



Fact Sheet – Anchorage Benzene Monitoring Study

What is benzene?

Benzene is an organic chemical compound that is a natural component of crude oil and is found in gasoline at varying levels. Exposure to benzene is linked with increases in certain types of leukemia and other health problems.

Why did the Municipal Department of Health and Human Services (DHHS) want to monitor airborne benzene levels?

Previous monitoring in Anchorage suggested that the levels of benzene in the ambient air were among the highest in the U.S. The benzene content of Anchorage gasoline (about 4%) was implicated as a primary cause of these high airborne levels because it was three to four times higher than most of the U.S. In 2007, the Environmental Protection Agency (EPA) set new rules that required refiners throughout the U.S. to reduce the amount of benzene in gasoline to 1.3% or lower by 2012. The EPA provided \$217,000 in funding to DHHS to sample gasoline and monitor the air in Anchorage to determine whether the new gasoline rules would reduce the amount of benzene in the air.

Was the amount of benzene in Anchorage gasoline reduced as a result of the EPA rule?

DHHS collected gasoline samples from a variety of retail stations before and after refiners lowered the gasoline benzene content to meet the new EPA rule. The University of Alaska, Anchorage analyzed over 200 gasoline samples to determine the average gasoline benzene level in Anchorage before and after refineries met the new EPA limit. The benzene content fell from an average of 4.2% in 2008-09 to 1.3% in 2013.

Did the amount of benzene in the ambient air fall as a result of the change in gasoline benzene content?

Ambient benzene levels dropped from an average of about 1 ppb (part per billion) in

2009 to 0.5 ppb in 2013, a reduction of about 50%. Nearly all of this reduction was attributable to the lower gasoline benzene content.

Where was the monitoring done?

DHHS sampled ambient air from a roof top site in the Airport Heights neighborhood in east Anchorage. Samples were collected during two separate one-year periods; before (Oct 2008 – Oct 2009) and after (Jan 2013 – Dec 2013) the benzene in gasoline was reduced. They were sent to a laboratory in North Carolina for analysis of benzene and other volatile organic compounds.



Looking west from the Airport Heights Air Monitoring Station in east Anchorage

Implications

Benzene levels in Anchorage's air were highly correlated with carbon monoxide (CO) concentrations. Because motor vehicles are the primary source of CO, this indicates that vehicle emissions are also the main source of benzene in the air. Anchorage is prone to high CO during winter temperature inversions; airborne benzene concentrations were highest during these same periods. The study shows that reducing benzene in gasoline was an effective way of reducing benzene in the air.

A copy of the full report on the benzene study can be found at www.anchorageair.info.

