AbstractID: 6004 Title: Shielding Design Workshop: PET/CT

The application of the structural shielding design techniques and goals as outlined in AAPM Task Group Report 108: *PET and PET/CT Shielding Requirements* Medical Physics (Vol. 33., Issue 1 (2006)) will be the basis for this practical course. As the use of PET and PET/CT units expands rapidly in the medical arena, the requirements for providing adequate radiation protection for both occupational personnel in these facilities and the public in uncontrolled areas around them necessitate the involvement of a qualified medical physicist. The many areas involved in implementing a PET/CT program including the Hot Lab, Patient Uptake Rooms, Patient Restrooms, Scan Rooms, and Disposal areas will be used as practical examples of typical structural shielding designs and evaluation methods.

The testing of PET shielding insures that the shielding is properly installed and that individuals do not exceed the radiation exposure levels required by applicable regulations and ALARA policies. Testing of PET and PET/CT shielding is a complex multidimensional problem since there are multiple sources and the radiation is emitted isotropically from the patients. Thus efficient testing can both save time and reduce radiation exposure to the physicists doing the testing. This course will discuss efficient methods for shielding testing. It will also review the instrumentation available to physicists for making the measurements. Practical methods of testing of a PET/CT facility will be presented.

Educational Objectives:

1. Understand the exposure factors to be used for currently used PET isotopes to determine required structural shielding to meet exposure limits for occupational personnel and the public.
2. Understand the effectiveness of existing and additional structural shielding materials that provide radiation protection and methods to calculate the required amounts of these materials.
3. Understand the methods to be used to evaluate the adequacy of PET and PET/CT installations to insure adequate shielding has been provided to meet applicable state and ALARA requirements.