

Chloroprene Monitoring Demonstration, Denka Performance Elastomer Facility, Reserve, St. John the Baptist Parish, LA (Sept 22-23, 2021)

SUMMARY

This report presents results of a small number of air and biomonitoring samples collected in Reserve, LA around Denka on September 2021.

This study was not designed to characterize average chloroprene concentrations offsite or to estimate exposures to chloroprene.

Chloroprene and neoprene production at Denka had ceased during the month of sample collection due to Hurricane Ida, which impacted the area on August 29th, 2021.

Thus, monitoring results are more characteristic of times in which there is no chloroprene production.

Results suggest a need for proactive precautionary policies, as chloroprene was found offsite at levels exceeding EPA recommendations, and biological samples suggested the presence of metabolites of chloroprene, 1,3-butadiene and epichlorohydrin, likely, known and probable cancer causing agents, respectively.

Introduction

- This summary presents results of a small monitoring project in Reserve, LA around the Denka facility conducted on September 2021 by Dr. Adrienne Katner for the LA Dept. of Health.
- This was not a formal study to characterize exposures to chloroprene. It was a proof-of-concept demonstration to evaluate an analytical protocol.
- Samples were collected during a month in which no chloroprene or neoprene production was reported due to Hurricane Ida (September 2021). Chloroprene emissions from the facility were the lowest on record.
- Thus, monitoring results are more characteristic of times in which there is no chloroprene production.
- Ten air samples were collected at offsite locations at different proximities from Denka.
- Urine samples were collected from 7 residents at three of the residential locations.



Figure 1. The presence of children 500 yards from Denka should trigger proactive precautionary measures to reduce exposures to chloroprene and other industrial emissions

Results

- Two of the ten air samples had detectable chloroprene at levels above EPA's recommendation for maximum annual average chloroprene air concentration for lifetime exposures ($0.2 \mu\text{g}/\text{m}^3$), which was set to limit cancer risk among 1 million exposed people to 100 cancer cases per year:
 - (1) $0.78 \mu\text{g}/\text{m}^3$ by the 5th Ward Elementary School;
 - (2) $0.85 \mu\text{g}/\text{m}^3$ across the street from the school.
- Some sites had detectable levels of other Volatile Organic Compounds (VOCs), including toluene, benzene, xylene, and 1,2,4-trimethylbenzene; but none exceeded EPA's chemical-specific lifetime recommendations for non-cancer health effects.
- Of nine urine samples from seven residents, all had detectable levels of DHBMA, a metabolite of chloroprene and 1,3-butadiene. HOBMA, CHPMA, Cl-MA metabolites were detected in urine samples, suggesting exposure to chloroprene, 1,3-butadiene and epichlorohydrin; however, we were unable to verify the identity of these metabolites.

RECOMMENDATIONS

Denka should conduct real-time fence-line and offsite continuous air monitoring for chloroprene and other VOC emissions.

Online air monitoring data should allow for real time alerts to residents, schools and workers.

A cumulative risk assessment should be conducted for the wide variety of Denka's emissions.

Non-cancer outcomes should be tracked to evaluate potential health impacts to the multiple VOC emissions from Denka.

Biomonitoring should be used to document resident exposures to chloroprene and other VOCs.

The State should adopt proactive precautionary practices and policies for the safety and well-being of this, and other fence-line communities.

Sample Locations

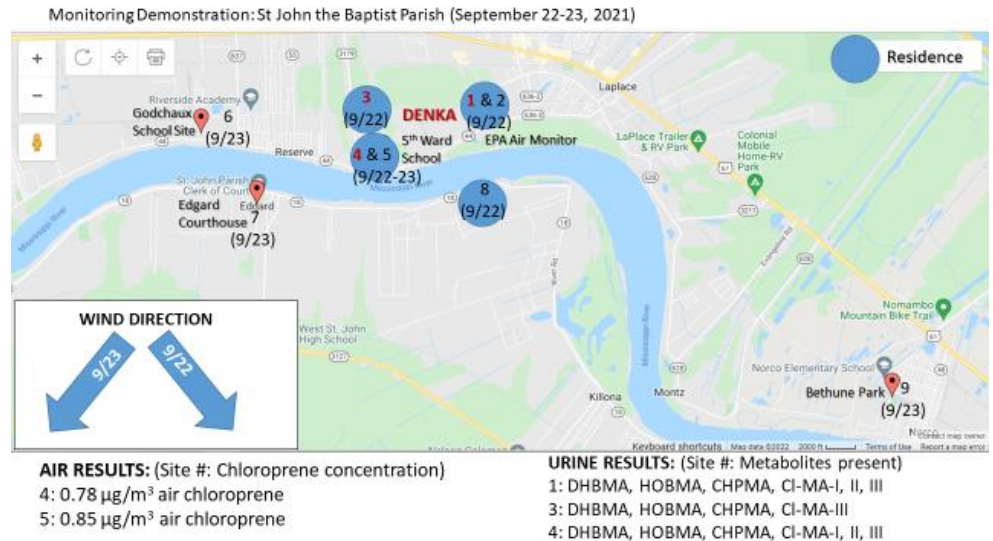


Figure 2. Air sample locations around the Denka facility (2021). Dates in which air samples were collected are indicated in parentheses near each site in the map. Sites in bold red are residential areas where urine samples were collected from available residents. Exact locations of residences are obscured to respect the privacy of participating residents.

Conclusions

Chloroprene continues to be detected offsite by EPA and Denka officials at levels of potential concern where vulnerable populations congregate or live. Biomonitoring indicates resident exposures is occurring to likely, known and/or probably carcinogens associated with plastics production. Gaps in scientific knowledge about the cancer and noncancer health impacts of lifetime exposures to low levels of chloroprene and VOC mixtures on vulnerable populations like children, the elderly, immunocompromised, sick and pregnant women, support a need for precautionary practices by state and parish officials.

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For more information about this study, please see the website for the "Cancer Review of St. John the Baptist Parish (CRISP)" project at: <https://louisianacancer.org/st-john/>