Japanese Nuclear Incident – Radiation Data Measured in North Carolina

Summary of June 1, 2011:

Since the date of the last data summary released on 5/25/11, radioactivity was detected in one of the samples analyzed. Since May 25, 34 samples of all media types have been analyzed. In this total population of samples analyzed, only one fish sample had a trace amount of Cesium-137 (Cs-137). For all other samples, only naturally occurring isotopes were detected. Please see below for further discussion of data for samples analyzed between 5/25/11 – 6/1/11.

Overview of increased monitoring: As a result of this event, the Radiation Protection Section (RPS) increased both the frequency and amount of samples it collects. No changes have been made to the enhanced sample plan since 4/27/11. This augmented environmental sampling program is outlined below.

- Air Particulate – Continuous monitoring, collected weekly or daily, depending on location and sampling method.
- Air Radioiodine – Continuous monitoring with sample media specifically engineered to detect airborne radioactive isotopes of iodine, such as Iodine-131 (I-131). These samples are collected weekly.
- Milk – weekly sampling from both large milk processors and small dairies. Samples are collected statewide for Radiation Protection by the Dairy Protection Branch, Division of Environmental Health. Samples are also collected at dairies on a monthly basis within the nuclear power plants' Emergency Planning Zones.
- Surface Water – Both continuous and grab samples are being collected statewide and around nuclear power plants. Surface water samples are collected at least weekly.
- Drinking Water – Multiple drinking water samples from public water supplies statewide are being collected at least weekly.
- Precipitation – Multiple collections at least weekly depending on rain events at the collection sites.
- Vegetation – Multiple terrestrial vegetation samples from locations statewide are being collected at least weekly. Terrestrial vegetation is defined as any vegetation that might be eaten by livestock.
- Sewage Effluent – Sewage effluent samples from treatment plants are being collected at least every two weeks.
- Shellfish – Shellfish samples are collected every other week.

Please note that this is an ongoing response and is subject to change at any time as the state transitions from an emergency-phase response to a recovery- phase response to this event.

Summary of results to date (6/1/2011): Since the last data summary provided on 5/25/11, only naturally occurring radioisotopes have been detected in all but one fish sample, where a trace amount of Cs-137 was detected. See below for a further explanation on this detection of a fission product.

In the 4/27/11 data summary, it was stated that a few positive samples have exceeded investigation levels set by RPS. These samples have been sent to an independent lab for Strontium-89 and Strontium-90 (abbreviated Sr-89 & Sr-90, respectively) analysis, and RPS awaiting the analysis results. Strontium analyses take approximately one month for the independent lab to complete. RPS has still only received

the results of one milk sample analyzed for Sr-90 in which Sr-90 was not detected. This result was reported in the 5-25-11 summary, and to recap this milk sample was collected in Mecklenburg County on March 28, 2011. It was sent for Sr-90 analysis due to an I-131 level in the sample of 9.83 pCi/l. This I-131 level is close to the investigation level of 10 pCi/l. Thus, it was decided to analyze the sample for Sr-90. RPS anticipates most or all of the strontium analysis results will be delivered within the next few weeks. The amount of Strontium in a sample is important to know because Strontium accumulates in the bones and has a long half life (28.8 years for Sr-90).

Since 5/25/11, 34 samples have been analyzed: 18 air samples, 5 milk samples, 2 finished water samples, 3 surface water samples, and 6 freshwater fish samples. Only naturally occurring radioactivity was detected in all but one sample: 4.93×10^{-3} pCi/g of Cs-137 was detected in a catfish sample collect on April 5, 2011. This sample was collected from Lake Norman in Mecklenburg County near McGuire Nuclear Station. This single positive fish sample containing trace amounts of Cs-137 is indicative of past atmospheric weapons testing or possible past nuclear events. Because of its 30 year long half-life trace amounts of fission products like Cs-137 are occasionally detected in fish and other samples collected in North Carolina. For a historical context, please visit the NCRPS environmental program website to see environmental monitoring reports from previous years. The web address for this environmental documents page is: http://www.ncradiation.net/nfers/documents.htm. Despite this single detection of a trace amount of Cs-137, radioactivity in samples analyzed since 5/25/11 is still indicative of a continuing decreasing trend. This downward trend corresponds to the cessation of significant airborne releases of radioactive material from the Fukushima Daiichi reactor.

List of Counties where the RPS collects samples as part of its monitoring program:

1. Chatham
2. Wake
3. Lincoln
4. Harnett
5. Mecklenburg
6. Brunswick
7. New Hanover
8. Burke
9. Currituck
10. Albemarle
11. Buncombe
12. Craven
13. Davison
14. Macon
15. Orange
16. Sampson
17. Durham
18. Forsyth
19. Johnston
20. Montgomery
21. Pitt
22. Halifax
23. Carteret

Anticipated Health Effects of Exposure to Detected Radiation Levels from the Japan Incident:

None. No adverse health effects are expected due to radioactivity found in the environment from the failure of the Fukushima Daiichi reactors in Japan. Only trace levels of radioactivity have been detected to date in samples collected in North Carolina. RPS will continue to monitor and report sample results via the Internet for the duration of this event.