

HEALTH CONSULTATION

KAR PRINTING, INCORPORATED

MIAMI LAKES, DADE COUNTY, FLORIDA

Prepared by:

**Florida Department of Health
Bureau of Environmental Toxicology
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry**

Background and Statement of Issues

On December 3, 1998, the Miami-Dade County Health Department requested that the Florida Department of Health, Bureau of Environmental Toxicology conduct a human health risk assessment. They requested an assessment of the air monitoring data collected near the KAR Printing facility 13930 NW 60th Avenue, Miami Lakes. KAR Printing is in a mixed commercial/residential area. On October 7, 1998, the Miami-Dade County Department of Environmental Resource Management (DERM) collected a 1-minute air sample 60 feet downwind of KAR Printing. On October 13, 1998, the Broward County Department of Natural Resource Protection laboratory analyzed this air sample for volatile organic chemicals using EPA method TO-14.

The Broward County Department of Natural Resource Protection (DNRP) laboratory detected 11 different volatile organic chemicals (VOCs) in this 1-minute air sample. The concentration of each VOC was less than one part per billion (by volume). The concentration of benzene was about 0.2 parts per billion (ppb). The concentrations of 33 other VOCs were below detection limits.

Discussion

Other than benzene, the concentrations of chemicals measured in the single, 1-minute grab air sample near KAR Printing are not likely to cause illness. The measured concentrations of the chemicals, other than benzene, were between 10 and 1000 times less than their respective comparison guidelines. Although the measured concentration of benzene (0.2 parts per billion) is above the federal Agency for Toxic Substances and Disease Registry (ATSDR) guideline concentration, it is less than the national average for urban areas. This assessment assumes exposure to only one chemical at a time. Health effects from simultaneous exposure to multiple chemicals (synergistic effects) are not well known.

Child Health Considerations

Although children in the nearby neighborhoods are also exposed, they are not known to be uniquely vulnerable to these contaminants. The state and federal guidelines for these contaminants are protective of children, as well as adults.

The Broward County DNRP measured about 0.2 parts per billion (ppb) of benzene in this air sample. This is about five times greater than the federal ATSDR guideline for constant, lifetime exposure. The measured concentration of benzene is, however, 10 to 100 times less than the levels that causes chronic erythroid leukemia in people following long-term exposure (more than one year). Chronic erythroid leukemia is a cancer of the blood forming cells in the bone marrow (ATSDR 1997).

The concentration of benzene in the air sample from this site (0.2 ppb) is less than the average ambient benzene air concentrations in other urban areas. Benzene is ubiquitous in the atmosphere. It has been identified in indoor air as well as rural and urban outdoor air. Ambient air samples from 44 sites in 39 U.S. urban areas were collected from 6:00 a.m. to 9:00 a.m. during June through September 1984, 1985, and 1986. Benzene was present in every sample. The median benzene site concentration ranged from 4.8 to 35 parts per billion (ppb), with the overall median being 12.6 ppb (detection limit = 0.04 ppb). The data indicated that mobile sources (motor vehicle exhaust and motor vehicle evaporation) were the major source of benzene in the vast majority of the samples (EPA 1987).

The Miami-Dade County Department of Environmental Resource Management (DERM) collected, and had analyzed, one air sample near this facility. One sample is, however, inadequate to characterize the long-term air quality. Additional samples are necessary to adequately characterize air quality near this facility. Additional samples should be collected on at least two different days to account for fluctuations in facility operations. The air samples should be collected as close to the nearest downwind house as possible. This will insure a measure of the air quality nearby residents are breathing.

The Miami-Dade County DERM collected this grab air sample during a 1-minute time period. Although a 1-minute grab air sample is a cost effective screening tool, it may not be representative of the average air quality. An 8-hour or 24-hour composite air sample is likely to be more representative of the average air quality.

The Miami-Dade County DERM did not collect a background (upwind) air sample. Without a background (upwind) air sample, it is not possible to differentiate between emissions from KAR Printing and other upwind sources.

The Broward County Department of Natural Resource Protection (DNRP) laboratory did not analyze the air sample for acetone, methyl ethyl ketone (MEK), or cumene. Although acetone and methyl ethyl ketone (MEK) are not particularly toxic, at high concentrations they can irritate the eyes, nose, and throat. People can smell these two chemicals, however, at very low concentrations. The Broward County DNRP laboratory also did not analyze the air sample for cumene. In their application for an air permit, KAR Printing predicted air emissions of cumene. To the extent possible, future analysis should include all volatile organic chemicals used at KAR Printing.

Conclusions

Other than benzene, the concentrations of chemicals measured in the single, 1-minute grab air sample near KAR Printing are not likely to cause illness. Although the measured concentration of benzene is above the federal ATSDR guideline concentration, it is less than the national average for urban areas.

1. One air sample is inadequate to characterize the long-term air quality.
2. A 1-minute grab air sample may not be representative of the average air quality.
3. Without a background (upwind) air sample, it is not possible to determine the contributions of other sources of contamination.
4. Broward County DNRP laboratory did not analyze the air sample for acetone, methyl ethyl ketone (MEK), or cumene (isopropyl benzene).

Recommendations

1. Collect additional air samples to adequately characterize the long-term air quality. Collect additional samples on at least two different days to account for fluctuations in facility operations. Collect air samples as close to the nearest downwind house as possible.
2. Collect 8-hour or 24-hour composite air samples for a more representative measure of the average air quality.
3. Collect a background (upwind) air sample to control for other sources of volatile organic chemicals
4. Include acetone, methyl ethyl ketone, and cumene in future air analyses. To the extent possible, include all other volatile organic chemicals used at KAR Printing in future air analyses.

References

ATSDR 1997. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Benzene (Update). Atlanta, GA. September 1997.

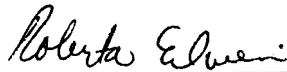
EPA 1987. June-September, 6-9 AM, Ambient Air Benzene Concentrations in 39 U.S. Cities, 1984-1986. Research Triangle Park, NC: U.S. Environmental Protection Agency, Atmospheric Sciences Research Lab. EPA/600/D/160.

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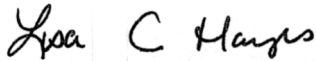
This KAR Printing health consultation was prepared by the Florida Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time it was begun.



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The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.



for Richard Gillig
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