

# Aim: How is SULFUR cycled through the ecosphere?

1. What is the significance of sulfur?

Sulfur (mainly in the form of sulfate ions:  $\text{SO}_4^{2-}$ ) is absorbed by plants and used to build proteins

2. Where is most of the Earth's sulfur located?

mostly in rocks and minerals

a. gypsum

calcium sulfate

$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

(deep in oceans –  
exposed when uplift occurs)

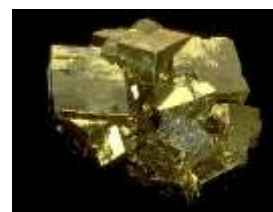


b. pyrite

iron sulfide

$\text{FeS}_2$

(underground)



3. How is sulfur released into air and water?

a. volcanoes

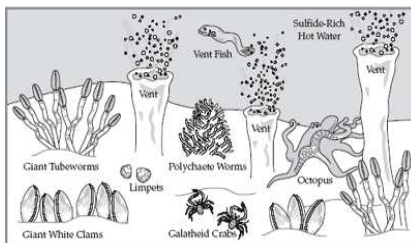
release  $\text{H}_2\text{S}$  – hydrogen sulfide gas  
and  $\text{SO}_2$  – sulfur dioxide gas



b. hydrothermal vents

in oceans

release  $\text{H}_2\text{S}$  – hydrogen sulfide gas  
and metal sulfide particles



c. anaerobic decomposers

in swamps and bogs

(and sewers)

produce  $\text{H}_2\text{S}$  – hydrogen sulfide



4. How do humans influence the sulfur cycle?

a. burning coal and oil (and oil refinement) produces sulfur dioxide gas ( $\text{SO}_2$ ) which reacts with water to form sulfuric acid ( $\text{H}_2\text{SO}_4$ ) → acid rain falls back to land and water environments

b. Smelting - extracting metal from its ore by heating and melting releases  $\text{SO}_2$  gas → acid rain