



Four Forest Restoration Initiative: Prescribed Burns and Radiation

The goal of the Four Forest Restoration Initiative (4FRI) is to restore the structure, pattern, and composition of fire-adapted ecosystems, which will provide for fuel reduction, forest health, and wildlife and plant diversity. One of the tools needed to accomplish this goal is prescribed burning. During the 4FRI public comment period, there were questions raised about the safety of the prescribed burns and potential radiation that could be released through burning.

The following questions and answers (Q and A) have been compiled to help address any concerns about prescribed burns and radioactive material.

Q: Are there radioactive materials present in Northern Arizona?

A: Yes. However, radioactive materials exist everywhere in the world. Elements and isotopes that are radioactive can be naturally occurring; from the atmosphere, within the earth, even contained in our own bodies, or man-made, such as nuclear fuel or waste, medical products, or atomic weapons. Our bodies tolerate this amount of radiation in our environment, which is commonly referred to as “background radiation.”

Q: What radioactive materials are present in Northern Arizona?

A: In Northern Arizona there are several types of radioactive elements. Most of these are naturally occurring, such as; radon, potassium, and thorium. Northern Arizona also has rich deposits of uranium, which can and have been used for commercial purposes. In addition, Northern Arizona, like much of the world, also has traces of man-made radioactive material, primarily from weapons testing conducted in the Cold War era. These radioactive elements include cesium and strontium. These forms of radiation are present in very low quantities, do not vaporize easily (even in extreme heat), and do not present a health risk if re-suspended during a fire.

Q: How could radionuclides be released in a prescribed burn or other fire?

A: Radioactive elements are often found in plants and soils; however, the concentration levels are very low. This is a type of background radiation that is always present. When a fire burns through an area, it may destroy plants and soils, but not the radioactive elements. It is possible for these radioactive particles to drift into the air and spread like fire ash. This process is called re-suspension. It is important to note the levels of radioactive material that could be released in a prescribed burn or wildfire are very low and do not present a health risk.

Q: What is the amount of radioactive material that would present a health concern?

A: People in the United States receive an average of 620 millirem (mrem)--a unit used to measure radiation dose--per year from natural and man-made sources. This level is considered background radiation. To put this amount in perspective, a medical chest X-ray typically delivers less than 10 mrem, while a cross county flight exposes a person to 2-5 mrem. Health physicists generally agree on limiting a person's exposure, beyond background radiation levels, to about 100 mrem per year, from all sources. This is far below the exposure levels that can cause acute health effects. Any amount of radioactive release due to a fire would not be expected to increase background radiation amounts significantly, if at all.

Q: Has research been conducted on the amount of radioactive material released during a forest fire?

A: Based on studies conducted on controlled burns and wildfires in the Southwestern United States, the amount of radioactive material that is released during a fire is extremely low and would lead to little, if any, increase in radiation exposure. These studies have concluded the amount of radioactive material released would lead to a radiation exposure of less than 1 mrem. The average person in the United States receives 620 mrem of radiation per year from background sources. Based on these studies, prescribed burns or wildfires do not present a radiological health concern for firefighters, the population living in close proximity to the fire, or individuals in areas where smoke from the fire may accumulate.

Q: Is it safe to be outside when the burns are being conducted?

A: There will not be enough, if any, radioactive material to present a health concern; however, you should take the same precautions you would with any prescribed burn or wildfire. Taking safety precautions due to smoke is especially important to people with respiratory illness or asthma.

Q: Will someone be monitoring during the prescribed burns to ensure radiation levels do not exceed what is safe?

A: The Arizona Radiation Regulatory Agency is working with the US Forest Service to establish possible air sampling sites to ensure any potential releases do not rise above expected levels.

Q: I have heard that taking a potassium iodide (KI) supplement can protect me against radiation. Will this be necessary?

A: No. The purpose of taking potassium iodide, commonly referred to as KI, is to block the thyroid gland from absorbing any potentially radioactive iodine. The use of KI is *only* recommended when people are exposed to high levels of radioactive iodine, due to side effects that may be harmful to some individuals. A prescribed burn or wildfire would not release radioactive iodine and therefore, a KI supplement should not be taken.

Q: Why are these questions coming up now and what about other fires?

A: During the public review process, a member of the public submitted several questions relating to the amount of radioactive material that could be re-suspended in a fire. Based on studies that have been conducted on other fires, and the properties of the elements that exist in Northern Arizona, a health concern does not exist. The Forest Service is working with subject matter experts to verify these findings for this project. In addition, many local fire and law enforcement departments, across the state have the ability to detect radiation, regardless of the source or cause. If there is ever a concern, further monitoring and actions will be taken to ensure there is no public risk.

Q: What should I do if I have more questions?

A: The Four Forest Restoration Initiative Project is managed by the United States Forest Service. Project information can be found on their website at <http://www.fs.usda.gov/4fri> . For more information about radiation health and safety, visit the CDC's website at <http://www.cdc.gov/nceh/radiation>. For information regarding emergencies and hazard information within the State of Arizona, please visit the Arizona Emergency Information Network at <http://www.azein.gov> .