**Assignment 3:   
Mercury and Human Health Case Study -**

**Teacher Key**

Many people are exposed to methylmercury from eating fish, such as tuna. Below is a true case study of a 54-year-old man that ate one can of tuna every day for five years.

Average weight of a can of tuna: 5 ounces

(It takes 16 ounces to equal 1 pound)

Number of days in a year: 365

**1) Calculate (and show) how many cans of tuna the man ate during that time:**

The basic equation: 1 can X 5 years

Substitution 1 year = 365 days

5 years X 365 days = 1825 days

Rewrite the equation 1 can X 1825 days = **1825 cans of tuna**

**2) Calculate how many pounds of tuna the man ate over five years**

Solve for ounces first: 5 ounces/day X 1825 cans of tuna = 9125 ounces of tuna

Convert to pounds: 9125 ounces X 1 pound/ = **570.3 pounds of tuna**

16 ounces

**3) After five years, the man went to the doctor, where his blood was tested for levels of methylmercury.** The only way to reduce mercury is to stop being exposed. On his first visit, he was told to stop eating tuna. The man continued going to the doctors, and his blood was measured each time to see if the mercury in his body was being excreted.

This table shows how the level of mercury in his blood changed over time.

|  |  |
| --- | --- |
| **Day of test** | **Level of methylmercury in blood (ug/L)** |
| Day 0 (first doctor’s visit) | 52 ug/L |
| Day 7 | 50ug/L |
| Day 100 | 22 ug/L |
| Day 225 | 7 ug/L |

**4) On the chart on the next page, plot this data to show the rate at which the methylmercury was excreted once the man stopped eating canned tuna. Once you have plotted the points, draw a line between all the points.**

**5) What happened to the amount of methylmercury in the man’s body after he stopped eating canned tuna every day?** The amount of methylmercury decreased in the man’s body.

**6) Using your graph of blood methylmercury and time, estimate how many days it took the amount of methylmecury to be half of what it was at day 0. This is the half-life of this compound in blood.** It took about 87 days for the amount of methylmercury to be half of what it was at day 0 (26ug/L)

