**BACKGROUND INFORMATION**

**Department of Transportation Placards**

Many products found in homes and used in industry involve potentially hazardous

substances that are classified by the U.S. Department of Transportation (D.O.T.) as

hazardous substances. Such materials are transported primarily by trucks or railroad

from refineries or plants where they are made to factories where they are used and

then to disposal facilities where they are reprocessed or discarded as waste. An estimated

60% of all hazardous materials travel U.S. highways. The D.O.T. requires

trucks, railcars, and shipping containers that carry hazardous materials to be marked

with diamond-shaped placards that help describe the nature of the materials. The

placards describe any hazards that the contents may pose such as corrosive, flammable,

or toxic.

**Demonstration of Corrosive**

According to the D.O.T., a corrosive substance is one the reacts chemically to disintegrate

or wear away at another substance. A test to indicate if a liquid is “corrosive”

determines if the liquid (in the demonstration in this Activity copper chloride,

ethanol, and water) reacts chemically with a solid (aluminum metal).

**Demonstration of Flammability**

There are degrees of flammability. A test to determine flammability can be conducted

by placing a small amount of the substance to be tested on the end of a metal loop and

holding it over a flame. If the substance ignites, it is flammable. This is one category of

hazards identified by the D.O.T.

According to D.O.T. guidelines, an extremely flammable substance often produces

vapors that ignite from the flame of a match or any nearby spark; moderately flammable

hazardous substances combust more easily if a wick is present; nonflammable

substances do not burn under normal conditions. Extremely flammable substances

often have a flash point, or a lowest temperature at which a sufficient amount of

vapors causes a fire if a flame or spark is present. Assuring the temperature conditions

remain below the flash point is essential to safely handing and storing an extremely

flammable substance.

