

# Hazards of Radon Progeny



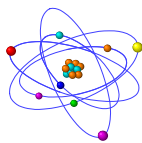
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## Health Hazard Information Card HH-13

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**Radon** is a radioactive gas associated with uranium mining and with several other underground mining industries. Radon **progeny**\* are fine solid particles which result from the radioactive decay of radon gas, and are hazardous because of the alpha radiation, or alpha particles, which they emit. When radon progeny are breathed and deposited in the lungs, the alpha radiation can harm sensitive lung tissue, and may cause lung cancer after years of exposure. The hazard of breathing contaminated air is especially serious because both radon gas and the progeny are invisible and odorless. Beta and gamma radiation are also associated with the radioactive decay of radon gas, but ordinarily are not present in sufficient quantities to cause harm.

Radon gas diffuses into the mine atmosphere through rock and ground water. When rock, such as uranium-bearing rock, is broken, the surface area is greatly increased and emission of radon gas increases also. Agitation of ground water in underground mines can be a significant source of radon gas and the associated radon progeny.



Radon progeny particles tend to attach themselves to airborne particles such as dust, smoke, and water mist. These particles are fine enough to reach the deepest parts of the lungs when inhaled, and the alpha radiation emitted can do a great deal of damage. For this reason, smoking is discouraged where radon gas is present. MSHA regulations in the 30 CFR prohibit smoking in areas of a mine where monitoring of radon progeny is required.

\*Previously termed: "daughters"

Sampling for radon progeny involves the use of personal sampling pumps and special filters, through which air is drawn at a known rate. Radon progeny are collected on the filter, and the filter is evaluated by measurement of alpha radiation with a radiation counting device.

The most effective control measure for radon gas and radon progeny is dilution and removal by means of ventilation. By quickly removing radon gas from work areas through ventilation, there will be less generation of radon progeny in the workplace. Primary air used for such ventilation should be free of radon progeny. Special design practices are required for effectiveness to be ensured.



The use of respiratory protection against radon progeny must be limited to temporary situations where engineering controls have not been developed, or during maintenance and investigative work. For exposures up to 10 working levels (WL), proper filter-type respirators are available. Where concentrations of radon progeny exceed 10 WL, supplied-air respirators or other devices for protection against radon gas as well as radon progeny are required.

For additional information and assistance, contact:

- » Your local MSHA office
- » **Metal/Nonmetal Mine Safety and Health**  
Arlington, Virginia  
202-693-9630
- » **Coal Mine Safety and Health**  
Arlington, Virginia  
202-693-9510
- » **Pittsburgh Safety and Health**  
Technology Center  
Pittsburgh, Pennsylvania  
412-386-6901

*U.S. Department of Labor  
Mine Safety and Health Administration  
Visit our web site at [www.msha.gov](http://www.msha.gov)*

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