

Unit #2 - Organic Chemistry

What you should be able to do by the end of this unit:

- demonstrate an understanding of the names and properties of organic compounds and some of their reactions
- carry out laboratory tests and reactions involving organic compounds
- describe the importance of organic compounds in consumer products, technological devices and biochemical applications
- explain some of the issues related to the environmental and societal impact of organic compounds

Organic Compounds

Organic compounds are compounds that contain hydrogen and carbon and sometimes other elements. Originally, the term organic was used to describe compounds that came from living organisms. However, chemists soon realized that organic compounds can also be made outside living organisms.

Hydrocarbons are organic compounds made up ONLY of hydrogen and carbon.

Hydrocarbons are subdivided into three categories:

Alkanes = hydrocarbons that contain only single C–C bonds

Alkenes = hydrocarbons that contain AT LEAST one double C=C

Alkynes = hydrocarbons that contain AT LEAST one triple C≡C

Drawing Hydrocarbons:

- carbon always makes 4 bonds
- hydrogen always makes one
- we always draw carbons attached to each other and then fill in hydrogen

Example 1: Draw a straight chain hydrocarbon that contains 3 carbons. What is the chemical formula of this hydrocarbon?

Example 2: Draw and write the formula of the hydrocarbon containing 4 carbons.

The names of the hydrocarbons:

The system of naming all organic compounds we will use was developed by the International Union of Pure and Applied Chemists. It is called the IUPAC name.

# of carbons	Formula	IUPAC Name
1	CH ₄	methane
2	C ₂ H ₆	ethane
3	C ₃ H ₈	propane
4	C ₄ H ₁₀	butane
5	C ₅ H ₁₂	pentane

# of carbons	Formula	IUPAC Name
6	C ₆ H ₁₄	hexane
7	C ₇ H ₁₆	heptane
8	C ₈ H ₁₈	octane
9	C ₉ H ₂₀	nonane
10	C ₁₀ H ₂₂	decane

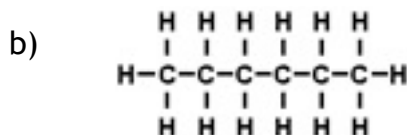
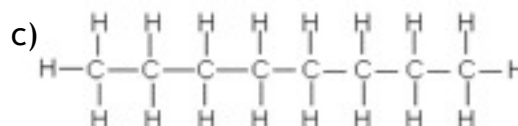
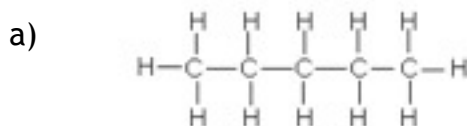
Hint: You can remember the first four by “monkeys eat peeled bananas” = methane ethane propane butane.

Worksheet:

- For each of the following, write the # carbons, and draw the structure.

Compound	# carbons	Structure
nonane		
butane		
pentane		
heptane		

- For each of the following, write the name.



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