

Benzene	40 days*	1.54	10%	<p>compounds.</p> <p>Determination of dose coefficients and urinary excretion function for inhalation of carbon-14-labelled benzene, A. Krins, K. Karcher, D. Noke, P. Sahre and T. Schönmuht, Radiation Protection Dosimetry 104:139-152 (2003) © 2003 Oxford University Press: "The fraction of activity removed via urine varies between 52 and 10% of the intake. ... A 14-day interval for the incorporation monitoring by urine activity counting seems to be reasonable.</p> <p>Annals of the ICRP, Volume 20, Issue 2, 1989, Page 21: "All labeled organic compounds are assumed to be distributed rapidly and uniformly in all body organs and tissues of adults and retained with a rounded half-time of 40 days (ICRP, 1979)."</p> <p>Methods and Models of the Hanford Internal Dosimetry Program, PNNL-15614, E. H. Carbaugh, D. E. Bihl, J. A. MacLellan' January 1, 2003, Page 4.18: "The remaining 50% (of organically bound tritium) would be associated with carbon-hydrogen bonding in tissues and would demonstrate a metabolic turnover rate similar to carbon (biological half-time of 40 days).</p> <p>Biokinetic models for the behavior of carbon-14 from labeled compounds in the human body: can a single generic model be justified? David M. Taylor Chemistry Department, Cardiff University, Cardiff, CF10 3TB, UK : The published data on the biokinetic behavior of 27 14C-labelled compounds in humans or animals have been reviewed .. and doses have been compared to that calculated</p>
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	Biological Half-life	CEDE per unit intake mrem/uCi**	Percentage C-14 in Urine	Citation or Basis
Barium carbonate	12 days*	1.54	1%	<p>Comparative Excretion and Distribution of C-14-Labeled Carbonate and Formate in Large Albino Rats, FREDERICK SPERLING, ELIZABETH S. MAXWELL AND W. F. VON OETTINGEN, Am J Physiol. 174 (1): 33: Carbonate-injected rats excreted, in the urine, somewhat more than 1 % of the dose</p> <p>Structure of a physiologically based biokinetic model for use in ^{14}C and organically bound tritium dosimetry, D. W. Whillians, Radiation Protection Dosimetry 105:189-192 (2003): Physiologically based biokinetic dosimetry models for ^{14}C must include rapid turnover compartments which, can dominate bioassay measurements at early times after intake. In this paper a ... model structure will be described for use in dose assessments for organic ^{14}C ... based on the literature of human carbon metabolism, and on direct measurements of human excretion.</p> <p>Assessment of contributors to radiation dose following intakes of rapidly excreted [^{14}C]-compounds, David M. Taylor* School of Chemistry, Cardiff University, Cardiff CF10 3TB, UK Radiation Protection Dosimetry 2007 127(1-4):440-443, The International Commission on Radiological Protection default biokinetic model for the assessment of radiation dose received following intakes of unspecified [^{14}C]-compounds (DCM) appears to overestimate the radiation doses delivered by many [^{14}C]-</p>

				with the International Commission on Radiological Protection (ICRP) default model for carbon compounds of unknown composition. (For most compounds) the doses are smaller by factors ranging from about 5 to 200. Comparison of the dosimetric data suggests that although the ICRP default model will overestimate the dose for very many compounds it could remain useful as a guide for general prospective radiological protection purposes. However, a comparison of the biokinetic information indicates that the ICRP default model would not be reliable for the interpretation of bioassay data.
Potassium cyanide	40 days*	1.54	75%	Excretion of ¹⁴C-labeled cyanide in rats exposed to chronic intake of potassium cyanide , Okoh, P.N., Appl. Pharmacol., Vol/Issue: 70:2, Sep 15 1983, OSTI ID: 6914257: "Urinary excretion was the main route of elimination of cyanide carbon in these rats, accounting for ... 89% of the total excreted radioactivity in 24 hr."
Aniline	40 days*	1.54	10%	Annals of the ICRP , Volume 20, Issue 2, 1989, Page 21: "All labeled organic compounds are assumed to be distributed rapidly and uniformly in all body organs and tissues of adults and retained with a rounded half-time of 40 days (ICRP, 1979)." Biokinetic models for the behavior of carbon-14 from labeled compounds in the human body: can a single generic model be justified? David M. Taylor Chemistry Department, Cardiff University, Cardiff, CF10 3TB, UK : The published data on the biokinetic behavior of 27 ¹⁴ C-labelled compounds in humans or animals have been reviewed .. and doses have been compared to that calculated with the International Commission on Radiological

				Protection (ICRP) default model for carbon compounds of unknown composition. (For most compounds) the doses are smaller by factors ranging from about 5 to 200. Comparison of the dosimetric data suggests that although the ICRP default model will overestimate the dose for very many compounds it could remain useful as a guide for general prospective radiological protection purposes. However, a comparison of the biokinetic information indicates that the ICRP default model would not be reliable for the interpretation of bioassay data.
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*OESH-813 requires measurement of biological half-life in individual intake cases where possible and allows adjustment of dosimetry model where appropriate.

**In the case of significant intakes where sufficient data are available to establish short term clearance compartments, the dose will be primarily based on the long term component of the intake.