

NAS Report and EPA's Approach to Setting Limits for Radon in Drinking Water

The National Academy of Science has published a report that will provide important inputs to EPA's development of a National Primary Drinking Water Regulation (NPDWR) for radon. The regulation will include a Maximum Contaminant Level (MCL) for radon in drinking water, as well as an Alternative Maximum Contaminant Level (AMCL) and multi-media mitigation guidelines. The Safe Drinking Water Act (SDWA), as amended, calls for the establishment of both an MCL as well as an AMCL tied to the ambient outdoor radon in air level. Setting the MCL will ultimately be a "risk management" decision that considers a variety of information and analyses, including human health risk, nationwide occurrence of radon in drinking water, performance of treatment technologies, costs of treatment, and capabilities of analytical methods. The Agency expects to publish a Health Risk Reduction and Cost Analysis for various MCL options for public comment in February, 1999. A proposed regulation will be published for public comment by August 6, 1999 and the regulation will be promulgated in final form on August 6, 2000.

The SDWA requires the Agency to set a Maximum Contaminant Level Goal (MCLG) at a level at which no known or anticipated adverse health effects would occur, with a margin of safety. For known human carcinogens such as radon, the MCLG is expected to be zero. The SDWA requires that the MCL be set as close as feasible to the MCLG, using the recommended best available treatment technology(ies), and taking into account costs to public water systems of meeting the MCL.

As a first step in developing the MCL, EPA will consider the NAS estimates of lifetime cancer risk associated with exposure to a unit concentration (expressed in picoCuries per liter of radon). This information, together with EPA's estimate of radon occurrence in U.S. public water supplies, will be used in the development of a national estimate of the risk from exposure to radon in drinking water. This national population risk estimate will be a key element in the Agency's cost-benefit analysis of various MCL options. Under the SDWA, the EPA Administrator must publish a determination of whether or not the benefits of the MCL justify the costs. In addition, small public water systems (those serving less than 10,000 people) may be eligible for variances or exemptions.

The EPA also anticipates setting an AMCL for radon in drinking water. The primary elements affecting the Agency's development of AMCL options are NAS' estimates of the national average concentration of radon in outdoor air and the transfer of radon in drinking water to radon in air. In addition, multi-media mitigation guidelines, which the Agency must publish to accompany the AMCL, will be developed in consideration of the Academy's recommendations concerning the effectiveness of various radon in air risk reduction measures.

In summary, the Academy's recommendations are expected to be valuable inputs into the process of development of the MCL for radon in drinking water. In combination with consideration of a variety of other factors, these recommendations are expected to help shape the proposed radon in

drinking water regulation. The Academy's recommendations with respect to ambient outdoor radon in air levels and the air-to-water transfer factor are expected to be formative in the development of the AMCL.