**Part B Covalent Compounds: Names and Formulas of Binary Molecular Compounds**

Any **cation and anion** combine in a single ratio that is easily predictable from their charges. This is why ionic compounds’ names do not need to explicitly contain their formulas.

On the other hand, two **non-metal** atoms may share electrons and combine in several ratios. Therefore, the name of the molecular compound must reveal its formula to distinguish it from the other compounds of the same two elements. The name of a molecular compound uses a **prefix** to provide its formula. The prefixes used are shown in Table 4.13.

The names of all binary compounds have an **-ide** suffix. **NaO** is therefore the **nitrogen** oxide. **Note that the number of atom** comes **before the name** of the element but after the symbol of the element. The prefix **mono-** is understood for the first element named if no prefix is stated. For example, carbon **di-** oxide is **CO**₂, NOT mono-carbon dioxide.

### Determining the FORMULA of a Molecular Compound from Its Name

**What is the formula of xenon tetrafluoride?**

**Xe**

**How to Do It**

1. Write the symbols of each element and the number of atoms of each.
2. Rewrite this information as a formula.

**XeF₄**

### Determining the NAME of a Molecular Compound from Its Formula

**What is the name of S₄O₆**?

**1.** Write the names of each element and the number of atoms of each.
2. Rewrite this information using the prefix code.

**S₄O₆**

### Determining the Name and Formulas of Molecular Compounds

#### PRACTICE

1. Write the formula of each of the following molecular compounds:
   - (a) Nitrogen monoxide
   - (b) Nitrogen dioxide
2. Name each of the following molecular compounds:
   - (a) PC₂
   - (b) SO₂

#### ANSWERS:

1. a. NO c. N₂O₄
2. a. Phosphorus pentachloride b. Sulphur dioxide c. Carbon monoxide d. Diphosphorus pentoxide

### Assignment #9 - Hebdon pg 74 Questions #8-9

All assignments are to be completed on a separate page with the assignment number & heading. Be sure to show FULL WORKING OUT for all homework.
Covalent Bonds
(a bond between two nonmetals)

<table>
<thead>
<tr>
<th>prefix</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>mono-</td>
<td>1</td>
</tr>
<tr>
<td>di-</td>
<td>2</td>
</tr>
<tr>
<td>tri-</td>
<td>3</td>
</tr>
<tr>
<td>tetra-</td>
<td>4</td>
</tr>
<tr>
<td>penta-</td>
<td>5</td>
</tr>
<tr>
<td>hexa-</td>
<td>6</td>
</tr>
<tr>
<td>septa-</td>
<td>7</td>
</tr>
<tr>
<td>octa-</td>
<td>8</td>
</tr>
<tr>
<td>nona-</td>
<td>9</td>
</tr>
<tr>
<td>deca-</td>
<td>10</td>
</tr>
</tbody>
</table>

If the element starts with a vowel, you may need to drop the α- or α- at the end of your prefix.

- penta- → pentoxide
- di- → dioxide
- tetra- → tetroxide
- hexa- → hexoxide

Writing Compound Names

**N₂O₅**
- nitrogen
- oxygen
- How many?
dinitrogen pentoxide

**CO**
- carbon
- oxygen
- How many?
carbon monoxide

**SiF₄**
- silicon
- fluorine
- How many?
silicon tetrafluoride

Notice that we don't use the prefix mono- here. That's because it's the first element in the compound.