## COMMON REACTIONS

**With Metals to Form Binary Compounds**

*Example:* $8Mg(s) + S_8(l) \longrightarrow 8MgS(s)$

$O_2$, Se, and Te follow this pattern in reacting with Na, K, Ca, Mg, and Al.

**With Oxygen to Form Oxides**

*Example:* $Se(s) + O_2(g) \longrightarrow SeO_2(s)$

S, Te, and Po follow this pattern. S, Se, and Te can form $SO_3$, $SeO_3$, and $TeO_3$.

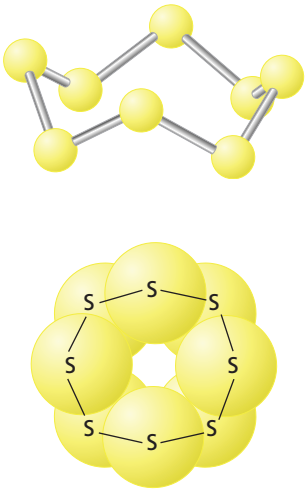
**With Halogens to Form Binary Compounds**

*Example:* $S_8(l) + 8Cl_2(g) \longrightarrow 8SCl_2(l)$

O, Se, Te, and Po follow this pattern in reacting with $F_2$, $Cl_2$, $Br_2$, and $I_2$.

**With Hydrogen to Form Binary Compounds**

$2H_2(g) + O_2(g) \longrightarrow 2H_2O(l)$




*Sulfur exists as $S_8$ molecules in which the atoms are bonded in a ring, as shown by the ball-and-stick and space-filling models.*

## ANALYTICAL TEST

There is no simple analytical test to identify all elements of this family. Selenium and tellurium can be identified by flame tests. A light blue flame is characteristic of selenium, and a green flame is characteristic of tellurium. Oxygen can be identified by the splint test, in which a glowing splint bursts into flame when thrust into oxygen. Elemental sulfur is typically identified by its physical characteristics, especially its color and its properties when heated. It melts to form a viscous brown liquid and burns with a blue flame.

*A glowing splint thrust into oxygen bursts into a bright flame.*

*Sulfur burns with a characteristically deep blue flame.*

*Molten sulfur returns to its orthorhombic form upon cooling.*