

TCEQ Interoffice Memorandum

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Date: June 16, 2011

Subject: Health Effects Review of 2010 Ambient Air Network Monitoring Data in Region 5, Tyler

Conclusions

- Exposure to monitored levels of volatile organic compounds (VOCs), carbonyls, or lead, arsenic and chromium from particulate matter less than 10 microns in diameter (PM₁₀), at the Karnack monitoring location would not be expected to cause chronic adverse health or vegetation effects.
- Exposure to monitored levels of VOCs at the Longview monitoring location would not be expected to cause chronic adverse health or vegetation effects.

Background

This memorandum conveys the Toxicology Division's evaluation of ambient air sampling conducted at two monitoring network sites in Region 5–Tyler during 2010. Summary results for 24-hour VOCs and carbonyls collected every sixth day and three speciated metals, lead, arsenic and chromium, from 24-hour PM₁₀ filter samples collected every sixth day from a site located at Highway 143 and Spur 449 in Karnack, as well as 24-hour VOCs collected every sixth-day from a site located at Gregg County Airport in Longview, were evaluated on a chemical-by-chemical basis. Information about the Region 5 monitoring sites is presented in Table 1, along with hyperlinks to the monitoring site maps and more detailed information. Complete lists of all chemicals evaluated are provided in Attachment A.

Table 1. Monitoring Sites Located in TCEQ Region 5

| City and Site Location | County | Monitor ID | Monitored Compounds |
|---|----------|------------|---|
| Longview, Gregg County Airport | Gregg | 481830001 | VOCs |
| Karnack, Highway 143 and Spur 149 | Harrison | 482030002 | VOCs, carbonyls, and metals (PM ₁₀) |

The Texas Commission on Environmental Quality (TCEQ) Field Operations Support Division reported data for all chemicals evaluated in this memorandum. Because every sixth day 24-hour air samples are designed to provide representative long-term average concentrations, annual averages from 24-hour samples were evaluated for potential chronic health and vegetation concerns. Short-term or peak concentrations are not captured by 24-hour samples; therefore, daily maximum concentrations have limited use in evaluating the potential for acute health effects. The data return for the monitored compounds at the Longview and Karnack monitor sites met completeness requirements for estimating annual average concentrations. All annual average concentrations were compared to their respective long-term Air Monitoring Comparison Values (AMCVs). More information about AMCVs is available online at:

<http://www.tceq.state.tx.us/implementation/tox/AirToxics.html#amcv>.

Evaluation

Karnack, Highway 143 and Spur 449 Site

All reported annual average concentrations of the 85 VOCs and the three speciated metals, lead, chromium and arsenic, monitored at the Karnack site were below their respective AMCVs and would not be expected to cause long-term adverse health and vegetation effects. All reported annual average concentrations of the 17 carbonyls monitored at the Karnack site were below their respective AMCVs and would not be expected to cause adverse long-term health effects.

Longview, Gregg County Airport Site

All annual average concentrations of the 85 VOCs monitored at the Longview site were below their respective AMCVs and would not be expected to cause adverse long-term health and vegetation effects.

If you have any questions about this evaluation, please call me at (512) 239-4477 or e-mail me at darrell.mccant@tceq.texas.gov.

cc (via email):

Casso, Ruben- EPA Region 6, Dallas
Prosperie, Susan- Department of State Health Services

Attachment A

List 1. Target VOC Analytes in Canister Samples

| | | |
|--------------------------------|--|---|
| 1,1,2,2-Tetrachloroethane | Acetylene | M/P Xylene |
| 1,1,2-Trichloroethane | Benzene | Methyl Chloroform (1,1,1-Trichloroethane) |
| 1,1-Dichloroethane | Bromomethane | Methylcyclohexane |
| 1,1-Dichloroethylene | Carbon Tetrachloride | Methylcyclopentane |
| 1,2,3-Trimethylbenzene | Chlorobenzene | N-Butane |
| 1,2,4-Trimethylbenzene | Chloroform | N-Decane |
| 1,2-Dichloropropane | Chloromethane (Methyl Chloride) | N-Heptane |
| 1,3,5-Trimethylbenzene | cis 1,3-Dichloropropene | N-Hexane |
| 1,3-Butadiene | Cis-2-Butene | N-Nonane |
| 1-Butene | Cis-2-Hexene | N-Octane |
| 1-Hexene+2-Methyl-1-Pentene | Cis-2-Pentene | N-Pentane |
| 1-Pentene | Cyclohexane | N-Propylbenzene |
| 2,2,4-Trimethylpentane | Cyclopentane | N-Undecane |
| 2,2-Dimethylbutane (Neohexane) | Cyclopentene | O-Ethyltoluene |
| 2,3,4-Trimethylpentane | Dichlorodifluoromethane | O-Xylene |
| 2,3-Dimethylbutane | Dichloromethane (Methylene Chloride) | P-Diethylbenzene |
| 2,3-Dimethylpentane | Ethane | P-Ethyltoluene |
| 2,4-Dimethylpentane | Ethylbenzene | Propane |
| 2-Chloropentane | Ethylene | Propylene |
| 2-Methyl-2-Butene | Ethylene Dibromide (1,2-Dibromoethane) | Styrene |
| 2-Methylheptane | Ethylene Dichloride (1,2-Dichloroethane) | Tetrachloroethylene |
| 2-Methylhexane | Isobutane | Toluene |
| 2-Methylpentane (Isohexane) | Isopentane (2-Methylbutane) | Trans-1-3-Dichloropropylene |
| 3-Methyl-1-Butene | Isoprene | Trans-2-Butene |
| 3-Methylheptane | Isopropylbenzene (Cumene) | Trans-2-Hexene |
| 3-Methylhexane | M-Diethylbenzene | Trans-2-Pentene |
| 3-Methylpentane | M-Ethyltoluene | Trichloroethylene |
| 4-Methyl-1-Pentene | | Trichlorofluoromethane |
| | | Vinyl Chloride |

List 2. Target Carbonyl Analytes

| | | |
|--------------------------|---------------------|--------------------------|
| 2,5-Dimethylbenzaldehyde | Formaldehyde | o-Tolualdehyde |
| Acetaldehyde | Heptaldehyde | p-Tolualdehyde |
| Acetone | Hexanaldehyde | Propanal-Propionaldehyde |
| Acrolein ** | Isovaleraldehyde | Valeraldehyde |
| Benzaldehyde | Methyl Ethyl Ketone | |
| Butyraldehyde | (MEK)/methacrolein | |
| Crotonaldehyde-2-Butenal | m-Tolualdehyde | |

** At the Karnack monitor, acrolein was a target analyte in both VOC and carbonyl sample analyses. At the Longview monitor, acrolein was a target analyte in only VOC sample analyses.

List 3. Target Metal (PM₁₀) Analytes

| | | |
|-----------------------------|------------------------------|--------------------------|
| Arsenic (PM ₁₀) | Chromium (PM ₁₀) | Lead (PM ₁₀) |
|-----------------------------|------------------------------|--------------------------|