



APO Mailing Address

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Please mark your Radon-related inquiries with
“Radon” in the subject heading of your email.

If you have health care concerns,
please contact your primary care physician.

Radon

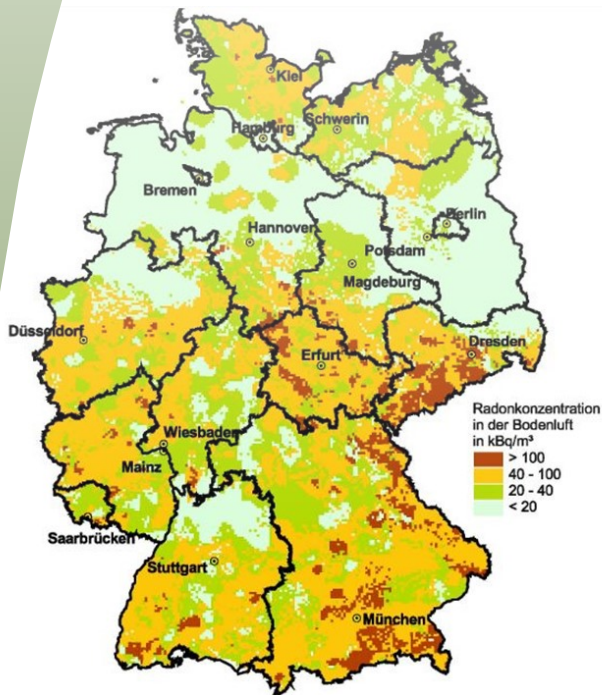


U.S. Army Garrison
RHEINLAND-PFALZ

What is radon?

Radon is not a man-made chemical substance. It is a naturally occurring, odorless, tasteless, colorless gas. It can be found all over in the world; including the US, Europe, and Germany.

Radon is generated by the breakdown of naturally occurring elements in soil, rocks, and sediments. Radon concentrations depend on the local geology. For example, magmatic rocks have elevated concentrations.



In Germany, higher radon concentrations can be found especially in East (Saxonia) and South Germany (East and South Bavaria, South Baden-Wuerttemberg).

Baumholder Military Community (BMC) is geologically also a known radon prone area.

Source: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit & Bundesamt für Strahlenschutz 2010

Health effects



Radon enters the lungs

Radon is a radioactive element that can impact human tissue. Inhaled radon can result in DNA damage and can cause lung cancer.

World-wide: 3-14% of all lung cancer fatalities are caused by indoor radon according to the World Health Organization (WHO).

USA: 12-14% , Germany: 5%

(Source: WHO 2009).

Radon & smoking

Radon is the second leading cause of lung cancer behind smoking.

The risk of lung cancer for smokers is up to 25 times higher than it is for radon (Source: WHO 2010).

Knowing risks

Risks if you smoke

- Radon level of 4 pCi/L:
about 62 of 1000 people could get lung cancer
if exposed over lifetime
(5 times risk of dying in a car crash)
- Radon level of 8 pCi/L:
about 120 of 1000 people could get lung cancer
if exposed over lifetime
(10 times risk of dying in a car crash)
- Radon level of 20 pCi/L:
about 260 of 1000 people could get lung cancer
if exposed over lifetime
(about 20 times risk of dying in a car crash)

Risks if you have never smoked

- Radon level of 4 pCi/L:
about 7 of 1000 people could get lung cancer
if exposed over lifetime
(less than the risk of dying in a car crash)
- Radon level of 8 pCi/L:
about 15 of 1000 people could get lung cancer
if exposed over lifetime
(about same risk of dying in a car crash)
- Radon level of 20 pCi/L:
about 36 of 1000 people could get lung cancer
if exposed over lifetime
(3 times risk of dying in a car crash)



Source: US EPA 2006, <https://www.epa.gov/radon/citizens-guide-radon-guide-protecting-yourself-and-your-family-radon>

How does radon enter the home?

Radon enters the building through small cracks of building soil slabs & walls, construction joints, and gaps around pipes.



Buildings trap radon inside, where it can build up if there is inadequate circulation and ventilation.

Periodic cross-ventilation (several times a day for 3-5 minutes) allows regular air exchanges and reduces radon concentrations significantly.

This also lowers CO₂ concentrations and humidity, which also have positive health effects.



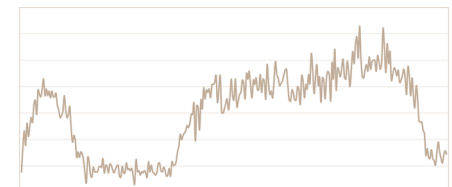
Influences on indoor radon

Evaluation by experts

Radon concentrations in indoor air depend on many factors:

The geological conditions determine the source of radon. The permeability of soils influences the migration of radon to the buildings. The tightness of the building dictates how much radon can enter the building.

Radon also shows large variance based on seasonal and weather conditions: indoor and outdoor temperature, atmospheric pressure, humidity etc.



Legal background

Radon is not in the Final Governing Standards (FGS) for Germany. This means there is no requirement for an official radon monitoring program.

The Army Radon Reduction Program was also removed from Army Regulation 200-1. Currently, only a Department of Army Pamphlet (17 Jan 2002) provides guidelines based on US Environmental Protection Agency (EPA) recommendations.

In the US, the EPA has established a reference value for radon of up to 4 pCi/L as a general low risk exposure limit.

Since December 2018, Germany established a reference level of 8.1 pCi/L as a low risk exposure limit for work places and buildings with public access.

Radon testing

Providing a Safe Environment for our Community

Despite no formal requirement to test, USAG Rheinland-Pfalz performs proactive radon sampling. Data for specific buildings can be requested through the Public Works Environmental Division.

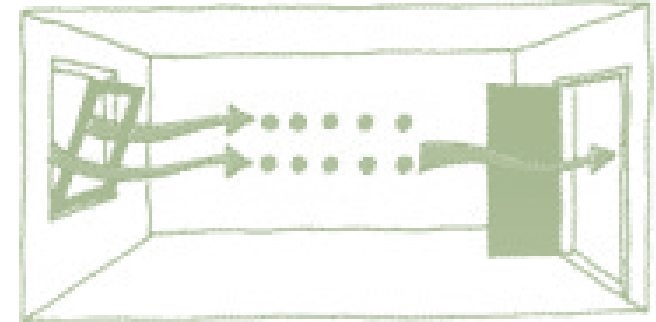
Radon sampling is performed in two different ways, to include short-term (3 month) and long-term monitoring (1 year).

As radon concentrations vary due to seasonal weather changes, the 1 year monitoring method is the preferred approach to obtain the most representative values.



Radon mitigation

If radon concentrations above the recommended levels are confirmed, the easiest and most efficient corrective action is always to ventilate the concerned rooms.



If ventilation is not sufficient, technical solutions can be considered, e.g. sealing cracks and openings, technical ventilation, soil slab suction, positive pressure etc.

Retesting for radon is required to verify the success of the mitigation.



New buildings can be built with radon resistant features. This can include radon caulking, installing a radon drainage, or other technical solutions.