Evans moved to the Massachusetts Institute of Technology (MIT) in 1934. There, with Dr. Joseph Aub from Boston, Evans continued to work with dial painters, developing the technique that permitted the body content of radium to be determined by summing the exhaled radon fraction and the fraction of radon that decayed within the body. The latter fraction was measured by detecting, with a Geiger counter, the gamma rays emitted from within the body (Evans 1937; Evans and Aub 1937; Aub et al. 1952).

The one-meter-arc method Evans (1937) introduced to measure the radon that decayed within the body required the determination of three unknowns: the gamma-ray attenuation coefficient of the body, the depth of burial of the source within the body, and the response or calibration of the detector. Four measurements were required: the detector response from the body, bent into a one-meter arc, facing first toward and then away from the instrument; then the response with a source placed behind the body; and finally the response from the source alone in the same position. From such an absolute measurement, alternative placements of the patient and the detector yielding higher count rates in more comfortable positions could be calibrated.

With these techniques, dependable body content measurements were made on 27 subjects by 1940. At this time an advisory committee to the National Bureau of Standards (NBS) was charged with the preparation of an NBS (1941) handbook, *Safe Handling of Radioactive Luminous Compound.* Earlier suggestions that levels of 10 μg or 1 μg might be appropriate safety guidelines for the radium content of humans (Rajewsky 1936) had been derived from experience with fewer cases and before accurate methods of measuring the total body burden were available.

The advisory committee, consisting of Martland, Flinn, Failla, Evans, and five others, reviewed the 27 measured cases. The committee found that 7 subjects had carried radium within their bodies for many years and had residual body burdens of 0.5 μCi or less with no symptoms. The other 20 individuals, all with symptoms, had residual body burdens of 1.2-23 μCi of radium. The committee decided on a *tolerance level* of 0.1 μCi of residual body content (NBS 1941; NCRP 1941). This level, later called the *maximum permissible body burden*, was based on effects observed in individuals who had carried radium for 20 or more years, but it was applied on the basis that the body content should never exceed this level. Because the original body contents of the observed individuals were undoubtedly much greater than their residual body contents, a safety factor of one or two orders of magnitude was built into this level. The history of these actions was reviewed by Evans (1980, 1981) and Stannard (1988).