



The UK Health Security Agency's (UKHSA) Personal Dosimetry Service (PDS) provides a personal radon dosimetry service based on poly(allyl diglycol carbonate) (PADG, also called CR-39).

The radon dosimeter is designed to be worn by individual workers to measure the time integrated activity concentration of radon gas being inhaled. The PDS radon dosimeter service is approved by the Health and Safety Executive under Regulation 36 of the Ionising Radiations Regulations 2017.

Specification overview

Radon risk is typically elevated in localities referred to as Radon Affected Areas (RAAs). However, it is important to understand that radon can have an elevated risk regardless of the local RAA status, especially in underground environments such as caves, mines, tunnels, large basements and other subterranean workplaces.

Employers who have a radon hazard should initially contact the UKHSA Radon Group, who will visit the work or home environment to monitor radon gas levels and provide advice on necessary remedial work to reduce radon levels. This may include the recommendation to access our radon dosimeter service.

If radon is identified, doses to individual workers need to be kept under review to ensure that any potential radon exposure is maintained at acceptable levels. Should doses to workers foreseeably exceed 6mSv per year, this should be classified under Regulation 21 of IRR17.

The PDS radon service provides monitoring of the individual to measure the exposure they receive whilst working. This service is separate from the standard measurements and remediation advice for dwellings and workplaces offered by UKHSA's specialist radon group, which uses similar passive monitors to measure radon in the environment.

We will require the customer's Radiation Protection Advisor (RPA) to provide an equilibrium factor (F), which is specific to an environment and should remain relatively constant. In most cases this value will be between 0.3 and 0.9 and is dependent on the relative concentration of decay products of radon. When the value is not known, 0.9 will be used because it is close to the theoretical maximum. Further information regarding the equilibrium factor can be provided if required.

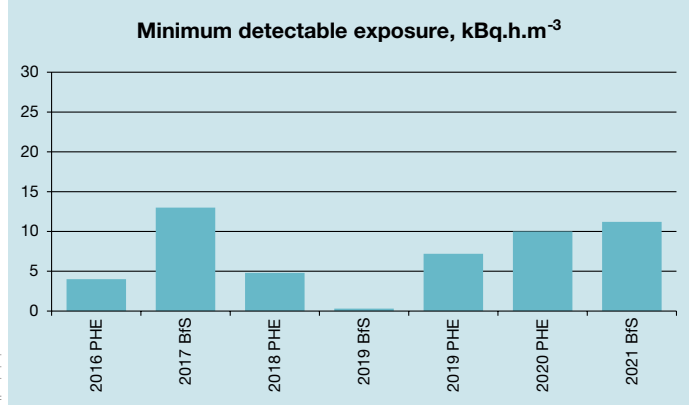
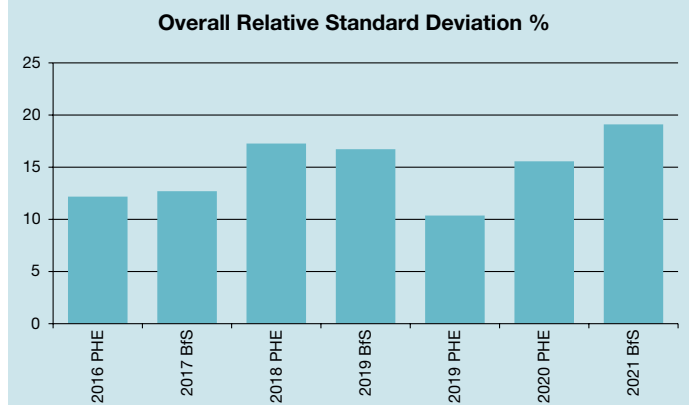
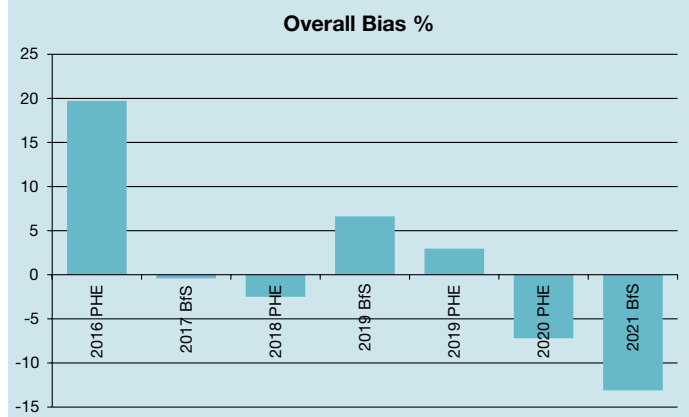


An underground worker wearing a personal radon dosimeter

The radon dosimeter service is just one of the approved dosimetry services offered by the UK Health Security Agency and can be linked to our dose record keeping service via an automated system. The processing laboratory is based at our centre in Oxfordshire. For further information or to place an order please contact:
 Tel: +44 (0)1235 825240
 Email: personaldosimetry@phe.gov.uk or personaldosimetry@ukhsa.gov.uk
www.ukhsa-protectionservices.org.uk/pds

Technical specification

PDS radon dosimetry demonstrates strong results in yearly inter-comparison tests, consistently showing a low percentage bias in the data, as well as acceptable precision.



Special features

The PDS radon dosimeter comprises a PADC detector element encapsulated in a polypropylene holder, which is worn by the worker, as close to the face as possible, as it is measuring the radon exposure from inhaled air. It is a passive device for the detection of ²²²Rn gas, where diffusion is enabled through the small gaps between the upper and lower halves of the dosimeter holder.

The dosimeter employs PADC to record tracks from alpha particles produced by the radioactive decay of radon. PADC is processed using the electro-chemical etching method. Electro-chemical etching of the PADC element develops the invisible 'damage' tracks from alpha particles, making them visible and thereby enabling an automated scanner to count the number of tracks with the total count being proportional to the dose.

Each dosimeter is labelled with a unique number, start-of-wear date and wearer name. The dosimeter comes in a bright-yellow holder and is tamper- and splash-proof, enabling it to withstand rough treatment, making it well suited for its purpose.

PDS provides customers with five control dosimeters per site, which should be stored at a workplace station where all worn dosimeters are kept when not being worn by workers. This workplace station should be in an environment where radon levels are known to be low, to ensure that any necessary corrections are small as a result.

