



# CITY OF LODI

## COUNCIL COMMUNICATION

AGENDA TITLE: Letter to United States Environmental Protection Agency Commenting on Proposed Drinking Water Regulations Concerning Radon

MEETING DATE: January 19, 2000

PREPARED BY: Public Works Director

RECOMMENDED ACTION: That the City Council formally comment to the United States Environmental Protection Agency (US EPA) opposing the proposed drinking water regulations concerning radon, and forward copies of our comments to our congressional representatives.

BACKGROUND INFORMATION: The US EPA has proposed radon regulations that will have a major impact to the City's water utility. Radon is a colorless, odorless gas that occurs naturally in some groundwaters. Adverse (theoretical) health effects are predominately due to airborne radon. Background information on radon and the proposed regulation published by US EPA is attached (Exhibit A). The comment period for the proposed regulations has been extended to February 4, 2000.

The proposed regulations contain a 300 pico-curies per liter (pCi/L) Maximum Contaminant Level (MCL) and a 4,000 pCi/L Alternative Maximum Contaminant Level (AMCL). The AMCL is applicable only if the State of California (or presumably the City of Lodi) institutes a "multi-media mitigation (MMM) program" to reduce radon in indoor air. All but one of Lodi's wells measure above the 300 pCi/L level and all wells are below 900 pCi/L.

Radon in drinking water plays a very small role in overall health risks. The US EPA level of concern for radon in the **air** is 4 pCi/L. Radon in **water** at 4,000 pCi/L contributes only 0.4 pCi/L to radon in **air**, and radon in **water** at 300 pCi/L contributes only 0.03 pCi/L to radon in **air**.

The US EPA is trying to regulate the radon in air through drinking water regulations. It could be very costly to put radon treatment systems on 23 of Lodi's wells. Ironically, treatment consists of "air-stripping" in tall towers, which transfers radon to the atmosphere. We assume that we will be required to capture the radon with air filters. Costs are estimated to be greater than the cost of DBCP treatment with capital costs exceeding \$350,000 per well for a total of \$8,000,000.

Additional background material from the Association of California Water Agencies (ACWA) and American Water Works Association (AWWA) are also attached (Exhibits B and C). Draft letters to the US EPA and our congressional representatives are also attached (Exhibit D).

FUNDING: Not applicable.

Richard C. Prima, Jr.  
Public Works Director

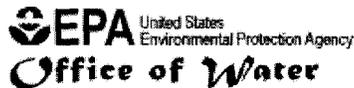
Prepared by Frank Beeler, Assistant Water/Wastewater Superintendent

RCP/FB/frb

Attachments

APPROVED: \_\_\_\_\_

H. Dixon Flynn -- City Manager



**Office of  
Ground Water and  
Drinking Water**

United States  
Environmental Protection  
Agency

Office of Water  
(4607)

EPA 815-F-99-007  
October 1999

## **RADON IN DRINKING WATER: *Questions and Answers***

### F • A • C • T • S • H • E • E • T

#### **What is radon?**

Radon is a gas that has no color, odor, or taste and comes from the natural radioactive breakdown of uranium in the ground. You can be exposed to radon by two main sources: (1) radon in the air in your home (frequently called "radon in indoor air") and (2) radon in drinking water. Radon can get into the air you breathe and into the water you drink. Radon is also found in small amounts in outdoor air.

Most of the radon in indoor air comes from soil underneath the home. As uranium breaks down, radon gas forms and seeps into the house. Radon from soil can get into any type of building - homes, offices, and schools - and build up to high levels in the air inside the building.

Radon gas can also dissolve and accumulate in water from underground sources (called ground water), such as wells. When water that contains radon is used in the home for showering, washing dishes, and cooking, radon gas escapes from the water and goes into the air. It is similar to carbonated soda drinks where carbon dioxide is dissolved in the soda and is released when you open the bottle. Some radon also stays in the water.

#### **Why is radon in drinking water a health concern?**

Breathing radon in indoor air can cause lung cancer. Radon gas decays into radioactive particles that can get trapped in your lungs when you breathe it. As they break down further, these particles release small bursts of energy. This can damage lung tissue and increase your chances of developing lung cancer over the course of your lifetime. People who smoke have an even greater risk. Not everyone exposed to high levels of radon will develop lung cancer. However, radon in indoor air is the second leading cause of lung cancer. About 20,000 deaths a year in the U.S. are caused by breathing radon in indoor air.

Only about 1-2 percent of radon in the air comes from drinking water. However breathing radon released to air from tap water increases the risk of lung cancer over the course of your lifetime. Some radon stays in the water; drinking water containing radon also presents a risk of developing internal organ cancers, primarily stomach cancer. However this risk is smaller than the risk of developing lung cancer from radon released to air from tap water.

Based on a National Academy of Science report, EPA estimates that radon in drinking water causes about 168 cancer deaths per year: 89% from lung cancer caused by breathing radon released to the indoor air from water and 11% from stomach cancer caused by consuming water containing

Radon is not a concern in water that comes from lakes, rivers, and reservoirs (called surface water), because the radon is released into the air before it ever arrives at your tap.

radon.

### **Is there radon in my water?**

Not all drinking water contains radon. If your drinking water comes from a surface water source, such as a river, lake, or reservoir, most radon that might be in the water will be released into the air before reaching your water supplier or home. Radon is only a concern if your drinking water comes from underground, such as a well that pumps water from an aquifer, though not all water from underground sources contains radon.

If you get your water from a public water system that serves 25 or more year-around residents, you will receive an annual water quality report. A major public right-to-know initiative of the 1996 Amendments to the Safe Drinking Water Act, these water quality reports will tell you what is in your water (including radon if it has been tested), where it comes from, and how to help protect it.

### **What levels of radon in indoor air should I be concerned about?**

There is no federal regulation for radon in indoor air. However, EPA does recommend that you take action to reduce your home's indoor radon levels if you test your home and find levels at or above 4 pCi/L (picoCuries per liter, a unit of measurement for radiation). EPA and the U.S. Surgeon General recommend that everyone test their homes (and apartments located below the third floor). In most homes, radon levels can be reduced to 2 pCi/L or less. In addition, new homes should be built radon resistant, especially in high radon areas.

For more information about how to

### **What levels of radon in water should I be concerned about?**

There is currently no federally-enforced drinking water standard for radon. EPA is proposing to regulate radon in drinking water from community water suppliers (water systems that serve 25 or more year-around residents). EPA does not regulate private wells. EPA proposed the rule in October, 1999 and plans to finalize it in August, 2000.

EPA is proposing to require community water suppliers to provide water with radon levels no higher than 4,000 pCi/L, which contributes about 0.4 pCi/L of radon to the air in your home. This requirement assumes that the State is also taking action to reduce radon levels in indoor air by developing EPA-approved, enhanced State radon in indoor air programs (called Multimedia Mitigation Programs). This is because most of the radon you breathe comes from soil under the house. This option gives States the flexibility to focus on the greatest problems, by encouraging the public to fix radon in indoor air problems and build homes that keep radon from entering.

For States that choose not to develop enhanced indoor air programs, community water systems in that State will be required to reduce radon levels in drinking water to 300 pCi/L. This amount of radon in water contributes about 0.03 pCi/L of radon to the air in your home. Even if a State does not develop an enhanced indoor air program, water systems may choose to develop their own local indoor radon program and meet a radon standard for drinking water of 4,000 pCi/L.

EPA has set up this option, under the framework specified by the 1996 Amendments to the Safe Drinking Water Act, so that the overall risks from exposure to radon, both through air and water, are

test the air in your home for radon and fix the problem, contact the Radon Hotline at 1-800-SOS-RADON. If you think the radon in your indoor air comes from the water, see "**How do I test for radon and how do I get rid of it?**"

reduced.

**How do I test for radon and how do I get rid of it?**

Because radon in indoor air is the larger health concern, EPA recommends that you first test the air in your home for radon before testing for radon in your drinking water. EPA and the U.S. Surgeon General recommend testing all homes for radon in indoor air (and apartments located below the third floor). EPA recommends that you take action to reduce your home's indoor radon levels if your radon test result is 4 pCi/L or higher.

If you have tested the air in your home and *found a radon problem* , you may also want to find out whether your water is a concern:

- **If you get water from a public water system:** Find out whether your water system gets its water from a surface (river, lake, or reservoir) or a ground water (underground) source.
  - *If the water comes from a surface water source* , most radon that may be in the water will be released to the air before it makes its way to your tap.
  - *If the water comes from a ground water source* , call your water system and ask if they've tested the water for radon.
- **If you have a private well:** EPA recommends testing your drinking water for radon. Call the Safe Drinking Water Hotline (1-800-426-4791) which can provide phone numbers for your

If testing your private well shows that you have high levels of radon in your drinking water and you are concerned about it, there are some things you can do to improve the water. The most effective treatment you can apply is to remove radon from the water right before it enters your home. This is called point-of-entry treatment. There are two types of point- of-entry devices that remove radon from water:

- Granular activated carbon (GAC) filters (which use activated carbon to remove the radon), and
- Aeration devices (which bubble air through the water and carry radon gas out into the atmosphere through an exhaust fan).

GAC filters tend to cost less than aeration devices, however, radioactivity collects on the filter, which may cause a handling hazard and require special disposal methods for the filter.

For more information on aerators and GAC filters, you should contact two independent, non-profit organizations: NSF International at (800) 673-8010 and the Water Quality Association at (630) 505-0160.

**I receive water from a public water supplier. How will EPA's proposed regulation affect me?**

Your State may decide to develop a plan for an enhanced radon in indoor air program, which would require your public water supplier to reduce radon levels in the water supply to 4,000 pCi/L. Consumers may be interested in participating in their State's development of this plan, once the radon rule is finalized (expected in August, 2000). If your State or public supplier does not develop an enhanced radon in indoor air program, your public water supplier is required to reduce radon levels to 300

State laboratory certification office or call the Radon Hotline (1-800-SOS-RADON) which can provide phone numbers for your State radon office. Your State laboratory certification office or State radon office can direct you to laboratories which may be able to test your drinking water for radon.

pCi/L. Under either option, your water bills may increase depending on the size of your water supplier and the radon levels in the drinking water in your area.

### How do I get more information about radon?

#### Call the Safe Drinking Water Hotline (1-800-426-4791):

The Safe Drinking Water Hotline can provide you with more information about what EPA is doing to regulate radon in drinking water and refer you to your State drinking water program for information about your community water system. Or, visit EPA's web site on drinking water at <http://www.epa.gov/safewater> for more information.

#### Call your Local Water Supplier:

Your local water supplier will have information about your local water supply and can answer any questions you have about your water. Look for the phone number on your water bill or in the government section of your phone book.

#### Call the Radon Hotline (1-800-SOS-RADON):

The Radon Hotline can refer you to your State radon office for more information, and can send you free publications about radon in indoor air, including: "A Citizen's Guide to Radon," "The Home Buyer's and Seller's Guide to Radon," and the "Consumer's Guide to Radon," which provide information on how you can test for radon levels in your indoor air and how indoor air radon problems can be fixed. Or, visit EPA's web site on radon at <http://www.epa.gov/iaq/radon> for more information



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Revised *October 20, 1999*

<http://www.epa.gov/OGWDW/radon/qa10.html>



## Radon in Air and Drinking Water Fact Sheet

November 1999

### *What is Radon?*

- Radon is an odorless, colorless gas that is naturally occurring in most soils, outside air and some groundwater. A cancer causing element, radon in air is the second leading cause of lung cancer, 12 percent of all cases.
- Radon exposure attributable to drinking water causes about 0.1 percent of those cases, most of them occurring in smokers.
- The health threat from radon in drinking water is small compared to the hazards of radon already present in the air and soil. Nationally, radon in drinking water accounts for about 2 percent of radon exposure in the home. Radon in soil accounts for about 98 percent of exposure, but is not regulated.

### *What's Happening?*

- The Environmental Protection Agency (EPA) has proposed a new regulation for radon in drinking water as required by the Safe Drinking Water Act amendments of 1996.
- The rule proposal initiates a 60-day comment period, followed by federal review process, and a final radon rule is statutorily due in August 2000.
- The EPA believes that radon is a health threat primarily in air and would prefer to reduce radon in air rather than drinking water. However, the Safe Drinking Water Act, re-authorized in 1996, requires that the EPA set a drinking water standard.

### *What's Proposed in the Radon Rule?*

- EPA's proposed Radon Rule sets a Maximum Contaminant Level (MCL) of 300 pCi/L for radon in drinking water.
- The proposal includes an Alternative MCL (AMCL) of 4,000 pCi/L.
- The proposal gives utilities the option of meeting the MCL or the AMCL.
- To comply with the AMCL, a multi-media mitigation (MMM) program must be approved by EPA. The proposal cites specific criteria for an acceptable MMM program.
- A state can adopt a "blanket" MMM program that provides compliance for any utility opting to meet the AMCL. If a state decides not to adopt a MMM program, a utility may design a local program for EPA approval.
- The MMM program criteria focus on reducing radon in air, the primary source of radon exposure. Program criteria include residential air monitoring, public outreach and possible remediation of homes.

## **RADON!!!! A Call To Action**

**E**PA has finally proposed the Radon Rule which specifies an MCL of 300 pCi/l and an Alternate MCL of 4000 pCi/l which is only if the State implements an indoor air radon reduction program (or each water system does?). Because the rule has many questionable aspects, national AWWA leaders believe we can make an impact by getting hundreds of comment letters and letting our congressional reps know of our concern. It does not take much effort to fire off a simple letter! **PLEASE GIVE IT 10 MINUTES OF ATTENTION. SEND A LETTER OR E-MAIL YOUR COMMENTS TO EPA —NOW!!!!**

Pick a couple of the following points. If you have real data from your system or your experience, use it. Otherwise, just assume (like EPA does) that most wells will have more than 300 pCi/l and will have to treat. It is also safe to assume that Calif. air quality agencies and the public will require mitigation or treatment of air from air-strippers.

1. Radon in water is the source of only 1-2% of the radon in indoor air.
2. Breathing radon in air is the concern; lung cancer is the potential result. Ingesting water with radon poses a very small and insignificant risk compared to indoor air radon. The health risk from radon in drinking water at levels below 4000 pCi/l is insignificant compared to radon in air from the soil.
3. EPA is using a drinking water regulation to force States to do more about radon in indoor air.
4. An AWWARF study showed that there is an insignificant reduction in the level of radon in indoor air if drinking water with up to 2000 pCi/l is treated to remove radon.
5. EPA has grossly underestimated the cost of meeting the 300 pCi/l radon MCL. Their data is erroneous re: how many treatment sites will be required. They do not include the very high cost to mitigate the effect of radon in the air used in air strippers. (Treatment or taller towers?)
6. The risk of radon is through inhaling it in air. Yet EPA says it is OK for the radon from water to be put into the air next to residences, schools and playgrounds. Calif. Air Quality agencies will likely require mitigation or treatment; if they don't, the public who live in the area may.
7. EPA is supposed to do a realistic cost-benefit analysis for regulations. For radon, they have grossly overestimated the benefits of the rule and underestimated the real costs.
8. There is no assurance that our States will definitely implement a multi-media radon mitigation program so the 4000 AMCL may not apply. Water utilities may be hit with toxic tort lawsuits if they do not meet the MCL, even if they meet the AMCL.
9. EPA's risk assessment is based mostly on smokers. Drinking water standards should not be based on a sub-population that has "elected" to be vulnerable by their choice of activity.

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CITY COUNCIL  
STEPHEN J. MANN, Mayor  
ALAN S. NAKANISHI  
Mayor Pro Tempore  
SUSAN HITCHCOCK  
KEITH LAND  
PHILLIP A. PENNINO

# CITY OF LODI

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P.O. BOX 3006  
LODI, CALIFORNIA 95241-1910  
(209) 333-6740  
FAX (209) 333-6841

H. DIXON FLYNN  
City Manager  
  
ALICE M. REIMCHE  
City Clerk  
  
RANDALL A. HAYS  
City Attorney

January 19, 2000

Radon-222, W-99-08 Comments Clerk,  
Water Docket (MC-4101)  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460

SUBJECT: Comments on the Proposed Rulemaking for the National Primary Drinking Water Regulation for Radon-222

The City of Lodi feels compelled to submit comments in opposition to the proposed National Primary Drinking Water Standard for Radon-222. The City of Lodi serves water to 56,000 customers and 23 of Lodi's 24 wells have radon levels that range from 300 to 900 pCi/L.

We would like to express our grave concern with this rule proposal. Putting numerous technical issues aside, our main concerns lie in the public health policy being adopted with this rule and the potential cost to the citizens of Lodi with practically no health benefits. Our concerns include the following:

- 1) The primary standard (MCL) of 300 pCi/L is far too low. The standard should be set at a level that reflects the insignificant contribution water makes to the radon problem (1-2%). **The standard should be set at 4,000 pCi/L, the equivalent of outdoor air radon and a level that is ten times more protective than the indoor air target level!**
- 2) EPA has seriously underestimated the costs for radon treatment and overestimated the benefits to public health associated with radon treatment.
- 3) Radon in air accounts for 98% of exposure and is the greatest risk to public health, yet radon in air is not regulated.
- 4) The proposed Multi-media Mitigation (MMM) program will raise community equity issues within our state and the regulation attempts to make air regulators out of public water suppliers.
- 5) California water utilities will be very vulnerable to lawsuits for choosing to comply with an "alternative" standard rather than a primary standard.

Stephen J. Mann  
Mayor

SJM/FB/frb

cc: City Manager  
The Honorable Diane Feinstein, U.S. Senate  
The Honorable Barbara Boxer, U.S. Senate  
The Honorable Richard Pombo, U.S. House of Representatives

CITY COUNCIL

STEPHEN J. MANN, Mayor  
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RANDALL A. HAYS  
City Attorney

January 19, 2000

The Honorable Diane Feinstein  
United States Senate  
331 Hart Senate Office Building  
Washington, DC 20510

SUBJECT: United States Environmental Protection Agency's Proposed Drinking Water  
Regulation for Radon-222

Dear Senator Feinstein:

As you may well be aware, the Environmental Protection Agency (EPA) on November 2, 1999 published its proposed radon in drinking water rule in the Federal Register. The proposed regulation includes a Maximum Contaminant Level (MCL) of 300 picoCuries per liter (pCi/L) and an Alternative MCL (AMCL) of 4,000 pCi/L. Utilities may comply with either the MCL or the AMCL. Compliance with the AMCL requires implementation of a multi-media mitigation (MMM) program that focuses on reduction of radon in indoor air.

This regulation is an issue of great concern to the City of Lodi. We fear that the rule will force municipalities like Lodi to spend millions of dollars annually on a program that will only minutely decrease the public's exposure to radon, if at all. The expense of this program will ultimately be borne by our water customers.

EPA's comment period for the proposed rule will close February 4, 2000. **The City of Lodi would appreciate your contacting EPA and commenting on the proposed rule before the close of the comment period. Please see the attached comments submitted to EPA by the City of Lodi.**

Once again the City of Lodi would appreciate your input on the proposed rule for radon.

Sincerely,

Stephen J. Mann  
Mayor

Enclosure

SJM/FB/frb

cc: City Manager

CITY COUNCIL

STEPHEN J. MANN, Mayor

ALAN S. NAKANISHI

Mayor Pro Tempore

SUSAN HITCHCOCK

KEITH LAND

PHILLIP A. PENNINO

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January 19, 2000

The Honorable Barbara Boxer  
United States Senate  
112 Hart Senate Office Building  
Washington, DC 20510

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Mayor

Enclosure

SJM/FB/frb

cc: City Manager

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January 19, 2000

The Honorable Richard Pombo  
United States House of Representatives  
2411 House Office Building  
Washington, DC 20515

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Regulation for Radon-222

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Sincerely,

Stephen J. Mann  
Mayor

Enclosure

SJM/FB/frb

cc: City Manager



**MEMORANDUM, City of Lodi, Public Works Department**

**To:** City Council  
Dixon Flynn, City Manager

**From:** Richard Prima, Public Works Director

**Date:** January 18, 2000

**Subject:** Radon

A handwritten signature in black ink, appearing to read "Richard", positioned to the right of the "From:" field.

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Attached is a copy of the laboratory results from one of the three basement radon tests City staff had performed. The information sheet provides additional background material on radon testing and risk. Note that the risk is much greater for smokers than non-smokers.

The level shown in this test was 4.6 pCi/l, slightly over the EPA's level of concern. The other two tests showed levels of 1.2 and 3.4 pCi/l.

RCP/rcp

attachment

cc: Water/Wastewater Superintendent



929 Mt. Zion Road  
Lebanon, PA 17046  
1-800-523-4964

JAN 17 1999  
CITY OF LODI

11/2/99

REPORT OF RADON TEST RESULTS

City of Lodi/Mike Schafer  
1331 South Ham Lane  
Lodi, CA 95242

Thank you for using Key Technology radon detectors and laboratory services. The radon level measured from the Key-Rad-Kit exposed in your home or office is as follows:

Canister Opened: 10/24/99 Canister Closed: 10/26/99

<u>Location</u>	<u>Serial No.</u>	<u>Radon Level - pCi/l Picocuries per liter</u>
Bst. 1B	508242	4.6

Charcoal canisters are recommended by the U.S. Environmental Protection Agency (EPA) as a simple, cost-effective way to obtain quick "screening" measurements of indoor radon. However, since indoor radon levels can change from room to room and from season to season, a single screening test is not a reliable means of making mitigation decisions for your home or office. This test result only indicates whether you may have a potential radon problem that would require further testing.

EPA recommends that you perform follow-up tests if your initial screening measurement is above 4.0 pCi/l. EPA also recommends that corrective actions be taken to reduce levels below 4 pCi/l when radon levels measured in several rooms of your home reach a long-term average of 4 pCi/l or greater.

Key Technology has successfully passed every round of EPA's proficiency tests (EPA ID #1273000), and we maintain an extensive quality control program to assure the accuracy of test results. However, Key Technology does not warrant that test results are representative of any conditions in your home. We take no responsibility for any decisions made based on these test results.

If you have questions or would like more information about radon, please contact your state health department at (800)745-7236. If you wish to order additional radon test kits, please call Key Technology at (800)-523-4964 or use the enclosed order form.

Again, thank you for using Key Technology detectors and services.

Raymond H. Johnson  
Laboratory Director  
EPA RMP ID #114040T

Enclosure

# Radon And You

## What is Radon?

Radon is a naturally occurring, radioactive gas that comes from the breakdown of uranium in soil, water and rocks. It enters your home through cracks and other openings in the foundation.

Some amount of radon can be found everywhere - even outside air contains about 0.4 pCi/L. The average radon level in U.S. homes is 1.3 pCi/L, although this number may be higher or lower in your home than in others. You can call your state radon office to find out the average radon level in your area, but remember every home is different. Your house could have significantly different radon levels than your neighbor's house. Therefore, the Environmental Protection Agency (EPA) and the U.S. Surgeon General strongly recommend all homes be tested for radon.

## How Does Radon Affect You and Your Family?

Radon is the second leading cause of lung cancer (next to cigarette smoking) in the nation. Your lung cancer risk associated with radon is determined by the level of radon in your home, the length of time exposed to that level and whether or not you smoke or have ever smoked. Smoking increases your radon risk 10 to 20 times, as shown in the tables below.

As with other environmental pollutants, there is some uncertainty about risks associated with radon. However, more is known about radon than about other cancer-causing substances because estimates are based on studies of humans (uranium miners). It is never too late to reduce your lung cancer risk. If your home has a radon problem, don't wait - fix it now. If you smoke, stop smoking now.

Radon Risk If You Smoke			
Radon Level	If 1000 people who smoked were exposed to this level over a lifetime	The risk of cancer from radon exposure compares to ...	WHAT TO DO Stop Smoking and ...
20 pCi/L	About 135 people could get lung cancer	100 times the risk of drowning	Fix your home
10 p Ci/L	About 71 people could get lung cancer	100 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 57 people could get lung cancer		Fix your home
4 pCi/L	About 29 people could get lung cancer	100 times the risk of dying in an airplane crash	Fix your home Consider fixing between 2 and 4 pCi/L
2 pCi/L	About 15 people could get lung cancer	2 times the risk of dying in a car crash	
1.3 pCi/L	About 9 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L	About 3 people could get lung cancer	(Average outdoor radon level)	
Note: If you are a former smoker, your risk may be lower.			

Radon Risk If You Have Never Smoked			
Radon Level	If 1000 people who smoked were exposed to this level over a lifetime	The risk of cancer from radon exposure compares to ...	WHAT TO DO
20 pCi/L	About 8 people could get lung cancer	The risk of being killed in a violent crime	Fix your home
10 p Ci/L	About 4 people could get lung cancer		Fix your home
8 pCi/L	About 3 people could get lung cancer	10 time the risk of dying in an airplane crash	Fix your home
4 pCi/L	About 2 people could get lung cancer	The risk of drowning	Fix your home Consider fixing between 2 and 4 pCi/L
2 pCi/L	About 1 person could get lung cancer	The risk of dying in a home fire	
1.3 pCi/L	Less than 1 person could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L	Less than 1 person could get lung cancer	(Average outdoor radon level)	
Note: If you are a former smoker, your risk may be higher.			

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## How Should I Interpret My Radon Result?

Your result is reported in pCi/L which stands for picoCuries per liter and is a standard unit for measuring radon in homes. Following is a table to help you decide what actions, if any, should be taken based on your radon result:

If your radon result or the average of two simultaneous or consecutive radon results is less than 4 pCi/L:  
**No radon problem is present at this time. Retest in the future, especially after making renovations to your home.**

If your radon result or the average of two simultaneous or consecutive radon results is 4 pCi/L or greater, but less than 10 pCi/L:  
**Perform follow-up measurements with long-term alpha track detectors for 90 days to one year, if time permits. Otherwise, perform follow-up measurements with short-term charcoal canisters. If follow-up measurements show average results of 4 pCi/L or greater, a radon problem is present and should be corrected as soon as possible.**

If your radon result or the average of two simultaneous or consecutive radon results is greater than 10 pCi/L:  
**Perform follow-up measurements with short-term charcoal canisters to confirm initial test results. If follow-up measurements show average results of 4 pCi/L or greater, a radon problem is present and should be corrected as soon as possible.**

Note: Consecutive or simultaneous radon results must come from the same room according to the EPA's "Home Buyer's and Seller's Guide to Radon" (March 1993)

### Correcting a Radon Problem

If your home or building has a radon problem, you're not alone. One out of 15 homes in the U.S. has an elevated radon level. Contact your state radon office to request a copy of the "Consumer's Guide to Radon Reduction" (August 1992) and information about EPA-listed and/or state-certified radon mitigation contractors in your area.

### Special Note for Real Estate Transactions

If you've tested your home in regard to a real estate transaction, call your state radon office and request a copy of the "Home Buyer's and Sellers Guide to Radon" (March 1993) and the "Protocols for Radon and Radon Decay Product Measurements in Homes" (June 1993) for more information and guidance on radon and real estate transaction.

**Important Note:** No level of radon is considered to be "safe". The U.S. Government has set a long-term goal that indoor radon levels be no more than outdoor levels. While this goal is not yet technologically achievable for all homes, the radon levels in most homes today can be reduced to 2 pCi/L or below.

### Ordering Follow-up Detectors is Easy

You can get additional charcoal canisters, alpha track detectors or radon in water test kits directly from Key Technology by completing the enclosed order form and mailing with payment to the address indicated. Credit card orders (VISA/Mastercard) may be accepted by phone - just call 1-800-523-4964. (No COD's please.) Or check with your local hardware store, and be sure to ask for **Key Technology radon gas test kits to assure the best quality and service!**

Note: Portions of this material have been taken from EPA documents, "Home Buyer's and Seller's Guide to Radon" (March 1993) and "Protocols for Radon and Radon Decay Product Measurements in Homes" (June 1993).

**Thank you for using Key Technology radon gas test kits and laboratory services!**

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