

## Chapter 9 Carbon Chemistry

**Section 9.2 Substituted Hydrocarbons****(pages 272–274)**

*This section discusses organic compounds that contain atoms of elements other than carbon and hydrogen. It also explains the relationship between the properties of organic compounds and functional groups.*

**Reading Strategy (page 272)**

**Monitoring Your Understanding** As you read, complete the table by connecting each functional group with the type of compound that contains the functional group. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Connecting Functional Groups to Types of Compounds	
Functional Group	Type of Compound
–OH	Alcohol
–COOH	Organic acid
–NH <sub>2</sub>	Organic base

- Name the two main products when methane and chlorine react.
  - Hydrogen chloride
  - Chloromethane
- To which environmental problem have researchers connected halocarbons containing chlorine and fluorine? Halocarbons containing chlorine and fluorine are connected to the depletion of Earth's protective ozone layer.
- Describe a substituted hydrocarbon. A substituted hydrocarbon is a hydrocarbon in which one or more hydrogen atoms have been replaced by an atom or group of atoms.
- Is the following sentence true or false? The functional group in a substituted hydrocarbon determines the properties of the compound. true

**Alcohols (page 273)**

- Methanol and ethanol are two examples of a class of organic compounds called alcohols.
- The functional group in an alcohol is represented as –OH and is called a(n) hydroxyl group.
- Identify two ways a halocarbon can be produced.
  - A halocarbon reacts with a base
  - An alkene reacts with water

## Chapter 9 Carbon Chemistry

**Organic Acids and Bases (pages 273–274)**

8. What two physical properties do organic acids tend to have?

a. A sharp taste

b. A strong odor

9. Is the following sentence true or false? Amines are organic bases. true

10. Name three products where amines can be found.

a. Paints

b. Dyes

c. Disinfectants

11. Complete the following table.

Substituted Hydrocarbons		
Type of Compound	Name of Functional Group	Formula of Functional Group
Alcohol	Hydroxyl	-OH
Organic acid	Carboxyl	-COOH
Organic base	Amino	-NH <sub>2</sub>

**Esters (page 274)**

12. What type of compound gives many flowers a pleasant odor?

Esters

13. Which two types of compounds can react and form esters?

a. Organic acid

b. Alcohol

14. Circle the letter of the other product of the reaction that forms an ester.

a. an alcohol

b. carbon dioxide

c. a salt

d. water

15. Is the following sentence true or false? Esters are used to make various fruit flavors in processed foods. true