TESTIMONY OF
ELIZABETH COTSWORTH
DIRECTOR, OFFICE OF RADIATION AND INDOOR AIR
OFFICE OF AIR AND RADIATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY, INTERGOVERNMENTAL RELATIONS, AND THE CENSUS
COMMITTEE ON GOVERNMENT REFORM
U.S. HOUSE OF REPRESENTATIVES
MARCH 15, 2004

Thank you, Mr. Chairman and members of the Subcommittee, for the invitation to appear here today to discuss the uses and associated risks of phosphogypsum. I will also comment on the approach the Environmental Protection Agency has implemented over the last fifteen years to address the issue of protection of human health and the environment with regard to phosphogypsum.

Mr. Chairman, EPA has specifically regulated phosphogypsum since 1989, with a National Emission Standard for Hazardous Air Pollutants, or NESHAPS, authorized under Section 112 of the Clean Air Act. Radionuclides are listed as a hazardous air pollutant under this section. EPA has determined that radionuclides are a known cause of cancer and genetic damage, and that radionuclides cause or contribute to air pollution that may reasonably be anticipated to result in an increase in mortality, or an increase in serious irreversible or incapacitating reversible illness. The processing of raw phosphate ore specifically concentrates radionuclides in the waste rock, phosphogypsum. Phosphogypsum contains naturally occurring radiation emitted by uranium-238 and its decay products, such as radium-226 and radon-222. Radium, as it decays, emits radon gas. Due to its health risk, radon emissions in particular are controlled by EPA's NESHAP regulation.

EPA strives to provide maximum feasible protection against risks to health from hazardous air pollutants like radionuclides by protecting the greatest number of persons possible. It does so by trying to limit exposures such that an individual's lifetime excess cancer risk level is no more than one in ten thousand and may be as little as one in a million. This risk is evaluated by assessing potential scenarios and associated exposures of workers and members of the general public to potential sources of emissions.

In our 1989 regulation, EPA specified that the safest thing to do with the waste phosphogypsum was for it to remain in place in the stacks that had been generated at most mining facilities. The use of stacks was determined to provide appropriate risk protection with an ample margin of safety as required by the Clean Air Act. Directing such waste to stacks also prevented the misuse or inappropriate disposal of this radioactive waste.

In that original version of the regulation, there were no provisions for permitting alternative uses of the material. Petitioners approached us after that rulemaking requesting that we reconsider setting standards to permit alternatives to disposal of phosphogypsum in stacks. EPA determined that the risks represented by the use of phosphogypsum in which the maximum individual risk does not exceed the presumptively safe level of approximately one in ten thousand are acceptable. We have determined that in the case of phosphogypsum, considering all of the information available on potential exposures and the associated risk, that certain uses of phosphogypsum may be considered acceptable as long as those uses are restricted to limit the estimated lifetime risk. That risk estimate is calculated using the radium-226 concentration of phosphogypsum removed from a stack at 10 picocuries/gram or less.

We considered a number of uses and modified our regulations to allow a small number that did not present unacceptable risk. This modified rule was published in 1993 and allows three types of activities using phosphogypsum:

- Outdoor agricultural uses, for example as a conditioner of soils containing high quantities of salt or low concentrations of calcium or other nutrients, where the average Radium-226 concentration is less than 10 picocuries/gram. For example, peanut farmers in Georgia apply phosphogypsum to their fields to strengthen peanut shells. This type of use has also occurred most recently in several counties in North Carolina, where farmland soils were found to have a high salinity, in part because of Hurricane Isabel's recent incursion along the coast.
- Indoor research and development activities, using up to 7,000 pounds of phosphogypsum, for example to study the production of road-base and building materials.
- Other alternative uses that are approved by EPA on a case-by-case basis.

Some activities do not meet the criteria for ensuring safety and health protection. For example, we found in our examination of potential uses that a generic exemption for road building material could not meet the risk criteria. This is because of radium bearing dusts which are dispersed as the road surface degrades and radon emissions from the road itself result in undesirable exposures. In addition, when road material is eventually removed, disposed, or abandoned, additional exposures can occur.

As we review and consider the safety of new potential phosphogypsum uses, we work in partnership with our colleagues in State government, in this instance the Florida Department of Environmental Protection. The DEP regulates phosphogypsum stack operating procedures, and has regulations in place for stack monitoring and maintenance. They also regulate the final

closure of the stacks, and have important responsibilities toward protecting their ground-water resources. In addition to potential exposure, our review carefully considers impacts on State authority and interests from an alternative use.

We have received several petitions requesting EPA approval of alternative uses for phosphogypsum. In particular, we are currently reviewing a petition for use of phosphogypsum as a landfill cover at a municipal solid waste landfill in Brevard County, Florida. We hope to have a response on the completeness of this application in the next month or so. We are also in the process of developing guidance to further explain the criteria discussed in the regulations – specifically on what information is required for a complete application that can be evaluated for the purposes of making a publically and scientifically defensible decision on whether an alternative use of phosphogypsum is safe. We stress the importance of addressing radiation risk, and giving confidence, perhaps through monitoring, that other constituents in the waste, for example heavy metals, do not pose additional environmental concerns. Additionally, we seek through our review to identify the benefits associated with the alternative use, and, consistent with principles of radiation protection, that potential exposures are justified and legitimate.

Managing phosphogypsum in stacks represents the best current management practice for phosphogypsum. We continue to be open to consideration of other beneficial and protective uses, and remain supportive of research that articulates possible beneficial uses of this material. Nevertheless, petitions submitted to the Agency for such uses must clearly and fully demonstrate that the alternative use will be at least as protective as keeping the material in a stack.

This concludes my prepared statement. I would be pleased to answer any questions you may have.