

US EPA ARCHIVE DOCUMENT

Technical Fact Sheet: Proposed Radon in Drinking Water Rule

The U.S. Environmental Protection Agency (EPA) is proposing new regulations to protect people from exposure to radon. The proposed regulations will provide States flexibility in how to limit the public's exposure to radon by focusing their efforts on the greatest public health risks from radon - those in indoor air - while also reducing the highest risks from radon in drinking water. The framework for this proposal is set out in the Safe Drinking Water Act as amended in 1996, which provides for a multimedia approach to address the public health risks from radon in drinking water and radon in indoor air from soil. The Safe Drinking Water Act directs the EPA to propose and finalize a maximum contaminant level (MCL) for radon in drinking water, but also to make available an alternative approach: a higher alternative maximum contaminant level (AMCL) accompanied by a multimedia mitigation (MMM) program to address radon risks in indoor air. This framework reflects the unique characteristics of radon: in most cases, radon released to indoor air from soil under homes and buildings is the main source of exposure and radon released from tap water is a much smaller source of radon in indoor air. It is more cost-effective to reduce risk from radon exposure from indoor air, than from drinking water. EPA strongly encourages States to take full advantage of the flexibility and risk reduction opportunities in the MMM program.

What are the Public Health Concerns?

Radon is a naturally-occurring radioactive gas that emits ionizing radiation. National and international scientific organizations have concluded that radon causes lung cancer in humans. Most of the radon in indoor air comes from the breakdown of uranium in soil beneath homes. Breathing radon from the indoor air in homes is the primary public health risk from radon, contributing to about 20,000 lung cancer deaths each year in the United States, according to a 1999 landmark report by the National Academy of Sciences (NAS) on radon in indoor air. The U.S. Surgeon General has warned that radon in indoor air is the second leading cause of lung cancer. EPA and the U.S. Surgeon General recommend testing all homes and apartments located below the third floor for radon in indoor air. If you smoke and your home has high indoor radon levels, your risk of lung cancer is especially high.

Radon from tap water is a smaller source of radon in indoor air. Only about 1-2 percent of radon in indoor air comes from drinking water. However breathing radon released to air from household water uses increases the risk of lung cancer over the course of your lifetime. Ingestion of drinking water containing radon also presents a risk of internal organ cancers, primarily stomach cancer. This risk is smaller than the risk of developing lung cancer from radon released to air from tap water. Based on a second 1999 NAS report on radon in drinking water, EPA estimates that radon in drinking water causes about 168 cancer deaths per year, 89 percent from lung cancer caused by breathing in radon released from water, and 11 percent from stomach cancer caused by drinking radon-containing water.

Who Must Comply with the Proposed Rule?

The proposed radon in drinking water rule applies to all community water systems (CWSs) that use ground water or mixed ground and surface water (e.g., systems serving homes, apartments, and trailer parks). The proposed rule would not apply to CWSs that use solely surface water, nor to non-transient non-community public water supplies and transient public water supplies (e.g., systems serving schools, office buildings, campgrounds, restaurants, and highway reststops).

What does the Rule Propose to Require?

The rule proposes a maximum contaminant level goal (MCLG), a maximum contaminant level (MCL), an alternative maximum contaminant level (AMCL), and requirements for multimedia mitigation (MMM) program plans to address radon in indoor air. The proposal also includes monitoring, reporting, public notification and consumer confidence report requirements, proposed best available technologies and analytical methods.

Maximum Contaminant Level Goal (MCLG), Maximum Contaminant Level (MCL), and Alternative Maximum Contaminant Level (AMCL)

The proposed MCLG for radon in drinking water is zero. This is a non-enforceable goal.

The proposed regulation provides two options for the maximum level of radon that is allowable in community water supplies. The proposed MCL is 300 picoCuries per liter (pCi/L) and the proposed AMCL is 4,000 pCi/L. The drinking water standard that would apply for a system depends on whether or not the State or CWS develops a MMM program. The regulatory expectation of CWSs serving 10,000 persons or less is that they meet the 4,000 pCi/L AMCL and be associated with an approved MMM program plan - either developed by the State or by the CWS.

The enforceable MCL or AMCL would apply under the following circumstances:

Small CWSs: Proposed regulatory expectation for systems that serve 10,000 or fewer people

<i>Does State develop MMM program?</i>	<i>Does CWS develop local MMM program?</i>	<i>CWS Complies with:</i>
yes	not needed	AMCL: 4000 pCi/L*
>no	yes**	AMCL: 4000 pCi/L
* Small systems may elect to comply with the MCL of 300 pCi/L		
** Small systems may elect to comply with the MCL of 300 pCi/L, instead of developing a local MMM program.		

Large CWSs: Proposed compliance options for systems that serve more than 10,000 people

<i>Does State develop MMM</i>	<i>Does CWS develop local MMM</i>	<i>CWS Complies</i>
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<i>program?</i>	<i>program?</i>	<i>with:</i>
yes	not needed	AMCL: 4000 pCi/L*
no	yes	AMCL: 4000 pCi/L
no	no	MCL: 300 pCi/L
* Large systems may elect to comply with the MCL of 300 pCi/L		

Monitoring Requirements

CWSs must monitor for radon in drinking water according to the requirements described in the table below and report their results to the State. If the State determines that the radon level in a CWS is below 300 pCi/L, the system only needs to continue meeting monitoring requirements and is not covered by the requirements regarding MMM programs.

Type	Frequency	Condition
Initial	Four consecutive quarters of monitoring for one year.	At each entry point to the distribution system which is representative of each well after treatment and/or storage
Routine	One sample per year	If running average from four consecutive quarterly samples is less than MCL/AMCL, and at the discretion of State.
Reduced	One sample every three years	If average from four consecutive quarterly samples is less than $\frac{1}{2}$ the MCL/AMCL, no samples exceed the MCL/AMCL, and State determines the system is "reliably and consistently below MCL/AMCL."
Increased	Four consecutive quarters of monitoring	If the MCL/AMCL for radon is exceeded in a single sample, when monitoring annually. Can return to one sample per year if meet routine monitoring conditions, listed above.