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**Title:** Environmental Victimization: Lived Experiences of Black Residents Residing Near Oil/Gas and Petrochemical Refineries

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## INTRODUCTION

Studies about environmental crime have grown exponentially within the past 20 years; however, studies focusing on the impacts of crime as it relates to victimization receive little attention within this context (Bisschop & Vande Walle, 2013; Hall, 2013). Environmental victimization raises questions that the criminal legal system has not yet addressed (Hall, 2013). Specifically, why are there high rates of cancer and other diseases among communities that live near refineries and petrochemical plants and what are the financial impacts on these local communities? The literature demonstrates an unequal geographic distribution of health hazards and differential risks of exposure, causing minoritized communities to bear the brunt of their impact (Bryant, 1995; Chakraborty & Zandbergen, 2007; Goldman, 1993; Linder et al., 2008). Aside from direct exposure to potential environmental hazards, people living near industrial complexes, such as oil and natural gas refineries, may suffer indirect or less noticeable consequences like soil contamination, substandard housing, limited neighborhood amenities, and reduced safety (Maantay, 2001; Sexton, 1997), as well as various adverse health outcomes, such as different forms of cancer, low-birth, preterm, heart defects in infants, and other reproductive consequences (Axelsson et al., 2010; Collins et al., 2016; Johnson et al., 2003; Lin et al., 2018; Linos et al., 1991; Sans et al., 1995; Simonsen et al., 2010; Weng et al., 2008; Williams et al., 2020; Wilkinson et al., 1999; Yu et al., 2006). These communities may have residents who are not knowledgeable about the hazards that surround them or are socioeconomically disadvantaged. This puts them at a greater risk for debilitating health outcomes as they lack access to adequate resources to address direct and indirect effects of environmental hazards or resistance to the placement of industrial corporations (O'Neill et al., 2003).

This study uses an environmental justice lens to explore environmental victimization through the lived experiences of Black residents in areas near oil/gas and petrochemical plants. Illuminating factors, such as risk perception, perceptions of victimization, health, and economic impact, are important to inform justice policy and the implementation of infrastructure that will improve community outcomes near environmental hazards. The current study begins with a review of prior research and provides a framework for the study centered on environmental justice, environmental racism, and environmental victimization. This research spotlights the oil, gas, and petrochemical industry in Texas and Louisiana, highlighting notable cases of environmental harms, and the region of study. A description of the study's methodology, followed by an analysis of the data is presented. Finally, a discussion of results and policy implications is provided.

Early research on environmental justice underscores that conditions, such as environmental racism are a reason hazardous facilities are located in racial minority and impoverished communities, with race being a significant factor (Bailey & Faupel, 1992; Berry et al., 1977; Bullard, 1983, 1993; Comacho, 1998; Goldman & Fitton, 1994; LaDuke, 1993). However, research that has examined social demographics and proximity to hazardous facilities and environmental hazards have resulted in mixed conclusions (Ash & Fetter, 2004; Been, 1995; Brown et al., 1997; Bullard et al., 2007; Downey, 2005; Glickman et al., 1995; Pastor et al.,

2006; Zahran et al., 2008). Regardless, the link between pollution, health, and financial impacts is complex, as communities are exposed to different sources of pollution (Johnston & Cushing, 2020) and thus requires further examination. Moreover, the conceptualization of environmental victimization, an emerging field within environmental justice, is important to explore.

Community members' risk perception of nearby hazardous facilities influences corporate decisions on facility placement and drives environmental community groups to advocate for better local conditions.

### **Environmental Justice**

Environmental movements are frequently associated with upper and middle-class white Americans who possess high levels of education and economic resources (Bullard, 2020). Despite the environmental movement hinting at pollution and environmental degradation in the 1950s and 1960s, environmental justice (EJ) began gaining traction in the 1970s and 1980s (Maantay et al., 2010; Taylor, 2014; Walker, 2012). The 1980s catapulted the EJ movement via grassroots activism, notably the 1982 protests in Warren County, North Carolina, against a hazardous landfill (Villarosa, 2020). The movement seeks to address and rectify the inequities in environmental protection and resource distribution, ensuring communities have equal access to a healthy environment. Further, as the environmental movement expands to encompass greater racial and socioeconomic diversity, there is a growing recognition by scholars and activists that marginalized groups are disproportionately subjected to environmental stressors such as localized water and air pollution, toxic chemical leaks, and litter and solid waste pollution (Bullard, 2020).

Broadly speaking, EJ encompasses all aspects of society deemed unsustainable by general health standards, including industrialization, pollution, overpopulation, energy consumption, and resource depletion (Maantay et al., 2010). The fundamental principles of EJ aim to ensure the right to protection from environmental hazards, prevent harm, shift the burden of proof from the environment to criminogenic actors, avoid the requirement of proving intent, and address existing inequities affecting underserved communities (Bullard, 2001). The framing of EJ within the United States by environmental scholars exhibits several key characteristics.

- There is a notable emphasis on the *politics of race*, particularly the structure of grassroots civil rights activism (Scholsberg, 1999; 2013; Taylor, 2000). The rise of grassroots activism among communities and victims of environmental toxins is rooted in social justice, challenging corporations' practices of site distribution based on sociodemographic factors, such as race, gender, and class, and addressing the power imbalance between citizens and corporations (Capek, 1993).
- The movement differentiates itself from an ecological standpoint by focusing on *justice for the people*, shifting attention from environmental harm against nature to the well-being of communities (Agyeman et al., 2003).
- The initial narrow focus on *environmental boundaries* centers on pollution and waste, highlighting the significance of toxic waste distribution and air pollution (Benford, 2005; Mutz et al., 2002).
- Distributive justice emphasizes pursuing *participatory justice*, where individuals and communities actively advocate for themselves in environmental justice dialogues (Scholsberg, 2007; 2013; Wenz, 1988).
- Attention is directed towards *blame and responsibility*, specifically focusing on corporate and industry actors, acknowledging the influential role of industrial power in establishing

corporations that inherently produce environmental toxins affecting various communities (Gouldson, 2006).

- There is an expansion in the *scales of analysis* used in research within the movement. For example, environmental issues are internationally conducted, and not just domestically.
- The *role of the government* and its agencies, such as the creation of the Environmental Protection Agency (EPA), is pivotal in safeguarding and establishing regulations to mitigate environmental harms (Block & Whitehead, 1999; Holifield, 2001; 2004).

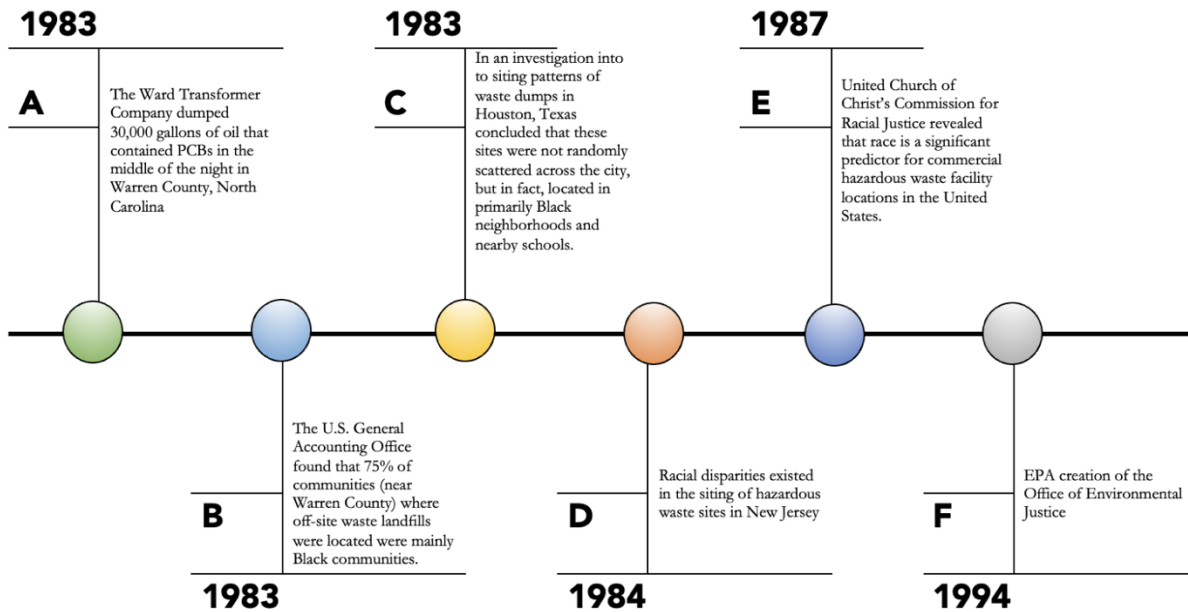
Traditional perspectives on EJ center around the interplay among race, poverty, and the placement of hazardous waste sites (Walker, 2012). The contemporary EJ movement spearheaded by grassroots organizations and activists has elevated the importance of age, indigenous people, gender, and individuals with disabilities (Capek, 1993; Faber, 2008; Kurtz, 2007; Taylor, 2000), shedding light on the significance of policies and regulations concerning social inequities, and proximity to industrial corporations. This attention underscores the disproportionate impact on minoritized communities (Banzhaf et al., 2019).

Early scholars scrutinized the framing of the Environmental Justice (EJ) movement in the United States, particularly examining the community struggles over waste sites in minoritized communities during the 1980s (Capek, 1993). Capek (1993) documented how these communities mobilized against pollution and contamination threats, employing civil rights discourse to advocate for their safety. Building on this foundation, subsequent research highlights how this discourse underscores environmental racism, emphasizing citizens' rights to a clean and healthy environment (Benford, 2005).

### **Environmental Racism**

Environmental racism is how society burdens minoritized communities with environmental policies that impose harmful effects yet benefit others (Fisher, 1994). Environmental racism is perceived as an element of racial capitalism—a system that relies on mistreatment of racialized people for capitalist gain (Robinson, 2023). Additionally, environmental racism is situated in long histories of oppression and deprivation of minoritized communities through colonialism, slavery, and racial capitalism (Kojola & Pellow, 2021; Pulido et al., 2016). Examples of such oppression include the creation of fence-line communities in where minorities resided. Fence-line communities, or areas that are situated near hazardous or toxic waste facilities, have predominantly Black residents—upwards of 75% compared to other racial/ethnic groups (Fleischman & Franklin, 2017). Compared to white Americans, Black Americans experience higher levels of air pollution irrespective of income (Mikati et al., 2018). Black Americans are further exposed to pollutions from the burning of fossil fuels at a rate of 1.5 times more than other Americans. This is associated with negative health effects such as lung and heart disease, as well as early death (Mikati et al., 2018; Villarosa, 2020).

**Figure 1. Environmental Harms**



Examples of past environmental harms towards Black communities during the early stages of the EJ movement include a) the Ward Transformer Company dumping gallons of oil with polychlorinated biphenyls (PCBs) in Warren County, North Carolina (Villarosa, 2020); b) the U.S. General Accounting Office (GAO) finding that 75% of communities near Warren County, North Carolina where off-site waste landfills are found consisted of predominantly Black neighborhoods (U.S. GAO, 1983); c) the siting patterns of waste dumps in Houston, Texas are placed in predominantly Black neighborhoods and near schools; d) racial disparities existing in the siting of hazardous waste in New Jersey (Greenberg & Anderson, 1984).; and e) the United Church of Christ's Commission for Racial Justice revealing that race is a significant predictor of hazardous waste facility locations in the U.S. compared to other factors, such as income, home value, and amount of waste generated (United Church of Christ, 1987; see Figure 1).

After the Congressional Black Caucus pressured the EPA officials to address the disparate impact of pollution on minoritized communities in 1994, the EPA created the Office of Environmental Justice (formerly Office of Environmental Equity) (Villarosa, 2020). President Bill Clinton issued an executive order to address the health and environmental conditions of these communities. The government established a grant program to support grassroots organizations dedicated to EJ issues (Villarosa, 2020). The EPA created environmental statutes to protect U.S. citizens from exposure to high levels of toxins both in air and water (Keehan, 2018). Despite the designation of these federal laws by Congress to protect citizens, the EPA and state environmental agencies' unequal enforcement of these laws perpetuated environmental racism in certain areas (Keehan, 2018).

Racists create disparities by bestowing advantages upon a particular racial or ethnic group, often to the detriment of others (Kaufman & Hajat, 2021). The distribution of power and privilege is not uniform across locations and time periods, as the features of the human environment change (Kaufman & Hajat, 2021). This uneven distribution allows for racist

individuals to influence structures and institutions in order to shape the environments where individuals reside, engage in recreational activities, and work. Environmental racism stands as a crucial element within this overarching system of oppression (Kaufman & Hajat, 2021).

### **Environmental Victimization**

The intentional placement of zoning and siting practices to target minoritized communities challenges the understanding of environmental victimization (Natali, 2015). Three components encompass environmental victimization, directly conflicting with traditional criminological perspectives (Natali, 2015). First, harm is not individualistic but can involve groups of people or communities of victims. Second, environmental offenders are often corporations or the State. Finally, establishing causality is complex, which leads to the notion that these crimes are ‘victimless’ (Bisschop & Vande Walle, 2013).

Techniques of denying environmental crimes and the lack of accountability hinder efforts to establish causality and assign responsibility to offending parties in the victim-offender relationship (Natali, 2015). Neutralization strategies include denial that there is a problem and blaming or causing confusion among victims, thus hindering any progress towards the establishment of environmental victimization (Cohen, 2001; Natalia, 2015; Williams, 1996). Moreover, even if a clear causal relationship between environmental offenders and victims cannot be established, particularly concerning adverse health outcomes, neutralization techniques used by these corporations may still exacerbate the health and financial consequences for residents. These corporations are not held criminally responsible, further worsening the situation (Brown, 2013; Lynch & Barrett, 2015). For example, after the catastrophic oil spill from the British Petroleum-owned Deepwater Horizon oil rig in the Gulf of Mexico in 2010, BP distributed a massive public relations campaign to rehabilitate its reputation. This campaign involved Dawn dish soap, and the cleaning of ducks covered in oil by the soap. Television commercials showed volunteers cleaning up the beaches and water where the oil spill occurred. Volunteers cleaned ducks who suffered from oil getting in their feathers, with Dawn dish soap. The advertisement is about Dawn dish soap but was backed by BP oil company. Years after, the oil spill is better associated with the use Dawn dish soap than the fact that the BP company had faulty foundation for the oil rig causing the massive spillage and economic suffering of those along the Gulf Coast region. The use of the Dawn detergent campaign “neutralized” the company of wrongdoing by shifting the focus of attention. Therefore, it is important to explore the concept of environmental victimization as an active social process involving power dynamics, control, and resistance (Natali, 2013; White, 2011).

### **HISTORY OF THE OIL/GAS AND PETROCHEMICAL INDUSTRY IN TEXAS AND LOUISIANA**

The oil refinery industry is a core component of global economics, with oil fluctuations contributing to economic success and failure of countries (Carpenter & Wagner, 2019). In addition, the fossil fuel industry is associated with exerting a disproportionate influence on U.S. foreign policy (Coll, 2012). Oil has been associated with 25 to 50% of interstate conflicts since 1973 (Colgan, 2013). Texas and Louisiana are the largest oil producers in the United States. Louisiana has 15 operating refineries producing approximately 3 million barrels per day (bpd), while Texas has and 32 operating refineries in Texas producing approximately 6 million bpd (U.S. Energy Information Administration, 2021). The advancements in fracturing techniques have significantly increased oil and natural gas production within the past decade (U.S. Energy

Information Administration, 2021). The chemicals released during the fracturing process include carcinogens, reproductive toxins, and mutagens which can infiltrate nearby environments through spills, leaks, and wastewater disposal (Colborn et al., 2011; Kassotis et al., 2016; Stringfellow et al., 2017). An estimated 17 million people (roughly the population of state of New York) who live in primarily rural neighborhoods near areas containing oil and gas extractions are at a constant risk of exposure to hazardous spills (Czolowski et al., 2017; Maloney et al., 2017). A consequence of living in rural locations is that these areas commonly rely on unrestricted groundwater resources leading to possible exposure to contaminated drinking water (Elliott et al., 2018).

### **Health and Economic Impacts: Notable Cases**

The environmental risks for residential areas near industrial refineries include soil pollution, water and air pollution, and hazardous waste that can cause detrimental health and financial impacts. Whereas government officials and petrochemical experts understand the risks imposed by the placement of these facilities, these risks are often not properly communicated to residents. As a result, residents are left out of conversations surrounding policy decisions (Janmaimool & Watanabe, 2014). The nuanced understanding of environmental risks from refineries impacts risk-related decision-making and perceptions of risks. Risk perception of residents is important to understand environmental victimization, especially when residents are confronted with harmful situations and consideration of economic benefits (Paek & Hove, 2017). For example, a survey demonstrates that 56.3% of community members were willing to accept health risks associated with an industrial facility if it meant better job opportunities (Bullard, 2020). However, job availability or security is not guaranteed and does not always increase based on a facility being built and opened (Bullard, 2020). Therefore, understanding the risks and benefits of placing hazardous facilities in residential communities is important. Moreover, acknowledging the disproportionate placement of these facilities in minoritized communities is crucial to improving the health and economic outcomes of environmental victims.

### ***Cancer Alley***

Cancer Alley, an area along the Mississippi River from Baton Rouge to New Orleans, Louisiana, has over 150 petrochemical plants and refineries (Keehan, 2018). Within this region, approximately 46 per 1,000,000 individuals are at risk for cancer, with the national average around 30 per 1,000,000, a rate almost 1.5 times higher (Keehan, 2018). Since Louisiana, like Texas, has large concentrations of oil and natural gas, like Texas, the state also has the most petrochemical plants. Consequently, this area of the United States has the sixth-highest cancer mortality rate (Keehan, 2018).

The siting of petrochemical plants in Cancer Alley traces back to Louisiana's historical practices of redlining, which further exposed Black residents to hazards that exacerbated their health through the present day (Mizutani, 2019). Redlining and residential segregation became widespread during the industrialization of the South (Mizutani, 2019). Redlining occurs when institutions discriminate against certain areas or residents by refusing to extend loans or insurance to properties in economically disadvantaged neighborhoods. (Castellon, 2021). During Jim Crow in Louisiana, redlining was a defining policy of the time. In LA, White people forced Black people to move to poorly drained areas in New Orleans in the mid-1800s. The continuation of restrictive policies concerning residential areas and building permits in white neighborhoods caused Black people to reside in ill-fated to poorly constructed areas (Mizutani,

2019; Pastor et al., 2006). These policies and practices led to a geographical makeup of this area in Louisiana, where whites lived above sea level on elevated grounds, and Blacks lived in swampy areas. Further, living in swamp-like areas led Black people to contract diseases, such as typhoid and malaria, increasing deaths (Mizutani, 2019). This displacement of Blacks in this area continued past Jim Crow into modern day.<sup>2</sup>

Most residents in Cancer Alley are socioeconomically disadvantaged Black individuals, comprising approximately 40% of the population, which is not a coincidence (James et al., 2012; Mizutani, 2019). The use of Jim Crow laws, discriminatory zoning and siting processes, and the unequal enforcement of environmental laws by the EPA allows for areas such as Cancer Alley to exist (Mizutani, 2019). Moreover, white flight has affected where petrochemical companies placed their refineries (Saha & Mohai, 2005). White citizens successfully advocated against petrochemical companies away from their communities; as a result, these facilities were relocated to minoritized communities. Their successfulness is attributed to their wealth and influence. Individuals in these minority communities are more likely to need jobs and are vulnerable due to the lack of support and limited resources from local governments (Mizutani, 2019). This systemic inequity highlights the urgent need for policy reforms and stronger advocacy to protect the health and well-being of residents in these marginalized areas.

When wealthy, predominantly white communities increase resistance against nearby facility siting, the petrochemical industry change strategies on the distribution of environmental hazards (Schelly & Stretesky, 2009). These companies relocate because wealthy communities have the financial and political influence to divert unwanted businesses from their areas. (Bullard, 1992). As a result, petrochemical corporations place their facilities near poor Black neighborhoods to avoid delays or expenses related to attempting to place the facilities in an affluent neighborhood (Mizutani, 2019).

Cancer Alley mainly consists of unincorporated towns, in which there is a lack of governance, such as municipal corporations (Mizutani, 2019). Instead, these areas are governed by parishes (e.g., a county). Whenever a petrochemical company wants to add a new plant or refinery, parish officials are receptive to this. This often comes at the detriment of predominantly Black local communities, who have little input in the decision-making process – I think you need to explain here why Black residents aren't usually parish officials... (Mizutani, 2019). For example, in St. John the Baptist Parish, which has a primarily white council, the parish council allowed for the rezoning of an unincorporated town, Wallace (95% Black), to allow for Formosa Plastics to build a new plant in 1990 (Mizutani, 2019). However, the citizens of Wallace created a grassroots movement and succeeded in preventing the plant from being built, although rare, this shows the need for citizen input to stop environmental racism (Bullard, 2020). Not all small towns can successfully prevent the siting of such facilities. Morrisonville, Louisiana, a small town founded by formerly enslaved people, is one such example, and was displaced by Dow Chemical in the 1960s (Kelsey, 2022).

### ***Mossville, Louisiana***

Similarly to Cancer Alley, Mossville, Louisiana is a historic, small, Black, unincorporated town located near Lake Charles, Louisiana. The health effects of living near toxic waste sites in Mossville have been documented by scientists and scholars for over 20 years. In 1997, blood samples were collected by scientists from Mossville residents for a class action lawsuit to show

proof of high dioxin levels. Mossville residents reported high rates of illness and health problems, which they believe were associated with the toxic emissions from the nearby industrial plants. These blood samples were sent to the EPA who then asked the Agency for Toxic Substances and Disease Registry (ATSDR) to start an investigation (Hines, 2015). The investigation began in 1998 with results showcasing that Mossville residents carried PCBs in their blood with an average of 2.8 times the total concentration average levels (Costner, 2000). Soil samples revealed that dioxin levels were 17 times higher than a control group and that mothers had elevated levels of dioxins and PCBs in their breastmilk and blood (Costner, 2000). After the ATSDR study concluded, no government assistance was offered, such as waste clean-up or pollution control efforts, despite Mossville residents suffering detrimental health effects (Cahill-Jackson, 2012).

In 1999, the residents of Mossville organized and incorporated a new nonprofit org, the Mossville Environmental Action Now (MEAN). (Kelsey, 2022). MEAN performed air tests in Calcasieu Parish and revealed that more than 50% of blood samples in the ATSDR investigation were 2 to 230 times the standard dioxin levels set by the EPA (Cahill-Jackson, 2012). Studies throughout the years demonstrate the negative environmental and health effects of nearby industrial facilities, with results revealing higher PCB levels of in the blood of Black residents compared to white residents (Wong et al., 2015); reports of contaminated tap water, skin peeling and behavioral disorders in children, heart disease, and reproductive health issues (Singer, 2011); and high levels of metal contamination in soil (Bussan et al., 2019). The presence of high dioxin levels and metals within this area is high enough to pollute water, soil, fish, and food, which may associated with health problems (Johnson, 2019). Further, the health effects of dioxin contamination include cancer, reproductive issues, immune system deterioration, neuro-behavioral development changes, and the passage of dioxin to infants via breastfeeding (Cahill-Jackson, 2012). Prior studies highlight the health disparities experienced by Mossville residents, but community members have found it difficult to successfully receive government assistance (Kelsey, 2022).

In 2008, a petition was filed with the Inter-American Commission on Human Rights to draw attention to environmental racism occurring in Calcasieu Parish and to the lack of effective state and national policies for protection. This resulted in the supreme court case *Mossville Environmental Action Now v. United States* (Cahill-Jackson, 2012; Roberts, 2011). The case ends, after Mossville residents allowed a chemical company to build a \$21 billion industrial plant and buy the residents' properties causing 500 residents to leave generations of living in the town behind (Kelsey, 2022; Rogers, 2015).

## **CAPSTONE SPOTLIGHT: PORT ARTHUR, TEXAS/ SOUTHEAST TEXAS**

### ***History***

Port Arthur, part of the coastal Southeast region of Texas, is a small, predominantly Black city that sits near the border of Louisiana, a key area for the energy system in the U.S. (Energy Information Administration, 2021; U.S. Census, 2020). oil and gas refineries have operated in this city Since the beginning of the Texas oil boom in 1901. It is now home to the largest refinery in the nation, Motiva Refinery, and six other petrochemical plants (Bruno & Jepson, 2018). Currently, Port Arthur residents are engaged in community action to improve their environmental quality and quality of life (Bruno & Jepson, 2018) with community advocates demanding better regulation, infrastructure, and buffer zones between communities and polluting facilities (Bruno & Jepson, 2018).



Before the oil industry, Port Arthur was home to plantations and ranches that exported agricultural goods and was one of the first places of legal slavery during Mexico's reign of the area (Bruno, 2021; Campbell et al., 2010; Jefferson County, 2015). Historically, the west side of Port Arthur is deemed the Black side of town, in which the first refinery, Guffey Refinery, was built by J. M. Guffey Petroleum. This refinery employed Black laborers, who at the time dealt with segregation (Bruno, 2021). When the Black population grew along the Westside, they could not live past a street, aptly named Houston Ave. Racism and white supremacist ideology have facilitated the segregation between the white and Black communities, contributing to the current state of environmental injustice affecting Port Arthur (Bruno, 2021). After the end of legal segregation and the migration of Blacks to the east side of the town, whites moved further away, causing an economic downturn resulting in poverty and new unemployment patterns (Bruno, 2021). Despite Port Arthur's petrochemical plants and refineries, which generate wealth for the city, the Black community is not receiving that wealth (Bruno, 2021). For instance, refinery workers often come from other areas in and outside of Port Arthur.

### ***Oil and Gas Today***

Motiva Refinery expanded in 2012, doubling barrel capacity of oil refined per day to 605,000 bpd (Seba, 2019). Other refineries with expansion plans include Total, one of the largest emitters of benzene in the U.S., and Valero, one of the oldest refineries, which has begun extending its operations in the city and is buying properties in the historic Black side of town, West Port Arthur (Bruno, 2021; Eslinger, 2020). The buyout prices of these homes are not fair to residents as their property value decreases because of the refineries. Essentially, the residents are cheated by the companies, impacting the wealth that could be accumulated through the sale of their homes (Bruno, 2021).

In recent years, oil/gas refineries and petrochemical plants in the Port Arthur area have succumbed to numerous lawsuits over harmful pollutants in the air and instances of dangerous work conditions for refinery workers. For example, many oil refinery workers were exposed to asbestos, insulation material that has been linked to cancers, such as mesothelioma and other diseases (Whitmire, 2023). Another instance of hazardous working conditions includes death. A refinery worker drowned in a scalding petroleum coke pit at a Total Port Arthur Refinery due to the company's lack of urgency in repairing crane equipment. The workers used a bulldozer and a backhoe to maintain the pit due to damage to crane equipment (Besson, 2015). This bulldozer slid down the embankment causing the worker to drown. Moreover, in 2019, the National Environmental Law Center (NELC), along with Texas Attorney General and Commission on Environmental Quality, filed lawsuits against the Valero Port Arthur oil refinery alleging more than 600 violations of Valero's Clean Air Act permit from 2014 to 2019, causing almost 2 million pounds of unauthorized pollution to be released by the refinery in heavily polluted areas (NELC, 2019). Within a three-mile radius of this refinery sit five schools and 20 churches impacting over 36,000 people, with many residents fearing exposure to harmful pollutants, such as fine particulate matter and sulfur dioxide as the frequency in which Valero pushed pollutants into the air exceeds federal limits (NELC, 2019).

The Texas Attorney General announced a \$1.4 million settlement in an environmental enforcement action against TotalEnergies Petrochemical and Refineries, Inc. for violating the Texas Clean Air Act. In the settlement, the Texas Attorney General cited that the refinery had experienced multiple, recurring instances of illegal emissions and permit violations caused by operator errors, equipment failures, and poor upkeep practices (Attorney General of Texas, 2023). Under the settlement, TotalEnergies agreed to pay \$1.3 million in civil penalties and

\$100,000 in attorney's fees. Additionally, TotalEnergies must implement a series of remedial actions to prevent further unauthorized pollution (Attorney General of Texas, 2023). Highlighting the past and ongoing lawsuits against petrochemical companies and the hazards of working in these industrial plants raises awareness of the environmental victimization and harm faced by affected communities. Additionally, it emphasizes that employees who depend on these companies for financial stability are also significantly impacted.

## **Methods**

Social and cultural perspectives are important to problematize and determine environmental victimization (Hall, 2013). To do this, understanding the perspectives of those affected by an environmental crime is important, as acknowledging how victims see, interpret, and assign meaning to their situation can provide crucial information for scholars, activists, and policymakers (White, 2011). The following study questions are asked: *How do people who live near polluted areas, such as refineries and petrochemical plants, make sense of their experiences living in these areas? How are refinery workers impacted by the companies they serve(d)? How do citizens perceive health and economic impact as it relates to the presence of refineries?*

This study explores the lived experiences of Black residents and refinery employees in Port Arthur, Texas and Southeast Texas via narratives from administered surveys and semi-structured interviews conducted between December 28, 2023, and January 20, 2024. Two anonymous surveys were created by the researcher as they relate to both community members and current or former refinery workers. Recruitment was through direct contact with residents and through snowball recruitment, in which the researcher gathered more participants from recommendations from residents and refinery workers. To qualify for this study, potential participants had to be (1) 18 years of age and older at the time of completion of survey; (2) identify as Black; and (3) have resided near or worked for a refinery in the area of study. For participants who completed the anonymous survey, an option to be interviewed was given. Interviews ranged from 10 to 30 minutes and were conducted via phone or Microsoft Teams. All participants gave verbal consent to be interviewed and recorded. All personal information has been de-identified to protect confidentiality. A total of 20 surveys were administered, and four interviews were conducted.

## **Data Analysis**

Data analysis began with the transcription of interviews, transcribed within 24 hours of the scheduled interview, with full coding of interviews completed within 48 hours. The coding of open-ended survey questions was completed within 48 hours of a survey submission. The coding and analysis were driven by a six-step process: familiarization with data, coding, generation of initial themes, development and review of themes, refinement and naming of themes, and writing up results (Braun & Clark, 2006; 2022).

Each interview or survey was coded individually by hand using Microsoft Word and Excel. A line-by-line reading of the transcripts and answers was used to generate initial codes, and these codes were then refined, and new codes were added as needed. Broader patterns emerged throughout the coding process with the aim that such coding reflects that of the research questions posed. Given that the study's focus was to examine lived experiences of individuals within the region relating to environmental victimization, themes were developed with this in mind. To ensure that the contextualization of the themes generated were accurate, quotations

used in the analysis were re-read to guarantee credible interpretation of words (Braun & Clark, 2013; 2022).

## Results

Twenty surveys and four semi-structured interviews with Black residents and refinery employees in Port Arthur, Texas were included in the final analysis. To address the study’s research questions, narrative themes are presented as they pertain to environmental victimization and racism, health and financial impacts, and experiences working and living within a refinery/petrochemical industrial complex. Selected quotes along with pseudonyms for survey and interview participants (see Appendix) are used to highlight common themes shared among Black residents and their lived experiences.

### Participant Characteristics

Approximately 75% of the study participants were between the ages of 65 and 74 and 60% identified as male. Most participants were retired at the time of the study (80%) with 85% having some college to graduate education. The average time worked for participants at a refinery was 34 years. Approximately 65% of participants’ annual income was \$75,000 or more in salary with 75% of participants being current or former refinery employees (see Table 1). Additionally, community residents lived in Port Arthur for over 30 years.

**Table 1. Participant Descriptives**

Participant	Age Group	Gender	Employment Status	Educational Attainment	Income	Worked for Refinery
1	65-74	Male	Retired	Bachelor’s	\$50k-74.9k	Y
2	35-44	Female	Employed	Bachelor’s	\$75k-99.9k	Y
3	65-74	Male	Retired	Graduate	More than \$100k	Y
4	65-74	Male	Retired	Bachelor’s	\$75k-99.9k	Y
5	65-74	Male	Retired	High school	\$75k-99.9k	Y
6	65-74	Male	Retired	Some college	\$75k-99.9k	Y
7	54-64	Male	Employed	Associate’s	More than \$100k	Y
8	65-74	Female	Retired	Some college	\$75k-99.9k	Y
9	75+	Male	Retired	Some college	Prefer not to answer	Y
10	65-74	Male	Employed	High school	\$50k-74.9k	Y
11	65-74	Male	Retired	High school	\$75k-99.9k	Y
12	54-64	Male	Employed	Some college	More than \$100k	Y
13	65-74	Female	Retired	Bachelor’s	More than \$100k	Y
14	75+	Female	Retired	Some college	\$35k-49.9k	N

15	65-74	Female	Retired	Some college	Prefer not to answer	N
16	65-74	Male	Retired	Bachelor's	\$75k-99.9k	N
17	65-74	Female	Retired	Some college	\$75k-99.9k	N
18	65-74	Female	Retired	Some college	\$35k-49.9k	N
19	65-74	Male	Retired	Some college	\$50k-74.9k	Y
20	65-74	Female	Retired	Some college	More than \$100k	Y

Themes curated for the analysis with a frequency of each component showcasing the number of times the theme was seen throughout the interviews and survey responses are presented (see Table 2). The findings of the analysis are divided into seven major themes. The first theme, *financial*, highlights the financial impact that refinery placement has on community members and employees. The second and third themes, *environmental effects* and *health*, emphasize the impact of refineries on the local communities. The fourth theme, *environmental victimization/racism* spotlights the perception of environmental victimization by community members and employees and the subsequent effects on health due to environmental and work conditions. Theme five and six, *resource awareness* and *community efforts*, focus on community knowledge of health and employment resources and the communities' (local and state) efforts to support its constituents. Finally, *community growth* features citizens' viewpoint on the current state of the community and where improvements are necessary.

**Table 2. Themes**

Theme	Frequency
Financial	26
Corporation support	18
Environmental effects	17
Environmental victimization/racism	34
Health	29
Resource awareness	22
Community efforts	25
Generational	9
Community growth	37

### **Financial**

Understanding socioeconomic impacts of refinery placements in communities requires acknowledging how these major industrial complexes influence the communities they surround. By starting with the financial implications of having refineries, these implications allow for a deeper understanding of the risk perception as it relates to environmental victimization. Furthermore, using Black resident accounts centers their experiences in their reality.

Most participants expressed that the refinery was great financially with many saying, “it was rewarding pay wise” and “provided a living to support the family.” The refineries were a way of life in Port Arthur. Interviews reveal that there were not many options concerning employment. Some participants note that they had a long line of family members, spouses, and friends that worked or currently work for a refinery.

Lois: My father was an employee at the refinery...[he] provided financially for the family [six children]. My youngest brother was employed at the refinery. My husband worked at the refinery for a while and presently my son is working for [a refinery].

Emma: My father-in-law worked at the refinery, my husband worked at the refinery, and it was a way of living. [The only jobs were] a refinery and education.

Further, participants describe how the refinery was not all positive as layoffs or strikes could occur disrupting family stability. Raymond explained that some employees were laid off because of behavior or not meeting work standards. Other participants, such as Emma, explained that strikes impacted the community significantly. Glenda noted layoffs while working at a refinery.

Emma: It wasn't mostly layoffs...when they would go on strike, when they wanted more pay...You get behind on your bills, some folks lost their homes. We had to stand in the line and try to get unemployment. Sometimes the strikes would last maybe a month or two. So that set everybody behind, even with their kids because you wasn't able to do anything, you know, but try to keep up with your bills and stuff to get food to eat. [After the strikes] the layoffs when they was shutting down all kind of departments in the refineries. That's what really made it hard.

Glenda: [Before I retired at each of the refineries I worked for] there were layoffs or a reduction in staff.

Participants noted that many refinery jobs were outsourced to people living outside of Port Arthur, which impacts the community growth and sustainability.

Emma: You had people coming in from out of town working at the refineries and from Louisiana and Texas.

Raymond: A lot of these folks [from outside communities] are being employed by these refineries [and not] employing people from the community.

Clarence: The city seems to be going out of its way to not hire city citizens even though the city has an agreement with the refineries in the area but is not enforcing it.

While the placement of refineries in Port Arthur provided substantial financial stability for the community, especially employees of these refineries, with the refineries having generational influence on some families, strikes and layoffs also negatively affected families. Additionally, the outsourcing of work outside the community in which the refineries were placed alienates the local community from receiving employment opportunities.

## **Environmental Effects and Health**

Working and living near refineries and petrochemical plants can cause communities to feel the brunt of environmental toxins released from refineries. Participants noted that many people were concerned about “air quality and chemicals being released into the air and water.” Life-long residents of the area, such as Lois, described growing up with refineries nearby.

Lois: We lived three or five minutes away from the Gulf refinery. We did see a lot of smoke from the stacks that were at the refinery. There were times you could see burning gas flares...There were sometimes when you could get a smell from the refineries, and I think [it] was because they were letting some of the chemicals out...I do believe that a lot of medical conditions that people had from the West side were contributed because of those refineries. I do remember growing up and in our area many people had contracted cancer.

Emma: All we see is black smoke and stuff...Some people say the main people that go to Houston and stuff to these hospitals comes from around in this area with cancer...We don't know [about health effects] because nobody went to the doctor for that particular thing until they go sick...we really couldn't say.

Many participants, specifically refinery employees, noted that having refineries in the area was not good for the environment and the health of the community. Robert stated that the refineries were “bad environmentally because it was a hotbed for cancer.” Joseph described how he had “two to three friends who have gotten cancer from working and living near refineries.” Other participants noted direct health effects related to working with the refinery, Raymond stated:

Now there was a guy that when we first hired him, he worked in the refining part of the facility outside the yard...and he got exposed to some H<sub>2</sub>S, which is gas hydrogen sulfide, but it's bad for you to inhale and he got very sick, and he actually end up passing from it.

The environmental and health effects of the placement of the refineries and plants can be detrimental to local communities. The consequence of these environmental hazards may lead to environmental racism and subsequent environmental victimization.

## **Environmental Victimization/Racism**

The idea of Risk perception is crucial in community input and corporation placement of refineries. If citizens do not perceive or understand that they are victims of environmental crimes, they will not pushback against increased refinery presence. Further, citizens may perceive that having refineries has an economic boost and weigh the risks and benefits. Participants' perception of environmental victimization was mixed. Some participants said they did not believe that environmental victimization impacted them. Participants, such as Raymond and Emma, noted that refineries may not have been placed in the minoritized areas on purpose; the communities surrounding the refineries being mainly Black is coincidental.

Raymond: The refinery was there but it happened to be where the Blacks end up residing, basically mostly all of those little, small towns like Port Arthur was majority white and

then once the Blacks move there in the neighborhood, [the whites] moved out and that's how the Blacks end up dominating the West side...It is intentional or not, I couldn't say.

Emma: No, I don't think [the refineries are intentionally placed]. That's just where everybody fell in that area and stuff because mainly on the West side that's where we live and that's where the refineries was closer too...That's just where, you know, Black people moved and had their own little area.

Others, such as Clarence, Joseph, and Ethel believed that they or know of others experienced some form of environmental victimization noting that various health conditions in their families and neighborhoods and the placement of the refineries.

Clarence: It seems that these kinds of companies are always minority communities and that is totally wrong, and the reason is that companies don't value the minority communities.

Joseph: Cancer among my family and mental illness is very high and is directly related to the environment due to the quality of air and the drinking water in the area... The majority of Caucasians are on the outside of Port Arthur in Nederland and Port Neches...I guarantee you, [it's] because of the environmental conditions. They knew [and] they moved. They knew more about the effects of the emissions in the area, and they had more information at the time than we did...So they moved away from the refineries and the chemical plants.

Ethel: As a young girl growing up in Port Arthur, I was exposed to two local refineries close within my neighborhood.

Residents' perceptions in the study varied. However, understanding that an individual's living and working conditions can influence perspectives on the placement of hazardous waste sites is important. Moreover, acknowledging the reality of these residents provides better awareness of what resources can be provided to them.

### **Resource Awareness**

Community insight on available resources is important as knowing what is accessible allows for proper advocacy and knowledge. Most participants were unaware of any community resources available to them that were associated with environmental factors. Some participants described Port Arthur's local watch group, The Port Arthur Community Action Network, and the Texas Commission on Environmental Quality (TCEQ), as well as a "STAN SYSTEM [that] keeps us informed through telephone calls and online information" as Edna noted. Participants, like Herman and James, noted that they knew very little about potential resources.

Herman: Very few resources are provided to the community.

James: [The community is notified] only when [something] makes the news and citizen complaints.

The lack of knowledge surrounding community resource availability may be directly tied to what the city and state are doing to notify citizens of what is happening around them concerning refineries. If the city, state, or refinery corporations are not providing residents with information unless sought out, this then causes ambiguity involving environmental concerns.

### **Community Efforts**

Many community members described that they are not aware of any environmental risks until something bad happens. Nolan said that the city is doing “very little [and] you have to stay informed and ask questions.” Other participants also describe not knowing of community efforts in place and stating that they are not being notified as they should.

Clarence: The city or county is not doing anything for the community [especially concerning employment and] as far as health access, the state really don’t do anything for the area, when the refinery is fined for a chemical release, the state gets the fine but don’t return it to the city.

Ethel: I don’t believe we are being notified when there are different problems within the refineries or chemical plants. When it affects our environment, it affects us.

Community partnerships and resources are important for the growth of areas such as Port Arthur. These participants underscore that not much is known about what the city is doing for its constituents, which is detrimental to them. The lack of notifications to community members may cause community decline and inhibit growth as inaction on city leaders’ part can lead to citizens leaving.

### **Community Growth**

participants noted that the current state of Port Arthur is in decline, with some, such as Emma, noting there are no improvements that can help the community. The main concern among participants was the lack of local community employment, old equipment, and lack of notifications.

Emma: There’s no improvement... the environment is bad over here. Port Arthur is [an] old community coming up with the refineries and anything that’s damaged now, I don’t see any improvement...They can go out there and clean out all those tanks. I don’t think it [will] happen now it might, but like I say the Saudia Arabians are in charge of the refineries, so they don’t have to pay taxes or anything.

Raymond: The money [is] not going back into Port Arthur. It is going back to other communities, like Lumberton...A lot of these folks are being employed by these refineries and the city itself is not getting the benefit that it should get by employing people from the community.

Lois and Joseph expressed the need to improve the healthcare system and access to employment in Port Arthur. They stated:



Lois: I think the [health department] can do better. I see sometimes we as Blacks in this area or in this town or sometimes I hear about things that come about pertaining to health. That maybe a slight on communications...I think working with the medical branch from the refineries and our city branches would work out better for our community.

Joseph: I always thought that giving as many people in those areas like a physical or annual physical and looking at the results. If they were allowed to give free evaluations, physicals every year, a certain percentage of people in the area, that would help out a lot.

Further, Raymond said that the Port Arthur community is declining:

The community itself seemed to have died in Port Arthur you know, the population has dwindled so much from when it was sixty something thousand to now maybe forty or fifty something thousand...Hire more people from this area [the Golden triangle] and Port Arthur. I believe that would benefit a whole lot because it's paying jobs and it seems as though we're not benefiting from it as a people, as Black people as we should.

The comments by the residents showcase a need to improve the health infrastructure of Port Arthur. Lois did note that the health department has hired new personnel which may improve the healthcare system. Others' comments, such as Raymond's on bringing the money back to Port Arthur echoes earlier sentiments on the outsourcing of jobs and the need to grow the local community.

The participants surveyed and interviewed demonstrated the importance of their perception and centering citizen accounts in their lived experiences as both social and cultural processes. Participants expressed both positive and negative impacts of having refinery placements, such as financial stability and instability and witnessing environmental hazards, such as black smoke and oil leaks. The perception of environmental victimization is important to note as this perception influences how communities advocate for themselves or whether they are content with their current situations. As previously mentioned, community members view the placement of refineries as great economic opportunities and ways to provide for families, outweighing the environmental risks associated with them. Other residents perceive the refineries as health hazards that need to be addressed, but not at the cost of causing an economic downturn for the city. Further, delving into the community resources and efforts revealed that community members knew of few services available to them. The experiences of these Black residents are valuable for acknowledging how simple placements of refineries and petrochemical plants can illustrate financial and health implications, risk perception as it relates to environmental victimization, and community awareness, which can inform local government officials, community groups, federal agencies (i.e., EPA), and Congress on ways to better improve these areas.

### **Policy and Practical Recommendations**

These policy recommendations aim to foster community development, improve healthcare access, protect the environment, and empower grassroots efforts for positive change. Implementing these measures will contribute to a more sustainable and inclusive future for the community.

- **Increase community outreach.** The citizens of Port Arthur are a predominantly aging group, which requires more effort in community outreach, such as phone calls, home visits, and increased town hall meetings. To do so, there should be the development and implementation of more programs aimed at Port Arthur citizens that allow them to engage in the decision-making processes. These programs can consist of:
  - *Educational workshops:* Tailored to older residents covering topics such as air quality, refinery emissions, and their effects on health with guest speakers including experts, such as environmental scientists, health professionals, and city officials to provide insight and answer questions. Additionally, providing residents with resources on reducing their exposure to harmful emissions and advocating for environmental protections.
  - *Community forums:* Residents can voice their concerns, share experiences, and propose ideas for addressing environmental challenges with facilitation of discussions on specific issues related to refinery emissions, such as regulatory compliance, monitoring efforts, and community impact assessments. Further, encourage collaboration between residents and local organizations to develop action plans and initiatives for promoting environmental stewardship.
  - *Informational campaigns:* Launch a multimedia campaign to disseminate accurate and up-to-date information about refinery emissions and environmental initiatives with the development of educational materials, including brochures, fact sheets, and digital resources, translated into multiple languages for accessibility. Additionally, using social media platforms, community newsletters, and local media outlets to reach a wide audience and encourage engagement.
  - *Feedback mechanisms:* Establish feedback mechanisms, such as surveys, focus groups, and online forums, to gather input from older residents on environmental issues. Regularly assess the effectiveness of outreach efforts and adjust strategies based on community feedback and evolving needs, and ensure transparency and accountability by sharing outcomes, progress reports, and action plans with the community and stakeholders.
- **Use of state and federal funds for healthcare support.** Funding should be directed towards the healthcare infrastructure in communities, such as Port Arthur, that have aging populations and are predominantly racial minorities to accommodate growing healthcare needs. The increase in funding can help with the establishment of programs to address health disparities, with an emphasis on preventative care and education. These components include:
  - Healthcare facility upgrades, such as upgraded equipment and technology to enhance the delivery of quality services.
  - Ensuring that facilities are accessible and culturally sensitive to the needs of the minority aging populations, by incorporation language services and culturally competent care practices.
  - Establishment of targeted programs aimed at addressing health disparities focusing on chronic disease management, mental health support, and preventative screenings.

- Providing resources and support for community health workers to engage directly with residents, offering lifestyle guidance and assistance with navigating the healthcare system.
- Implementation of initiatives aimed at preventative care and wellness practices and encouragement for regular health check-ups and screenings via outreach campaigns.
- **Calls to reduce reliance on oil deposits, mitigate refinery impacts, and transition to renewable energy.** The initiative aims to reduce reliance on oil deposits, mitigate refinery impacts, and facilitate a transition towards renewable energy sources while simultaneously creating job opportunities and improving work conditions for residents. To do so, this includes:
  - Introduce and enforce policies aimed at reducing the use of oil deposits and accelerating the adoption of renewable energy sources, such as solar, wind, and hydroelectric power.
  - Collaborate with industry stakeholders, research institutions, and community organizations to identify viable pathways for transitioning away from fossil fuels while ensuring energy affordability and reliability.
  - Conduct regular monitoring and inspections to ensure compliance with emission standards, imposing penalties for non-compliance and incentivizing investment in cleaner technologies.
  - Establish transparent reporting mechanisms to provide residents with real-time daily information on refinery emissions and pollution levels.
  - Foster sustained partnerships between refineries and city officials to create local employment opportunities and prioritize hiring residents from oil-dependent communities.
  - Develop workforce development programs, vocational training initiatives, and apprenticeship opportunities to equip local residents with the skills and knowledge needed to succeed in the renewable energy and clean technology sectors.
  - Implement targeted recruitment and retention strategies to promote diversity, equity, and inclusion in the workforce, ensuring that underrepresented groups have equal access to employment opportunities and advancement.
  - Provide resources and support for refinery workers to access healthcare services, mental health counseling, and financial assistance programs, addressing the holistic needs of the workforce and promoting job satisfaction and retention.
  - Increase enforcement of regulations that ensure safe working conditions, competitive pay, and benefits for refinery employees, prioritizing worker health and well-being
- **Pass the Protection from Cumulative Emissions and Underenforcement of Environmental Law Act of 2023 to strengthen environmental regulations.** This legislation (H.R. 1673) was introduced during the 118<sup>th</sup> Congress (2023-2024) by Representative Diana DeGette (D-CO-1) and would direct the Environmental Protection Agency to address cumulative public health risks associated with multiple environmental stressors and recommend steps to reduce the number of violations of environmental law in minoritized, low-income, and tribal/indigenous communities that have high risks of being affected by environmental and health effects.

## **Conclusion**

This study highlights the pressing issue of environmental victimization, emphasizing its emergence as a significant aspect of environmental justice. Minoritized and low-income communities bear the brunt of environmental hazards, particularly due to the strategic placement of hazardous facilities, such as refineries and petrochemical plants. The placement of these facilities may lead to adverse effects on both the environment and public health and exacerbate financial challenges within these communities. Centering the lived experiences of Black residents and refinery workers in Port Arthur, their narratives showcase a range of impacts, including financial burdens and health concerns. Their stories shed light on the perceptions of environmental victimization and underscore the need for heightened community awareness and proactive efforts. To address these challenges and promote environmental justice, the study brings forth a comprehensive set of policy and practical recommendations. The study advocates for a collaborative and multifaceted approach to environmental harms involving local, state, and federal agencies and stresses the urgency of taking concrete steps to improve quality of life in communities that have long endured the detrimental effects of environmental stressors, often at the expense of corporate interests. By implementing the proposed recommendations, there is an opportunity to foster positive change and advance environmental justice for these communities.

## References

- Agyeman, J., Bullard, R., & Evans, B. (Eds.). (2003). *Just sustainabilities: Development in an unequal world*. Earthscan.
- Ash, M., & Fetter, T. R. (2004). Who lives on the wrong side of the environmental tracks? Evidence from the EPA's Risk-Screening Environmental Indicators Model. *Social Science Quarterly*, 85, 441-462. <https://doi.org/10.1111/j.0038-4941.2004.08502011.x>
- Attorney General of Texas. (2023, May 3). *Paxton announces \$1.4 million settlement with TotalEnergies over unlawful pollution*. <https://www.texasattorneygeneral.gov/news/releases/paxton-announces-14-million-settlement-totalenergies-over-unlawful-pollution>
- Axelsson, G., Barregard, L., Holmberg, E., & Sallsten, G. (2010). Cancer incidence in a petrochemical industry area in Sweden. *Science of the Total Environment*, 408(20), 4482-4487. <https://doi.org/10.1016/j.scitotenv.2010.06.028>
- Bailey, C., & Faupel, C. E. (1992). Environmentalism and civil rights in Sumter County, Alabama. In B. Bryant & P. Mohai (Eds.), *Race and the incidence of environmental hazards: A time for discourse* (pp. 140-152). Westview.
- Banzhaf, S., Ma, L., & Timmins, C. (2019). Environmental justice: The economics of race, place, and pollution. *The Journal of Economic Perspectives*, 33(1), 185-208. <https://doi.org/10.1257/jep.33.1.185>
- Been, V. (1995). Analyzing evidence of environmental justice. *Journal of Land Use and Environmental Law*, 11(1), 1-28.
- Benford, R. (2005). The half-life of the environmental justice frame: Innovation, diffusion, and stagnation. In D.N. Pellow & R.J. Brulle (Eds.), *Power, justice and the environment: A critical appraisal of the environmental justice movement* (pp. 37-54). MIT Press.
- Berry, B. J. L., Caris, L. S., Gaskill, D., Kaplan, C. P., Piccinini, J., Planert, N., Rendall III, J. H. J., & de Ste. Phalle, A. (1977). *The social burdens of environmental pollution: A comparative metropolitan data source*. Ballinger.
- Besson, E. (2015, October 29). *Repairs were debated before death at Port Arthur plant*. Beaumont Enterprise. <https://www.beaumontenterprise.com/news/article/Repairs-were-debated-before-death-at-Port-Arthur-6598147.php>
- Bisschop, L., & Vande Walle, G. (2013). Environmental victimisation and conflict resolution: A case study of e-waste. In R. Walters, D. Westerhuis, & T. Wyatt (Eds.), *Emerging issues in green criminology. Exploring power, justice and harm* (pp. 34-54). Palgrave Macmillan.
- Block, W., & Whitehead, R. (1999). The unintended consequences of environmental justice. *Forensic Science International*, 100, 57-67. [https://doi.org/10.1016/S0379-0738\(98\)00162-5](https://doi.org/10.1016/S0379-0738(98)00162-5)
- Braun, V., & Clarke, V. (2006). Using thematic analysis in qualitative research. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. Sage.
- Brown, P. (2013). *Toxic exposures: Contested illnesses and the environmental health movement*. Columbia University Press.

- Brown, P., Ciambrone, D., & Hunter, L. (1997). Does 'green' mask grey? Environmental equity and issues at the metropolitan level. *International Journal of Contemporary Sociology*, 34, 141-158.
- Bruno, T. M. (2021). Environmental injustice and black sense of place in the social and biophysical afterlife of slavery (Publication No. 28545723) [Doctoral dissertation, University of Oregon]. ProQuest Dissertations and Theses Global.
- Bruno, T., & Jepson, W. (2018). Marketisation of environmental justice: U.S. EPA environmental justice showcase communities project in Port Arthur, Texas. *Local Environment*, 1-17. <https://doi.org/10.1080/13549839.2017.1415873>
- Bryant, B. (1995). *Environmental justice: issues, policies, and solutions*. Island Press.
- Bullard, R. D. (1983). Solid waste sites and the black Houston community. *Sociological Inquiry*, 53(2-3), 273-288. <https://doi.org/10.1111/j.1475-682X.1983.tb00037.x>
- Bullard, R. D. (1992). Environmental blackmail in minority communities. In B. Brant & P. Mohai (Eds.), *Race and incidence of environmental hazards: A time for discourse*. Routledge.
- Bullard, R. D. (1993). Anatomy of environmental racism and the environmental justice movement. In R. D. Bullard (Ed.), *Confronting environmental racism: Voices from the grassroots* (pp. 15-40). South End Press.
- Bullard, R. D. (2020). *Dumping in Dixie: Race, class, and environmental quality* (3rd ed.). Routledge.
- Bullard, R. D. (2001). Decision making. In L. Westra & B. E. Lawson (Eds.), *Faces of environmental racism: Confronting issues of global justice* (2nd) (pp. 3-28). Rowman & Littlefield.
- Bullard, R. D., Mohai, P., Saha, R., & Wright, B. (2007). *Toxic waste and race at twenty, 1987-2007: A report prepared for the United Church of Christ Justice and Witness Ministries*. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.366.4145&rep=rep1&type=pdf>
- Bussan, D., Harris, A., & Douvris, C. (2019). Monitoring of selected trace elements in sediments of heavily industrialized areas in Calcasieu Parish, Louisiana, United States by inductively coupled plasma-optical emission spectroscopy (ICP-OES). *Microchemical Journal*, 144, 51-55. <https://doi.org/10.1016/j.microc.2018.08.053>
- Cahill-Jackson, J. (2012). Mossville environmental action now v. United States: Is a solution to environmental injustice unfolding? *Pace International Law Review*, 3(6), 173-2-8.
- Campbell, R. B., Pugsley, W. S., & Duncan, M. P. (2010). *The laws of slavery in Texas: Historical documents and essays*. University of Texas Press.
- Capek, S. M. (1993). The environmental justice frame—A conceptual discussion and an application. *Social Problems*, 40(1), 5-24. <https://doi.org/10.2307/3097023>
- Carpenter, A., & Wagner, M. (2019). Environmental justice in the oil refinery industry: A panel analysis across the United States. *Ecological Economics*, 159, 101-109. <https://doi.org/10.1016/j.ecolecon.2019.01.020>
- Chakraborty, J., & Zandbergen, P. (2007). Children at risk: Measuring racial/ethnic disparities in potential exposure to air pollution at school and home. *Journal of Epidemiology and Community Health*, 61, 1074-1079. <http://dx.doi.org/10.1136/jech.2006.054130>
- Cohen, S. (2001). *States of denial: Knowing about atrocities and suffering*. Polity Press.
- Colborn, T., Kwiatkowski, C., Schultz, K., & Bachran, M. (2011). Natural gas operations from a public health perspective. *Human Ecological Risk Assessment*, 17(5), 1039-1056. <https://doi.org/10.1080/10807039.2011.605662>

- Colgan, J. D. (2013). Fueling the fire: Pathways from oil to war. *International Security*, 38(2), 147-180. [https://doi.org/10.1162/ISEC\\_a\\_00135](https://doi.org/10.1162/ISEC_a_00135)
- Coll, S. (2012). *Private empire: ExxonMobil and American power*. Penguin.
- Collins, M. B., Munoz, I., Jaja, J. (2016). Linking ‘toxic outliers’ to environmental justice communities. *Environmental Research Letters*, 11(1), 015004. <https://doi.org/10.1088/1748-9326/11/1/015004>
- Comacho, D. E. (1998). *Environmental injustices, political struggles: Race, class, and the environment*. Duke University Press.
- Costner, P. (2000). *Dioxin and PCB contamination in Mossville, Louisiana: A review of the exposure investigation by ATDSR*. Greenpeace. <https://pvcinformation.org/assets/pdf/DioxinMossville.pdf>
- Czolowski, E. D., Santoro, R. L., Srebotnjak, T., & Shonkoff, S. B.C. (2017). Toward consistent methodology to quantify populations in proximity to oil and gas development: A national spatial analysis and review. *Environmental Health Perspective*, 125(8), 086004. <https://doi.org/10.1289/EHP1535>
- Downey, L. (2005). The unintended significance of race: Environmental racial inequality in Detroit. *Social Forces*, 83(3), 971-1007.
- Elliott, E. G., Ma, X., Leaderer, B. P., McKay, L. A., Pedersen, C. J., Wang, C., Gerber, C. J., Wright, T. J., Summer, A. J., Brennan, M., Silva, G. S., Warren, J. L., Plata, D. L., & Deziel, N. C. (2018). A community-based evaluation of proximity to unconventional oil and gas wells, drinking water contaminants, and health symptoms in Ohio. *Environmental Research*, 167, 550-557. <https://doi.org/10.1016/j.envres.2018.08.022>
- Energy Information Administration. (2021). *Texas state profile and energy estimates*. <https://www.eia.gov/state/?sid=TX#tabs-1>
- Eslinger, S. (2020, September 10). *Group holds meeting to educate homeowners as Valero makes offer to buy some homes near refinery in Port Arthur*. 12News Now. <https://www.12newsnow.com/article/news/local/power-city/group-holds-meeting-to-educate-homeowners-as-valero-makes-offers-to-buy-some-homes-near-refinery-in-port-arthur/502-70c6c9f4-11e1-41b0-ae23-bce132842a69#:~:text=Group%20holds%20meeting%20to%20educate,their%20home%20to%20the%20refinery>
- Faber, D. (2008). *Capitalizing on environmental justice: The polluter-industrial complex in the age of globalization*. Rowman and Littlefield.
- Fisher, M. R. (1994). On the road from environmental racism to environmental justice. *Villanova Environmental Law Journal*, 5(2), 449-478. <https://digitalcommons.law.villanova.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1326&context=elj>
- Fleischman, L., & Franklin, M. (2017). *Fumes across the fence-line. The health impacts of air pollution from oil & gas facilities on African American communities*. NAACP and CATF. [https://cdn.catf.us/wp-content/uploads/2017/11/21094509/CATF\\_Pub\\_FumesAcrossTheFenceLine.pdf?\\_gl=1\\*16osaea\\*\\_ga\\*NDA2NDU4Nzk1LjE2OTk5MDMzOTQ.\\*\\_ga\\_88025VJ2M0\\*MTY5OTkwMzM5M5My4xLjAuMTY5OTkwMzM5NC4wLjAuMA.\\*\\_fplc\\*ajBEdlZlbzFBMW5MZGc0cjJhOGxCZ0xKdGRVaSUyRkNsQ0VF](https://cdn.catf.us/wp-content/uploads/2017/11/21094509/CATF_Pub_FumesAcrossTheFenceLine.pdf?_gl=1*16osaea*_ga*NDA2NDU4Nzk1LjE2OTk5MDMzOTQ.*_ga_88025VJ2M0*MTY5OTkwMzM5M5My4xLjAuMTY5OTkwMzM5NC4wLjAuMA.*_fplc*ajBEdlZlbzFBMW5MZGc0cjJhOGxCZ0xKdGRVaSUyRkNsQ0VF)

- Glickman, T. S., Golding, d., & Hersh, R. (1995). GIS-based environmental equity analysis—a case study of TRI facilities in the Pittsburgh area. In G.E.G. Beroggi & W.A. Wallace (Eds.), *Computer supported risk management* (pp. 95-114). Kluwer Academic.
- Goldman, B. A. (1993). *Not just prosperity: Achieving sustainability with environmental justice*. National Wildlife Foundation.
- Gouldson, A. (2006). Do firms adopt lower standards in poorer areas? Corporate social responsibility and environmental justice in the EU and the US. *Area*, 38(4), 402-412. <https://doi.org/10.1111/j.1475-4762.2006.00702.x>
- Greenberg, M., & Anderson, R. F. (1984). *Hazardous waste sites: The credibility gap*. Routledge.
- Hines, R. (2015). The price of pollution: The struggle for environmental justice in Mossville. Louisiana. *The Western Journal of Black Studies*, 39(3), 198-208.
- Holifield, R. (2001). Defining environmental justice and environmental racism. *Urban Geography*, 22(1), 78-90. <https://doi.org/10.2747/0272-3638.22.1.78>
- Holifield, R. (2004). Neoliberalism and environmental justice in the United States Environmental Protection Agency: Translating policy into managerial practice in hazardous waste remediation. *Geoforum*, 35(3), 285-297. <https://doi.org/10.1016/j.geoforum.2003.11.003>
- Houck, O. A. (2019). Shintech: Environmental justice at ground zero. *Georgetown Environmental Law Review*, 31(3), 455-508.
- James, W., Jia, C., & Kedia, S. (2012). Uneven magnitude of disparities in cancer risks from air toxics. *International Journal of Environmental Research and Public Health*, 9(12), 4382. <https://www.mdpi.com/1660-4601/9/12/4365>
- Janmaimool, P., & Watanabe, T. (2014). Evaluating determinants of environmental risk perception for risk management in contaminated sites. *International Journal of Environmental Research and Public Health*, 11, 6291-6313. <https://doi.org/10.3390/ijerph110606291>
- Jefferson County. (2015). *A history of Jefferson County, Texas*. [https://co.jefferson.tx.us/historical\\_commission/files/History/Jefferson\\_County\\_History\\_2015-12-03.pdf](https://co.jefferson.tx.us/historical_commission/files/History/Jefferson_County_History_2015-12-03.pdf)
- Johnson, K. C., Pan, S., Fry, R., Mao, Y., & The Canadian Cancer Registries Epidemiology Research Group. (2003). Residential proximity to industrial plants and non-Hodgkin lymphoma. *Epidemiology*, 14(6), 687-693. <https://www.jstor.org/stable/3703428>
- Johnson, R. O. (2019). A lot like war: Petrocapitalism, “slow violence,” and the struggle for environmental justice. *Social Justice*, 46(1), 105-118. <https://www.jstor.org/stable/26873840>
- Kassotis, C. D., Iwanowicz, L. R., Akob, D. M., Cozzarelli, I. M., Mumford, A. C., Orem, W. H., & Nagel, S. C. (2016). Endocrine disrupting activities of surface water associated with a West Virginia oil and gas industry wastewater disposal site. *Science of the Total Environment*, 557/558, 901-910. <https://doi.org/10.1016/j.scitotenv.2016.03.113>
- Kaufman, J. D. & Hajat, A. (2021). Confronting environmental racism. *Environmental Health Perspective*, 129(5), 051001-1-2. <https://ehp.niehs.nih.gov/doi/10.1289/EHP9511>
- Keehan, C. J. (2018). Lessons from cancer alley: How the clean air act has failed to protect public health in southern Louisiana. *Colorado Natural Resources, Energy & Environmental Law Review*, 29(2), 341-372. [https://www.colorado.edu/law/sites/default/files/attached-files/keehan\\_online\\_copy.pdf](https://www.colorado.edu/law/sites/default/files/attached-files/keehan_online_copy.pdf)



- Kelsey, C. (2022). Life in Mossville, Louisiana: Policy implications of toxic waste exposure and environmental racism (Publication No. 28964186) [Masters Theses, Rochester Institute of Technology]. ProQuest Dissertations and Theses Global. <https://www.proquest.com/openview/e95e4aea98b37f7875d1391387158cfd/1?pq-origsite=gscholar&cbl=18750&diss=y>
- Kojola, E., & Pellow, D. N. (2021). New directions in environmental justice studies: Examining the state and violence. *Environmental Politics*, 30(1-2), 100-118. <https://doi.org/10.1080/09644016.2020.1836898>
- Kurtz, H. E. (2007). Gender and environmental justice in Louisiana: Blurring the boundaries of public and private spheres. *Gender, Place and Culture*, 14(4), 409-426. <https://doi.org/10.1080/09663690701439710>
- LaDuke, W. (1993). A society based on conquest cannot be sustained: Native peoples and the environmental crisis. In R. Hofrichter (Ed.), *Toxic struggles: The theory and practice of environmental justice* (pp. 98-106). New Society.
- Lin, C. K., Hsu, Y. T., Christiani, D. C., Hung, H. Y., & Lin, R. T. (2018). Risks and burden of lung cancer incidence for residential petrochemical industrial complexes: A meta-analysis and application. *Environmental International*, 121(1), 404-414. <https://doi.org/10.1016/j.envint.2018.09.018>
- Linder, S. H., Marko, D., & Sexton, K. (2008). Cumulative cancer risk from air pollution in Houston: Disparities in risk burden and social disadvantage. *Environmental Science & Technology*, 42(12), 4312-4322. <https://doi.org/10.1021/es072042u>
- Linos, A., Blair, A., Gibson, R. W., Everett, G., Van Lier, S., Cantor, K. P., Schuman, L., & Burmeister, L. (1991). Leukemia and non-Hodgkin's lymphoma and residential proximity to industrial plants. *Archives of Environmental Health*, 46(2), 70-74. <https://doi.org/10.1080/00039896.1991.9937431>
- Lynch, M. J., & Barrett, K. L. (2015). Death matters: Victimization by particle matter from coal fired power plants in the US, a green criminological view. *Critical Criminology*, 23, 219-234. <https://link.springer.com/article/10.1007/s10612-015-9266-7>
- Maantay, J. A. (2001). Zoning, equity, and public health. *American Journal of Public Health*, 91(7), 1033-1041. <https://doi.org/10.2105%2Fajph.91.7.1033>
- Maantay, J., Chakraborty, J., & Brender, J. (2010). *Proximity to environmental hazards: Environmental justice and adverse health outcomes*. U.S. Environmental Protection Agency. <https://archive.epa.gov/ncer/ej/web/pdf/brender.pdf>
- Maloney, K. O., Baruch-Mordo, S., Patterson, L. A., Nicot, J. P., Entrekin, S. A., Fargione, J. E., Kiesecker, J. M., Konschnik, K. e., Ryan, J. N., Trainor, A. M., Saiers, J. E., & Wiseman, H. J. (2017). Unconventional oil and gas spills: Materials, volumes, and risks to surface water in four states of the U.S. *Science of the Total Environment*, 581/582, 369-377. <https://doi.org/10.1016/j.scitotenv.2016.12.142>
- Mikati, I., Benson, A.F., Luben, T. J., Sacks, J. D., & Richmond-Bryant, J. (2018). Disparities in distribution of particulate matter emission sources by race and poverty status. *American Journal of Public Health*, 108(4), 480-485. <https://doi.org/10.2105/AJPH.2017.304297>
- Mizutani, J. (2019). In the backyard of segregated neighborhoods: An environmental justice case study of Louisiana. *The Georgetown Environmental Law Review*, 31, 363-390. <https://www.law.georgetown.edu/environmental-law-review/wp-content/uploads/sites/18/2019/04/GT-GELR190004.pdf>

- Mutz, K., Gary, C.B., & Douglas, S. K. (Eds.). (2002). *Justice and natural resources: Concepts, strategies, and applications*. Island Press.
- Natali, L. (2013). Exploring environmental activism. A visual qualitative approach from an ecological and green-cultural criminological perspective. *Journal of Social Criminology. Special Issue: Green Criminology*, 64-100.
- Natali, L. (2015). A critical gaze on environmental victimization. In R. Solund (Ed.), *Green harms and crimes: Critical criminology in a changing world* (pp. 63-78). Palgrave Macmillan.
- National Environmental Law Center. (2019). *Environment Texas, Sierra Club v. Valero Port Arthur Refinery*. NELC. <https://www.nelc.org/cases/environment-texas-sierra-club-v-valero-port-arthur-refinery/>
- O'Neill, M. S., Jerrett, M., Kawachi, I., Levy, J. I., Cohen, A. J., Gouveia, N., Wilkinson, P., Fletcher, T., Cifuentes, L., & Schwarz, J. (2003). Health, wealth, and air pollution: Advancing theory and methods. *Environmental Health Perspectives*, 111(16), 1861-1870.
- Pastor, M., Bullard, R., Boyce, J.K., Fothergill, A., Morello-Frosch, R., & Wright, B. (2006). Environment, disaster, and race after Katrina. *Race, Poverty, & the Environment*, 13(1), 21-26. <https://www.jstor.org/stable/41495680>
- Pulido, L., Kohl, E., Cotton, N-M. (2016). State regulation and environmental justice: The need for strategy reassessment. *Capitalism Nature Socialism*, 27(2), 12-31. <https://doi.org/10.1080/10455752.2016.1146782>
- Roberts, M. (2011). A community's fight for the human right to a healthy environment. *Clearinghouse Review*, 45(4-5), 257-258.
- Robinson, C. (2023). *Black marxism: Social theory re-wired* (3rd ed.). Routledge.
- Rogers, H. (2015). *Erasing Mossville: How pollution killed a Louisiana town*. The Intercept.
- Saha, R. & Mohai, P. (2005). Historical context and hazardous waste facility siting: Understanding temporal patterns in Michigan. *Social Problems*, 52(4), 618-648. <https://doi.org/10.1525/sp.2005.52.4.618>
- Sans, S., Elliott, P., Kleinschmidt, I., Shaddick, G., Pattenden, S., Walls, P., Grundy, C., & Dolk, H. (1995). Cancer incidence and mortality near the Baglan Bay petrochemical works, South Wales. *Occupational and Environmental Medicine*, 52, 217-224. <http://dx.doi.org/10.1136/oem.52.4.217>
- Schelly, D., & Stretesky, P. B. (2009). An analysis of the "path to resistance" argument in three environmental justice success cases. *Society & Natural Resources*, 22(4), 369-380. <https://doi.org/10.1080/08941920802119648>
- Scholsberg, D. (1999). Networks and mobile arrangements: Organisational innovation in the US environmental justice movement. *Environmental Politics*, 8, 122-148. <https://doi.org/10.1080/09644019908414441>
- Scholsberg, D. (2007). *Defining environmental justice: Theories, movements, and nature*. Oxford University Press.
- Scholsberg, D. (2013). Theorising environmental justice: The expanding sphere of a discourse. *Environmental Politics*, 22(1), 37-55. <http://dx.doi.org/10.1080/09644016.2013.755387>
- Seba, E. (2019, August 19). *Motivation to buy Flint Hills Port Arthur, Texas chemical plant*. Reuters. <https://www.reuters.com/article/us-usa-chemical-motiva-flinthills/motiva-to-buy-flint-hills-port-arthur-texas-chemical-plant-sources->

- [idUSKCN1V91G6/#:~:text=HOUSTON%20\(Reuters\)%20%2D%20Motiva%20Enterpris es,off%20a%20push%20into%20petrochemicals](#)
- Sexton, K. (1997). Sociodemographic aspects of human susceptibility to toxic chemicals: Do class and race matter for realistic risk assessment? *Environmental Toxicology and Pharmacology*, 4, 261-269. [https://doi.org/10.1016/S1382-6689\(97\)10020-5](https://doi.org/10.1016/S1382-6689(97)10020-5)
- Simonsen, N., Scribner, R., Su, L.J., Williams, D., Luckett, B., Yang, T., & Fontham, E. T. H. (2010). Environmental exposure to emissions from petrochemical sites and lung cancer: The lower Mississippi Interagency Cancer Study. *Journal of Environmental Public Health*, 2010, 1-9. <https://doi.org/10.1155/2010/759645>
- Singer, M. (2011). Down Cancer Alley: The lived experiences of health and environmental suffering in Louisiana's chemical corridor. *Medical Anthropology Quarterly*, 25(2), 141-163. <https://doi.org/10.1111/j.1548-1387.2011.01154.x>
- Stringfellow, W. T., Camarillo, M. K., Domen, J. K., Sandelin, W. L., Varadharajan, C., Jordan, P. D., Reagan, M. T., Cooley, H., Heberger, M. G., & Birkholzer, J. T. (2017). Identifying chemicals of concern in hydraulic fracturing fluids used for oil production. *Environmental Pollution*, 220, 413-420. <https://doi.org/10.1016/j.envpol.2016.09.082>
- Taylor, D. E. (2000). The rise of the environmental justice paradigm: Injustice framing and the social construction of environmental discourses. *American Behavioral Scientists*, 43(4), 508-580. <https://doi.org/10.1177/0002764200043004003>
- Taylor, D. E. (2014). *Toxic communities: Environmental racism, industrial pollution, and residential mobility*. New York University Press.
- Taylor, D. E. (2018). Diversity in environmental organizations: Reporting and transparency. University of Michigan, School of Environment and Sustainability.
- U.S. Census Bureau. (2020). *Port Arthur City, Texas*. <https://data.census.gov/table/DECENNIALPL2020.P1?q=Port%20Arthur%20city,%20Texas>
- United Church of Christ Commission for Racial Justice. (1987). *Toxic wastes and race in the United States: A national report on the racial and socio-economic characteristics of communities with hazardous waste sites*. United Church of Christ. <http://uccfiles.com/pdf/ToxicWastes&Race.pdf>
- US Energy Information Administration. (2021). *Petroleum & other liquids: Refinery capacity report*. <https://www.eia.gov/petroleum/refinerycapacity/>
- US General Accounting Office. (1983). *Siting of hazardous waste landfills and their correlation with the racial and socio-economic status of surrounding communities*. U.S. Government Accountability Office. <https://www.gao.gov/products/rced-83-168>
- Villarosa, L. (2020, July 28). *Pollution is killing black Americans. This community fought back*. The New York Times Magazine. <https://nyti.ms/2Bzkhcu>
- Walker, G. (2012). *Environmental justice: Concepts, evidence and politics*. Routledge.
- Weng, H. H., Tsai, S. S., Chiu, H. F., Trong-Neng, W., & Chun-Yuh, Y. (2008). Association of childhood leukemia with residential exposure to petrochemical air pollution in Taiwan. *Inhalation Toxicology*, 20(1), 31-36. <https://doi.org/10.1080/08958370701758734>
- Wenz, P. S. (1988). *Environmental justice*. State University of New York Press.
- White, R. (2011). *Transnational environmental crime: Toward an eco-global criminology*. Routledge.
- Whitmire, M. (2023, June 20). *Oil refinery workers and asbestos exposure*. <https://www.asbestos.com/occupations/oil-refinery-workers/>

- Wilkinson, P., Thakrar, B., Walls, P., Landon, M., Falconer, S., Grundy, C., & Elliot, P. (1999). Lymphohaematopoietic malignancy around al industrial complexes that include major oil refineries in Great Britain. *Occupational Environmental Medicine*, *56*, 577-580. <https://oem.bmj.com/content/oemed/56/9/577.full.pdf>
- Williams, C. (1996). An environmental victimology. *Social Justice*, *23*, 16-40.
- Williams, S. B., Shan, Y., Jazzer, U., Kerr, P. S., Okereke, I., Klimberg, S., Tyler, D. S., Putluri, N., Lopez, D. S., Prochaska, J. D., Elferink, C., Baillargeon, J. G., Kuo, Y., & Mehta, H. B. (2020). Proximity to oil refineries and risk of cancer: A population-based analysis. *JNCI Cancer Spectrum*, *4*(6), 1-9. <https://doi.org/10.1093/jncics/pkaa088>
- Wong, L. Y., Uddin, M. S., Turner, W., Ragin, A. D., & Dearwent, S. (2015). Serum PCB concentrations in residents of Calcasieu and Lafayette Parishes, Louisiana with comparison to the U.S. population. *Chemosphere*, *118*, 156-162. <https://doi.org/10.1016/j.chemosphere.2014.07.073>
- Yu, C. L., Wang, S. F., Pan, P. C., Wu, M. T., Ho, C. K., Smith, T. J., Li, Y., Pothier, L., Christiani, D. C., & the Kaohsiung Leukemia Research Group. (2006). Residential exposure to petrochemicals and the risk of leukemia: Using geographic information system tools to estimate individual-level residential exposure. *American Journal of Epidemiology*, *164*(3), 200-207. <https://doi.org/10.1093/aje/kwj182>
- Zahran, S., Hastings, D. W., & Brody, S. D. (2008). Rationality, inequity, and civic vitality: The distribution of treatment, storage, and disposal facilities in the southeast. *Society and Natural Resources*, *21*(3), 179-196. <https://doi.org/10.1080/08941920701618195>

## Appendix

<b>Pseudo-Names of Participant</b>
1. Raymond
2. Brenda
3. Eugene
4. Nolan
5. Herman
6. Clarence
7. Joseph
8. Ethel
9. Robert
10. Arthur
11. Roland
12. Harvey
13. Lucy
14. Lois
15. Emma
16. Willy
17. Edna
18. Rhonda
19. James
20. Glenda