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Abbreviations

ACDS	Australian Clinical Dosimetry Service
ANAO	Australian National Audit Office
ANM Facility	Nuclear Medicine Molybdenum-99 Production Facility
ANRDR	Australian National Radiation Dose Register
ANSTO	Australian Nuclear Science and Technology Organisation
APS	Australian Public Service
ARGOS	Accident Reporting and Guidance Operating System
ARIR	Australian Radiation Incident Register
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
BIPM	Bureau International des Poids et Mesures,
BSS	Basic Safety Standards
CEO	Chief Executive Officer
CoI	Conflict of Interest
CT	computed tomography
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
DRLs	diagnostic reference levels
ELF	extremely low frequency
EME	electromagnetic energy
EMERG	Electromagnetic Energy Reference Group
EMF	electric and magnetic fields
FMA Act	Financial Management and Accountability Act 1997
FOI	Freedom of Information
HIFAR	High-Flux Australian Research Reactor
IAEA	International Atomic Energy Agency
ICNIRP	International commission for Non-Ionizing Radiation Protection
ICRP	International Commission on Radiological Protection
ICT	information and communication technology
IM	information management
IPL	intense pulsed light
IRRS	Integrated Regulatory Review Service (IAEA)
IWS	Interim Waste Store
KPIs	key performance indicators
LHSTC	Lucas Heights Science and Technology Centre
linac	medical linear accelerator
MDCT	multidetector computed tomography
MoU	Memorandum of Understanding
NATA	National Association of Testing Authorities
NDRP	National Directory for Radiation Protection
NSC	Nuclear Safety Committee
OBPR	Office of Best Practice Regulation
OPAL	Open Pool Australian Lightwater reactor
RF EMR	radiofrequency electromagnetic radiation
RHC	Radiation Health Committee
SES	Senior Executive Service
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UPF	Ultraviolet Protection Factor
WHO	World Health Organization
WHS	work health and safety

Glossary

absorbed dose

The energy absorbed per unit mass by matter from ionising radiation which impinges upon it.

accident

An unintended event which causes, or has the potential to cause, employees or members of the public to be exposed to radiation from which the individual doses or collective doses received do not lie within the range of variation which is acceptable for normal operation. An accident may result from human error, equipment failure or other mishap; it may require emergency action to save life or to safeguard health, property or the environment; it requires investigation of its causes and consequences and, possibly, corrective action within the program for control of radiation; and it may require remedial action to mitigate its consequences.

activity

The measure of quantity of radioactive decay.

air kerma

The measure of the kinetic energy of all charged particles liberated per unit of mass and released in a volume of air at some distance from a radioactive source.

AS/ISO

Standard established by Standards Australia and the International Organization for Standardization.

Australian National Radiation Dose Register

A centralised repository for the radiation dose records of workers as supplied by the employers, maintained by ARPANSA. It is currently limited to those engaged in the uranium mining and milling industry in Australia.

Code of Practice for radiation protection

A document prescribing specific requirements for radiation protection in a particular application.

computed tomography (CT)

A three dimensional x-ray image of an object or patient. The final image is a combination of multiple images taken as an x-ray tube rotates about the object or patient.

constraint

Either dose constraint in the case of exposures anticipated to be received, or risk constraint in the case of potential exposures (see dose constraint and risk constraint).

controlled apparatus – as defined in the ARPANS Act

- (a) An apparatus that produces ionising radiation when energised or that would, if assembled or repaired, be capable of producing ionising radiation when energised,

- (b) An apparatus that produces ionising radiation because it contains radioactive material, or
- (c) An apparatus prescribed by the Regulations that produces harmful non-ionising radiation when energised.

diagnostic reference levels (DRLs)

Dose levels for medical exposures in medical radio-diagnostic practices, or levels of activity in the case of radiopharmaceuticals, applied to groups of standard-sized patients or standard phantoms for common types of diagnostic examination and broadly defined types of equipment. These levels are expected not to be consistently exceeded for standard procedures when good and normal practice regarding diagnostic and technical performance is applied. DRLs will be set by relevant professional bodies and published by ARPANSA or the relevant regulatory authority from time to time.

dose

A generic term which may mean absorbed dose, equivalent dose or effective dose depending on context.

dose constraint

A prospective restriction on anticipated dose, primarily intended to be used to discard undesirable options in an optimisation calculation. In occupational exposure, a dose constraint may be used to restrict the options considered in the design of the working environment for a particular category of employee. In medical exposure, a dose constraint for volunteers in medical research may be used to restrict the options considered in the design of an experimental protocol. In public exposure, a dose constraint may be used to restrict the exposure of the critical group from a particular source of radiation.

dosimetry

The theory and application of the principles and techniques involved in the measurement, calculation and recording of radiation doses.

effective dose

A measure of dose which takes into account both the type of radiation involved and the radiological sensitivities of the organs and tissues irradiated.

electromagnetic energy

The energy stored in an electromagnetic field. Expressed in joule (J).

equivalent dose

A measure of dose in organs and tissues which takes into account the type of radiation involved.

exposure

The circumstance of being exposed to radiation.

Fluorine-18 (18F)

Short-lived radiopharmaceutical isotope used in positron emission tomography (PET scans) as a radioactive tracer in patients. Fluorine is usually manufactured in a cyclotron.

extremely low frequency radiation

Has very long wavelengths (in the order of a thousand kilometres or more) and frequencies in the range of 100 hertz or less.

gamma ray

Ionising electromagnetic radiation emitted by a radionuclide during radioactive decay or during a nuclear (isomeric) transition.

incident

An event which causes, or has the potential to cause, abnormal exposure of employees or of members of the public and which requires investigation of its causes and consequences and may require corrective action within the program for control of radiation, but which is not of such scale as to be classified as an accident.

Integrated Regulatory Review Service

A peer review and appraisal service offered by the IAEA to strengthen and enhance the effectiveness of a national regulatory system in nuclear, radiation, radioactive waste, transport safety and nuclear security.

Intense Pulsed Light Devices (IPLs)

Instruments that use a full spectrum (noncoherent), non-laser, broadband, filtered Xenon flash lamps. Flash lamps emit in the UVR, visible and IR region of the electromagnetic spectrum. The UVR and IR wavelength components of the emissions are blocked using specific cut-off filters. These properties allow for variability in selecting individual treatment parameters and adapting to different skin types. Cosmetic uses of IPLs include hair removal, removal of skin pigmentation, wrinkles and the treatment of certain skin disorders by dermatologists.

ionisation

The process by which one or more electrons are removed from, or sometimes added to, an atom leaving the atom in a charged state.

ionising radiation

Radiation which is capable of causing ionisation.

optically stimulated luminescence dosimetry

A method of measuring the dose of ionising radiation which uses storage of energy in a crystal lattice by the ionising radiation and the release of that energy by optical stimulation which yields light of a different frequency.

ISO Series

Internationally accepted standards developed by the International Organization for Standardization which is a network of the national standards institutes of 157 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system.

justification

The notion that human activities which lead to exposure to radiation should be justified, before they are permitted to take place, by showing that they are likely to do more good than harm.

licence

A written authorisation issued to an operator which allows the operator to carry out an operation legally.

limitation

The requirement that radiation doses and risks should not exceed a value regarded as unacceptable.

linac – linear accelerator

An electrical device used to produce highly penetrating radiation beams. Frequently employed for the treatment of cancer or research.

medical exposure

Exposure of a person to radiation received as a patient undergoing medical diagnosis or therapy, or as a volunteer in medical research, or non-occupational exposure received as a consequence of assisting an exposed patient.

non-ionising radiation

Ranges from extremely low frequency radiation, through the radiofrequency, microwave, and visible portions of the spectrum into the ultraviolet range.

occupational exposure

Exposure of a person to radiation which occurs in the course of that person's work and excludes the the component of exposure that arises from natural background radiation.

operator

Any person or entity responsible for an operation which may lead to exposure to ionising radiation.

optimisation

The process of determining what level of radiation protection and safety makes exposures, and the probability and magnitude of potential exposures, as low as reasonably achievable with economic and societal factors being taken into account.

public exposure

Exposure of a person, or persons, to radiation which is neither occupational nor medical exposure.

radiation

Electromagnetic waves or quanta, and atomic or sub-atomic particles, propagated through space or through a material medium.

radioactive material

Material which spontaneously emits ionising radiation as a consequence of radioactive decay.

radiofrequency

Electromagnetic energy with frequencies in the range 3 kHz to 300 GHz.

radiofrequency field

A physical field, which specifies the electric and magnetic states of a medium or free space, quantified by vectors representing the electric field strength and the magnetic field strength.

radiological emergency

An emergency in which there is, or is perceived to be, a hazard due to:

- (a) the energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction, or
- (b) radiation exposure.

radionuclide

A species of atomic nucleus which undergoes radioactive decay.

radiopharmaceutical

A radioactive pharmaceutical administered to patients for medical diagnosis or therapy.

Regulatory Impact Statement

A Regulatory Impact Statement (RIS) is required, under the Australian Government's requirements, when a regulatory proposal is likely to have significant impacts on business and individuals or the economy. The primary role of the RIS is to improve government decision-making processes by ensuring that all relevant information is presented to the decision maker when a policy decision is being made. A RIS is prepared for each of ARPANSA's Codes of Practice and Standards and contains a cost benefit analysis.

solaria

Salons for artificial sun tanning through exposure to ultraviolet radiation.

Synchrotron

A giant particle accelerator capable of creating light beams a million times brighter than the sun to examine the sub microscopic structures.

Tellurium (Te)

Chemical element which is used as a target in the OPAL reactor to produce radioiodine for nuclear medicine.

UV Index Data

Simple numerical indication of the maximum solar UVR during the day, the higher the number, the higher the UVR hazard. The UV index is calculated from data collected by broadband detectors which measure the UV radiation from the sun. It is a scale primarily used in daily forecasts aimed at the general public.

X-ray

Ionising electromagnetic radiation emitted during the transition of an atomic electron to a lower energy state or during the rapid deceleration of a charged particle.