Notes & Comments

Lessons from Cancer Alley: How the Clean Air Act Has Failed to Protect Public Health in Southern Louisiana

Courtney J. Keehan*

This Note discusses the history and development of Cancer Alley under the regulatory framework of the Clean Air Act, analyzing how industrial interests infiltrate the environmental regulation at the design, implementation, and enforcement level and ultimately hinder how the Act protects public health and the environment. Cancer Alley is an eighty-five mile stretch of land along the Mississippi River from Baton Rouge to New Orleans in Louisiana. This area, also known as "Petrochemical America," is home to more than 150 petrochemical industrial plants and refineries, and a population plagued by rare forms of illness. The United States has numerous and extensive regulations, including the Clean Air Act, issued to protect citizens' health from the chemicals and pollution that have become commonplace in modern society. However, as Cancer Alley illustrates, federal environmental regulations fail to protect vulnerable, industrial communities.

This Note first provides an analysis on how industrial interests disrupt the design, implementation, and enforcement of the Clean Air Act, allowing for devastation of public health and the environment in industrial regions. Second, it poses several lessons to be learned from the interaction of environmental regulations and industrial interests, and their effect—as seen through Cancer Alley. The lessons from Cancer Alley provide a framework for relevant changes that should be made to federal environmental

* J.D. Candidate, 2018, University of Colorado Law School. The author would like to thank her family for their endless support and the staff and editors of the *Colorado Natural Resources, Energy & Environmental Law Review* for their efforts in preparing this Note for publication.

regulations and provide insight for developing countries to consider when drafting their own environmental regulations.

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INTRODUCTION

> From Baton Rouge to New Orleans, the great sugar plantations border both sides of the river all the way . . . plenty of dwellings . . . standing so close together, for long distances, that the broad river lying between two rows, becomes a sort of spacious street. A most home-like and happy-looking region.[1]

> With Louisiana's oil boom in the 1960s, the river plantations were replaced nearly wholesale with facilities that refined and processed oil into an ever-growing suite of petrochemicals and products. This pattern has resulted in the landscape and culture of Cancer Alley, where today over one hundred petrochemical facilities and refineries are interspersed with poor historic settlements . . . [with] higher than average rates of cancers . . . .[2]

Northwest of downtown Baton Rouge sits what remains of Standard Heights, a predominantly African-American neighborhood established on the east bank of the Mississippi.[3] Its landscape is defined by sun-bleached asphalt streets, establishing a perfect grid of overgrown grass lots, intermittently broken by the stark presence of one of the few remaining homes in the area.[4] This once thriving community is now only a memory—the quaint clapboard houses that once replaced the grand sugar cane plantations have begun their decline.[5] The local air, heavy with southern humidity and pollution, bathes the neighborhood with an

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1 MARK TWAIN, LIFE ON THE MISSISSIPPI 372 (1883).

2 RICHARD MISRACH & KATE ORFF, PETROCHEMICAL AMERICA 115 (2012).

3 Trymaine Lee, *Cancer Alley: Big Industry, Big Problems*, MSNBC, http://www.msnbc.com/interactives/geography-of-poverty/se.html (last visited Oct. 2, 2016).

4 David Hanson, *Neighbors of the Fence*, BITTER SOUTHERNER, http://bittersoutherner.com/neighbors-of-the-fence/#.WJUrNBDmA7B (last visited Oct. 2, 2016).

5 *Id.*

odor described to smell like photo developer, rotten eggs, and sewage.[6] Looking north to the edge of the mostly-deserted neighborhood, through the sea of ancient oaks patiently shading the empty lots, is a chain-link fence guarding a gray tangled landscape of pipelines and smoke stacks.[7] This gray landscape, sprawling along the bank of the Mississippi, is Exxon Mobil's Baton Rouge plant and refinery—the eleventh largest oil complex in the world and the reason for the decline of Standard Heights.[8]

Illness has plagued the community of Standard Heights, resulting in the neighborhood's deterioration over time.[9] Residents complain of strange sores on their feet that will not heal, enduring sinus infections, and air that not only smells, but deposits a film over everything.[10] Yet, the residents in Standard Heights are not alone. Poverty and sickness consume the residents in communities along the Mississippi River in Louisiana. Here, it is normal for residents to die early from cancer and lung disease[11]—but why?

In 2012, the Exxon plant bordering Standard Heights leaked 31,000 pounds of cancer-causing benzene into the air.[12] After this event, many citizens in the community fell ill.[13] Yet, the cause of their sickness went undocumented.[14] Exxon failed to report the accident to the EPA, as federally mandated.[15] In fact, between 2008 and 2012, eight other similar leaks occurred at the Baton Rouge plant; however, Exxon reported zero accidents during this time period.[16] For residents living in Standard Heights and other parishes[17] home to the petrochemical industry, they are sick because this is their reality—they reside in *Cancer Alley*.

Cancer Alley defines the eighty-five mile stretch of land bordering the Mississippi River from Baton Rouge to New Orleans.[18] This area was given its name due to the significant number of cancer cases, unexplainable illness, and death in the area.[19] This landscape is home to

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6 *Id.*

7 *Id.*

8 Lee, *supra* note 3.

9 *Id.*

10 *Id.*

11 *Id.*

12 *Id.*

13 *Id.*

14 *Id.*

15 *Id.*

16 *Id.*

17 Louisiana is divided into parishes, or civil divisions that correspond to a county in other states. *See Parish*, MERRIAM-WEBSTER (2016).

18 Lee, *supra* note 3.

19 *Id.*

more than 150 industrial plants and refineries and an environment heavy with pollution.[20]

Louisiana has the highest concentration of oil, natural gas, and petrochemical facilities in the Western Hemisphere.[21] And nationally, Louisiana has the third highest rate of cancer.[22] It is not a coincidence that the some of the highest rates of cancer in the country correspond with a concentration of industrial operations, causing pollution and environmental degradation.[23] The question is why? The United States has numerous and extensive regulations issued to protect citizens' health from the chemicals and pollution that have become commonplace in modern society. Yet, U.S. federal environmental regulations, like the Clean Air Act ("CAA"), fail to protect vulnerable communities, like those in Cancer Alley, because the design and administration of such regulations are tainted with pro-industry interests at the expense of public health.

This Note discusses the history and development of Cancer Alley and uses the area as an example to discuss: (1) the industrial pollution regulations in the CAA; (2) how industrial interests disrupt the design, implementation, and enforcement of the CAA, devastating health and the environment; and (3) several lessons to be learned from such devastation. These lessons are then analyzed, proposing relevant changes and discussing what developing countries should take away from these lessons when drafting their own environmental regulations.

I. CANCER ALLEY: THE CREATION OF A PETROCHEMICAL LANDSCAPE

The history of Cancer Alley is a story of transformation and drastic change. Today, the landscape is a mapping of pipelines, refineries, and petrochemical facilities; however, it traditionally was a marshy eco-landscape, comprised of bayou, floodplains, and backswamp.[24] Plantations developed the region on the back of slave labor, transforming the landscape into a quilt of crops to harvest wealth from the southern sugar, indigo, and cotton.[25] However, when slavery was abolished, the

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20 *Id.*

21 *Id.*

22 *Cancer Rates by U.S. State*, CDC, https://www.cdc.gov/cancer/dcpc/data/state.htm (last visited Feb. 9, 2018).

23 Lee, *supra* note 3.

24 MISRACH & ORFF, *supra* note 2, at 116.

25 *Id.*; Lee, *supra* note 3.

region's wealth disappeared—poverty spanned the south from Virginia to the Gulf in areas whose economies were tied to the plantation industry.[26]

Following the Civil War era, former slaves continued to live on or near the plantations where they previously worked.[27] In Louisiana, many old plantations were along River Road, which traces the east bank of the Mississippi River.[28] When freed, slaves from the region established homes near River Road; these houses have been passed down through generations of African-American families, who continue to live there today.[29] When the petrochemical industry expanded into Louisiana, it did so along the banks of the Mississippi and River Road.[30] Industrial entities began to buy up old plantation land; however, they ran into issues purchasing homesteads of slaves' ancestors.[31] Louisiana follows the Napoleonic Code, which requires proper proof of ownership to buy property.[32] Because most properties in the area had been passed down through former slave families for generations, proof of ownership was not always available.[33] Therefore, most of the historic African-American homes in the area could not be bought by the industry.[34] This led to the haphazard landscape found in Cancer Alley today, where homes are located on industrial plant fence lines and historic cemeteries are boxed-in by industrial plant property.[35]

A. Entrance of the Petrochemical Industry

The American petrochemical industry's hub is located in Louisiana because the coastal landscape is embedded with Pleistocene-age geological deposits, making the area rich with oil.[36] Oil is the product of sea creatures that settled on the ocean floor millions of years ago, which were heated and placed under high pressure, producing hydrocarbons.[37] Yet, what took millions of years to create has been transformed in the

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26 *See* Lee, *supra* note 3.

27 *Id.*

28 *Id.*

29 *Id.*

30 *Id.*

31 *Id.*

32 *Id.*

33 *Id.*

34 *Id.*

35 *Id.*

36 MISRACH & ORFF, *supra* note 2, at 121.

37 *Id.*

past two hundred years—the petrochemical industry drills, scrapes, and transports these hydrocarbons from the ocean floor to sustain modern life.[38] Today, eighty-eight percent of the nation's offshore oil rigs are located off Louisiana's coast in the Gulf of Mexico.[39] Thirty percent of all domestic oil production and twenty percent of all domestic natural gas production comes from Louisiana's coast.[40] Additionally, forty-seven percent of all American refining capacity is generated in the Gulf Coast region.[41] Three hundred major petrochemical plants are located in Louisiana and export 4.5 billion chemical products annually.[42] The lower region of the Mississippi River in Louisiana is home to six oil refineries.[43]

Additionally, more than twenty major oil and gas corporations are present in the area, including: Chevron, ConocoPhillips, DuPont, Exxon Mobil, Marathon Petroleum, Shell, and Valero.[44]

Petroleum is one of the driving forces behind the modern American economy.[45] Traditionally, fibrous plants, animals, timber, clay, and sand were the sources of manufactured products that supported the economy.[46] However, this all changed with the birth of the petrochemical age in America.[47] Petroleum-derived, synthetic chemicals produced a new society, powering vehicles, industries, and a new consumer goods market.[48] The petrochemical industry refines crude oil through an energy intensive process into a variety of petrochemicals, which become everything from building materials and fleece sweatshirts to red food coloring and the substance that makes soap lather.[49]

In the United States, society's consumption habits can be traced back to the landscape of Cancer Alley—an area also commonly referred to as Petrochemical America.[50] This riverside manufacturing mecca is a hodgepodge of more than one hundred oil refineries and chemical

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38 *Id.*

39 *Energy/Petrochemicals/Plastics*, GREATER NEW ORLEANS INC., http://gnoinc.org/industry-sectors/energypetrochemicalsplastics/ (last visited Oct. 2, 2016).

40 *Id.*

41 *Id.*

42 *Id.*

43 *Id.*

44 *Id.*

45 MISRACH & ORFF, *supra* note 2, at 119.

46 *Id.*

47 *Id.*

48 *Id.*

49 *See id.*

50 *See id.* at 129.

manufacturing facilities, intermixed with sugar and coffee producers.[51] The chemicals produced in Cancer Alley infiltrate every aspect of Americans' lives. For example, propylene, a chemical used to make acetone, is also transformed into plexiglass, antifreeze, medication for swimmer's ear, plastic furniture, and long underwear.[52] The United States consumes around twenty million barrels of petroleum daily—a large majority of which is consumed through petrochemical products.[53]

It is evident that modern society is powered by petroleum.[54] However, the environmental and public health effects of fossil fuel extraction, processing, and disposal are localized, making them invisible to society at large. While American consumers benefit from the products petroleum makes possible, the pollution and toxic waste generated when producing such products is poisoning Southern Louisiana, overshadowing this rich ecological landscape with pollution and uncertainty.[55]

B. Waste Disposal and Pollution

Unlike natural waste in the ecosystem, which is reintegrated into the environment, waste from industrial processes does not reintegrate and is left to linger in the air, water, and ground.[56] Waste produced from petrochemical-industrial processes in Cancer Alley is disposed of in five ways. The first three methods affect local water supply. First, the waste may be stored in landfills.[57] Modern landfills are lined with an impenetrable barrier; however, landfills from previous decades are located in the Mississippi River's floodplain, and floods disperse their toxic contents into the river.[58] Second, some wastewater is released into the Mississippi River.[59] The petrochemical industry uses the Mississippi's water for cleaning and cooling processes. Spent water is later discharged back into the river, carrying large quantities of petrochemical by-products and runoff.[60] Third, waste is injected into the

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51 *Id.*

52 *Id.*

53 *Id.* at 127.

54 *Id.*

55 *Id.* at 129.

56 *Id.* at 147.

57 *Id.*

58 *Id.*

59 *Id.*

60 *Id.*

ground, which raises the risk of contaminating the area's groundwater reserves.[61]

The last two methods of waste disposal affect air quality—the focus of this Note. Waste from industrial processes is often incinerated on-site, releasing air pollutants and toxics into the air.[62] Common air pollutants released during on-site incineration include sulfur dioxide, benzene, carbon monoxide, dioxin, and hydrocarbons.[63] Additionally, toxic air pollutants are often accidentally released into the air.[64]

C. Health and Environmental Issues

The population in Southern Louisiana, living in the bounds of Cancer Alley, is plagued with sickness.[65] Cancer, skin rashes, and respiratory problems are rampant.[66] It has become normal for kids to go to school with respirators and for the local newspaper's obituary section to be filled with reports of infant death caused by local pollution.[67] In the town of Ella, Louisiana, deaths by vinyl chloride and arsenic poisoning are common.[68] Despite the high occurrence of illness and death in Cancer Alley, state officials and the EPA deny any correlation between the area's polluted environmental conditions and deteriorating public health.[69] These officials hold strong to their belief, despite data showing that the air is highly polluted from industrial emissions and spills.[70] For example, in 2013, there were 331 accidents in Cancer Alley, which released two hundred thousand pounds of cyanide, two hundred thousand pounds of carbon monoxide, and more than eight hundred thousand pounds of sulfur dioxide into the air.[71]

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61 *Id.* at 149.

62 *Id.*

63 *Id.*

64 *Id.*

65 Les Stone, *Cancer Alley Louisiana*, VISION PROJECT, http://www.visionproject.org/20images/img_magazine/pdfs/canceralley_louisiana.pdf (last visited Oct. 2, 2016).

66 *Id.*

67 *Id.*

68 *Id.*

69 Lee, *supra* note 3.

70 *Id.*

71 *Id.*

D. Environmental Regulations Have Failed to Prevent the Development of Cancer Alley

The United States has established a myriad of environmental regulations to protect public health from the toxic chemicals and pollutants that result from modern industrial processes and production. Unlike other industrial areas around the United States, the industrial corridor in Louisiana is densely populated, allowing the pollution to show its impact on public health.[72] Cancer Alley is a warning, illustrating that current pollution and toxics regulations may not be strong enough to protect human health. There are many lessons to be learned from Cancer Alley's environmental state—lessons that emanate from flaws rooted in the U.S.'s environmental regulations and political control over such regulatory enforcement. Regarding the CAA alone, six major flaws are apparent. These flaws concern how the Act is designed and administered to protect public health against the impact of toxic environmental pollutants and how such regulation is approached by industrial, medical, and local political bodies. A discussion of these issues and the lessons to be learned from each follows. But first, this Note introduces and discusses portions of the CAA relevant to the problems in Cancer Alley.

II. ENVIRONMENTAL REGULATION, THE CLEAN AIR ACT, AND PROTECTION OF PUBLIC HEALTH

The CAA controls air pollution on a national level.[73] The CAA's enactment in 1970 established today's federal and state regulatory framework for air emissions from stationary and mobile sources.[74] The Act initiated four regulatory programs, two of which directly control air pollution from industrial processes in the interest of protecting public health—the National Ambient Air Quality Standards ("NAAQSs") and the National Emissions Standards for Hazardous Air Pollutants ("NESHAPs").[75]

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72 MISRACH & ORFF, *supra* note 2, at 151.

73 *Evolution of the Clean Air Act*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act (last visited Oct. 4, 2016).

74 *Summary of the Clean Air Act*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/laws-regulations/summary-clean-air-act (last visited Oct. 4, 2016).

75 *See id.*

A. Standards for Criteria Pollutants Under the CAA—NAAQSs

The CAA, under section 109, directs the EPA to establish NAAQSs for certain pollutants.[76] These standards set a legal limit on the concentration of regulated atmospheric pollutants.[77] NAAQSs are developed based on the latest science pertaining to each criteria pollutant and are created as two different standards.[78] Primary standards are developed to protect the health of sensitive populations, including the ill, children, and the elderly.[79] Secondary standards are developed to protect public welfare by guarding against decreased air visibility and damage to property, which includes animals, crops, vegetation, and buildings.[80] The EPA is required to promulgate these air quality standards with an adequate margin of safety to protect public health.[81]

The EPA has established NAAQSs for six criteria pollutants, which are used as indicators of air quality.[82] These pollutants include ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxide, and lead.[83] These standards are applied uniformly nationwide and are revised and updated every five years.[84]

The CAA divides the United States into air quality regions.[85] Within each region, states monitor air quality and report regularly to the EPA with the levels of criteria pollutants in the air.[86] State-reported data is used to determine whether each area is attaining sufficient air quality for each NAAQS.[87]

Regions that meet primary NAAQSs are "attainment" areas.[88] Attainment is determined on a pollutant-by-pollutant basis; this means that a region may be considered an attainment area for one criteria

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76 *See id.*

77 *Id.*

78 *See id.*

79 *NAAQS Table*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/criteria-air-pollutants/naaqs-table (last updated Dec. 20, 2016).

80 *Id.*

81 42 U.S.C. § 7409(b)(1) (2012).

82 U.S. ENVTL. PROTECTION AGENCY, *supra* note 79.

83 *Id.*

84 *Air Quality Designations 101*, U.S. ENVTL. PROTECTION AGENCY (July 25, 2017), https://www.epa.gov/sites/production/files/2017-09/documents/webinar.naaqs_designas.july_2017.pdf.

85 *See* 42 U.S.C. § 7407 (2012).

86 *See Air Pollution Monitoring*, U.S. ENVTL. PROTECTION AGENCY, https://www3.epa.gov/airquality/montring.html (last updated June 8, 2016).

87 *See id.*

88 *Air Quality Designations 101*, *supra* note 84, at 6.

pollutant, but not for another.[89] Attainment areas may be classified within three different classes.[90] Class I areas are given the highest protection and allow for the least amount of air pollution.[91] Class II areas allow for more air pollution to maintain and generate industrial activity.[92] Class III areas allow the most air pollution to promote industrial growth; no area in the United States has been given this designation.[93]

Regions where air quality does not meet primary NAAQSs are considered "nonattainment" areas.[94] The CAA aims to bring the air quality in such regions within attainment levels.[95]

Once a state determines whether it meets attainment for each NAAQS, the CAA requires each state to submit a State Implementation Plan ("SIP") to the EPA that lays out how the state plans to meet or maintain primary air quality standards.[96] A SIP must: (1) contain control measures and strategies, both developed through a public process; (2) be formally adopted by the state; and (3) be submitted by the state Governor to the EPA.[97] If an area is given a "nonattainment" designation, the SIP must also include: emission inventories, monitoring networks, air quality analysis data, modeling results from data, attainment demonstrations, enforcement mechanisms, and state regulations adopted to address air quality issues.[98]

NAAQSs are established in the interest of public health and are reviewed every five years based on scientific data.[99] During the review process for a criteria pollutant, the EPA develops a criteria document, which is a report that assesses scientific data concerning the health and welfare impacts of the pollutant.[100] The criteria document is then given to the Clean Air Scientific Advisory Committee ("CASAC"), which

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89 *See id.* at 4.

90 *Air Resource Management*, NAT'L PARK SERV., https://www.nature.nps.gov/rm77/air/define.cfm (last updated Feb. 5, 2004).

91 *Id.*

92 *Id.*

93 *Id.*

94 *Air Quality Designations 101*, *supra* note 84, at 6.

95 *See* 42 U.S.C. § 7409(b) (2012).

96 42 U.S.C. § 7410(a)(1) (2012).

97 *See id.* § 7410(a)(2).

98 *See id.* § 7410(a)(2)(I).

99 42 U.S.C. §§ 7409(b), (d).

100 *Process to Set National Ambient Air Quality Standards (NAAQS)* 1, ENVTL. COUNCIL AFFILIATES, http://environ-council.affi.org/AFFI/files/ccLibraryFiles/Filename/000000000568/WASHINGTON-663087-v3-Process%20to%20Set%20NAAQS.pdf (last visited Oct. 4, 2016).

reviews the information and responds to the EPA Administrator addressing any suggested change to the existing standard.[101] The EPA then submits the suggested standard for public comment.[102] After reviewing public comments, the EPA proceeds with a proposed and final rule on whether and how to revise the relevant NAAQS.[103]

B. Standards for Hazardous Air Pollutants Under the CAA—NESHAPs

The CAA additionally regulates air emissions of toxic substances not covered by the NAAQSs under the NESHAPs.[104] Hazardous air pollutants are pollutants that are "known, or suspected to cause, cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects."[105] The EPA recognizes 187 toxic air pollutants, which include benzene, toluene, and dioxin.[106]

Section 112 of the CAA addresses the emissions of hazardous air pollutants from both major sources and area sources.[107] Major sources are defined as any stationary source or group of stationary sources that emit, or can emit, ten tons or more annually of a hazardous air pollutant, or twenty-five tons or more per year of a combination of hazardous pollutants.[108] Area sources are considered any polluting source that is not a major source.[109]

The CAA requires the EPA to regulate hazardous air pollutants produced by both major and area source industrial facilities in two phases.[110] The first phase is technology-based.[111] The EPA is required to develop standards to control emissions from a specific industrial group, or source category; this standard is based on the emission level that is

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101 *Id.*

102 *Id.*

103 *Id.*; *see Reviewing National Ambient Air Quality Standards (NAAQS): Scientific and Technical Information*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/naaqs (last updated Oct. 16, 2017) (providing scientific review documents).

104 *See* 42 U.S.C § 7412 (2012).

105 *What are Hazardous Air Pollutants*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/haps/what-are-hazardous-air-pollutants (last updated Feb. 9, 2017).

106 *Id.*

107 *See* 42 U.S.C. §§ 7412(a)(1)–(2) (2012).

108 *Id*. § 7412(a)(1).

109 *Id.* § 7412(a)(2).

110 *Controlling Hazardous Air Pollutants*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/haps/controlling-hazardous-air-pollutants (last updated Mar. 17, 2017).

111 *Id.*

already being achieved by the best-controlled and lowest-emitting source(s) in the industry.[112] The second phase is health-based. The EPA must assess remaining health risks from each source category within eight years of setting the technology based standard.[113] This assessment is used to determine whether the set technology standard adequately protects public health within an ample margin of safety and protects against adverse environmental effects.[114]

C. Facility Operating Permits

Title V of the CAA requires all major and some minor sources to hold an operating permit.[115] An operating permit is a legally enforceable document that clarifies what pollution control requirements a facility must meet under federal or state regulations.[116] State and local agencies are responsible for reviewing permit applications and issuing permits.[117]

D. Finding Violations of the CAA

The EPA is required under the CAA to conduct compliance monitoring to ensure facilities comply with federal and state regulations.[118] This includes reviewing records, reports, work practices, emission discharge samples, and leak detection technology.[119] Additionally, the EPA is required to conduct initial performance compliance tests for all sources that emit hazardous air pollutants subject to NESHAPs.[120] The EPA may also require such facilities to install and operate continuous monitoring devices to demonstrate compliance.[121] Major sources are evaluated every two years.[122]

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112 *Id.*

113 *Id.*

114 *Id.*

115 *Title V Operating Permits, Basic Information about Operating Permits*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/title-v-operating-permits/basic-information-about-operating-permits (last updated Nov. 23, 2016).

116 *Id.*

117 *Id.*

118 *National Emission Standards for Hazardous Air Pollutants Compliance Monitoring*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/compliance/national-emission-standards-hazardous-air-pollutants-compliance-monitoring (last updated Jan. 29, 2018).

119 *Id.*

120 *Id.*

121 *Id.*

122 *Id.*

III. HOW ENVIRONMENTAL REGULATIONS UNDER THE CAA ALLOW FOR ENVIRONMENTAL AND PUBLIC HEALTH DEGRADATION

Cancer Alley's pollution is not adequately addressed under current air pollution regulations because industrial interests dominate the design, administration, and enforcement of the CAA in the region. Since the establishment of the CAA, progress has been made in reducing criteria pollutants and hazardous air toxics from the air.[123] Yet, despite federal and state efforts to maintain or reduce air pollution, Cancer Alley remains a toxic landscape in America. The prioritization of industrial interests over public health concerns is evident in: (1) NAAQS development and design standards under the CAA; (2) state leaders' actions regarding the administration of the CAA; and (3) the denial of air pollution's effect on public health and the actual amount of pollution being emitted.

A. NAAQS Development and Design Values

The CAA's first shortcoming, which allows for the perpetuation of the conditions in Cancer Alley, is inherent to the design of the regulation. Under the CAA, the EPA is required to promulgate NAAQSs to protect public health without regard to the cost of implementation to meet such standards.[124] Yet, when NAAQSs are being established or reviewed, industrial interests come into consideration, and two issues arise: (1) costs of implementation to meet a standard are inevitably taken into account, and (2) the standards are established based on averages that ignore the highest readings and discount high individual years.

1. When Establishing NAAQSs, Cost of Implementation Is Taken into Account, Despite the CAA's Prohibition Against Cost Considerations in Setting NAAQSs

The EPA considers costs when developing and reviewing NAAQSs, despite the CAA's explicit prohibition against considering costs in setting such standards.[125] Under section 109 of the CAA, the EPA is not

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123 *See Progress Cleaning the Air and Improving People's Health*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health#ghg (last updated Feb. 16, 2017).

124 *See* 42 U.S.C. § 7409(b) (2012).

125 Whitman v. Am. Trucking Ass'ns, Inc., 531 U.S. 457, 492–93 (2001); David M. Driesen, *Should Congress Direct the EPA to Allow Serious Harms to Public Health to*

required to set air quality standards that eliminate every health risk produced by an air pollutant.[126] Rather, the Act is flexible regarding NAAQSs to allow the EPA to set standards at levels which are feasible for industries to achieve without imposing financial burden.[127] Yet, the CAA explicitly prohibits the EPA to base NAAQSs in whole or in part upon economic costs of compliance.[128] The EPA has interpreted these standards to mean that the CAA prohibits the consideration of costs in determining what constitutes clean air, but that it authorizes the EPA to consider costs when reviewing implementation options for a clean air standard.[129] This creates a conflict for regulatory drafting, by which the EPA allows the financial interests of the industry to prevail. However, this result is not surprising. It is impossible for the EPA to consider whether a clean air standard is too expensive for an industry to meet without also considering how clean the air has to be under a particular NAAQS.

For example, in 2008, when the EPA revised the ozone NAAQS, it analyzed costs when making the final decision for the standard.[130] The EPA was undergoing its five-year review of the ozone standard for ambient air to ensure that the standard was adequate to protect public health and the environment.[131] The pre-2008 ozone standard, which had been in place since 1997, was set at parts per billion ("ppb"); however, scientific studies suggested that this standard was too high to protect the health of sensitive populations.[132] Additionally, this standard greatly exceeded the recommended level of fifty-one ppb by the World Health Organization ("WHO").[133] Therefore, the EPA's scientists and the CASAC recommended that the standard be revised to sixty ppb—a standard that only a handful of states would be able to meet.[134] Numerous state and local government officials, air pollution control authorities, environmental groups, and public health officials supported

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Continue—Cost-Benefit Tests and NAAQS under the Clean Air Act, 11 TUL. ENVTL. L.J. 217, 218 (1998).

126 *See Whitman*, 531 U.S. at 494.

127 *Id.* at 492–93.

128 *Id.* at 471.

129 Driesen, *supra* note 125, at 219.

130 Bob Weinhold, *Ozone Nation: EPA Standard Panned by the People*, 116 ENVTL. HEALTH PERSPECTIVES A 302, A 304 (2008).

131 *Id.*

132 *Id.*

133 *Id.*

134 *Id.* States that would be able to meet the 60 ppb standard included: Alabama, North Dakota, South Dakota, Montana, Washington, Oregon, and North Carolina. *Id.*

lowering the standard.[135] Yet, industrial organizations argued against any change because, in their opinion, the costs were too high and the benefits unclear.[136] The presiding EPA Administrator sided with the industrial organizations and rejected the health-based recommendation of the CASAC.[137] He approved the reduction at seventy-five ppb.[138] Following the promulgation of this standard, the CASAC review panel wrote a letter to the Administrator, stating that it did not support the new primary ozone standard because it was not sufficient to protect health.[139] The CASAC review panel urged the Administrator to reduce the standard to sixty to seventy ppb.[140] It recommended this course of action because the seventy-five ppb standard failed to satisfy the explicit requirement in the CAA that an adequate margin of safety be incorporated into the standard to protect all individuals, including sensitive populations.[141] But, as illustrated here, the EPA does not adhere to the CAA's prohibition against considering costs—rather, industrial interests sway the agency at a cost to human health.

2. NAAQS Design Values Are Based on Averages That Ignore the Highest Air Emission Readings and Discount Emissions from High Individual Years.

A NAAQS design value is a calculation based on data, typically an average or percentile, which determines whether a location meets attainment under the NAAQSs.[142] Each criteria air pollutant has its own established design value.[143] Because this method for determining whether an area meets attainment for an air quality standard is based on averages and percentiles—rather than looking at the entire set of data from a location—it can lead to skewed results.[144] A region could occasionally exceed safe air quality standards but still meet attainment if those readings are not included in attainment determinations.[145] For example, the ozone design value is "based on the three-year average of

135 Weinhold, *supra* note 130, at A 304.

136 *Id.*

137 *Id.*

138 *Id.*

139 *Id.*

140 *Id.*

141 *Id.*

142 *Air Quality Design Value*, U.S. ENVTL. PROTECTION AGENCY, https://www.epa.gov/air-trends/air-quality-design-values (last updated Sept. 29, 2016).

143 U.S. ENVTL. PROTECTION AGENCY, *supra* note 79.

144 *See id.*

145 *Id.*

the fourth highest reading over an eight-hour period."[146] This design value "ignores the three highest readings and discounts high individual years."[147]

Overall, this method of assessing attainment is lenient on industry—it allows for air pollution to exceed safe standards in air quality regions on occasion, without holding industry accountable for posing a risk to public health caused by their emissions. To reorient design values towards health, as is the purpose of such standards under the CAA, the design values for each pollutant would need to be changed to allow zero exceedances of the set NAAQS. This practice, as recommended by the WHO,[148] would fulfill the purpose of NAAQSs—to protect public health and the environment—while also holding industry accountable for: (1) causing their designated air quality region to exceed safe air quality levels; and (2) posing a risk to public health and the environment.

B. State Leniency in the Administration of the CAA

State administration of the CAA gives rise to the second shortcoming in how the Act perpetuates the conditions in Cancer Alley. State officials tasked with administering parts of the Act do so leniently when industry interests are concerned in order to appear friendly to industry and promote economic growth within their borders. As a result, industrial and economic interests are prioritized over public health, aggravating the current environmental and health crisis in the region.

State officials' leniency towards industrial interests is evident in the actions of community, legal, and state leaders in Louisiana; but, direct evidence of such leniency is hard to find. These individuals do not explicitly state they are lenient on industry, compromising citizens' interests in health and the environment. Beyond the fact that Cancer Alley is home to over 150 major industrial facilities and the effects of petrochemical pollution on the environment are visibly evident in the landscape, direct evidence is scarce. However, such evidence may be gleaned from negotiations between state officials and industries looking to make Louisiana their home. The strongest example comes from 1998. Although dated, it is still relevant for illustrating how state governments and local organizations bring industrial interests into the administration of the CAA.

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146 Weinhold, *supra* note 130, at A 304.

147 *Id.*

148 *Id.*

In 1998, citizens in Convent, Louisiana were alarmed by the lack of procedures followed by the Louisiana Department of Environmental Quality ("LDEQ") in filing for an air pollution permit for Shintech, a Japanese conglomerate that was planning to build a $700 million polyvinyl chloride ("PVC") factory in town.[149] Convent was already home to six other chemical plants.[150] Like past petrochemical corporations who entered the community, Shintech was marketing itself as an economic spark.[151] Shintech preached promises of jobs and growth in tax revenue.[152] However, Shintech did not mentioned the air-quality issues its plant might cause, nor the fact that its facility would include an on-site waste incinerator located less than two miles from an elementary school.[153] Indeed, Shintech would bring more to the community than jobs; the company was a manufacturer of PVC, a chemical that releases the carcinogen dioxin into the air when processed and burned.[154]

Citizens, concerned about Shintech contributing further to the degradation of the local environment, carcinogenic pollution, and the decay of their community, attended the reopened air permit hearing concerning the new facility.[155] Shintech's previously applied-for permits were withheld by the U.S. EPA because the permit application contained over fifty technical errors—none of which were flagged by the Region 6 EPA, which serves the U.S. petrochemical hub in Louisiana and Texas.[156] Citizens feared that state officials were acting too lenient toward industries because there was evidence of multiple occurrences of state and local leaders endorsing industry interests over local concerns.[157] For example, the Louisiana governor granted a ten-year industrial tax exemption for $130 million to Shintech on the condition that it be located in Convent.[158] While this tax break offered to bring 165 new jobs to the town, it also diverted valuable tax funds, which would have been collected from Shintech, away from the local community.[159] Similarly, industrial interests prevailed when a Louisiana judge granted the issuance of county water permits to Shintech, which authorized an

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149 Woody Justice, *PVC: Poor, Victimized Community*, HARBINGER (Sept. 8, 1998), http://www.theharbinger.org/xvii/980908/milligan.html.

150 *Id.*

151 *Id.*

152 *Id.*

153 *Id.*

154 MISRACH & ORFF, *supra* note 2, at 149.

155 Justice, *supra* note 149.

156 *Id.*

157 *Id.*

158 *Id.*

159 *Id.*

estimated daily discharge of eight million gallons of contaminated wastewater into the Mississippi River.[160] Further, actions of local parish council officials evidence the endorsement of industrial interests.[161] The Convent Parish council members reportedly provided Shintech with personality profiles of all council members, including their attitudes towards industry, when Shintech was originally trying to site its facility in Convent.[162] The officials shredded the documents when asked to make them public to the community.[163]

After two years of community activism by Convent citizens opposing the Shintech PVC plant, Shintech announced that it was withdrawing its proposal and instead planned to build a smaller PVC plant in the nearby Plaquemine Parish.[164] Although this was a victory for the citizens of Convent, this narrative reveals much more. The public's fight with Shintech revealed state, agency, and local leader's advocacy for petrochemical industrial interests over the protection of public health.

C. Denial of Industrial Pollution's Health Impacts and Accidents

Louisiana's lenient enforcement of the CAA, spurred by general denial of the impact local pollution has on public health, gives rise to the third shortcoming in how the Act perpetuates the conditions in Cancer Alley. State officials, governmental organizations, and industrial entities deny the extent to which industrial pollution affects both public health and the environment. This leads to two issues with the enforcement of the CAA. First, Louisiana officials, relying on flawed toxicology studies and the opinions of medical professionals who disregard pollution when providing preventative health advice, deny that pollution from industries in the region is causing any abnormal health effects for its citizens. Second, Louisiana officials often turn a blind eye to industrial entities' neglectful reporting practices when it comes to documenting accidental toxic air pollution releases. Both of these issues enable state officials to ignore the need for stronger enforcement of pollution controls in Cancer Alley.

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160 *Id.*

161 *Id.*

162 *Id.*

163 *Id.*

164 Alejandro Colsa Perez, *Shintech PVC Plant in Convent, LA, USA*, ENVTL. JUSTICE ATLAS, https://ejatlas.org/conflict/shintech-pvc-plant-in-the-cancer-alley-usa (last visited Feb. 18, 2018).

1. Denial of Health Impacts from Industrial Pollution

Medical providers and agents who study toxicology in Cancer Alley deny health impacts from industrial air pollution in the local environment. However, their denial is flawed and misleads citizens and regulatory officials in the area into thinking petrochemical-related air pollution poses insignificant risks to human health.

a. Denial of Health Impacts by Medical Providers

Louisiana officials, the petrochemical industry, and medical providers dismiss the fact that the health issues and ailments that affect the citizens of Cancer Alley are the product of local air pollution created by the petrochemical industry.[165] Rather, these entities claim that the local environment's air pollution levels are safe and that health issues suffered by local citizens are the result of unhealthy lifestyles.[166] Such agents claim that it is hard to link high rates of cancer and other ailments directly to local environmental factors given the prevalence of other high-risk behaviors, like smoking and consumption of fast food, which are common among residents in Southern Louisiana.[167]

One reason state officials discredit the tie between ailments suffered by individuals in Cancer Alley and regional petrochemical pollution is because major public health institutions do not consider pollution a pressing health risk.[168] Public health institutions highlight the risks from heredity and lifestyle factors, like smoking or eating too much meat, but do not consider air pollution as a significant risk when providing advice on preventative health measures.[169] For example, the American Cancer Society's website outlines methods for cancer prevention, focusing on smoking, obesity, genetics, and aspirin consumption—but does not address industrial pollution.[170] Similarly, the Center for Disease Control's ("CDC") Comprehensive Control Plan for Louisiana 2011-2015 excludes pollution as a health risk that may lead to cancer.[171] The plan states that an individual may reduce his cancer risk by decreasing obesity, minimizing tobacco exposure, and increasing protective

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165 *See* Lee, *supra* note 3.

166 *Id.*

167 *Id.*

168 *See* Heather Rogers, *Erasing Mossville: How Pollution Killed a Louisiana Town*, INCEPTOR (Nov. 4, 2015), https://theintercept.com/2015/11/04/erasing-mossville-how-pollution-killed-a-louisiana-town/.

169 *Id.*

170 *Id.*

171 *Id.*

behaviors surrounding sun exposure.[172] Again, carcinogens released into the air by the petrochemical industry are ignored.

Because environmental factors have been written off as negligible in causing health problems in Cancer Alley, regional hospitals do not take environmental factors into account when considering the cause of patients' diagnoses.[173] A spokesperson from the local Lake Charles Memorial Health System said that they "don't want to get involved in the topic [of industrial pollution and toxics] because it's something controversial."[174] Similarly, the spokesperson for M.D. Anderson Center in Houston, one of the country's most preeminent and innovative treatment and research centers, stated, "[w]e just don't have any faculty that works on pollutants and cancer, other than tobacco."[175] This disregard of pollution as a substantial public health issue by medical providers—arguably the strongest watchdogs concerning human health—is concerning; the medical field would rather ignore a possible source of cancer altogether in advising individuals on health risks than address a controversial topic. Again, industrial interests are put before public health.

Like most Americans, the citizens of Cancer Alley are accustomed to seeing environmental pollution as acceptable and this belief shapes popular perceptions of chronic ailments.[176] Many individuals ignore toxic chemicals and choose to believe that their diseases are strictly inherited or the result of poor lifestyle choices.[177] These individuals purposefully remain ignorant to the fact that the products—or in the case of Cancer Alley, the jobs—that support their life are actually poisoning it.[178]

b. Denial of Health Impacts by Toxicology Studies

Like the medical industry, toxicologists who study industrial air pollution's effects on Cancer Alley's residents discredit local petrochemical pollution as a possible cause of health problems plaguing the area.[179] However, as a recent congressional investigation found, studies performed by the Agency for Toxic Substances and Disease

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172 *Id.*

173 *Id.*

174 *Id.*

175 *Id.* M.D. Anderson Center provides care for many cancer patients who reside in Southern Louisiana. *Id.*

176 *Id.*

177 *Id.*

178 *See id.*

179 *See id.*

Registry ("ATSDR") have used flawed research design to purposefully dilute results when performing studies in Cancer Alley.[180] The ATSDR is a public health agency under the U.S. Department of Health and Human Services that claims to use the best science to protect public health by preventing harmful exposure and diseases related to toxic substances.[181]

The clearest example of the ATSDR's flawed research into the exposure of residents to toxic substances in Cancer Alley dates back to 1998 in Mossville, Louisiana.[182] Mossville is a small, predominantly African American town on the West side of the Mississippi, slightly removed from the traditional bounds of Cancer Alley.[183] The ATSDR completed a study in 1998 that found dangerous dioxin levels in the blood of Mossville residents.[184] After receiving the results, the ATSDR did not disclose them to the community.[185] Instead, the ATSDR met privately to discuss the results with industry representatives, the current state Governor, and state environmental and public health agency administrators.[186] Residents were not aware of their high blood-dioxin levels until the data was released through the local news.[187]

As part of the toxicology investigation, the ATSDR hired Dr. Peter Orris, an environmental specialist.[188] Orris found that the blood contaminants in Mossville residents appeared to be locally generated and that there was an urgent need to monitor chemical releases from local petrochemical plants to identify the source of the dioxin found in the blood samples.[189] However, the ATSDR disavowed Orris's work and recommendation and initiated two further studies, which generated misleading information.[190] First, in 2001, the ATSDR began an investigation that analyzed dioxin in the community's built environment.[191] The ATSDR sampled food, yard soil, and indoor dust for dioxin; however, this study did not take any air samples.[192] From this

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180 *Id.*

181 INTRODUCING ATSDR, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (2015).

182 Rodgers, *supra* note 168.

183 *Id.*

184 *Id.*

185 *Id.*

186 *Id.*

187 *Id.*

188 *Id.*

189 *Id.*

190 *Id.*

191 *Id.*

192 *Id.*

study, the ATSDR concluded that the high dioxin levels in residents' blood were caused by fish consumption, not dioxin emissions in the local air.[193] In 2007, Wilma Subra, chemist and former vice-chair of EPA's National Advisory Council on Environmental Policy and Technology, concerned about the results of the ATSDR's 2001 study, compared dioxin compounds—called congeners—in residents' blood with those found in pollution at nearby plants.[194] Dioxin congeners are like a fingerprint, allowing for fairly accurate matching between dioxin deposits in the environment and its source.[195] Subra found that seventy-seven percent of the most concentrated congeners in local residents' blood samples were identical to those found at nearby petrochemical plants, which established a casual connection between local industry dioxin pollution and residents' blood dioxin levels.[196]

In 2002, the ATSDR initiated its second test and performed a large-scale screening of individuals across the Calcasieu Parish, where Mossville is located, to once again analyze dioxin levels in residents' blood.[197] Departing from the first study design in 1998, this study tested dioxin levels in twenty-two Mossville residents living near the petrochemical plants and 272 residents of the greater Calcasieu Parish, whose homes were farther removed from industrial sites.[198] The ATSDR minimized the actual problem in Mossville by diluting such residents' high dioxin blood levels by including residents in less polluted areas.[199] Therefore, the alarming dioxin rates in Mossville were neutralized.[200] From this study, the ATSDR issued a press release, announcing "ATSDR study finds dioxin levels in Calcasieu Parish similar to National Levels."[201] While this statement is technically true, it ignores the real problem in Mossville—that the closer residents live to the petrochemical plants, the higher the dioxin levels in their blood.[202] This study ultimately misled local residents into believing that the local petrochemical industry's toxic air emissions were not the cause of their health issues.[203]

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193 *Id.*
194 *Id.*
195 *Id.*
196 *Id.*
197 *Id.*
198 *Id.*
199 *Id.*
200 *Id.*
201 *Id.*
202 *Id.*
203 *Id.*

The ATSDR's practice of intentionally diluting toxicology results when studying industrial pollution's link to an area's local health issues is not unique to Cancer Alley.[204] This pattern is repeated across the United States—the ATSDR comes into a town, collects data, and then produces results that obscure any possible link between toxins and disease among local residents.[205] For example, in Midlothian, Texas, the ATSDR determined that a cement factory burning hazardous waste created no health risks for local populations, despite the area's cluster of cancer cases.[206] In Elkhard, Indiana, the ATSDR found the release of solvents from a nearby group of factories into drinking wells was insufficient to have caused the leukemia epidemic in the area.[207] In rural Pennsylvania, the ATSDR told families who lived by a toxic waste dump that the waste had no relation to their high incidence of an extremely rare cancer.[208] Like Mossville, these communities were victims of flawed study design and information release.[209]

In 2009, Congress became aware that the ATSDR's studies "lack the ability to properly attribute illness to toxic exposures" and that "methodologies used by the agency to identify suspected environmental exposures to hazardous chemicals [were] doomed from the start" due to faulty research design.[210] Congress's investigation brought out the flaws and corrupt pro-industry stance of the ATSDR.[211] Christopher De Rosa, former director of toxicology and environmental medicine at the ATSDR, came forward during Congress's investigation and reported the ATSDR's flawed methods.[212] He revealed that when the ATSDR scientists discovered condemnatory data, such as tripled dioxin levels in Mossville residents, the common response was to "back away" because staff who found industry accountable were pushed out of their jobs.[213] He expounded that community concerns were purposefully explained away.[214]

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204 *Id.*

205 *Id.*

206 *Id.*

207 *Id.*

208 *Id.*

209 *Id.*

210 *Id.*

211 *Id.*

212 *Id.*

213 *Id.* In fact, De Resa lost his job at the ATSDR after speaking up about dangerous levels of formaldehyde in FEMA trailers that were given to Hurricane Katrina survivors. *Id.*

214 *Id.*

The ATSDR skews toxicology results because there are incentives to avoid linking industrial pollution with chronic illness.[215] If diseases were found to be linked to industrial emissions, residents and state governments would be justified in establishing stricter pollution and industry controls.[216] However, strict pollution controls mark a state as "unfavorable to business," ultimately costing the state valuable jobs and tax revenue.[217] Additionally, the ATSDR fears that powerful corporations accused of causing public health problems would turn to the court system and increase lobbying in Congress, which could ultimately backfire on the Agency by having their political and financial support disappear.[218] Therefore, by designing studies that avoid linking the petrochemical industry to environmental and public health issues, these possible consequences may be avoided.[219] The ATSDR protects its own interests, as well as those of industry and state economies, all to the detriment of public health. Ultimately, this violates the ATSDR's purpose for existence and unquestionably burdens low-income individuals who live near toxic industrial plants.

2. Industry's Failure to Report Toxic Air Emission Release Accidents

Not only do Louisiana officials deny that petrochemical air emissions in Cancer Alley contribute to health issues present in the region, but such officials also turn a blind eye to industrial entities' neglectful reporting practices when it comes to documenting accidental toxic air pollution releases. The amount of toxins released into the air by Louisiana's petrochemical industry is vastly underreported.[220] Petrochemical facilities in Cancer Alley are legally allowed to pump out millions of pounds of air pollution each year into the local environment; yet, leaks, spills, and questionable self-reporting methods are likely to make this amount larger than recorded.[221] The Louisiana Bucket Brigade documented 331 reported industrial accidents in the state during 2013—amounting to an accident almost every day.[222] These accidents released an additional two hundred thousand pounds of hydrogen cyanide, two

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215 *Id.*

216 *Id.*

217 *Id.*

218 *Id.*

219 *Id.*

220 Lee, *supra* note 3.

221 *Id.*

222 *Id.*

hundred thousand pounds of carbon monoxide, and more than eight hundred thousand pounds of sulfur dioxide into the local air.[223]

The Toxic Release Inventory ("TRI") is a mandatory reporting program that requires industries that handle hazardous chemicals to report how they manage, recycle, treat, and release such chemicals into the environment.[224] The TRI compiles reported information into a public database that provides a toxic release and waste management overview at the local, state, regional, and national level.[225] The inventory ultimately tracks management of toxic chemicals that pose a threat to human health and the environment.[226] Data collected from the TRI may be used by states to: (1) assess where to target state environmental initiatives to reduce toxic emissions; and (2) to determine the risk toxic emissions pose to a local community by exceeding safe air quality standards under the CAA.[227] A state's use of TRI factors for these purposes plays into its enforcement of the CAA.

While the TRI provides an overview of reported toxic releases, it is unlikely that its data is wholly reliable.[228] Individual industrial entities self-calculate and self-report TRI data, and are incentivized to under-report major chemical accidents because accidents may cause the entities' annual emissions to exceed CAA permit release limits.[229] In fact, the record of reported accidental releases shows that such spills typically exceed legal release limits.[230] For example, since 1988, Monsanto has illegally injected 116 million pounds of formaldehyde—an anticipated human carcinogen—into the ground.[231] Shell Chemical has accidentally released 1,917,606 pounds of benzene—a known carcinogen—into the air since 1988.[232] Geismar accidentally released eight thousand pounds of toxic materials, including ethylene dichloride, hydrogen chloride, and vinyl chloride into the air in 1996, which formed a dense chemical cloud over the surrounding community.[233] Knowing that these are the types of accidents that are reported, it is hard to

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223 *Id.*

224 U.S. ENVTL. PROTECTION AGENCY, TOXICS RELEASE INVENTORY PROGRAM, EPA-260-R-002-004, HOW ARE THE TOXICS RELEASE INVENTORY DATA USED?—GOVERNMENT, BUSINESS, ACADEMIC, AND CITIZEN USES 12–13 (2003).

225 *Id.* at 1.

226 *Id.* at 2.

227 *Id.* at. 12–13.

228 *See* MISRACH & ORFF, *supra* note 2, at 151.

229 *Id.*

230 *Id.*

231 *Id.*

232 *Id.*

233 *Id.*

imagine how many are kept a secret, blinding the environmental regulatory world to the true amount of pollution in Cancer Alley.

IV. LESSONS TO BE LEARNED FROM CANCER ALLEY

Cancer Alley in Louisiana exists, despite environmental regulations such as the CAA, because industrial interests infiltrate this environmental regulation at the design, implementation, and enforcement level, ultimately hindering its purpose to protect public health and the environment. At the regulatory design level, the CAA's air quality standards are designed to ignore instances of industry's highest emissions and take cost of implementation into account over public health protection.[234] At the administration level, state officials, in an effort to promote their state as industry-friendly, are lenient towards industrial interests.[235] This leads to states and communities with leaders who protect jobs and tax-income over public safety and air quality.[236] Lastly, at the enforcement level, the government and industry deny environmental and health issues, leading to improper implementation of environmental standards.[237] The true health effects of air pollution allowed under current regulatory standards are masked by studies designed to take blame away from industry stakeholders.[238] Therefore, medical providers ignore air pollution as a cause of health problems and toxic air emission accidents are often not reported as federally required by the TRI.[239] This leaves a string of communities bordering the Mississippi River from Baton Rouge to New Orleans with a toxic pollution problem that has not been addressed.

A. Cancer Alleys Around the World

The concept of Cancer Alley is not unique to Louisiana—toxic-polluting industries with deep roots in river communities exist across the world.[240] Each of these communities possesses its own story of pollution, economic disparity, and environmental and health degradation from toxic exposure.[241] For example, in Cubatao, Brazil, also known as the "Valley

234 *See supra* text accompanying notes 123–47.

235 *See supra* text accompanying notes 148–63.

236 *Id.*

237 *See supra* text accompanying notes 164–232.

238 *See supra* text accompanying notes 178–218.

239 *See supra* text accompanying notes 164–74.

240 *See* MISRACH & ORFF, *supra* note 2, at 167.

241 *Id.*

of Death," two million people are affected by the 130 local petrochemical and metallurgical industries clustered on the banks of the Cubatao River.[242] In Spolana, Czech Republic, individuals continue to be affected by the Spolana Neratovice chemical factory, which, although closed for three decades, contaminated the surrounding environment with high levels of dioxin, pesticides, benzene, chloroform, and chlorine.[243] In Sumgayit, Azerbaijan, decades of chemical manufacturing by twenty-three local factories has affected around 275,000 people with elevated cancer rates and genetic mutations.[244] This area is known for its "Baby Cemetery," due to the high death rate of infants affected by industrial pollution.[245] And in Bhopal, India, a 1984 release of the toxic gas methyl isocyanate from the Union Carbide pesticide plant killed fifteen thousand people overnight, and continues to affect people to this day.[246]

From Mexico City, Mexico to Lanzhou, China, individuals in communities across the world bear the burden of industrial pollution. However, unlike citizens in the United States, residents of these developing countries typically have fewer opportunities to oppose toxic emission sources.[247] Other countries look to the United States in developing their laws and standards. Yet, the United States, like so many other countries—developing and developed—has a cancer alley. Therefore, it is evident that the United States' strict environmental regulations and standards may not be strong enough to protect public health. However, by looking to the reasons why the United States possesses a cancer alley despite its strict environmental regulations, such as the CAA, lessons may be gleaned and shared with the developing world on how to avoid the creation of toxic industrial communities when establishing their own environmental regulations.

B. Lessons to be Learned

Cancer Alley is the product of small failures in regulatory design and big interests in industry, which has led to the creation of a toxic landscape. The area is unique in that the community's health is a direct reflection of local industries' toxic effect on the environment. Unlike

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242 *Id.* at 166.

243 *Id.*

244 *Id.* at 167.

245 *Id.*

246 *Id.*; *see also* Alan Taylor, *Bhopal: The World's Worst Industrial Disaster, 30 Years Later*, ATLANTIC (Dec. 2, 2014), https://www.theatlantic.com/photo/2014/12/bhopal-the-worlds-worst-industrial-disaster-30-years-later/100864/.

247 MISRACH & ORFF, *supra* note 2, at 167.

other industrial communities in the United States, Cancer Alley is highly populated, allowing for the effects of the petrochemical industry's devastating pollution to become visible as a public health issue. Yet, what does this area teach us about our environmental regulations' design, enforcement, and value to society at large? Through the lens of the CAA, Cancer Alley teaches five major lessons:

First, the CAA explicitly prohibits the EPA to consider implementation costs when setting NAAQSs; yet, the regulation has been interpreted to allow the EPA to considering costs to an extent to avoid ruining industry with implementation burdens. While environmental regulations must necessarily take cost into account to avoid industry destruction, it is key that public and environmental health remain the focus of discussion on setting such regulations. Even if industries complain that a regulation is cost prohibitive, the regulation should still be set at the recommended standard to protect health, forcing innovation in the industrial sector.

Second, design values used in setting NAAQSs are flawed, allowing an industry's highest pollution emission readings to be ignored in determining whether that industry meets attainment. This practice is evidently pro-industry and works against the purpose of the CAA. Guidelines, like those followed by WHO, which do not allow emission exceedances past established safe levels,[248] are a more effective approach to fulfill the goal of the environmental regulation—to protect ecological and public health.

Third, community and state leaders are lenient towards industrial entities. Although this stance is arguably good for a community's economic well-being, it works against environmental and public health. Leaders must learn to balance economic interests with the value of life. While a new industrial plant may provide new jobs, is that job worth more than the health of the worker himself?

Fourth, policymakers must begin to recognize that toxic industrial pollution causes significant health impacts. This requires: (1) changing the integrity and design of studies on toxic pollution's impact on health to accurately report issues in communities bordering industrial plants; and (2) increasing awareness, studies, and prevention guidelines in the medical field concerning toxic pollution as a cause of health issues.

Fifth, laws calling for industries, who have an interest in minimizing attention to their toxic emissions and waste, to self-regulate and self-report emissions and spills of wastes into the environment are not conducive to actually monitoring the true amount of pollution released

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248 Weinhold, *supra* note 130, at A 304.

by industrial plants. Methods to track pollution emission data, which is then used by the federal government, states, and organizations to identify health risks, should not be left to the industry itself. These laws need to be revised to promote accuracy and integrity.

CONCLUSION

The CAA, despite its purpose to protect the environment and human health, fails to protect vulnerable communities, like those in Cancer Alley, because the design and administration of the regulation are influenced by pro-industry interests. Unlike other industrial areas around the United States, the industrial corridor in Louisiana is densely populated, allowing local petrochemical pollution to show its impact on public health.[249] Cancer Alley is a warning, showing that current pollution and toxics regulations may not be strong enough to protect human health. The only solution moving forward would be to remove petrochemical-industrial interests from the regulatory process—a difficult solution to implement given modern society's reliance on petroleum-based products.

[249] MISRACH & ORFF, *supra* note 2, at 151.