

Plenary Panel on Radiobiology and Blood Irradiators

Cesium-137 and Cobalt-60 irradiators have been used for the past decades for many types of applications including, to name a few, radiation biology research, irradiation of cells, blood irradiation performed at hospitals to prevent the transfer of graft-versus-host disease during blood transfusions, calibration of instruments, radiation dose primary standards, etc. A vast amount of research exists using these radionuclide sources which has served as the backbone for these applications to ensure for example the successful treatment of blood during irradiation as well as helping advance the field of radiation therapy through radiobiology research. Due to the fear that radionuclide irradiators can be stolen for malicious use (e.g. construction of radiation dispersive devices), there has been a need to consider the use of alternative (non-radionuclide) radiation sources such as x-rays and electron beams for these applications. The panel will share their experience of switching to these alternative irradiator sources. We aim to discuss in an open forum how the different characteristics introduced by these new devices such as the different energy spectrum, beam uniformity, depth of penetration, dose values, shelf life of irradiated products, etc...., may affect some of these applications. The plenary panel session will focus exclusively on radiobiology applications and blood irradiation and aim to identify any needs to be addressed by the community in switching from radionuclide to x-ray and e-beam irradiators.