Finding the optimal sterilization configuration using simulations

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The dose delivered during radiation sterilization is highly dependent on many factors, such as the orientation of the device relative to the beam, how the devices are arranged in the shipping box, and how devices are positioned within their packaging. Experimentally exploring this trade space to find the best sterilization configuration is a very expensive and time consuming process since it requires relying on trial-and-error measurements and rules-of-thumb. In this presentation, we use simulations to demonstrate that the dose delivered to even a very simple medical device can be strongly influenced by the factors listed above. Simulations offer a powerful way to optimize the sterilization configuration *in silico*, in order to improve the efficiency of the sterilization validation process.