

Health Consultation

Airways Boulevard

OWENS CORNING/EUTHER DAVIDSON SITES

JACKSON, MADISON COUNTY, TENNESSEE

EPA FACILITY ID: TND980559009

DECEMBER 18, 2003

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

**OWENS CORNING/EUTHER DAVIDSON SITE
AIRWAYS BOULEVARD**

JACKSON, MADISON COUNTY, TENNESSEE

EPA FACILITY ID: TN980559009

Prepared by:

Tennessee Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

BACKGROUND AND STATEMENT OF ISSUES

On July 15, 2003, the Agency for Toxic Substances and Disease Registry (ATSDR) and the Tennessee Department of Health (TDH) released the Health Consultation for the building at 781 Airways Boulevard, Jackson, Tennessee. For several months, employees in the West Tennessee Health Care Facilities (WTHCF) office of TDH in Jackson, Madison County, Tennessee, had complained of an unpleasant odor that irritated their eyes and caused nausea. TDH Commissioner, Dr. Kenneth Robinson, asked Environmental Epidemiology (EEP) to investigate and determine whether odor complaints were a health concern to state employees. The 781 Airways Health Consultation identified landfill gases, including methane, non-methane organic compounds, organic sulfides, and carbon dioxide, as the cause of problems in the 781 Airways building. Because sixteen (16) businesses operate on or near the footprint of the former dump site, the Division of Environmental Epidemiology, Communicable and Environmental Disease Services Section, recommended the following:

1. Monitor methane gas levels to ensure worker safety.
2. Determine if landfill gas is migrating into other Airways Boulevard buildings.
3. Correct the landfill gas problems throughout the entire site.

This consultation will address recommendation 2.

TDEC, DSF contracted with MACTEC Engineering and Consulting of Antioch, Tennessee, to monitor all buildings on the former site for methane, carbon dioxide, and oxygen levels. This was to determine if landfill gas was migrating into other buildings and as a preliminary investigation into the extent of the landfill gas problem.

On April 15, staff of EEP visited each business on or near the footprint of the Owens Corning/Euther Davidson site. Staff explained the landfill gas problem at 781 Airways, left a fact sheet outlining the problem and the investigation process, and asked questions about any odors in the building. See the Appendix for a copy of the fact sheet and the questionnaire. Odors were noticed occasionally in the discount bakery (781 Airways) in the warehouse and at the Super Way Gas Station (795 Airways) in the northeast corner.

The 781 Airways building and other buildings on Airways Boulevard were built on the footprint of a closed hazardous waste site, the Owens Corning/Euther Davidson site, a State of Tennessee Superfund site, number 57-506. The site was first used as a gravel pit. After that, the site was used for waste disposal from September 1975 to May 1979. In the fall of 1977, Mr. Euther Davidson purchased the land from Mr. Levy Williams, the original owner, and had it evaluated for use as an industrial landfill. The property has since been subdivided and parcels were sold to new owners. The site occupies approximately 40 acres and contains approximately 44,000 total cubic yards of waste. For many years, Owens Corning operated a fiberglass plant in the area. In addition to waste fiberglass, Owens Corning also dumped there more than 10,995 cubic yards of their wastewater treatment sludge containing spent halogenated and non-halogenated solvents and chrome.

Other products used as fill materials include: household garbage, lumber, construction debris, kiln-dried wood, old chemical drums, cardboard, sawdust, tires, and paper. The landfill, which was 15 feet deep and would fill with underground water, stretched back about 150 feet from the roadside. It site was eventually covered with compacted soil.

The Tennessee Department of Environment and Conservation (TDEC) and the US Environmental Protection Agency (EPA) have evaluated the site. On June 7, 1990, the Tennessee Division of Superfund (DSF) added Owens Corning/Euther Davidson to its list of inactive hazardous waste sites. The landfill was designated as a Tennessee Superfund site (#57-506) out of fear that rainwater could leach landfill constituents to adjacent properties. Under a voluntary cleanup agreement, Owens Corning investigated how to minimize this leaching potential. Chromium appeared to be the main chemical of concern - the other fill materials being fairly inert. A remedial investigation from September 8 to October 28, 1995, found no widespread contaminants, and wet-weather testing indicated no migration of contaminants. At that time investigators identified no threats to human health or the environment. After the remedial investigation, DSF accepted a “no further action” plan. In April 1996, the local newspaper, *The Jackson Sun*, reported on cleanup activities. The site later received a “clean bill of health” and was removed from the list of inactive hazardous waste sites. By December 1997, the Tennessee Office of General Counsel closed the books on the Owens Corning/Euther Davidson site (ATSDR 2003a).

Discussion

Methane is the most common landfill gas. It is explosive between its Lower Explosive Limit (LEL) of 5% methane in air by volume and its Upper Explosive Limit (UEL) of 15%. Because methane concentrations within the landfill are typically 50% (much higher than its UEL), methane is unlikely to explode within the landfill itself. As methane migrates and is diluted, however, the methane gas mixture may be at explosive levels. Also, oxygen is a key component for creating an explosion, but the biological processes that produce methane require an anaerobic, or oxygen-depleted, environment. At the surface of the landfill, enough oxygen is present to support an explosion, but the methane gas usually diffuses rapidly into the ambient air to concentrations below its LEL of 5% (ATSDR 2003b).

Carbon Dioxide is the second most common landfill gas. NIOSH (National Institute of Occupational Safety and Health) recommends a maximum concentration of 1,000 ppm carbon dioxide for indoor air. If the carbon dioxide concentration in indoor air builds up, the oxygen level could drop below 21% - the amount of oxygen in the ambient atmosphere.

Air monitoring was conducted on three different occasions: August 18, September 2, and September 19, 2003. The August 18 sampling was conducted using a handheld Landtec model GA-90 Infrared Landfill Gas Analyzer (MACTEC 2003). Results from this sampling did not seem reliable; therefore, this data was not published. The sampling was repeated using both a handheld Gastec model 201 gas analyzer set up and calibrated for methane and a TSE model 8551 Q-Trak Indoor Air Quality meter for carbon dioxide and oxygen.

Samples were taken in each building at floor penetrations, floor cracks, wall penetrations, utility closets, rest rooms, and other locations where landfill gases would be more likely to seep into a building. Table 1 summarizes results for those businesses at which methane was detected in at least one location, as well as the carbon dioxide and oxygen values in the affected areas. The levels of methane detected, however, are extremely low, well below the Lower Explosive Limit (LEL). No methane was detected at the following sample locations: Total Line HVAC (739 Airways), John Deere (743 Airways), Process Power (749 Airways), Jackson Brake (753 Airways), Britt Brothers (771 Airways), and Dollar General (781 E Airways).

At NES Rental (757 Airways) methane was detected at a floor crack at 4 parts per million (ppm) (0.0004 %) on September 19, 2003, but no methane was detected on September 2, 2003. At David White Body Shop (769 Airways) methane was found in two locations, in the breathing zone in a northeast office at 20 ppm (0.002%) on September 19, and at a well pipe outside the building at 60 ppm (0.006%) on September 2 and 40 ppm (0.004%) on September 19. At Airways Motors (793 Airways) methane was found at 40 % (0.004%) on both September 2 and 19 at a floor drain in the west bay of the back building. At Super Way Gas Station (795 Airways) methane was detected at 320 ppm (0.03%) on September 19 in the kitchen area at a floor penetration. These levels of methane are all extremely low, well below the 5% Lower Explosive Limit (LEL) for methane.

Although no methane was detected inside the West Tennessee Health Care Facilities building, more than 10,000 ppm (1%) methane was detected at the exhaust vent that rises above the roof of the building. A sub-slab active exhaust system was installed in the building after the publication of the *Health Consultation: 781 Airways Boulevard*. The September 2003 monitoring events are evidence that the exhaust system is working as planned.

Carbon dioxide levels were greater than 1,000 ppm in several locations: David White Body Shop in the accounting office, solvent storage room, and break room; Harris Auto Repair in the water heater closet; Airways Motors in the sales area; and T&T Used Cars in the rest room and office area. No methane was found in these areas, suggesting that landfill gas intrusion was not the cause of the elevated carbon dioxide levels.

These results suggest that components that produce landfill gases are not likely to be buried beneath Airways Boulevard buildings, other than 781 Airways buildings. The results also do not indicate whether landfill gases are being formed in other areas of the landfill.

Table 1: Businesses with methane detection or elevated carbon dioxide levels, Owens Corning site, Jackson, Tennessee. September 2, and September 19, 2003

Name of Business	Address	Reading Location	Gas Detection Readings						Comments
			Methane, ppm		Carbon Dioxide, ppm		Oxygen, %		
			Sept 2	Sept 19	Sept 2	Sept 19	Sept 2	Sept 19	
NES	757 Airways	Warehouse north	0	4	470	447	20.9	20.9	Floor crack
David White Body Shop	769 Airways	Well pipe	60	40	470	450	20.8	20.8	Well opening
		Office NE	0	20	449	528	20.5	20.9	Breathing zone
		Accounting office	0	0	1126	1265	20.8	20.7	Breathing zone
		Solvent storage	0	0	1058	977	20.5	20.9	Breathing zone
		Break room	0	0	1024	715	20.5	20.9	Floor crack
		Break room	0	0	1029	710	20.8	20.9	Breathing zone
Flowers Discount Bakery	781 A Airways	Warehouse NE corner	20	0	570	470	20.8	20.9	Floor crack
		Warehouse NE corner	20	0	577	470	20.8	20.9	Breathing zone
		Warehouse west wall	40	20	579	450	20.1	20.9	Floor penetration
West TN Health Care Facilities	781 B Airways	Outside at migration pump	>10,000	>10,000	490	NA	19.5	18.5	At exhaust vent
Airways Motors	793 Airways	Back building west bay	40	40	537	436	20.8	20.9	Floor Drain
		Sales area	0	0	736	1032	20.6	20.9	Breathing zone
Super Way Gas Station	795 Airways	Kitchen area	0	320	589	570	20.8	19.9	Floor penetration
T&T Used Cars	831 Airways	Rest room	0	0	915	1022	20.6	20.9	Breathing zone
		Office area	0	0	107	1238	20.6	20.9	Breathing zone
Harris Auto Repair	833 Airways	Water heater closet	0	0	1170	498	20.6	20.9	Wall cavity

ppm: parts per million

NA: Not Available

CHILDREN'S HEALTH CONSIDERATIONS

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance

per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus, adults need as much information as possible to make informed decisions regarding their children's health.

In 1996, the Agency for Toxic Substances and Disease Registry (ATSDR) launched an initiative to place special agency-wide emphasis on environmental hazards to children's health and to emphasize child health in all agency programs and activities (ATSDR 1997, 1998).

In so far as the buildings on Airways Boulevard are concerned, children would not be employees and would only shop there occasionally. Thus, any exposure of children to odors or vapors in this instance is perceived to be minimal.

CONCLUSIONS

No apparent health hazards from landfill gases exist for any building on or near the Owens Corning/Euther Davidson site.

RECOMMENDATIONS

None at this time.

PUBLIC HEALTH ACTION PLAN

1. Hold an open house for workers in and owners of the buildings along Airways Boulevard where health educational materials will be provided. Staff will be present to answer any questions.
2. Provide a copy of this report to interested persons at the open house.
3. Provide information to workers in and owners of the buildings along Airways Boulevard about signs of landfill gas intrusion and contact information in case any such signs are observed.

REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). 2003a. Health Consultation, Owens Corning/Euther Davidson Site, 781 Airways Boulevard, Jackson, Madison County, Tennessee. EPA facility ID: TND980559009. Atlanta: US Department of Health and Human Services; 15 July, 2003.

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CERTIFICATION

This Health Consultation: Owens Corning/Euther Davidson Site, Airways Boulevard, Jackson, Madison County, Tennessee, was prepared by the Tennessee Department of Health, Environmental Epidemiology, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

Alan W. Farbrough

Technical Project Officer, SPS, SSAB, DHAC, ATSDR

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

Roberta Erlwein

Chief, State Program Section, SSAB, DHAC, ATSDR

APPENDIX
Jackson, Madison County, Owens-Corning/Euther Davidson Site

Date: _____ Personnel: _____ Digital photo number: _____

Address: _____

Name of business: _____

Owner of building: _____

Address: _____

Phone number: _____

Owner of land: _____

Address: _____

Phone number: _____

Name of contact person: _____

Phone number: _____

Have you noticed any strange odors in the building? _____

Please describe the smell: _____

Is there a particular place in the building where the odor is most noticeable? If yes, where: _____

When did you first notice the odor? _____

How often does the odor occur? _____







Number of employees: _____

Do you commonly use an open flame or is there ignition source in the building? _____

Describe: _____

EHSS notes: _____

FACTSHEET	Airways Blvd Landfill Gases Jackson, Madison County, TN
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THE PROBLEM		
	Landfill Gases	Some property along Airways Blvd in Jackson was once used to bury trash. Now closed, the Owens Corning/Euther Davidson landfill contained mostly fiberglass with some household trash, construction debris and wood.
	Hydrogen Sulfides	When bacteria decompose organic materials gases are produced. Some landfill gases such as hydrogen sulfide smell bad. These odors can be offensive to people in very small amounts. Strange smells would be a clue to landfill gas.
	Methane	The landfill gas we are most concerned with is methane. Methane has no color or odor. So, you cannot see or smell methane. Methane is dangerously flammable. If methane were to accumulate in your workplace, a spark or open flame could create an explosion.
THE PROCESS		
	Tennessee Dept. of Health Environmental Epidemiology	Odors in a State of Tennessee workplace, helped us to discover the potential landfill gas problem. Now we are preparing a <i>Health Consultation</i> to alert the public of health hazards.
	Future Site Inspections	We are working with the Tennessee Dept. of Environment and Conservation (TDEC) to inspect all buildings on top of the old landfill. We will inspect your building for the level of oxygen, carbon dioxide, and methane in the air.
	Answers to Questions	Throughout our investigation, the Environmental Epidemiology staff is available to answer your questions or concerns. Our findings will be available to the public once all data are collected, analyzed, and ready to report.

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