# A Cloud with a Silver Lining:

# The Killer Smog in Donora, 1948

By Erin Peterman, Spring 2009

*Donora Smog Museum*

A murderous villain terrorized the town of Donora during the last week of October 1948. The silent killer took the lives of 20 people and left thousands of others in its wake. The killer came in without warning and vanished in a puff of smoke.

*Devra Davis, When Smoke Ran Like Water, 2002 and www.environmentalhealthtrust.org*

Donora lies on the western bank of a Pennsylvania river. In 1948, the town was home to 14,000 residents, 6,500 of whom worked for the area's two mills, the American Steel & Wire Co. and Donora Zinc Works. Unbeknownst (unknown) to the majority of the residents, the factories that sustained their livelihood would also be the cause for illness in a large majority of the town's population and even death for some.

On October 27, 1948, thick, opaque smog began to cover the small, flat river town. "You couldn't see your hand in front of your face," said resident Bill Schempp. He described the scene as something out of this world. "If you chewed [the air] hard enough, you could swallow it."

Within 24 hours of the smog's arrival, police began to receive an alarming number of calls about residents who were having trouble breathing. As time progressed, the calls got more serious. Soon, those who already had respiratory problems began to

die, and those who were not sick began to feel the effects of the unusual fog.

Those who tried to escape found their attempts futile (pointless) because they could not see through the smog while driving even though the town kept its streetlights on during the day. The dense fog had the residents trapped in the town.

*NOAA Oceanservice Education*

Taken at noon on October 29, 1948, this picture shows the deadly smog blanketing Donora.

Schempp, a local fire fighter during the incident, responded to calls, but said it took him an hour to get to a house five blocks away because visibility was so poor. When he arrived with his 135-pound oxygen tank, he was unable to give the wheezing victims all of the oxygen they desired. He had to keep moving in order to help other residents.

## Storm Saves Lives

Luckily the smog was stopped from causing any more harm when two things occurred. First, the factory was ordered to shut down. Second, a storm rolled into town on October 31. The storm saved the town because it broke the temperature inversion that started in the last week of October.

*Devra Davis, When Smoke Ran Like Water, 2002 and www.environmentalhealthtrust.org*

A cemetery overlooks the ominous clouds from the steel mills in the valley below. Hot air trapped the pollution in the valley in October 1948.

Normally, air is warmest near the ground. Because warm air is lighter than cold air, it rises into the cooler air above it like a hot air balloon, and it takes pollution with it. During the temperature inversion, the air near the ground was colder than the air higher up. The heavy cold air couldn't rise into the warmer air above it. The cold air and the pollution from the factories, cars, and houses were trapped over the

town.

Temperature inversions were not unusual for Donora, but this one was different because it lasted for five days. More and more pollution built up in the trapped air as each day passed. Because of the storm activity on October 31, the polluted air was dispersed (spread out) and the air quality improved.

**Clean Air Act Becomes Law**

The exact amounts of toxins in the air during the incident are unknown because records have disappeared. Today, the Environmental Protection Agency measures air quality with instruments on the ground, while NASA satellites measure air quality from space. All of these measurements are available to everyone on the Internet.

*Public Health Service National Institutes of Health*

Public Health Service engineer George Clayton looks down at a mill emitting pollution while getting ready to survey its emission levels.

The incident at Donora was tragic, but it should not have been completely unexpected. There had been claims against the mill settled in court in the early 1900s. The first claim came from Mamie C. Burkhardt, who said she began to get headaches, felt lethargic (being sluggish), and had trouble breathing when the mill opened in 1915.

In December 1952, 4 years after the killer smog of Donora, a strange fog took over the city of London, England. The week-long fog, caused by coal ovens, is said to have killed 4,000 people.

*Devra Davis, When Smoke Ran Like Water, 2002 and www.environmentalhealthtrust.org*

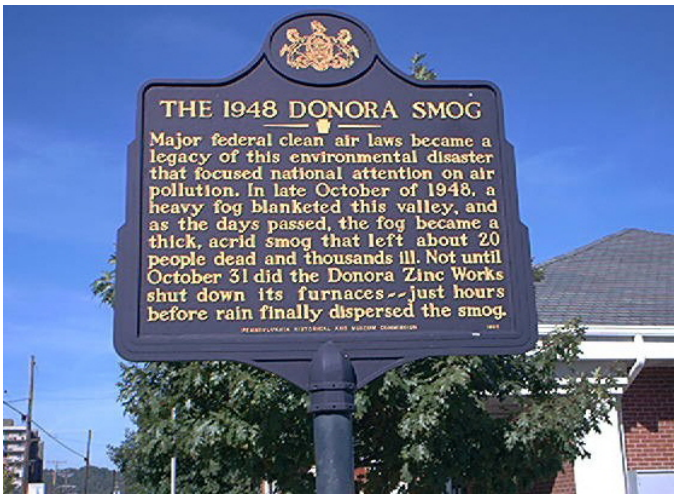
London's famous double-decker buses

disappear into the Killer Fog of 1952.

These two incidents caused the United States to make drastic changes to its laws concerning air pollution, resulting in the Clean Air Act. The act required that standards concerning air quality be rigid. The act also established the Environmental Protection Agency to enforce the standards for ozone (smog), carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, and particular soot levels.

The act limited the amount of sulfur dioxide allowed in the air to an average of 80 micrograms per cubic meter. At the time of the Donora incident, the emissions of sulfur dioxide were estimated to be somewhere around 1,500 to 5,500 micrograms per cubic meter.

The Clean Air Act has prevented another incident like the Donora smog of 1948 or the London fog of 1952. In fact, since the act's creation, emissions of toxic lead in the United States have dropped 98 percent. Sulfur dioxide emissions have dropped 35 percent, and carbon monoxide levels have fallen 32 percent.




*Donora Public Library*

Pennsylvania's Historic and Museum Commission commemorated the Donora Smog with an historic marker.

Donora is said to have started the movement towards clean air. Because the Clean Air Act has led to cleaner air and better health for everyone in the United States, the Donora smog tragedy is like a cloud with a silver lining.

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