CALCULATIONS FOR MERCURY IN SEAFOOD

Assumptions used in calculations:

1 serving of seafood= 6 oz
1 oz= 28.4 g
1 serving of seafood= 170.4 g
EPA Reference Dose (RfD) for methylmercury = 0.1 μg/kg/day (EPA)
Days per month= 30.5
Average weight of a woman of childbearing age= 130 lb or 60 kg
Mercury concentration of tuna, canned light: 0.128 μg/g (FDA)
Mercury concentration of tuna, canned albacore: 0.35 ug/g (FDA)

***How were the concentration ranges calculated for the recommended seafood consumption categories of* High, Medium, Low, and Avoid?**

- High consumption rate= 12 servings/month
- Medium consumption rate= 6 servings/month
- Low consumption rate= 3 servings/month
- Avoid= 0 servings/month

Maximum mercury concentration for each consumption rate tier:

$$Maximum\ mercury\ concentration\ (\frac{\mu g}{g}\ or\ ppm) = \frac{RfD*weight*days}{serving\ size*consumption\ rate}$$

Example: If someone eats 12 servings of seafood in a month, what should the maximum mercury concentration per serving be in order to comply with EPA's reference dose?

$$\frac{0.1\frac{\mu g}{kg*day}*60kg*30.5\frac{days}{month}}{170.4\frac{g}{serving}*12\frac{servings}{month}} = 0.13\frac{\mu g}{g}\ or\ 0.09\ ppm$$

In one month, someone who weighs 60kg can eat 12 servings of seafood with a mercury concentration as high as 0.09ppm, without exceeding EPA's RfD value of 0.1μg/kg/day.

How many servings of canned tuna (light) can someone eat in one week?

$$\frac{days*RfD*weight}{serving\ size*Hg\ concentration\ of\ Tuna,canned\ light} = servings$$

Example: How much canned tuna (light) can a 36 lb child (16 kg) eat in a week?

$$\frac{7\ days*0.1\frac{\mu g}{kg}*16\ kg}{170.4\ g*0.128\frac{\mu g}{g}} = 0.51\ servings$$

A 36 lb child can eat 0.51 servings of canned tuna (light) each week.

How many servings of canned tuna (albacore) can someone eat in one week?

$$\frac{days*RfD*weight}{serving\ size*Hg\ concentration\ of\ Tuna,canned\ albacore} = servings$$

Example: How much canned tuna (albacore) can a 130lb woman (60kg) eat in a week?

$$\frac{7\ days*0.1\frac{\mu g}{kg}*60\ kg}{170.4\ g*0.128\frac{\mu g}{g}} = 1.93\ servings$$

A 130lb woman can eat a little less than 2 servings of canned tuna (albacore) each week.