

Health Consultation

AMBIENT AIR QUALITY ASSESSMENT
FOR THE CHALMETTE AIR MONITORING PROJECT

CHALMETTE, ST. BERNARD PARISH, LOUISIANA

NOVEMBER 19, 2008

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

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Prepared By:

Louisiana Department of Health and Hospitals
Office of Public Health
Section of Environmental Epidemiology and Toxicology
Under a Cooperative Agreement With the
U.S. Department of Health and Human Services
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**Chalmette
St. Bernard Parish, Louisiana**



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List of Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
CHAMP	Chalmette Air Monitoring Project
COC	Contaminant of concern
CV	Comparison value
CREG	Cancer risk evaluation guide for 1×10^{-6} excess cancer risk
EMEG	Environmental media evaluation guide
EPA	Environmental Protection Agency
ESRI	Environmental Systems Research Institute, Inc
GNOCDC	Greater New Orleans Community Data Center
H ₂ S	Hydrogen sulfide
LTAP AAS	Louisiana Toxic Air Pollutant Ambient Air Standards
LBB	Louisiana Bucket Brigade
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
NAAQS	National Ambient Air Quality Standards
NOAEL	No observable adverse effects level
OPH	Office of Public Health
ppb	Parts per billion
ppm	Parts per million
QA/QC	Quality assurance/quality control
SBP Monitoring Program	St. Bernard Parish Enhanced Ambient Monitoring Program
SEET	Section of Environmental Epidemiology and Toxicology
SO ₂	Sulfur dioxide
VOC	Volatile organic compound

Summary and Statement of Issues

The Louisiana Department of Health and Hospitals/Office of Public Health/Section of Environmental Epidemiology and Toxicology (LDHH/OPH/SEET) received a request from the Louisiana Bucket Brigade (LBB) to review air quality data collected through the St. Bernard Parish Enhanced Ambient Monitoring Program (SBP Monitoring Program) and by Bucket Brigade volunteers. The LBB and the St. Bernard Citizens for Environmental Quality are concerned that measures in place to monitor the ambient air quality in St. Bernard Parish are insufficient. Members of these two organizations asked SEET to assess the air quality data collected by the LBB and to compare the results to data collected by the Louisiana Department of Environmental Quality (LDEQ). Through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), SEET has developed the following health consultation to review the data sets and to examine the public health implications of exposure to any contaminants found in these samples.

Background and Site History

The Chalmette Refining, LLC facility (also known as the Exxon Mobil Refinery) is located at 500 West St. Bernard Highway, Chalmette, LA. The facility was constructed in 1915 by the Chalmette Petroleum Corporation to fuel ships for the Standard Fruit Company. It has changed hands a number of times, from a 1955 takeover by Tenneco to a 1988 purchase by Mobil, which merged with Exxon to form the Exxon Mobil Corporation in 2000 [1]. The facility, which includes approximately 400 acres of land in Chalmette, LA., is a petroleum refinery with a capacity reported in 2003 of approximately 190,000 barrels per day of crude oil. The refinery's products include gasoline, diesel, fuel oil, kerosene, propane, butane, sulfur, petroleum coke, and asphalt [2].

Residents of Chalmette, LA have submitted numerous odor complaints to LDEQ about air quality in their neighborhoods [3]. In order to address these public concerns, LDEQ and Chalmette Refining signed an administrative order of consent in 2005. Through this order, Chalmette Refining agreed to institute the SBP Monitoring Program to evaluate ambient air quality in the area and to identify potential sources of pollutant emissions. Chalmette Refining also purchased and set up the air monitors to be used in the program. Following a delay caused by aftereffects of Hurricane Katrina in August 2005, the air monitoring program began recording air data in May 2006 [4].

As described by LDEQ, the primary purpose of the monitoring project is “to make a legally defensible and scientifically sound determination if the Chalmette area monitor is in compliance with State and Federal air quality”. The foci of the project are to identify the chemical compounds that are most abundantly present in the air, to determine which compounds may be responsible for odor complaints the LDEQ has received, and to compare concentrations of any chemicals detected to ambient air standards established by LDEQ and the US Environmental Protection Agency (EPA) [4].

A map illustrating the placement of SBP Monitoring Program monitors is shown in Figure A-1. Monitors included in the program are stationed near the Chalmette Vista neighborhood, near

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Chalmette High School, and at the former Algiers Entergy site across the river from Chalmette [4]. The locations of these monitors were based on wind direction patterns in the Greater New Orleans area, as described in a circular graphic created to represent the typical wind speed, direction, and distribution throughout Greater New Orleans.

- The Chalmette Vista monitor in East Chalmette was positioned to detect emissions carried by the predominant southerly winds. This monitor was placed on the northwest side of the refinery to detect emissions carried by winds varying from Southeast to Southwest. The monitor is positioned at 24 East Chalmette Circle, Chalmette, LA, within approximately ¼ mile of the Chalmette Vista neighborhood.
- The Chalmette High School monitor, which is located east of the refinery, is positioned to detect emissions carried by winds from the south and southwest. The monitor is located at 1100 East Judge Perez Drive, Chalmette, LA, From this position, it can monitor emissions from the refinery's tank farm area.
- The Algiers Entergy monitor is located in Orleans Parish near General Meyer Avenue and monitors air quality in winds from the south and from the north. The monitor is positioned at 2456 Ernest Street, Algiers, LA.

Although the air monitoring performed to date through the SBP Monitoring Program does not indicate that the emissions pose long-term health hazards, residents of the Chalmette Vista neighborhood continue to report strong odors and resulting physical effects such as burning eyes. The LBB and the St. Bernard Citizens for Environmental Quality are concerned that the monitors used by the program are not picking up emissions carried by the prevailing winds. Residents are also concerned that the analysis of data from the monitors is not performed with potential short-term acute exposures in mind. The Chalmette Vista community, which is directly across from the Refining plant, is particularly worried that emissions of sulfur dioxide may be affecting the health of local children and asthma sufferers. To determine whether the odors the community has experienced are indicators of health hazards, the LBB has been working with volunteers from St. Bernard Parish to develop an independent database of ambient air sampling data.

The Louisiana Bucket Brigade

The LBB is an environmental health and justice organization that works with communities adjacent to oil refineries and chemical plants. The organization collects ambient air samples using the US Environmental Protection Agency (EPA)-approved "bucket", a collection tool that is modeled after EPA SUMMA canisters. The LBB provides community members with the bucket and air sampling training to monitor industrial emissions as they occur. EPA provides funding and assistance with quality assurance for the buckets [5].

The LBB also monitors air quality using a real-time monitor called "the Hound". The Hound, which is manufactured by Argos Scientific, uses ultraviolet light to detect, identify, and quantify airborne emissions. The Hound is capable of sampling for longer than the three-minute sampling period of the bucket.

The LBB is currently working in a joint project with the St Bernard Citizens for Environmental Quality called the Chalmette Air Monitoring Project (CHAMP). CHAMP operates in the community directly across the street from the Chalmette Refining, LLC facility and focuses on

contaminants the project refers to as the “foul five”: benzene, carbon disulfide, sulfur dioxide (SO₂), dioxin, and toluene. Whenever one of CHAMP’s bucket samples collect contaminant concentrations above levels of concern, the project issues an alert providing the community with details about when, where, and at what time the release was detected. The goal of CHAMP is to have the Exxon/Mobil company commit to monitoring its refinery’s emissions to protect the health of St. Bernard residents. Information about CHAMP and instructions on how to interpret air monitor results can be accessed at URL: <http://www.airmonitorchalmette.org>

Demographics

At the time of the U.S. Census Bureau’s Census 2000, the city of Chalmette’s total population was 32,069. The largest ethnic group in the city was Caucasian (92.7%), followed by African-American (2.4%), Asian (1.8%), two or more races (1.7%), self-identified as Other (0.9%), and American Indian or Alaskan Native (0.4%). Four point eight percent (4.8%) of the population identified themselves as Hispanic or Latino. Seventy-six percent (76%) of the population age 25 years or older in 2000 had earned at least a high school diploma. The median household income was \$36,699. The primary occupation was in the field of sales and office occupations (32.3%), followed by management, professional and related occupations (25.1%); and construction, extraction, and maintenance (14.2%) [6].

According to data estimates from the Environmental Systems Research Institute, Inc. (ESRI) 2007 data update, the population of Chalmette has decreased to 8,724 since Hurricane Katrina’s landfall in 2005. This data is based on reports from disaster agencies, news sources, field work, revised models and other sources [7].

Discussion

Data Used

The majority of the LBB air samples were collected before the SBP Monitoring Program’s monitors were in place. During 2006, the monitoring program was active, but the LBB did not receive any bucket samples from Chalmette residents. The data held in common between CHAMP and LDEQ was therefore limited to only 2 sampling days: April 3, 2007 and September 11, 2007. SEET was therefore unable to compare the data sets to each other and examined each data set individually.

St. Bernard Parish Enhanced Ambient Monitoring Program Data

Each monitoring site for the SBP Monitoring Program measures concentrations of ozone, sulfur dioxide (SO₂), hydrogen sulfide (H₂S), volatile organic compounds (VOCs), particulate matter, and methane/non-methane hydrocarbon releases. The air monitors sample ambient air at 5 minute, 10 minute, and 1 hour intervals. Due to limited access to raw data for the SBP Monitoring Program monitors, analysis of air data from these monitors focused on hydrogen sulfide and sulfur dioxide. The LDEQ laboratory’s analysis of air samples follows EPA quality

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assurance/quality control (QA/QC) practices [4]. Summary data can be retrieved for each of the air monitors from URL: <http://www.deq.louisiana.gov/apps/edas/ESCSiteSummary.aspx>

LBB/CHAMP Data

The LBB volunteers collected 41 real-time air samples using buckets from April 6, 2003-September 11, 2007, excluding 2006. One sample was collected over a three-minute interval per day; each day's sampling took place at one of the following addresses:

- 12 Carroll Drive
- Jacob Drive (near the Murphy Oil facility)
- 2201 Trio Street
- 9105 Livingston

Except for Jacob Drive, these Chalmette Vista neighborhood addresses are located within 1 mile of each other. Jacob Drive is approximately 2 miles away from the Chalmette Vista neighborhood.

All of the LBB air samples were analyzed by the Columbia Analytical Services, Inc Air Quality Laboratory. Each sample was analyzed for 20 sulfur compounds and 55 VOCs. The bucket sample analyses did not include sulfur dioxide because the bucket samplers cannot be used to collect this compound; therefore, only hydrogen sulfide results were evaluated. The Columbia Analytical Services, Inc. laboratory's analysis of air samples follows QA/QC practices with an EPA-approved quality assurance program.

Four real-time data averages were collected between June 15, 2007 – June 26, 2007 by LBB volunteers in Chalmette using the Hound. Two samples were collected from the community near the Chalmette Refining, L.L.C. Two samples were collected from the community near the Murphy Oil Refinery, which is located at 8100 West Judge Perez Drive #A, Chalmette, LA, approximately 1.8 miles from Chalmette Refining, L.L.C. The Hound sampled ambient air for approximately 1 hour and 20 minutes during each sampling event. Each sample was analyzed for sulfur dioxide, nitrogen dioxide, benzene, carbon disulfide, and ozone.

Data Limitations

- Due to the expense involved in air sample analyses, only one air sample per day was available for 41 days during the LBB's bucket sampling events from April 6, 2003-September 11, 2007. This may not give an accurate representation of daily contaminant concentrations; the samples may have been collected during an interval in which an air contaminant was at its highest concentration for the whole day.
- As with the bucket samples, only one air sample per sampling day was available for the LBB's Hound sampling events from June 15, 2007 – June 26, 2007. These samples may have been collected during an interval in which an air contaminant was at its highest concentration for the whole day. The Hound samples therefore may not give an accurate representation of daily contaminant concentrations.

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- The majority of the LBB samples were collected before the SBP Monitoring Program was active. Due to community changes following Hurricane Katrina in 2005, only 2 LBB bucket samples were collected during the same period of the monitoring program's activities.
- Air quality standards are based on long-term (year-long) exposures and 24-hour exposures. When sample concentrations are averaged over several hours or more, the concentrations that may cause health effects from short-term exposures may be averaged out.

Exposure Pathways

An exposure pathway contains the following five elements: a source of contamination, transport through some kind of environmental medium, a point of exposure, a route of exposure, and a receptor population. The sources of the airborne contaminants detected in St. Bernard Parish have not been specifically identified. Ambient air in the vicinity of the monitors serves as both the transport medium and point of exposure for the contamination. The route of exposure to these contaminants is through inhalation of air. The exposed population includes St. Bernard Parish residents, particularly those living near industrial facilities. For example, the Chalmette Vista residential neighborhood, while not directly adjacent to the Chalmette Vista monitor, begins within less than one-half of a mile from the monitor's location.

Evaluation Process

Appendix B describes the evaluation process used to determine whether airborne contaminants detected by the SBP Monitoring Program and by LBB/CHAMP pose any hazard to public health. Concentrations of contaminants detected in the air samples were initially screened using health-based comparison values (CVs). These conservative screening values are only used to determine which environmental contaminants need further evaluation. CVs are not used to predict adverse human health effects. Contaminant concentrations that exceeded health-based CVs are listed in Tables B-1 and B-2 and are identified as contaminants of concern (COCs)

Health Effects Evaluation

Louisiana Bucket Brigade Data

Except for carbonyl sulfide, and ethanol, the COCs listed in Tables B-1 and B-2 were not present in concentrations that have been found to cause health effects during the time intervals used for LBB sampling (3 minutes for bucket samples, 1 hour 20 minutes for Hound samples) [8-15]. Available information about the health effects caused by inhaled carbonyl sulfide and ethanol is very limited.

An assessment of potential health effects due to long-term exposures can only be performed using multiple samples taken at regular intervals each day; this method of sampling would offer a more accurate measure of the chronic exposure to the contaminants the public might be

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experiencing. SEET was therefore unable to determine whether air samples collected by the LBB indicated the presence of a public health hazard in the ambient air of Chalmette, LA.

SBP Monitoring Program Data - Hydrogen Sulfide

Hydrogen sulfide (H₂S) is a colorless and flammable gas with a characteristic odor of rotten eggs that can be detected at concentrations as low as 0.5 parts per billion (ppb) (0.5 parts of hydrogen sulfide in 1 billion parts of air). Hydrogen sulfide occurs naturally during the digestion of food proteins by bacteria found in the mouth and digestive tract. It is naturally released into the air from volcanoes, sulfur springs, swamps, crude petroleum and natural gas. Hydrogen sulfide is also associated with cigarette smoke, sewage treatment plants and manure-handling operations. Industrial sources of hydrogen sulfide include pulp and paper operations, petroleum refineries, food processing plants, and tanneries [8]. Exposure to low concentrations of hydrogen sulfide may cause eye, nose, or throat irritation. Asthmatics exposed to hydrogen sulfide may experience difficulty in breathing [8].

Table B-3 lists the one-hour average concentrations of hydrogen sulfide detected by all three monitors in the SBP Monitoring Program. These concentrations were all below the limit set by the Louisiana Ambient Air Standards (LA AAS). These concentrations were also below the no observable adverse effects level (NOAEL) of 2,000 ppb, the concentration at which no health effects were observed following human exposure to hydrogen sulfide in controlled experimental studies [8]. Ambient air concentrations of hydrogen sulfide therefore pose no apparent public health hazard to residents of Chalmette, LA.

SBP Monitoring Program Data - Sulfur Dioxide

Sulfur dioxide (SO₂) is a colorless and inflammable gas with a characteristically strong odor. Sulfur dioxide in the air results primarily from the burning of fossil fuels such as coal and oil and from copper smelting. Long-term exposure to persistent levels of sulfur dioxide can alter lung function, particularly in children. Symptoms of sulfur dioxide exposure include burning of the nose and throat and breathing difficulties [9].

Averaged over 24 hours, sulfur dioxide concentrations detected by the SBP Monitoring Program fall below the National Ambient Air Quality Standard for sulfur dioxide. These standards, which are based on 24-hour averages, have been established to protect public health, including the health of sensitive populations such as children, the elderly, and asthmatics [16]. However, some sensitive individuals may experience health effects when exposed to sulfur dioxide over shorter periods of time. As shown in Table B-4, the range of hourly averages detected by the Chalmette Vista and Chalmette High monitors exceeded the NAAQS.

An estimated 10-20% of individuals with asthma appear to be sensitive to sulfur dioxide exposures between 200 – 500 ppb. Five-minute exposures to this range of concentrations can result in increased airway resistance in asthmatics engaging in physical exercise [17]. An examination of the hourly averages between May 1, 2006 – May 1, 2008 identified multiple days on which the hourly averages at the Chalmette Vista monitor and the Chalmette High monitor were above 0.2 ppm (or 200 parts per billion (ppb)). During these hours, asthmatics engaged in physical activities may have experienced changes in their breathing capacity.

Cancer Health Effects Evaluation

The LBB sampling events detected carcinogens including benzene, chloroform, cis-1,2-dichloroethane, and methylene chloride. However, lifetime cancer risks for inhalation exposures are estimated using annual average concentrations of COCs in ambient air. The samples collected using the buckets and the Hound were collected over short intervals of time during a single day and may not give an accurate representation of average contaminant concentrations. Therefore, these contaminants were not evaluated for their potential to cause cancer health effects.

Child Health Considerations

The physical differences between children and adults demand special emphasis in assessing public health hazards. Children may be at greater risk than are adults from exposures to hazardous substances. A child's lower body weight and higher intake rate result 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. Because many chemical contaminants are heavier than air and children are shorter than adults, children would be exposed to a higher dose of the contaminants than would adults in the same circumstances [8]. Children also tend to be more active than adults. Children with asthma would therefore be more vulnerable than asthmatic adults to the effects of short-term exposures to sulfur dioxide concentrations over 200 ppb.

Conclusions

A comparison between the LBB sample set and the samples collected through the SBP Monitoring Program was not possible because most of the samples collected by these entities were not collected during the same time periods. The LBB bucket samples and Hound samples were collected over relatively short periods of time and therefore may not give an accurate representation of contaminant concentrations individuals would be exposed to on a long-term basis.

Hydrogen sulfide detected through the SBP Monitoring Program poses no apparent public health hazard. Hourly sulfur dioxide averages were detected at the Chalmette Vista and Chalmette High monitors at concentrations that may cause a decrease in breathing capacity in exercising asthmatics. Therefore, although exposure to these sulfur dioxide concentrations poses no public health hazard for the general population, short-term exposure to these concentrations may pose a public health hazard to sensitive individuals, such as physically active people with asthma. The remaining contaminants of concern, carbonyl sulfide and ethanol, pose an indeterminate public health hazard due to lack of sufficient information about the health effects of these chemicals.

Recommendations

Community members and stakeholders in Chalmette, LA should be informed that short-term exposures to concentrations of sulfur dioxide below the NAAQS may cause health effects in asthmatics. Sulfur dioxide is currently being re-evaluated by federal health agencies. Once the evaluation has been completed, the data collected by the SBP Monitoring Program should be re-examined to determine if short-term exposures to this contaminant pose a potential health hazard to sensitive members of the community.

Public Health Action Plan

The information produced within this health consultation should be made available to the community members and stakeholders within St. Bernard Parish, Louisiana.

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Certification

This Ambient Air Quality Assessment for the Chalmette Air Monitoring Project public health consultation was prepared by the Louisiana Department of Health and Hospitals under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures at the time the health consultation was begun. The editorial review was conducted by the Cooperative Agreement Partner.

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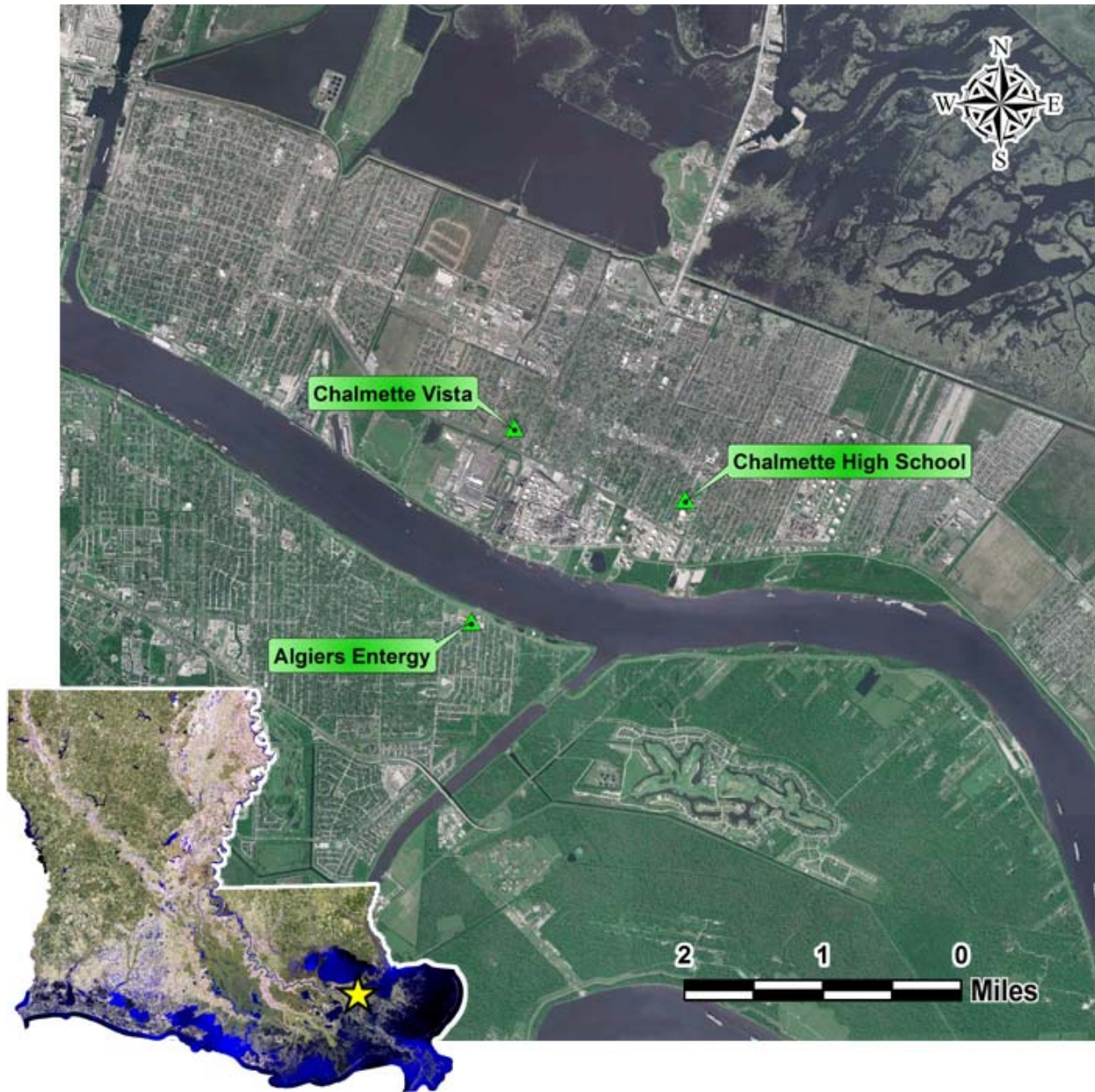
The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

Alan W. Yarbrough

Cooperative Agreement Team Leader, DHAC, ATSDR

APPENDIX A: Map of the St. Bernard Parish Enhanced Ambient Monitoring Program

Figure A-1: Map of the St. Bernard Parish Ambient Monitoring Program monitor locations



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Retrieved from: St. Bernard Parish Enhanced Ambient Monitoring Program. Sponsored by Louisiana Department of Environmental Quality through the Active & Intelligent Monitoring website. Providence Engineering and Environmental Group, LLC. Accessed 05 May 2008 at URL: <http://aimportal.providenceeng.com/ldeqnet/>

APPENDIX B: Evaluation Process

Screening Process

Comparison values were initially used to determine which samples needed to be closely evaluated. Comparison values are media-specific concentrations of chemicals that are used by health assessors to screen environmental contaminants for further evaluation. These values are not used as predictors of adverse health effects. The comparison values used in the evaluation of St. Bernard Parish air monitoring are listed below:

Environmental media evaluation guides (EMEGs) are estimated contaminant concentrations at which noncarcinogenic health effects are unlikely. They are calculated from the Agency for Toxic Substances and Disease Registry's (ATSDR) minimal risk levels (MRLs).

Cancer risk evaluation guides (CREGs) are estimated contaminant concentrations that would be expected to cause no more than one additional excess cancer in 1 million exposed persons over a lifetime. CREGs are calculated from EPA's cancer slope factors (CSFs).

National Ambient Air Quality Standards (NAAQS) are standards derived for six criteria pollutants established under the current federal law (40 CFR 50), that are considered harmful to public health and the environment. The six pollutants include carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone and sulfur dioxide. The NAAQS standards used in assessing air data for this health consultation were *Primary Standards*, which set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.

The *Louisiana Toxic Air Pollutant Ambient Air Standards* (LA AAS) define the limits at which concentrations of toxic air pollutants (those identified in Title III of the Clean Air Act Amendments of 1990) are considered to be unacceptable and require air pollution controls. These compounds are known or suspected to cause cancer or other serious health effects.

Table B-1 lists Louisiana Bucket Brigade (LBB)-detected contaminants that were identified through the screening process as needing further consideration. These contaminants are identified as contaminants of concern (COCs).

Table B-2 lists COCs detected by the LBB's Hound monitor.

Table B-3 lists the ranges of 1-hour average hydrogen sulfide concentrations that were detected by samples in the St. Bernard Parish Enhanced Ambient Monitoring Program.

Table B-4 lists the ranges of 1-hour average sulfur dioxide concentrations that were detected by samples in the St. Bernard Parish Enhanced Ambient Monitoring Program.

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Table B-1: Contaminants of Concern (COCs) detected in 41 air samples collected by Louisiana Bucket Brigade volunteers in Chalmette, LA from April 6, 2003 – September 11, 2007.

COC	Concentration Range (ppb*)		CV † (ppb)	CV reference
	Low	High		
Benzene	ND‡	9.4	0.03	CREG§
Carbonyl Sulfide	ND	44.7	N/A**	N/A
Chloroform	ND	1.1	0.008	CREG
cis-1,2-Dichloroethane	ND	1.6	0.01	CREG
Ethanol	ND	130	N/A	N/A
Hydrogen Sulfide	ND	77.2	20	int. †† EMEG‡‡
Methylene Chloride	ND	1.5	0.9	CREG

* ppb = parts per billion

†CV=comparison value

‡ND = not detected.

§CREG=Cancer risk evaluation guide for 1×10^{-6} excess cancer risk

**N/A=no information available

††int. = intermediate

‡‡EMEG=Environmental media evaluation guide

Table B-2: Contaminants of Concern (COCs) detected in 4 air samples collected by the Hound sampler in Chalmette, LA from June 15, 2007 – June 26, 2007.

COC	Concentration (ppb*)		CV † (ppb)	CV reference
	High	Highest Average		
Sulfur Dioxide	23.26	7.72	10	Acute EMEG‡
Nitrogen Dioxide	112.1	23.42	53	NAAQS§
Benzene	49.0	11.08	0.03	CREG**
Ozone	176.3	30.16	75	NAAQS

* ppb = parts per billion

†CV=comparison value

‡EMEG = Intermediate environmental media evaluation guide

§NAAQS= National Ambient Air Quality Standards (24-hour averaging time)

**CREG=Cancer risk evaluation guide for 1×10^{-6} excess cancer risk

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Table B-3: Hydrogen sulfide (H₂S) 1-hour averages detected in air sampled by the St. Bernard Parish Enhanced Ambient Monitoring Program, May 1, 2006 – May 1, 2008*.

Monitor	Concentration Range (ppb [†])		Intermediate EMEG [‡] (ppb)	LA AAS [§] (ppb)
	Low	High		
Chalmette Vista	ND**	114	20	240
Chalmette High	ND	58	20	240
Algiers Entergy	ND	91	20	240

* Hourly averages collected over a 24-hour period on a daily basis

[†]ppb = parts per billion

[‡]EMEG=Environmental media evaluation guide

[§]LA AAS=Louisiana Toxic Air Pollutant Ambient Air Standards (8-hour averaging time)

**ND = not detected

Table B-4: Sulfur dioxide (SO₂) 1-hour averages detected in air sampled by the St. Bernard Parish Enhanced Ambient Monitoring Program, May 1, 2006 – May 1, 2008*.

Monitor	Concentration Range (ppb [†])		Acute EMEG [‡] (ppb)	NAAQS [§] (ppb)
	Low	High		
Chalmette Vista	ND**	387	10	140
Chalmette High	ND	306	10	140
Algiers Entergy	ND	116	10	140

* Hourly averages collected over a 24-hour period on a daily basis

[†]ppb = parts per billion

[‡]EMEG=Environmental media evaluation guide

[§]NAAQS=National Ambient Air Quality Standards (24-hour averaging time)

**ND = not detected



Date November 19, 2008

From Division of Health Assessment and Consultation, ATSDR

Subject Health Consultation
Chalmette Refinery LLC

To George Pettigrew
Senior Regional Representative, ATSDR, Region VI

Enclosed please find 3 hard copies and 3 CDs of the November 19, 2008 Health Consultation on the following site prepared by the Louisiana Department of Health and Hospitals under cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

AMBIENT AIR QUALITY ASSESSMENT
FOR THE CHALMETTE AIR MONITORING PROJECT

CHALMETTE, ST. BERNARD PARISH, LOUISIANA

The Division of Health Assessment and Consultation requires copies of all letters used to transmit this document to the agencies, departments, or individuals on your distribution list. The copy letters will be placed into the administrative record for the site and serve as the official record of distribution for this health consultation.

Please address correspondence to the Agency for Toxic Substances and Disease Registry (ATSDR) Records Center, 1600 Clifton Road, NE (F09), Atlanta, Georgia 30333.

Freda Dumas
Manager, ATSDR Records Center

Enclosures

cc: W. Cibulas, Jr. R. Gillig J. Kellam L. Luker L. Daniel

You May Contact ATSDR Toll Free at
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Visit our Home Page at: <http://www.atsdr.cdc.gov>



ANNOUNCES
HEALTH CONSULTATION

for

**AMBIENT AIR QUALITY ASSESSMENT
FOR THE CHALMETTE AIR MONITORING PROJECT**

CHALMETTE, ST. BERNARD PARISH, LOUISIANA

Enclosed for your review is the Health Consultation for Chalmette Refinery LLC. This document, dated November 19, 2008, was prepared by the Louisiana Department of Health and Hospitals under cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

Please address correspondence to:

Agency for Toxic Substances and Disease Registry
Attn: Records Center
1600 Clifton Road, NE, MS F-09
Atlanta, Georgia 30333

If there are questions, please direct them to Jeff Kellam, Technical Project Officer, at (770) 488-3664.

Enclosure

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