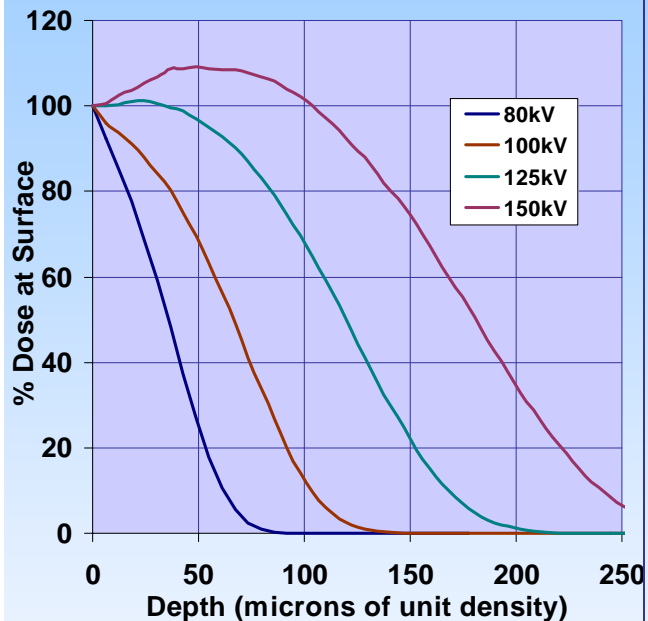


# The Physics and Microbiology of Electron Beam Sterilization

## Dose – Depth – Voltage

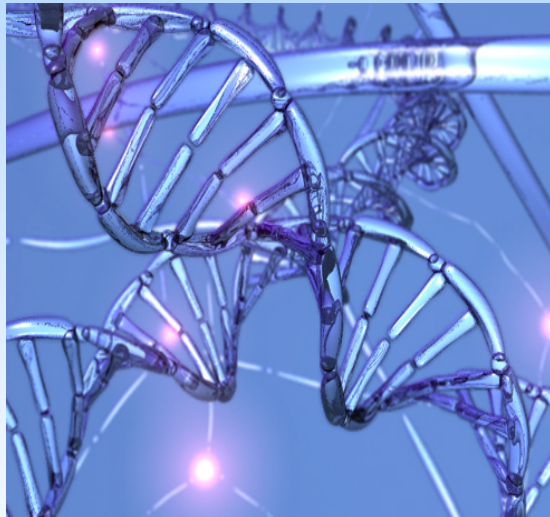


### Advantages of low voltage electron beam sterilization include:

- High throughput
- Does not impact bulk material properties
- Does not affect packaged product

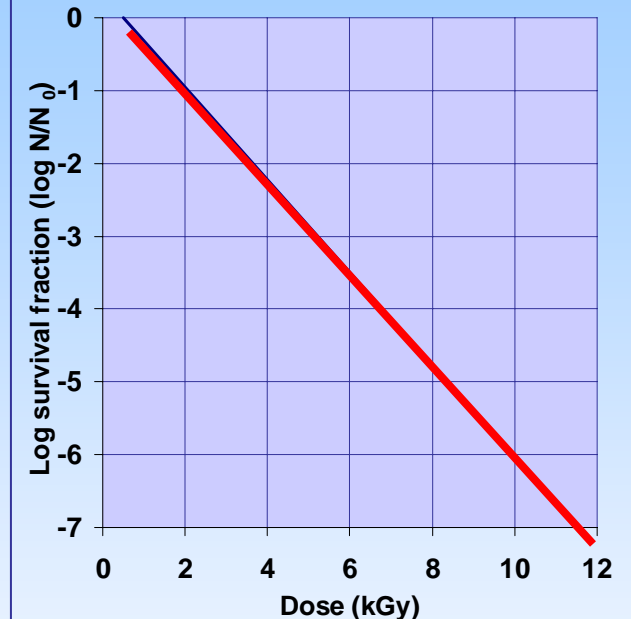
## Mechanism of Cell Destruction

- Damages cellular DNA leading to cell death
- Free radicals formed react with macromolecules



**Energetic electrons destroy all types of pathogens including: viruses, fungi, bacteria, parasites, spores, molds**

## Dose Response



\* Cleghorn et. al., Journal of Applied Microbiology, Dec. 2002.

- High sterilization efficacy
- Correlation between dose and kill rate is well established
- Do not need to prove that electron beams kill microorganisms
- Typical minimum sterilizing dose in the range of 10 to 25 kGy