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# Subpart R: National Emission Standards for Radon Emissions From Phosphogypsum Stacks

### Basic Information

#### Legal Authorities

- 42 U.S.C. §7401

#### Federal Register Citations

- 57 FR 23317

#### Code of Federal Regulations Citations

- 40 CFR Part 61 [☑](#)

#### Effective Date

- June 3, 1992

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# Rule Summary

Subpart R protects the public and the environment from the hazards of radioactive materials found in phosphogypsum. Phosphogypsum is a solid waste byproduct that results from processing phosphate ore to make phosphoric acid that is later used in fertilizer. Because the phosphate ore contains uranium <<https://epa.gov/radiation/radionuclide-basics-uranium>> and radium <<https://epa.gov/radiation/radionuclide-basics-radium>>, phosphogypsum also contains these radionuclides. The radium is of particular concern because it decays to form a cancer-causing, radioactive gas.

The radium is of concern because it decays to form radon <<https://epa.gov/radiation/radionuclide-basics-radon>>, a radioactive gas that can cause lung cancer. Radon occurs naturally in the atmosphere in trace amounts that are generally not a health concern. However, exposure to radon at higher levels and over prolonged periods of time can pose a serious hazard to human health by increasing the risk of developing lung cancer. Radon contained in the outside air can enter structures through doors and other openings and reach levels that pose a health hazard over time.

EPA requires that phosphogypsum be managed in engineered stacks, in order to limit public exposure from emissions of radon and other radionuclides. Owners and operators must measure and report radon emissions from inactive stacks and take measures to keep radon emissions within the regulatory limit of 20 picocuries (0.74 becquerel) per square meter per second.

# Rule History

## Other Uses of Phosphogypsum

Under certain conditions, phosphogypsum may be removed from stacks for outdoor agricultural purposes [↗](https://www.ecfr.gov/current/title-40/chapter-i/subchapter-c/part-61/subpart-r/section-61.204) <<https://www.ecfr.gov/current/title-40/chapter-i/subchapter-c/part-61/subpart-r/section-61.204>> or indoor research and development [↗](https://www.ecfr.gov/current/title-40/chapter-i/subchapter-c/part-61/subpart-r/section-61.205) <<https://www.ecfr.gov/current/title-40/chapter-i/subchapter-c/part-61/subpart-r/section-61.205>>.

Any other use of phosphogypsum requires advance permission from EPA. EPA may approve a request for a specific use of phosphogypsum if it is determined that the proposed use is at least as protective of human health as placement in a stack. This process is outlined in regulation [↗](https://www.ecfr.gov/current/title-40/chapter-i/subchapter-c/part-61/subpart-r/section-61.206) <<https://www.ecfr.gov/current/title-40/chapter-i/subchapter-c/part-61/subpart-r/section-61.206>>. See the document repository for Subpart R, including information on the process for obtaining permission for other uses of phosphogypsum: Subpart R: Resources <<https://epa.gov/radiation/subpart-r-resources>>.

## Withdrawal of Approval to Use Phosphogypsum in Government Road Projects

On June 30, 2021, the EPA withdrew previously granted conditional approval to use phosphogypsum in government road construction projects. On October 14, 2020, the EPA approved The Fertilizer Institute's request to use phosphogypsum in government road construction projects subject to certain terms and conditions. Under Clean Air Act (CAA) regulations, EPA may approve a request for a specific use of phosphogypsum if it is determined that the proposed use is at least as protective of human health as placement in a stack. Upon review, EPA found that The Fertilizer Institute's request did not provide all the information required for a complete request under these regulations. The EPA withdrew the approval for this reason. The decision was effective as of June 30, 2021. Until a complete request for the use of phosphogypsum is approved by the Agency, phosphogypsum cannot be used in road construction.

View Federal Register Notice "Withdrawal of Approval for Use of Phosphogypsum in Road Construction" (86 FR 35795) [↗](https://www.federalregister.gov/documents/2021/07/07/2021-14377/withdrawal-of-approval-for-use-of-phosphogypsum-in-road-construction) <<https://www.federalregister.gov/documents/2021/07/07/2021-14377/withdrawal-of-approval-for-use-of-phosphogypsum-in-road-construction>>

View Docket No. EPA-HQ-OAR-2020-0442 on [www.regulations.gov](http://www.regulations.gov). [↗](#)

View the 2021 withdrawal, the 2020 approval letter, and supporting documents.

<https://epa.gov/radiation/request-use-phosphogypsum-government-road-projects-supporting-documents>

## Compliance

Phosphogypsum facilities must meet the requirements of 40 CFR Part 61, Subpart R.

The regulations require that phosphogypsum be managed in engineered stacks, which are designed to limit public exposure from emissions of radon and other radionuclides.

Owners and operators must monitor and report radon emissions from inactive stacks and take measures to keep radon emissions within the regulatory limit of 20 picocuries (0.74 becquerel) per square meter per second.

All facilities subject to any National Emissions Standards for Hazardous Air Pollutants (NESHAP) must meet 40 CFR Part 61, Subpart A: General Provisions [↗](#).

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