CE213A

Assignment: 7 (Health Risk Assessment)

Note: refer to information provided in lecture for parameter values.

Q. 1.Compute Incremental Lifetime Cancer Risks (ILCR) due to Benzo[a]pyrene in an adult. The concentration of Benzo[a]pyrene in drinking water and per capita drinking water demand are 10 mg/L and 6 L/d, respectively. Take cancer slope factor of Benzo[a]pyrene as 3.9 $(mg/kg\text{-}d)^{-1}$ Assume all other parameters in the view of their realistic values

Q.2. Estimate Hazard Quotient (HQ) of PM1 bound metal viz. Pb, Cr, As and Co in adults? Take concentration of: Pb = 30 mg/kg, Cr = 45 ng/kg, As = 20 mg/kg, Co = 14 mg/kg in PM_1. Take No-Observed Adverse Effect Level (NOAEL) for all given metals as 40 mg/kg/day. Also estimate hazard index (HI) of given heavy metals in PM1 bound aerosols. Assume all other parameters in the view of their realistic values.

Q. 3. List different microenvironments in exposure science.

Q. 4. Explain different steps involved in risk assessment process. What are the uses/ benefits of risk assessment analysis?

Q.5. Calculate deposition fractions of particulates (PM) in head and pulmonary regions of a human body. Given, Total suspended particulates (TSP) = 300 $\mu g/m^3$, $PM_{0.8}$ = 150 $\mu g/m^3$, $PM_{0.1}$ = 20 $\mu g/m^3$. Here, PM_X represents particulates of size $\leq$ X μm.