

## Episode 16 - The Proton in Chemistry

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1. Lime (calcium hydroxide) is the fifth most produced chemical in the United States. What are some uses for lime?
2. In the video, reactions of acids and bases were demonstrated. Complete the following table to summarize the results.

Substance	Acids	Bases
litmus		
magnesium		
limestone		

3. What atom or element is common to all acids?
4. a. What is acid rain?  
  
b. What are some causes of acid rain?
5. What is the name of the ion common to:
  - a. acids
  - b. bases
6. a. Do all acids and bases react to the same degree?  
  
b. What scale is used to describe the strength of acids and bases?  
  
c. Where are acids, bases, and neutral materials found on the pH scale?
7. What is an antacid?
8. Of the top ten chemicals produced in the United States, how many are acids and bases?

## Answer Key

1. Lime (calcium hydroxide) is the fifth most produced chemical in the United States. What are some uses for lime?

- *precipitates materials in the treatment of sewage*
- *neutralizes acid mine drainage*
- *prevents sulfur dioxide emissions when coal is burned*

2. In the video, reactions of acids and bases were demonstrated. Complete the following table to summarize the results.

Substance	Acids	Bases
litmus	<i>red</i>	<i>blue</i>
magnesium	<i>gas forms (hydrogen)</i>	<i>no reaction</i>
limestone	<i>gas forms (carbon dioxide)</i>	<i>no reaction</i>

3. What atom or element is common to all acids?

*hydrogen*

4. a. What is acid rain?

*Rain that is more acidic than normal (pH = 5.6).*

b. What are some causes of acid rain?

*Sulfur and nitrogen oxides emitted into the atmosphere.*

5. What is the name of the ion common to:

a. acids

*H<sub>3</sub>O<sup>+</sup> hydronium*

b. bases

*OH hydroxide*

6. a. Do all acids and bases react to the same degree?

*No*

b. What scale is used to describe the strength of acids and bases?

*pH*

c. Where are acids, bases, and neutral materials found on the pH scale?

*Acids < 7, Bases > 7, Neutral = 7*

7. What is an antacid?

*Chemical used to neutralize "excess" stomach acid.*

8. Of the top ten chemicals produced in the United States, how many are acids and bases?

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