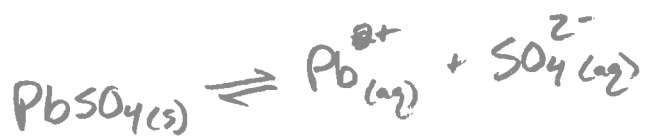


Ch 16 Team Problem

The maximum $[Pb^{2+}]$ in drinking water 0.05 ppm. Is groundwater in equilibrium with the mineral anglesite ($PbSO_4$) safe to drink?

$$(K_{sp} = 1.6 \times 10^{-8})$$



$$1.6 \times 10^{-8} = [Pb^{2+}][SO_4^{2-}]$$
$$= [x][x]$$

$$1.26 \times 10^{-4} M = [x]$$

$$0.05 \text{ ppm} = \frac{0.05 \text{ g } Pb^{2+}}{1 \text{ e } 6 \text{ g } H_2O} = \frac{2.4 \times 10^{-4} \text{ mol}}{1 \text{ e } 3 \text{ L}}$$

$$0.05 \text{ g } Pb^{2+} \left(\frac{1 \text{ mol}}{207.2 \text{ g}} \right) = 2.4 \times 10^{-4} \text{ mol}$$

$$1 \text{ e } 6 \text{ g} \left(\frac{1 \text{ L}}{1000 \text{ g}} \right) = 1 \text{ e } 3 \text{ L}$$

density of water

$$2.4 \times 10^{-7} M$$

$$1.26 \times 10^{-4} M > 2.4 \times 10^{-7} M$$

too high \therefore