



FIGURE 8 The hydroxides of most *d*-block metals are nearly insoluble in water, as is shown by the gelatinous precipitate, copper(II) hydroxide, $\text{Cu}(\text{OH})_2$, in the beaker on the right.

Bases that are not very soluble do not produce a large number of hydroxide ions when added to water. Some metal hydroxides, such as $\text{Cu}(\text{OH})_2$, are not very soluble in water, as seen in **Figure 8**. They cannot produce strongly alkaline solutions. The alkalinity of aqueous solutions depends on the concentration of OH^- ions in solution. It is unrelated to the number of hydroxide ions in the undissolved compound.

Now consider ammonia, which is highly soluble but is a weak electrolyte. The concentration of OH^- ions in an ammonia solution is relatively low. Ammonia is therefore a *weak base*. Many organic compounds that contain nitrogen atoms are also weak bases. For example, codeine, $\text{C}_{18}\text{H}_{21}\text{NO}_3$, a pain reliever and common cough suppressant found in prescription cough medicine, is a weak base.

SECTION REVIEW

- What are five general properties of aqueous acids?
 - Name some common substances that have one or more of these properties.
- Name the following acids: a. HBrO b. HBrO_3 .
- What are five general properties of aqueous bases?
 - Name some common substances that have one or more of these properties.

- Why are strong acids also strong electrolytes?
 - Is every strong electrolyte also a strong acid?

Critical Thinking

- RELATING IDEAS** A classmate states, "All compounds containing H atoms are acids, and all compounds containing OH groups are bases." Do you agree? Give examples.