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Japan, Factor 9: Water and Sanitation

Japan: The Effects of Radiation from Fukushima on Fish and Other Food Sources

Introduction:

Japan is an independent island country, very well known for its technological advances and industrial background. The country is also very well known for its unique art, landmarks, history, and the fact that it is the only country still under the control of an emperor. What comes to mind when you think of Japan? Does Mt. Fuji come to mind? The popular car brands of Toyota and Honda may also come to mind. Several other brands of electronics, such as Sony and Casio, may pop into the minds of people who have a knack for electronics and technology. In addition, it isn't uncommon for people to think of anime and manga art with their iconic enormous eyes when they hear the word, "Japan." It seems, however, that people are focusing more on these topics than they are on what is actually happening in Japan right at this moment.

Back in March 2011, the Tohoku earthquake struck Japan, devastating many people by injuries and taking their lives away. To make matters worse, there have been over 10,000 aftershocks, and those aftershocks of the great earthquake still occur to this day. The combinations of the aftershocks and tsunamis triggered by the major Tohoku earthquake has managed to destroy homes, lives, and also cause the Fukushima Daiichi Nuclear Power Plant to rank at a 7 (major accident; highest number possible) on the International Nuclear Event Scale.¹

The accident of the Fukushima Daiichi Nuclear Power Plant put the world in a state of emergency. This is because radioactive waste from the nuclear plant has leaked into the Pacific Ocean and areas around the water. The pollution of the water is dangerous and urgent because of the aquatic life that lives in the water and for the condition of the water. The aquatic life from Japan is often consumed as food not just in Japan, but all around the world. This is not necessarily safe to humanity. Could the problems of devastation be resolved after these years?

Japanese Lifestyle:

Japan is a well-developed country with a class society. Poverty, however, has increased since the earthquake had occurred. Since many lives and homes were taken during the tragic incident, people and families may have had to move into temporary homes. Some still live in these, due to the fact that they cannot afford a new home, they cannot relocate, or for other possible reasons. Some people, on the other hand, have resumed their lives in a new home or in the same home if it was salvageable.

Commonly, Japanese families consist of only 3 or 4 people. It is rare to have a lot of children in a Japanese family, for Japan is so small that there usually isn't enough room for large houses. In addition to this reason, Japanese couples prefer a smaller family so that they can give their children a high standard of living, such as a great education or high-quality material goods, in an affordable way. Due to the declining economy and inflation from the earthquake and other hindrances, Japanese families are always trying to conserve money.²

The diets of Japanese families are quite nutritious. It mostly consists of rice and soy, which are staples in all of Asia. Seafood and other aquatic life also make up a large portion of diets. Since Japan's mountains

¹ http://en.wikipedia.org/wiki/2011_Tohoku_earthquake_and_tsunami

² <http://kunihime.blogspot.com/2010/10/average-family-size-in-japan.html>

makes up 4/5 of the country and soil isn't very fertile, people are unable to grow many crops or raise a lot of animals, so people rely on the sea. Japanese people also typically eat things in smaller amounts, making the population leaner compared to other countries, such as America. Their unique diet is known to contribute to the fact of how Japanese people have the longest lifespan in the world.

Japanese education is among the best in the world. They have a 6-3-3-4 system of education (6 years of elementary school, 3 years of middle school, 3 years of high school, and 4 years of university/college). Japanese education typically has very strict guidelines, such as wearing school uniforms and even having admission tests to get in select high schools. Japanese schools years start during April, when the cherry blossoms bloom, for they believe that the blooming of the cherry blossoms signifies new beginnings and growth.

Access to health care isn't hard in Japan. Japan is very advanced when it comes to health care. Japan is home to pharmaceutical companies and medical technologies. Japan manufactures, designs, and produces innovative ideas to help with the medical field. Health care in rural areas, however, may be hard to access. People often may have to go to bigger cities to get access to hospitals, but rural areas often have clinics to help people.

The unemployment rate of Japan is quite low—3.7% as of July 2014.³ This is actually very good and surprising since the natural disasters that have occurred and are still occurring. The minimum wage of Japan is ¥764, which is about \$7.48 in America. In metropolitan cities, such as Tokyo and Osaka, the minimum wage is ¥869, which is about \$8.51 in America.⁴ Both minimum wages are higher than the minimum of the United States, but achieving basic needs, such as food, shelter, etc., tend to be slightly more expensive in Japan. In urban areas, people often buy their food from street markets and supermarkets, which include both locally grown goods, processed food, and imported items.

Meeting basic needs can include difficulties and hazards. Agriculture is not abundant in Japan. Only few crops can grow; they primarily include rice, legumes, wheat, and some fruits and vegetables like potatoes and mandarin oranges. Typically, an average Japanese farm is only about 3 acres, so there is very limited space for agriculture.⁵ Adequate nutrition in Japan can be hindered from the radioactivity from Fukushima, which can taint some fish or even some of the crops through water runoff and even radioactive materials getting on land. The radioactive materials that have tainted the water and possible food sources can cause many health problems, including cancer. The effects are not immediate, however. The radioactive contamination may cause the problems a few years down the road.

Applying My Chosen Factor to Situations:

The factor of the water being tainted by the leakage of Fukushima Daiichi Nuclear Power Plant can taint the food sources that are nearby, such as the aquatic life that live nearby and the crops that are nearby the source of radioactive leakage. The pollution can affect agricultural productivity, household income, and food availability and quality in its own ways.

Agricultural productivity may slow down if the crops have been tainted by the radioactivity. They could be tainted if the water or fertilizer that is used to nourish the crops has some of the radioactive material from Fukushima. Another way of the crops being affected by radioactivity could be if the location the crops are in the Fukushima Prefecture of Japan and is close in proximity to the leaking plant. If the crops have been tainted at high levels, they must be disposed of, which causes agricultural production to slow

³ <http://www.tradingeconomics.com/japan/unemployment-rate>

⁴ <http://www.globalpost.com/dispatch/news/kyodo-news-international/130910/minimum-wage-rise-average-764-yen-hour-japan>

⁵ <http://www.nationsencyclopedia.com/Asia-and-Oceania/Japan-AGRICULTURE.html>

down and causes farmers or the company that runs the farms to lose money. Japan may use imported goods from countries such as the USA, South Korea, China, and Thailand to substitute for the contaminated food and agriculture.

The status of this pollution from Fukushima Daiichi is still present and is still occurring as of now and will probably still occur years after, despite the major earthquakes and major tsunamis happening in March of 2011. Every day, there are 300 tons of radioactive materials being dumped into the sea adjacent to Daiichi. 300 tons is equal to 71,895 gallons, or 272,152 liters, of contaminations being released into the waters.⁶ People's health is in danger; if people become intoxicated by this radiation, cancerous cells may be created. Pregnant women may experience problems with childbirth or the child may experience birth defects. In some cases, if the radioactivity is severe within the pregnant woman, the child and/or woman could die. In addition to humans, animals could possibly die from radioactivity, altering the conservation status of some species of animals for the worse. In addition, if theories of contamination spreading rapidly are true, the world could be affected by these same problems.

This situation is severe, yet it seems that panic in foreign countries has died down since March 2011. The environment of Japan is in danger due to the leakage and the spreading of it. Depending on who is talking, these contaminations can spread within a few more years if this problem is not paid attention to or is not attempted to be resolved. Once the radioactive waters hit the coasts of other countries, it can start affecting the citizens, the wildlife, the agriculture, and the environment in a negative effect. People may be affected by the health problems caused by radiation exposure that I have listed above. The wildlife, agriculture, and environment may also be affected by the radiation exposure in the same fashion that the Japanese wildlife is facing. These factors in countries besides Japan, if contaminated by Fukushima Daiichi's spreading poisons, can affect the economy and society of not just that country, but the whole world.

The radioactive contaminations are only worsening, since there are about 300 tons of contaminations released into to the adjacent waters to the power plant every day. Minor natural events, such as storms or very menial earthquakes, can cause the plant to leak more, but the overall average is 300 tons. Because of the worsening factors, the situations of families vary. Urban families' lives may not degrade at all, for they are flourishing ever since the disaster of 2011 and are doing their best to make a living in the cities. They do have a possibility to suffer if the urban family is involved with having careers in the agricultural management, food production management, sanitation, pollution, etc. Rural families, however, may suffer. The rural families in the Fukushima Prefecture are more likely to suffer than anywhere else. If the rural family has a farm, there is a higher chance of radioactivity contaminating their crops and possible fish farm if they have one.

Solutions:

Solutions to the Fukushima Daiichi leakage are extremely difficult to do. There isn't much that any one individual can do to resolve this by themselves. There have been attempts to repair the leak. Tokyo Electric Power Company, or TEPCO, has attempted to apply measures to fix the issue. TEPCO has constructed a groundwater bypass system. The bypass system has tried to transport groundwater that runs down the mountain sides before getting infected with the contaminations when the water makes contact with the reactor buildings. This system has not made much of an effect to the issue. Employees of Daiichi have made attempts to manufacture an underground barrier in the coastline's soil through chemical injections, but the water has managed to seep through and underneath the barrier, making the barrier useless. The most effective attempt to rid of contamination at this moment is by collecting contaminated water into a tank. TEPCO says that the tank can store up to 400,000 tons, which equals to 95 million gallons or 360 million liters, of contaminated water. TEPCO plans on adding on a tank that can hold an

⁶ <http://news.nationalgeographic.com/news/energy/2013/08/130807-fukushima-radioactive-water-leak/>

extra 300,000 tons. The problem with this is that TEPCO is running out of space. On average, approximately 150,000 tons of contaminated water leaks out of Daiichi annually. Since the tank is almost full, they need a new plan of ridding of contaminated water.

The ousting of the radioactivity is not impossible. TEPCO is now in the act of producing a filter that can sift out 62 radioactive elements out of water. There are problems to this, however. It is still a work in progress, even after a couple years, for the end results do not come out as well as expected. In addition, the filter does not pick up tritium, but that is not much of an issue, for tritium is not as radioactive or lethal as most other elements. Tritium, however, can be a health hazard if inhaled or ingested. Since the filter has trouble detecting tritium, it is still in development to achieve perfection.

Besides TEPCO, Japanese citizens have been working and teaming up to clean up the radiation in Fukushima. Quite a large percentage of these people are older and healthy elderly people. For example, the “Skilled Veterans Corps” are a group of 200 Japanese retired engineers, veterans of the Japanese military, and other retired professionals who aim to clean up Fukushima’s mess. Yasuteru Yamada, Former President of the Skilled Veterans Corps, states the reasons for such a particular group gathering together to tackle the crisis:⁷

“Even if I were exposed to radiation, cancer could take 20 or 30 years or longer to develop. Therefore us older ones have less chance of getting cancer... We are not kamikaze. The “kamikaze” were something strange, no risk management there. They were going to die. But we are going to come back. We have to work but never die.”

—Yasuteru Yamada (1939 – 2014)

Other countries can contribute to helping Japan solve this problem by donating time, technology, and support. People from other countries have sent funds to Japan in order to help rebuild and reconstruct the well-being of people’s lives. I think that even the smallest communities could raise money and make a difference to the projects. I would recommend that companies from other countries that specialize in engineering could cooperate with TEPCO to make the filter that is in production exist and make a well-being for Japan and even the rest of the world. I would also recommend that neighboring countries (such as South Korea) would help take action in cleaning up the radiation or cooperate with Japan to find ways to dispose of the waste before it has a chance to spread to their lands. These things can help not just Japan, but the whole world that relies off of the waters and aquatic life of Japan.

Conclusion:

Japan may be a small country, but the whole world depends on it, whether it would be water, food, technology, economy, and other important modern ways. Imagine how different our world would be if Japan did not exist. We would definitely be far behind than we are now. We would not have a majority of the inventions that we have now, such as portable calculators, compact discs, martial arts, video games, weapons, and an abundance of other items. Even though Japan is a “rich” country, it still has urgent problems that must be paid attention to. Like our United States of America, all countries have their own problems that people tend to forget, ignore because they see it as a menial issue, or are unaware of such issues.

After doing research for this project, I see disastrous events in foreign countries totally differently. I now place myself into every incident that occurs and see it from a point of view of a citizen from that place. I put myself into a situation where I have to rebuild my life because of the disaster and I think of ways that

⁷ <http://www.bbc.co.uk/news/world-asia-pacific-13598607>

I can live successfully in such situation, if possible. This project has really made me look at things at a new perspective on life.

I hope people would look at this event in Japan that is still occurring after 3 years and see how urgent it is to our world and how it can affect our future. I hope my recommendations would make a large impact and would not necessarily leave a definite resolution, but will make a large effect on the leaking radioactivity. Sometimes, just one person with a large dream could change the world, like how Dr. Borlaug has saved a billion lives by keeping his dream strong. He has been a great inspiration to me while researching and writing this essay. Food security is very important in this world for survival. There is really nothing more heartbreaking than knowing that people in this world go without food every day. Let's make a difference in this world by contributing in our own ways.

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