

# Advanced dosimetry service tracks radiation workers' exposure

In a first for South Africa, an accredited independent dosimetry service has been established to monitor and track occupational radiation exposure using advanced optical stimulated luminescence (OSL) technology, helping employers across the country to safeguard radiation workers.



Source: Supplied. Dr Koranteng, Sr Adrigwe and Dr Mutshutshu.

A 51% black women-owned partnership is breaking into the healthcare value chain using this advanced, world-class radiation monitoring technology in South Africa.

“OSL technology has become the international standard in personal radiation monitoring, however previously there was no approved local provider of personal radiation monitoring devices using this advanced technology,” explains radiologist Dr Nonceba Koranteng, co-owner of Dosimeter Services.

Dosimeter Services has been accredited (T908) by the South African National Accreditation System (Sanas) and approved by the South African Health Products Regulatory Authority (SAHPRA) as a radiation control (DS0908) dosimeter service provider. The company is a member of the steering committee for the National Dose Registry: National Nuclear Regulator (NNR) and meets all the requirements for the submission of radiation worker doses to the National Dose Registry.

Through an innovative enterprise and supplier development partnership, healthcare group Netcare and RAD Imaging Africa,

jointly owned by radiologists Dr Koranteng, Dr Palesa Mutshutshu, and Dr Jacintha Adrigwe, have teamed up to fulfil the crucial need for monitoring the doses of professionals that may be exposed to radiation due to their work practices.

By tracking monthly, annual and lifetime exposure, Dosimeter Services ensures that doses are monitored and reported to the companies which use their services. This is done to ensure that individual workers operate within safe regulated limits. Currently, Dosimeter Services continuously monitors 2,750 radiation workers in both public and private health facilities and industry across the country, with capacity to expand the service.

## A shared passion

Having initially met while undergraduates at the University of Witwatersrand (Wits), the three women behind RAD Imaging Africa met up again when they registered as registrars through the Wits radiology department.

“We dreamed of starting our own radiology practice, but soon realised it would require huge start-up capital and that there is a lot of competition in this space already,” says Mutshutshu.

“Radiation forms a critical, and increasingly important part of modern medicine and medical technologies with therapeutic applications in the treatment of certain kinds of cancers and is also essential to diagnostic radiology technologies including x-ray and computed tomography (CT),” says Adrigwe.

Radiation workers may include radiation oncologists, surgeons, interventional specialists, nurses, medical physicists, radiologists, radiographers and other medical practitioners working in hospitals as well as workers providing services in industrial applications where radiation monitoring is required.

“As medical radiation workers ourselves, we understand the importance of monitoring occupational exposure accurately and reliably. There is a great responsibility on employers in the industry to ensure regulatory compliance in keeping exposure within the set limits,” Adrigwe adds.

## A need and a niche fulfilled

Meanwhile, the medical physicists working at Netcare hospitals, developed, commissioned and successfully accredited this advanced OSL technology in-house for radiation workers at Netcare. Hendrik de Vos, Netcare’s national medical physicist manager and co-director of Dosimeter Services, explains that Netcare places great emphasis not only on the protection and safety of patients but is equally focused on safety of the healthcare workers who are exposed to radiation.



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“Previously, before using OSL technology, Netcare hospitals’ monitoring of radiation workers was outsourced, however we were actively investigating the possibilities of more reliable and advanced OSL technology for radiation monitoring and were engaging with regulators for approval in this regard.

At the time, no dosimetry provider was able to fulfil this need until our Netcare medical physicists commissioned the OSL technology and accredited the service locally. Netcare saw an opportunity to partner with the radiologists of RAD Imaging Africa to further develop and grow this service in South Africa while also facilitating broader participation in the healthcare supply value chain,” notes de Vos.

## More accurate monitoring

OSL technology offers a number of advantages including the ability to re-read the personal radiation monitoring devices (PRMDs) in order to have reproducibility in results.

Each radiation worker is issued with two PRMDs which they wear while performing their duties. While one PRMD is returned for analysis, the second PRMD will be worn to ensure continuity in the recording of radiation exposure and the cycle continues. The technology allows for timely reporting of doses, as per the regulatory requirement, yielding more consistently accurate readings and the ability to detect lower levels of exposure.

Dosimeter Services supplies, collects and analyses the PRMDs, and maintains comprehensive records to assist in the control of their clients' employees' radiation exposure. This helps employers to ensure that exposure is maintained at safe levels, and also ensures that radiation workers are at all times following safe practice, use the appropriate protective gear such as lead aprons, and are following correct operational procedures and techniques.

PRMD reports are accessible online from mobile devices which improves ease of use, access to data, cumulative record keeping, and efficient management of results, for all stakeholders.

As part of Dosimeter Services' responsibilities, it is also required to report any exposure exceeding occupational radiation dose limits to the South African Health Products Regulatory Authority (SAHPRA) Radiation Control.

## **Building inclusivity in SA health ownership**

Zimasa Sotshongaye, Netcare's general manager of transformation, enterprise and supplier development, congratulated Dosimeter Services on two years of solid, sustainable growth in strengthening the radiation protection options available to healthcare companies and radiation workers.

"As a level 2 B-BBEE Exempt Micro Enterprise [EME], Dosimeter Services is a fully compliant radiation dosimeter provider. As Netcare, we saw the opportunity to broaden participation in the supply chain through assisting the company with a security-free and interest-free loan," Sotshongaye says.

"The first two years is the most vulnerable time for a small emerging business, and so the conditions of the loan provide for a two-year period without the need for the new entity to make any repayments. The aim is to ensure that the business can sustain itself before servicing debt.

"We are extremely proud to be contributing to the safety of fellow radiation workers through this advanced monitoring technique and building a legacy towards a more equitable economy of health in our country," Koranteng concludes.

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