

## U.S. ENVIRONMENTAL PROTECTION AGENCY'S RADON MITIGATION STANDARDS: A STATUS REPORT

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### ABSTRACT

This paper describes the U.S. Environmental Protection Agency's Radon Mitigation Standards (RMS) and complementary standards developed through the American Society for Testing and Materials, E-6 committee on Performance of Building Constructions. In addition, the paper also discusses the application of the Radon Mitigation Standards through the voluntary EPA Radon Contractor Proficiency (RCP) Program and enforcement issues encountered during their first year of application. Adherence to Interim Radon Mitigation Standards was required of all program participants starting in December 1991. These interim standards were superseded by the final RMS as revised in April 1994.

The EPA Radon Mitigation Standards have been incorporated into the radon certification programs in a number of states, including New Jersey, Pennsylvania and Iowa. The standards serve to ensure the quality, performance and long-term effectiveness of residential radon mitigation systems. They are also incorporated into hands-on radon mitigation training which is required of all newly entering RCP Program participants.

*This paper has been reviewed in accordance with the U.S. Environmental Protection Agency's peer review and administrative review policies and approved for presentation and publication.*

### INTRODUCTION

In response to a requirement set forth in the Indoor Radon Abatement Act (IRAA) of 1988, the U.S. Environmental Protection Agency (EPA) developed the voluntary Radon Contractor Proficiency (RCP) Program. The RCP Program was initiated in 1989 with the basic objective of providing homeowners with a source of trained and fully qualified contractors who could be relied upon to effectively perform the service of radon mitigation. As the RCP Program matured, EPA saw a growing need to standardize procedures, techniques, equipment, and materials used by radon mitigation contractors. EPA met this need by developing a document titled, "Radon Mitigation Standards," also referred to as the RMS.

EPA published the RMS in April, 1994 (EPA 402-R-93-078) as the culmination of four years of intensive development and review by all elements of the radon industry. This paper summarizes the basic objectives of the RMS, issues arising from its use in the field by RCP contractors over the past year, and how EPA plans to revise the RMS in the coming months to accommodate field experience.

The basic objective of the RMS is to provide radon mitigation contractors with uniform standards that will ensure quality and effectiveness in the design, installation, and evaluation of radon mitigation systems in detached and attached residential buildings three stories or less in height. Participation in EPA's RCP Program is not a Federal requirement. However, use of the RMS is mandatory for radon mitigators participating in the RCP Program. It is also intended to serve as a model set of requirements which can be adopted or modified to fulfill specific objectives of state radon contractor certification or licensure programs.

The primary areas of mitigation activities covered by the RMS are:  
(1) General Practices, (2) Building Investigation, (3) Worker Health and Safety, (4) Systems Design and Installation, (5) Materials, Monitors and Labeling, Post Mitigation testing, and Contracts and Documentation.

## ASSESSMENT OF THE RADON MITIGATION STANDARDS

The overall response to the RMS has been positive. Radon mitigation contractors participating in the RCP program have welcomed the availability of standards that clearly describe the requirements for quality mitigation work, and which serve to level the field of competition for their services. The only general complaint from RCP contractors has centered on concerns about competition from non-RCP mitigators who continue to install cut-rate radon control systems that are not up to the standards set forth in the RMS. In attempting to deal with this problem, EPA, in its public information programs on radon, has continued to emphasize to the public through a wide variety of channels the desirability of using RCP qualified contractors to address a radon problem. In addition, several states have recognized the need to protect the public against below-standard radon mitigation work by requiring that such work be conducted only by RCP qualified or state certified contractors. Several states have also developed their own radon mitigation standards relying on the RMS as a basis for these standards. These adaptations are generally more restrictive than the RMS and reflect increased local concern for quality mitigation.

While the majority of RMS provisions have been accepted and applied by radon mitigators throughout the country, a few specific provisions of the RMS have been identified by contractors as problem areas. For example:

- o The requirements related to location of the radon vent pipe exhaust point have been questioned. Some perceive a need for setting criteria that would permit ground level discharge for systems with low radon concentrations in the exhaust stream.
- o Concerns were expressed about the use of the backdrafting checklist and interpreting the test results. Some mitigators have suggested a provision to allow for the use of carbon monoxide monitors as an alternative to performing backdrafting tests.
- o Concern was expressed about the use of innovative techniques not researched by EPA and how to best ensure long-term effectiveness in unproven technology.
- o Concerns were expressed on the location of a radon vent fan and that it should be allowed to be within the conditioned space of the building.

In most cases, problems of complying with all of the provisions of the RMS have been localized in relatively small geographical areas, where local building practices or extreme climatic conditions cause unique problems. Such problems have generally been solved by accepting precedence established in local building codes or regulations, or by obtaining approval from local building authorities to deviate from the RMS.

There has been a general debate on the designation of certain RMS provisions as mandatory ("shall" be done) while others are considered good practice but are not mandatory ("should" be done). In the field, most contractors seem to feel that "should" provisions are, in effect, "shall" provisions because that approach avoids any post-mitigation allegation by homeowners that the work was sub-par. In future iterations of the RMS, we will continue to work to clarify those provisions which are clearly mandatory.

## FUTURE DIRECTIONS

As we look to the future of the RMS, consideration is being given to incorporating its technical provisions in a Standard Practice developed and published by the American Society for Testing and Materials (ASTM). This ASTM Standard Practice would then simply be referenced in a revised and shortened EPA RMS. The RMS would continue to include policy guidance relating to its mandatory application by RCP contractors, as well as limitations and authorized deviation procedures. The remaining sections containing references, terminology, general practices, building investigation, safety, systems design, and system installation would be included in the ASTM Standard. Any provisions not included in the ASTM Standard, but considered by EPA to be important, would be added to the policy guidance in the RMS.

By applying the respected, broad, and formal consensus- building procedures used by ASTM in its standards development activities, we would expect to produce current radon mitigation guidance that stands the test of nationwide applicability and acceptance. The ASTM requirement for periodic reviews and updates of its standards would also assure that new and innovative radon mitigation technology is addressed as it evolves over the coming years. In the near term, this approach is also seen as increasing the likelihood of adoption of the ASTM mitigation techniques in local building codes or regulations. In addition, EPA plans to increase enforcement of the RMS in the RCP Program through coordinated actions of its Regional offices and State Radon offices.

In summary, EPA views the Radon Mitigation Standards (RMS) as a successful and useful tool in its efforts to provide protection against the threat to public health caused by elevated levels of radon in homes. We will continue to assess the optimum methods for refining the mitigation standards and extending their use across the country.

Anyone interested in obtaining copies of the EPA RMS may contact the Radon Division in the following manner:

- (a) By writing to the U.S. Environmental Protection Agency  
Radon Division, (6604J)  
401 M Street, SW  
Washington, DC 20460
- (b) By Telephone or Fax to the Radon Division  
Phone Number: 202-233-9370 Fax: 202-233-9652
- (c) By E-Mail - SALMON.LEE@EPAMAIL.EPA.GOV

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