Questions on ppm 2

1. The European Unit limit for copper in drinking water is 2.0 ppm. A student analyses 10.0 cm^3 of water and finds that it contains 1.5 μg of copper.

(a) Determine whether this sample of water exceeds the legal limit for copper.

(b) Calculate the concentration of the copper in mol dm^{-3}.

2. The EU limit for chromium in drinking water is 50 μg dm^{-3}.

(a) Calculate the maximum allowed concentration in ppm.

(b) The concentration of chromium in a sample of water is 7.70×10^{-7} mol dm^{-3}. Determine whether this sample exceeds the legal limit.

3. The concentration of dissolved oxygen (O_2) in a sample of river water is 10.0 ppm. Calculate the number of oxygen molecules in 200 cm^3 of the river water.

Avogadro's constant is 6.02×10^{23} mol^{-1}

4. The current level of carbon dioxide in the air is about 400 ppm.

(a) Calculate the volume (in cm^3) of CO_2 present in a room with dimensions 4m x 4m x 3m.

(b) 1.00 g of ethanol (C_2H_5OH) is burnt in the room. Assuming complete combustion of the ethanol, calculate by how much (in ppm) the concentration of CO_2 in the room will increase. Assume that the temperature in the room remains stable at 20°C and the pressure is 100 kPa.