

The target is the cell and its genetic material.

The overall probability of fixed genetic damage and then cancer following low dose exposure is the result of sequential binomial probabilities i.e. several different things have to occur.

A fixed mutation depends upon:

1. A window of ionisation density at the target, not too large, not too small.
2. Ionisation location in the cell i.e. the target organelle.
3. The state of the cell (phase) when it is hit.
4. The cell's DNA repair efficiency.
5. The effects of neighbour cells on the target cells.
6. The effect of the target cell on neighbour cells.

The final expression of cancer then may depend upon:

7. The acquisition of other critical mutations in the cell or its daughters.
8. The viability of the cell and its daughters.
9. Damage to neighbouring cells.
10. Rate of replication of the damaged cell and daughters.
11. Immune surveillance.

The ICRP model considers only No 1 in this list, ionisation density, and even then, only in the case of RBE for alpha etc.

The Linear No Threshold model is both theoretically and empirically wrong.