Category | Imports | Share | Exports | Share | Net Trade |
|---|---|---|---|---|---|
| | ($ million) | (%) | ($ million) | (%) | ($million) |
| **Fish and seafood** | 11,695 | 20% | 1,292 | 28% | (10,404) |
| **Animal and meat products** | 9,403 | 16% | 142 | 3% | (9,262) |
| **Prepared meat and fish** | 5,263 | 9% | 655 | 14% | (4,608) |
| **Fats and oils** | 1,309 | 2% | 141 | 3% | (1,1690) |
| **Dairy, eggs, honey** | 1,334 | 2% | 47 | 1% | (1,287) |
| **Fresh fruits, vegetables** | 4,865 | 8% | 141 | 3% | (4,724) |
| **Grains, baking products** | 13,410 | 23% | 711 | 15% | (12,698) |
| **Sugar and Cocoa** | 1,826 | 3% | 138 | 3% | (1,688) |
| **Beverages, water** | 2,865 | 5% | 368 | 8% | (2,497) |
| **Prepared foods** | 3,006 | 5% | 57 | 1% | (2,949) |
| **Floriculture, spices, misc.** | 4,350 | 7% | 1,001 | 21% | (3,348) |
| **Total** | **59,326** | **100%** | **4,693** | **100%** | **(54,633)** |

**Source:** Compiled by CRS using Global Trade Atlas, http://www.gtis.com/gta/, "Reporting Total Import Statistics" and "Reporting Countries Export Statistics" (Japan).

**Notes:** Data are by Harmonized System (HS) code. Imports, actual U.S. dollars. Harmonized System (HS) codes in chapters 01-22. Excludes other agricultural categories: food waste (HS 23) and tobacco products (HS 24).

Japan's food exports totaled $4.7 billion in 2010. Leading Japanese food exports included fish and other animal products (about 40%), processed foods, bakery products, and grains (about 15%), beverages (8%), and other miscellaneous products (**Table 1**). Food exports to the United States totaled nearly $700 million in 2010, accounting for about 15% of Japan's total food exports. Exports to the United States consisted mostly of fish and animal products, processed bakery products and grains, and beverages.

## Policy Priorities

The agricultural and food sectors are important and strategic aspects of Japan's government policies. Japan provides generous support to its agricultural sectors and protects its domestic producers by imposing high tariffs on most imported foods. The Organisation for Economic Co-

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waste (HS 23) and tobacco products (HS 24).

[8] CRS, using USITC data, http://www.dataweb.usitc.gov. By U.S. Harmonized Tariff Schedule (HTS) code, includes corn (HTS 1005). Other grain exports were: sorghum, HTS 1007 ($127 million, 17% of U.S. exports) and barley, HTS 1003 ($2.8 million,7% of U.S. exports in 2010).

operation and Development (OECD) estimates that Japan provides substantial government support for its domestic farmers—estimated at more than $46 billion in 2009—ranking Japan second behind the European Union (EU) in terms of total governmental farm spending among developed countries.[9]

Japan's current agricultural policy plan (Food, Agriculture and Rural Areas Basic Plan) "addresses wide-ranging policy change by designating food, agriculture and rural areas governance as a national strategy."[10] One of the plan's principal goals is to raise Japan's self-sufficiency in food production from an estimated 40% in recent years to 50% by FY2020.[11] Food self-sufficiency is reported to be greater in some prefectures. The five coastal prefectures that were most affected by earthquake and tsunami had a reported high food self-sufficiency ratio: Aomori (119%); Iwate (104%); Miyagi (80%); Fukushima (85%); and Ibaraki (70%). It is unclear how the recent devastation to these areas will affect the region's food self-sufficiency.

# Initial Damage Assessment

Most reports acknowledge that Japan's current production and supply shortages, along with rising food safety concerns and possible longer-term radiation threats to its food production, could limit Japan's food exports while possibly increasing its need for food imports in the future.[12] It is still not clear what effect, if any, Japan's current food supply and demand situation will have on world farm commodity markets and food prices.

## Potential Production Losses

The widespread devastation from the March 2011 earthquake and tsunami affected many agricultural and fishery areas in Japan. The Japanese government is still assessing the extent of the overall damages to the country's agricultural, forestry, and fisheries sectors.

Damages to agricultural crops, land, and facilities have been reported in several prefectures, including Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima, Ibaraki, Tochigi, Gunma, Saitama, Chiba, Yamanashi, Nagano, Niigata, and Mie, among others (**Figure 1**).[13] Among fisheries, "catastrophic damages" to fish vessels and harbor facilities have been reported in Iwate, Miyagi, and Fukushima prefectures; other damages to fishing vessels and harbor facilities were also reported in Hokkaido and Aomori, Ibaraki, Chiba, Kanagawa, Aichi, Mie, Wakayama, Tokushima, Kochi, Oita, Miyazaki, Kagoshima, and Okinawa prefectures, and in Tokyo Metropolitan. Damages to aquaculture facilities were reported in Toyama, Ishikawa, Shizuoka, and Shimane prefectures.

[9] OECD, *Agricultural Policies in OECD Countries, at a Glance*, 2010, Table 1.3. Based on estimated 2009 Producer Support Estimate (PSE). Other leading countries: EU ($121 billion), U.S. ($31 billion), Korea ($18 billion). Additional information is provided in CRS Report R41713, *U.S. and EU Agricultural Support: Overview and Comparison*.

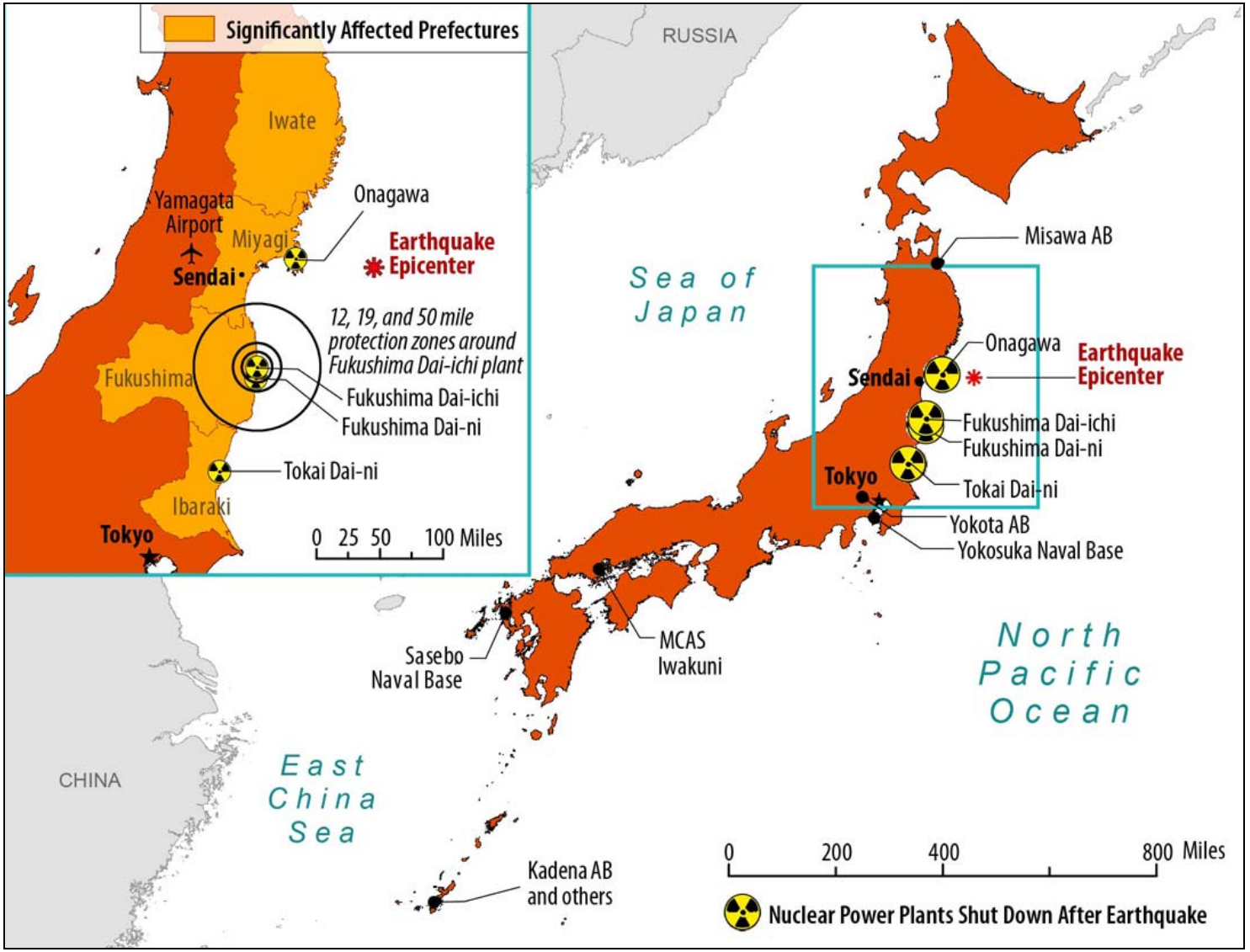
[10] MAFF, *FY2009 Annual Report on Food, Agriculture and Rural Areas in Japan*, March 2010, http://www.maff.go.jp/e/%20annual_report/2009/pdf/e_all.pdf.

[11] Ibid., pp. 10-20. This ratio is based on a supplied calorie basis.

[12] See, for example, Rabobank Food & Agribusiness Research and Advisory (FAR) Group, "Japan Earthquake: Magnitude of Impact on Food and Agriculture," March 2011, and *Kiplinger Agriculture Letter*, March 11 and 25, 2011.

[13] Ministry of Agriculture, Forestry and Fisheries (MAFF), "The damages caused by the 2011 off the Pacific coast of Tohoku Earthquake and Actions taken by Ministry of Agriculture, Forestry and Fisheries," http://www.maff.go.jp/e/quake/press_110328-1.html.

**Figure 1. Map of Affected Areas, Japan**




**Source:** Prepared by CRS based on data from the U.S. Department of State, National Geospatial Intelligence Agency, and GeoCommons.

USDA has compiled production statistics for crop production in the five coastal prefectures—Aomori, Iwate, Miyagi, Fukushima, and Ibaraki (**Table 2**).[14] USDA's summary, using 2007 production data, shows that these five prefectures account for about 21% of Japan's total marine fisheries and aquaculture production by volume, and 17% of all agricultural output by volume. These areas also account for similar shares of the nation's rice, soybeans, vegetables, and livestock production, and also house 40% of Japan's hog production, about one-tenth of all cattle and dairy herds, and about 5% of its poultry flocks.

**Table 2. Agricultural and Fisheries Output, and Shares in Selected Prefectures**

| | All Japan | Aomori Share | Iwate Share | Miyagi Share | Fukushima Share | Ibaraki Share | Total Share |
|---|---|---|---|---|---|---|---|
| **Marine fishery catch** (1000 mt.) | 4,397 | 4% | 3% | 6% | 2% | 4% | 20% |
| **Marine aquaculture** (1000 mt.) | 1,242 | 2% | 1% | 3% | 0% | NA | 7% |
| **Agricultural output** (100 billion yen) | 83 | 0% | 0% | 0% | 0% | 0% | 0% |
| **Crops output** (100 billion yen) | 57 | 0% | 0% | 0% | 0% | 0% | 0% |
| **Vegetables** (100 million yen) | 21 | 0% | 0% | 0% | 0% | 0% | 0% |
| **Rice** (1000 mt.) | 8,823 | 7% | 7% | 9% | 10% | 10% | 42% |
| **Soybeans** (1000 mt ) | 262 | 0% | 0% | 0% | 0% | 0% | 1% |
| **Livestock** (100 billion yen) | 25 | 0% | 0% | 0% | 0% | 0% | 0% |
| **Dairy cattle** (1000 head) | 1,533 | 0% | 1% | 1% | 0% | 1% | 3% |
| **Beef cattle** (1000 head) | 2,890 | 1% | 3% | 2% | 2% | 1% | 9% |
| **Pigs** (1000 head) | 9,745 | 9% | 10% | 5% | 5% | 14% | 43% |
| **Layers** (million chickens) | 185 | 0% | 0% | 0% | 0% | 0% | 1% |
| **Broiler shipments** (million chickens) | 630 | 1% | 2% | 0% | 0% | 0% | 4% |

**Source:** USDA, Economic Research Service (ERS), "Japan: Current Issues in Japanese Agriculture," Table 1, http://www.ers.usda.gov/Briefing/Japan/currentissues.htm. Data vary and are either 2007 or 2008.

**Notes:** 1 metric ton (mt) = 2,205 pounds. Assumes 1 dollar = 118 yen (2007), 103 yen (2008) (nominal).

Another report by the Netherlands-based Rabobank estimates the potential impact on some major food sectors, covering meat, dairy, seafood, fruits and vegetables, and grains and rice.[15] The report states that the earthquake had no immediate effect on rice supply, given high year-end stocks; however, it noted possible concerns about soil contamination and its effect on future planting. The report notes that most of Japan's grain processing mills and soy-crushing plants are located outside the damage zone; other reports confirm that many of these facilities may remain operational.[16] However, power shortages may temporarily affect processing operations. About 15% of Japan's compound feed industry capacity is estimated to have been damaged. The report

[14] USDA, Economic Research Service (ERS), "Japan: Current Issues in Japanese Agriculture," Table 1. http://www.ers.usda.gov/Briefing/Japan/currentissues.htm.

[15] Rabobank Food & Agribusiness Research and Advisory (FAR) Group, "Japan Earthquake: Magnitude of Impact on Food and Agriculture," http://www.rabobank.com/content/research/FoodAndAgriResearch/, as reported by Farms.com Ltd. ("Rabobank: Japan to import more ag products," April 7, 2011).

[16] See, for example, Morton Sosland, "Japan's flour mills built to resist earthquakes," *Food Business News*, March 22, 2011; and the *Kiplinger Agriculture Letter*, March 25, 2011.

notes that a significant portion of Japan's meat, poultry, and dairy production is located in northern coastal prefectures, and states that power shortages may have damaged supplies that were in cold storage. The report also notes widespread damage in the fisheries and aquaculture sectors, including damage to fishing ports and vessels, and to wild seedbeds for key products such as scallops and oysters.[17] Also, seawater contamination is eroding consumer confidence in the country's fresh seafood catch. In addition to damage to vegetable farms and orchards in the coastal prefectures, the report notes growing concerns about radioactive contamination in locally produced vegetables and fruits.

Despite the current situation in Japan, food imports for consumption or for further processing have not stopped and many in-country food facilities continue to operate throughout the country.[18]

## Potential Radioactive Contamination

The Japanese government has been monitoring possible radioactive contamination of plant and animal products and tap water in some of the coastal prefectures as well as southern prefectures near the disabled Fukushima Daiichi Nuclear Plant. Testing has been conducted nearly daily since March 19, 2011, to detect possible radioactive contaminants on a wide range of plant and animal products, including fish.[19] Testing for radioactive contaminants in foods is ongoing and spans many adjacent prefectures. Among the types of foods tested are spinach, lettuce, leeks, cabbage, cucumbers, strawberries, tomatoes, chives, broccoli, turnips, asparagus, eggplant, parsley, zucchini, celery, cabbage, melons, shitake, wasabi, garland chrysanthemum and other locally grown produce, rapeseed, raw and pasteurized milk, poultry eggs, pork, sea cucumbers, blue mackerel, squid, flounder, and sardines.

The Japanese government has taken action to restrict the distribution of potentially contaminated foods. During March 21-23, 2011, Japan's Ministry of Health, Labour and Welfare made a series of announcements restricting the distribution and consumption of certain foods, including "non-head type leafy vegetables and head type leafy vegetables" (such as spinach, komatsuna, cabbages), and any "flowerhead brassicas" (broccoli, cauliflower) produced in Fukushima and Ibaraki prefectures,[20] and in another notice placed restrictions on spinach and kakina (a leafy vegetable) harvested in Fukushima, Ibaraki, Tochigi, and Gunma prefectures, and fresh raw milk produced in Fukushima prefecture. [21] Some of these restrictions were later lifted.[22]

[17] Farms.com Ltd., "Rabobank: Japan to import more ag products," April 7, 2011.

[18] See, for example, Tom Johnston, "U.S. exports to Japan remain strong," *Meatingplace*, March 23, 2011; Brian Salvage, "Smithfield: No declines in pork exports to Japan," *MeatPoultry*, March 28, 2011; and Cheryl Anderson, "U.S. Grain Experts Expect Quick Recovery to Trade," *The Progressive Farmer*, March 28, 2011.

[19] Reports are posted by Japan's Ministry of Health, Labour, and Welfare (MHLW), "Information about 2011 Tohoku-Pacific Ocean Earthquake," http://www.mhlw.go.jp/english/topics/2011eq/index.html.

[20] MLHW, "Restriction of distribution and/or consumption of foods concerned in Fukushima and Ibaraki Prefectures," March 23, 2011, http://www.mhlw.go.jp/stf/houdou/2r98520000015wun-att/2r98520000015xym.pdf.

[21] MLHW, "Handling Monitoring of Radioactive Contaminants for Agricultural and Livestock Products," March 23, 2011, http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110323.pdf.

[22] MLHW, "Cancellation of Instruction to restrict distribution of foods concerned (Fukushima and Gunma Prefectures)," April 8, 2011, http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110408.pdf; and MLHW, "Cancellation of Instruction to restrict distribution of foods concerned (Ibaraki Prefecture)," April 10, 2011, http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110410.pdf.

The ministry also noted that "in Fukushima Prefecture, there is no capability for coastal fishing in the sea area of the prefecture ... due to damage of the coast by the earthquake." Japan's Fisheries Agency stated that "fishery activities will not be resumed for a while in the sea area of Fukushima prefecture."[23] Again, during April 4-5, the ministry made additional announcements regarding possible contaminated fish products,[24] and also an announcement to restrict spinach and leafy greens from Chiba prefecture.[25] News reports indicate that fisheries in Ibaraki prefecture have ceased operations after contaminated fish were detected south of Fukushima, where radioactive water from a stricken nuclear plant contaminated the sea.[26]

The situation is ongoing, and updates on the safety of Japan's agricultural and fishery products are posted on a regular basis. For updated information, see the ministry's website at http://www.mhlw.go.jp/english/topics/2011eq/index.html. This website also posts ongoing announcements and updates on radiation concerns regarding Japan's tap water supplies, primarily in the Fukushima and Chiba prefectures.

Various news reports have noted the potential for radioactive contamination to affect several Japanese food production markets, including those for its fish and seafood, as well as global sushi markets; and Japan's milk and dairy foods; produce; and beer, spirits, and bottled water.

# Possible Global Implications

Reports about possible radioactive contamination of food produced near the disabled Fukushima Daiichi Nuclear Plant have raised fears about the safety of Japan's food production, as well as concerns that radiation might reach the United States or U.S. territories in the Pacific. Many countries, including the United States, have instituted controls or banned Japanese food products from entering their countries.

As previously noted, Japan has been an important trading partner with the United States, particularly for U.S. exports. In 2010, the value of U.S. food exports to Japan totaled $14.1 billion, making Japan our fourth-largest agricultural export market.[27]

However, Japan accounts for a relatively small portion of the total U.S. market. The value of Japanese food exports to the United States totaled $0.7 billion, less than 1% of the value of U.S. food imports.[28] The majority of imports (75% of the value in 2010) consisted of fish and Japanese prepared foods. Fresh seafood and also prepared fish and meat products accounted for about one-

[23] Japan's Fisheries Agency, "Questions and answers on fishery products," http://www.jfa.maff.go.jp/e/q_a/index.html. Also see http://www.jfa.maff.go.jp/e/inspection/index.html for other testing and inspection reports.

[24] MLHW, "Handling of provisional regulation values for radioactive iodine in fishery products," April 5, 2011, http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110405.pdf.

[25] MLHW, "Restriction of distribution in Chiba Prefecture," April 4, 2011, http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110404.pdf.

[26] Aya Takada, "Fishing Halted in Japan's Ibaraki After Radioactive Water Contaminates Sea," *Bloomberg* news online, April 6, 2011.

[27] Compiled by CRS, using data from the Global Trade Atlas, http://www.gtis.com/gta/. Harmonized System (HS) codes in chapters 01-22. Excludes food waste (HS 23) and tobacco products (HS 24).

[28] Compiled by CRS using data from the U.S. International Trade Commission (USITC), http://dataweb.usitc.gov. U.S. Harmonized Tariff Schedule (HTS) codes in chapters 01-22.

third of total imports from Japan.[29] These imports account for less than 2% of the seafood consumed in the United States.[30] Other leading imported products are prepared grain-based foods, including baked goods and pastas (12%),[31] and beverages, including rice wine and sake (7%).[32] Another leading import category is Japanese food preparations "not elsewhere specified" in the U.S. import codes, accounting for almost 20% of imports.[33]

## Effects on U.S. Food Supplies

To date, based on current available data, agencies in the United States claim that the situation in Japan does not pose a risk to U.S. food supplies. Similarly, international health organizations claim there is no evidence that radiation in Japan has contaminated food produced in any other country.[34]

The U.S. Nuclear Regulatory Commission (NRC) further states that, based on current testing information, it does "not expect harmful levels of radiation to reach the West Coast, Hawaii, Alaska, or U.S. territories in the Pacific." Also, the NRC "does not expect that residents of the United States or its territories are at any risk of exposure to harmful levels of radiation resulting from the events in Japan."[35] In addition to the NRC, other U.S. agencies are monitoring and assessing radiation released from the Japanese plants, including the Environmental Protection Agency (EPA) and the Department of Energy (DOE).

EPA is continuously monitoring the nation's air in all states and most territories, and is also regularly monitoring drinking water, milk, and precipitation at these sites for environmental radiation using its nationwide radiation monitoring system, RadNet.[36] EPA's daily sampling data are posted at its website: http://www.epa.gov/japan2011/data-updates.html. To date, EPA's sampling of drinking water, precipitation, and milk, and its air monitoring, have consistently detected only "low levels of radioactive material below levels of public-health concern."[37] On March 30, 2011, EPA and FDA issued a joint statement:

[29] HTS 03 (fish and crustaceans, molluscs and other aquatic invertebrates) and HTS 16 (edible preparations of meat, fish, crustaceans, molluscs or other aquatic invertebrates).

[30] Joint statement, "FDA, USDA, NOAA Statements on Food Safety," http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm248257.htm.

[31] HTS 19 (preparations of cereals, flour, starch or milk; bakers' wares).

[32] HTS 22 (beverages, spirits and vinegar).

[33] HTS 21 (miscellaneous edible preparations), mostly HTS 2106909998 (food preparations not elsewhere specified or included, not canned or frozen).

[34] FDA, "Radiation Safety," http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm#food; and FAO/WHO consolidated statement, "Nuclear Emergency in Japan and Food Safety Concerns," http://www.fao.org/crisis/japan/69718/en/.

[35] NRC, "Frequently Asked Questions About the Japan Nuclear Crisis," http://www.nrc.gov/japan/faq-need-to-know.pdf.

[36] EPA, "Japanese Nuclear Emergency: Radiation Monitoring," http://www.epa.gov/japan2011/. See map on national monitoring sites. Also see EPA's "Frequently Asked Questions."

[37] Results for April 7, 2011. EPA, "Daily Data Summary," http://www.epa.gov/japan2011/data-updates.html. Also see EPA, "EPA Monitoring Continues to Confirm That No Radiation Levels of Concern Have Reached the United States," March 28, 2011; and Joint EPA/DOE statement, "Radiation Monitors Confirm That No Radiation Levels of Concern Have Reached the United States," March 18, 2011. Also see CRS Report R41728, *The Japanese Nuclear Incident: Technical Aspects* (specifically, section titled "Could Harmful Levels of Fallout Reach the United States?").

> Results from a screening sample taken March 25 from Spokane, WA detected 0.8 pCi/L of iodine-131, which is more than 5,000 times lower than the Derived Intervention Level set by FDA. These types of findings are to be expected in the coming days and are far below levels of public health concern, including for infants and children. Iodine-131 has a very short half-life of approximately eight days, and the level detected in milk and milk products is therefore expected to drop relatively quickly.[38]

The Centers for Disease Control and Prevention (CDC) have posted information to address consumer concerns about iodine-131 detected in milk and in surface water supplies.[39]

Reports by some West Coast states, including California and Washington, also downplay potential risks based on ongoing radiologic monitoring in these states. The California Department of Public Health reports that "all data from state and federal sources show that harmful radiation won't reach California."[40] These findings underlie claims by industry representatives of the Western Growers and Produce Marketing Association that there is no threat to California's produce industry.[41] Washington State Department of Health officials also claim they "aren't seeing significant levels of radioactivity in our state, and there's no health risk."[42]

# Trade Considerations

## International Activities

Following the initial reports about possible radioactive contamination of foods, many countries increased their surveillance of food imports from Japan. In addition to the United States, others with heightened import surveillance measures include the European Union, Canada, Australia, New Zealand, and India, as well as most Asian nations, such as China and Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan, Thailand, among others. Import restrictions vary by country but broadly cover milk and milk products, vegetables and fruit, and seafood and meat from those prefectures with a perceived risk of contamination, specifically Fukushima, Ibaraki, Tochigi, and Gunma.

Several international organizations are monitoring concerns about the safety of food produced in Japan. These include the various organizations of the United Nations, including the World Health Organization (WHO), the Food and Agriculture Organization (FAO), the Joint FAO/WHO Codex Alimentarius Commission, the International Food Safety Authorities Network (INFOSAN), and also the International Atomic Energy Agency (IAEA).[43] These organizations help oversee the

[38] Joint FDA/EPA statement, "Update on Ongoing Monitoring," March 30, 2011, http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm249146.htm.

[39] CDC, "Frequently Asked Questions About Iodine-131 Found in Milk," http://emergency.cdc.gov/radiation/isotopes/iodine131andmilk_faq.asp; and "Frequently Asked Questions About Iodine-131 Found in Surface Water," http://emergency.cdc.gov/radiation/isotopes/iodine131surfacewater.asp

[40] CDPH, "FAQs About Radiation," http://www.cdph.ca.gov/pages/radiationfaqs2011.aspx.

[41] Dan Flynn, "CA says no threat of radiation in leafy greens," *Food Safety News*, March 25, 2011.

[42] Washington State Department of Health, "Frequently Asked Questions: How the nuclear reactor event affects Washington, http://www.doh.wa.gov/topics/japan-faq.htm. Also see press release by Governor Gregoire, "Gov. Gregoire's statement on ongoing radiological monitoring," March 30, 2011, http://www.governor.wa.gov/news/news-view.asp?pressRelease=1682&newsType=1.

[43] See, for example: WHO, "FAQs: Japan nuclear concerns," http://www.who.int/hac/crises/jpn/faqs/en/index7.html; FAO, "United Nations system response," http://www.fao.org/crisis/japan/en/; FAO/WHO statement, "Nuclear (continued...)

rules for radioactivity in foods for international trade, as agreed to within the Codex "Guideline Levels" (GLs) for radionuclide levels in internationally traded food following a nuclear or radiological emergency.[44] Other joint UN activities include "international guidance related to nuclear preparedness and response to nuclear or radiological events, including application of appropriate agricultural countermeasures."[45]

These international organizations acknowledge that recent reports of radioactivity in food in Japan suggest that "some foods produced in Japan are likely to be contaminated by radioactive material at levels unsuitable for human consumption."[46] The primary contaminant detected in some food samples include radioactive iodine; however, radioactive cesium has also been detected in some foods.[47] Radioactive iodine is relatively short-lived with a half-life of about one week and decays naturally within a few weeks. However, if ingested and accumulated in the body, radioactive iodine has been associated with certain types of cancers.[48] Radioactive cesium is longer-lived and can remain in the environment for a long time; also, because radioactive cesium can be relatively quickly transferred from feed to milk, its uptake into food production can pose longer-terms risks and public health effects.[49]

## U.S. Activities

In the United States, food imports are regulated by FDA, which monitors the safety of most types of food imports, and USDA's Food Safety and Inspection Service (FSIS), which regulates the safety of meat and poultry imports.[50] In addition, USDA's Animal and Plant Health Inspection Service (APHIS) is responsible for protecting plant and animal resources from domestic and foreign pests and diseases, and the Department of Homeland Security (DHS) is responsible for coordinating agencies' food security activities, including border inspections by the U.S. Customs and Border Protection (CBP).

Following reports about radioactive contamination of milk and leafy greens, FDA issued an "Import Alert" for certain milk products and fresh vegetables produced or manufactured from the

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Emergency in Japan and Food Safety Concerns," http://www.fao.org/crisis/japan/69718/en/;" and IAEA, "Fukushima Nuclear Accident Update Log," http://www.iaea.org/newscenter/news/tsunamiupdate01.html.

[44] GLs are published by Codex. See "Codex General Standard For Contaminants And Toxins In Food And Feed," Codex Stan. 193-1995, 1995, http://www.codexalimentarius.net/download/standards/17/CXS_193e.pdf.

[45] FAO, "United Nations system response," http://www.fao.org/crisis/japan/en/; and Joint FAO/IAEA statement, "Emergency Preparedness & Response," http://www-naweb.iaea.org/nafa/emergency/index.html.

[46] Joint WHO/FAO/IAEA statement, "Questions & Answers on the Nuclear Emergency in Japan and Food Safety Concerns," http://www-naweb.iaea.org/nafa/faqs-food-safety.html.

[47] Joint FAO/WHO statement, "Nuclear Emergency in Japan and Food Safety Concerns," http://www.fao.org/crisis/japan/69718/en/.

[48] INFOSAN, "Information on Nuclear accidents and radioactive contamination of foods," March 2001, http://www.who.int/foodsafety/fs_management/INFOSAN_note_Radionuclides_and_food_300311.pdf. Also see NRC, "Fact Sheet on Biological Effects of Radiation," http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html; and CRS Report R41728, *The Japanese Nuclear Incident: Technical Aspects* (specifically, section titled "Health Effects of Ionizing Radiation").

[49] Ibid.

[50] CRS Report CRS Report RL34198, *U.S. Food and Agricultural Imports: Safeguards and Selected Issues*; and CRS Report RS22600, *The Federal Food Safety System: A Primer*.

Japanese prefectures of Fukushima, Ibaraki, Tochigi, Gunma, Chiba, and Saitama.[51] As of April 12, 2011, the import alert covered "spinach and kakina (a local Japanese vegetable) from the affected prefectures of Fukushima, Gunma, Ibaraki, and Tochigi in Japan; ... head type leafy vegetables (i.e. spinach, lettuce, celery, cress, endive, escarole, chard, and collards) from the Fukushima prefecture; and ... non-head type leafy vegetables (i.e. turnip), flower head brassicas (i.e. broccoli and cauliflower) from the Fukushima prefecture; and ... milk from the Fukushima and Ibaraki prefectures."[52]

To date, FDA's import alert does not cover Japanese fish and seafood. However, FDA has stated that "Other food products from this area, including seafood, although not subject to the import alert, will be diverted for testing by FDA before they can enter the food supply. FDA will also be monitoring and testing food products, including seafood, from other areas of Japan as appropriate."[53] Given historically low import inspection rates of food by FDA, some groups want FDA to issue an import alert for all food imported from Japan, including seafood.[54] As noted by the National Oceanic and Atmospheric Administration (NOAA), about 2% of the seafood consumed in the United States is imported from Japan.[55]

Regarding meat and poultry products, USDA points out that because of USDA's import equivalency requirements and other trade-related concerns, Japan has not exported any beef products to the U.S. since early 2010, and Japan is not currently eligible to export any poultry products or processed egg products to the United States. [56]

Some in Congress remain concerned that contaminated foods might enter the U.S. through its food imports.[57] Both FDA and USDA have taken steps to address the current situation in Japan. FDA has stated: "FDA's screening at U.S. borders will remain vigilant and will be augmented with radiation screening of shipments" and its import tracking system "has been programmed to automatically flag all shipments of FDA-regulated products from Japan."[58] USDA has stated that "USDA and its federal partners through the Food Emergency Response Network are preparing to begin sampling, if necessary." [59] Prior notification to FDA of food imports into the United States is required under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (P.L. 107-188; 42 U.S.C. 300i), which allows the agency to readily identify and track food shipments from Japan.

[51] FDA, "Detention Without Physical Examination of Products from Japan Due to Radionuclide Contamination," Import Alert 99-33, http://www.accessdata.fda.gov/cms_ia/importalert_621.html.

[52] Ibid. (as of April 12, 2011). All U.S. alerts for Japan are at http://www.accessdata.fda.gov/cms_ia/country_JP.html.

[53] FDA, "Radiation Safety," http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm.

[54] See, for example, "FDA Should Issue Import Alert for All Japanese Food Imports; Food and Water Protections Must Remain Priority in Washington," Statement from Wenonah Hauter, Food & Water Watch, March 23, 2011.

[55] Joint FDA/USDA/NOAA statement, "FDA, USDA, NOAA Statements on Food Safety," March 23, 2011, http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm248257.htm.

[56] Ibid.

[57] Press release by Representative Rosa L. DeLauro, "DeLauro Calls for FDA Testing of Imported Japanese Products," March 22, 2011, http://delauro.house.gov/release.cfm?id=3075; also see "DeLauro Wants All Japanese Food Bound for the U.S. Tested," *CQ Health Beat*, March 23, 2001.

[58] FDA, "Radiation Safety," http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm.

[59] USDA, "USDA's Radiation Safety Questions and Answers," http://www.usda.gov/wps/portal/usda/%20usdahome?contentidonly=true&%20contented=radiation_safety_qa.html.

Enhanced import security measures by FDA and USDA, in conjunction with existing CBP border inspections, are intended to address concerns about possible contaminated food imports from Japan. As noted by USDA, CBP is "responsible for monitoring for the presence of radiological materials in cargo shipments coming into the United States at all U.S. ports of entry. This monitoring is a regular part of inspection procedures carried out at every port of entry nationwide;" FDA also notes that CBP officers "routinely use radiation detection equipment to screen food imports, cargo, and travelers."[60]

Finally, existing U.S. trade laws, such as general requirements under the Tariff Act of 1930 (19 U.S.C. 1304), require all imported articles to be marked with the English name of the country of origin.[61] Other labeling requirements also apply under other laws that govern both FDA and USDA. For example, FDA requirements under the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*) require that a food label must contain specified information. However, as noted by FDA: "The law does not specifically require that the country of origin statement be placed on the PDP [the principal display panel, PDP, or the label panel], but requires that it be conspicuous."[62] Certain labeling requirements for meat and poultry products are also required within laws administered by FSIS, including the Federal Meat Inspection Act (21 U.S.C. 601 et seq.) and the Poultry Products Inspection Act (21 U.S.C. 451 et seq.). Only plants in countries certified by USDA to have inspection systems equivalent to those in this country are eligible to export products to the United States. Regulations issued under these laws have required that country of origin appear in English on immediate containers of all meat and poultry products entering the United States.[63] Other USDA-administered programs also provide for additional country-of-origin requirements for certain types of foods.[64]

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[60] USDA, "USDA's Radiation Safety Questions and Answers," March 22, 2011; and FDA, "Radiation Safety," http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm#food.

[61] Customs and Border Protection's Guidance is at http://www.fda.gov/ICECI/ComplianceManuals/CompliancePolicyGuidanceManual/ucm074567.htm. See regulations at 19 CFR 134.

[62] 21 CFR 101. See FDA, "Guidance for Industry: A Food Labeling Guide," October 2009, http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/FoodLabelingNutrition/FoodLabelingGuide/ucm064872.htm.

[63] Regulations are at 9 C.F.R. 327.14 and 9 C.F.R. 381.205.

[64] Includes (1) Country of Origin Labeling (COOL); see CRS Report RS22955, *Country-of-Origin Labeling for Foods*; and (2) Perishable Agricultural Commodities Act (PACA) of 1930 and the Produce Agency Act of 1937 (7 U.S.C. § 499a et seq., and §1622, respectively); see CRS Report RL32746, *Fruits, Vegetables, and Other Specialty Crops: A Primer on Government Programs*.