

# ElectroStatic Precipitators (ESP)



## The Problem-

Just like the wood in your fireplace at home, when coal is burned it leaves behind a dust known as ash. Roughly 75 percent of the ash remaining from the combustion of coal is suspended in the exhaust gases and would be emitted into the atmosphere.

## The Solution -

Just as a TV or computer monitor screen attracts dust, the same principle captures dust in an electrostatic precipitator. In fact, Sharper Image sells a small stand-alone electrostatic precipitator for home use – to collect dust in the indoor air.

## How it works-

The electrostatic precipitator is a large industrial version of the Sharper Image device. The ESP uses 30,000 to 50,000 volts of direct current (DC) to charge the fly ash with static electricity, and then collect and capture the ash dust. These ESPs routinely collect over 99.9 percent of the ash that enters the device, and about 90 percent of all coal-fired power plants in the U.S. have ESPs today.

## What does this have to do with mercury control?

The ability to collect small particles in ESPs can be used to collect mercury by the use of sorbents – a solid material that attracts and binds the mercury gases to the solid surface. The best known mercury sorbent is activated carbon, a chemical sponge actually made from coal, used widely to clean drinking water. In fact, a home water filter from Home Depot will likely contain a bed of activated carb on which can capture metals, organic compounds, and improve the taste. The same activated carbon can be injected ahead of an ESP, where it will capture a part of the mercury in the exhaust gases, and then, in turn, be collected along with the ash by the action of the ESP.