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Abbreviations

ACDS	Australian Clinical Dosimetry Service
ANRDR	Australian National Radiation Dose Register
ANSTO	Australian Nuclear Science and Technology Organisation
APS	Australian Public Service
ARGOS	Accident Reporting and Guidance Operating System
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASNO	Australian Safeguards and Non-Proliferation Office
BSS	Basic Safety Standards
CEO	Chief Executive Officer
COAG	Council of Australian Governments
CPRs	Commonwealth Procurement Rules
CSIRO	Commonwealth Science and Industrial Research Organisation
CT	computed tomography
CTBT	Comprehensive Nuclear-Test-Ban Treaty
DRLs	diagnostic reference levels
ELF	extremely low frequency
EMF	electric and magnetic fields
EMR	electromagnetic radiation
FMA Act	<i>Financial Management and Accountability Act 1997</i>
HIFAR	High-Flux Australian Research Reactor
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IM	information management
IRRS	Integrated Regulatory Review Service
IWS	Interim Waste Store
KPIs	key performance indicators
linac	medical linear accelerator
MODARIA	Modelling and Data for Radiological Impact Assessments (IAEA)
NATA	National Association of Testing Authorities
NDRP	<i>National Directory for Radiation Protection</i>
NEWDB	Net Enabled Waste Management Database
NRWMF	National Radioactive Waste Management Facility
NSC	Nuclear Safety Committee
OPAL	Open Pool Australian Light-Water reactor
PPSWG	Physical Protection and Security Working Group
PRMS	Personal Radiation Monitoring Service
RANET	Response and Assistance Network (IAEA)
RF EME	radiofrequency electromagnetic energy
RHC	Radiation Health Committee
RPS	Radiation Protection Series
SMC	Strategic Management Committee
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UPF	ultraviolet protection factor
UVR	ultraviolet radiation
WH&S	Work Health and Safety
WHO	World Health Organization

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 energy 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

Pictures of structures within the body created by a computer that takes the data from multiple x-ray images and turns them into pictures.

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.

controlled material – as defined in the ARPANS Act

Any natural or artificial material, whether in solid or liquid form, or in the form of a gas or vapour, which emits ionising radiation spontaneously.

Design Basis Threat (DBT)

A description of the attributes and characteristics of potential insider and/or external adversaries who might attempt unauthorised removal of nuclear material or sabotage against which a physical protection system is designed and evaluated.

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 standardised 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.

dosimeter

An instrument used to determine the presence and sometimes the amount 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 which takes into account the type of radiation involved.

exemption

The deliberate omission of a practice from regulatory control, or from some aspects of regulatory control, by the appropriate authority.

exposure

The circumstance of being exposed to radiation.

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.

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

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.

linear accelerator

Linacs have numerous applications: they generate x-rays and high energy electrons for medicinal purposes in radiation therapy, serve as particle injectors for higher-energy accelerators, and are used directly to achieve the highest kinetic energy for light particles (electrons and positrons) for particle physics. They can also be used to produce highly penetrating radiation for calibrating radiotherapy dosimeters used in medicine for the treatment of cancer.

medical cyclotrons

A medical cyclotron is an electrical device for accelerating charged particles in a spiral fashion to high energies. The beams produced are used to manufacture Positron Emission Tomography (PET) radioisotopes which are subsequently injected into patients for medical imaging. The main clinical areas of diagnosis are oncology, cardiology and neurology.

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 which is not excluded exposure.

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.

radon

Radon is a radioactive noble gas which is part of the uranium decay chain. Radon and some of its decay products are alpha particle emitters. Radon decays to form a series of short-lived radionuclides: Po-218, Pb-214, Bi-214 and Po-214. If these radionuclides are breathed in, they can attach to the lungs and respiratory tract. The subsequent radiological dose is recognised as one cause of lung cancers (WHO 2009; ICRP 2010).

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.

system of radiation protection

A generic process of radiation risk management designed to limit the health risks arising from exposure to radiation to acceptable levels in a manner which takes economic and social considerations into account.

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.

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