

# Radiation Protection

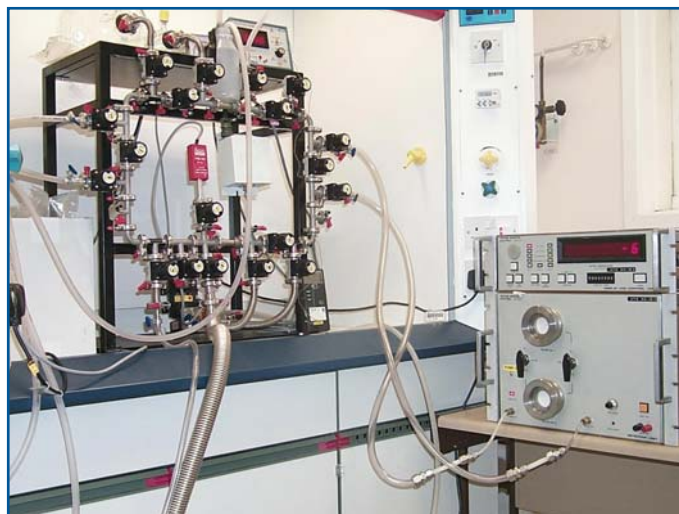
**Ionising radiation has many applications, ranging from nuclear medicine to the nuclear power industry.**

**This project is concerned with the radiation protection of workers and of the general public. It includes the provision of primary standards for radioactivity in air, including a new standard for the growing field of Positron Emission Tomography.**

Airborne radioactivity is a hazard to people working with radioactivity and also to the general public.

Included in this project is the provision of primary standards of man-made gaseous radionuclides ( $^3\text{H}$ ,  $^{85}\text{Kr}$  and  $^{133}\text{Xe}$ ) and re-establishing a regular supply of primary standards of radon (radon is a naturally-occurring radioactive gas; it contributes approximately half of the total radiation dose to the general public). These standards underpin the calibration of all the radioactivity-in-air monitors in the UK.

Positron Emission Tomography (PET) is receiving increasing attention as an imaging modality for oncology, and there is considerable investment at present in new PET Centres at hospitals throughout the UK. The positron-emitting radionuclides (eg,  $^{18}\text{F}$ ) used for PET are short-lived, and are produced using cyclotrons situated close to the hospital. There is a need for a positron-in-gas standard to test the instruments used to monitor possible emissions of these radionuclides into the environment; NPL (in collaboration with the University of Surrey) is aiming to produce the world's first primary standard of this type.



*The rig used at NPL for calibrating radioactivity-in-air monitors*

The adoption of best practice will be encouraged through the Airborne Radioactivity Monitoring Users Group and the publication of a Measurement Good Practice Guide for the relevant instrumentation.

For further information on the Ionising Radiation Programme please visit: <http://www.npl.co.uk/ionrad> or contact one of our experts via e-mail ([radioactivity@npl.co.uk](mailto:radioactivity@npl.co.uk))