

Electrostatic Precipitators Breed Dioxins

Electrostatic Precipitators, or ESPs, are pollution control equipment which the gases pass through after leaving the combustion chamber. [Dioxins](#) are formed at relatively low temperatures: 200°C to 400°C (392°F to 752°F). Hence it doesn't matter how hot an incinerator burns when considering dioxin formation. The issue is how long the gases stay in that dioxin-forming temperature range as they cool off. This cooling off period is known as "quench time." Short quench times form less dioxin than long quench times. Sometimes dioxins are actually formed after they leave the stack of a burner (if they leave at high enough temperatures). ESPs are known to form lots of dioxin because they keep the gases in that temperature range. The EPA has been aware of this at least since 1988, when they tested the Red Wing incinerator in Minnesota. Test results showed that the average of dioxins in emissions entering the ESP was 2.2 nanograms per dry standard cubic meter. The average exiting the ESP was 23.8 ng/dscm. Hence the pollution control equipment was actually causing more than a 10-fold increase in the most toxic chemicals ever studied -- dioxins.

The following is a quote from a March 1994 memo to all EPA regional offices from Walt Stevenson and Fred Porter, US EPA Office of Air Quality Planning and Standards:

"Operating an ESP with a combustion gas inlet temperature in the range of 450 degrees Fahrenheit or greater, normally leads to substantial formation of dioxin in the ESP. By operating in this manner the ESP...may be generating dioxin emissions at levels which present an imminent and substantial endangerment to the public health or welfare or the environment."

You can find this and other great reporting on incineration, dioxins and ESP in the Waste Not newsletter published by Dr. Paul Connett and his wife Ellen Connett out of Canton, NY. Paul is a chemistry professor at St. Lawrence University and is an internationally known expert on this topic. Some of their newsletters are archived at:

<http://www.workonwaste.org>

Issue #45 (March 7th, 1989) is the earliest article on the topic and is not available in the archive. However, it mentions the Red Wing, Minnesota incinerator and states that dioxins have been found as high as 30 ng/dscm. 23.8 ng/dscm (what they found on average coming out of the ESP) is at least 230 times greater than the Swedish dioxin guidelines for new incinerators.

Issue #275 "The Columbus, Ohio Waste-to-Dioxin Trash Incinerator" is also not available on the web, but discusses what was the nation's largest dioxin-emitting incinerator (they used ESPs for pollution control) before being shut down in the mid-1990s. Now, the nation's largest single dioxin source is [the Harrisburg, Pennsylvania trash incinerator](#).

Here are some of the issues on the ESP topic which ARE available in the web archive:

[#309](#): The US EPA mandated dioxin tests in 1994 at the listed municipal solid waste incinerators because they generating dioxin emissions at levels which present an imminent and substantial endangerment to the public.

[#262](#): A Review, by State, of Operating Municipal Solid Waste Incinerators. (Minnesota to Mississippi)

Last modified: 2 May 2001

<http://www.ejnet.org/dioxin/esp.html>