



**Statement by Neil Carman, PhD chemist on
Health Effects of Air Pollution in Houston Area and
Emissions from Shell Oil's Deer Park Refinery-Chemical Complex**

“Houston has one of the worst air quality problems in the nation with ozone, smog, air toxics, and harmful tiny soot particles affecting the health of people living in the greater Houston area and Harris County. A significant economic cost occurs every year due to people experiencing health problems when the air is dirty and needing medical treatment.

Sensitive persons who suffer the most from Houston's dirty air are children, the elderly, and persons with respiratory illnesses. Children are especially vulnerable to air pollution due to the delicate nature of their developing bodies and playing outside on a daily basis exposes them to more air pollution than adults.

Houston's air pollution contains a soup of dozens of chemicals, including those emitted by Shell Oil Deer Park.

1. Nitrogen Oxides - Forms ozone and smog that irritate sensitive lung tissues (alveolar sacs) and make breathing difficult. On bad air days, people suffer asthma attacks and breathing problems. More emergency room visits.

2. Volatile Organic Compounds - Forms ozone and smog making breathing difficult. Contribute for the air toxics pollution problem.

3. Air Toxics pollution is high in the Houston area and is a mixture of toxins including carbon-based chemicals, metals and other substances.

A. Benzene - Carcinogen and non-cancer health effects.

B. 1,3-Butadiene - Carcinogen and non-cancer health effects.

C. Other air toxic substances



4. Fine Particles/PM2.5/Soot/Smoke - microscopic soot formed by the mixture of airborne chemicals, and tiny soot particles. Soot pollution contributes to breathing difficulties, increased rates of heart attacks and premature mortality.

5. Sulfur Dioxide - Respiratory irritant that is especially harmful to the human lungs. Sulfur dioxide also forms fine sulfate particulate matter.

6. Hydrogen Sulfide gas - Neurotoxin and genotoxin. Rotten egg odors from H₂S often cause headaches and discomfort in low concentrations.

Shell Oil Deer Park is one of the largest sources of air pollution on a daily basis in the Houston area. Shell ranked #2 or #3 in Harris County in 2005-07 in annual criteria air pollutants (Texas Commission on Environmental Quality). Gulf Coast winds routinely carry Shell's air emissions through the Houston Ship Channel communities and large areas of Houston where people breathe the pollution.

If approved by the court -- this landmark settlement, we are delighted to announce, will reduce the emission of these pollutants from Shell Deer Park by a minimum of hundreds of thousands of pounds per year, and perhaps significantly more."

**Neil Carman, PhD
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Dr. Carman is the Clean Air Program Director with the Lone Star Chapter of the Sierra Club based in Austin, Texas.