Radiation Effect on Foods

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#### Executive Summary:

If a nuclear weapon or bomb of some sort were to hit an agricultural field or something of the likeness, then what would the reactions be? This is the problem that is mainly being addressed at. With the promise of some sort physical complication or war, and with the advancement of technology, it is with eerie curiosity that this will be the project. The encounter of nuclear war is possible, but bombs aren't really tested on modern society. In addition, a well-known bomb took place at Hiroshima in 1945, but not in the present-day civilization. Most of humanity has advanced fairly well in the past decades, it is not the same as it was 72 years ago. It is planned to use NetLogo as a language to make it possible as a stimulation.

#### Introduction:

An atomic bomb is a weapon that releases energy when the fission splits of the nuclei of plutonium and uranium. It has a shockwave that can reach hundreds of kilometers in an hour. The exposure to radiation can cause tissue damage, and radiation sickness, where the symptoms are vomiting, fever, and abdominal pain. The radiation surface contaminated the food and entered the food chain by contaminating the tissue. It also affected the water in Hiroshima and Nagasaki, where an atomic bomb was dropped. A store being affected by this amount of energy and radiation will contaminate and have a large shockwave that vaporizes materials. There will also be a fireball which will condense particles to be finer. The contamination affecting the area and other variables around it will be stimulated using Netlogo.

Limiting the amount of interaction, and seeing and creating a way to prevent the effects of contamination within food.

## Results

Progress to Date is researching more about agriculture, atomic bombs, and radioactivity of foods, and the effects. The progress of coding is a slow process, we have stimulated the explosion, but we have yet to refine the radius, and the full effects of the radiation.

The contamination of the food affecting the stock, store, and the food exported. The health issues, and the consumption of radioactively contaminated foods.

### Conclusion

The stimulation was difficult to present and receive results from. There were many different variables that were possible to test. It was also questioning how to test it. Test the heat? The radiation? The radius? Resources? There were many different versions of the stimulation.

The variables being changed to represent new ones, new ones added, others lost. Radiations effect on food was by far more interesting than testing it on a store. The project was originally going to be about testing the durability of buildings, stores, and other places since the world was much more different than from 1945, and only certain places were affect in Japan. The plants were mutated and the humans were dying from radiation. It was an interesting topic. The results were that a large area had been affected, many of the plants had mutated.

#### Recommendations

The results of the experiment were to be expected, however it was interesting to see how far and wide the radiation could affect a plot of land. The results of the experiment are not complete or accurate. It was a short time and most of the time it was confusing what was being sought after. The project had somehow completely deviated from the course that was set, and the members were new to coding, so it was hard to get results that were reliable.

## Bibliography

Barnett, S. (2008). Green goes with everything: simple steps to a healthier life and a cleaner planet. New York: Atria Books.

Basic Effects of Nuclear Weapons. (n.d.). Retrieved October 4, 2017, from http://www.atomicarchive.com/Effects/effects2.shtml

Creager, A. N. (2015). Life atomic: a history of radioisotopes in science and medicine. Chicago: The University of Chicago Press.

December 4, 2017, from https://www.britannica.com/technology/atomic-bomb

Goll-McGee, B. (2002). Encounter with disaster. Emmitsburg, MD: National Emergency Training Center.

Hall, M. (2013, August 06). By the Numbers: World War II's atomic bombs. Retrieved October 23, 2017, from <u>http://www.cnn.com/2013/08/06/world/asia/btn-atomic-bombs/index.html</u> Hatchkiss, M. (2014, February 27). Beyond the Bomb. Retrieved October 14, 2017, from <u>https://www.princeton.edu/news/2014/02/27/beyond-bomb-atomic-research-changed-medicine-biology</u>

History.com Staff. (2009). Bombing of Hiroshima and Nagasaki. Retrieved October 13, 2017, from <a href="http://www.history.com/topics/world-war-ii/bombing-of-hiroshima-and-nagasaki">http://www.history.com/topics/world-war-ii/bombing-of-hiroshima-and-nagasaki</a>

Liebow, A. A. (1985). Encounter with disaster: a medical diary of Hiroshima, 1945. New York: Norton.

Nuclear Weapons. (n.d.). Retrieved October 18, 2017, from UNODA website: https://www.un.org/disarmament/wmd/nuclear/ The Atomic Bombings of Hiroshima and Nagasaki. (n.d.). Retrieved November 7, 2017, from <a href="http://www.atomicarchive.com/Docs/MED/med\_chp3.shtml">http://www.atomicarchive.com/Docs/MED/med\_chp3.shtml</a>

The Editors of Encyclopædia Britannica. (2017, November 10). Atomic bomb.

Types of Nuclear Weapons. (2012). Retrieved October 27, 2017, from CTBTO website: <a href="https://www.ctbto.org/nuclear-testing/types-of-nuclear-weapons/">https://www.ctbto.org/nuclear-testing/types-of-nuclear-weapons/</a>

Radiation and Food Safety. (2015, December 12). Retrieved November, 2017, from <u>http://www.cfs.gov.hk/english/programme/programme\_rafs/programme\_rafs\_fc\_01\_30\_Q&A\_2\_.html</u>

Questions & Answers about Radiation and Food Safety. (n.d.). Retrieved November 01, 2017, fromhttps://www.foodsafety.gov.mo/e/sense/detail.aspx?id=e6c39d58e01e45e49104295a17c6a7 1a