

Radioactive Material From Fertilizer Production

An ingredient in some fertilizers is the mineral phosphorous. The most common method for making fertilizer containing phosphorous leaves behind a waste called phosphogypsum.

- Phosphogypsum emits radon, a radioactive gas. It also contains uranium and radium, which are radioactive elements.
- Phosphogypsum is stored in big piles called stacks. Some stacks cover hundreds of acres and are hundreds of feet high.
- As the phosphogypsum dries out, it forms a thick crust that keeps the radon from escaping into the air.

About Radioactive Material From Fertilizer Production

Phosphate rock contains the mineral phosphorus, an ingredient used in some fertilizers to help plants grow strong roots. Phosphate rock also contains small amounts of naturally occurring radionuclides, mostly uranium and radium. When processing phosphate rock to make fertilizer, the phosphorous is removed by dissolving the rock in an acidic solution. The waste that is left behind is called phosphogypsum. Most of the naturally occurring uranium and radium found in phosphate rock end up in this waste. As a result, phosphogypsum has a higher concentration of these naturally occurring radioactive elements. Uranium decays to radium and radium decays to radon, a radioactive gas.

The waste that is produced in fertilizer production is stored in large piles (stacks). In the aerial photo at right, you can see that the top of a phosphogypsum stack is covered in water. Phosphogypsum is very watery when it is first put on the stack. As the phosphogypsum dries out, a crust forms on the stack. The crust thickens over time, reducing the amount of radon that can escape and helping keep the waste from blowing in the wind.

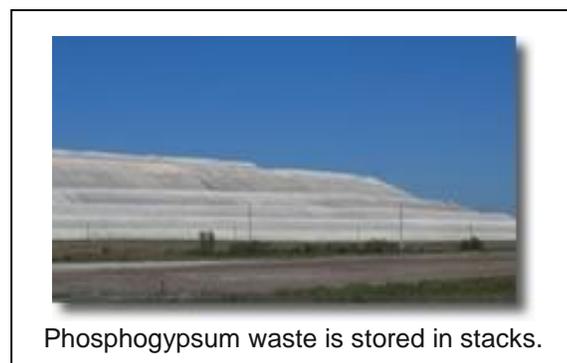
Rules and Guidance

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA has regulated phosphogypsum since 1989. It has banned all use of this waste unless it has very little radioactivity. EPA requires phosphogypsum to be placed in stacks.



Phosphogypsum is watery at first. As it dries, it forms a crust, which blocks most of the radon.



Phosphogypsum waste is stored in stacks.

THE STATES

Some states have worked with EPA to write rules for managing phosphogypsum. In Florida, companies have to follow special rules to close (shut down) a stack that won't be used any more. Florida is also working on ways to reduce the amount of waste from the wet acid process that creates phosphogypsum.

What you can do

Phosphogypsum stacks are located on private property away from people. Unless you are visiting a facility, you will not encounter a phosphogypsum stack.

Where to learn more

You can learn more about radioactive material from fertilizer production by visiting the resources available on the following webpage: <http://www3.epa.gov/radtown/fertilizer-production.html#learn-more>.