



European Radon Solutions Database

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Existing Buildings

Case Study

Sheet N°

MB24

MB25

Type

Sealing of different parts of building structure.

Country

Poland

Illustration



Description

This project comprises single family house, built in 1930, located in Piekary Slaskie in Upper Silesia (South Poland). Constructed with bricks and in-situ concrete ground floor.

Investigated building is situated in area strongly affected by mining activity. Damages of building structure caused by the effects of subsiding of surface such as cracks and fissures were observed. Radon concentration was measured before and after mentioned above damages were repaired.

These house therefore offer a useful comparison for measurements taken in the house in the area affected by mining..

Selection

In the vicinity of investigated building one underground coal mine is operating. Several years ago another mine was operating in the area, exploiting zinc and lead ores. Radon in soil concentrations measured in this part of Upper Silesia were higher than in others regions. Building structures of numerous houses in this area are damaged by the effects of mining activity. We assumed that fissures and cracks make gases entering into building very easy. We chose one family house located over excavations of coal mine. The owner of the building showed us fissures in slabs, roofs in the basement and in the chimney and ventilation duct. Fissures in ventilation duct were observed not only on the ground floor, but on the higher floors as well.

Radon concentrations had been measured at the basement, at the ground floor and at the first floor before the damages were repaired. At the same sites radon measurements were repeated after reparation of the damages.

Diagnosis before reparation of the building

The only diagnosis testing carried out was the radon measurement in each floor of the building

Radon reduction achieved

Radon level before :	Basement	798 Bq/m ³
	Ground floor	
	Main bedroom	312 Bq/m ³
	Living room	371 Bq/m ³
Radon level after :	First floor	
	Bedroom	402 Bq/m ³
	Basement	170 Bq/m ³
	Ground floor	
	Main bedroom	120 Bq/m ³
	Living room	100 Bq/m ³
	First floor	
	Bedroom	40 Bq/m ³

Re-testing has shown that the reparation (sealing) of fissures in building structure is having a significant effect on reduction of radon concentration in the building

Problems

After the building was repaired, radon level is kept at the permissible level. However, there could be a problem in the future because coalmine is still operating and new damages could appear. Therefore measurements of radon level should be systematically repeated.

System enhancements

Described example showed that very simple measures are good enough to prevent entering of radon into buildings. Therefore we use to advice people living in the areas affected by mining to remove all damages which unable entering gases from the soil and under laying strata. Up to now we didn't measure radon concentrations in buildings higher than 300-500 Bq/m³ (higher concentrations were measured in basements) therefore proposed prevention was adequate and sufficient.

Further Information

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