

Selective Catalytic Reduction (SCR)



The Problem-

Whenever anything is burned in air, the components of air – oxygen and nitrogen – can combine to form nitrogen oxides, or NO_x. Coal is even more difficult because it contains nitrogen – from the ancient plants that became the coal – and this nitrogen burns to make even more NO_x.

The Solution -

Simply, just as a catalytic converter is used on a car to reduce NO_x, a catalytic system can be used on power plants.

How it works-

A large catalyst reactor is built hanging on the back of the power plant, and three or four layers of catalyst – maybe three feet deep – are installed inside the reactor. The catalyst is installed at 700°F and ammonia is injected into the gas before it enters the SCR. The catalyst then combines the NO_x and the ammonia to make harmless nitrogen gas and water. (The air you are breathing right now is 80 percent nitrogen gas.)

What does this have to do with mercury control?

The industry was surprised that the SCR system, with certain kinds of coal, was beneficial to capturing mercury in a power plant. The catalyst appears to help change the chemistry of mercury and thus make it possible to capture more mercury in a downstream scrubber installed to remove acid gases like sulfur dioxide.