Definitions

administrative control level (ACL)
A dose level that is established below the DOE dose limit in order to administratively control exposures. ACLs are multi-tiered, with increasing levels of authority required to approve a higher level of exposure.

ALARA
Acronym for “as low as reasonably achievable,” which is the approach to radiation protection to manage and control exposures (both individual and collective) to the workforce and the general public to as low as reasonable, taking into account social, technical, economic, practical, and public policy considerations. ALARA is not a dose limit but a process with the objective of attaining doses as far below the applicable limits as is reasonably achievable.

average measurable dose
Dose obtained by dividing the collective dose by the number of individuals who received a measurable dose. This is the average most commonly used in this and other reports when examining trends and comparing doses received by workers, because it reflects the exclusion of those individuals receiving a less than measurable dose. In this report, average measurable dose is calculated for TED and CED.

collective dose
As used in this report, the term “collective dose” is the sum of doses to all individuals in a population for a period of time. The general term “collective dose” is used whenever the dose may refer to more than one type of dose. In cases where the type of dose is specified, the term “collective” is followed by the type of dose such as the TED, CED, or photon. In all cases, the population is the group of DOE workers that were monitored for occupational radiation exposure, and the period of time is the monitoring year. Collective dose is expressed in units of person-rem.

committed effective dose (CED) ($H_{E,50}$)
The sum of the committed equivalent doses to various tissues or organs in the body ($H_{T,50}$), each multiplied by the appropriate tissue weighting factor ($w_T$) (i.e., $H_{E,50} = w_T H_{T,50}$). CED is expressed in units of rem.

committed equivalent dose (CEqD) ($H_{E,50}$)
The equivalent dose calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide into the body. It does not include contributions from radiation sources external to the body. CEqD is expressed in units of rem.

DOE site
A geographic location operated under the authority of the DOE.

Effective Dose
The summation of the products of the equivalent dose received by specified tissues or organs of the body ($H_T$) and the appropriate tissue weighting factor ($w_T$) –that is, Effective dose = $\Sigma w_T H_T$. It includes the dose from radiation sources internal and/or external to the body. For purposes of compliance with this part, equivalent dose to the whole body may be used as effective dose for external exposures. The effective dose is expressed in units of rem (or Sievert [Sv]).

equivalent dose (EqD)
The product of average absorbed dose ($D_{TR}$) in rad (or gray) in a tissue or organ (T) and a radiation (R) weighting factor ($w_R$). For external dose, the EqD to the whole body is assessed at a depth of 1 cm in tissue; the EqD to the lens of the eye is assessed at a depth of 0.3 cm in tissue; and the EqD to the extremity and skin is assessed at a depth of 0.007 cm in tissue. The mathematical term is $H_T$, while the abbreviation EqD is used in this report and in the REMS reporting requirements for this data element. EqD is expressed in units of rem (or Sv).
**exposure**
Occupational exposure means an individual’s exposure to ionizing radiation (external and internal) as a result of that individual’s work assignment.

Occupational exposure does not include planned special exposures, exposure received as a medical patient, background radiation, or voluntary participation in medical research programs.

**Hanford**
This term is used to describe the entire reservation and all activities at this geographic location. It includes all cleanup activities at the reactors at the “Hanford Site,” ORP, and PNNL. This term is used when we are including Hanford Site, ORP, and PNNL.

- **Hanford Site**
  All activities at, and cleanup of, the reactors and 100–400 areas at the reservation. Does not include ORP and PNNL.

- **Office of River Protection (ORP)**
  Tank farm and liquid waste cleanup to protect the Columbia River.

- **Pacific Northwest National Laboratory (PNNL)**
  The national laboratory involved in a broad range of scientific research.

**measurable dose**
A dose greater than zero rem (not including doses reported as “not detectable”).

**member of the public**
Any individual not occupationally exposed to radiation or radioactive material, which either is not a DOE general employee or is an off duty DOE general employee. The definition of general employee is specified in 10 CFR 835.

**number of individuals with measurable dose**
The subset of all monitored individuals who receive a measurable dose (greater than the limit of detection for the monitoring system). Many personnel are monitored as a matter of prudence and may not receive a measurable dose. For this reason, the number of individuals with measurable dose is presented in this report as a more accurate indicator of the exposed workforce. The number of individuals represents the number of dose records reported. Some individuals may be counted more than once if multiple dose records are reported for the individual during the year.

**occupational dose**
Occupational dose is an individual’s ionizing radiation dose (external and internal) as a result of that individual’s work assignment. Occupational exposure does not include doses received as a medical patient or doses resulting from background radiation or participation as a subject in medical research programs.

**person-rem**
The unit of measurement used for the collective dose to all DOE employees, contractors and subcontractors.

**rem**
A unit of dose derived from the phrase roentgen equivalent man. The rem is equal to 0.01 sievert, which is the international unit of measurement for radiation exposure.
**total effective dose (TED)**
The sum of the effective dose from external sources and the CED from intakes of radionuclides during the monitoring period. The internal dose component of TED changed from the annual effective dose equivalent to the committed effective dose equivalent (CEDE) in 1993 and from CEDE to CED in 2007.

**total number of records for monitored individuals**
All individuals who are monitored and reported to the DOE Headquarters database system. This includes DOE employees, contractors, subcontractors, and members of the public monitored during a visit to a DOE site. The number of individuals represents the number of dose records reported. Some individuals may be counted more than once if multiple dose records are reported for the individual during the year.

**total organ dose**
The sum of the equivalent dose to the whole body for external exposures and the committed equivalent dose to any organ or tissue other than the skin or the lens of the eye.

**transient individual**
An individual who is monitored at more than one DOE site during the calendar year.

**urinalysis**
The technique of determining the amount of radioactive material in the urine excreted from the body.
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