

Course Work Activity 5 – Water

Read the following paper from the journal Science: Smith 2002.
You may use any other sources to answer the following questions.

1. Make a table with two columns labelled natural and anthropogenic sources of arsenic in the environment. Complete the table.
2. Use the web site <http://nationalatlas.gov> to answer the following question. According to the United States Geological Survey where are the most polluted groundwaters in the US?
3. What are the health effects of arsenic poisoning (arsenicosis)?
4. According to Smith the cancer risk at 50 ppb is 1300 in 100,000 which is close to 1 in 100, what is the new reduced cancer risk at the new 10 ppb standard?

(You must cite where you found this number.)

How does this compare with the highest cancer risk EPA usually allows in tap water, 1 in 10,000?

5. When was the 10 ppb standard for arsenic in drinking water first recommended?
6. Give the two reasons Smith suggests it took time for regulatory standards to catch up to epidemiological studies.
7. Why do **you** think arsenic was treated so differently than other carcinogens shown in the table?
8. What would be the usual concentration of arsenic that you would expect to find in your drinking water (ppb)?
9. Use Google Scholar (<http://scholar.google.com>) to find a similar paper that deals with arsenic pollution of drinking water in the USA. Give the full reference citation and a one paragraph summation.
10. What water pollutant with the chemical formula ClO_4^- has been termed 'the new arsenic'? What are its main sources?

microgram per liter = ppb