

SLAG

Southeast Idaho Phosphorus Slag Program



How to Find Out if You Have a Problem with Radiation from Slag

Residents throughout **southeastern Idaho** are invited to participate in a **free, voluntary program** conducted jointly by Southeastern Idaho Public Health, FMC, Monsanto, and EPA. The program helps residents find out if phosphorus slag in their homes and business properties is causing unacceptably high exposure to radiation. The program is designed to determine if phosphorus slag has been used in your home or business property as well as measure the radiation dose of individuals living and working in buildings or on property where phosphorus slag is found. Participation in the program is free, and it takes very little of your time.

If I participate in the program, what will the results tell me?

The results will tell you whether you are being exposed to elevated radiation levels in your building or on your property and if slag is the cause.

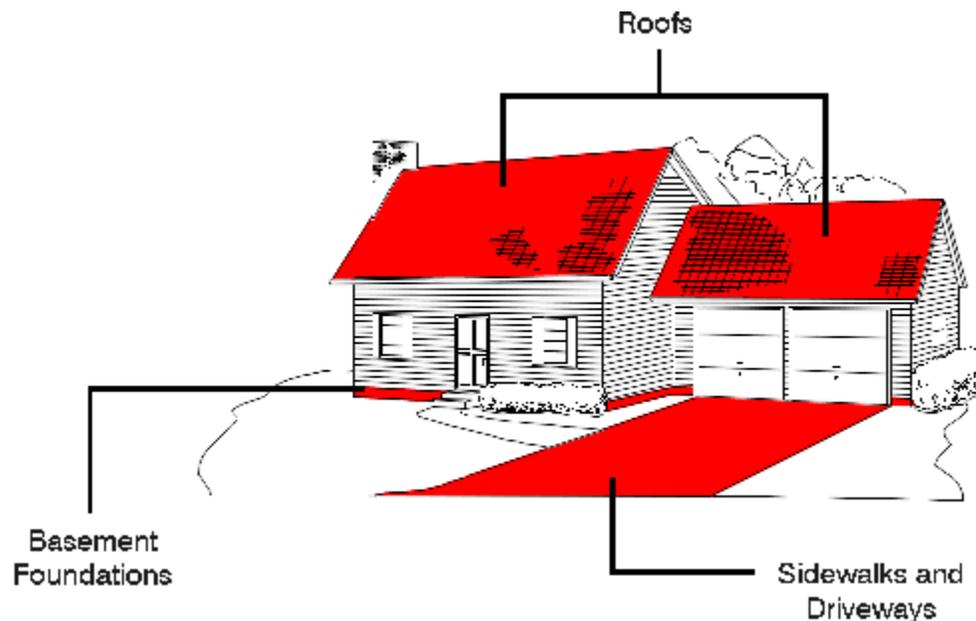
How much does it cost to participate in the program?

There is no cost for participating.

Where in southeast Idaho is the program being conducted?

The focus of the study is in the communities of Pocatello and Soda Springs, however individuals in surrounding communities are welcome to participate in the program as well.

Past Uses of Slag

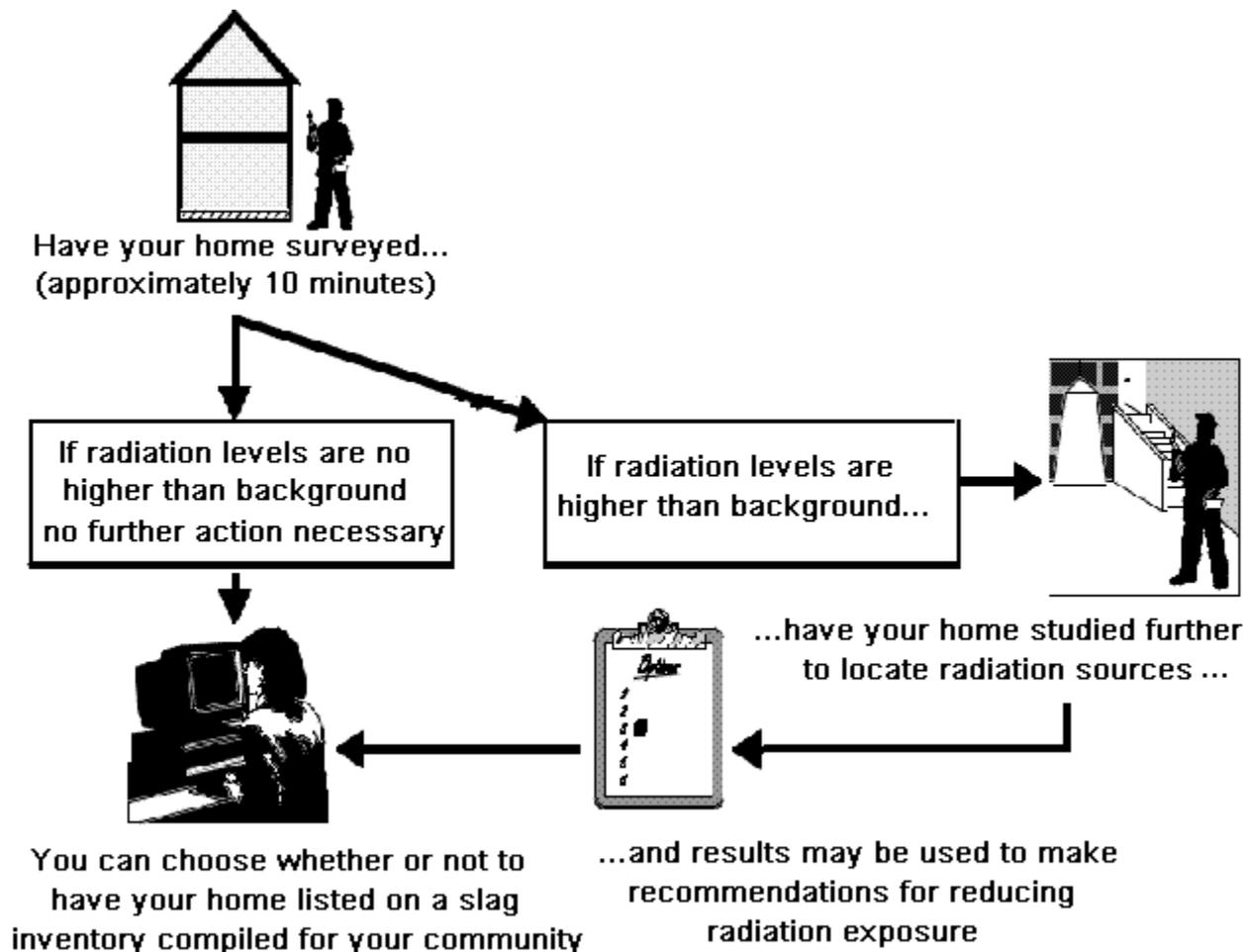


How to Sign Up to Participate in the Slag Program

Homeowners and other building or property owners who wish to participate in the voluntary exposure study can call Southeastern Idaho Public Health at **(208) 478-6316 in Pocatello**.

The way to participate in the program is to have your home or business property surveyed. The survey will immediately show if there are elevated radiation levels in your home or business property. Those who want to know how much radiation they are being exposed to can request an additional study that will include filling out a form to estimate how much time occupants spend in the various rooms of the building.

The Testing Process



Things To Keep In Mind

1. Participation in the program is **voluntary**.
2. Recommendations for reducing your radiation exposure would be based on the survey results and will be provided to you.
3. You may choose whether or not to list your building or property's results on the phosphorus slag inventory.

What happens if either I don't want to participate in the program or I only partially participate?
The testing process is entirely voluntary, and an individual can decide not to participate at any time.

Can I have my business property surveyed?

Yes. Any property in southeast Idaho can be included in the program, with permission of the owner.

More Information About the Surveys

Southeast Idaho Phosphorus Slag Program

Surveys are performed with instruments that measure radiation and identify specific locations in the buildings or on the property where radiation exceeds natural background levels. Surveys measure radiation dose rates (for example, dose per hour) and in most cases can tell you whether your property has radiation levels above background, indicating that slag may be present.

The survey team will make an appointment with you, and you must be present to have the survey conducted. Once you have given your permission to the team to enter your building, team members will check for radiation levels that are higher than would be expected for southeast Idaho. Measurements will be taken on the main floor and in the basement. The team will spend only a few minutes in your building. If the measurements do not show significant levels of radiation in your building, you will be given a statement of the team's findings. If elevated radiation levels are found, the team will inform you that the measurements indicate you may have slag in your building and recommend more extensive measurements.

Surveys

- Surveys measure the rate of radiation dose in a specific location
- Surveys provide immediate results.
- Homeowners must provide access to indoor house locations, and the method is somewhat intrusive for study participants.

What if the building survey indicates exposure rates that are higher than expected?

If the initial building survey indicates that you may be exposed to elevated radiation levels, more extensive measurements will be recommended. These measurements will help you find out exactly where in your building you are being exposed to radiation. To participate in the more extensive dose rate measurements, you need to make an appointment by calling Southeastern Idaho Public Health.

First, the building owner must grant permission to the team members to enter the building and perform detailed measurements. Then, they may visually inspect the building to look for physical evidence of slag. Next, they will measure the radiation dose rate in every room in the building using a meter that measures radiation levels. Finally, they will provide forms on which occupants can indicate time spent in each room to be used in calculating each individual's radiation dose.

What if Your Building Has Slag in It

In 1992, FMC, Monsanto, the U.S. EPA joined together with several other scientific and community agencies to form the Phosphorus Slag Technical Work Group. The Technical Work Group was convened to develop guidelines to help individuals interpret radiation exposure results from the phosphorus slag program and determine what, if any, action should be taken to reduce their exposure.

The Graded Decision Guidelines, developed by this group and approved by EPA, recommends following action options for reducing individual radiation dose; these recommendations have been accepted by EPA. The options start with the easiest and least expensive and range up to the most difficult and costly. The simpler and easier options are more appropriate for lower doses, while more costly options would be more appropriate at higher doses.

No Action - Do Nothing- Scientific opinion differs about how much low-level radiation an individual can be exposed to without harm. The possibility exists that there may be a threshold level of radiation exposure below which there are no adverse health effects. Consequently, exposure to natural background radiation levels may not pose any health risks. However, current evidence suggests that exposure to radiation at low levels may pose some risk of cancer.

Education and Counseling - Education and counseling would include a balanced discussion of radiation risk and radiation protection measures. This would include exploring the range of possible actions that could be taken to reduce an individual's dose, such as possible changes in use patterns - like spending less time in the basement.

Attrition - Attrition means removing slag once a structure's useful life has ended. This would involve listing the property on the phosphorus slag inventory and subsequent removal of the slag to an appropriate disposal location when the building or structure, such as a roof or driveway, is replaced or demolished.

Modification of Use - Space that contributes to radiation dose would be converted to an alternative use in order to reduce the amount of time that individuals spend in a space where slag significantly contributes to individual dose.

Remodeling, Shielding, or Partial Removal - This option involves reducing exposure through physical changes to the building either through removal or shielding of the slag areas by covering the area.

TWG Recommended Actions	Dose above background				Dose, including background
	Less Than 100 mrem	More Than 100 mrem	More Than 200 mrem	More Than 300 mrem	More Than 500 mrem
Do Nothing	X				
Education and Counseling		X	X	X	X
Attrition		X	X	X	X
Modification of Use			X	X	X
Remodeling, Shielding, or Partial Removal				X	X
Additional Living Space					X

Additional Living Space - This option would provide additional living space to replace areas that contribute to an elevated dose. For example, a new bedroom could be built onto a home to replace a basement bedroom.

The Technical Work Group anticipated that cost-effective risk reduction options will be considered on a case-by-case basis based on radiation exposure test results, and each homeowner will have an opportunity to discuss any specific concerns with a radiation risk professional that is available through the phosphorus slag program. The Technical Work Group completed their work in 1995 and is no longer active.

How will it be determined that something must be done to reduce my exposure to gamma radiation?

If the more extensive measurements indicate that slag is present in your building which is causing increased exposure to radiation, you will be presented you with a copy of the Graded Decision Guideline recommendations for reducing your exposure to the slag. But you will make the decision about whether anything will be done, and if so, what will be done. No one will force you to do anything you don't want to do.

What if I do want to reduce my exposure according to the Technical Work Group's guidelines? Some of the options look costly. Who will pay for that?

FMC and Monsanto have agreed to pay for the phosphorus slag program including the testing and any implementation of the guideline options.

Considerations for Building Owners

Southeast Idaho Phosphorus Slag Program

The results of the testing will be maintained confidentially by the testing contractor working for Southeastern Idaho Public Health, FMC, and Monsanto. Testing results will be reported to EPA and the public in aggregate only (no names and addresses will be used). For example, we might occasionally provide statistics on how many properties have been tested and the range of results.

Phosphorus Slag Inventory

Southeastern Idaho Public Health, FMC, and Monsanto have established an "inventory" of phosphorus slag testing results for southeast Idaho. The inventory is a listing of the most recent testing results. All residential entries in the inventory have been approved by their owners.

The inventory lists public places (including streets, sidewalks, businesses and public buildings) that have been found to contain phosphorus slag, even though such places may not contribute a significant level of exposure to radiation for most people. The primary reason for automatically listing public places in the inventory is to ensure that the slag will be adequately considered when the areas are replaced due to normal wear and tear.

Radon

Residents in southeast Idaho may experience elevated radiation doses in their homes and business properties from many sources. The primary focus of the phosphorus slag program is on gamma radiation from phosphorus slag that has been used as construction material in many areas. Although elevated radon is not usually associated with slag, some buildings may have elevated radon levels from other sources which increase radiation dose to the occupants. Radon is an invisible, odorless gas and a natural part of the environment. It will be important to know the level of radiation resulting from radon in addition to that resulting from phosphorus slag so that appropriate measures can be taken to protect the residents' health. Because of this, property owners participating in the program may also have their buildings surveyed for radon.

Who else will be given the results of the survey of my property?

No one. Program results will be reported in aggregate only. For example, we might provide statistics on how many properties have been evaluated and what the overall results have been.

My home was built in 1988. Should I still participate in the program?

While buildings built in the 1980s and later are less likely to have phosphorus slag in them than homes built in the 1950s, 60s, and 70s, we can't guarantee that they do not. If you want to know for sure whether or not your building has slag in it, you are welcome to participate in the program.

How long will the testing program be offered?

FMC and Monsanto, under oversight by EPA, completed the extensive initial phase of testing from 1996 to 1997. Testing is now available for an indefinite period of time for those individuals that would like to participate through Southeastern Idaho Public Health. The extended offer will be particularly useful to either new residents or individuals that would like to have a residence retested after making changes to reduce exposure.

Recommendations for People Who are Buying or Selling Property

Recommendations for People Who Are Buying Property:

1. Contact Southeastern Idaho Public Health at **(208) 478-6316 in Pocatello** to determine if the building is listed on the Southeast Idaho Phosphorus Slag Inventory.
2. If the building is not listed on the inventory, you may want to ask the building owner to have it tested. Find out the results.
3. If the test results of a building you purchase indicate the potential for elevated radiation exposure due to the presence of phosphorus slag, take action to reduce that exposure. Consult the Graded Decision Guidelines and have the building retested.

Recommendations for People Who Are Selling Property:

1. If you haven't already done so, sign up to participate in the slag program. Find out if phosphorus slag is causing elevated radiation levels.
2. If testing results indicate the potential for exposure to elevated radiation levels as a result of phosphorus slag, take action to reduce that exposure according to the Graded Decision Guidelines. After taking action to reduce radiation exposure, have the property retested to find out if the action was effective. Have Southeastern Idaho Public Health update the information in the Southeast Idaho Phosphorus Slag Inventory.

Will this program affect my property values?

If you have your property tested and (1) no elevated radiation levels are found or (2) elevated radiation levels are reduced by implementing one of the Technical Work Group's recommended action options, then prospective buyers can be reassured. Such reassurance should enhance your property's value as compared to other properties that have not been tested.

More Questions & Answers

What is Radiation?

Some atoms, known as "radionuclides", are unstable--or radioactive. Radionuclides undergo a spontaneous decay process and emit one or more types of radiation until they reach a stable form. There are three main types of radiation: alpha radiation; beta radiation; and gamma radiation (which is very similar to x-rays). This program is limited to **gamma radiation that is emitted by phosphorus slag**. Gamma radiation consists of electromagnetic waves, which can penetrate skin and travel through the human body.

Naturally occurring radioactive materials in the earth--primarily uranium, thorium, radium, radon, and potassium--and cosmic rays from outer space immerse us in fluctuating amounts of radiation at all times. Background radiation varies by location because cosmic radiation increases with increasing elevation and naturally occurring radionuclide concentrations in the earth vary from place to place. The phosphorus slag program looks for buildings where radiation levels exceed the expected background level.

In addition to naturally occurring sources of radiation, people are exposed to manufactured sources of radiation as well, including medical applications, consumer goods, and the operation of the nuclear power industry. Medical doctors use radiation for diagnosis and treatment of cancer and other diseases.

Of the total amount of radiation that the average person in the United States is exposed to in a year, 50% comes from natural sources and 48% from medical exposure to patients. Consumer products and other activities account for 2%.

Despite the benefits of radiation in our modern world, increases in exposure to radiation have been linked to increases in cancer rates. For that reason, the phosphorus slag program seeks to **reduce exposure to radiation for residents of southeast Idaho**.

How Does Radiation Affect Human Health?

High doses of radiation can be harmful or even fatal. The damage caused by exposure to radiation is determined by the amount of radiation, the type of radiation, the duration of exposure, and the part of the body that is exposed. The effects of a radiation dose are either prompt or delayed. Prompt effects occur within the first several months after exposure. Delayed effects occur over many years. The delayed effects could include cancer or other diseases in exposed persons and harmful effects on unborn children.

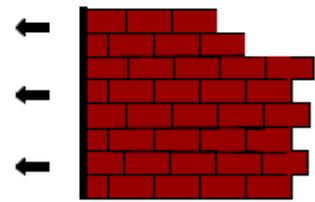
It is important to note that an average of **one in four** people develops some form of cancer. Excess lifetime cancer risks resulting from exposure to radiation are calculated *in addition* to this number. Risk estimates assume that even small amounts of radiation pose some small risk.

FACTORS THAT AFFECT YOUR RADIATION EXPOSURE

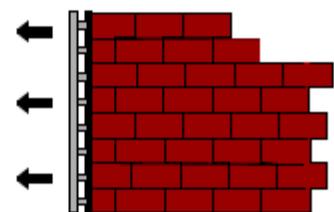
- How long and how often you are exposed



- How far away you are from the source



- How much shielding or absorbing material is present



The total number of observed cancers in southeast Idaho is low by national standards. Healthy lifestyles, rural living, and a low incidence of smoking and drinking likely contribute to the lower overall incidence of cancer in southeast Idaho.

Radiation from Southeast Idaho Slag

In general, cancer rates are low in this region; however, concerns remain about possible increases in cancer risk that may be associated with slag. For that reason, area residents are encouraged to participate in the southeast Idaho phosphorus slag program.

What level of radiation is safe?

No one knows for sure. This question is of ongoing interest to scientists and researchers.

How is radiation dose measured?

Radiation dose is the amount of radiation that is absorbed by the body. The human body's absorption of ionizing radiation is measured in units called "rems". Low levels of radiation are measured in thousandths of a rem called "millirems" or millionths of a rem called "microrems."

For More Information on Phosphorus Slag in Southeast Idaho

- **EPA** – Contact Beth Sheldrake (sheldrake.beth@epa.gov) at (206) 553-0220 or (800) 424-4372, extension 0220.
- **Southeastern Idaho Public Health** in Pocatello at (208) 478-6316.
- **Health Education Office on Fort Hall Indian Reservation** at (208) 238-3953.
- **Monsanto** contact Jim McCulloch at (208) 547-1233.
- **FMC** contact Barbara Ritchie at (215) 299-6700.

Websites to visit:

<http://sdhdidaho.org/comhealth/slag.php>

<http://yosemite.epa.gov/r10/cleanup.nsf/sites/idslag>

Or visit one of the following libraries to view materials related to the phosphorus slag program:

Marshall Public Library

113 South Garfield
Pocatello, ID 83204
(208) 232-1263

Portneuf District Library

5210 Stuart Street
Chubbuck, ID 83202
(208) 237-2192

Idaho State University Library

Government Documents Department
9th and Terry
Pocatello, ID 83209
(208) 236-2940

Soda Springs Public Library

149 South Main
Soda Springs, ID 83276
(208) 547-2606

Shoshone-Bannock Library

Pima and Bannock
Fort Hall, ID 83203
(208) 238-3700, extension 3882