HEALTH OUTCOMES NEAR SUPERFUND SITES: CABOT-KOPPERS SITE IN GAINESVILLE, FLORIDA

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ABSTRACT

This paper explores the potential health impacts of the Cabot-Koppers Superfund Site in Gainesville, Florida, and considers that environmental racism could be at play. Environmental racism is the unequal distribution of environmental degradation and contamination that could potentially harm human health, particularly when this distribution disproportionately affects a particular race or ethnicity. This is in contrast to Environmental Justice, or "EJ," which is a movement that advocates for equal opportunities for communities to protect themselves from environmental hazards and the overall minimization (and eventual eradication) of environmental contamination with negative impacts to human health and the planet. This research is intended to make a case that environmental racism could be occurring as a result of the Cabot-Koppers Superfund Site, raise awareness, encourage further research, and advocate for solutions and reparations for the harm that has most likely been done. If even one person has contracted a chronic illness as a result of long-term exposure to contaminants because of the Superfund Site, who might not ever have otherwise contracted this illness, then an irreversible injustice has occurred that should, at the very least, be compensated with financial aid and healthcare. The methodology includes gathering demographic statistics and researching similar case studies on environmental justice. The goal of this research is to bring attention to the harm that environmental racism causes and encourage further research and policy changes that could reduce this harm.

1. INTRODUCTION

Sustainable Development

Sustainability is commonly defined as, “development that meets the needs of the present, without compromising the ability of the future generations to meet their own needs.” This definition can be applied to and interpreted through the lenses of many areas of study including anthropology, biology, climate science, ecology, economics, ethics, philosophy, sociology, zoology, and more.

The Wayfinder guide, a resilience-based guide to sustainability created by international experts, defines sustainable development as this:

> “Sustainable development refers to trajectories that are both safe, in the sense that they stay within critical planetary boundaries, and just, in the sense that each person on the planet has the ability to meet their needs and human rights.”

Sustainability is found at the intersection of cultural, ecological, economical, and social harmony. Sustainable development is human development with these goals in mind. This is why within the broader study of environmental sustainability there is also an emphasis on human rights and social justice. The built environment influences how people interact with the world and each other: class relations, race relations, social interactions, environmental degradation, waste and pollution, human health, psychological health, air quality, mood, and more.

In the case of environmental justice, sustainability means advocating for environmental protection while also advocating for human rights and equity.

Environmental Justice in the United States

Environmental Justice advocates that “all people and communities have a right to equal protection and equal enforcement of environmental laws and regulations,” (Bullard, 2018). It is an important facet of sustainability that all communities, regardless of race or ethnicity, are able to prosper, have equal protection under the law, breathe clean air, drink clean water, have nutritious and fresh food available to buy within a reasonable distance, and not be burdened by environmental hazards that negatively affect human health. When communities are disproportionately burdened by these hazards, it is considered **environmental racism**. This can happen deliberately or naturally due to the free market and inadequate and inequitable enforcement of regulatory environmental protections.

Robert Bullard defines environmental racism as: “any environmental policy, practise or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups or communities based on race or colour,” (1999, 5–6). Environmental racism is a form of oppression and violence which disproportionately affects the Black, Indigenous, Latinx, Asian, and other minority communities. Dumping sites, incinerators, air pollution, water contamination, lead paint, and even light and noise pollution often plague these communities.

Environmental justice could be said to have started at the foundation of the United States as a country. The colonization of the United States by Europeans between 1500 CE and 1800 CE involved unspeakable violence to Indigenous peoples, one aspect of which was eradicating their sustainable way of life and ancient knowledge of the land. Environmental philosophers have linked colonization with Christianity in

their attitudes towards nature, viewing it as a resource to be conquered and utilized as opposed to viewing nature as a holistic system of living beings existing within a delicate balance. The introduction of capitalism also subjected the United States, as a land, to relentless resource extraction and disregard for the natural environment for the first time.

During the Industrial Revolution, pollution levels and exploitation of workers for the sake of profit went hand in hand. The relationship between capitalism, degradation of the natural environment, and disregard for human wellness was put on display. Women and children were preferred as factory workers because they were paid half as much as men for the same amount of hours, and children were less likely to unionize. Environmentalists like Mary Walton, an inventor who engineered ways to reduce pollution during the Industrial Revolution, tried to make a difference. However, it was not until the Great Depression and the efforts of President Franklin Delano Roosevelt about thirty years later that child labor was finally ended on a federal level and a minimum wage was established. If not for regulatory intervention, the free market would still allow for child labor, endless pollution, dangerous working conditions, and near-zero wages.

The next major push towards the environmental justice movement was the publication of Silent Spring by Rachel Carson in 1962. It was the first time that corporations were exposed for using chemicals that were dangerous to human health in their pesticides. An element to this injustice is that the demographic makeup of agricultural workers who are exposed to these chemicals are more often immigrants, people of color, and people with less socioeconomic status. According to the California Department of Food and Agriculture, “over a third of the country’s vegetables and

two-thirds of the country's fruits and nuts are grown in California," (CDFA, 2019). Many agricultural laborers in California are migrant workers, in part due to the proximity to the U.S.-Mexico border. The U.S. Department of Agriculture reported that 57% of all farmworkers in the country were Hispanic of Mexican origin in 2018), so this is a demographic phenomenon that is prominent to this day. The fact that dangerous chemicals were and are used with complete disregard for human health in an occupation dominated by people of color should not be overlooked. This environmental racism was first brought to the mainstream conversation by Cesar Chavez and organized farmworker strikes in the '60s and '70s. These strikes gained national attention utilizing peaceful protest tactics (Pao, 2016).

This brings us to the 1980s, when the man who is known as the father of Environmental Justice, Dr. Robert Bullard, began researching the demographic aspects of residential proximity to toxic waste, pollution, and contamination sites. Despite environmental policies passed in the '70s through '90s, like the Clean Air Act and the Clean Water Act, it soon became clear that these policies were being enforced differently for people of color ("Failed Promises", 2015). Dr. Bullard first became aware of this problem in 1979, when a suburb in Houston, Texas, which contained almost 63% of the city's minority population, contested that they were being discriminated against by the placement of 64% of solid waste sites in their proximity (Dicum, 2006). In this case, Bean v. Southwestern Waste Management Corp., the plaintiffs argued that the proximity of solid waste facilities to predominantly black communities was a form of discrimination. Bullard was asked to be an expert witness, and his wife, attorney Linda Bullard, represented the plaintiffs. "Solid Waste Sites and the Black Houston

Community," a study conducted by Bullard for the sake of the trial, was the first of its kind in the United States, which examined the direct link between race and environmental hazards (source, year). This started his career as a researcher and activist on behalf of communities suffering from discriminatory environmental burdens. He has published countless articles, research studies, reports, and books on this topic for decades, and much of his research informs this research paper and many others.

Today, the Environmental Justice movement has gained more visibility than ever thanks to social media and the ever-growing pool of research on the topic. Young people are getting involved in protests like Fridays for Future, and posts raising awareness about environmental justice go viral on TikTok and Instagram. A Houston TikTok user named Frederick Lewis went viral in January of 2021 for demonstrating the prominence of liquor stores and gas stations in minority communities in contrast to the prominence of grocery stores in wealthier, whiter communities, which is an aspect of environmental racism ("It took 60 seconds," 2021).

The topic has even entered the mainstream political conversation, and has been included in the platforms of former President Barack Obama and current President Joe Biden. In January, President Biden signed an executive order creating the White House council on environmental justice with the aim to acknowledge the government's role in environmental racism and taking actions to move towards a more equitable future. There is skepticism regarding the Biden administration's intentions to follow through on these promises, mainly due to Bill Clinton's lack of follow-through after making similar promises in the '90s ("Failed Promises, 2015).

Capstone Objective

The problem my research is seeking to answer is this: How could the Cabot-Koppers Superfund Site in Gainesville, FL be affecting the people in the adjacent community in terms of monetary, physical health, and mental health impacts? Additionally, I want to answer the question of how the City of Gainesville, the Environmental Protection Agency (EPA), and the University can help to make up for these potential damages and/or make reparations. If harm has been caused by the Superfund Site and its contamination of the groundwater and soil, then that harm should be mitigated or if possible completely removed. Affected parties deserve financial compensation and appropriate healthcare if needed.

By evaluating a similar case study with the same contaminants, I will be able to speculate the impacts of the Cabot-Koppers Superfund Site. I will also use a case study of successful remediations of hazardous sites to make recommendations and suggest appropriate action and research that should be taken by the City of Gainesville, involved private companies, and the University of Florida.

2. METHODOLOGY

The initial intention of this research was to survey and interview long-term residents firsthand, but the initial research phase took over and there was not enough time to create an Internal Review Board (IRB) approved methodology. At first, the goal was to have two phases of interviews with long-term residents; phase one would involve

a survey (included in the appendix of this paper) and phase 2 would involve more in-depth interviews of long-term residents as case studies.

This proved to be too much for a single student contained within a single semester, so my recommendation would be for further research to be done in order to track down long-term residents and long-term former residents, create IRB survey and interview questions that are carefully considered due to the sensitive nature of health and financial information, and for a team of researchers of diverse specializations to do extensive research on the impact of the Superfund Site's contamination on residents over the decades. The research team should have team members proficient in statistics, sociology, biology, and sustainability, to account for all aspects of this issue.

Instead, this project became a research paper. I collected sources, completed a literature review researching the Cabot-Koppers Superfund site and the related issues, and decided to look at two case studies for comparison. This paper is essentially a compilation of relevant research and academic studies relating to the Superfund Site to take a holistic look at the potential impacts the site could have on nearby residents, as well as what that means for the city.

3. LITERATURE REVIEW

One of the main issues of environmental justice is environmental racism. in the United States at higher rates than whiter and wealthier communities. This causes an unfair burden on minority communities, causing serious health issues like cancer, respiratory complications, and lead poisoning. "Extensive research shows that

low-income and racial and ethnic minorities continue to experience health disparities due to environmental exposures," (Konisky, 2015 pp 5). Even when these communities are able to mobilize into grassroots movements to challenge these issues, the government often ignores their cries on all levels - local, state, and federal. "Studies of cleanup decisions under the Superfund program, for instance, have found that EPA officials are less responsive to lower-income communities than wealthier communities, and they often adopt less stringent cleanup remedies," (11).

There is a prominent debate within the topic of environmental justice as to whether race or class is more strongly linked to proximity to hazardous sites. A 1987 report also illustrated that race, even more so than income level, was the primary determinant of toxic waste facility siting. (Toxic Wastes and Race at Twenty, 1987). However, these factors are both strongly linked to proximity to hazardous sites and to each other. According to Liam Downey's research study titled "Environmental Injustice: Is Race or Income a Better Predictor," race has a stronger correlation to toxic emissions (TRI emissions) when looking from a statewide scale, but class has a stronger correlation to TRI emissions when looking from a regional (urban) scale. Ultimately, both of these factors play a large role in proximity to hazardous sites and pollution, and both factors have a lot of overlap due to systemic disadvantages that keep POC in poverty. Downey concluded that continuing to debate which factor is more important misses the point of environmental justice work and wastes time, and I tend to agree.

Communities with more **political capacity**, finances, and social capital are more likely to be able to hold corporations and the government accountable for violating environmental regulations. "Corporate officials take [the political capacity of a

community] into account when deciding where to locate a facility or whether to comply with environmental obligations, as do government regulators when they set priorities or decide how to allocate their limited resources," (Konisky, 2015 pp 12). Thus, regulations are enforced more strictly in communities with more power, and are enforced less strictly in communities with less power. Within the communities where environmental hazards occur, people who have the means are able to move somewhere else and people without the means are forced to endure the unsafe conditions.

NIMBY is an acronym for "Not in My Backyard," and NIMBYism describes the phenomenon where communities with more wealth and political capacity oppose the construction of environmentally hazardous projects or advocate for the swift cleanup of discovered environmental hazards in close proximity. When those communities successfully lobby for their own protection from harm, the problem is often just relocated to another community with less political capacity to lobby. NIMBYism causes the most vulnerable communities to be harmed, but it is hard to say what the solution would be. It is reasonable that communities would want to do everything in their power to protect themselves and their loved ones from harm. NIMBYism is likely influenced by capitalism and individualism, preventing the overall system to equitably distribute risk and cause harm to those who are already most vulnerable.

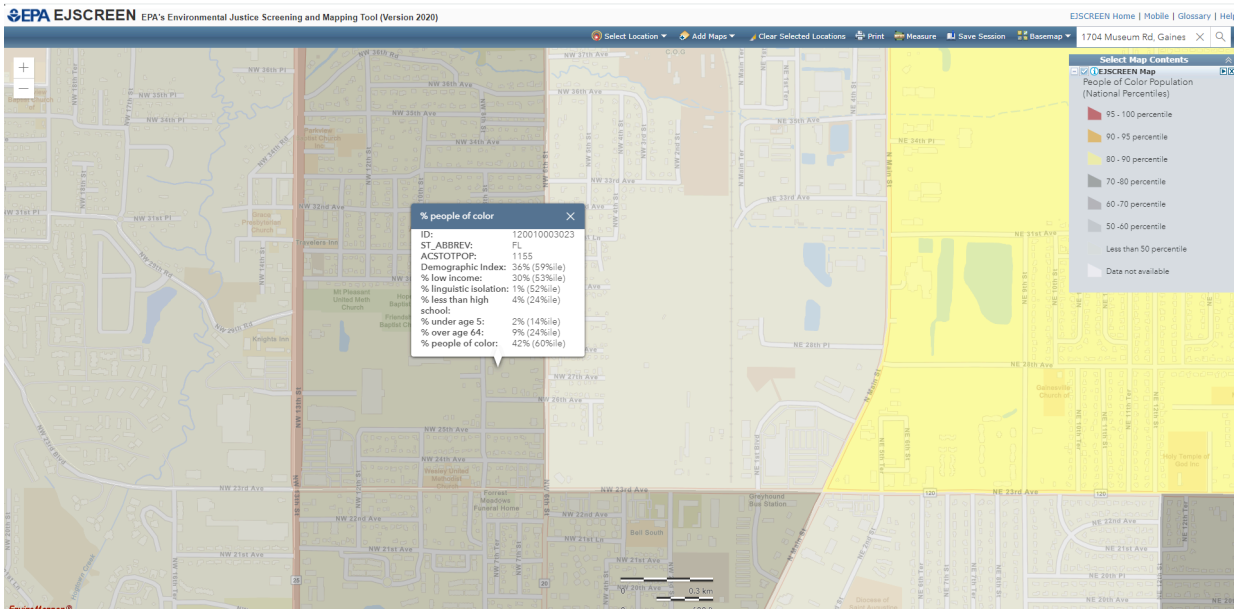
Environmental justice issues are not only bound by location. Concerns can arise from any common factor of harm that may be affecting specific groups of people disproportionately. Even shopping for particular items can become a matter of environmental justice- if specific minority and low-income groups of people are offered the same products, and if those products contain mercury, lead-based paint, or other

contaminants, then those groups can become sick more often than the overall population (Konisky, 2015 pp 93). Access to grocery stores with fresh foods is often a luxury afforded more often to communities with more political capacity, whereas communities with more POC and less wealth are left with gas stations and liquor stores (Brooks, 2014). When a particular area has a lack of fresh foods and grocery stores, it is called a food desert.

When the burden of environmental hazard is distributed unevenly to certain groups of people, it becomes an insidious form of violence against those groups. This is why environmental justice must be brought to the forefront of sustainability.

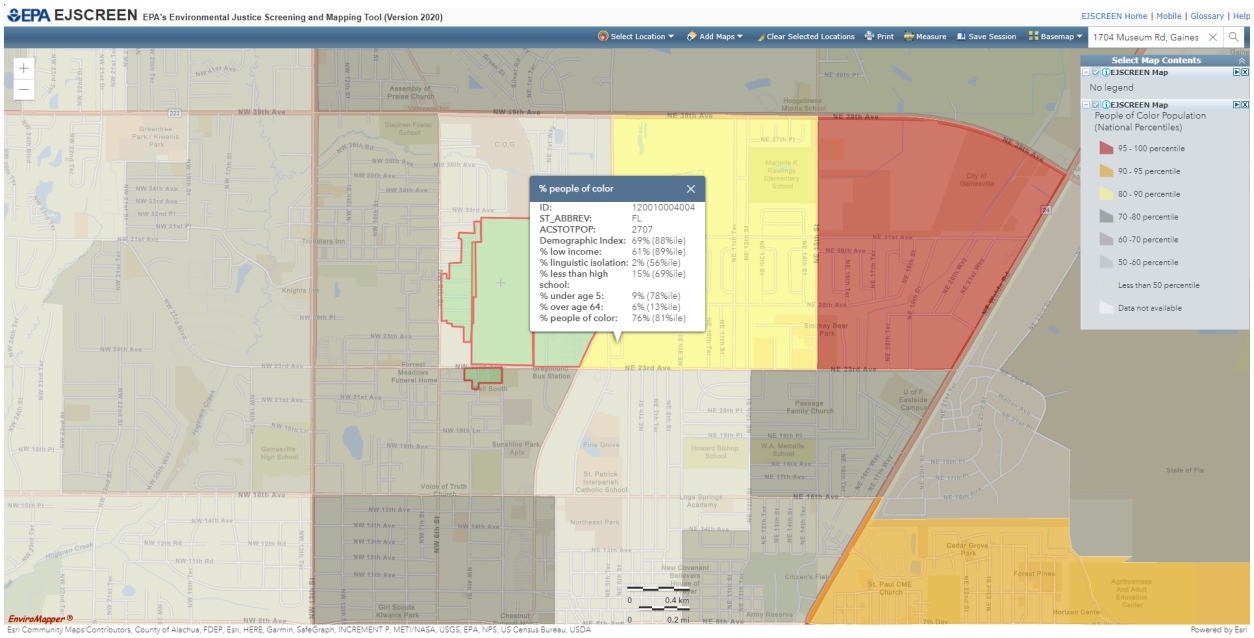
Stephen Foster Community

The Stephen Foster neighborhood is a community in Gainesville, Florida bounded by the Cabot-Koppers Superfund Site, Northwest 39th Avenue, Northwest 13th Street, and Northwest 23rd Avenue. The portion of this community that was marked for soil remediation by the EPA was bounded on the west side by Northwest 6th Street. It is known to be a minority neighborhood, and according to EJSCREEN's 2010 Census Data, 42 percent of its population is made up of People of Color (POC) and is in the 60th percentile nationally in terms of POC population. This is higher than the surrounding area, and particularly higher than the greater Gainesville area.



Screenshot obtained from EJSCREEN, March 2021, at https://ejscreen.epa.gov/mapper/.

The east side of the Superfund Site is also bounded by a neighborhood that is predominantly POC. This density is even more apparent than the east side, with 76 percent POC in 2010 and, according to EJSCREEN, this area was in the 81st percentile nationally in terms of population of POC.



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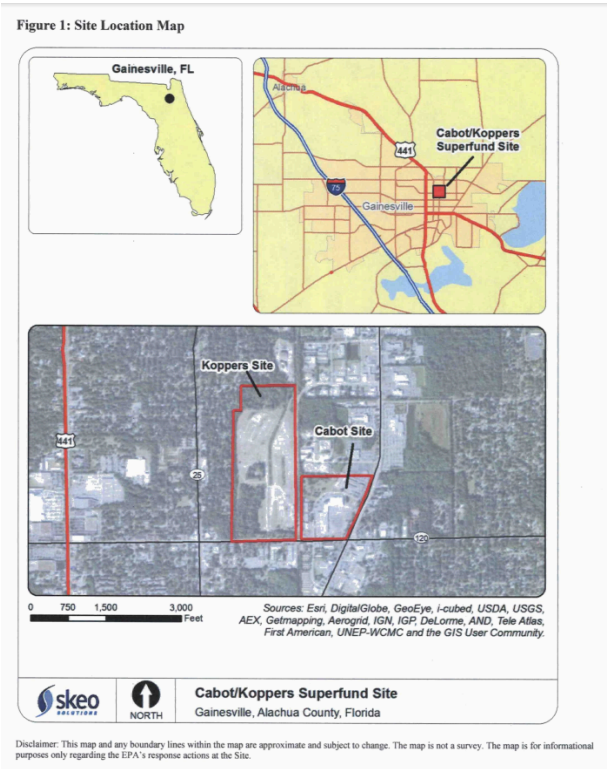
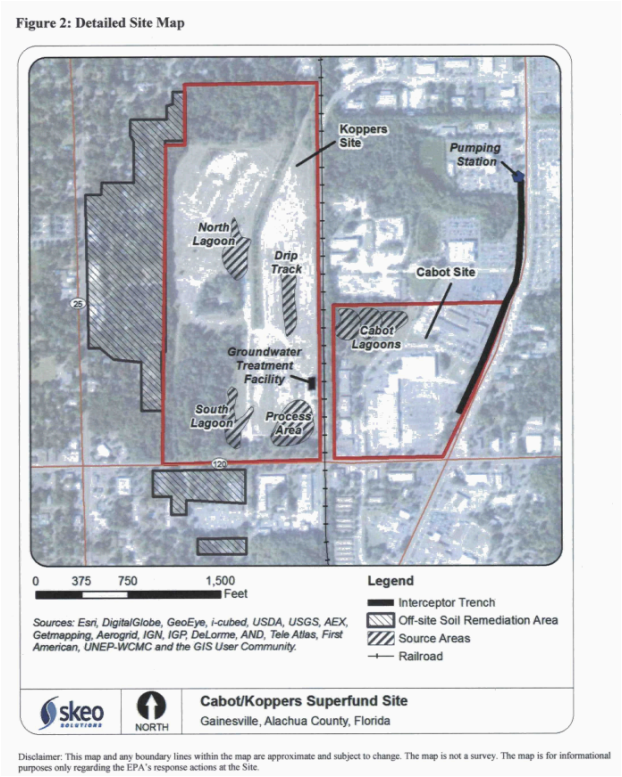
Cabot-Koppers Superfund Site





Hill, Franklin E. *Fourth Five-Year Review Report for Cabot Carbon/Koppers*. EPA Five Year Review, pp 7-8. FLD980709356, United States Environmental Protection Agency Region 4, Mar. 2016, https://semspub.epa.gov/work/04/11018889.pdf.

The Cabot-Koppers Superfund site is named for the corporations that caused the environmental hazard and owned the property whereupon the hazard originated. The corporations operated pine tar, charcoal and wood-preserving facilities which involved chemicals harmful to human health. These industrial operations began in the early 1900s and only stopped entirely in 2009 when Koppers ceased wood-treatment. The site was added to the NPL in September of 1984, five years after the initial problem was discovered in 1979. It is worth noting that in 1977, a survey concluded that Hogtown Creek was devoid of life, likely due to the contamination caused by Cabot and Koppers (Hill, 2016).

The site is currently owned by Beazer East, which has worked with the EPA to remediate the site since 1991. Beazer East has not officially announced any specific plans for the site after remediation, but there have been collaborations with UF students to come up with ideas for future redevelopment (“Graduate Students”).

According to the EPA, “waste handling practices resulted in groundwater, soil and off-site surface water contaminated with pentachlorophenol, arsenic, polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, benzene, toluene, ethylbenzene, xylenes, phenols and chromium,” (Hill, 2016). The EPA has named two potentially responsible parties (PRPs), which legally binds the parties to handle remediation costs. “Beazer East, Incorporated (Beazer) is the PRP for Koppers and Cabot is the PRP for the remainder of the Site.” This means that in this particular case, taxpayer dollars are not being used to fund remediation.

Pictured below are the various interventions the EPA has done in order to contain the contamination to the site and minimize harm done off-site, in addition to soil remediation done off-site. There is a trench along the eastern border of the Cabot site that acts as a physical barrier to contain contamination. This trench finished construction in 1995 (Hill, 2016 pp 3). There is also stormwater management, including a pond, wells, physical walls, and a cap barrier. With these methods, the EPA has managed the contamination so that it does as little harm as possible in the immediate future. Something worth noting is the excessive amount of time it has taken for these interventions to get to this point. The site was added to the NPL in 1984, after decades of contamination, and these interventions are only stopping further harm rather than reversing harm that has already been done.

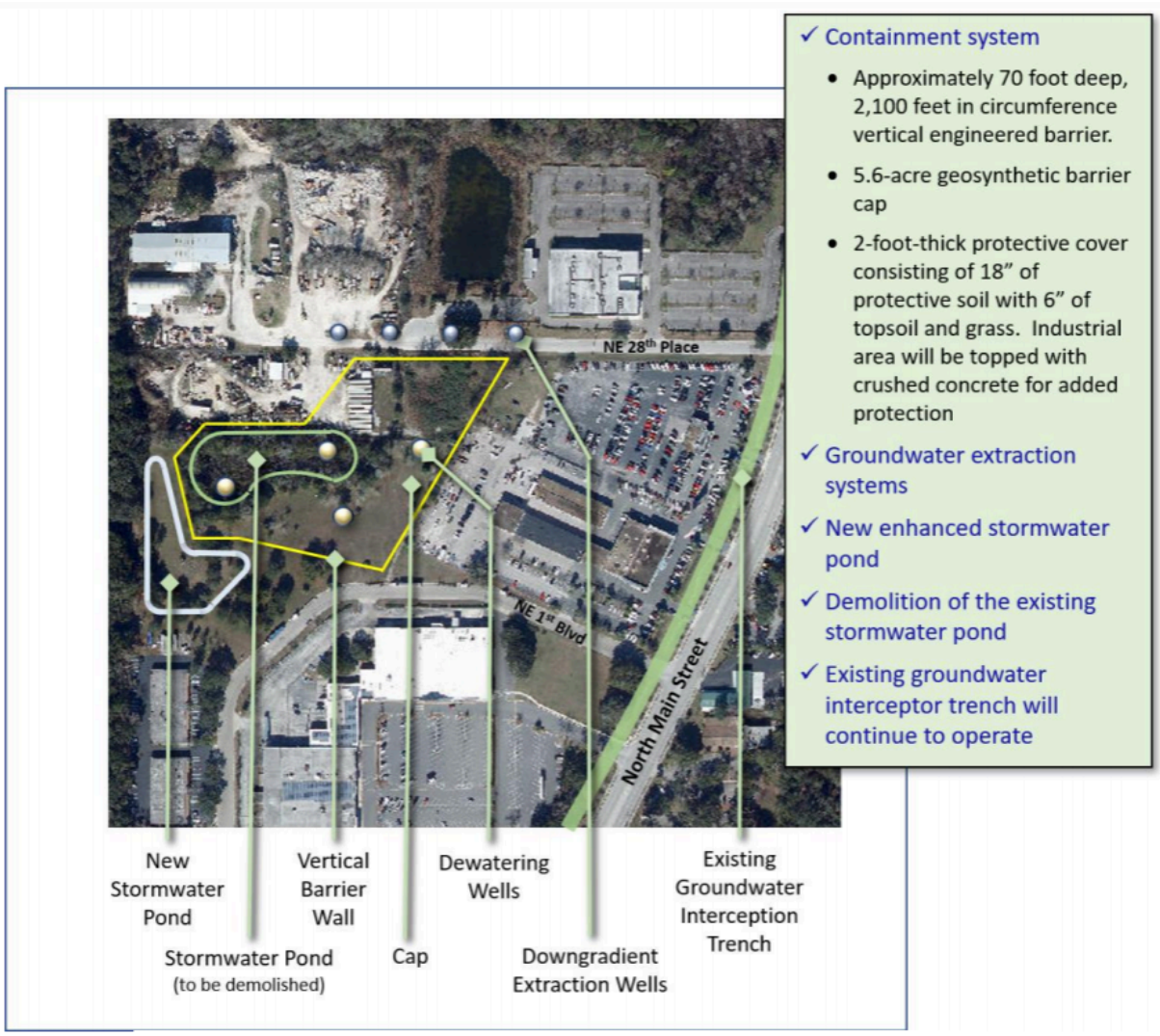


Figure 2: Cabot Copper's Containment System

EPA. *Remedial Action Fact Sheet*. Pp 3. U.S. Environmental Protection Agency, 1 June 2019, https://semspub.epa.gov/work/04/11131421.pdf.

Contaminants and Health Impacts

According to the fourth five year review, "major contaminants of concern include arsenic, polycyclic aromatic hydrocarbons (PAHs) and dioxins/furans in soil, and benzene, toluene, ethylbenzene, xylenes, PAHs, phenols, arsenic and chromium in groundwater," (Hill, 2016 pp B-1).

Arsenic is naturally present in the earth, but it is highly toxic in its inorganic form. This is what poses a threat to human health. According to the World Health Organization (WHO), inorganic arsenic poses the greatest threat when it contaminates groundwater or soil, as in the case of the Cabot-Koppers Superfund Site (WHO, 2018). It can cause cancer, among other negative health impacts.

PAHs are a result of burning in industrial activity. PAHs can contaminate air, soil, or water and can persist for years. Depending on the type, some PAHs may be carcinogenic and cause other health problems (Illinois Department of Public Health).

> "Long-term health effects of exposure to PAHs may include cataracts, kidney and liver damage, and jaundice. Repeated skin contact to the PAH naphthalene can result in redness and inflammation of the skin. Breathing or swallowing large amounts of naphthalene can cause the breakdown of red blood cells. Long-term exposure to low levels of some PAHs have caused cancer in laboratory animals." (Illinois Department of Public Health).

These possibilities are particularly concerning when one considers the decades of time that the Cabot-Koppers site polluted the area and contaminated the water and soil. This case is very long-term exposure, which can impact human health even if the levels of contamination were low. "Studies of workers exposed to mixtures of PAHs and other compounds have noted an increased risk of skin, lung, bladder, and gastrointestinal cancers," according to the Illinois Department of Public Health. The Agency for Toxic Substances and Disease Registry (ATSDR) reported in 2009 that these effects can correlate with occupational exposure to PAHs: "chronic bronchitis, chronic cough irritation, bronchogenic cancer, dermatitis, cutaneous photosensitization, and pilosebaceous reactions."

Dioxins are persistent organic pollutants (POPs), and according to the EPA, “are highly toxic and can cause cancer, reproductive and developmental problems, damage to the immune system, and can interfere with hormones,” (“Learn About Dioxin, 2020).

“Creosote is the most common product utilized to preserve wood in [the] United States,” so it is no surprise that it is listed as a contaminant of concern by the EPA given the site’s history with wood treatment (ATSDR 2006). Creosote is also a compound that takes years to break down after it enters the groundwater and soil.

> “Exposure to small amounts of creosote over time by direct skin contact or by contact with creosote vapors, may cause: blistering, peeling, or reddening of the skin, damage to the eyes, increased sensitivity to sunlight. Eating food or drinking water with large amounts of creosote may cause, burning in the mouth and throat, stomach pains. Accidentally eating large amounts of creosote for a short period of time can cause: bad skin rash, eye burns, convulsions, kidney or liver problems [and] unconsciousness or death.” (ATSDR, 2006).

Other studies suggest the potential for creosote to cause birth defects like cleft palate or even cancer, but these studies have only been done on animals. It is difficult to extrapolate these results to humans with certainty.

Property Values and Superfund Sites

Proximity to Superfund Sites can devastate the economy of a community by devaluing the residential property nearby. If there is enough publicity surrounding the site and enough fear, the residential properties within the affected community are stigmatized and devalued significantly (Messner, 2006). The best way to minimize these

financial hardships is to expedite the remediation process as much as possible. The longer the site remains unremediated, the longer it takes for the real estate nearby to recover its original value.

> "Over the long term, when cleanup is delayed for 10, 15, and even up to 20 years, the discounted present value of the benefits of cleanup are mostly lost since property values do not recover during the cleanup period itself. A possible explanation for these property value losses is that a Superfund site remains stigmatized and the homes in the surrounding communities are shunned as long as activity continues at the site," (Messner et. al, 2006).

We can conclude that the best way to minimize economic losses caused by the stigma associated with hazardous sites would be to expedite the cleanup process as much as possible. For projects like Cabot-Koppers which have lasted decades, it is likely that the residential properties of the affected communities have taken massive long-term losses.

Environmental Hazards and Distress

Living near a hazardous waste site brings its share of emotional distress. The knowledge that one lives near a toxic site that could negatively impact the health of oneself, one's family, and one's neighbors, can be devastating. In East Chicago, 38 homeowners filed a lawsuit seeking damages for property devaluation and emotional distress caused by the proximity of the U.S.S. Lead Superfund Site ("38 East Chicago," 2017). They filed the federal lawsuit against the companies considered to be the responsible parties by the EPA. Emotional distress, if supported by documentation, is often used as valid proof of damages in civil cases. It is not a far stretch of the

imagination to see how a community might be able to prove that decades of devaluation, human health impacts, and drawn out remediation processes might cause emotional distress. The long-term, insidious, and ever-present threat of environmental contamination in soil, water, and air could wreak havoc on a person's mental health.

While there is not much research on this topic yet, there is potential for studies to be conducted measuring the distress of communities living near Superfund Sites versus the distress of a control community. The emotional distress of residents of Stephen Foster should also be studied in order to better understand the far-reaching impacts of living with hazardous contamination. Eventually, the impacted individuals should be able to seek financial compensation for any distress caused to them by this burden.

Case Studies for Comparison

Escambia Wood Superfund Site

The Escambia Wood Superfund Site is located in Pensacola, Florida. Its contamination was caused by the chemicals and waste involved in the wood treatment process which started in 1942 and ended in 1982. Creosote, PCPs, PAHs, Dioxin, and other hazardous chemicals contaminated the soil and groundwater. The Escambia Wood Treating Company abandoned the property in 1991, and the EPA began excavation of the soil in 1992, leaving a large pile of contaminated soil (covered by a tarp) in the open for an extended amount of time. It was nicknamed "Mount Dioxin," (Halloran, 2020). The site was added to the NPL in 1994, and remains on the NPL to this day.

Like many other Superfund Sites, the Escambia Wood Superfund Site is located near a historically Black neighborhood as well as federally subsidized apartments. However, in this case the community was able to form a coalition called CATE (Citizens Against Toxic Exposure) and gain enough national attention to pressure the EPA into relocating all 356 households in the community - after the initial offer by the EPA to relocate only 66 households. By 2008, over 400 households were relocated away from the site.

Although this case study is located in the same region as Cabot-Koppers (north Florida), has a similar list of contaminants, and also involves the contamination of soil and groundwater, the major difference between Escambria and Cabot-Koppers was CATE. The community in this case study was able to unite, organize, protest, and gain national attention to the contamination in order to achieve a specific goal: the relocation of every household potentially affected by the contamination by the EPA. This can serve as a blueprint for community action in similar cases and even in Gainesville.

Depot Park

Depot Park, a formerly-contaminated site in Gainesville that was designated as a Brownfield site, has had a much different recovery process than Cabot-Koppers. While Cabot-Koppers is still not finished with the cleanup process today, Depot Park was given a remedial action plan in 2000, more than $60 million in city funds and grants, and the land was transformed into park - all of the cleanup efforts and park remodeling completed in 2016 (“Gainesville’s Depot Park”, 2020). Brownfields are typically considered less hazardous than Superfund Sites, particularly sites on the NPL, so this may have contributed to its swift recovery process. There was also a lot more private

investment involved in the project, potentially motivated by the intention to “flip” the site and get a return on investment. The site is now a beacon of community and natural beauty in Gainesville, and has served as a place of respite for many during this time of social distancing. It is also an economic hub where large events take place. There is the Cade Museum, a few restaurants with outdoor seating, and there are often food trucks parked on site. On weekends it is bustling with skateboarders, families, dog-walkers, roller-bladers, runners, cyclists, and picnicers.

Depot Park serves as an example of just how far a site can come. It started as an abandoned lagoon with contaminated soil and water, but with one “Big Dig,” funding, 16 years and some construction, it is now the Central Park of Gainesville. This future is possible for all contaminated sites if communities are able to obtain enough political capacity. Cities have an incentive to remediate brownfields and Superfund Sites if they know they will have a return on investment in the same capacity as Depot Park.

4. DISCUSSION

Taking all of this information into consideration, it is more than fair to say that harm has likely been done to Stephen Foster long-term residents, former residents, and other locals who may have lived nearby prior to the cease of wood treatment operations at the site and prior to the implementation of interventions on-site. Not only that, but the EPA has a tendency to take longer on the remediation of Superfund Sites on the NPL that are located in close proximity to minority communities. The long-term exposure to even small amounts of the contaminants of concern can cause serious chronic health

issues, and the delay of remediation efforts only increases that risk to human health. Whether intentional or unintentional, this causes harm disproportionately to POC, which is why it is called environmental racism. Communities of color are dealing with a disproportionate burden of environmental hazard on top of disproportionate policing, incarceration, crime, obesity, poverty, and negative impacts caused by natural disasters exacerbated by climate change. The most vulnerable communities in our society should not also be the ones being harmed the most by toxins and pollution, and when possible we should try to eliminate those hazards entirely. So create a sustainable, equitable, just, and harmonious society, we must take environmental justice seriously.

5. CONCLUSION AND RECOMMENDATIONS

Throughout this paper, I have been building the case that there have been and could still be people experiencing long-term negative health outcomes due to the Cabot-Koppers Superfund Site who deserve compensation. If even one person got cancer who otherwise wouldn't have, or even if more babies were born with cleft palate in this community, that is an injustice caused by the actions of corporations that should be held accountable. Our government should protect and compensate those who have been harmed, particularly when it involves harm done to their health by negligent waste disposal practices and pollution caused by companies cutting corners for profit. Any health effects that may have been caused by industrial activities on this site were preventable - they didn't need to happen. While it is impossible to implicate the industrial activities of these corporations with certainty, and to say definitively that they

caused health defects and illnesses that otherwise would not have happened, we can do further research to compare the rates of disease and chronic illness in long-term residents and former residents to compare to the national average rates. If these rates are higher, we can take one more step into the direction of accountability, reparations, and healing.

I recommend that the University of Florida do extensive research on the long-term residents and former residents who may have been affected by the contamination. This should involve researchers with backgrounds in health, statistics, and sociology. I also recommend that surveys and interviews be done to determine cases of real estate devaluation, emotional distress, and other negative impacts that could have been caused by the Superfund Site.

I also recommend that the EPA reinstate the tax on petroleum and chemical products from the 1980s, so that taxpayers do not have to fund Superfund Site remediation and corporations are disincentivized from creating hazardous waste.

My final recommendation is to create funding for the EPA that has permanence that transcends the Presidency. As we have seen since the 2016 election, the EPA has the vulnerability to be gutted financially if the President in office has the motivation to do so. The head of the executive branch can also appoint an Administrator of the EPA, meaning the agency gets new leadership every 4-8 years. With a revolving door or funding and leadership, the agency is constantly under threat and adjusting to changes. Out of the 40,000 Superfund Sites and 1,300 NPL sites, there are still many more that haven’t even gotten on the list because of the EPA’s limited resources, and the sites that are on the list are not receiving the attention and funds needed to remediate in a timely

manner. This reallocation of funds towards the EPA's efforts to remediate hazardous sites could potentially improve and even save lives on a national scale.

Environmental injustice is one of the most insidious threats of our time. It is difficult to see up close, but once you look at the big picture and all the systems at play you can see how it all adds up. Environmental justice is a requirement for an equitable and sustainable future, not an option.

DEFINITIONS

Brownfield Site: Undeveloped or abandoned land that is contaminated due to industrial activity. Brownfields do not require EPA intervention or oversight but can qualify for EPA grant money for cleanup and redevelopment. These sites are often redeveloped with city funds, grants, and private investment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): The U.S. federal law that established the Superfund Program and National Priorities List (NPL), as well as creating the tax on petroleum and chemical products that was funneled into a trust fund to cover the costs of remediation (this tax no longer exists, the trust fund is now reliant on taxpayer funds).

Environmental Justice (EJ): A movement and area of study which advocates that all people and communities have a right to equal protection and equal enforcement of environmental laws and regulations.

Environmental Protection Agency (EPA): An U.S. agency controlled by the executive branch of government which is tasked with environmental protection.

Environmental racism: any environmental policy, practise or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups or communities based on race or colour.

National Priorities List (NPL): A group of 1,600 of the most critical Superfund Sites (out of 40,000 Superfund Sites total) that are considered to be the highest risk to human health and the environment.

NIMBYism (“Not in my backyard”): Opposition to proposed projects in one’s local community, which in turn contributes to the relocation of hazardous sites to communities with less wealth, power, and visibility.

Political capacity: The ability a community has to affect change, gain media attention, educate their citizens on issues, sway government action, and finance campaigns or protests. This correlates with education level, social status, generational wealth, proximity to whiteness, and other privileges.

Superfund Site: A site that is determined to be contaminated with hazardous substances by the EPA with the potential to be dangerous to human health.

Sustainability: Meeting the needs of the present, without compromising the ability of the future generations to meet their own needs.

Sustainable Development: Development of the built environment that takes into account the planet’s finite natural resources, using only what is absolutely necessary in order to build towards an equitable and environmentally harmonious global society, (while allowing the earth enough time and space to replenish natural resources to provide for future generations).

APPENDIX

Survey:

1. What is your gender?

_____

2. Which community/neighborhood do you live in now?
    a. Stephen Foster
    b. Depot Park

3. How long have you been living in this community/neighborhood?
    a. <1 year
    b. 1-3 years
    c. 4-5 years
    d. 6-10 years
    e. >10 years

4. What is your age?
    a. <18
    b. 19-25
    c. 26-35
    d. 36-45
    e. 46-50
    f. 51-60
    G.61-70
    h. >70

5. How do you identify racially and/or ethnically?

_____

6. In terms of employment and earnings, would you define yourself as…

a. Lower/Working class

b. Working/Middle class

c. Middle class

d. Upper class

7. Would you say that your socio-economic status is…

a. Lower than the majority of people in my community

b. About the same as the majority of people in my community

c. Higher than the majority of people in my community

8. Do you perceive there to be health, environmental, or social issues facing your community?

a. Yes, a lot

b. Some

c. I do not know of any

9. How concerned are you about the health, environmental, and/or social issues facing your community?

a. Not at all concerned

b. Somewhat concerned

c. Very concerned

10. In your opinion, what are the three most important health, environmental, or social issues in your community.

1._____

2._____

3._____

11. If you had to choose one, who do you think is the most active stakeholder addressing these issues?

a. Citizen organized community groups and activists

b. NGOs/non-profit organizations

c. Government Agencies

d. The business community

e. Religious groups

f. Elected officials

g. Nobody is addressing these issues

12. What one thing would you improve in your community in relation to health, social, or environmental issues?

If you would be interested/willing to participate in an interview regarding these topics, please provide contact information below.

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