

The halogens are located in Group VII, now known as Group 17, of the periodic table. Included in the halogen family are the elements fluorine, chlorine, bromine, iodine, and astatine (F, Cl, Br, I, and At, respectively). Halogens are fairly reactive due to their seven valence electrons. They are very close to the desired octet, and easily pick up one electron. Due to their reactivity, halogens are only found in nature when they are in a molecular compound. Fluorine and chlorine are gases at room temperature. Bromine is a liquid at room temperature, and iodine and astatine are solids at room temperature.

## History

Explore the discoverer's biography, including general facts about his life and anecdotes regarding how he made this particular discovery. Also see other significant scientific discoveries built largely on this concept and other real-world applications in history that may not still be relevant.

### Discoverer/Developer

The halogens were named by a Swedish chemist by the name of Jöns Jakob Berzelius. Halogen means "salt come to be" and is significant because halogens form salts when reacted with metals.

## Real World Application

Discover processes or disciplines in the natural or man-made worlds that employ the concept.

### Fluorine

Fluorine is used in non-stick Teflon pans. Fluorine is also used to etch glass and is an ingredient in toothpaste. CFCs, or chlorofluorocarbons, are a main component in refrigeration and cooling units. Fluorine has been added in **very** small quantities to public water supplies to reduce tooth decay.

### Chlorine

The use of chlorine is quite common. You may recognize the smell of chlorine in public swimming pools or bleach. This is because chlorine makes an excellent disinfectant. One of the most common applications of chlorine is in something that you ingest every day: table salt is NaCl.

### Bromine

Bromine is used as a pesticide. It is also used to flame-proof things. Bromine, like chlorine, is commonly used in disinfectants and sanitizers.

### Iodine

Iodine use is very important to the medical community. This is due to its antiseptic qualities. Iodine is often added to halogen headlights that are used in vehicles.

### Astatine

Astatine is radioactive and has no known real world applications.

## Vocabulary

Learn important vocabulary for this concept, including words that might appear in assessments (tests, quizzes, homework, etc.) that indicate the use of this concept.

Important Vocabulary	Term	Context
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## Videos

Browse relevant videos from the Journal of Chemical Education's (JCE) Chemistry Comes Alive! library and other video sources.

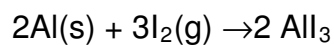
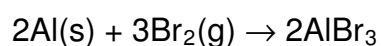
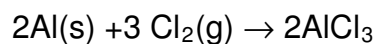
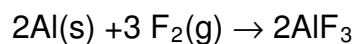
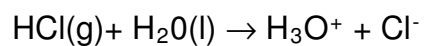
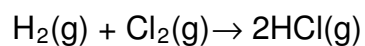
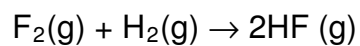
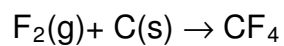
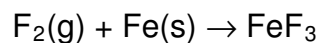
### Chlorine with Acid

Test Tube One and Two:

Test Tube Three and Four:

### Comparing the Four Halogens

The reactions in this video are:



## Computer Animations

Experience computer simulators or animations that illustrate the concept discussed here. Many simulators or animations come with worksheets for use in class.

[http://preparatorychemistry.com/element\\_properties\\_flash.htm](http://preparatorychemistry.com/element_properties_flash.htm)