

## ENVIRONMENTAL USES OF MINERALS

Minerals are used every day for environmental purposes from filtering wastes to neutralizing acid-rain. Below are just a few uses for you to review. Have your students investigate other ways minerals are used to protect or clean up the environment.

**BARITE:** As a weighing agent in oil well drilling mud to keep oil in the drill hole (prevents “gushers” which would contaminate soil on the surface around the drill hole.)

### **CLAYS:**

Air Quality: Replacement for asbestos in many construction and industrial applications.

Hazardous Waste Disposal: Solidification of organic wastes and salt solutions containment of hazardous wastes by encasement or by impermeable barrier.

Water Treatment: Selective absorbance of organic contaminants from waste water removal of paint residue from water in industrial processes.

### **DIATOMITE:**

Horticulture: Non-chemical insecticide

Water Treatment: Purification of water by removing impurities down to 0.1 micron without the use of filtration chemicals (uses from water treatment plants to swimming pools).

**GOLD:** Energy Conservation: Microcoating on glass reflects solar energy, reducing air conditioning electrical demand.

### **LIMESTONE:**

Agriculture: Soil stabilization and pH control.

Air Quality: neutralizes sulfur oxides from industrial stock gases.

Hazardous Waste Disposal: PCB sludge solidification and neutralization.

Solid Waste Disposal: Stabilize sludge from sewage and desulfurization plants.

Waste Water Treatment: Removes phosphorus and nitrogen, odor control, kills bacteria; aids in clarification.

Water Treatment: Potable water softening and clarification; acid-rain and acid-drainage neutralization.

**LITHIUM:** Energy Conservation: High density, high energy batteries for numerous applications including propulsion of electric cars.



**PERLITE:**

Horticulture: Soil conditioning and water retention.

Water Treatment: Filtration of water in food processing, industrial applications and swimming pools.

**PLATINUM:**

Hazardous Waste: Shows promise in treating toxic wastes.

Air Quality: Automobile catalytic converters; also used in the synthesis of MTBE, a gasoline additive to replace lead and reduce automobile carbon monoxide emissions.

Waste Treatment: Used in the detoxification of ground water and soil.

**RARE EARTHS:**

Air Quality: Automobile catalytic converters.

Energy Conservation: Phosphors in low-energy fluorescent lighting.

Recycling: Use in permanent magnets for separation of metals from other wastes.

**SANDSTONE AND CRUSHED ROCK:** Water conservation by using as ground cover in xeriscape landscaping.

**SILVER:** Water treatment: Kills bacteria in water purification systems.

**ZEOLITES:**

Agriculture: Stabilization of ammonium and potassium in soil.

Air Quality: Air filtration, odor control, and purification of gases and air by selectively adsorbing gases such as: ammonium, hydrogen sulfide, carbon monoxide, carbon dioxide, nitrogen, formaldehyde and mercaptan.

Hazardous Waste: Heavy metal and nuclear waste containment.

Water Treatment: Ammonium removal.