



US Army Corps  
of Engineers

# FUSRAP Fact Sheet

## Lewiston-Porter School Background Study

U.S. Army Corps of Engineers • Buffalo District • February, 2002

*This is one in a series of fact sheets that provides information about regulatory, technical, and other issues related to the Formerly Utilized Sites Remedial Action Program (FUSRAP). This fact sheet discusses a study measuring background gamma radiation at the Lewiston-Porter School in Youngstown, NY.*

Under the FUSRAP program, the US Army Corps of Engineers is in the process of investigating the Niagara Falls Storage Site (NFSS) on Pletcher Road, in Lewiston, NY. The goal of the investigation is to identify locations of radioactive material on the site, so the material can be cleaned up or contained, and the NFSS may be released for appropriate future use. In December, 2001, The US Army Corps of Engineers, in cooperation with NYSDEC, performed a background gamma radiation study at the Lewiston-Porter School in Youngstown, NY. The purpose of the study was to help determine the amount of radioactivity naturally present in the local area. The results of the study showed radiation levels were typical of a developed property such as the school, and no radiation levels that would present a hazard to the public were found. Before we discuss the study in more detail, some general information on radiation and background studies is provided.

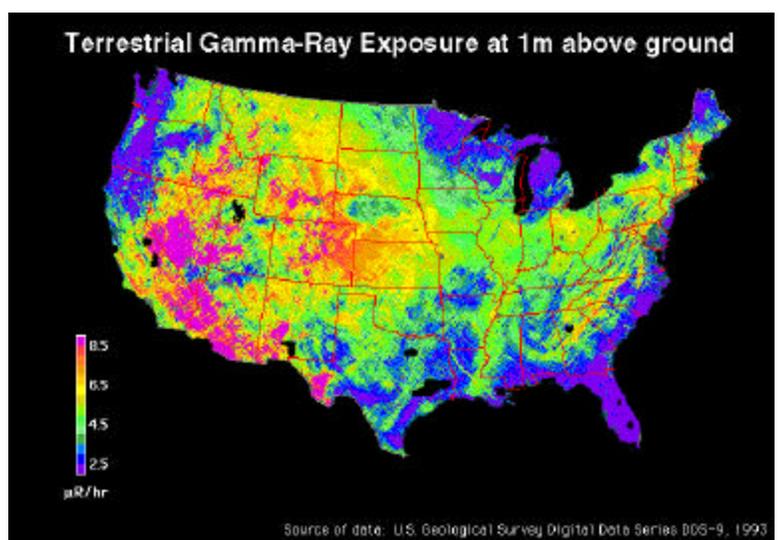
### What is Gamma Radiation?

Gamma rays are a type of electromagnetic wave, much like X rays, that move at the speed of light. Gamma radiation is the result of a radioactive atom releasing excess energy. Substances that emit radiation are called radioactive materials. Almost all substances contain some amount of radioactivity. Radioactive materials are found naturally in air, water and soil. They are even found in us, being that we are products of our environment. Every day, we ingest and inhale the radioactive materials in our air, food and water. Natural radioactivity is also common in the rocks and soil that makes up our planet, in rivers, lakes and oceans, and in our building materials and homes. There is nowhere on Earth that you cannot find natural radioactivity. The gamma rays that are found in nature are part of what is called "background radiation" since they are present in the background of our everyday lives.

### Why do a Gamma Radiation Background Study?

Measuring gamma rays with a radiation survey meter provides insight as to how much radioactive material is contained within a surface. Background gamma radiation levels are measured locally because the levels of naturally occurring radioactive material in our environment can vary with geographical location. The background measurements provide a baseline, which is then compared to measurements from the site being investigated. The comparison allows us to better discern which activity found at the site is natural, and which is due to contamination from man's activities.

Background gamma radiation levels can vary significantly by location, as shown by the USGS map at right. It should be noted that the levels shown are averaged over a given area, and that large variations in natural activity can occur over very short distances. Significant variations in gamma radiation levels are often found where different geological formations or different soils are exposed at the earth's surface. The differences are most readily seen on the map in the vicinity of the Rocky Mountains, but these variations are known to occur throughout the world.



## Why was the Lewiston-Porter School Selected for the Background Study?

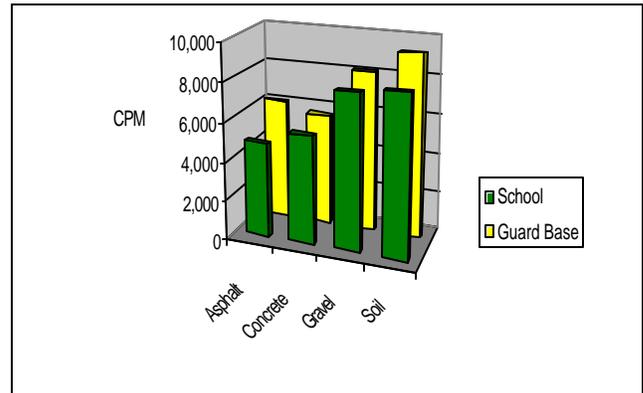
During the summer of 2001, a gamma radiation survey was conducted at the NFSS. Before doing the survey, local background gamma activity was measured at the Army National Guard Base on Balmer Road. Since background gamma activity varies in different types of material such as soil, gravel, concrete, and asphalt, as well as geographic location, we measured each of these surfaces at the Guard Base to determine local averages.

To confirm that our measurements for gamma background activity at the Guard Base were representative of background in the Lewiston-Porter area, we selected the Lewiston-Porter School Property for a comparative study. By comparing the gamma background activity at the School to the measurements taken at the Guard Base, we would have greater confidence that our measurements from the Guard Base accurately reflected background for the area.

One reason the Lewiston-Porter School Property was selected for comparison is due to its geographic location; the school should have similar types of soil, which should give similar radiation readings for background comparison. The school also has a variety of other surfaces that contribute to background radiation including gravel, asphalt, and concrete, all of which are also found at the NFSS. In addition, historical information indicates no Department of Defense activities involving radioactive materials have occurred on this property.

## What were the Results for the Lewiston-Porter School?

The radiation detection instruments used during the study measure gamma radiation in units of counts-per-minute (CPM). CPM is simply the rate of how many gamma rays would be detected in one minute by the type of instrument used. The graph to the right shows the average gamma activity for each surface in CPM. The CPM values shown in the graph are typical for each of the materials, and are representative of what is naturally found in western New York. As you can see, radiation levels vary naturally for different types of materials, and the results are consistent between the two background locations.



During the study, a number of small areas of what appears to be natural activity were noted. These include granite curbs, a granite rock, other rocks, and two small areas of asphalt. The results of the survey for these small areas are typical of those found on a property such as the school, both due to natural variations found in the environment, and from man's activities in the course of construction and development. Regardless of the source of activity, none of the areas surveyed during the course of the background study demonstrated radiation levels that would present a hazard to members of the public, including children who attend the school and people who work there.

Overall, average gamma activity measured at the school was similar to that found at the Guard Base. From the results of the background study at the school, we were able to confirm that background values used at the NFSS were appropriate, and we are proceeding with the investigation at the NFSS.

## For More Information:

To learn more about radiation and other aspects of FUSRAP, please contact the U.S. Army Corps of Engineers FUSRAP Public Information Center at 1776 Niagara Street, Buffalo, NY 14207, **(716) 879-4410**, or call the FUSRAP toll-free public access line at **1-800-833-6390**. You can also visit our website at <http://www.lrb.usace.army.mil> or e-mail the information center at [fusrap@usace.army.mil](mailto:fusrap@usace.army.mil). Information can also be found at the Idaho Statue University website <http://www.physics.isu.edu/radinf/index.html>

Interested citizens are encouraged to visit the Administrative Record file, which contains documents that are used in the decision making process for a site. The Administrative Record files for the NFSS and the Lake Ontario Ordnance Works are located at the FUSRAP Public Information Center in Buffalo, and at the Lewiston and Youngstown Public Libraries. Please call ahead to ensure the facilities are open.