KCC Health and Safety Standard

Radon

Introduction

The radioactive gas Radon is a hazard in many homes and workplaces. Breathing in radon is the second largest cause of lung cancer in the UK resulting in over 1000 fatal cancers per year. However, radon hazards are simple and cheap to measure and relatively easy to address if levels are high. Under UK regulations all employers must review the potential radon hazard in their premises.

Radon is a colourless, odourless, radioactive gas that occurs in rocks and soils, some building materials and water. The ground is the most important source as radon can seep out and build up in houses and indoor workplaces. The highest levels are usually found in underground spaces such as basements, caves and mines. High concentrations are also found in some buildings because warm air rising draws radon from the ground underneath buildings to enter through cracks and gaps in the floor.

Legal requirement

The Health and Safety at Work etc Act 1974 - employers must, so far as is reasonably practicable, ensure the health and safety of employees and others who have access to their work environment.

The Management of Health and Safety at Work Regulations 1999 - require the assessment of health and safety risks and this should include radon in the following circumstances:

- all below ground workplaces in the UK as detailed above; and
- all workplaces located in radon Affected Areas.

The Ionising Radiations Regulations 2017 (IRR17) - come into effect where radon is present above the defined level of 300 Bq/m3 (as an annual average) and employers are required to take action to restrict resulting exposures.

Who should follow this health and safety standard?

Employers responsibility - In the case of any workplace, it is the employers responsibility to meet the requirements of applicable health and safety legislation. Anyone due to their role, who has a responsibility for premises management should be aware of and adhere to this Standard.

KCC Health and Safety Standard

Radon

Management expectations within KCC – responsibilities:

Premises 'at risk' of Radon exposure

The following types of premises should be considered 'at risk' from Radon exposure and be risk assessed (including onsite measurement of Radon levels) for the potential of Radon exposure to employees:

Above ground workplaces - for the vast majority of above ground workplaces, the risk assessment should include radon measurements in appropriate ground floor rooms where the building is located in a radon affected area according to the UK Health and Security Agency Radon website map (https://www.ukradon.org/on - Home). This map is divided into 1km grid squares and does not give information for individual buildings. If employers wish to be more specific, they may choose to consult the definitive UK Health and Security Agency online (a small fee is charged) to identify the affected area status of a particular building or buildings.

Below ground workplaces - for occupied below-ground workplaces (for example those occupied greater than an average of an hour per week or approximately 50 hours per year), or those containing an open water source, the risk assessment should include radon measurements. This applies to all below ground workplaces in the UK (basements, cellars, mines, caves, tunnels, etc), irrespective of the above ground affected areas status.

Kent County Council's Infrastructure in conjunction with Skanska will carry out a Radon risk assessment for all its premises either within a Radon affected area or any premises which has a below ground workplace as defined above. Anywhere where it has been estimated that there is more than a 1% chance of the property containing high levels of radon, based on the geology, is classified as a radon affected area.
Exposure to radon within affected buildings above the action level will be reduced to the lowest level reasonably practicable by:

- identifying and monitoring all County Council properties that may be affected by Radon, using the interactive search map on the UK radon website.
- ensuring all above ground premises showing 1-3% probability range and above have Radon levels monitored as part of the risk assessment.
- ensuring all below ground workplaces as defined previously, are monitored irrespective of the above ground Affected Areas status.
- developing and maintaining records of radon gas levels in the Council's premises
- maintaining a central database of all records relating to monitoring.

- consulting, where necessary, with a recognised Radiation Protection Adviser (RPA)
- providing suitable information and advice to employees and other persons likely to be exposed to levels of radon gas in the Council's premises.
- ensuring that any remedial measures put in place to reduce the level of radon in a property are monitored and maintained effectively.
- reviewing the policy, procedures and risk assessments as required.

Radon Risk Assessment and Monitoring

Radon risk assessments including the results of monitoring will be completed for all Kent County Council 'at risk' buildings.

All Radon monitoring is carried out using dose meters that are placed at selected locations within the building. This can be done by sending the monitors to the building managers/headteachers of the selected locations, providing clear instructions and relevant information on the use of the monitors and placement. Alternatively, they can be placed by selected individuals who have the required knowledge of where to place. Once dose meters have been purchased, they will only have a relatively short shelf life and will need to placed quickly.

The risk assessments should inform the priority of distribution based on:

1. high radon readings from any previous monitoring
2. premises located in a high probability Radon area based on UK Radon maps
3. any premises with an occupied basement as defined above, for below ground workplaces.

Measurements are made over a period of 3 months after which the detectors are posted back to the supplier who then provides the report with results. Results will be adjusted to take account of seasonal variations.

Where workplace measurements show radon levels below 300 Bq/m3 then the only further action required is to periodically review the Radon Risk Assessment.

Buildings with Radon measurements above the recognised action level

Where an existing building has been shown, through monitoring, to have a radon level above the recognised action level (300 Bq/m3), remedial measures will be considered and implemented as soon as is reasonably practicable. Any such

measures will be appropriate to the levels of radon detected, the type of building affected and the occupancy rates. A Radiation Protection Adviser (RPA) with radon experience should normally be consulted about how best to manage radon exposures.

Remedial work

Remedial work will be undertaken at any place of work where the radon concentration exceeds the action levels recommended by Public Health England. For any engineering controls to immediately reduce the radon exposures, a specialist radon removal (remediation) contractor will need to be consulted. After remedial measures have been installed to reduce the level of radon in a premise the radon level will be immediately monitored to show that such measures are functioning correctly and effectively Premises where remedial measures are in place to reduce the level of radon will be monitored on a regular basis to ensure that such measures remain effective.

Access control

Where satisfactory reduction cannot be achieved the premises or specific areas of premises may need to be subject to access controls to limit any levels of exposure. A risk assessment will be undertaken based on information and guidance from Public Health England to identify the safe access/expose time (hours and minutes) per week individuals will be allowed access to these areas. Detailed records of the amount of time individuals spent within these areas must be kept up to date to ensure time limits are not exceeded.

Regular Review

As with all health and safety risk assessments, Radon risk assessments need to be kept under review. Where significant changes are made to the fabric of a building or to the work processes carried out within it, then the need to re-measure the radon levels should be considered. In any case, it is still good practice to assign a maximum period upon which remeasurement of the radon levels will occur. The HSE guidelines suggests the following frequency of any re-measurements,:

- where radon levels were found to be significantly less than 300 Bq/m3 at the initial measurement, the period of remeasurement might be of the order of once every 10 years.

- where radon levels were just below 300 Bq/m3 at the initial measurement, the suggested period for remeasurement will be less than 10 years.
- where radon levels were above 300 Bq/m3 at the initial measurement and measures have been taken to reduce radon exposures (such as engineered systems or occupancy restrictions), the remeasurement periods may need to be significantly more frequent in order to verify their continuing effectiveness.

However, as an organisation Kent County Council expects a review of the Radon risk assessments to be undertaken every 3 years. This will include:

- Consulting the latest Radon maps
- Measuring Radon levels in all 'at risk' premises
- Reviewing effectiveness of control measures in premises where the initial readings were above the action level.
- Documenting all risk assessment reviews

Summary

Radon is a naturally occurring radioactive gas, which with sufficient exposure can cause serious health effects. Kent County Council has a moral and legal duty to identify, and risk assess premises which may be affected. Radon monitoring must be carried out in the identified premises and where necessary remedial action taken to reduce levels to below 300bq/m3. Risk assessments and local Radon information must be kept under review.

Additional information

The Management of Health and Safety at Work Regulations - The Management of Health and Safety at Work Regulations 1999 (legislation.gov.uk)

The Ionising Radiations Regulations 2017 (IRR17) - The Ionising Radiations Regulations 2017 (legislation.gov.uk)

Radon in the Workplace – HSE - Radon in the workplace (hse.gov.uk)

UK Health and Security Agency – Radon - UKradon - Introduction

KCC Health and Safety Standard

Radon

Appendix 1 - Radon Monitoring Procedural Arrangements with KCC

18/06/2024

KENT COUNTY COUNCILS RADON MONITORING PROCEDURAL ARRANGEMENTS

KCC Infrastructure team have appointed Skanska to provide a service through their supply chain and provide all necessary measures to monitor and check for **RADON** Gasses throughout Schools and our corporate building stock.

Since radon is invisible and has no odour or taste, testing for this is the only way **RADON** can be identified.

Since we are committed to the continued health and safety of our staff and pupils and tenants, we are conducting this testing as a precautionary measure.

To ensure the very success of this testing, it will last for a minimum of 12 weeks and during this period the following stages will be applicable:

KCC Health and Safety Standard

Radon

Sequence of events below:

Stage 1: Kent County Council (KCC) logged enquiry to UK Radon and request of the levels of Radon in the County of Kent.

Stage 2: Map received from UK Radon, overlaid the map with the properties which KCC are responsible for.

Stage 3: Based on the information from the overlaid map KCC prioritised Radon levels in low, medium, or high levels of risk and RAG rated each site.

Stage 4: KCC commissioned their FM provider (Skanska) to undertake Radon monitoring starting with high-risk areas taking priority KCC's appointed John Anderson as the project lead working with Skanska. KCC and Skanska issued a letter to all high-risk sites stating monitoring will be undertaken, the letter stated of pending detector placements and the length of the monitoring.

Stage 5: High risk site identified, KCC commissioned Skanska to ordered Detector order placed with UKHSA and an installation date is shared so the units can be dispatched to meet the 12-week site placement period. Tracker updated with installation dates, this is shared with KCC Health and Safety at the beginning of each month.

Stage 6: Skanska approved contractors to fit detectors on site and note locations which are relayed to UKHSA to follow processes. This is added to the tracker for updates.

Stage 7: Following a 12-week placement, units are collected and packaged and sent to UKHSA for analysis.

Stage 8: Where a building is located in an area with less than **1%** probability of Radon being present according to the HRA UK Radon Map, **NO** Radon Risk Assessment or further action will be required. However, any building located in areas shown to be **1% or above,** will require KCC to carry out monitoring and produce a Radon risk assessment for that building. Results of the monitoring will inform if any further action is required.

If Radon measurements are found to be below **300 Bq/m3** then no further action is likely to be necessary apart from recording the results within the risk assessment, which will be issued to the end user and held on KCC's RADON file for future reference or use. The risk assessment would then need to be reviewed approximately every 10 - Ten years and or, if there are significant changes to the workplace, structure or use.

Stage 9: Where an existing building has been shown, through monitoring, to have a radon level above the recognised action level (**300 Bq/m3**), remedial measures will be considered and implemented as soon as is reasonably practicable. Any such measures will be appropriate to the levels of radon detected, the type of building

affected and the occupancy rates. A Radiation Protection Adviser (RPA) with radon experience should normally be consulted about how best to manage radon exposures. If detection of high levels of RADON readings is found and based on the buildings floor design and usage, a specialist surveyor will be engaged to design dispelling methods.

Stage 10: Analysis takes one month later, following analysis, a report by UKHSA is generated and sent to Skanska summarising findings and recommendations. This is added to the tracker for information.

Stage 11: Any critical high-risk sites to be priced for remedial works and submitted to KCC for approval and a tracker is formed for the programme of works high risk works will be completed within 1 year as per Radon regulations.

Stage 12: Recommendations made for testing regime based on reading results.

Example of recommendations

Red high level readings sites requiring remedials 1 year testing until levels drop

Amber Medium levels readings sites 5 year testing

Green Low level reading sites 10 year testing

Remedial Actions

If detection of high levels of **RADON** readings is found and based on the buildings floor design and usage, a specialist Design Engineer based in Extraction design techniques will be engaged to mitigate **RADON GAS** dispelling methods . For readings greater than or equal to **1000 Bq m-3** advice from UKHSA will be sought. Surveyor determinations will be made for: o Floor type Solid or Suspended o Reading Level 500 Bq m-3 o Sump Fan Required Active or Passive o Ventilation Positive (fan) – Passive (venting grilles) o Basement Yes/No o Basement Usage Storage or Occupied o Basement Considerations Occupancy -duration/windows

Floor type	Solid		Suspended	
Radon level* (Bq m^{-3})	Under 500	Over 500	Under 500	Over 500
Recommended solutions, best first	Radon sump or Positive ventilation	Radon sump	Natural under-floor ventilation or Positive ventilation	Mechanical under-floor ventialtion or Natural under-floor ventilation