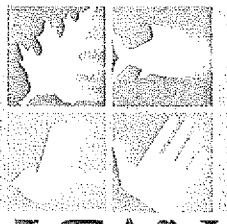
Louisiana Environmental Action Network
Helping to make Louisiana safe for future generations



LEAN

test pit soil

Chloroprene

test H2O

Denka Performance Elastomer, Former DuPont Pontchartrain Works

By Wilma Subra subracom@aol.com
Louisiana Environmental Action Network

August 14, 2018

Denka Performance Elastomer LLC purchased the DuPont Pontchartrain Works Neoprene Facility in LaPlace in **November 2015 (officially October 31, 2015)**. DuPont continues to operate the Diamine Unit. Denka manufactures Chloroprene and uses the Chloroprene to manufacture Neoprene. Chloroprene has been released into the air since 1969, for 49 years. Denka is the largest releaser of Chloroprene into the air in the US. Denka is the only source of Chloroprene air emissions in the St. John the Baptist Parish area.

NATA Screening Level Assessment

The Environmental Protection Agency's 2010 National Air Toxics Assessment (NATA), was released on **December 17, 2015**. NATA classified Chloroprene as a **likely human carcinogen** and established the long-term cancer based comparison level for a 100 in 1 million cancer risk comparison level as **0.2 ug/m3 for Chloroprene**. On July 7, 2016, EPA, DEQ and St. John the Baptist Parish officials held a public meeting to announce the Chloroprene/Denka situation to the public in St. John.

NATA **estimated higher than expected levels of Chloroprene in the community of LaPlace, Louisiana (Reserve).**

NATA/EPA **identified the Dupont/Denka facility as creating the greatest offsite risk of cancer of any manufacturing facility in the US.**

POST OFFICE BOX 66323 BATON ROUGE, LOUISIANA 70896 (225) 928-1315 FAX (225) 922-9247 WWW.LEANWEB.ORG

Denka Air Emissions

Chloroprene is the largest quantity of chemicals released into the air from the Denka facility. Toluene is the second largest quantity of chemicals released into the air. In 2016 Denka reported releasing:

238,607 pounds of Chloroprene into the air
28,335 pounds of Toluene in to the air
15 additional toxic chemicals into the air

Chloroprene - a Likely Carcinogen

Chloroprene is a likely carcinogen. Studies have demonstrated that Chloroprene increases the risk of cancer in humans associated with:

Lung cancer	Colon cancer	Leukemia
Liver cancer	Kidney cancer	

Toluene is a Teratogen

Toluene is a teratogen in animals and may be a teratogen in humans. A teratogen causes malformation of the embryo. Toluene may also damage the developing fetus.

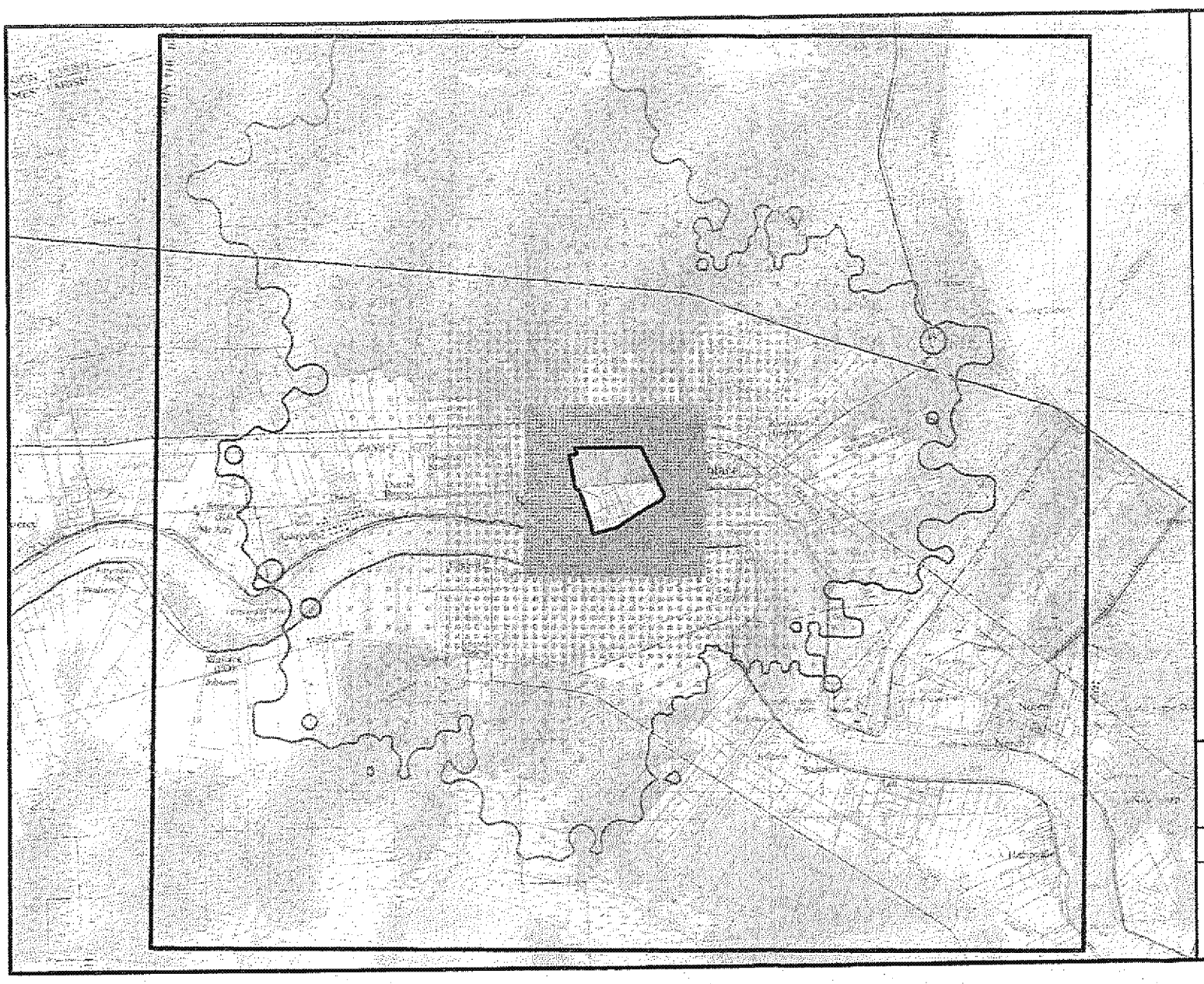
Denka Modeling

Denka provided modeling results for Chloropren at 0.2 ug/m3 to DEQ on October 7, 2016. The modeling covered the period 2011 through 2015.

Based on the refined modeling analysis for the years 2011 through 2015, **the off-property impacts were greater than the comparison guidelines of 0.2 ug/m3 for Chloroprene.**

The isopleth on the figure on the following page demonstrates the area exceeding 0.2 ug/m3. Up river beyond and including Garyville. Down river to the spillway. Across the Mississippi River on the west bank including Edgard, Tigerville, Gold Mine Plantation and Lucy. North above Airline Highway and Interstate 10.

ED_002226B_00002273-00002



N

2011-2015

Legend

- Fenceline
- Receptor Grid
- Receptor Location

Contours (ug/m³)

- 0.2

Reference

Base map comprised of U.S.G.S. 100K topographic maps, "Ponchatoula, LA" and New Orleans, LA".

8,000 4,000 0 8,000 Feet

Isopleth Map

Air Dispersion Modeling Report
LaPlace, St. John the Baptist Parish, Louisiana

Denka Performance Elastomer LLC
Pontchartrain Site

PROVIDENCE

Drawn By	LMH	10-05-15
Checked By	LMH	10-05-15
Approved By	WTP	10-06-15
Project Number	1132-001	3
Drawing Number	1132-001-B002	

ED_002226B_00002273-00003

St. John the Baptist Census Tract Risk Due to Chloroprene

NATA and EPA determined that Chloroprene was being emitted into the air at concentrations that gave the census tracts in St. John the Baptist Parish the highest risk of cancer from Chloroprene air pollution in the US.

In most of the US, the number of cancer risk due to Chloroprene were zero to one per million individuals, with a national average of 0.968 individuals per million. In St. John the Baptist Parish, one census tract was 800 times the national average for cancer risk associated with Chloroprene.

Chloroprene Cancer Risk

St. John the Baptist Census Tract	Risk per 1 million individuals
708 Includes Most of Denka Facility	776.8
709 Includes Part Denka Facility	426.6
705 North of 708 and 709	327
707 Up river from 708	235.5
700	209.4
704	164.8
703	142.8
702	88.9
701	60.7
706 Garyville	51.7

Air Monitoring

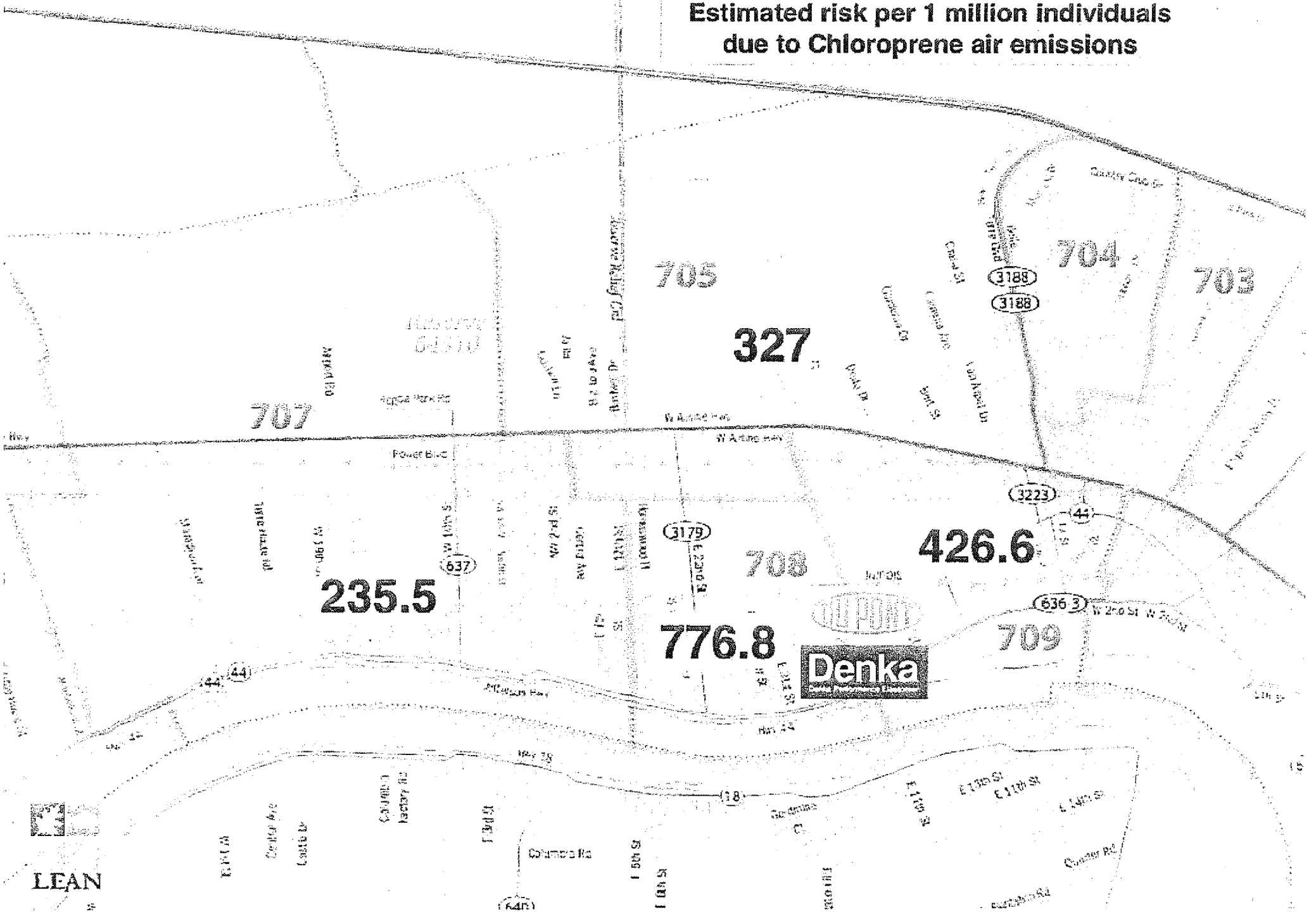
In March 2016, the EPA and DEQ performed air sampling for Chloroprene in the area surrounding the Denka facility to determine levels of Chloroprene contamination in the community's air.

EPA

Beginning on May 25, 2016 and continuing until today, EPA collects 24 hour air sampling events at six locations around the Denka facility every three days using Summa Canisters.

ED_002226B_00002273-00004

Estimated risk per 1 million individuals due to Chloroprene air emissions



EPA Highest Air Sample Levels Covering the Sampling Period May 25, 2016 Through December 31, 2017

Highest Levels of Chloroprene by Sampling Location

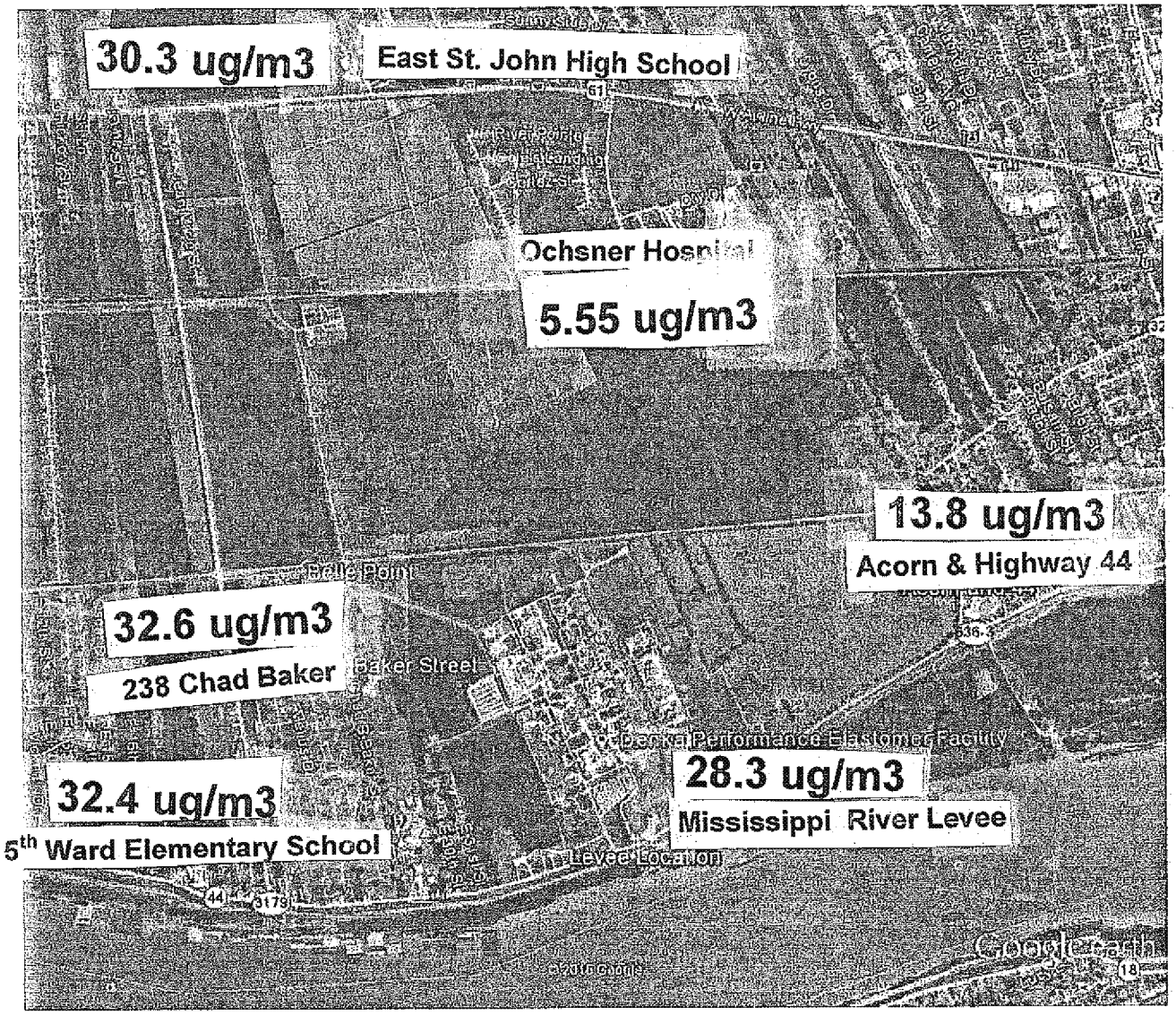
Location	Chloroprene	Date	Exceeds 0.2 ug/m3
Acorn and Hwy 44	153 ug/m3	11-21-16	765 X
Miss. River Levee	147 ug/m3	11-21-16	735 X
Fifth Ward Elementary	151 ug/m3	11-28-17	755 X
Ochsner Hospital	89.2 ug/m3	11-25-17	446 X
238 Chad Baker	70 ug/m3	11-28-17	350 X
East St. John the Baptist Hi	39.5 ug/m3	11-25-17	197.5X

EPA Highest Levels of Chloroprene from January through July 21, 2018 by Sampling Location

Location	Chloroprene	Date	Exceeds 0.2 ug/m3
Acorn and Hwy 44	13.8 ug/m3	3-14-18	69 X
Miss. River Levee	28.3 ug/m3	3-14-18	141.5 X
Fifth Ward Elem.	32.4 ug/m3	2-6-18	162 X
Ochsner Hospital	5.55 ug/m3	1-19-18	27.8 X
238 Chad Baker	32.0/33.2 ug/m3	2-6-18	163 X
East St. John High	30.3 ug/m3	1-31-18	151.5 X

ED_002226B_00002273-00006

2018 EPA Air Monitoring



Chloroprene Air EPA Integrated Risk Information System Limit

0.2 ug/m3

Fifth Ward Elementary School
238 Chad Baker Street
East St. John High School
Ochsner Hospital
Acorn and Highway 44
Mississippi River Levee

Denka

Beginning on August 8, 2016, Denka collected 24 hour air samples for Chloroprene and Toluene, every six days at five locations around the Denka facility using Summa Canisters. A sixth sampling location was added, at the request of DEQ, at the Edgard- Court House, across the Mississippi River beginning on October 26, 2016.

Highest Levels of Chloroprene by Denka Sampling Location

Denka Fence Line Monitoring Results Aug. 8, 2016 - Dec. 30, 2017

Location	Chloroprene	Date	Exceeds 0.2 ug/m3
Entergy (1)	46.3 ug/m3	10-3-16	231.5 X
Railroad (2)	89.1 ug/m3	5-5-17	445.5 X
Western Edge (3)	105 ug/m3	4-7-17	525X
Miss. River Levee (4)	58.7 ug/m3	5-5-17	293.5 X
Hospital (5)	134.3 ug/m3	5-5-17	671.5 X
Edgard (6)	50.3 ug/m3	10-26-16	251.5X

Denka Fence Line Air Monitoring Results, Jan. through July 2018

Location	Chloroprene	Date	Exceeds 0.2 ug/m3
Entergy (1)	11.5 ug/m3	2-19-18	57.5 X
Railroad (2)	40.2 ug/m3	6-6-18	201 X
Western Edge (3)	32.1ug/m3	6-6-18	160.5X
Miss. River Levee (4)	63.7 ug/m3	6-6-18	318.5 X
Hospital (5)	47.1 ug/m3	6-6-18	235.5 X
Edgard (6)	6.3 ug/m3	2-26-18	31.5X

ED_002226B_00002273-00008

Denka calculated the Chloroprene concentration for their entire monitoring period as **3.60 ug/m3 (18X)** and for **July 2018 as 1.24 ug/m3, still above 0.2 ug/m3 (6.2 x).**

The Chloroprene concentrations in the air are trended downward as a result of the installation of four control technologies installed by Denka in compliance with the **Administrative Order on Consent** of January 6, 2017. DEQ and Denka both signed the Administrative Order of Consent and the control technologies were installed during 2017.

The Chloroprene ambient air concentrations **are still not near 0.2 ug/m3.** Chloroprene is still present in the air during all sampling events and ranges from one to six sampling locations during each sampling event, depending on the wind conditions and wind direction.

During the 17 EPA sampling events in June and July 2018, the sampling locations each **exceeded 0.2 ug/m3** on five to 12 sampling dates. Denka had 13 sampling events and the sampling locations each **exceeded 0.2 ug/m3** on three to seven (three locations) sampling dates at the east bank sampling locations.

Further reductions of Chloroprene air emissions are needed.

Denka Incidents

The highest Denka Chloroprene concentration in 2018 occurred on June 6, 2018 at four sampling locations:

Mississippi River Levee	63.7 ug/m3
Southwest Corner of Hospital	47.1 ug/m3
Intersection Hwy 44 and ICRR	40.2 ug/m3
Western Edge of Denka Property	32.1 ug/m3

The wind was a light breeze to the South at the beginning of the sampling event and light breeze to the South-Southeast at the end of the sampling event.

ED_002226B_00002273-00009

According to Denka, the event that caused the Chloroprene results on June 6, 2018 is still under investigation. In an e mail I received on the afternoon of August 2, 2018, Denka stated they continue to work on a definitive cause of the unusual results of June 6, 2018.

Denka is performing air monitoring sampling every six days. If the air monitoring had not occurred on June 6, 2018, there would have been no indication of a releases of Chloroprene which resulted in elevated ambient air concentrations at four of the six monitoring location. More frequent ambient air sampling by Denka is needed to insure the protection of community members living, working, worshiping and attending schools in the area surrounding the Denka facility.

On July 9, 2018, the two highest concentrations in July 2018 occurred at the Mississippi River Levee location, 15.8 ug/m3 and the western edge of Denka property, 13.2 ug/m3. On that date Toluene was also detected at the Mississippi River Levee, 2.1 ug/m3, the western edge of Denka property, 2.0 ug/m3 and across the river at Edgard, 2.0 ug/m3. The wind was a light breeze to the North West at the beginning of the sampling period and light breeze to the South East at the end of the sampling period. **In the cover letter of the July 2018 air monitoring report, Denka indicated "on 7/9/18, there was a malfunction on one of the headers feeding the RTO; this was discovered quickly and repaired shortly thereafter."**

Need for Denka Chloroprene and Neoprene Production Rates

Chloroprene Production Rate – Highest in 2017 (pounds per month)

March 2017	7,767,000
April 2017	7,509,000
August 2017	7,491,000

Chloroprene Production Rates 2018 (pounds per month)

January 2018	3,247,000
February 2018	5,227,000
March 2018	6,906,000
April 2018	3,781,000
May 2018	5,549,000
June 2018	5,677,000

Neoprene Production Rate – Highest in 2017 (pounds per month)

August 2017	7,036,837

Neoprene Production Rate 2018 (pounds per month)

January 2018	4,492,163
February 2018	4,971,130
March 2018	5,838,976
April 2018	5,814,881
May 2018	4,885,768
June 2018	5,811,156

The Chloroprene production rate in 2018 is still below the more than 7 million pounds per month produced during the maximum in 2017.

The Neoprene production rate in 2018 is also still well below the maximum Neoprene production rate in 2017, during the month of August , 7,036,837 pounds per month.

Assuming Chloroprene air emissions correspond to production rates of Chloroprene and manufacturing of Neoprene from Chloroprene, the maximum expected Chloroprene emissions have not yet been reached in 2018. Even with the four control technologies installed, we have not seen the maximum Chloroprene emissions possible with the production rates of 2017.

In the August 7, 2018 Fenceline Monitoring Results for July 2018, Denka indicated "as agreed verbally with you (DEQ) on June 12, 2018, Denka is submitting only meteorological data with the monitoring results." When specifically asked for the Chloroprene and Neoprene production values, Denka replied they were no longer required to produce production quantities of Chloroprene and Neoprene.

There is a need to have Denka continue to report on a monthly basis the Chloroprene and Neoprene production rate to compare the air emissions to production quantities.

DEQ Notice of Potential Penalty to Denka – May 3, 2018

On **May 3, 2018**, DEQ issued to Denka a **Notice of Potential Penalty.**

Denka Violations Listed in the Notice of Potential Penalty

Based on the Stack Test Report and Polymers and Resins MACT Report, Denka's first Poly Kettles Vent condenser achieved a removal efficiency of halogenated hydrocarbons of **approximately 46%**. The first Poly Kettles Vent Condenser was operated by Denka from October 31, 2015 until January 11, 2017 when the second condenser was installed. This first Poly Kettles Vent Condenser was operated without making any changes and/or modifications to the operations of DuPont.

Denka failed to achieve the removal efficiency of 95% or greater of halogenated hydrocarbons from the Poly Kettles Vent as required by LAC 33:III.2115G and other specific requirements.

Based on the Stack Test Report and MACT Report, Denka failed to achieve and/or demonstrate a 95% or greater removal efficiency of halogenated hydrocarbons from the Poly Kettles Vent. The reports indicate only an **81%** removal efficiency of halogenated hydrocarbons was achieved at the exit of the second condenser during the Poly Kettles Vent Condenser Stack Test.

Denka failed to achieve the removal efficiency of 95% or greater of halogenated hydrocarbons from the Poly Kettles Vent as required by LAC 33:III.2115G and other specific requirements.

Denka was required to achieve 95% or greater removal efficiency from the original and the second Poly Kettles Vent Condensers. However, Denka only achieved 46% removal efficiency from the first condenser and 81% removal efficiency when the second condenser was added in series beginning January 11, 2017.

Denka has been in violation for not achieving 95% or greater removal efficiency since October 31, 2015 and continues to be in violation at the present time (for more than 2.75 years).

Thus the first control technology that Denka installed under the AOC of January 6, 2017, did not remove halogenated hydrocarbons to the level required in the Title V Air Permit, 95% or greater.

DuPont was issues a similar Potential Penalty Notice on May 3, 2018 for operating the Poly Kettle Vent at only 46% removal efficiency, and not achieving 95% removal efficiency from August 9, 2004 until October 30, 2015.

DEQ Notice of Potential Penalty to Denka – August 1, 2018

On June 14, 2018 Denka reported to DEQ that during routine internal auditing. Denka discovered the Outside Brine Pit was a source of Volatile Organic Compounds emissions, **mostly Chloroprene**, which was not

previously included in any Title V permit. Denka has operated the facility with an unpermitted source, Outside Brine Pit, since October 31, 2015, for which a timely permit application was not submitted to, or authorization obtained from DEQ.

Chloroprene Likely Carcinogen

Chloroprene is a likely carcinogen. Studies have demonstrated that Chloroprene increases the risk of cancer in humans associated with:

Liver cancer	Colon cancer	Leukemia
Lung cancer	Kidney cancer	

Based on publications of rats, mice and human exposures studies, the routes of human exposure to Chloroprene consist of inhalation, consumption and absorption through the skin.

The results of air sampling by EPA and Denka demonstrates the individuals living, working, worshiping and attending school in the area around the Denka facility are exposed to Chloroprene in the air and inhale, ingest and absorb Chloroprene from the air into their bodies.

The highest concentrations of Chloroprene in the body are normally found in the kidneys, liver, myocardial muscle and brain as a result of exposure to Chloroprene. Chloroprene is quickly metabolized by the liver.

Some of the Chloroprene metabolites are presumed to be more toxic than Chloroprene itself. Some Chloroprene metabolites react with DNA. Some Chloroprene metabolites are mutagens. Chloroprene metabolites are excreted in the urine.

Samples of urine were collected from individuals living and attending schools in the area around Denka in March and November 2017.

Metabolites of Chloroprene were detected in each and every one of the urine samples tested. The detection of Chloroprene specific metabolites in all of the urine samples demonstrated a completed pathway of exposure in the individuals tested.

The continuous exposure of humans to Chloroprene in the air in St. John the Baptist Parish serves as a continuous source of Chloroprene to individuals bodies and a source of Chloroprene for the liver to metabolize.

Based on sampling of urine of individuals in the Reserve/LaPlace area, completed pathways of human exposure were demonstrated. These completed pathways of exposure demonstrate the need for:

1. DEQ and EPA to require additional reductions in the ambient air concentrations of Chloroprene, via reduction in Chloroprene air emissions from various units within the Denka facility.
2. Thank you EPA for the ambient air monitoring for Chloroprene at six monitoring locations every three days. Please continue monitoring the concentrations of Chloroprene in the ambient air to track the progress or lack of progress in reduction of Chloroprene air emissions from the Denka facility and provide data to track incident events that release additional elevated quantities of Chloroprene into the air over short periods to time. info
3. DEQ should require Denka to continue to monitor Chloroprene and Toluene air emissions at the six monitoring locations every six days. Denka was only required to sample and report the ambient air monitoring data through June 2018 by the AOC.
4. DEQ should require Denka to continue reporting the monthly quantities of **Chloroprene and Neoprene production rates**.
5. DEQ and EPA should continue to make monitoring data available to the public in a timely manner. DEQ's Electronic Data Management System is missing a number of Denka monthly air monitoring reports.
6. Establish a program to perform urine analysis for Chloroprene metabolites in community members in the area around the Denka facility.

DENKA: THE PATH FORWARD

Denka, at a site formerly operated by DuPont, manufactures the chemical chloroprene which is used in the manufacture of neoprene synthetic rubber. EPA reclassified chloroprene as a likely carcinogen in 2010. That reclassification was reflected in the National Air Toxics Assessment (NATA) map released by EPA in 2015. The map suggested an elevated risk for cancer in the area around the Denka plant in LaPlace, La. The referenced risk is an incremental estimate of the increased probability of developing cancer over a lifetime as a result of a continuous exposure to chloroprene.

What is the NATA's purpose?

The purpose of NATA is to identify and prioritize air toxics, emission source types and locations that are of greatest potential concern in terms of contributing to population risk. EPA uses the results of these assessments in many ways, including:

- To work with communities in designing their own local-scale assessments
- To set priorities for improving data in emissions inventories
- To help direct priorities for expanding and improving the network of air toxics monitoring

The Louisiana Department of Environmental Quality (LDEQ) has worked with the U.S. Environmental Protection Agency (EPA) to gather actual monitoring data. NATA uses estimates of emissions and computer models to approximate risks; it is not designed to determine actual health risks to individual people. Six monitors are maintained by EPA in areas adjacent and near the plant. Additionally, Denka maintains six monitors of their own in and around their site. LDEQ receives data from both EPA and Denka monitoring.

The AOC

Denka voluntarily agreed to take initiatives to reduce plant emissions. LDEQ worked with Denka to craft an Administrative Order on Consent (AOC), an enforceable order of the LDEQ, in which Denka agreed to install a series of new control technology and measures designed to reduce emissions of chloroprene by 85 percent from the facility's 2014 baseline chloroprene emissions. EPA supports LDEQ setting an enforceable schedule to make the agreed upon changes to the facility. Denka has spent more than $25 million to reduce chloroprene emissions.

Under the AOC, emissions reductions devices will be installed on a set schedule, culminating with the installation of the Regenerative Thermal Oxidizer (RTO) by the end of the fourth quarter of 2017. The first two phases have been installed and are operating. Denka has applied for an extension of time for installation of the third phase because of complexities in the engineering design for the modification. The final phase is the installation of the RTO. The RTO is on-site undergoing installation. After the initial phases were installed, LDEQ and EPA saw a downward trend in chloroprene readings at monitors around the Denka site. While the reductions have leveled out, more emissions declines are expected when the remaining phases of the remedy are installed.

What about .2?

Once the control measures are in place, LDEQ will again assess the emissions at the Denka facility. While there is currently no federal standard for chloroprene emissions, EPA has offered this number as guidance, but .2 micrograms per cubic meter is not a federally enforceable emissions limit.

Questions about the school

Some LaPlace residents voiced concerns about the 5th Ward School, which is near the Denka plant. The Louisiana Department of Health (LDH) and LDEQ conferred regarding the environmental status at 5th Ward School. LDH officials indicated they have found no reason that children cannot attend the school. Monitoring has shown spikes of chloroprene, not continuous exposure as defined in risk estimates.

Monitoring results

For EPA's monitoring results, go to https://www.epa.gov/la/laplace-st-john-baptist-parish-louisiana

For more information:
Contact Greg Langley, LDEQ Press Secretary,
at (225) 219-3964, email Gregory.Langley@la.gov.