

TG-51: a review of the background and implementation issues

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The first part of this session will present background information about the TG-51 protocol for high-energy photon and electron beam reference dosimetry. Unlike TG-21, TG-51 only presents the bare minimum required to use the protocol. This talk will be a review of how the various factors in TG-51 were calculated, including a derivation of the relevant equations, a discussion of the sources of physical data used and details of how to do the calculations. Much of this has been presented in publications: the 1996 AAPM Summer School chapter by Rogers, his paper on electron beam dosimetry (Med. Phys. 25 (1998) 310) and his earlier paper on the advantages of using absorbed dose calibration factors (Med. Phys. 19 (1992) 1227).

The second part of the session will discuss the Radiological Physics Center's (RPC) implementation of the TG-51 protocol on January 1, 2000 into all aspects of its QA activities including TLD monitoring, dosimetry review visits, and educational activities. Several areas of confusion and concern have been noted by those facilities attempting to implement TG-51. These include depths of measurement, use of cylindrical vs. parallel plate ion chambers, expected differences between TG-51 and TG-21, use of a lead sheet, shifted photon depth dose, etc. Each area of confusion will be addressed and clarified.

Education Objectives:

1. Derive where the AAPM TG-51 equations come from.
2. Outline where data used in the protocol comes from.
3. Explain how calculations were done.
4. Make clear that RPC is based on TG-51 since Jan, 2001.
5. Clarify various points of confusion which have arisen in implementation at RPC.