

A Level 1 Heading

THIS PAGE CONTAINS A LEVEL 1 HEADING WHICH ACTIVATES THE APPENDIX LETTER IN THE PAGE NUMBER. THE HEADING 1 STYLE MUST BE MODIFIED IN ORDER TO CHANGE THE APPENDIX LETTER.

PLEASE RECYCLE THIS PAGE.

Appendix A

Glossary

Appendix A

Glossary

This glossary is a limited compilation of specialized terms used in this manual which are pertinent to internal dosimetry and, in particular, the Hanford Internal Dosimetry Program. It is not intended to be a general glossary of health physics or internal dosimetry definitions. For more detailed compilations or cross references for health physics definitions, see 10 CFR 835.2, the U.S. Department of Energy *Internal Dosimetry Program Guide* (DOE 1999a), and the DOE *Internal Dosimetry Standard* (DOE 1999b). Most terms used in this manual are generally consistent with standard technical usage by the International Commission on Radiological Protection (ICRP), National Council on Radiation Protection and Measurements, Health Physics Society, DOE, and the Nuclear Regulatory Commission.

absorption type

an ICRP 66 respiratory tract model concept describing the relative speed of dissolution and translocation to blood of material within the respiratory tract. It is related to the physical chemistry of the material. The ICRP 66 model defines three absorption types: type F (fast solubilization), type M (moderate rate of solubilization), and type S (slow solubilization).

bioassay

the determination of kinds, quantities, and, in some cases, locations of radioactive material in the human body, whether by direct (in vivo) measurement or by indirect analysis of material removed or excreted from the body.

burden

the instantaneous quantity of material in an organ or tissue of interest (e.g., lung, bone surfaces, whole body, wound site). Same as **retained quantity**.

committed dose equivalent, $H_{T,50}$ dose equivalent to an organ or tissue calculated for a 50-year period following an acute intake or onset of chronic intake. It does not include contributions from external dose.

committed effective dose equivalent, $H_{T,50}$	the effective dose equivalent calculated for a 50-year period following an acute intake or onset of chronic intake. It does not include contributions from external dose.
DAC-hours	the time- and concentration-integrated exposure to airborne radioactivity. Exposure to 1 DAC-hour implies the equivalent of one hour exposure to air at the DAC value.
decision level	The quantity of material in a measurement above which the analyte is interpreted as being present (i.e., analyte is detected). See Appendix B for discussion.
decorporation	The chemical acceleration of the removal of radioactive atoms from the body using chelating agents, which bind the atoms and cause them to be excreted.
deposition	1) process of material being initially retained from an intake, 2) the material initially deposited at an entry site, 3) Hanford historical usage : the total input to an organ or tissue for a specified period of time. See also systemic deposition .
derived reference levels	bioassay measurement values corresponding to retention or excretion associated with an intake of the reference level . Derived reference levels are discussed in Section 2.12 of this manual and provided for nuclides in the respective chapters.
detection level	a general term relating to the smallest amount of material detectable as a function of the measurement method and instrument background. (The precise way that detection level has been used at Hanford has changed over the years. At times it has been defined as the minimum detectable activity , and at other times it has been defined as the decision level .)
inhalation class	an ICRP 30 respiratory tract model concept describing the relative rate of clearance from the pulmonary region of the lungs. ICRP 30 defined three inhalation classes for materials, class D (clearance half-time less than 10 days), class W (10 to 100 days), and class Y (greater than 100 days). Hanford has described a super-Y class as having a nominal clearance half-time of 10,000 days.
injection	any means whereby the radioactive material is placed in direct contact with the blood, excluding through the lung or gastrointestinal tract.

instantaneous uptake	material translocated from a point of intake to the blood with essentially no delay. In concept, a direct injection to the blood.
intake	The amount of a radionuclide that enters the body. For inhalation, it is the material inhaled (including material that is subsequently exhaled). For material absorbed through the intact skin, it is the amount absorbed through the skin. For a wound or abraded skin, it is the amount absorbed through the skin; for practical purposes, it does not include material on the skin near the wound or material in the wound that is easily and promptly washed away. However, it does include material that is later removed by medical treatment if the time from deposition to treatment is deemed long enough to allow some material to reach the systemic circulation prior to treatment. Intake is independent of time.
in vivo	refers to measuring radioactivity directly in a living organism. In vivo is synonymous with the word “direct” when used in the phrase “direct bioassay.”
minimum detectable activity, MDA	the smallest activity of a radionuclide in a sample (or organ) that will be detected with a specified level of confidence. See Appendix B for details.
presystemic deposition	a mathematical or schematic component (or components) of the deposition at the entry site that is available for translocation to the blood. It excludes material that is permanently retained at the entry site or by the lymph system.
preview counter	a standup whole body counter consisting of five NaI detectors. It is the principal counter used for routine whole body counts and incident screening counts, provided good resolution of photopeaks is not needed.
reference level	Hanford usage: a magnitude of intake used as a basis for some action (see derived reference level). Reference levels are discussed in Section 2.12 of this manual and provided for nuclides in the respective chapters.
retained quantity	synonymous with burden .
retention	the retained quantity (or burden) as a fraction of the uptake or intake. It can apply to any organ, tissue, system of tissues (e.g., gastrointestinal or respiratory tracts) or to the whole body.

systemic deposition	Hanford historical usage: activity retained for an extended period of time in all systemic organs and tissue. Differs from uptake in that activity that stays in the transfer compartment and is ultimately excreted without going to systemic organs (for instance, because of chelation) is included in the term uptake but not in the term systemic deposition .
transfer compartment	a mathematical or schematic representation of the blood circulation system through which radioactive material is transported to organs, tissues, or excretion.
transportable	material that is transferred from the site of initial deposition to the blood. As applied to material in the lung, readily transportable material would be considered inhalation class D, whereas poorly transportable material would be inhalation class Y. It is generally equivalent to the term “soluble” as applied to human physiology, but it is not necessarily equivalent to chemical solubility in aqueous solutions.
transportability class	Generic term used at Hanford to designate the respiratory tract inhalation class or absorption type .
uptake	quantity of a radionuclide taken up by the systemic circulation or a specified organ or tissue via the blood. Uptake can occur by direct injection into the blood, by absorption from compartments in the respiratory or gastrointestinal tracts, or by absorption through the skin or through wounds in the skin.

References

10 CFR 835.2. 1999. U.S. Department of Energy, “Occupational Radiation Protection, Definitions.” U.S. Code of Federal Regulations.

U.S. Department of Energy (DOE). 1999a. *Internal Dosimetry Program Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection*. DOE G 441.1-3, Washington, D.C.

U.S. Department of Energy (DOE). 1999b. *Internal Dosimetry Standard*. DOE-STD-1121-98, Washington, D.C.