



Work towards SDG 3 calls for reducing illnesses and deaths from environmental hazards. Radon gas is released by bedrock and can travel up through soil and into homes. Because radon is clear, odorless, and tasteless, most people do not realize when they are being exposed. Radon is one of the leading causes of lung cancer in the United States, second only to smoking. To protect communities, scientists are working to identify and map where radon risks are highest so people can test their homes, raise awareness, and take action to reduce radon levels indoors.

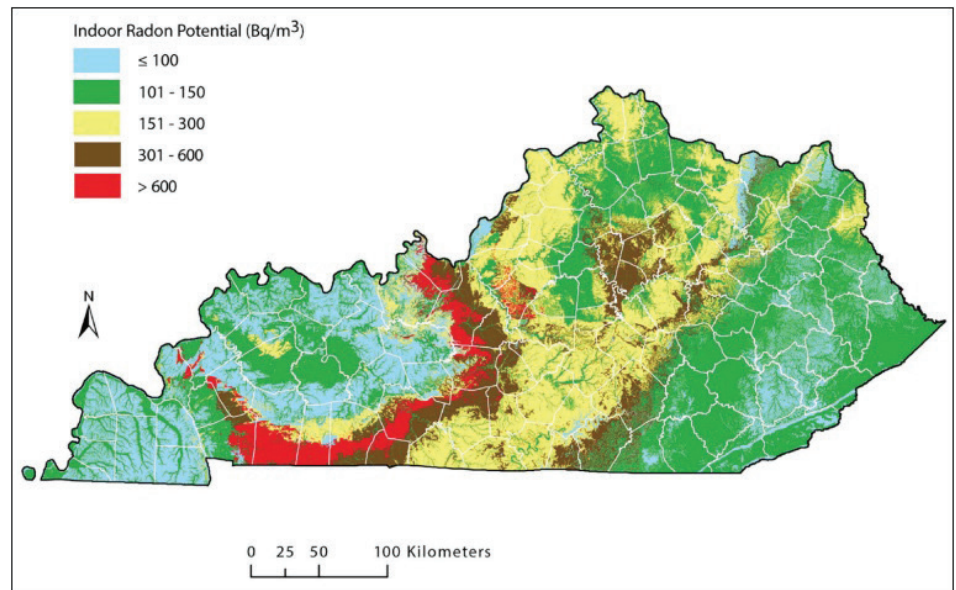


Credit: UN Photo

Project Summary

Some rocks in Kentucky, such as black shale and phosphate-rich limestone, contain more radioactive uranium than other rock types. This uranium decays over time, forming radon gas that can travel up and out of the soil. If a home is built above an area where radon is released, dangerous levels of radon can accumulate within that home, posing a health risk to those who live there.

To better understand where radon might be concentrated, scientists use drones equipped with gamma spectrometers. These drones collect data about rock layers, faults, and sinkholes that influence soil radon levels. The Kentucky Geological Survey worked with the University of Kentucky's BREATHE program to create the most detailed radon risk map in the United States. This map combines over 70,000 home radon test results with the state's geologic data. The map is online, easy to search, and uses colors to show high-, medium-, and low-risk areas.



Credit: Map of Kentucky showing indoor radon concentration potential in becquerels per cubic meter [Bq/m³]. (Hanneberg et al., 2020). © Kentucky Geological Survey, under a CC BY-NC 4.0 license.

The goal is to build even more detailed “micro-maps” showing where radon risks are the highest. Maps like this can help residents understand their potential radon exposure, identify where testing is most needed, as well as where to install systems that reduce radon levels. The methods used in Kentucky can also be applied around the world in areas with uranium-rich rocks.

Sharing this work with the public has been an important step. Community workshops and training activities help people learn how geology connects to health. Expanding these programs, and even adding geology or emphasizing lessons in schools, can build a stronger understanding of geohazards and public health at both local and global levels.