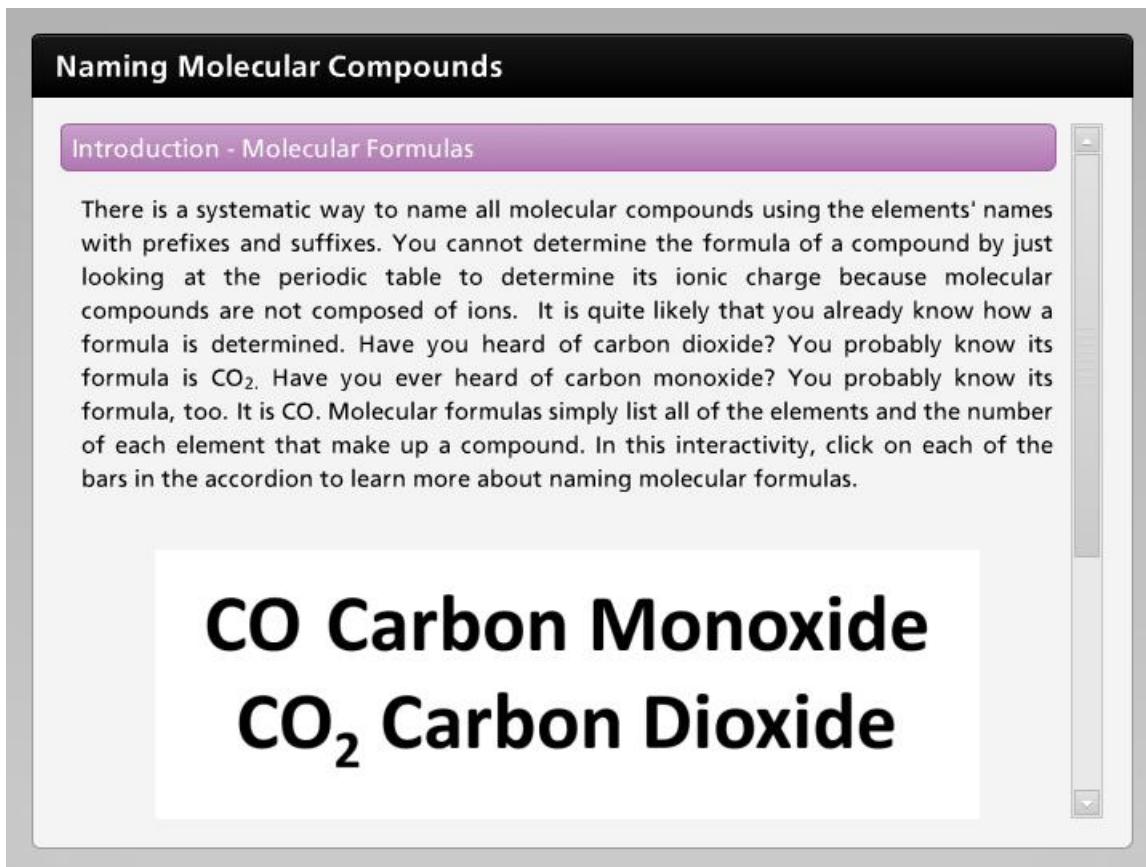


## Module 4: Bonding, Formula Writing, and Nomenclature

### Topic 5 Content: Naming Molecular Compounds Notes

#### Introduction - Molecular Formulas



The screenshot shows a digital interface for a chemistry lesson. At the top, a black header bar contains the title 'Naming Molecular Compounds' in white. Below this, a purple bar highlights the current section: 'Introduction - Molecular Formulas'. The main content area is white and contains a paragraph of text explaining the systematic naming of molecular compounds. At the bottom of this area, a white box displays two examples: 'CO Carbon Monoxide' and 'CO<sub>2</sub> Carbon Dioxide' in large, bold, black font. A vertical scrollbar is visible on the right side of the content area.

**Naming Molecular Compounds**

Introduction - Molecular Formulas

There is a systematic way to name all molecular compounds using the elements' names with prefixes and suffixes. You cannot determine the formula of a compound by just looking at the periodic table to determine its ionic charge because molecular compounds are not composed of ions. It is quite likely that you already know how a formula is determined. Have you heard of carbon dioxide? You probably know its formula is CO<sub>2</sub>. Have you ever heard of carbon monoxide? You probably know its formula, too. It is CO. Molecular formulas simply list all of the elements and the number of each element that make up a compound. In this interactivity, click on each of the bars in the accordion to learn more about naming molecular formulas.

**CO Carbon Monoxide**  
**CO<sub>2</sub> Carbon Dioxide**

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## Module 4: Bonding, Formula Writing, and Nomenclature

### Topic 5 Content: Naming Molecular Compounds Notes

#### Prefixes

### Naming Molecular Compounds

Introduction - Molecular Formulas

Prefixes

Prefixes are used to indicate the number of atoms of each element. View the table for a list of prefixes that are used in naming molecular compounds.

Number of Atoms	Prefix
1	Mono-
2	Di-
3	Tri-
4	Tetra-
5	Penta-
6	Hexa-
7	Hepta-
8	Octo-
9	Nona-
10	Deca-

Suffixes

Prefixes are used to indicate the number of atoms of each element. View the table for a list of prefixes that are used in naming molecular compounds.

## Module 4: Bonding, Formula Writing, and Nomenclature

### Topic 5 Content: Naming Molecular Compounds Notes

#### Suffixes

### Naming Molecular Compounds

Prefixes

Suffixes

The second element changes the end of its name to "-ide," just as in ionic naming. View the table for a list of common element names with their correct suffixes.

Element Name	Element with Suffix
Nitrogen	Nitride
Oxygen	Oxide
Fluorine	Fluoride
Phosphorous	Phosphide
Sulfur	Sulfide
Chlorine	Chloride
Arsenic	Arsenide
Selenium	Selenide
Bromine	Bromide
Tellurium	Telluride
Iodine	Iodide

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# Module 4: Bonding, Formula Writing, and Nomenclature

## Topic 5 Content: Naming Molecular Compounds Notes

### Common Names

#### Naming Molecular Compounds

Prefixes

Suffixes

Common Names

Some molecular compounds have common names. These compounds still have a formula and a proper name like other molecular compounds. View the table for a list of common names and their chemical formulas.

Common Name	Formula
Water	H <sub>2</sub> O
Ammonia	NH <sub>3</sub>
Methane	CH <sub>4</sub>
Ethane	C <sub>2</sub> H <sub>6</sub>
Propane	C <sub>3</sub> H <sub>8</sub>
Butane	C <sub>4</sub> H <sub>10</sub>
Pentane	C <sub>5</sub> H <sub>12</sub>
Benzene	C <sub>6</sub> H <sub>6</sub>
Methanol	CH <sub>3</sub> OH
Ethanol	CH <sub>3</sub> CH <sub>2</sub> OH

Some molecular compounds have common names. These compounds still have a formula and a proper name like other molecular compounds. View the table for a list of common names and their chemical formulas.

# Module 4: Bonding, Formula Writing, and Nomenclature

## Topic 5 Content: Naming Molecular Compounds Notes

### Diatomic Elements

The screenshot shows a digital interface with a dark header titled "Naming Molecular Compounds". On the left, there is a vertical sidebar menu with several items: "Prefixes", "Suffixes", "Common Names", "Diatomic Elements" (which is highlighted in a lighter purple), and "Permanent Bonding". The main content area contains a text paragraph and a table. The text explains that diatomic elements exist only in pairs and lists them with their formulas in a table.

There is also a group of very special elements that exist only in pairs in their elemental state. They are called the diatomic molecules. It is important to memorize this group of elements with their names. Keep in mind, that when these elements are combined with other elements, they are not necessarily diatomic. View the table for a list of diatomic molecules and their formulas.

Molecule Name	Formula
Bromine	Br <sub>2</sub>
Oxygen	O <sub>2</sub>
Iodine	I <sub>2</sub>
Nitrogen	N <sub>2</sub>
Chlorine	Cl <sub>2</sub>
Hydrogen	H <sub>2</sub>
Fluorine	F <sub>2</sub>

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## Module 4: Bonding, Formula Writing, and Nomenclature

### Topic 5 Content: Naming Molecular Compounds Notes

#### Permanent Bonding

### Naming Molecular Compounds

- Prefixes
- Suffixes
- Common Names
- Diatomic Elements
- Permanent Bonding

In molecular compounds, the atoms are bonded permanently to those other particular atoms in the compound. For example, the formula for glucose is  $C_6H_{12}O_6$ . If the formula is reduced to  $CH_2O$ , an entirely different compound is created. The compound of  $CH_2O$  represents formaldehyde. In the glucose molecule, the six carbon atoms, twelve hydrogen atoms, and six oxygen atoms are bonded together as a unit.

~~$C_6H_{12}O_6$  Glucose~~  
 ~~$CH_2O$  Formaldehyde~~

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