

Understanding the Effects of Lead Exposure

The City of El Paso believes that operation of a copper smelter within the City poses an unacceptable environmental risk and health threat to the community. This article will focus on the detrimental effects and health concerns associated with the emission of lead from the Asarco copper smelter into the air of El Paso.

The Asarco copper smelter produces refined copper by separating copper from all other materials found in the ore. Lead is one of the materials separated from the copper, and if the air quality permit is issued by the Texas Commission on Environmental Quality (TCEQ), the smelter will be authorized to emit 4.7 tons of lead into the El Paso air each year.

Historical studies have established that the Asarco facility in El Paso contributed to nearby lead contamination. For example, children living in “Smelertown,” formerly adjacent to the Asarco facility, were found to have exceptionally high levels of lead in their blood and were hospitalized. Tests showed that the soils in Smelertown had high levels of lead. Exposure to lead causes a wide range of health effects, interfering with the development of the brain and affecting the kidneys. Children under the age of six and unborn babies are particularly vulnerable to lead exposure because their brains and central nervous systems are not yet formed.

The National Ambient Air Quality Standard (NAAQS) for lead of 1.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) was established by the U.S. Environmental Protection Agency (EPA) in 1978 to ensure “safe” blood-lead concentrations, but it was based on what is now an outdated blood-lead standard. (A measurement of the concentration of lead in blood—the blood-lead standard—is used as the primary indicator of lead exposure.) While the medical community has lowered the blood-lead standard, EPA has not followed suit by lowering the NAAQS for lead in air. Because of this, the current lead NAAQS is based on a blood-lead standard three times higher than the current blood-lead standard.

EPA staff recently concluded that a significant reduction in the lead NAAQS is necessary to protect public health and recommended that the standard be reduced from 1.5 $\mu\text{g}/\text{m}^3$ to a level between 0.02 $\mu\text{g}/\text{m}^3$ and 0.2 $\mu\text{g}/\text{m}^3$. The sobering reality for the El Paso area is that the NAAQS being used to assess the health impacts of lead emissions from the Asarco copper smelter is based on an outdated and unprotective health standard. Exposure to lead from Asarco’s air emissions may pose a health threat when accurately evaluated based on more current health-protective standards. Based on Asarco’s own air dispersion modeling, if the copper smelter begins operation, the concentration of lead in El Paso air could be as high as 0.27 $\mu\text{g}/\text{m}^3$.

To complicate matters, exposure to lead does not occur through air alone, and lead exposure is cumulative. The primary way that people come into contact with lead is through soil that is contaminated with lead from air emissions or other sources. To determine the concentration of lead in air that will be protective of a community, it is necessary to consider the concentration of lead in soil to which the community will also be exposed. One of the City’s principle issues with TCEQ’s review of Asarco’s permit application is that TCEQ is evaluating the air emissions of lead without considering the additional exposure from lead in El Paso soils. EPA has determined that over a thousand residential yards in the El Paso area have been contaminated with arsenic and lead by Asarco’s past operations. TCEQ has also failed to consider that the lead emitted to air from the Asarco copper smelter will, over time, again accumulate in area soils.

Once lead enters the body, it is stored in bones and teeth where it accumulates and gets slowly released back into the blood over decades. This characteristic of lead makes it particularly dangerous and is why

El Paso, with its history of exposure to lead contamination, needs to be particularly diligent in preventing new lead emissions. Asarco's lead emissions would possibly be higher than any single facility in the United States. The new lead emissions from the Asarco smelter, coupled with the history of lead contamination by Asarco in the El Paso area and what we know about the long-term residual effects of lead, create the potential for serious health consequences for El Paso citizens, especially those living in areas where high levels of lead remain in soil. To read the entirety of this article, please go to www.elpasotexas.gov and click on ASARCO Information.

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