The ingestion of human milk is an important pathway for the incorporation of radionuclides during the first year of life. A fraction of the radionuclides incorporated by the mother, either by ingestion of contaminated foodstuff or by inhalation of radioactivity in air, is transported into human milk and is thus transferred to a breast-fed baby. Biokinetic models which are suitable to describe the transfer of radionuclides into human milk are currently being developed for a small number of radionuclides. They are not yet ready for use for purposes of dose assessment. Assuming equilibrium conditions, the contamination of human milk was quantified using transferred fractions. Applying this concept to non-equilibrium conditions will result in conservative estimates of the potential dose due to breast-feeding. Transferred fractions foodstuff – human milk were derived from a literature study and research projects, mainly from values of the average intake rate of stable elements and the resulting average concentration in human milk. Most recent German data on the nutritional habits of babies were taken as a basis. Since virtually no data are available for the transfer of radionuclides from air into human milk, appropriate transferred fractions were calculated on the basis of a compartment model by comparing the inhalation and ingestion pathway of a nursing mother. The derived transferred fractions into human milk are compiled for the inhalation and ingestion pathway, respectively. The basic equations to assess the radiation exposure to a breast-fed baby are described. Comparative calculations demonstrate that for some radionuclides the contribution of human milk to the dose of a breast-fed baby can be as significant as the contributions arising from direct inhalation and ingestion of supplementary food, respectively.