Currently, air and water contaminants, drugs in the human body, and pesticide residues are measured in parts per million.

Example 14.2

What is the mass percent of sodium hydroxide in a solution that is made by dissolving 8.00 g NaOH in 50.0 g H_2O?

SOLUTION

READ **Knowns** 8.00 g NaOH
50.0 g H_2O

Solving for: mass percent

CALCULATE
$$\left(\frac{8.00\text{ g NaOH}}{8.00\text{ g NaOH} + 50.0\text{ g } H_2O}\right) = 13.8\%\text{ NaOH solution}$$

Example 14.3

What masses of potassium chloride and water are needed to make 250. g of 5.00% solution?

SOLUTION

READ **Knowns** 250. g solution
5.00% solution

Solving for: masses KCl and water

PLAN 5.00% of 250. g = (0.0500)(250. g) = 12.5 g KCl (solute)

CALCULATE 250. g − 12.5 g = 238 g H_2O

Dissolving 12.5 g KCl in 238 g H_2O gives a 5.00% solution.

Example 14.4

A 34.0% sulfuric acid solution had a density of 1.25 g/mL. How many grams of H_2SO_4 are contained in 1.00 L of this solution?

SOLUTION

READ **Knowns** $d = 1.25$ g/mL
$V = 1.00$ L
34.0% H_2SO_4 solution

Solving for: mass H_2SO_4

PLAN Find the mass of the solution from the density and then use the mass percent to determine the mass of H_2SO_4.

CALCULATE d = mass/V

$$\text{mass of solution} = \left(\frac{1.25\text{ g}}{\cancel{\text{mL}}}\right)(1.00 \times 10^3\,\cancel{\text{mL}}) = 1250\text{ g (solution)}$$

$$\text{mass percent} = \left(\frac{\text{g solute}}{\text{g solution}}\right)100$$

$$\text{g solute} = \frac{(\text{mass percent})(\text{g solution})}{100}$$