EXECUTIVE SUMMARY:

Three years ago, residents living near a chemical plant in St. John the Baptist Parish, Louisiana were told by the Environmental Protection Agency (EPA) that they faced the highest risk in the country of developing cancer from air pollution.

St. John Parish is part of an area of Louisiana known as “Cancer Alley,” an 85-mile stretch of land along the Mississippi River between New Orleans and Baton Rouge.
More than 150 chemical plants and oil refineries dot this stretch of land, where most communities are predominantly Black and many residents attribute seemingly staggering levels of cancer and other illness to toxic air emissions from industry.¹

The St. John plant’s neoprene manufacturing unit—owned by DuPont until its sale to Japanese company Denka Performance Elastomer² in November 2015—has been pumping the toxic chemical chloroprene into a predominantly Black community since 1969. Residents had long felt that there was too much illness in the area—far beyond what could be considered normal. One resident with whom we spoke recalled the words of her niece, shortly before she passed away of cancer: “We’re just sitting here, waiting to die.”

The EPA’s 2011 National Air Toxics Assessment (NATA), released in December 2015, seemed to confirm many residents’ suspicions. According to the most recent NATA, the risk of developing cancer from air pollution in the census tract closest to the Denka neoprene facility is nearly 50 times the national average due to emissions of chloroprene,³ classified by the EPA as a “likely human carcinogen.” The EPA advocates a significant reduction in chloroprene emissions from the Denka facility, such that air concentration of the chemical does not exceed 0.2 micrograms per cubic meter (µg/m³)—the maximum concentration that would keep cancer risk from air pollution within the EPA’s “upper limit of acceptability.”⁴

For the past three years, community members have demanded a reduction of chloroprene emissions to this EPA-recommended maximum level of 0.2 µg/m³. Their struggle for environmental justice has gained increasing traction and national media coverage.⁵

Although the EPA has affirmed its confidence in the scientific validity of its chloroprene assessment—stating that the assessment “was developed using a robust, transparent, and public process and represents the Agency’s top tier source of toxicity information on chloroprene”⁶—Denka continues to challenge the EPA’s findings on chloroprene toxicity.⁷

Denka signed a voluntary agreement to reduce emissions in January 2017 and finished installing emissions reduction technology by the end of that year, but the EPA’s air monitoring data continues to show high levels of chloroprene emissions—well in excess of the 0.2 µg/m³ guideline—in the neighborhoods around the Denka facility.
Concerned citizens confront denka in japan

This report by the University Network for Human Rights presents localized health data from the area surrounding the Denka/DuPont plant. In March 2018, a team of trained researchers collected health data from a large sample of residents who live within 2.5 kilometers of the plant. Below, we present our in-depth analysis of this household health survey data. Our data reveal extremely improbable rates of cancer and other illness among residents surveyed. We also found that prevalence of cancer and other illness among our survey sample is correlated with proximity to the Denka plant, with higher rates of illness closer to the plant.

Cancer prevalence among those surveyed is unusually high. Among respondents (those who provided health information about themselves and all their household members), the p-value for cancer prevalence when compared to a distribution of populations with the same race, sex, and age demographics is 0.6% (very statistically significant).[8] In other words, the probability of the 9.7% cancer prevalence outcome that we found among respondents—the likelihood that we would see a cancer prevalence this high or higher in a population with the same race, sex, and age composition—is only 0.6%.

Among all residents surveyed (respondents plus all their household members, i.e. everyone for whom we collected information), the p-value for cancer prevalence is 3.43% (statistically significant).

Cancer prevalence among those surveyed is also associated strongly with proximity to the Denka facility. The p-value for cancer prevalence among respondents who live closest to the facility (within 1.5 kilometers) is 0.26% (very statistically significant). The p-value for cancer prevalence among residents who live closest to the facility (within 1.5 kilometers) is 0.33% (very statistically significant).

Prevalence of non-cancer health conditions associated with chloroprene exposure is also striking and invariably correlated with proximity to the plant. Nearly half the children in the households surveyed within 1.5 kilometers of the plant suffer from headaches, nosebleeds, or both. P-values for tachycardia (abnormally fast heart rate) diagnosed by a doctor or other health care provider are 0% for both respondents and residents, indicating a virtual impossibility that high tachycardia prevalence among the survey sample was due to chance.

Among respondents surveyed within 1.5 kilometers of the plant: nearly 40% regularly experience chest pain, heart palpitations, or both; one-third regularly experience wheezing and/or difficulty breathing; more than half regularly experience headaches, dizziness, and/or lightheadedness; nearly half regularly experience eye pain/irritation and/or watery eyes; more than 40% experience cough, sneezing, and/or sore/hoarse throat most of the time; more than one-third regularly experience skin rash, irritation and/or itchy skin; and nearly 30% experience fatigue/lightheadedness most of the time.

Overall, our findings strongly indicate that prevalence of cancer and other illness among residents surveyed is unusually high compared to what we would expect using national actuarial tables. These results are disturbing enough to warrant additional in-depth, localized, and rigorous health studies in the area surrounding the Denka/DuPont plant and throughout Cancer Alley.

In the meantime, local, state, and federal agencies—including the Louisiana Department of Environmental Quality and the Louisiana Department of Health—must insist that Denka Performance Elastomer adhere to the EPA’s 0.2 µg/m³ guideline for maximum chloroprene air concentration.

[2] Denka Co. Ltd. owns 70% of Denka Performance Elastomer, and Mitsui Co. Ltd. owns 30%.
Letter from Koki Tabuchi to Scott Pruitt, Request to Withdraw and Correct the 2010 IRIS Review of Chloroprene (June 26, 2017), https://www.scribd.com/embeds/408326975/content?start_page=1&view_mode=scroll&access_key=key-pMd8zNOfLwIOotdRxQXN&show_recommendations=false.

P-values are generally expressed as decimals rather than percentages (0.006 rather than 0.6%, for example). Throughout this report, we express p-values as percentages because they are conceptually easier for the layperson to understand this way. P-values less than 5% (0.05) are considered statistically significant.
Activists find high cancer rates among residents near Denka plant; scientists question methodology

A long-awaited report released Wednesday by the University Network for Human Rights, a nonprofit founded last year by Stanford University law clinic instructors, found some Reserve residents had cancer at "extremely improbable rates," and pointed to the controversial Denka neoprene plant next door as the likely cause.

But several environmental experts said that even if cancer rates are higher by statistically significant amounts in parts of St. John the Baptist Parish, the study's methodology is so flawed that it provides little proof the nearby plant is to blame. As such, the findings may do little to help community members hoping the report will help their cause.

Called "Waiting to Die: Toxic Emissions and Disease Near the Louisiana Denka/DuPont Plant," the report said surveyors found about 10.5% of the 505 non-smoking respondents in a 2.5-kilometer radius of the plant had reported a cancer diagnosis. The report found a higher diagnosis rate within a 1.5-kilometer radius.

At a meeting in a Reserve church on Wednesday night, activists behind the study told about 60 community members that their research found a strong correlation between cancer rates and proximity to Denka Performance Elastomer. The plant has been swirling in controversy because of its output of the chemical chloroprene, which has been deemed a "likely carcinogen" by the U.S. Environmental Protection Agency.

As a result, the EPA in 2015 said the cancer risk from airborne pollutants in census tracts near the plant was the highest in the nation.

"We strongly suspect there's something going on here," said Ruhan Nagra, executive director of the nonprofit that conducted the study. She gestured at a projection screen as her nonprofit partner pointed his pen at data sets in bell-curve form.

Residents who have long complained of sickness permeating their community said they felt validated by the results. Some cried and others shook their heads. Many wore matching red shirts reading "Only 0.2 will do," a logo associated with the local activist group Concerned Citizens of St. John.

Lawyers representing thousands of plaintiffs suing the plant's owners listened intently to data they said could bolster multiple cases winding through state and federal courts, while some prospective and current St. John council members weighed in to criticize the source of pollution.

And Matthew Block, executive counsel to Gov. John Bel Edwards, attended Wednesday night, and said afterward the findings had prompted the governor to organize meetings with the Department of Health and the Department of Environmental Quality to take a closer look at how Louisiana Tumor Registry data is analyzed. The tumor registry -- which mirrors datasets kept in other states -- is supposed to keep track of every cancer diagnosis in Louisiana. For privacy reasons, much of the data is shielded from public view.
The Department of Health issued a statement late Thursday saying the department "is reviewing this new study to determine our next most appropriate steps."

While state officials were careful not to criticize the report, its methodology raised eyebrows among scientists and other critics, largely because it relied on residents to report medical problems of other people living in a household with them. The college students who collected the data were not instructed to ask for proof of any medical diagnosis.

The report has not been peer-reviewed or submitted to a scientific journal for publication, though Nagra said she intends to do both of those things.

In a rare show of consensus, representatives from Denka and from the Louisiana Environmental Action Network -- an environmental advocacy group that has been outspoken against Denka's pollution -- agreed that the report did not meet scientific standards.

Wilma Subra, a scientist with LEAN, called it "an embarrassment to the community."

"It's got so many faults in it that anybody who knows how to read those kind of reports will pull out the faults," Subra said, "because it's such a critical issue."

Jim Harris, a spokesman for Denka, said the study's findings clash with the tumor registry and failed to link chloroprene exposure to illness. The tumor registry does not show dramatically higher cancer rates in the census tract nearest the plant, but the comparison is of limited use because the tract includes some homes very near the plant and others that are quite distant.

"The authors of the UNHR study conclude that the number of self-reported cancers indicate unmeasured levels of chloroprene from the Denka plant caused those cancers and other health problems," Harris said. "That simply isn't science."

Nagra, a former instructor at Stanford Law School's Human Rights Clinic, defended her methodology in an interview.

"That was not the objective," Nagra said when asked about a peer review, saying she was instead responding to what she already considered a "public health emergency."

"The goal or intent was to do the most rigorous study we could do under a rigorous timeline," she said.

She also stood by her organization's blurring of science and advocacy.

"Does that make the study any less reliable or significant in its findings?" she added. "I would argue absolutely not. We are rigorous in everything we do."

Attempts to prove a thesis

Chloroprene is used to create the synthetic rubber neoprene, commonly found in wetsuits, tires and other items. Despite high demand, Denka's St. John facility is the only place in the United States where it's made.

Although it has been produced in St. John for about 50 years, it was only deemed a "likely carcinogen" about a decade ago. The 2010 designation put it one notch below "known carcinogen," which has wider consensus among experts about its propensity to cause cancer.

While government and health officials agree that questions about the level of its toxicity remain, the chemical has been in environmentalists' sights in recent years. Along with creating a cancer risk, the EPA has highlighted chloroprene's likelihood to cause other ailments, such as skin rashes and heart problems.

In 2016, the EPA began measuring how much chloroprene was being released into the air surrounding the plant, which showed spikes hundreds of times over the agency's recommended exposure threshold of no more than 0.2 micrograms per cubic meter of air.

The resulting data have sparked a spate of public and legal battles against the company, which in turn have shined a national spotlight on the plant and the community that surrounds it.

Nagra said she began working with the predominantly black activists searching for environmental justice after coming to Louisiana on a trip with the Center for Constitutional Rights, a legal advocacy group she used to work for.

When the Concerned Citizens group asked her to do a health survey and analysis, she brought the project to Stanford University, which had an informal relationship between undergraduate students and the Law School’s Human Rights Clinic.

Nagra and James Cavallaro, the former director of the law clinic, planned the trip to Reserve. With funding from Stanford, 14 students got training from Subra and epidemiology and statistician professors, and then did the household health survey over 10 days in March 2018.

Seeking to test whether cancer and other illness increased with proximity to the plant, the study was designed so that a higher proportion of the households surveyed were within a mile of it.

Last year, the two formed a nonprofit and started collecting money from donors, Cavallaro said. They hired Lance Hilderbrand, a former teaching assistant and data analyst intern for Stanford's communications office, to crunch the numbers. Nagra and Cavallaro said they couldn't immediately name donors without their permission.

“We wanted to know how bad it was,” Nagra said of the pollution.

Study results

The report bills itself as the first look at localized health data around the plant, purchased by Denka from its former owner DuPont in 2015.

The college students surveyed about 60% of the households within Zone 1, a circle centered on the plant with a 1.5-kilometer radius. They interviewed a respondent from 20% of all households located in Zone 2, between 1.5 and 2.5 kilometers from the plant.

The study included data on "respondents" and "residents." Respondents physically answered health questions on behalf of residents, defined as anyone living in the house.

The survey found that, after removing all respondents living in households with a smoker, 12.4% of people in Zone 1 reported having cancer, versus 8.6% in Zone 2.

The results showed "very statistically significant" elevated cancer rates for the first zone compared to people with the same demographic profile around the U.S.

When analyzing both zones together, and removing respondents who lived with a smoker, researchers found 10.5% of respondents had cancer.

The report found that 7% of a typical U.S. population made up of the same race, sex and age composition as the surveyed St. John residents in both zones, with the smoking exclusion criterion, would have a cancer diagnosis. The chance of the St. John population randomly being so much higher was just 0.37%, researchers found. Any probability below 5% is considered statistically significant.
In addition to the study, the nonprofit recorded video interviews with residents. Among those questioned was Lydia Gerard, who suffers from skin conditions and is one of 3,875 plaintiffs in the series of lawsuits in Louisiana’s 40th Judicial District.

Her husband, Walter Gerard, also talked to the group, before dying of kidney cancer about two months later.

"I’m more than sure — that’s where it probably came from," he said in the video. "Because that’s one of the cancers that’s associated with chloroprene — kidney cancer."

**Looking at the data**

Subra and other experts, however, underscore that the smoking gun that might prove correlation is still missing: granular and reliable data showing high rates of liver, lung or kidney cancers immediately near the plant.

That's because those are most closely linked to chloroprene exposure, Subra said.

"When you read the whole study, it doesn't give any information about rates of specific cancers," she said. "That's supposedly what they were looking for. They didn't even go there with the data."

Subra was frustrated because the new report was supposed to provide an addendum to the Tumor Registry, which, right now, show rates of most kinds of cancer in St. John Parish are not significantly higher than they are statewide.

Numbers from 2005 to 2015 showed overall cancer incidents in just one census tract east of the plant occurred at "significantly higher" rates than elsewhere in the Pelican State.

Dr. Jeffrey Wickliffe, associate professor in Global Environmental Health Sciences at the Tulane University School of Public Health and Tropical Medicine, agreed with Subra.

He said he was concerned about the lack of breakdown about types of cancers. Some cancers, such as breast cancer, would be more likely attributable to factors other than chloroprene, he said.

"It takes data and simulations and overstates everything," he said of the report. "I certainly don't think chloroprene coming from the Denka plant is responsible for all these cancers."

Block said the governor's office would be taking a critical look at cancer data in the area regardless.

"This is a complicated issue to study, and we have to make sure we have good data and good science," Block said. "Whether or not there are others who are critical of the report, we’re going to take it seriously and make sure we understand what’s going in that local community."

**Editor’s note:** This story was changed Aug. 15 to remove an erroneous statement saying the report was the first field research project by the nonprofit. Several other passages were changed to improve clarity.
Letters: Deeply flawed study unfairly focuses on Denka plant in St. John

CRYHARRISA August 18, 2019

Last month, a Connecticut-based advocacy group called the University Network for Human Rights published the results of an informal survey of residents near the Denka Performance Elastomer Neoprene production facility in St. John the Baptist Parish. UNHR claims their report, “Waiting to Die,” “reveals extremely improbable levels of cancer and other illnesses … correlated with proximity to the Denka plant.” But it doesn’t, because there aren’t.

In fact, objective scientific studies on cancer in Louisiana have shown for years there is no widespread negative health impact in industrial communities or around the DPE facility. Cancer rates in Louisiana are already collected and studied by a reputable, objective public health institution — the Louisiana Tumor Registry, affiliated with the Louisiana State University School of Public Health. Years of Tumor Registry reports directly contradict the UNHR report and scientifically show that neither the Industrial Corridor nor the areas surrounding the DPE facility are any less healthy than the rest of the state.

So where did UHNR go wrong? To find out, DPE commissioned an independent review of UNHR’s report, conducted by a chief epidemiologist of worldwide environmental expert Ramboll. It found numerous fundamental flaws in the design of the survey that indicate its methods were highly susceptible to basic biases that would invalidate the report’s results outright.

Among them, Ramboll notes UNHR used volunteers, rather than professional, credentialed researchers to conduct surveys. Also, UNHR asked residents to report illnesses they or anyone else in the household experienced but didn’t make any effort to verify them with medical records. Most troubling, Ramboll noted UNHR suggested that all of the illnesses, from headaches to cancer, were caused by DPE, despite the fact there is no scientific research to support the vast majority of those connections, and the facility operates well within its environmental permits.

Ramboll found UNHR then arbitrarily decided to label some homes “in proximity to the Denka plant.” Next, UNHR compared them to an inappropriate and not validated number the authors decided cancer rates “should” be.

The Ramboll report concludes any potential scientific value of UNHR’s studies was diluted or washed out entirely by biases and holes throughout the process. To read it, visit Denka-pe.com.
UNHR’s report isn’t objective, it’s meant to confirm the group’s beliefs. Verified data on cancer incidence has repeatedly shown the area near the Denka facility does not have a higher rate of cancers compared with the rest of Louisiana. To learn more about Tumor Registry reports, visit the LSU School of Public Health online at https://sph.lsuhsc.edu/louisiana-tumor-registry/.

Jim Harris

DPE spokesman

Baton Rouge
Letters: Health problems fairly linked to Denka plant

The University Network for Human Rights recently released the results of a health survey of the area near the Denka/DuPont plant in St. John Parish. The University Network study — which The Guardian has called “the most detailed and comprehensive evidence to date that (residents) are at an especially pronounced risk of cancer and other negative health effects due to toxic chemicals in the air” — found that cancer and illness levels among those surveyed are unusually high and correlated with distance from the plant.

Dr. Mindy Roseman of Yale Law School, formerly an instructor at the Harvard School of Public Health, said the following about the study: “The findings of this report are alarming, especially regarding children within the radius. This is a matter not only of environmental and racial justice, but one of public health and human rights protection for the most vulnerable among us. Those responsible — Denka Performance Elastomer, municipal, and state authorities — will have to take appropriate action. This is not a report to be ignored.”

A recent article about the study in The Advocate revealed fundamental misunderstandings about the nature, methodology, and significance of survey-based approaches in epidemiology, which are well-established and known as “shoe-leather” studies. When an urgent public health problem arises, shoe-leather epidemiological studies are a common first line of response.

Dr. Jeffrey Wickliffe of Tulane University said the following about his comments to The Advocate regarding the study: “Any studies regarding these communities and their health should facilitate communities’ involvement in those studies, as was done in this project. EPA-estimated cancer risks due to chloroprene emissions in census tracts 708 and 709 are far too high, ambient air concentrations are far too high, and chloroprene levels have got to come down. It’s just that simple.”

The article also included the opinions of Ms. Wilma Subra, a local environmental advocate who suggested that she would have liked to see a breakdown of our analyses by cancer type. The rigorous nature of our data analysis did not permit us to take this approach, which would have been deeply
flawed and would have undermined the quality of the study for multiple reasons. Disclosing small numbers of people in a concentrated area who have reported specific, rare cancer types implicates serious privacy and confidentiality concerns, as well as statistical concerns having to do with sample size. In addition, although we know that chloroprene is a likely human carcinogen, there is much that we do not know about the specific types of cancer linked to chloroprene exposure. Given these issues, focusing on higher rates of liver, lung, and kidney cancers, as Ms. Subra suggested, is not scientifically sound.

For more details on these and other issues raised in the article, visit
https://www.humanrightsnetwork.org/health-study-faqs.

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