

# Initial EPA Perspectives on NAS Report: "Risk Assessment of Radon in Drinking Water"

## Key Messages - Highlights:

- The National Academy of Sciences report, released September 15, 1998, represents the most comprehensive accumulation of scientific data gathered to date on radon in drinking water. This assessment by the National Academy of Sciences was required by the 1996 Safe Drinking Water Act (SDWA). It generally affirms a number of EPA's earlier scientific conclusions and analyses on the risks of exposure to radon in drinking water.
- The Report presents no major changes to EPA's 1994 risk assessment. The Academy recommends a small reduction of the overall risk associated with radon in drinking water compared with previous EPA analyses. The Report estimates that 183 deaths each year result from exposure to radon in drinking water, compared to EPA's 1994 estimate of 186 deaths annually (from ingestion of radon and inhalation of radon progeny).
- An NAS report (BEIR VI) issued earlier this year confirmed that radon is a serious public health threat. This new report goes on to refine the risks of radon in drinking water and confirms that there are drinking water related cancer deaths, primarily due to lung cancer.
- MCL: The Committee's risk assessment will be one of many elements considered by EPA in setting the maximum contaminant level (MCL) for radon in drinking water. 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.
- AMCL: The Committee recommends an Alternative MCL level of 4000 pCi/L, based on findings consistent with SDWA direction as to how EPA is to set the AMCL.
- The Report confirms that the estimated risk posed by radon from drinking water is small, relative to exposure to radon in indoor air, and is larger than the risk from other regulated drinking water contaminants.
- The Report notes that there is not enough evidence to identify any particular group at greater risk from radon, except for smokers. Smokers and former smokers, however, are at greater risk.
- The Report reiterates the findings of the NAS report on the biological effects of ionizing radiation (BEIR VI) that even very small exposures to radon can result in increased cancer risk. In fact, NAS concluded that no current evidence exists that shows a threshold of exposure below which radon levels are harmless.
- Most of the cancer risk from radon in drinking water arises from the transfer of radon into indoor air, and exposure through inhalation, although there is some risk from ingesting water containing radon.
- The primary health risks from radon in drinking water are lung cancer, from inhaling radon discharged from water used in the home, and stomach cancer, from ingesting radon in drinking water.

- The Report reiterates the NAS estimate in BEIR VI that 12% of lung cancer deaths in the U.S. are linked to radon in indoor. NAS' best estimates are that radon causes in the range of 15,000 to 22,000 lung cancer deaths each year. EPA's best estimate has been 14,000 annual lung cancer deaths due to radon.
- The Committee's review regarding multimedia mitigation programs provides some perspectives that may be of use to EPA as it drafts proposed guidelines for multimedia mitigation programs. As required by SDWA, EPA is developing guidelines for states (and public water supply systems) for multimedia mitigation programs.
- EPA is committed to protecting the public's health. The NAS Report will provide important inputs to EPA's development of a Maximum Contaminant Level (MCL) for radon in drinking water, as well as an Alternative Maximum Contaminant Level (AMCL) and multi-media mitigation guidelines.
- EPA appreciates this comprehensive review of the science on radon in drinking water from the National Academy of Sciences. We thank NAS and the members of the Committee on Risk Assessment of Exposure to Radon in Drinking Water for their commitment to this extensive undertaking.

### **Additional NAS Findings**

- Transfer factor: The NAS Committee recommends that EPA continue to use 10,000 pCi/L in water to 1 pCi/L in air as the best estimate of the transfer of radon in drinking water to radon in indoor air (through showering, cooking, and other household water uses).
- National average outdoor radon level: The Committee recommends use of 0.4 pCi/L as the best available national average ambient radon concentration.

### **Background**

- 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. 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.
- 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. In addition, SDWA requires EPA to develop multimedia mitigation guidelines to accompany the AMCL.
- EPA has in place a voluntary program to find the homes with high indoor air radon levels. We recommend that people do a simple home radon test and if high levels of radon are found, we recommend reducing those high levels with straight-forward techniques.

**Question: Shouldn't we really be focused on tobacco smoke?**

*Response:* There is no question that if you quit smoking, you will reduce your risk of lung cancer. But reducing radon exposure is another confirmed way to reduce lung cancer risk. Smokers, former smokers, and non-smokers can all reduce their risk of lung cancer by reducing high radon levels.

**Question: Will the NAS Report lead EPA to set a higher MCL?**

*Response:* It's too early for us to know the full impact of this report. EPA will be taking a careful look at the report and consider all new information. EPA is pleased that this scientific report reaffirms the current view that radon is a major public health concern. 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.