

**A Care Ethics Analysis of the DuPont Chloroprene Production Plant in St. John Parish,
LA**

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

In 1969, the residents of St. John the Baptist Parish, Louisiana had their first encounter with the petrochemical giant, DuPont. The 55.7% African American county was considered a prime location for a new chloroprene production plant due to its proximity to the Mississippi River and its low property values (Hersher, 2018; Louisiana Department of Health, 2021). 41 years after DuPont launched its chloroprene facility, the EPA deemed the chemical “a likely human carcinogen” (Hersher, 2018). According to data collected from Louisiana residents living within walkable proximity to the DuPont plant, now turned Denka, the residents exhibited “cancer prevalence... 44% higher than the national rate” (University Network for Human Rights, 2019, p. 7). Of that population, the risk of cancer is 16% higher in predominantly black areas than in predominantly white areas (Mizutani, 2019).

Since the sale of the plant in 2015, much attention has been drawn to the malpractice of DuPont through the lenses of legal frameworks and community responses to environmental injustice (Berry, 2003; Mizutani, 2019). Scholarly work has highlighted the health and environmental impact of the company on the local population and the weakness of local legislation in reconciling these injustices; however, the current body of literature on the topic has yet to address the ethics of the matter in terms of DuPont’s agency and lack of attempt to fulfill its duty of care to St. John the Baptist Parish Residents. By refraining from holding DuPont to the moral standards we might hold any individual to, we perpetuate the notion that corporations need not consider the consequences of their actions beyond meeting legal requirements and their own bottom lines. This way of operating is not equitable or sustainable.

I will illuminate the extent to which DuPont failed to act morally with respect to Joan Tronto’s four phases of care, inspired by Carol Gilligan’s ethical framework, care ethics. These

moral shortcomings present themselves repeatedly in DuPont's actions, from its inception of the chloroprene plant to its continued evasion of accountability today. Specifically, I will assess how the corporation breached its duty of attentive, responsible, competent, and responsive care to the historically Black community surrounding the plant via an analysis of the history of St. John the Baptist Parish's economic and political history in relation to lobbying efforts by DuPont, poverty and employment rates in the region, DuPont's mission statement, and an internal DuPont memo leaked by *The Guardian* describing the decision-making process of the company after the EPA claimed chloroprene to be a carcinogen.

Background

St. John the Baptist Parish is part of a corridor of counties in Louisiana named "Cancer Alley" that is home to nearly 25% of the total petrochemical production in the US (Mizutani, 2019). Since its opening just east of New Orleans in 1969, the Louisiana DuPont plant has been the sole chloroprene production facility in the US. Chloroprene is a key component in the production of the synthetic rubber, neoprene – a flexible and waterproof material used in boots, phone cases, and an abundance of other consumer products. In 2010, the EPA imposed a maximum allowable air concentration of 0.2 micrograms of chloroprene per cubic meter of air via their IRIS system for quantifying hazards (Hersher, 2018). Fearing regulatory pushback, DuPont sold the chloroprene plant in 2015 as part of a surreptitious deal with Denka, another chemical production company (Laughland, 2021). In February of 2018, "multiple air monitors showed concentrations more than 150 times higher than the IRIS value" (Hersher, 2018) of 0.2 in St. John the Baptist Parish, and evidence suggests that its presence in the locality is continuing to grow. Out of 179 houses surveyed in a 2.5 kilometer radius surrounding the plant, 83 reported having at least one case of cancer. Of the 50 case reports between 2009 and 2018, 30 (60%) were

from Black residents (Williams et al., 2021). This LSU Health survey is tangible evidence of the EPA's National Air Toxics Assessment claim that cancer risk in the region surrounding the plant was over 700 times the average in the US in 2014 (EPA, 2014).

Literature Review

Many environmental activist groups have addressed the inadequacy of laws and environmental regulations regarding chloroprene production, but scholars have not adequately considered the actions of DuPont - from its establishment of the chloroprene plant to its sale of the plant - from an ethical standpoint.

In *In the Backyard of Segregated Neighborhoods: An Environmental Justice Case Study of Louisiana*, Julia Mizutani, an adjunct professor of Cornell Law, defines environmental racism as “the intentional and unintentional disproportionate siting and effects of environmental hazards on communities of color,” (Mizutani, 2019, pg. 365). Her work endeavors to delineate the connection between historically discriminatory legislation and exploitation of consequently disenfranchised communities by corporations in Cancer Alley. She does so through analysis of housing and zoning laws and environmental policies, as well as the inequitable enforcement of said laws by political entities, both historically and contemporarily. She concludes by calling for stronger laws and regulations on corporations that produce hazardous materials, warning that climate change will only exacerbate current environmental inequity. While the author makes a critical point that current laws and regulatory checks fail to account for the legal legacies of discrimination - which has enabled corporations to take advantage of historical inequity - She does not analyze the extent to which the chemical corporations themselves responded unethically.

In an analysis of the Shintech chemical plant in St. James Parish, a neighboring community to St. John the Baptist Parish, Gregory Berry (2003), recounts the empowerment of the community as a primary agent in the downfall of a hazardous chemical plant. Berry differentiates this study from those prior by noting the importance of the social context in which the purely actor- and network- based analyses fail to fully integrate into their discourse. In doing so, he adds to the discussion of Mizutani (2019), by highlighting the multidirectional agency among community members and political entities. For example, the author concludes that negative sentiments of communities towards chemical plants is not enough to induce serious change. Rather, these disenfranchised communities must form coalitions with legal bodies to truly become empowered and have agency against the chemical corporations (Berry, 2003).

While Mizutani (2019) enumerated the agency of legislative entities in addressing environmental injustice, and Berry (2003) elucidated the agency of exploited communities when in discourse with these political powers, I seek to close this triangle of agents by analyzing the ethical onus and agency of chemical corporations, specifically DuPont, in this imbalance of power. Specifically, I aim to uncover the ethical deficiency of DuPont's actions regarding their duty of care to the members of St. John the Baptist Parish, Louisiana.

Conceptual Framework

According to the framework of care ethics, our morality is derived from the obligations, expectations, and duties inherent to our relationships with others, as opposed to a universal set of categorical imperatives or general principles. Moral development does not come out of the void, but rather evolves out of the context-specific mutual responsibility, which is elucidated only by encounters with real people. This necessitates that we be attentive to the vulnerabilities, dependencies, and asymmetrical power dynamics that shape how we care for and to what degree

we expect care from one another to live morally under care ethics. In doing so, we employ care as an exercise of adherence to the common goal of bettering the society that we live in as opposed to striving for care as a virtue or mindset (Van de Poel & Royakkers, 2011).

Building on Carol Gilligan's work, Joan Tronto defined four phases of care in order to concretely qualify how care can be applied adequately. These virtues are attentiveness, responsibility, competence, and responsiveness. To be attentive is to have a propensity for recognizing the needs of others, and to be responsible is to attend to those needs. Competence is to provide care meaningfully and effectively, and responsiveness is to avoid exploitation of another's care through recognition and empathy for their status relative to one's own (Sander-Staudt, n.d.). While these values are intended to apply to an individual, the concept of collective responsibility enables the virtues of care ethics to extend to greater entities, such as a corporation, without holding any one person as solely accountable for said entity's actions (Smiley, 2017). For the purpose of making moral judgments, this framework and its corresponding phases must be adapted to the social context of interest (Van de Poel & Royakkers, 2011).

I aim to illustrate the asymmetrical relationship between DuPont and the disenfranchised Black community of St. John the Baptist Parish, Louisiana in this paper through the framework of care ethics. In doing so, I will utilize attentiveness, responsibility, competence, and responsiveness as gauges of DuPont's moral failures regarding its duty of care.

Analysis

From the conception of the chloroprene plant in 1969 to the litigations against DuPont today, the chemical giant has neglected to act as a moral agent in its duty of care to the residents of St. John the Baptist Parish. According to DuPont's own website, a core part of their mission is

to “meet local needs while empowering employees in the communities where they work and live” (DuPont, 2023). Considering how closely this statement parallels with the ideals of care ethics described above and how starkly the company has violated each of the four tenets of Joan Tronto’s care ethics as evidenced below, the actions of DuPont appear to compromise the legitimacy of its own claims. Partaking in exploitative plant placement, economic neglect and severe pollution of the surrounding community, concealment of emissions research from the EPA, and disregard for reducing carcinogenic emissions, DuPont indeed infringed upon each facet of Tronto’s care ethics framework: Attentiveness, responsibility, competence, and responsiveness. The following sections will detail these ways in which DuPont was a negligent agent of care.

Attentiveness and Responsiveness

DuPont failed to be attentive or responsive to the dependency it imposed upon the community of St. John the Baptist Parish and instead took advantage of the community’s vulnerability. It did so by building a plant in an economically powerless and politically voiceless region of Louisiana and by emitting excessive quantities of a known carcinogen into the community. As defined above, attentiveness within the context of Joan Tronto’s care ethics is cognizance of the needs of others and a grasp of how one’s own actions affect those in the wake of their consequences (Sander-Staudt, n.d.). In situations where for-profit corporations fail to maintain the practice of attentiveness, the cause is often the prioritization of revenue over the well-being of vulnerable, bystanding groups. This exploitation is frequently of communities of color, who are left politically voiceless and economically powerless by historically discriminatory policies, such as redlining, in a phenomenon known as ‘racial capitalism’ (Pirtle, 2020). Following this pattern, DuPont failed to demonstrate attentiveness and perform its duty of

care to the residents of St. John the Baptist Parish by establishing a plant and emitting immense quantities of chloroprene - a known toxin and carcinogen - in this historically disenfranchised and majority African American community.

Likewise, Joan Tronto's fourth tenet of care ethics, responsiveness, is recognition of the asymmetry or dependency within a relationship and the careful consideration of one's own actions to avoid taking advantage of that asymmetry (Sander-Staudt, n.d.). By establishing a neoprene plant within their community, DuPont abused the pre-existing vulnerability of St. John the Baptist Parish residents and further subjugated them to its own priorities and decisions. By failing to recognize its power as a multi-billion dollar corporation over the disenfranchised community from an ethical perspective, DuPont broke its duty of responsiveness due to the following evidence.

From the time of slavery up until DuPont imposed its presence on the area in the 1960's, St. John the Baptist Parish was blanketed in sugar cane fields (Mizutani, 2019). At the time of the Civil War, 4,954 enslaved people forced to tend those fields faced liberation, resulting in a population of resource-less workers and a crumbled economy. Between 1860 and 1870, 10.6% of its white population fled the area, leaving the already predominantly-Black population of recently enslaved people to create an infrastructure by purchasing land on the perimeters of plantations (Blake, 2001; Mizutani, 2019). These pieces of land that continue to be home to the Black communities of Cancer Alley, as well as the plantations flanking them, did not have central local authorities - they were "unincorporated" (Mizutani, 2019, p. 373). According to Mizutani (2019) "unincorporated communities that were historically communities of freed slaves suffer an acute vulnerability to noxious facility siting because they do not have the power to govern themselves" (p. 373). Petrochemical companies, such as DuPont, were able to lobby

predominantly white government officials representing the parishes of Cancer Alley to rezone these devalued residential districts into districts for industrial use (Mizutani, 2019).

The historical redlining and unincorporated status faced by St. John the Baptist Parish suggests a visible vulnerability of the community, which must be recognized as their duty of care by corporations seeking to settle in the region. DuPont failed to recognize this vulnerability and the needs of the community by building a toxin-emitting plant in St. John the Baptist Parish. This delineation of historical events, such as lobbying the removed local government, suggests that the company took advantage of their geographic isolation, economic expendability, and political invisibility as tools to attain a larger profit margin with minimal legal pushback. By establishing the chloroprene plant, not only did DuPont exploit and perpetuate this historical discrimination by further devaluing the homes of St. John the Baptist Parish residents, but the chemical giant also consciously worsened their health and quality of life by polluting their air with a known toxin. Laura Pulido - an associate professor of American studies and ethnicity at USC - perfectly depicted these victims of racial capitalism as “so devalued that their lives are subordinated to the goals of municipal fiscal solvency... this devaluation is based on both their blackness and their surplus status, with the two being mutually constituted.” (Pulido, 2016, pg. 1) Inasmuch, DuPont was inattentive to the needs of this marginalized group, and actively used the vulnerability of the community to parasitically leech revenue out of their health and well-being instead of being responsive to it in a nurturing manner.

Above, I claimed that DuPont exploited St. John the Baptist Parish by knowingly taking advantage of the poverty in the region to cheaply build and run a toxic chemical plant. One may argue that establishing a high-throughput chemical plant from a large corporation in a low-income community would benefit the community by drawing resources and capital into it

and by providing jobs to its residents (Pichardo, 1997). While it is understandable that this could be seen in a positive light, this perspective is overly simplistic. The people of St. John the Baptist Parish did not have a say in the construction of the DuPont plant. As stated above, it was contrived through the collusion of white, removed political figures and DuPont's lobbyists, whose interests did not go beyond capital gain (Mizutani, 2019). Rather than providing some amount of economic liberation to the community, this decision instead subjected the residents to economic dependence on a corporation that, as will be detailed below, did not have any stake or interest in the well-being of the community. The presence of the plant evacuated most, if not all, other pathways to a healthy, sustainable economic upturn by rendering the region unfavorable for starting a business, nonetheless living (Pichardo, 1997). Additionally, the majority of the plants in Cancer Alley neglected to support those most affected by the infiltration of chemical manufacturing. Despite how nearly half of the remaining population of Cancer Alley is Black, the petrochemical plants in the region only hired enough Black workers to encompass between 4.2% and 19.4% of their staff as of 1997 (Berry, 2003). It is no surprise then that today, St. John the Baptist Parish's poverty rate exceeds that of the national average by 3%, and 67.3% of people living in poverty in the region are Black (US Census Bureau, 2019; Data USA, 2021). These statistics concretely suggest that DuPont both poisoned its surrounding community and has failed to support it economically and equitably. Now, families who have lived in the region over many generations must choose between fleeing the pollution and collapsing their community or enduring the deaths of many loved ones (Mizutani et al., 2019)

Responsibility and Competence

DuPont neglected to take responsibility for their historic and ongoing carcinogenic emissions and actively avoided providing competent care to the people of St. John the Baptist

Parish by ignoring the recommendations of the EPA, selling the plant to a naive company - Denka Performance Elastomer - instead of implementing viable emissions reduction technology, and withholding critical information from its internal emissions studies from Denka.

Maureen Sander-Staudt is a professor of philosophy at Southwest Minnesota State University. According to her interpretation of Joan Tronto's four care tenets, responsibility is "a willingness to respond and take care of a need" (Sander-Staudt, n.d.). It requires that an individual, group, or corporation in this case takes ownership over providing care for the needs recognized through attentiveness. To apply the responsibility tenet effectively to DuPont's actions, there must be evidence that DuPont is truly accountable for the health of the surrounding community. Like many other chemical manufacturing corporations, part of DuPont's mission statement is to "make a difference locally" and "support communities to ensure they thrive" (DuPont, 2023). Also, according to the EPA's Toxic Substances Control Act from 1976, chemical manufacturers must immediately notify the EPA upon discovering that a chemical processed within their facilities poses a serious risk to human health or the environment (EPA, 2022). Using these two statements as standards to hold DuPont accountable to, I will demonstrate how DuPont breached its duty of responsibility to St. John the Baptist Parish residents by hiding key information on their emissions, failing to heed the EPA's requests to lower their chloroprene emission concentrations, and evading legal ownership over decades of air pollution. The following paragraphs will also detail DuPont's disregard to administer competent - successful and effective - care, through its inaction on known means of reducing its carcinogenic chloroprene emissions.

According to legal statements and an internal memo leaked by *The Guardian*, DuPont withheld significant in-house emissions research on chloroprene from the surrounding

community and prospective buyers of the plant. After discovering that the chemical species was potentially carcinogenic in 2010, the company began to negotiate with a Japanese chemical manufacturer, Denka Performance Elastomer, to sell the neoprene plant out of fear of regulatory clamp downs on its production. The memo reveals how DuPont anticipated that local regulatory bodies in Louisiana would impose stricter regulations on chloroprene monomer emissions after the EPA relabeled the chemical as ‘likely carcinogenic.’ The memo also implied that DuPont would attempt to avoid revealing any of their emissions test results or any news of the EPA’s reclassification of chloroprene as carcinogenic to Denka prior to their purchase of the plant. According to testimony under oath by George Denny Wright, a high-up official of DuPont, the chemical manufacturer did aim to reduce emissions prior to 2011 and underwent significant testing to do so, but chose not to after performing a cost analysis despite having the means to successfully complete the process modifications. As a result, DuPont made no emissions reductions between the EPA’s updates and the sale of the plant, and Denka officials admitted in interviews to being entirely unaware of the tightened regulations on chloroprene emissions during the transaction. Under Denka leadership, the plant finally committed to reducing emissions of chloroprene by 85% in 2017, which cost the company 35 million dollars. Had DuPont updated the facility six years earlier, it would have spent 30 million dollars, which was only 16% of the plant’s estimated value of 190 million dollars (Laughland, 2021). Also, the surrounding community of St. John the Baptist Parish would have been saved from being subject to 612 additional tons of chloroprene (Denka, 2017).

Despite the reduction in emissions from the plant, which is still on DuPont-owned land, the neoprene plant still emits chloroprene in concentrations above the 0.2 micrograms per cubic meter encouraged by the EPA. Likewise, Denka is contractually obligated to obtain consent from

DuPont to make various process changes, yet DuPont feigns from taking any legal or moral responsibility for the decline in health of St. John the Baptist Parish residents.

This evidence illustrates how DuPont actively avoided taking ownership over the past harm it inflicted upon St. John the Baptist Parish and how the company failed to mitigate harm it knowingly could have reduced. Through its own mission statement and the recommendations provided by the EPA, DuPont had all means necessary to recognize that the health needs of the community surrounding it were not being met and that it was solely responsible for fulfilling those needs since it was the sole source of the harm. DuPont also had the information to provide competent care via its own internal emissions reduction study, which delineated the technology required to meet the EPA's recommendations, but refused to implement it. Instead, the company procrastinated its obligation to the community dependent on it for the sake of its bottom line and actively thwarted the capacity of the future plant owners to reduce emissions moving forward. It did so first by obscuring the carcinogenic nature of the chloroprene emissions during its sale of the plant to Denka and is continuing to do so by maintaining strict authority over the plant's processes despite Denka's ownership. Both of these choices imply an active intent to avoid responsibility and subvert care.

After severely polluting the air in the region with a carcinogenic chemical and causing the cancer rate to be above the national average by 50 times, DuPont has failed to demonstrate anything but neglect of its responsibility for the residents of St. John the Baptist Parish and an unwillingness to choose competent care over profit (Laughland, 2021). Inasmuch, it has breached yet another two virtues of Joan Tronto's care ethics framework and has further failed its duty of care.

Conclusion

When analyzed through Tronto's framework of care ethics, DuPont had an obligation to provide attentive, responsible, competent, and responsive care to the residents of St. John the Baptist Parish, and it failed to do so. The company's actions from the plant's conception to today suggest that it had no intention of fulfilling its moral duty to the surrounding community or the regulatory bodies overseeing its production of chloroprene. By forcefully building its toxic plant in a marginalized community and refusing to acknowledge or reduce its harmful chloroprene emissions, it appears that DuPont actively sought to exploit those who it needed to care for most.

This case study highlights the salience of exploring engineering actions and decisions through ethical frameworks as opposed to purely scientific or cost-based lenses. Existing in an interconnected society full of complex, imbalanced relationships, modern engineers can leverage care ethics to illuminate the disparity in power among the corporations they work for and the community they work in, and they can serve to close the inequity made over history rather than exacerbate it.

Word Count: 3865

References

- Berry, G. (2003). Organizing against multinational corporate power in Cancer Alley. *Organization & Environment*, 16(1), 3-33. DOI: 10.1177/1086026602250213
- Blake, T. (2001). *St. John the Baptist Parish, Louisiana: Largest slaveholders from 1860 slave census schedules and surname matches for African Americans on 1870 census*
<https://sites.rootsweb.com/~ajac/lastjohntheb.htm>
- Data USA. (2021). *St. John the Baptist Parish, LA*. <https://datausa.io/profile/geo/st-john-the-baptist-parish-la>
- Denka. (2017). *Frequently Asked Questions*. <http://denka-pe.com/wp-content/uploads/2017/10/Denka-QA.pdf>
- DuPont. (2023). *Community Impact*. <https://www.dupont.com/about/community-impact.html>
- Environmental Protection Agency. (2014). *2014 National Air Toxics Assessment*.
<https://gispub.epa.gov/NATA/>
- Environmental Protection Agency. (2022). *Summary of the Toxic Substances Control Act*.
<https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act>
- Hersher, J. (2018). *After decades of air pollution, a Louisiana town rebels against a chemical giant*. <https://www.npr.org/sections/health-shots/2018/03/06/583973428/after-decades-of-air-pollution-a-louisiana-town-rebels-against-a-chemical-giant>
- Laughland, O. (2021). *Revealed: Chemicals giant sold Louisiana plant amid fears over cost of offsetting toxic emissions*. <https://www.theguardian.com/us-news/2021/feb/17/revealed-chemicals-dupont-giant-sold-louisiana-plant-fears-offsetting-toxic-emissions>
- Louisiana Department of Health. (2021). *Covid-19 Information*. <https://ldh.la.gov/Coronavirus/>
- Mizutani, J. (2019). In the backyard of segregated neighborhoods: An environmental justice case study of Louisiana. *The Georgetown Envtl. Law Review* 31, 363-390. <https://www.law.georgetown.edu/environmental-law-review/wp-content/uploads/sites/18/2019/04/GT->

GELR190004.pdf

- Pichardo, N. A. (1997). New social movements: A critical review. *Annual Review of Sociology*, 23, 411-430. <https://doi-org.proxy1.library.virginia.edu/10.1146/annurev.soc.23.1.411>
- Pirtle, W. N. L. (2020). Racial capitalism: A fundamental cause of novel coronavirus (COVID-19) pandemic inequities in the United States. *Health Education & Behavior* 47(4), 504–508. DOI: 10.1177/1090198120922942
- Poel, I. van de, & Royackers, L. M. M. (2011). *Ethics, technology and engineering: An introduction*. Chichester, West Sussex: Wiley-Blackwell.
- Pulido, L. (2016). Flint, environmental racism, and racial capitalism. *Capitalism Nature Socialism*, 27(3), 1-16. <https://www.tandfonline.com/doi/full/10.1080/10455752.2016.1213013>
- Sander-Staudt, M. (n.d.). *Care Ethics*. <https://www.iep.utm.edu/care-eth/#SSH1cv>
- Smiley, M. (2017, March 27). *Collective Responsibility*. <https://plato.stanford.edu/entries/s/collective-responsibility/>
- United States Census Bureau. (2019). *St. James the Baptist Parish, Louisiana*. <https://www.census.gov/quickfacts/fact/table/stjamesparishlouisiana/PST045219>
- University Network for Human Rights. (2019). *Waiting to die: Toxic emissions and disease near the Louisiana Denka/DuPont plant*. <http://www.humanrightsnetwork.org/waiting-to-die>.
- Williams, D., Pereira, M., Maniscalco, L., Wu, X., Straif-Bourgeois, S., & Trapido, E. (2021). *Cancer reporting in St. John Parish: Cancer surveillance project*. <https://louisianacancer.org/wp-content/uploads/2021/03/CRISP-Final-Report.pdf>