

NEU Guidance for Members, Reps and Local Officers

This briefing gives NEU guidance on radon, and preventative measures that should be taken in schools to avoid exposure.

What is radon?

Radon is a naturally occurring clear, odourless radioactive gas that escapes naturally from the rock beneath the earth's surface and can seep out of the ground and build up in houses and indoor workplaces. Radon (more properly known as radon-222) is itself a 'decay' product of radioactive uranium and is naturally found in rocks such as granite, which is why radon is found at high levels in Cornwall. Most radon gas breathed in is immediately exhaled and presents little radiological hazard. However, the decay products of radon are radioactive. Radon contributes by far the largest component of background radiation dose received by the UK population and, while the largest radon doses arise in domestic dwellings (due to the longer time spent there), significant exposures are possible in workplaces.

What is the health risk of exposure?

The solid decay products attach to atmospheric dust and water droplets which can then be breathed in and become lodged in the lungs and airways. Some decay products emit particularly hazardous radiation called alpha particles which cause significant damage to the sensitive cells in the lung and can be deadly. Radon is now recognised to be the second largest cause of lung cancer in the UK after smoking. Lung cancer is also the biggest cause of cancer related death in the UK and only 5 per cent of all lung cancers are curable. The HSE acknowledges that approximately 2,000 people in the UK die from lung cancer linked to radon exposure each year. A recent study which pooled the results of 13 European case-control epidemiological studies of people exposed to radon at home (Darby et al, 2005) has confirmed the risks. However it should be noted that the study also showed that the risk from radon is approximately 25 times higher for cigarette smokers than for non-smokers.

What are the symptoms?

Unfortunately there is no research documentation of any short-term radon exposure symptoms at the levels likely to be found in homes or schools. There are no symptoms such as joint pain, intestinal problems, headaches or rashes associated with short term exposure at normal environmental levels. It would take years of exposure at relatively high levels before any symptoms occur and the only documented symptoms are those listed for [smoking induced lung cancer](#).

Workplaces which may be affected.

The UK has been extensively surveyed by Public Health England and British Geological Survey. The highest radon areas have been defined by Government as Radon Affected Areas and employers and householders can check if their workplace falls within one of these areas on the [interactive map](#). Employers can pay a small fee to carry out an [individual property search](#).

Radon exposure in schools

The legal background.

Under the Health and Safety at Work Act 1974, the employer is responsible for ensuring the health and safety of employees and protection from exposure to radon at work is specified in the Ionising Radiation Regulations 1999. These regulations apply to work areas where the level of radon exceeds a defined threshold. Where radon levels are found in excess of 400 Bq m⁻³ in the workplace, then the first approach should be to apply remedial measures to the building(s) to reduce radon levels to as low as is reasonably achievable. The employer may need to immediately take steps to manage occupational exposures pending any decision they may take to reduce the radon levels by engineered means. A Radiation Protection Adviser with radon experience should normally be consulted about how best to manage radon exposure.

The Management of Health and Safety at Work Regulations 1999 require the assessment of health and safety risks and this should include radon where the building is included in a Radon Affected Area. Radon Surveys should be conducted in any building or basement where its location and characteristics suggest that elevated levels may be found and significant exposures to employees and/or other persons are possible. Inexpensive surveys can be carried out by leaving small plastic passive detectors in rooms of interest.

Controlling radon levels in buildings.

New buildings can be protected during construction by installing a 'radon proof barrier/membrane' within the floor structure and, in more seriously affected areas, provision of a ventilated sub-floor void or a 'radon sump'

In existing buildings, it is not possible to provide a radon proof barrier and so alternative reduction measures are used depending upon the severity of the problem. Such measures include improved under floor and indoor ventilation in the area, sealing large gaps in floors and walls in contact with the ground, positive pressure ventilation of occupied areas, and installation of radon sumps and extraction pipework.

Further Guidance

General information on radon exposure can be found on the [HSE website](#).



RADON EXPOSURE IN SCHOOLS

CHECKLIST FOR NEU HEALTH AND SAFETY ADVISERS AND REPRESENTATIVES

1. Are there concerns about radon exposure from a school building, old or new, and has an initial search been undertaken to ascertain if the site is on a radon affected area?
2. If so has the employer provided you with the outcome of the risk assessments undertaken and the measures that have been put in place to prevent occupational exposure?
3. However, if these have not been done, has a radon survey been carried out to identify any buildings with an elevated radon level?
4. If there are elevated levels has the employer consulted with a radiation protection adviser on how best to manage the occupational exposure before taking remedial steps to reduce radon levels if they are found?
5. Following the completion of the work does the risk assessment set out criteria and a time frame for continued monitoring, and keep their applicability under review?
6. Does the risk assessment mention the need to remeasure radon levels if there are any major works carried out to the building?
7. Has the employer kept a record of any exposure events and a record of staff involved?
8. Have staff ensured that there is also a log of their exposure on their medical records?
9. Has the employer identified staff and pupils who live locally and who may also be receiving exposure at home which would increase their risk? Has the employer encouraged them to contact the local authority who often provide free domestic radon testing in radon affected areas?
10. Has the school organised a meeting for staff to have their concerns on any of these issues answered by an expert who can explain the risks and procedures involved?