Aquatic Chemistry A
06/07/2016

Time: 2,5 h.
<u>**Justify every answer.**</u>
2,0 points for each question.

1 - Refer what are the main causes and the consequences of acid precipitation.

2 - Explain how oil spills in the ocean can influence gases exchange with the atmosphere and the consequences that may arise.

3 - Among the various constituents of the atmosphere which one dissolves more easily in water? Refer some of the consequences that this dissolution causes.

4 - "The effects of PM2.5 on human health are of more concern than those of PM10." Comment the sentence explaining what are we talking about.

5 – An aqueous matrix has been analysed as to its color and turbidity, with the following results:

matriz X	10 uH	10 UNT

a) Explain the meaning of these values and the process in which they were determined.
b) Could the matrix X be potable water? Justify your answer.

6 – Compare the consequences for humans of Cadmium or Arsenic contaminated food, mentioning, for these metals, their most toxic forms.

7 – Consider water from a lake bed, which has the following values:
    pE= -3 e pH=4.

a) Write the chemical scheme relative to the dominant process in this situation, showing the change in oxidation numbers of the elements involved.

b) Considering those values and pE^o=2.87, determine the relation between the chemical species that one can consider predominant in that matrix.

8 – Knowing that Chloroform and Toluene are two contaminants in an aquifer.
a) Regarding their contaminant type, label these two compounds.
b) Describe these aquifer characteristics.
c) What are the possible treatments.

9 – For water disinfection of a swimming pool, we can use electrolysis of a sodium chloride aqueous solution.
a) Which species are produced in this process and with what purpose.
b) Write the relevant chemical scheme for the disinfection process, identifying the chlorination agent.

10 - Describe how agricultural activities near a lake can affect its trophic level and what measures should be taken to minimize impacts.