

IMA Human Health Risk Assessment Workshop #1: Equations for Revised Preliminary Human Health Risk Model

Equation 1

$$HQ_{Se,site} = \frac{Dose_{Se,diet} + Dose_{Se,supplements} + \Delta Dose_{Se,beef} + \Delta Dose_{Se,fish}}{cRfD_{Se}}$$

Equation 2

$$HQ_{Se,background} = \frac{Dose_{Se,background}}{cRfD_{Se}}$$

Equation 3

$$Dose_{Se,background} = Dose_{Se,diet} + Dose_{Se,supplements} = \frac{ADI_{Se,diet} + ADI_{Se,supplements}}{BW}$$

Equation 4

$$\Delta Dose_{Se,beef} = \frac{\left\{ \left[\frac{(C_{Se,beef,site,pasture,mean} - C_{Se,beef,background,mean})}{2^{DT/BHL_{Se}}} + C_{Se,beef,background,mean} \right] - C_{Se,beef,background,mean} \right\} \times IR_{beef} \times F_{beef,site} \times EF}{UCF_t \times BW}$$

Equation 5

$$\Delta Dose_{Se,fish} = \frac{(C_{Se,fish,site,mean} - C_{Se,fish,background,mean}) \times IR_{fish} \times F_{fish,site} \times EF}{UCF_t \times BW}$$

Equation 6

$$cRfD_{Se} = \frac{cNOAEL_{Se}}{UF_{H,Se}}$$

Equation 7

$$\text{HQ}_{\text{Se,site}} = \frac{\text{ADI}_{\text{Se,diet}} + \text{ADI}_{\text{Se,supplements}} + \left\{ \left[\frac{(\text{C}_{\text{Se,beef,site,pasture,mean}} - \text{C}_{\text{Se,beef,background,mean}})}{2^{\text{DT}/\text{BHL}_{\text{Se}}}} \right] \times \text{IR}_{\text{beef}} \times \text{F}_{\text{beef,site}} \right\} + \left\{ (\text{C}_{\text{Se,fish,site,mean}} - \text{C}_{\text{Se,fish,background,mean}}) \times \text{IR}_{\text{fish}} \times \text{F}_{\text{fish,site}} \right\} \times \text{EF}}{\text{UCF}_t} \cdot \frac{\text{BW} \times \frac{\text{cNOAEL}_{\text{Se}}}{\text{UF}_{\text{H,Se}}}}{\text{UCF}_t}$$

Equation 8

$$\text{HQ}_{\text{Se,background}} = \frac{\text{ADI}_{\text{Se,diet}} + \text{ADI}_{\text{Se,supplements}}}{\text{BW} \times \left(\frac{\text{cNOAEL}_{\text{Se}}}{\text{UF}_{\text{H,Se}}} \right)}$$