

ENVS4450 Coursework - Introduction

1. Define 'pollution' in your own words.
2. Why do scientists think that the number of Sockeye Salmon in the Columbia river declined over the last 100 years?

3. Residence time question:

The stock of water in the oceans is $1.35 \times 10^{18} \text{ m}^3$ and the precipitation on the oceans is $4.10 \times 10^{14} \text{ m}^3/\text{y}$. What is the residence time (τ) of water in all of the Earth's oceans?

4. Calculate how much annual precipitation must occur on the average throughout the world, in units of inches of water, to account for the above value of F_w . [Hint: use the surface area of the ocean]

5. The US EPA set a limit for the concentration of lead in drinking water at 15 ppb. A laboratory finds the concentration of lead in a sample taken from a water fountain to be $18 \mu\text{g} / 100 \text{ mL}$. Is this above the EPA limit? By how much?

6. What assumption is made in the conversion of aqueous pollutant concentration from mg L^{-1} to ppm?

7. The hydrocarbons that make up plant waxes are only moderately volatile. As a consequence, many of them exist in the atmosphere partly as gases and partly as constituents of aerosol particles. If tetradecane ($\text{C}_{14}\text{H}_{30}$, molecular weight 198) has a gas phase mixing ratio over the N. Atlantic Ocean of 250 ppt (pptv) and an aerosol concentration of 180 ng m^{-3} , in which phase is it more abundant?

8. Correlate hazardous waste production to a country's development level (economic status, per capita GDP). [GRAPH]

9. Calculate the import/export ratio (if ratio > 1 the country is a net importer). Are there any net importers? If so list them. [TABLE]

10. Why is the US absent from the Basel convention's list of hazardous waste import/export quantities?