UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Comments on Draft Scopes of the Risk Evaluations for the
First Twenty High-Priority Substances under the Toxic Substances Control Act

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Submitted via Regulations.gov

Docket Nos.:

1. 1,3-Butadiene, CASRN 106-99-0, Docket ID number: EPA-HQ-OPPT-2018-0451
2. o-Dichlorobenzene (Benzene, 1,2-dichloro-), CASRN 95-50-1, Docket ID number: EPA-HQ-OPPT-2018-0444
3. p-Dichlorobenzene (Benzene, 1,4-dichloro-), CASRN 106-46-7, Docket ID number: EPA-HQ-OPPT-2018-0446
4. 1,1-Dichloroethane, CASRN 75-34-3, Docket ID number: EPA-HQ-OPPT-2018-0426 ("1,1-DCA")
5. 1,2-Dichloroethane, CASRN 107-06-2, Docket ID number: EPA-HQ-OPPT-2018-0427 ("EDC")
6. trans-1,2- Dichloroethylene (Ethene, 1,2-dichloro-, (1E)-), CASRN 156-60-5, Docket ID number: EPA-HQ-OPPT-2018-0465
7. 1,2-Dichloropropane, CASRN 78-87-5, Docket ID number: EPA-HQ-OPPT-2018-0428 ("1,2-DCP")
8. Ethylene dibromide (Ethane, 1,2-dibromo-), CASRN 106-93-4, Docket ID number: EPA-HQ-OPPT-2018-0488 ("EDB")
9. 1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta [g]-2-benzopyran, CASRN 1222-05-5, Docket ID number: EPA-HQ-OPPT-2018-0430 ("HHCB")
10. 4,4'-(1-Methylethylidene)bis[2, 6-dibromophenol], CASRN 79-94-7, Docket ID number: EPA-HQ-OPPT-2018-0462 ("TBBPA")
11. Phosphoric acid, triphenyl ester, CASRN 115-86-6, Docket ID number: EPA-HQ-OPPT-2018-0458 ("TPP")
12. 1,1,2-Trichloroethane, CASRN 79-00-5, Docket ID number: EPA-HQ-OPPT-2018-0421 ("1,1,2-TCE")
13. Tris(2-chloroethyl) phosphate (Ethanol, 2-chloro-, 1,1',1"-phosphate), CASRN 115-96-8, Docket ID number: EPA-HQ-OPPT-2018-0476 ("TCEP")

May 26, 2020

Earthjustice * Community In-Power and Development Association * Concerned Citizens of St. John * Louisiana Bucket Brigade * Louisiana Environmental Action Network * Mossville Environmental Action Network * RISE St. James * Pastor Harry Joseph, Sr. * Genevieve Butler * 350 New Orleans

The undersigned organizations ("Commenters") submit these comments on the draft scope documents released by the United States Environmental Protection Agency ("EPA") in connection with the twenty chemicals that were designated "high priority" under the Toxic Substances Control Act ("TSCA") on December 20, 2019 ("TSCA high-priority chemicals").

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INTRODUCTION and SUMMARY

The revised TSCA offers EPA an unprecedented opportunity to protect vulnerable and chemically over-burdened populations—including people living near facilities that manufacture, process, use, release, dispose, and recycle chemicals; children; workers; the elderly; and others who may be at greater risk than the general population—from toxic chemicals. But this promise will only be fulfilled if EPA's risk evaluations take into account the full range of intended, known, and reasonably foreseen ways that people across the country—both the general population and "potentially exposed and susceptible subpopulations"—are or will be exposed to the TSCA high-priority substances during the full life-cycle of those chemicals. Because EPA's scope documents must identify the hazards, exposures, conditions of use, and potentially exposed and susceptible subpopulations that will ultimately be included in the risk evaluation, it is also critical that the scopes identify all of this information. EPA's draft scopes for the TSCA high-priority chemicals fail to do so. For this reason, EPA's draft scopes do not meet the requirements of TSCA, EPA's implementing regulations, EPA's own guidance documents, and longstanding Executive Orders.

First, in particular, the draft scopes fail properly to identify "the potentially exposed or susceptible subpopulations [EPA] expects to consider" in the risk evaluation."[1] Rather than identify subpopulations specific to a chemical, in each draft scope EPA merely parrots the definition of potentially exposed or susceptible subpopulations. This is not sufficient.

As part of identifying populations with specificity, EPA must identify and consider people living in geographic proximity to high-volume chemical facilities, particularly those living in the following highly industrial regions: the Greater Houston Area; in and around Port Arthur, Texas; Mossville, Louisiana and nearby towns; and communities along the Mississippi River between Baton Rouge and New Orleans in an area known as Cancer Alley. Because of the close proximity of communities in these regions to multiple facilities releasing large volumes of high-priority chemicals, these populations are more exposed than the general public to high-priority chemicals. Moreover, these communities must also be considered "potentially exposed or susceptible subpopulations" because they are more susceptible to harm from exposure to these chemicals than the general population. This increased susceptibility is due to intrinsic factors, such as underlying disease, and extrinsic factors, such as psychosocial stress related to factors such as poverty.

Second, TSCA requires EPA to conduct risk evaluations based on "reasonably available" information.[2] EPA must use its authority under TSCA to fill gaps in information by asking

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[1] 15 U.S.C. § 2605(b)(4)(D); 40 C.F.R. § 702.41(c)(2).

[2] 15 U.S.C. § 2625(k); *see also* 40 C.F.R. § 702.33 (defining this term to include not only "information that EPA possesses" but also information that EPA "can reasonably generate, obtain, and synthesize for use in risk evaluations.").

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industry and other government agencies for release, waste transfer, and other exposure data. This is especially the case for the six high-priority chemicals that are not on the U.S. Toxics Release Inventory ("TRI"). EPA must also seek input from exposed communities because they have information that is directly relevant to understanding the conditions of use of the TSCA high-priority chemicals, as well as information about exposure to these substances.

Third, EPA's identification of conditions of use should take into account facilities that manufacture, process, distribute, use, or dispose of the high-priority chemicals and that have a documented history of spills, leaks, fires, and explosions such that these incidents occur with regularity and are "reasonably foresee[able]" under TSCA—as is the case in the four aforementioned areas in Texas and Louisiana.[3]

Fourth, the draft scopes fail to meet TSCA requirements because EPA attempts to carve out assessment of certain conditions of use from its risk evaluations if other statutes address the pathway of exposure. This fails EPA's obligation to determine whether the substance presents unreasonable risk, regardless of whether a substance is regulated under another statute. Other statutes do not regulate substances based entirely on risk, and do not consider all sources that pollute the environmental media the law is designed to protect, so even if a substance is regulated under other laws, risk may remain unreasonable.

Last, TSCA requires that a scope describe "the hazards . . . the Administrator expects to consider."[4] For a number of high-priority chemicals EPA has not met this requirement. Instead, EPA offers only that it plans to identify hazards later, and/or may update the list it provides in the draft scopes.[5] This approach deprives the public of essential information and necessitates that EPA publish revised draft scopes that are available for public comment.

INTERESTS OF THE SIGNATORY ORGANIZATIONS

The following signatory organizations represent residents living in areas with concentrations of industrial facilities that release large volumes of high-priority and other toxic chemicals. The signatory individuals are residents of areas with facilities that release large volumes of high-priority and other toxic chemicals. For these reasons, the organizations and their members, as well as these individuals, are concerned with EPA's draft scopes that fail to identify communities such as theirs as potentially exposed and vulnerable subpopulations.

Community In-Power and Development Association ("CIDA") is a 501(c)(3) non-profit organization that works on behalf of residents of the town of Port Arthur, Texas and neighboring communities, such as those in Orange, Beaumont, Groves, Baytown, and Nederland, Texas. CIDA aims to protect those communities' health and well-being from pollution and safety

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[3] 15 U.S.C. § 2602(4); *see* section III.A. *infra*.

[4] 15 U.S.C. § 2605(b)(4)(D).

[5] Draft Scope for Formaldehyde at 60; Draft Scope for 1,3-butadiene at 28.

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threats caused by the neighboring chemical manufacturers, refineries, and other industrial facilities. Hilton Kelley, a U.S. Navy Veteran, founded CIDA in 2000 to address environmental injustices in his hometown of Port Arthur and along the Texas Gulf Coast. In 2011, Mr. Kelley won the prestigious Goldman Environmental Prize for his environmental justice work. In Port Arthur alone, a medium-sized town of almost 55,000 residents, there are eight facilities known to release and/or transfer high-priority chemicals.[6] EPA's EJSCREEN shows that Port Arthur and surrounding areas have high percentages of minority and low-income communities overlapping with some of the highest cancer and air toxics respiratory hazard rankings nationally.[7]

Concerned Citizens of St. John ("CCOSJ"), founded in 2016, works with St. John the Baptist Parish residents, environmental justice allies, and government agencies to protect the health of St. John residents. St. John is also located in Cancer Alley, a highly-industrialized span of 85 miles along the Mississippi River.[8] St. John is home to just under 44,000 residents, the majority of whom are African American.[9] There are four significant sources of high-priority chemical releases and waste transfers in St. John.[10]

Louisiana Bucket Brigade is an environmental health and justice organization with members who live in the shadow of Louisiana's oil refineries and chemical plants, including in St. James Parish. Louisiana Bucket Brigade's mission is to bring about a Louisiana that is healthy, prosperous, and pollution-free. Louisiana Bucket Brigade uses grassroots organizing and action to hold the petrochemical industry and government accountable for the true costs of pollution from petrochemical operations and hasten the transition from fossil fuels to cleaner forms of energy. Louisiana Bucket Brigade has members who live St. James Parish communities such as St. James, Welcome, and Convent, which have been targeted for new chemical plant development. These members are extremely concerned that about the impacts of toxic pollution from these new plants along with the toxic industrial pollution that exists in the area. Louisiana Bucket Brigade supports these members and works with them to help stop this new chemical buildout in their communities.

Since 1986, **Louisiana Environmental Action Network ("LEAN")** has fought for better health outcomes for Louisiana's underserved residents. LEAN is a 501(c)(3) nonprofit

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[6] U.S. Census Bureau, "Port Arthur City, Texas" (July 2019), www.census.gov/quickfacts/portarthurcitytexas; Appendix 1.

[7] EPA, "EJSCREEN" (2019), https://ejscreen.epa.gov/mapper/ (search for Port Arthur, TX).

[8] James Pasley, "Inside Louisiana's Horrifying 'Cancer Alley,'" *Business Insider* (Apr. 9, 2020), https://www.businessinsider.com/louisiana-cancer-alley-photos-oil-refineries-chemicals-pollution-2019-11.

[9] Census Reporter, "St. John the Baptist Parish, LA" (2018), https://censusreporter.org/profiles/05000US22095-st-john-the-baptist-parish-la/.

[10] These are Nalco Company in Garyville; Marathon Petroleum in Garyville; Denka Performance Elastomer in LaPlace; and DuPont in LaPlace. Appendix 4 at 9–11.

membership organization that utilizes education, empowerment, advocacy, support, and scientific and technical knowledge to serve individuals and communities facing environmental problems. LEAN serves environmental justice communities, consisting of mainly African American, Native American, Vietnamese, Cajun, and Creole individuals. The majority of community members that LEAN serves are located adjacent to or in close proximity to industrial facilities that release TSCA high-priority chemicals into the air they breathe and water they drink. These environmental justice community members are the most vulnerable to exposure to the TSCA high-priority chemicals.

Mossville Environmental Action Network ("MEAN"), founded in the early 1980s, is a grassroots environmental justice group that has been fighting against industrial pollution in and around Mossville, Louisiana for over three decades. MEAN began after a Mossville resident heard an explosion at a chemical facility and saw a black cloud spread over the town; the incident led to dozens of hospitalizations.[11]

Mossville is located around two hours east of Houston, Texas. Founded by an ex-slave in 1790, Mossville is one of the first settlements of free blacks in the South.[12] To this day, Mossville is predominately African American.[13] The town has been referred to as "quite possibly the most polluted corner of the most polluted region in one of the most polluted states in the United States."[14] Mossville and the nearby towns of Sulphur, Carlyss, and Westlake have a high concentration of industrial facilities.[15] At least ten of these manufacture, process, and/or dispose of multiple high-priority chemicals.[16]

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[11] Environmental Justice and Health Alliance for Chemical Policy Reform, *Who's in Danger?: Race, Poverty, and Chemical Disasters* at 18 (May 2014), https://comingcleaninc.org/assets/media/images/Reports/Who's%20in%20Danger%20Report%20FINAL.pdf. The explosion was at an Axiall facility in Mossville (*id.*); Westlake Chemical purchased Axiall in 2016. "Westlake Chemical Completes Acquisition of Axiall Corporation," (Aug. 31, 2016), https://www.westlake.com/westlake-chemical-completes-acquisition-axiall-corporation.

[12] Tom Valtin, "Louisiana Man Takes a Stand Against a Petrochemical Giant," *Sierra Club* (July 21, 2015), https://www.sierraclub.org/planet/2015/07/louisiana-man-takes-stand-against-petrochemical-giant.

[13] Environmental Justice and Health Alliance for Chemical Policy Reform at 18, note 11 *supra*.

[14] Environmental Justice Atlas, "Mossville, Louisiana: Environmental Racism in 'Cancer Alley,' United States" (Mar. 25, 2018), https://ejatlas.org/conflict/mossville-louisiana-environmental-racism-united-states.

[15] Tom Valtin, note 12 *supra* (noting that "14 industrial plants surround what remains of the community, making it potentially one of the most polluted locales in one of the most polluted regions of the country").

[16] Appendix 3.

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RISE St. James is a faith-based environmental and social justice organization based in St. James Parish, Louisiana working to save communities in the parish from industrial pollution and exposure to toxic chemicals. Sharon Lavigne, a lifelong resident of St. James, founded the organization in 2018. RISE St. James' members mostly reside in historic African American communities in the upriver part of St. James Parish such as St. James, Welcome, and Convent, and they work together to advocate for racial, social, and environmental justice. These members are extremely concerned about the impacts of toxic pollution in their communities.

Also in St. James Parish is **Pastor Harry Joseph, Sr.**, Pastor of Mt. Triumph Baptist Church in St. James and a resident of St. James Parish, and **Genevieve Butler,** a resident of St. James. Together, Pastor Joseph and Ms. Butler have organized, worked with, and educated the residents of St. James Parish for decades on the issues of pollution and toxic chemicals, and corresponding health impacts associated with operating industrial facilities emissions and releases, proposed industrial facilities, and historical pollution situations, including ground water and river water pollution.

Beginning in the 1960s, large refineries and chemical plants began crowding near homes throughout the parish.[17] The upriver end of St. James Parish where the communities of St. James, Welcome, and Convent are located (among others) is part of Cancer Alley, and already has 17 industrial facilities, and at least six more are proposed to be built there in the near future.[18] In 2017, St. James Parish ranked ninth among Louisiana's 64 parishes and among the top 100 counties in the U.S. for toxic air emissions.[19]

350 New Orleans is a volunteer-led climate activist group connecting Louisiana to the international climate change movement led by 350.org. Its mission is to lend support to initiatives in the state that raise consciousness around, and promote sound policy to affect, climate change. Members of 350 New Orleans are located in Cancer Alley; these members are

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[17] Trymaine Lee, "First Pollution, Now Coronavirus: Black Parish in Louisiana Deals With 'a Double Whammy' of Death," *NBC News* (Apr. 23, 2020), https://www.nbcnews.com/podcast/into-america/first-pollution-now-coronavirus-black-parish-louisiana-deals-double-whammy-n1189951; Meghan Holmes, "The Revolution in St. James," *Sierra* (Oct. 10, 2019), https://www.sierraclub.org/sierra/revolution-st-james-wanhua-environmental-justice.

[18] David J. Mitchell, "St. James Parish Officials Accused of Secret Sessions on Wanhua Chemical Plant Before Key Vote," *The Advocate* (July 17, 2019), https://www.theadvocate.com/baton_rouge/news/article_164c3d86-a8be-11e9-9421-5372ba92af98.html. One of the proposed facility is the Formosa mega-complex of 14 separate major facilities, including 10 chemical plants. *Id.*

[19] Mark Schleifstein, "New EPA Rules Aim to Reduce Toxic Emissions. But Many 'Cancer Alley' Chemical Plants Won't Have to Change," *ProPublica* (Nov. 14, 2019), https://www.propublica.org/article/new-epa-rules-aim-to-reduce-toxic-emissions-but-many-cancer-alley-chemical-plants-wont-have-to-change.

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exposed to and concerned about the emissions and releases of the high-priority chemicals from the industrial facilities in their neighborhoods.

LEGAL BACKGROUND

Under TSCA, for each high-priority chemical EPA must publish a "scope of the risk evaluation to be conducted, including the hazards, exposures, conditions of use, and the potentially exposed or susceptible subpopulations the Administrator expects to consider."[20] In developing the scope, EPA must "take into consideration information relating to a chemical substance or mixture, including hazard and exposure information, under the conditions of use, that is reasonably available to the Administrator."[21] In the final risk evaluation, EPA must "integrate and assess available information on hazards and exposures for the conditions of use" of the chemicals it is evaluating.[22] To fulfill this requirement, EPA is obligated to *seek out* information,[23] including from highly impacted communities, workers, and any others who are or may be heavily exposed to these substances.

Each risk evaluation must consider the risks presented by the chemical substance under all of the "conditions of use,"[24] which are "the circumstances, as determined by the Administrator, under which a chemical substance is intended, known, or reasonably foreseen to be manufactured, processed, distributed in commerce, used, or disposed of."[25] The agency lacks discretion to exclude any conditions of use from the scope of its risk evaluations.[26] As part of its consideration of all conditions of use, EPA must include legacy uses and associated disposals, as well as all ongoing disposals that the Ninth Circuit found fall within the clear statutory definition of "conditions of use."[27]

One of TSCA's central requirements is that each risk evaluation must consider whether the chemical substance under review presents "an unreasonable risk to a potentially exposed or susceptible subpopulation."[28] In the scope document, EPA must identify "subpopulations [EPA]

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[20] 15 U.S.C. § 2605(b)(4)(D).

[21] *Id.* § 2625(k).

[22] *Id.* § 2605(b)(4)(F)(i).

[23] *Id.* § 2625(k) (requiring EPA to take into consideration information that is "reasonably available"); 40 C.F.R. § 702.33 (defining "reasonably available information" to include information EPA "can reasonably generate [or] obtain").

[24] 15 U.S.C. § 2605(b)(4)(A).

[25] *Id.* § 2602(4); *see also* 40 C.F.R. § 702.33.

[26] *Safer Chemicals, Healthy Families v. EPA*, 943 F.3d 397, 419 (9th Cir. 2019).

[27] *Id.* at 425.

[28] 15 U.S.C. § 2605(b)(4)(A).

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expects to consider" in the risk evaluation."[29] Subpopulations are "potentially exposed or susceptible" if they are at "greater risk than the general population of adverse health effects from exposure to a chemical substance or mixture" due to either "greater susceptibility or greater exposure."[30]

Underlying the entire scoping and risk evaluation process is the requirement that EPA must employ the "best available science" in its use of scientific information, technical procedures, measures, methods, protocols and methodologies.[31]

In addition to the statutory requirements regarding the scope document, EPA's risk evaluation regulations set forth a host of additional requirements. EPA must identify both "the ecological receptors . . . and the hazards to health and the environment that EPA plans to evaluate."[32] A scope must include "[a] description of the reasonably available information and science approaches EPA plans to use in the risk evaluation."[33] Reasonably available information means "information that EPA possesses or can reasonably generate, obtain, and synthesize for use in risk evaluations."[34] EPA must include a conceptual model describing "actual or predicted relationships between the chemical substance, the conditions of use within the scope of the evaluation and human and environmental receptors"[35] and identifying "human and ecological health hazards."[36] In developing the model, the agency must "consider the life cycle of the chemical substance, including manufacture, processing, distribution in commerce, storage, use, and disposal, relevant to the conditions of use within the scope of the evaluation."[37] EPA must also provide an analysis plan identifying "the approaches, methods, and/or metrics that EPA plans to use to assess exposures, effects, and risk, including associated uncertainty and variability for each risk evaluation."[38] Of central importance, EPA's draft scope must include all the elements that its regulations require of the final scope.[39]

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[29] *Id.* § 2605(b)(4)(D); 40 C.F.R. § 702.41(c)(2).
[30] 15 U.S.C. § 2602(12); *see also* 40 C.F.R. § 702.33.
[31] 15 U.S.C. § 2625(h).
[32] 40 C.F.R. § 702.41(c)(2).
[33] *Id.* § 702.41(c)(3).
[34] *Id.* § 702.33.
[35] *Id.* § 702.41(c)(4)(i).
[36] *Id.* § 702.41(c)(4)(ii).
[37] *Id.* § 702.41(c)(4)(iii).
[38] *Id.* § 702.41(c)(5)(i).
[39] *Id.* § 702.41(c)(7)(i).

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CONCERNS WITH EPA'S DRAFT SCOPE DOCUMENTS

For the reasons below, EPA's draft scopes for the TSCA high-priority chemicals fail to comport with the requirements of TSCA and EPA's implementing regulations.

I. EPA Must Identify People Living in Geographic Areas Near High-Volume Chemical Facilities in Texas and Louisiana as Potentially Exposed or Susceptible Subpopulations.

The draft scopes fail to comply with the requirement that EPA identify "the potentially exposed or susceptible subpopulations [EPA] expects to consider" in the risk evaluation."[40] Instead, EPA indicates that this required scope element will be developed and provided later. The failure to identify this information with specificity violates EPA's regulations, which state that the agency must publish a draft scope that "will address the elements" that must be in the scope, including the potentially exposed or susceptible subpopulations EPA will consider in its risk evaluation.[41] This failure denies Commenters the opportunity to provide input on this critical aspect of the risk evaluation that is of great importance to their members.

Rather than identify potentially exposed or susceptible subpopulations that are specific to the chemical, each of the draft scopes includes very similar language, stating that EPA has identified "children, women of reproductive age (e.g., pregnant women), consumers and workers" as potentially exposed or susceptible subpopulations that it plans to evaluate.[42] The draft scopes also indicate that EPA will assess "whether some human receptor groups may have higher exposure via identified pathways of exposure due to unique characteristics . . . when compared with the general population."[43] And several of the draft scopes add parenthetically: "(e.g., . . . duration or location of exposure)."[44] Although this reference is too vague to meet the requirements of TSCA, it is a strength of those draft scopes that EPA recognizes that "duration" of exposure compared with the general population, or "location of exposure," may put a subpopulation at "greater risk than the general population for adverse health effects from exposure to a chemical substance," such that the subpopulation should be considered a "potentially exposed or susceptible subpopulation" under TSCA.

None of the draft scopes identify as "potentially exposed or susceptible subpopulations" people living in geographic proximity to high-volume chemical facilities in Texas and Louisiana, including facilities that release and/or transfer high volumes of multiple TSCA high-priority

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[40] 15 U.S.C. § 2605(b)(4)(D); 40 C.F.R. § 702.41(c)(2).

[41] 40 C.F.R. §§ 702.41(c)(1), (7).

[42] *See, e.g.*, Draft Scope for Formaldehyde at 35–36; Draft Scope for 1,3-butadiene at 28.

[43] This language appears in section 2.5 of each Draft Scope.

[44] *E.g.*, Draft Scope for 1,1,2-TCE at 29; Draft Scope for 1,1-dichloroethane at 28; Draft Scope for 1,2-dichloropropane at 31.

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chemicals as well as other toxic industrial chemicals of concern. However, it is notable that several of the scope documents acknowledge that people living near manufacturing, processing and disposal sites do in fact have potentially higher exposures to the TSCA high priority chemicals. For several of the draft scopes, Section 2.3.7 (entitled General Population Exposures) notes that fenceline communities have higher exposures than the general population, including:

- ***o*-dichlorobenzene:** "Several groups within the general population have potentially higher exposures (higher than background levels) to *o*-dichlorobenzene. These populations include individuals living near sites where *o*-dichlorobenzene is produced or used in manufacturing and disposal sites. Individuals living in proximity to hazardous waste sites may also be exposed to *o*-dichlorobenzene by contaminated groundwater";[45]
- **1,3-butadiene**: "Elevated ambient air concentrations of 1,3-butadiene have been measured in the vicinity of heavily trafficked areas, refineries, chemical manufacturing plants, and plastic and rubber factories";[46]
- **1,1-dichloroethane:** "Populations living near source areas, such as petrochemical factories, where 1,1-dichloroethane is manufactured or used, are expected to have higher exposures via inhalation";[47]
- **1,2-dichloroethane:** "Populations living near industrial waste sites may have a higher likelihood of exposure to 1,2-dichloroethane";[48]
- **1,2-dichloropropane:** "Populations living near industrial wastewater treatment or incineration facilities may have higher exposure to 1,2-dichloropropane";[49] and
- **Ethylene dibromide:** "Populations living in areas near oil refineries, chemical manufacturing plants, and plastic and rubber factories where ethylene dibromide is manufactured or used would be expected to have higher exposures."[50]

Despite acknowledging that people living near certain industrial and waste facilities have "greater exposure" than the general population to chemicals that present well-documented hazards (meaning they face "greater risk than the general population of adverse health effects," precisely what TSCA defines as a "potentially exposed or susceptible subpopulation"), the draft scopes inexplicably treat these duration- and location-specific "greater exposures" as general

[45] Draft Scope for *o*-dichlorobenzene at 31.
[46] Draft Scope for 1,3-butadiene at 27–28.
[47] Draft Scope for 1,1-dichloroethane at 27.
[48] Draft Scope for 1,2-dichloroethane at 29.
[49] Draft Scope for 1,2-dichloropropane at 30.
[50] Draft Scope for Ethylene dibromide at 28.

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population exposures.[51] This is a major flaw because, as EPA admits, these "fenceline" populations face higher exposures than the general population. If EPA does not consider the risks to these populations as distinct from general population exposures, it will overlook the actual risk faced by these communities. This would violate TSCA.

When EPA publishes the final scopes, it must identify people living in geographic proximity to high-volume chemical facilities, waste sites, incinerators, and similar facilities—including, at a minimum, such communities in Texas and Louisiana that are dense with facilities that release and transfer TSCA high priority chemicals—as potentially exposed or susceptible subpopulations whose unique risks from the TSCA high-priority chemicals will be evaluated separately from risk to the general population. As required by EPA's regulations, the scopes must also explain EPA's approach for ensuring that the risk evaluations will fully and accurately evaluate those populations' risks from all of the conditions of use, including any combination thereof, of the TSCA high-priority chemicals.

While these comments focus on several areas of Texas and Louisiana where large volumes of the high-priority chemicals are released into the environment, these are only examples of places that are more exposed and more susceptible to harm from the TSCA high-priority chemicals than the general population. We urge EPA to investigate other overburdened, highly-exposed areas whose health and environments are at risk from exposure to multiple high-priority chemicals, and to similarly consider those in its final scopes and risk evaluations.

A. People living in several geographic areas in Texas and Louisiana are *more exposed* than the general population to the TSCA high-priority chemicals due to their proximity to industrial facilities that release these substances in high volumes.

During the 2019 prioritization period, Earthjustice submitted to EPA Technical Reports on the conditions of use for each of the TSCA high-priority chemicals, which were prepared by Material Research L3C ("Technical Reports").[52] Each Technical Report identified supply chain

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[51] One exception is the draft scope for 1,3-butadiene, which—in the section on "potentially exposed or susceptible subpopulations"—flags that communities in geographic proximity to "oil refineries, chemical manufacturing plants, and plastic and rubber factories where 1,3-butadiene is manufactured or used *would be expected* to have higher exposures." Draft Scope for 1,3-butadiene at 29 (emphasis added). But this acknowledgement that such populations would be expected to have higher exposures does not constitute a commitment to evaluate such populations, as required by EPA's regulations. *See* 40 C.F.R. § 702.41(c)(2) (defining the required elements for a draft scope as including "potentially exposed populations . . . that EPA plans to evaluate").

[52] Earthjustice's prior comments and the Technical Reports prepared by Material Research L3C are available on Regulations.gov at the following Docket ID numbers: EPA-HQ-OPPT-2018-

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information for the chemical, as well as release and transfer data. Using data from the Technical Reports, we identified locations in the United States where many of the TSCA high-priority chemicals are manufactured, processed, distributed, used, disposed of, transferred, and released in high volumes. Two major geographic areas of concern for high exposure to the TSCA high-priority chemicals emerged. The first is a roughly 500-mile stretch along the Gulf of Mexico from Houston to the Texas/Louisiana border ("TX/LA Gulf region").[53] The second is a densely industrialized area along the Mississippi River between Baton Rouge and New Orleans, often referred to as Cancer Alley.[54] Because of the close proximity of communities in these regions to facilities releasing large volumes of high-priority chemicals, their populations are more exposed than the general public to high-priority chemicals, which is described in detail below.[55]

Of note is that the Technical Reports do not tell the full picture of high-priority chemical exposure borne by communities like those in the TX/LA Gulf region and Cancer Alley because some information about chemical releases and transfers is not publicly available. For one, when companies report manufacturing and processing data to EPA under TSCA's Chemical Data Reporting Rule ("CDR"), they may claim that some of the information, often including production volume, is confidential business information ("CBI"), thus preventing disclosure to the public.[56] Second, only 14 of the 20 high-priority chemicals are listed on the TRI, meaning that facilities have no obligation under this legal provision to report releases of the other six substances to EPA. Reports from the 2012 and 2016 CDR cycles show that at least two of the six

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0451-0017 (1,3-Butadiene); EPA-HQ-OPPT-2018-0444-0013 (o-Dichlorobenzene); EPA-HQ-OPPT-2018-0446-0017 (p-Dichlorobenzene); EPA-HQ-OPPT-2018-0426-0011 (1,1-Dichloroethane); EPA-HQ-OPPT-2018-0427-0015 (1,2-Dichloroethane); EPA-HQ-OPPT-2018-0465-0020 (trans-1,2-Dichloroethylene); EPA-HQ-OPPT-2018-0428-0011 (1,2-Dichloropropane); EPA-HQ-OPPT-2018-0488-0013 (Ethylene dibromide); EPA-HQ-OPPT-2018-0430-0013 (HHCB); EPA-HQ-OPPT-2018-0462-0016 (TBBPA); EPA-HQ-OPPT-2018-0458-0014 (TPP); EPA-HQ-OPPT-2018-0421-0013 (1,1,2-Trichloroethane); EPA-HQ-OPPT-2018-0476-0012 (TCEP); EPA-HQ-OPPT-2018-0501-0015 (BBP); EPA-HQ-OPPT-2018-0504-0011 (DCHP); EPA-HQ-OPPT-2018-0503-0012 (DBP); EPA-HQ-OPPT-2018-0434-0014 (DIBP); EPA-HQ-OPPT-2018-0433-0015 (DEHP); EPA-HQ-OPPT-2018-0438-0019 (Formaldehyde); EPA-HQ-OPPT-2018-0459-0015 (Phthalic anhydride).

[53] *See* Appendices 1–3, which set forth in detail the releases and transfers of the TSCA high-priority chemicals from 2012 to 2018 in three areas of the TX/LA Gulf region.

[54] *See* Appendix 4, which sets forth in detail the releases and transfers of the TSCA high-priority chemicals from 2012 to 2018 in Cancer Alley.

[55] In addition, many residents in these areas also work in facilities that manufacture, process, use and/or release high-priority chemicals. Many of these workers are exposed to chemicals on the job, further increasing their exposure. EPA's risk evaluation should take into account these aggregate exposures.

[56] 40 C.F.R. § 711.30.

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high-priority chemicals that are not on the TRI—HHCB and TPP—were manufactured or processed in Texas and/or Louisiana, as well as at locations that are withheld as CBI and could be in these states.[57] It is therefore likely that there were releases or waste transfers of these chemicals in these states that are not accounted for in the discussion below and accompanying tables. In addition, neither the CDR nor the TRI reflect any "ongoing" and/or "independent" disposals—including spills, leaks and other uncontrolled discharges—of high-priority chemicals that were previously disposed of in the TX/LA Gulf region and Cancer Alley, even though these ongoing and/or independent disposals are conditions of use that must be reflected in the risk evaluations of these substances.[58] Recognizing that the CDR and TRI information does not capture all releases of the 20 high-priority chemicals, the actual exposure of these communities to the TSCA high-priority chemicals is almost certainly higher than the available data show.

1. The TX/LA Gulf region

Between 2012 and 2018, facilities located in the TX/LA Gulf region collectively accounted for the release or waste transfer of 187.8 million pounds of 14 high-priority chemicals from roughly 200 facilities. Detailed information about these releases and transfers is set forth in Appendices 1–4, attached hereto, which focus on three separate municipal clusters in the TX/LA Gulf region.[59] As shown in the Appendices, chemical plants, refineries, paper mills, and waste treatment facilities released a total of 10.5 million pounds of high-priority chemicals, with 9.2 million pounds of chemicals emitted into air, nearly 82,000 pounds discharged to water, over 300,000 pounds released to land, and nearly 100,000 pounds injected into underground wells.[60] Over 81.9 million pounds of high-priority chemicals were transferred from this region to offsite disposal facilities (during which additional releases are likely to have occurred in transit or upon disposal via incineration or other treatment).[61] Finally, over 95 million pounds of these chemicals were transferred to facilities in this region for further use, treatment, or disposal.

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[57] For the 2016 reporting period, HHCB was manufactured in Houston, Texas and at a CBI site. For the 2012 reporting period, TPP was manufactured or processed in: Plaquemine, Louisiana; Baton Rouge, Louisiana; and at a CBI site. For the 2016 reporting period, TPP was manufactured in Houston, Texas and at a CBI site. Technical Report for HHCB at 12; Technical Report for TPP at 4, 5.

[58] *Safer Chemicals, Healthy Families*, 943 F.3d at 426.

[59] These spreadsheets were created using information taken from the Technical Reports. Appendices 1–3.

[60] *Id.* at 1.

[61] *Id.* Because EPA does not require companies to publicly report where offsite transfers are sent and how they are ultimately disposed of, we do not know which communities near waste disposal and treatment facilities are exposed to TSCA high-priority chemicals transferred out of facilities in the Texas/Louisiana border-Gulf region.

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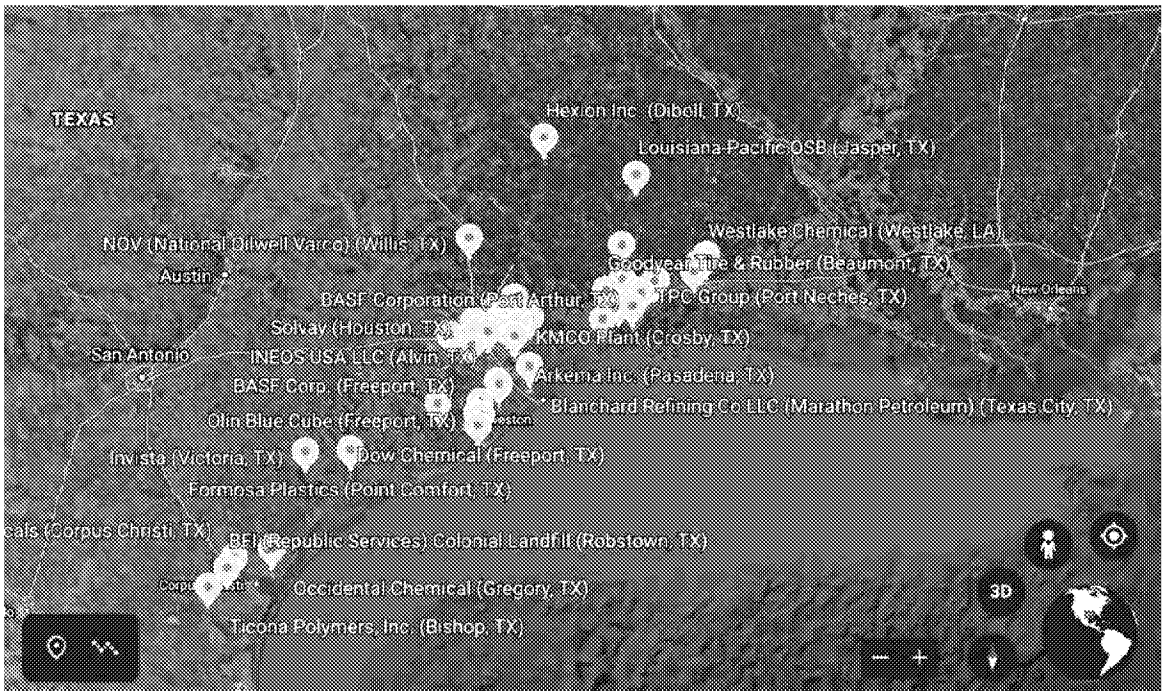
For three of the TSCA high-priority chemicals, the TX/LA Gulf region experiences more than one-half the releases of the chemical in the entire United States: TBBPA (76.9 percent of all U.S. releases); 1,3-butadiene (73.6 percent of all U.S. releases); and 1,1-DCA (54.8 percent of all U.S. releases). In addition, for five of the TSCA high-priority chemicals, this region experiences more than 70 percent of the incoming waste transfers of the chemical in the United States: 1,1-DCA (95.1 percent of all U.S. incoming waste transfers); 1,1,2-TCE (86.6 percent of all U.S. incoming waste transfers); trans-1,2-dichloroethylene (80.6 percent of all U.S. incoming waste transfers); 1,2-DCP (89.3 percent of all U.S. incoming waste transfers); 1,3-butadiene (75.4 percent of all U.S. incoming waste transfers); and EDC (72.2 percent of all U.S. incoming waste transfers). These data underscore that people in this region have far greater exposure to these chemicals, as well as many of the other high-priority chemicals, than does the general population—a fact that EPA must take into account in its risk evaluations.

Earthjustice created the map below to help visualize the extraordinary density of the facilities with the highest volumes of releases and transfers of high-priority chemicals in the TX/LA Gulf region.



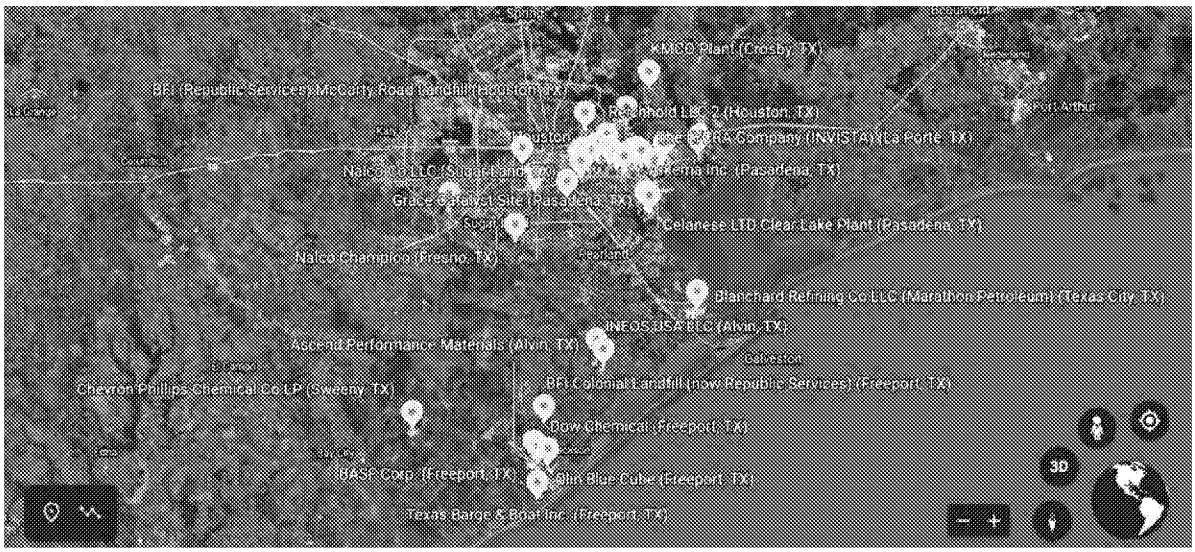
Of the 66 highest emitting facilities shown on this map, 22 are in the Houston area, 10 are in the Port Arthur area, and 7 are in the Mossville area.[62] What follows are detailed discussions showing that people living in each of these three areas face greater exposure than the general population to many of the TSCA high-priority chemicals.

[62] *See* Appendices 1–3.

a) Greater Houston, TX Area

Those living in the Greater Houston, Texas area, which includes towns such as Freeport, Baytown, LaPorte, and Pasadena, as well as the city of Houston, are more exposed than the general public to 14 high-priority chemicals.[63] Between 2012 and 2018, facilities in the area released, transferred off-site, and/or received over 146.2 million pounds of high-priority chemicals.[64]

The largest locations of high-priority chemical releases and transfers from 2012 to 2018 in the Greater Houston region, based on the Technical Reports, are depicted on the map below.



The following table shows the volume of high-priority chemical releases, off-site waste transfers, and waste received by Houston-area facilities from 2012 to 2018 for the 14 chemicals to which residents of this area experience greater exposure than the general population.[65] Data broken down by specific facility appears in Appendix 1.

Chemical	Releases	Waste Transfers Sent Off-Site	Waste Received
1,1,2-TCE	17,645 *(7.6%)*	29,244,936 *(76.5%)*	30,793,503 *(80.8%)*

[63] Appendix 2 at 1.

[64] *Id.*

[65] Volumes of releases and transfers are reported in pounds. Below the volume, in parentheses, we report what percentage of the national volume of releases and/or transfers occurs in the Houston area. The percentage of national releases/transfers is not shown when that amount is less than one percent.

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Chemical	Releases	Waste Transfers Sent Off-Site	Waste Received
1,2-DCP	39,836 *(12%)*	9,235,002 *(99.8%)*	8,248,107 *(89%)*
EDB	245 lbs *(1.8%)*	163 *(25.9%)*	–
1,1-DCA	3,955 *(3.9%)*	57,316 *(92.8%)*	58,156 *(94%)*
p-Dichlorobenzene	89	53,787 *(2%)*	1,133,497 *(38.7%)*
TBBPA	145,916 *(40%)*	68,894 *(24%)*	146,041 *(21.5%)*
DBP	4,745	131,372 *(11%)*	128,115 *(11%)*
phthalic anhydride	126,976 *(7.9%)*	1,714,083 *(15.8%)*	1,116,624 *(10%)*
formaldehyde	1,306,541 *(1%)*	1,549,873 *(4%)*	1,411,854 *(3.6%)*
1,3-butadiene	3,895,636 *(39%)*	445,862 *(1.5%)*	16,606,166 *(54.6%)*
o-Dichlorobenzene	28,138 *(5.7%)*	1,756,149 *(34%)*	2,451,003 *(47.8%)*
DEHP	553	28,649	944,638 *(4.6%)*
trans-1,2-Dichloroethylene	245 (1.6%)	55,057 (41%)	65,086 (52%)
EDC	649,523 (21%)	13,390,546 (43%)	19,172,628 (64%)

These data demonstrate that those living in the Greater Houston area are more exposed than the general public to 14 of the 20 high-priority chemicals. The Greater Houston area occupies approximately 9,444 square miles and has approximately 7.1 million residents.[66] In contrast, the entire United States comprises 3.8 million square miles and has approximately 328.2 million residents.[67] Thus, the Greater Houston area occupies approximately .25 percent of the land mass in the United States and is home to approximately 2.16 percent of its people, but is exposed to high-priority chemicals at levels that are orders of magnitude higher than .25 or 2.16 percent, or hundreds, in some cases thousands, of times higher than their "fair share."

[66] *See* Appendix 5.
[67] *Id.*

Indeed for several of the high-priority chemicals, the Greater Houston area alone is bearing the brunt of more than 33 percent of the entire country's share of releases and/or waste transfers. Highlighting one example from the table above, 39 percent—over a third—of the national releases of 1,3-butadiene occur in the Greater Houston area, and *over half* of all national incoming waste transfers of 1,3-butadiene—more than 16 million pounds—are received by facilities in and around Houston. For six of the high-priority chemicals (1,1,2-TCE; 1,2-DCP; 1,1-DCA; 1,3-butadiene; trans-1,2-Dichloroethylene; and EDC), the Greater Houston area alone received more than one-half the total volume of waste transfers received anywhere in the United States.[68]

In sum, residents of this area have greater exposure than the general population to the 14 chemicals identified in the table above, and under TSCA must be considered a potentially exposed and susceptible subpopulation warranting EPA's identification in the scopes and analysis in the risk evaluation process for these chemical substances.

b) Port Arthur, TX and Surrounding Area

Residents of Port Arthur, Texas and the nearby towns of Beaumont, Orange, Port Neches, and Winnie are more exposed than the general population to five of the high-priority chemicals: 1,1,2-TCE, phthalic anhydride, formaldehyde, 1,3-butadiene, and EDC.[69] From 2012 to 2018, facilities in the Port Arthur area released, transferred off-site, and/or received just over 16 million pounds of these five chemicals.[70]

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[68] Appendix 2.

[69] Appendix 1 at 1.

[70] *Id*. This amount represents chemicals with the greatest percentages of total releases, incoming waste, and/or off-site transfers when compared to other locations around the country. In total, between 2012 and 2018, facilities in the Port Arthur area released, received, and/or transferred 16.3 million pounds of 14 high-priority chemicals.

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The largest sources of high-priority chemical releases and transfers in the Port Arthur area from 2012 to 2018, based on the Technical Reports, are depicted on the map below.

The following table shows the volume of high-priority chemical releases, off-site waste transfers, and waste received by Port Arthur-area facilities from 2012 to 2018 for the five high priority chemicals to which residents of this area experience greater exposure than the general population.[71] Data broken down by specific facility appears in Appendix 1.

Chemical	Releases	Waste Transfers Sent Off-Site	Waste Received
1,1,2-TCE	692	5,933	2,227,498 *(5.8%)*

[71] Volumes of releases and transfers are reported in pounds. Below the volume, in parentheses, we report what percentage of the national volume of releases and/or transfers occurs in the Port Arthur area. The percentage of national releases/transfers is not shown when that amount is less than one percent. Chemicals for which there are releases and/or transfers in the Port Arthur area, but are not included in the chart, are 1,2-DCP; EDB; 1,1,-DCA; DBP; *o*-Dichlorobenzene; DEHP; and trans-1,2-Dichloroethylene. Appendix 1. The chart also does not include data for *p*-Dichlorobenzene, as the total percentage of national releases/transfers totaled less than 2 percent.

Chemical	Releases	Waste Transfers Sent Off-Site	Waste Received
phthalic anhydride	171	–	852,904 *(7.8%)*
formaldehyde	445,542	29,671	1,143,883 *(2.9%)*
1,3-butadiene	2,886,284 *(28.9%)*	181,092	6,301,871 *(20.7%)*
EDC	1,667	284	2,308,136 *(7.7%)*

In Port Arthur and nearby communities, the volume of these five high-priority chemical releases to air, water and land, and transfers to water is very high given the small land area and population. The Port Arthur area occupies approximately 3,034 square miles and has a population of approximately 410,233 people.[72] In contrast, the entire United States comprises 3.8 million square miles and has a population of approximately 328.2 million people.[73] Thus, the Port Arthur area occupies approximately .08 percent of the land mass in the United States and houses approximately .125 percent of its residents, yet it is exposed to five of the high-priority chemicals at levels that are orders of magnitude higher than .08 or .125 percent. For 1,3-butadiene, for example, this small area is subjected to nearly one-third of the entire country's releases.[74]

In sum, residents of the Port Arthur area have greater exposure than the general population to 1,1,2-TCE, phthalic anhydride, formaldehyde, 1,3-butadiene, and EDC, and under TSCA must be considered a potentially exposed and susceptible subpopulation warranting EPA's identification in the scopes and analysis in the risk evaluation process for these chemical substances.

c) Mossville, LA Area

Mossville and the nearby towns of Sulphur, Carlyss, and Westlake are home to at least seven industrial facilities that manufacture, process, and/or dispose of multiple high-priority chemicals.[75] Residents of these areas are more exposed than the general population to six of the high-priority chemicals: 1,1,2-TCE; 1,1-DCA; TBBPA; 1,3-butadiene; trans-1-2-

[72] Appendix 5.
[73] *Id.*
[74] Appendix 1 at 1.
[75] Appendix 3.

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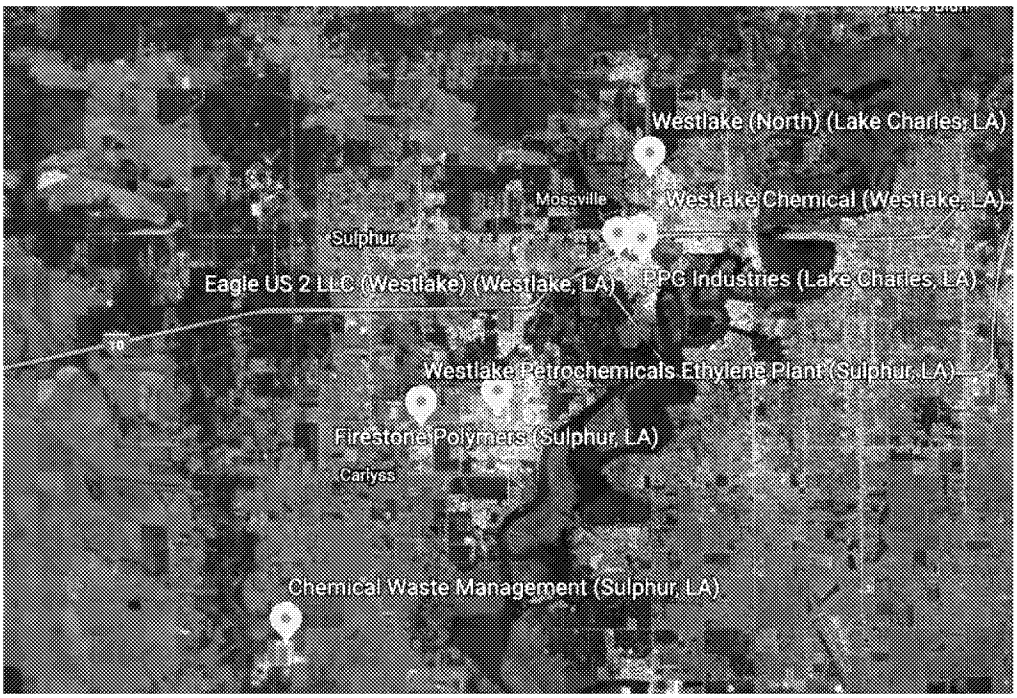
dichlorethylene; and EDC.[76] Between 2012 and 2018, Mossville-area facilities released, transferred off-site, and/or received over 25.2 million pounds of these chemicals.[77]

The largest sources of high-priority chemical releases and transfers in the Mossville area from 2012 to 2018, based on the Technical Reports, are depicted on the map below.



The following table summarizes the volume of releases, off-site waste transfers, and waste received by Mossville-area facilities from 2012 to 2018 for the six high-priority chemicals.[78] Data broken down by specific facility appears in Appendix 3.

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[76] *Id.*

[77] *Id* at 1. The exact amount, 25,210,881 pounds, represents chemicals with the greatest percentages of total releases, incoming waste, and/or off-site transfers when compared to other locations around the country. In total, however, between 2012 and 2018, facilities in the Mossville area released, received, and/or transferred 25,216,738 pounds of 14 high-priority chemicals. *Id.*

[78] Volumes of releases and transfers are reported in pounds. Below the volume, in parentheses, we report what percentage of the national volume of releases and/or transfers occurs in the Port Arthur area. The percentage of national releases/transfers is not shown when that amount is less than one percent. Chemicals for which there are releases and/or transfers in the Mossville area, but are not included in the chart, are EDB; DBP; phthalic anhydride; and formaldehyde. *Id.*

Chemical	Releases	Waste Transfers Sent Off-Site	Waste Received
1,1,2-TCE	50,752 *(22%)*	243,343	–
1,1-DCA	50,601 *(50.8%)*	240	38
TBBPA	134,002 *(36.8%)*	–	120,000 *(17.7%)*
1,3-butadiene	560,918 *(5.6%)*	22,246,217 *(75%)*	8,356
trans-1,2-Dichloroethylene	2,200 *(15%)*	6,163 *(4.5%)*	33,988 *(27%)*
EDC	288,060 *(9%)*	1,462,513 *(4.7%)*	3,489

These data demonstrate that residents of Mossville and nearby towns are more exposed than the general population to six high-priority chemicals. Together, the Louisiana municipalities of Mossville, Sulphur, Carlyss, and Westlake occupy only 1,094 square miles, a mere .028 percent of the square mileage of the United States; its population of approximately 203,436 represents only .06 percent of the United States population.[79] Yet this area is subject to at least 5 percent of the entire nation's releases of six of the high-priority chemicals; for four of these chemicals, this tiny area is exposed to 15 percent or more of the total volume of releases for the substances in the entire United States; for one chemical—1,1-DCA—the Mossville area bears the brunt of more than half of the releases into the entire country.

In sum, residents of this area have far greater exposure than the general population to 1,1,2-TCE, 1,1-DCA, TBBPA, 1,3-butadiene, trans-1-2-dichlorethylene, and EDC, and under TSCA must be considered a potentially exposed and susceptible subpopulation warranting EPA's identification in the scopes and analysis in the risk evaluation process for these chemical substances.

2. Communities in Cancer Alley, LA

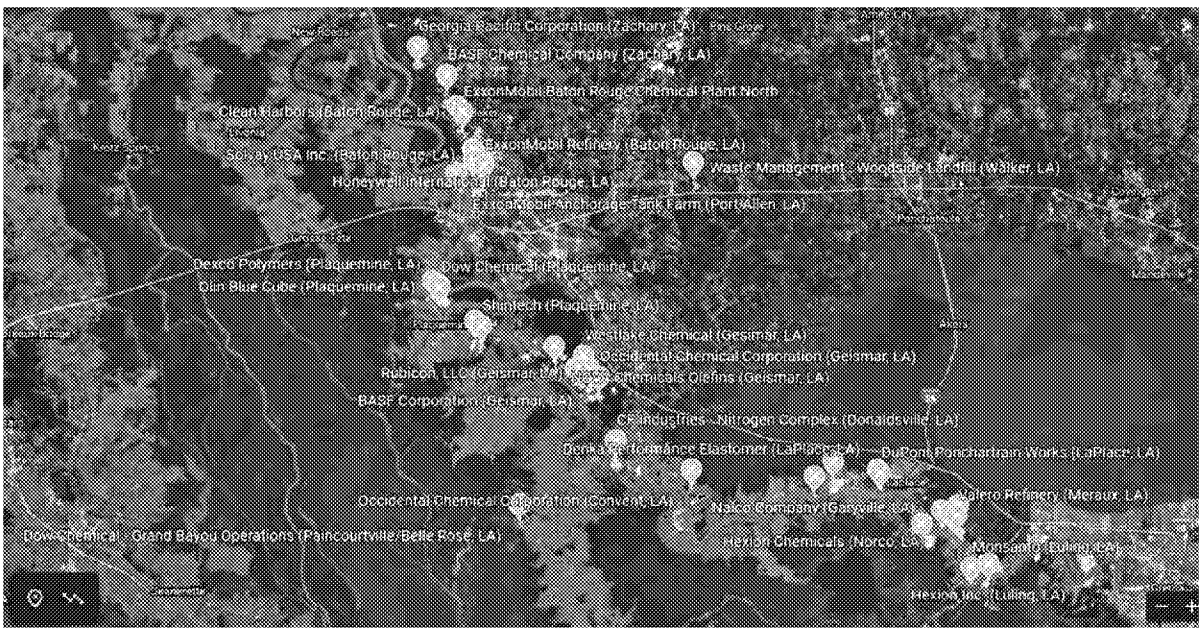
Communities in the 85-mile industrial corridor in Louisiana between New Orleans and Baton Rouge known as "Cancer Alley" have greater exposure than the general population to nine of the TSCA high-priority chemicals: 1,1,2-TCE, 1,2-DCP, EDB, 1,1-DCA, DBP, phthalic anhydride, formaldehyde, 1,3-butadiene, and EDC.[80] Between 2012 and 2018, facilities in Cancer Alley released, received, and/or transferred more than 103.6 million pounds of these nine

[79] Appendix 5.
[80] Appendix 4.

chemicals.[81] Underground injection of formaldehyde accounts for 64 million pounds of this total.[82]

Eleven parishes in Cancer Alley contain facilities that emit and/or transfer waste of high-priority chemicals.[83] Three cities in Cancer Alley—located within thirty miles of each other—are home to the majority of facilities responsible for releasing or transferring high-priority chemicals: Baton Rouge (eight facilities); Plaquemine (five facilities); and Geismar (seven facilities); these cities are located in East Baton Rouge, Iberville, and Ascension parishes, respectively.[84]

The image below depicts facilities in Cancer Alley with the largest volume of releases and/or transfers of high-priority chemicals between 2012 and 2018.



The following table summarizes the volume of high-priority chemical releases, off-site waste transfers, and waste received by Cancer Alley facilities from 2012 to 2018 for the nine

[81] *Id.* at 1. The total amount, 103,802,624 pounds, represents chemicals with the greatest percentages of total releases, incoming waste, and/or off-site transfers when compared to other locations around the country. In total, however, between 2012 and 2018, Cancer Alley facilities released, received, and/or transferred 103,879,365 pounds of 14 high-priority chemicals. *Id.*

[82] *Id.*

[83] *See, e.g.*, Appendix 4.

[84] *Id.*

high-priority chemicals to which residents of Cancer Alley experience greater exposure than the general population.[85] Data broken down by specific facility appears in Appendix 4.

Chemical	Releases	Waste Transfers Sent Off-Site	Waste Received
1,1,2-TCE	73,095 *(32%)*	8,688,021 *(22.7%)*	–
1,2-DCP	24,119 *(7%)*	15,733	421
EDB	6,041 *(44.5%)*	–	–
1,1-DCA	39,856 *(40%)*	1,126 *(1.8%)*	–
DBP	105,951 *(7%)*	45,000 *(3.8%)*	–
phthalic anhydride	123,603 *(7.7%)*	3,510,695 *(30.6%)*	3,320,451 *(32%)*
formaldehyde	65,545,320 *(58%)*	112,927	80,996
1,3-butadiene	680,414 *(6.8%)*	3,970,187 *(13%)*	3,920,312 *(12.9%)*
EDC	1,149,525 *(37%)*	12,387,102 *(39.8%)*	1,723

For these nine high-priority chemicals, the volumes of releases, incoming waste, and off-site waste transfers in Cancer Alley are extremely high, and vastly disproportionate to this small geographic area. Cancer Alley occupies approximately 4,352 square miles,[86] only .11 percent of the square mileage of the United States; its population of approximately 1.6 million is only .5 percent of the United States population.[87] Yet this area is subject to approximately one-third or more of the entire nation's releases of at least five of the high-priority chemicals: formaldehyde

[85] Volumes of releases and transfers are reported in pounds. Below the volume, in parentheses, we report what percentage of the national volume of releases and/or transfers occurs in the Port Arthur area. The percentage of national releases/transfers is not shown when that amount is less than one percent. Chemicals for which there are releases and/or transfers in Cancer Alley, but are not included in the chart, are *p*-Dichlorobenzene; DEHP; *o*-Dichlorobenzene; and trans-1,2-Dichloroethylene. Appendix 4.

[86] This figure is derived from adding together the square mileage for each of the parishes with parts that comprise Cancer Alley; the actual size of Cancer Alley is smaller because not all parts of each parish is considered to be within the highly-industrialized Cancer Alley corridor.

[87] Appendix 5.

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(58.3 percent of total U.S. releases); EDB (44.5 percent of total U.S. releases); 1,1-DCA (40 percent of total U.S. releases); EDC (37.3 percent of total U.S. releases); and 1,1,2-TCE (32.2 percent of total U.S. releases).[88]

For the reasons above, residents of Cancer Alley have far greater exposure than the general population to: 1,1,2-TCE; 1,2-DCP; EDB; 1,1-DCA; DBP; phthalic anhydride; formaldehyde; 1,3-butadiene; and EDC. EPA is therefore required to consider communities throughout Cancer Alley as potentially exposed or susceptible subpopulations in the final scopes and risk evaluations of these substances.

B. People living in the TX/LA Gulf region and Cancer Alley are *more susceptible* than the general population to harm from exposure to the TSCA high-priority chemicals.

The people living in the geographic areas described above must also be considered "potentially exposed or susceptible subpopulations" in EPA's risk evaluations of the TSCA high priority chemicals because they are *more susceptible* to harm from exposure to these chemicals than the general population.[89]

TSCA's definition of potentially exposed and susceptible subpopulations includes examples of subpopulations at greater risk of harm from chemicals; "such as infants, children, pregnant women, workers, or the elderly."[90] The prefatory term "such as" makes clear that this list is not exhaustive, meaning that EPA should also consider whether additional populations are at greater risk of injury from the chemicals undergoing evaluation. EPA's determination of which subpopulations are more vulnerable to harm from chemical exposure than the general population must be based on the "best available science"-understanding of factors that contribute to greater susceptibility.[91] These include 1) intrinsic factors, such as underlying disease and 2) nonchemical extrinsic factors, such as psychosocial stress. Each of these factors can individually or in combination increase human susceptibility to harm from exposure to individual chemicals.[92]

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[88] *See* Appendix 4.

[89] 15 U.S.C. § 2602(12); 40 C.F.R. § 702.33.

[90] *Id.*

[91] *Id.* § 2625(h).

[92] Patricia D. Koman et al., *Population Susceptibility: A Vital Consideration in Chemical Risk Evaluation Under the Lautenberg Toxic Substances Control Act*, 17 PLoS Biology at 4 (Aug. 2019), https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000372; Cliona M. McHale et al., *Assessing Health Risks from Multiple Environmental Stressors: Moving from G×E to I×E*, 775 Mutational Research 11– 20 (Jan. 2018), https://www.ncbi.nlm.nih.gov/pmc/ar

People living in geographic proximity to high-volume chemical facilities in Texas and Louisiana, including facilities that release or transfer high volumes of TSCA high-priority chemicals as well as other chemicals of concern, are demographically diverse and report an array of intrinsic and extrinsic susceptibility factors that put them at a greater risk of adverse health outcomes from chemical exposures. Intrinsic susceptibility factors common to these geographic areas include underlying diseases like cancer.[93] Extrinsic factors common to these areas include psychosocial stressors like poverty and racial injustice.[94] Due to their proximity to chemical facilities, fenceline communities in Texas and Louisiana, such as the ones described above in the TX/LA Gulf region and Cancer Alley, are also uniquely impacted by elevated exposure to multiple harmful chemicals, including many of EPA's 20 high-priority chemicals.

EPA must consider people living in the communities described in Section I.A above, and similarly exposed communities elsewhere in the country, as potentially exposed or susceptible populations due to the interaction of scientifically-supported intrinsic and extrinsic susceptibility factors. In order to adequately evaluate risk from exposure to the 20 high-priority chemicals, EPA's final scope documents, and therefore its risk evaluations, must separately evaluate risk for populations living in proximity to the facilities in Louisiana and Texas where many of the TSCA high-priority chemicals are manufactured, processed, used, released, disposed of, and transferred into and out of taking susceptibility factors into account.

1. Intrinsic factors like underlying disease make communities in the TX/LA Gulf region and Cancer Alley *more susceptible* than the general population to harm from exposure to the TSCA high-priority chemicals.

Human susceptibility to harm from chemical exposures can be increased by intrinsic factors of susceptibility, which are biological traits like age, life stage, genetic makeup, and pre-existing health conditions that contribute to the variability in the human response to chemical exposures.[95] For example, a group of studies examining air pollution exposure indicated that

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ticles/PMC5863617/; NRC, *Science and Decisions: Advancing Risk Assessment* at 110, 111, and 213 (2009), https://pubmed.ncbi.nlm.nih.gov/25009905/.

[93] EPA, *2014 National Air Toxics Assessment: National Cancer Risk by Source Group* (2014), https://www.epa.gov/national-air-toxics-assessment/2014-nata-assessment-results.

[94] Wesley James et al., *Uneven Magnitude of Disparities in Cancer Risks from Air Toxics*, 9 Intl. J. Envtl. Res. & Pub. Health 4365, 4366 (Dec. 2012), https://pubmed.ncbi.nlm.nih.gov/23208297/; National Environmental Justice Advisory Council ("NEJAC"), *Ensuring Risk Reduction in Communities with Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts* at 5 (Dec. 2004), https://www.epa.gov/sites/production/files/2015-02/documents/nejac-cum-risk-rpt-122104.pdf.

[95] Rachel Morello-Frosch et al., *Understanding the Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy*, 30 Health Affairs 879–887 (May 2011), https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2011.0153; McHale et al., note 92 *supra*;

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underlying diabetes and cardiovascular disease increased mortality risk from exposure to particulate matter.[96]

People inhabiting communities in the TX/LA Gulf region and Cancer Alley suffer from elevated rates of pre-existing or underlying disease compared to national averages.[97] Cancer Alley in Louisiana serves as a prime example: the term "Cancer Alley" refers to the staggeringly high cancer rates among residents living in close proximity to petrochemical facilities.[98] According to EPA data, seven out of 10 census tracts with the nation's highest cancer risks are located in Cancer Alley.[99] St. John the Baptist Parish contains five of the six census tracts with the highest cancer rates in the nation.[100] One of those five tracks has the nation's highest cancer risk; there, residents face a cancer risk almost 50 times the national average.[101] Cancer Alley residents also suffer from elevated pre-existing health conditions like diabetes and obesity.[102] All of the 11 parishes that comprise Cancer Alley report higher rates of diabetes and obesity compared to national averages.[103]

Other highly-industrialized communities in Louisiana also suffer from elevated rates of disease. A survey conducted by the University of Texas at Galveston Medical Branch found that 99 percent of surveyed residents in Mossville, Louisiana, discussed above in Section I.A.1.c.,

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Koman et al., note 92 *supra*; Ronald N. Hines, *Approaches for Assessing Risks to Sensitive Populations: Lessons Learned from Evaluating Risks in the Pediatric Population*, 113 Toxicological Sci. 4– 26 (Jan. 2010), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3469276/; NRC, *Science and Decisions* at 110, note 92 *supra*.

[96] Antonella Zanobetti & Joel Schwartz, *Are Diabetics More Susceptible to the Health Effects of Airborne Particles?*, 164 Am. J. Respir. Crit. Care Med. 831– 33 (Sep. 2001), https://pubmed.ncbi.nlm.nih.gov/11549541/; Antonella Zanobetti et al., *Are There Sensitive Subgroups for the Effects of Airborne Particles?*, 108 Envtl. Health Perspectives 841–45 (Sep. 2000), https://pubmed.ncbi.nlm.nih.gov/11017888/.

[97] United Health Foundation, "America's Health Rankings: U.S. Overall 2019," https://www.americashealthrankings.org/explore/annual (last visited May 24, 2020).

[98] Tristan Baurick, et al., "Welcome to 'Cancer Alley,' Where Toxic Air Is About to Get Worse," *ProPublica* (Oct. 30, 2019), https://www.propublica.org/article/welcome-to-cancer-alley-where-toxic-air-is-about-to-get-worse.

[99] Rachel Ramirez, "Wake-Up Call," *Grist* (May 4, 2020), https://grist.org/justice/as-coronavirus-ravages-louisiana-cancer-alley-residents-havent-given-up-the-fight-against-polluters/.

[100] EPA, *2014 National Air Toxics Assessment: National Cancer Risk by Source Group*, note 93 *supra*.

[101] *Id.*

[102] United Health Foundation, note 97 *supra*.

[103] *Id.*

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supra, suffered from ear, nose, and throat illnesses. More than 50 percent of Mossville residents also suffered from central nervous system disturbances, cardiovascular problems, as well as skin, digestive, and immune disorders.[104]

In Port Arthur, Texas, discussed above in Section I.A.1.b, *supra*, a health survey conducted by the University of Texas Medical Branch indicated elevated rates of headaches, muscle aches, ear, nose and throat conditions, heart conditions, and respiratory illnesses in communities where people live within close proximity of refineries in Port Arthur compared to non-refinery neighborhoods.[105] Neighborhoods in East Houston, Texas reported higher incidence of heart attacks, indicating underlying cardiovascular disease, compared to the City of Houston and the surrounding Harris County.[106]

The high prevalence of pre-existing health conditions among those living in close geographic proximity to the many facilities that release and/or transfer TSCA high-priority chemicals in Cancer Alley, the Mossville area, Port Arthur, and the Greater Houston area (and any similar communities in close proximity to multiple facilities that release or transfer large volumes of high priority chemicals) are "potentially exposed or susceptible subpopulations" based on their elevated susceptibility to harm from exposure to these chemicals as compared to the general population.[107]

2. Extrinsic factors like psychosocial stress make communities in the TX/LA Gulf region and Cancer Alley *more susceptible* than the general population to harm from exposure to the TSCA high-priority chemicals.

Human susceptibility to harm from chemical exposures can also be influenced by extrinsic factors, which include psychosocial stressors like poverty, violence, racial injustice,

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[104] MEAN et al., *Industrial Sources of Dioxin Poisoning in Mossville, Louisiana: A Report Based on the Government's Own Data* (July 2007), https://www.loe.org/images/content/100423/mossville.pdf; According to the United Health Foundation, the state of Louisiana ranks 47th in the nation for Overall Health Status. United Health Foundation, note 97 *supra*.

[105] The University of Texas Medical Branch, "Burning Deadly Military Waste in Blacks Backyard" (Oct. 17, 2007), https://www.utmb.edu/newsroom/article1827.aspx; Debra L. Morris et al., *Symptoms of Adverse Health Effects Among Residents from Communities Surrounding Chemical-Industrial Complexes in Southeast Texas*, 59 Archives Envtl. Health 160–65 (Mar. 2004), https://www.ncbi.nlm.nih.gov/pubmed/16121907.

[106] Houston Dep't of Health & Human Services, *Community Health Profile: Health Service Delivery Area A* at 33 (July 2014), https://www.houstontx.gov/health/chs/2014CommunityHealthProfile%20Area%20A-Nov%202014.pdf.

[107] 15 U.S.C. § 2602(12); 40 C.F.R. § 702.33.

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healthcare inequity, and food insecurity.[108] It is well established in the scientific literature that these nonchemical stressors can increase susceptibility to harm from chemical exposures, and should be taken into consideration when determining "potentially exposed or susceptible subpopulations."[109] For example, several large-scale, longitudinal studies examining air pollution exposure in the United States associated increased mortality from exposure to particulate matter with low levels of educational attainment, a common indicator of low socioeconomic status.[110]

In general, racial and ethnic minorities in the United States face higher levels of psychosocial stressors than non-minorities.[111] These stressors, like low socio-economic status and healthcare inequities, often translate to a greater proportion of negative health outcomes among minority groups.[112] In the context of environmental exposures, these stressors can further increase susceptibility to adverse exposure effects.[113] For example, a longitudinal study examining air pollution in New York City found that ambient ozone exposure increased the relative risk for respiratory hospital admissions only in Hispanic and nonwhite individuals who also lacked health insurance coverage, where health insurance coverage served as an indicator of socioeconomic standing.[114]

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[108] Morello-Frosch et al., note 95 *supra*; McHale et al., note 92 *supra*; Devon C. Payne-Sturges et al., *Methods for Evaluating the Combined Effects of Chemical and Nonchemical Exposures for Cumulative Environmental Health Risk Assessment*, 15 Intl. J. Envtl. Research & Pub. Health 2797 (2018), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6313653/.

[109] NRC, *Science and Decisions* at 10, 110, 111, note 92 *supra*; Bruce S. McEwen & Pamela Tucker, *Critical Biological Pathways for Chronic Psychosocial Stress and Research Opportunities to Advance the Consideration of Stress in Chemical Risk Assessment*, 101 Am. J. Pub. Health S131–39 (Dec. 2011), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222511/; Payne-Sturges et al., note 108 *supra*.

[110] Marie S. O'Neill et al., *Health, Wealth, and Air Pollution: Advancing Theory and Methods*, 111 Envtl. Health Perspectives 1861– 70 (Dec. 2003), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241758/pdf/ehp0111-001861.pdf.

[111] Gilbert C. Gee & Devon Payne-Sturges, *Environmental Health Disparities: A Framework Integrating Psychosocial and Environmental Concepts*, 112 Envtl. Health Perspectives 1645–53 (Dec. 2004), https://pubmed.ncbi.nlm.nih.gov/15579407/.

[112] *Id.*

[113] Morello-Frosch et al., note 95 *supra*; NEJAC at 23–25, note 95 *supra*; NEJAC, *The 2005 Gulf Coast Hurricanes and Vulnerable Populations: Recommendations for Future Disaster Preparedness/Response* at 2 (Aug. 2006), https://www.epa.gov/sites/production/files/2015-02/documents/gulf-coast-recomm-9-27-06.pdf.

[114] R. Charon Gwynne, *The Burden of Air Pollution: Impacts Among Racial Minorities*, 109 Envtl. Health Perspectives 501– 06 (Aug. 2001), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240572/pdf/ehp109s-000501.pdf.

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Because of discriminatory practices when siting facilities, many fenceline communities in Texas and Louisiana are predominately populated by lower-income, racial minorities. Of the fenceline neighborhoods in East Houston, two are over 85 percent minority populations.[115] The median level of family income across all East Houston fenceline neighborhoods is more than 30 percent lower than for the City of Houston, and over a quarter of the residents fall below the poverty level.[116] Most residents in Port Arthur, Texas identify as African American, and nearly 28 percent of residents live below the poverty line.[117] The communities closest to the chemical facilities along the Mississippi River in Louisiana are predominantly African American, with a large proportion of the population living below the poverty line.[118]

As a result of the extrinsic factors noted above, people living in close geographic proximity to facilities that release and/or transfer the TSCA high priority chemicals—such as in Cancer Alley, Houston, Port Arthur, and Mossville—are more susceptible to harm from exposure to the TSCA high priority chemicals than the general population.[119]

3. The interaction of intrinsic and extrinsic susceptibility factors further increases the *susceptibility* of communities in the TX/LA Gulf region and Cancer Alley to harm from exposure to the TSCA high-priority chemicals.

Research examining the interaction between intrinsic and extrinsic factors suggests that the combination of both results in greater variability, and thus greater susceptibility, in populations exposed to harmful chemicals.[120] This interaction primarily occurs in two ways. The first interaction involves extrinsic factors increasing the severity of intrinsic factors independently of chemical exposures. This interaction is often the result of the physiological "wear and tear" that can result from chronic stress.[121] For example, a study conducted by researchers at Johns Hopkins University found that the long-term, psychosocial stress related to a poor working environment increased the risk of mortality from cardiovascular disease, an

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[115] Heidi L. Bethel et al., *A Closer Look at Air Pollution in Houston: Identifying Priority Health Risks*, https://www3.epa.gov/ttn/chief/conference/ei16/session6/bethel.pdf.

[116] *Id.*

[117] Census Reporter, "Port Arthur, TX," (2018), https://censusreporter.org/profiles/16000US4858820-port-arthur-tx/.

[118] James et al. at 4366, note 94 *supra*; NEJAC at 5, note 94 *supra*.

[119] 15 U.S.C. § 2602(12); 40 C.F.R. § 702.33.

[120] McHale et al., note 92 *supra*; Morello-Frosch et al., note 95 *supra*.

[121] Bruce S. McEwen, *Protective and Damaging Effects of Stress Mediators*, 338 New England J. Med. 171–79 (Jan. 1998), https://pubmed.ncbi.nlm.nih.gov/9428819/; Morello-Frosch et al., note 95 *supra*; Payne-Sturges et al., note 108 *supra*.

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intrinsic underlying condition.[122] The second form of interaction involves both factors acting together to cumulatively increase the susceptibility to harm from chemical exposures. For example, a study conducted by researchers at the Harvard School of Public Health discovered that exposure to high levels of traffic-related air pollutants during childhood, an intrinsically susceptible life stage, was associated with an elevated risk of developing asthma only if the exposed children also experienced chronic psychosocial stress in the form of violence.[123]

Together, this evidence highlights the potential for even greater susceptibility to harm from chemical exposures due to interacting intrinsic and extrinsic susceptibility factors. Scientists agree that both intrinsic and extrinsic factors must be taken into consideration during chemical risk evaluation to ensure protection of highly susceptible groups, like those living in Cancer Alley, Mossville, Port Arthur, and Houston.[124] Indeed, the National Academy of Sciences ("NAS") suggests that failing to account for both intrinsic and extrinsic susceptibility factors could lead to a vast underestimation of risk from chemical exposures in the human population.[125]

II. The Draft Scopes Fail to Identify All Reasonably Available Information About Exposure.

TSCA requires EPA to conduct risk evaluations based on "reasonably available" information.[126] EPA defines this term to include not only "information that EPA possesses" but also information that EPA "can reasonably generate, obtain, and synthesize for use in risk evaluations."[127] TSCA also provides EPA with broad authority to require the production or generation of exposure and toxicity data. If such data already exists, EPA can require its production under TSCA section 8 or issue subpoenas for such information under TSCA section

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[122] J.V. Johnson et al., *Long-term Psychosocial Work Environment and Cardiovascular Mortality Among Swedish Men*, 86 Am. J. Pub. Health 324– 31 (Mar. 1996), https://pubmed.ncbi.nlm.nih.gov/8604756/.

[123] Jane E. Clougherty, *Synergistic Effects of Traffic-Related Air Pollution and Exposure to Violence on Urban Asthma Etiology*, 115 Envtl. Health Perspectives 1140–46 (Aug. 2007), https://pubmed.ncbi.nlm.nih.gov/17687439/.

[124] Patricia D. Koman et al., note 92 *supra*; McHale et al., note 92 *supra*; NRC, *Science and Decisions* at 110, 111, 213, note 92 *supra*.

[125] NRC, *Science and Decisions* at 213, note 92 *supra*.

[126] 15 U.S.C. § 2625(k).

[127] 40 C.F.R. § 702.33.

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11.[128] If such data does not presently exist, EPA can order additional workplace monitoring under TSCA section 4.[129]

A. EPA should seek out reasonably available information beyond CDR and TRI reporting.

According to the draft scopes, EPA plans to rely very heavily on information it obtains from the TRI and/or the CDR. However, these databases are limited and have serious gaps. For example, six of the twenty high-priority chemicals are not reportable under the TRI: DIBP, DCHP, TCEP, TPP, HHCB, and BBP. EPA should promptly add these six substances to the TRI reportable substance list so it obtains release information before the risk evaluation and risk management process is over. In addition, CDR reporting is not required for facilities that manufacture or import less than 25,000 pounds of a substance (other than substances subject to rules under TSCA sections 5 or 6),[130] which could result in significant gaps in EPA's knowledge of actual manufacturing/import data. EPA should fill these gaps by asking manufacturers and processors to provide information about *all* facilities that manufacture or process any TSCA high-priority chemicals at amounts that do not trigger CDR reporting. EPA must also seek information from the Agency's Superfund program (as well as state Superfund programs) regarding any "ongoing" and/or "independent" disposals—including spills, leaks and other uncontrolled discharges—of high-priority chemicals from Superfund sites in the TX/LA Gulf region and Cancer Alley, as these conditions of use must be reflected in the risk evaluations of these substances.[131]

In addition, state and local government agencies, as well as other federal agencies, often have critical information on how substances impact particular subpopulations or their particular conditions of use. EPA must therefore affirmatively request that federal, state and local governmental bodies provide information about the TSCA high-priority chemicals during the scoping phase. Requests should include, but are not limited to:

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[128] 15 U.S.C. §§ 2607(a), (c) ("Records required to be maintained under this subsection shall include records of consumer allegations of personal injury or harm to health, reports of occupational disease or injury, and reports or complaints of injury to the environment submitted to the manufacturer, processor, or distributor in commerce from any source"); *id.* § 2610(c).

[129] *Id.* § 2603(a)(1) ("the Administrator shall . . . require that testing be conducted on such substance or mixture to develop information with respect to the health and environmental effects for which there is an insufficiency of information and experience and which is relevant to a determination that the manufacture, distribution in commerce, processing, use, or disposal of such substance or mixture, or that any combination of such activities, does or does not present an unreasonable risk of injury to health or the environment").

[130] 40 C.F.R. § 711.8.

[131] *Safer Chemicals, Healthy Families*, 943 F.3d at 426.

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- information from state and local health departments about releases and exposures to these chemicals, and disease trends in communities near manufacturing, processing, storage, recycling and disposal;
- information from state and local labor departments about releases and exposures to these chemicals, accidents at sites where the chemicals are manufactured, processed, recycled and disposed of, and disease trends among workers at such sites;
- information from State Emergency Response Commissions and Local Emergency Planning Committees established pursuant to the Emergency Planning and Community Right to Know Act[132] about reported accidents and releases involving these chemicals;
- information from state and local environmental agencies about permit violations and releases of these chemicals into the environment including into drinking water;
- site-specific enforcement information from OSHA and NIOSH and medical surveillance data if available; and
- information from the Agency for Toxic Substances and Disease Registry, particularly the Petition Assessment Branch and the Division of Health Assessment and Consultation.

B. To fully characterize the risks to people living in geographic proximity to high-volume chemical facilities in Texas and Louisiana, EPA must gather and develop information about exposures directly from these communities.

EPA must actively seek input from exposed communities on the high-priority chemicals because this information is "reasonably available" and directly relevant to understanding the conditions of use of the TSCA high-priority chemicals, as well as information about exposure to these substances.[133] In *Science and Decisions*, the National Research Council's ("NRC") Committee on Improving Risk Analysis Approaches Used by the U.S. EPA stressed the importance of involving stakeholders in risk evaluation, including community groups: "Without [stakeholder] involvement, the committee sees no way to ensure that the decision process will be satisfactory; indeed, without such involvement, it is inevitably deficient."[134] NRC emphasized that stakeholder involvement requires more than public comment periods, calling these "obviously important, but . . . insufficient."[135] Rather, "stakeholder involvement . . . should include substantive involvement in the assessment process."[136]

To comport with best available science standards, EPA must reach out to communities to seek their input. Community members may be aware of local air or water monitoring. In

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[132] 42 U.S.C. § 11,001 *et seq.*

[133] 15 U.S.C. § 2625(k).

[134] NRC, *Science and Decisions* at 250, note 92 *supra*.

[135] *Id.* at 250–51.

[136] *Id.* at 234–35.

addition, communities living near facilities that emit the chemical can help EPA determine activity patterns relevant to exposure, *e.g.*, children may play near facilities due to the presence of a field or playground. Community input is also essential to understanding the susceptibility of people living near facilities releasing and/or transferring high-priority chemicals.

Moreover, seeking community input on the high-priority chemicals is consistent with EPA's environmental justice agenda. Per EPA's Environmental Justice Strategic Action Plan for 2016–2020 ("EJ 2020"), the Agency commits to "expand [the Agency's] work with diverse stakeholders in communities," including by "routinely analyz[ing], consider[ing] and address[ing] environmental justice issues in all appropriate EPA rulemaking[s] . . . ."[137] EJ 2020 commits EPA to meaningful engagement with communities:

> Vibrant stakeholder engagement and partnerships are the backbone of EJ 2020 and essential to achieving meaningful outcomes for overburdened communities. Through early, ongoing and meaningful stakeholder engagement, EPA will catalyze a new level of stakeholder dialogue and collaboration in the course of implementing EJ 2020 and environmental justice practice within our programs and regions. Examples of community engagement in EJ 2020 include community involvement in EPA rulemaking and permitting processes, community-based participatory research and citizen science, and the development of outcome measures that are meaningful to communities.[138]

The Office of Chemical Safety and Pollution Prevention is identified as the EJ 2020 program lead in meeting the objective of "ensur[ing] environmental justice is appropriately analyzed, considered and addressed in EPA rules with potential environmental justice concerns, to the extent practicable and supported by relevant information and law."[139] While TSCA risk evaluations are not rulemakings, any finding of unreasonable risk must be followed by a risk management rulemaking and such risk management can only protect fenceline communities if the underlying risk evaluation takes environmental justice concerns into account.

III. EPA's Draft Scopes Do Not Contain All of the Information Required by TSCA and EPA's Risk Evaluation Regulations.

A risk evaluation scope must describe "the hazards, exposures, conditions of use, and the potentially exposed or susceptible subpopulations the Administrator expects to consider."[140] EPA's regulations for scopes also provide a number of requirements for the Agency

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[137] EPA, *EJ 2020 Action Agenda* at ii– iii (Oct. 2016), https://www.epa.gov/sites/production/files/2016-05/documents/052216_ej_2020_strategic_plan_final_0.pdf ("EJ 2020").

[138] *Id.* at 10.

[139] *Id.* at 2.

[140] 15 U.S.C. § 2605(b)(4)(D).

to meet.[141] In addition to failing to properly identify potentially exposed or susceptible subpopulations such as those in Texas and Louisiana, EPA's scopes fall short of the requirements for the following additional reasons.

A. EPA must consider spills, leaks, fires, and explosions at facilities releasing and/or transferring high-priority chemicals as conditions of use.

TSCA mandates that the scope of a risk evaluation identify the "conditions of use" that will be addressed in the risk evaluation, including those that are "reasonably foreseen."[142] In the final scopes, EPA's identification of conditions of use should take into account the facilities that manufacture, process, distribute, use or dispose of the TSCA high-priority chemicals and that have a documented history of spills, leaks, fires, and explosions. To the extent these incidents occur with regularity, they are "reasonably foresee[able]" and must be understood as conditions of use of these substances.

Texas and Louisiana facilities have a documented history of spills, leaks, fires and explosions.[143] A 2016 Houston Chronicle investigation found that a major chemical incident occurs once every six weeks in the greater Houston area.[144] One source of incidents is the Exxon Complex in Baytown, Texas, a suburb of Houston. The Exxon Complex is the largest petroleum and petrochemical complex in the United States[145] and a source of formaldehyde and 1,3-butadiene releases.[146] Between January and July 2019, there were two fires at the facility.[147] Also in the Greater Houston area is Ineos, the leading U.S. importer of 1,3-butadiene. Ineos has been

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[141] 40 C.F.R. § 702.41(c).

[142] 15 U.S.C. § 2605(b)(4)(D); *id.* § 2602(4).

[143] *See, e.g.*, Margaret Toal et al., "Thousands Evacuated in Texas After Explosion at Port Neches Chemical Plant," *N.Y. Times* (Nov. 27, 2019), https://www.nytimes.com/2019/11/27/us/texas-explosion-port-neches-tpc.html; Matt Dempsey et al., "Explosion, Fire at Exxon Mobil Baytown Plant Injures 37," *The Houston Chronicle* (July 31, 2019), https://www.houstonchronicle.com/news/houston-texas/houston/article/ExxonMobil-s-Baytown-fire-the-latest-in-a-14270558.php; Julia Bagg et al., "Crosby, Texas Chemical Plant Explodes Twice, Arkema Group Says," *NBC News* (Aug. 30, 2017), https://www.nbcnews.com/storyline/hurricane-harvey/harvey-danger-major-chemical-plant-near-houston-likely-explode-facility-n797581; Nomaan Merchant, "Cleanup of Texas Chemical Plant Hamstrung by New Fire, Spill," *Associated Press* (March 22, 2019), https://apnews.com/6fd4420cecd240dea79657bc67fb812e.

[144] Matt Dempsey et al., note 143 *supra*.

[145] *Env't Texas Citizen Lobby, Inc. v. ExxonMobil Corp.*, 2017 WL 2331679, at *2 (S.D. Tex. Apr. 26, 2017).

[146] Appendix 2 at 10, 12.

[147] Matt Dempsey et al., note 143 *supra* (noting that in the first seven months of 2019 there had been a total of four fires at Houston-area chemical facilities).

cited for a number of incidents, including in 2009, when the facility released 25,000 pounds of 1,3-butadiene, butylene, and carbon monoxide,[148] and in 2010, when Ineos was fined for unauthorized release of nearly 2,000 pounds of 1,3-butadiene.[149]

Port Neches, a town near Port Arthur, Texas, is the site of Texas Petroleum Chemicals Group ("TPC"), a facility with a documented history of leaks and explosions. TPC manufactures 1,3-butadiene and is a source of releases and incoming waste transfers of that chemical.[150] In 2017, an EPA settlement required TPC to install fenceline monitoring to detect fugitive emissions of 1,3-butadiene because EPA found that TPC had been releasing 1,3-butadiene rather than flaring it off.[151] The Texas Commission on Environmental Quality found that TPC's Port Neches facility is the second-highest unauthorized emitter of 1,3-butadiene in the state, having emitted 14,881 pounds of the chemical beyond its permit limits.[152] In November 2019, TPC had an explosion that required widespread mandatory evacuations.[153] That explosion released 1,000 pounds of 1,3-butadiene and 500 pounds of particulate matter.[154]

Louisiana facilities are also known to have frequent chemical disasters. The Sasol Chemicals plant in Westlake, Louisiana, a source of 1,3-butadiene releases,[155] was the site of an

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[148] Technical Report for 1,3-butadiene at 5.

[149] Technical Report for 1,3-butadiene at 5.

[150] Appendix 1 at 10; Kiah Collier, "Port Neches Plant Rocked by Multiple Explosions Has History of Environmental Missteps," *The Texas Tribune* (Nov. 27, 2019), https://www.texastribune.org/2019/11/27/texas-plant-rocked-explosions-mandatory-evacuations-ordered/.

[151] Kiah Collier, "Ahead of Explosion, Port Neches Plant Reported an Increase of Rogue Emissions of Explosive Gas," *Houston Public Media* (Jan. 30, 2020), https://www.houstonpublicmedia.org/articles/news/2020/01/30/358950/ahead-of-explosion-port-neches-plant-reported-an-increase-of-rogue-emissions-of-explosive-gas/.

[152] Kiah Collier, "Texas Regulators Want Stiffer Penalties for Company Whose Port Neches Plant Exploded," *The Texas Tribune* (Dec. 18, 2019), https://www.texastribune.org/2019/12/18/texas-regulators-want-tougher-penalties-company-after-port-neches-blas/.

[153] Kiah Collier, "Texas Sues Company Whose Port Neches Chemical Plant Exploded," *The Texas Tribune* (Feb. 22, 2020), https://www.texastribune.org/2020/02/22/attorney-general-port-neches-plant-explosion/; Audrey McNamara, "50,000 People Allowed Back Home After Blasts at Chemical Plant in Texas," *CBS News* (Nov. 30, 2019), https://www.cbsnews.com/news/texas-chemical-plant-blasts-50000-people-allowed-back-home-2019-11-30/.

[154] Kiah Collier, note 150 *supra*. In 2020, the Texas Attorney General sued TPC for the plant's environmental violations, including those associated with the November 2019 explosion. Kiah Collier, note 153 *supra*.

[155] Appendix 3 at 11.

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explosion in January 2020.[156] A 2016 EPA inspection of Firestone Polymers in Sulphur, Louisiana found that it was releasing illegal amounts of 1,3-butadiene.[157] In 2017, an equipment failure caused the Firestone Polymers plant to release an estimated 740 pounds of 1,3-butadiene per day.[158] Since 2015, there have been 32 accidental releases of 1,3-butadiene at the Shell Chemical plant in Norco, Louisiana (St. Charles Parish).[159] In 2012, the plant experienced "elevated flares, shooting flames and leaking thick black smoke."[160]

Incidents such as these explosions, leaks, spills, and equipment failures have been found to be reasonably foreseeable under other laws in similar contexts. For example, EPA and regulated industries recognize that inadvertent releases of hazardous air pollutants occur and are inevitable.[161] In addition, the interpretation and implementation of the National Environmental Policy Act ("NEPA") shows that, in the realm of environmental law, "reasonable foreseeability" includes accidental releases.[162] Indeed, federal guidance for preparation of NEPA analyses

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[156] Associated Press, "Explosion Reported at Chemical Plant in Lake Charles; No Injuries, Company Says," *NOLA.com* (Jan. 15, 2020), https://www.nola.com/news/article_b8f9c60e-379b-11ea-b7a6-975903917c9a.html.

[157] Technical Report for 1,3-butadiene at 5.

[158] *Id.* at 6.

[159] *Id.*

[160] *Id.*

[161] *See, e.g. U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 606 (D.C. Cir. 2016), *on reh'g en banc in part*, 2016 WL 7427434 (D.C. Cir. Dec. 23, 2016), and *on reh'g en banc*, 2016 WL 7427453 (D.C. Cir. Dec. 23, 2016) ("Both [EPA and industry petitioners] agree that malfunctions are inevitable in the operation of area and major boilers. According to the EPA, "even equipment that is properly designed and maintained can sometimes fail and . . . such failure can sometimes cause an exceedance of the relevant emission standard."). Indeed, the regulated industries have challenged EPA for failing to incorporate consideration of *anticipated malfunctions* resulting in releases of toxics into regulations. *Id.*

[162] NEPA requires federal agencies to prepare an environmental impact statement ("EIS") for any proposed major federal action "significantly affecting the quality of the human environment." 42 U.S.C. § 4332(C). An EIS must include an evaluation of the proposed action's "[i]ndirect effects, which are caused by the action and are later in time or farther removed in distance, but are still *reasonably foreseeable*." 40 C.F.R. § 1508.8(b) (emphasis added); *see Brady Campaign to Prevent Gun Violence v. Salazar*, 612 F. Supp. 2d 1, 21–22 (D.D.C. 2009) (finding that NEPA required the agency to analyze the foreseeable consequences that would occur as a result of the agency action). Failure to include leaks, accidents and other unintended consequences of the proposed action—when they are reasonably foreseeable—is a basis for invalidating an EIS. *See, e.g.*, *New York v. Nuclear Regulatory Comm'n*, 681 F.3d 471, 479 (D.C. Cir. 2012) (finding that the Nuclear Regulatory Commission's NEPA analysis was "not supported by substantial evidence on the record because the Commission failed to properly

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acknowledges that accidents may be foreseeable.[163] Just as an EIS created under NEPA must comprehensively evaluate impacts to the environment so that decisionmakers have access to all of the information that they need in order to make a decision about how to proceed with a potential project,[164] so, too, must a TSCA risk evaluation provide comprehensive information to support EPA's risk determination. Both require in-depth analysis of reasonably foreseeable future conditions in order to provide meaningful information to support agency decisionmaking.

The reading of reasonably foreseen to include accidental circumstances that occur during conditions of use is further confirmed by other language in the amended TSCA. The statute requires that the process for prioritizing risk evaluations "shall include a consideration of the hazard and exposure potential of a chemical substance or a category of chemical substances (including consideration of persistence and bioaccumulation, potentially exposed or susceptible subpopulations *and storage near significant sources of drinking water*)."[165] The mandate that EPA consider whether a substance is stored near drinking water reflects congressional intent that the potential for inadvertent leaks or spills leading to drinking water contamination is relevant to EPA's section 6 analyses. This provides additional confirmation that Congress intended EPA to include accidents and misuses in its risk evaluations.

To obtain information about spills, leaks, fires, explosions, and other accidents involving the TSCA high-priority chemicals—including their frequency—EPA must affirmatively ask all manufacturers, processors, distributors, and disposers/recyclers of these chemicals to produce all information in their possession about environmental releases (including leaks, spills, discharges, and emissions), misuses, and accidents involving these substances, including an estimate of the

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examine the risk of leaks in a forward-looking fashion and failed to examine the potential consequences of pool fires").

[163] NRC, *Evaluation of the Health and Safety Risks of the New USAMRIID High Containment Facilities at Fort Detrick, Maryland* (2010), https://www.ncbi.nlm.nih.gov/books/NBK220309/pdf/Bookshelf_NBK220309.pdf (quoting U.S. Dep't of Energy, *NEPA: Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements* (2d ed. Dec. 2004), https://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-greenbook.pdf) ("[a]n important theme of the [Department of Energy's] guidance [for the preparation of EISs] is that the EIS's consideration of human health effects should involve 'realistic scenarios,' 'realistic exposure conditions,' and 'reasonably foreseeable accidents.'").

[164] *Balt. Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983) ("[NEPA] first . . . places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action. Second, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process.") (internal quotation marks omitted).

[165] 15 U.S.C. § 2605(b)(1)(A)(emphasis added).

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amount and the frequency of releases, misuses, and accidents over the last decade.[166] The final scope documents should reflect that this effort is underway and that relevant information obtained will be incorporated into the risk evaluation.

B. EPA must examine risks from environmental exposures, including environmental exposures that could be regulated under other laws.

When conducting a risk evaluation, TSCA requires EPA to determine "whether a chemical substance presents an unreasonable risk of injury to health or the environment" under all "the conditions of use," meaning manufacture, processing, distribution in commerce, use and disposal.[167] Moreover, TSCA section 6(a) requires EPA to take into account "any combination of such activities." Risk evaluations must therefore examine all sources of exposure that contribute to health and environmental risk, including all conditions of use that result in releases into the environment, regardless of whether other environmental laws might regulate such release to some extent.[168] If EPA excludes conditions of use that result in releases of the substance into environmental media (e.g., air, water and soil), then it cannot meet its obligation to determine whether the substance presents unreasonable risk to health or the environment under all conditions of use.

If Congress had intended a blanket exemption for environmental releases from risk evaluations under TSCA section 6(b), it could have said so explicitly. But not only is there no such exemption in TSCA, its legislative history and structure demonstrate that Congress intended TSCA to provide a comprehensive framework for identifying and managing chemical risks, including those that derive from environmental exposure pathways that are subject to other environmental laws.[169] In amending TSCA in 2016, Congress sought to promote "effective

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[166] Some of this information may be available through the TRI, but only 14 of the high-priority chemicals are on the TRI.

[167] 15 U.S.C. § 2605(b)(4)(A); *Safer Chemicals, Healthy Families*, 943 F.3d at 419.

[168] TSCA defines "environment" to include "water, air, and land and the interrelationship which exists among and between water, air, and land and all living things." 15 U.S.C. § 2602(6).

[169] *See* H.R. Rep. No. 94-1341, at 7 (1976) (noting that then-existing environmental laws were "clearly inadequate" to address the "serious risks of harm" to public health from toxic chemicals); *see also* S. Rep. No. 94-698, at 3 (1976) ("[W]e have become literally surrounded by a manmade chemical environment. … [T]oo frequently, we have discovered that certain of these chemicals present lethal health and environmental dangers"). While other federal environmental laws focused on specific media, such as air or water, none gave EPA authority to "look comprehensively" at the hazards of a chemical "in total." *Id.* at 2. Congress designed TSCA to fill these "regulatory gaps," *id.* at 1, through a comprehensive approach to chemical risk management that considered "the full extent of human or environmental exposure," H.R. Rep. No. 94-1341, at 6.

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implementation" of the 1976 law's objectives.[170] Thus, it affirmed that the intent of the original law—to give EPA "authority to look at the hazards [of chemicals] in total,"[171]—remained "intact."[172]

The draft scopes fail to fulfill TSCA's requirements because EPA attempts to carve out evaluation of conditions of use from its risk evaluation based on the potential for regulation under other statutes. For example, in the draft scopes EPA writes that it "plans to . . . meet the statutory deadline for completing risk evaluations" by identifying how environmental and other "statutes and any associated regulatory programs address the presence of [high-priority chemicals] in exposure pathways."[173]

Invoking other statutes that may regulate certain exposure pathways as a justification for omitting conditions of use from the TSCA risk evaluation defies TSCA, which requires EPA to consider all of a chemical's conditions of use, regardless of whether they may be regulated under other laws. EPA's mandate under TSCA is to ensure that a "chemical substance" does not present unreasonable risk (a determination made without regard to non-risk factors), regardless of how exposure occurs, whereas other statutes do not have that same goal; indeed most environmental laws do not regulate releases based purely on risk.[174]

Indeed, EPA's discussion in the draft scopes of other laws' patchwork of certain limited protections highlights why Congress required TSCA risk evaluations to include all conditions of use, regardless of regulation or potential regulation under other environmental laws. For example, the draft scope for formaldehyde provides that with regards to drinking water, EPA "did not make a regulatory determination" when evaluating formaldehyde under the Contaminant Candidate List process per the Safe Drinking Water Act.[175] Similarly under the Clean Water Act, "EPA has not developed . . . water quality criteria" for formaldehyde.[176] The draft scope then weakly concludes that EPA "continues to consider whether and how other EPA-administered statutes and any associated regulatory programs address the presence of

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[170] *See* S. Rep. No. 114-67, at 2 (2015).

[171] S. Rep. No. 94-698, at 2.

[172] S. Rep. No. 114-67, at 7.

[173] *See, e.g.*, Draft Scope for 1,3-butadiene at 33. Similar language appears in all of the draft scopes in section 2.6.3.

[174] *Compare* 15 U.S.C. § 2605(a) (requiring EPA under TSCA to ensure that "the chemical substance" does not present unreasonable risk) *with, e.g.*, 42 U.S.C. § 300g-1(b)(4) (directing EPA under the Safe Drinking Water Act to promulgate standards of maximum contaminant levels of pollutants in drinking water, taking practical considerations into account).

[175] Draft Scope for Formaldehyde at 42.

[176] *Id.*

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formaldehyde in exposure pathways falling under the jurisdiction of these EPA statutes."[177] In sum, the draft scope shows that formaldehyde levels in water are not well-regulated under other environmental laws, underscoring the need for EPA's TSCA program to evaluate the risk to human health and the environment from formaldehyde in water.

Moreover, as is evident from the information we provide in section I.A., *supra*, other environmental laws are not preventing extensive exposure to the TSCA high-priority chemicals in highly-industrialized communities. This means that "unreasonable risk" may remain despite other laws and regulations that may address part of a chemical's lifecycle or certain exposure pathways. This is precisely why Congress required TSCA risk evaluations to cover all conditions of use, regardless of other environmental laws.

C. The Draft Scopes must identify which hazards and exposures EPA expects to consider in the risk evaluations.

TSCA requires that a scope describe "the hazards . . . the Administrator expects to consider,"[178] and EPA's regulations require draft scopes to include all of the information that is required by TSCA and EPA's rules to be in a final scope.[179] For a number of high-priority chemicals, EPA has not met this requirement. For example, in the draft scope for formaldehyde, EPA writes that it "plans to identify human health hazards from acute and chronic exposures."[180] Other draft scopes include only a partial list of health effects that EPA "screened for during prioritization," and provide that "EPA is in the process of identifying additional reasonably available information . . . which may update the list of potential human health hazards under the scope of the risk evaluation."[181]

Draft scopes with such absent and/or incomplete hazard statements do not meet TSCA's or EPA's requirement that EPA describe the hazards it expects to consider in a risk evaluation.[182] Moreover, if EPA later identifies health hazards—for example, in a final scope—doing so will deprive the public of the opportunity to comment on the hazard list, which is the harm EPA sought to avoid by requiring draft scopes to include all the information that must ultimately be in the final scope.[183]

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[177] *Id.* at 44; *see also* Draft Scope for 1,3-butadiene at 36 (repeating the same conclusion that EPA will continue to consider how other statutes address the chemical).

[178] 15 U.S.C. § 2605(b)(4)(D).

[179] 40 C.F.R. § 702.41(c)(7)(i).

[180] Draft Scope for Formaldehyde at 60.

[181] *See, e.g.*, Draft Scope for 1,3-butadiene at 28.

[182] 15 U.S.C. § 2605(b)(4)(D).

[183] 40 C.F.R. § 702.41(c)(7)(i).

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Additionally, in the draft scopes EPA repeatedly refers to yet-to-be-published systematic review documentation to inform EPA's identification and evaluation of each chemical's hazards, exposures, and potentially exposed and susceptible subpopulations.[184] Though EPA seems to recognize that the systematic review documentation is relevant and essential for the risk evaluations, EPA's failure to make this documentation public fails its requirements to make certain information available in the draft scopes.[185] Instead, EPA offers only broad categories of hazards, exposures, and potentially exposed and susceptible subpopulations, and indicates it will only provide specifics once the scopes are finalized. This is not allowed under TSCA and EPA's regulations.

Because EPA is currently failing its requirements and depriving the public of information necessary to comment effectively on the draft scopes, EPA must publish, and provide adequate time for public comment on, revised draft scopes once the Agency fully identifies the specific hazards, exposures, and potentially exposed or susceptible subpopulations and the reasonably available information EPA relied on to identify them. EPA should also publish and accept comment on its systematic review documentation for each high-priority chemical.

CONCLUSION

Millions of individuals live, work, attend school, recreate, and worship in close proximity to clusters of facilities that release large volumes of high-priority chemicals to the air, water, and land. Because of their close proximity to such facilities, these individuals have greater exposure than the general public to high-priority chemicals. In addition, a number of factors—including the prevalence of underlying disease, disability, and poverty, much of which is associated with structural inequities—have led to these individuals also becoming more susceptible than the general public to adverse health effects from high-priority chemicals. Further, because a number of facilities release more than one high-priority chemical along with other toxic chemicals, individuals in highly-industrialized areas endure cumulative exposures such that their susceptibility to adverse health effects is greater than the general public.

For these reasons, EPA must identify and evaluate communities meeting these conditions—including those in Texas and Louisiana—as potentially exposed and susceptible subpopulations. At present, the draft scopes fail to do so. In addition, as laid out in this comment, the draft scopes fail to meet other requirements under TSCA and EPA's regulations. As a result, EPA must revise the draft scopes and re-publish them for comment in order to align with the statute and regulations.

Thank you for your consideration.

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[184] *See, e.g.*, Draft Scope for *o*-dichlorobenzene at 50, 53; Draft Scope for DEHP at 51, 53; Draft Scope for 1,3-butadiene at 45, 48.

[185] 40 C.F.R. § 702.41(c).

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Releases & Transfers of High Priority Chemicals (Port Arthur, TX Area) 2012-2018 (lbs)	Air	Water	Land	Underground Injection Wells	Total Releases (Air, Water, Land Un. Inj.)	Offsite Transfer	Incoming Waste Transfers	% of Nationwide Total (releases)	% Nationwide Total (Offsite Transfers)	% Nationwide Total (Incoming Waste Transfers)
1,1,2-TCE	692.0	-	-	-	692.0	5,933.0	2,227,498.0	0.305%	0.016%	5.847%
1,2-DCP	26.6	-	-	-	26.6	-	15,235.0	0.008%	-	0.165%
EDB	-	-	-	-	-	-	45.6	-	-	9.806%
1,1-DCA	38.3	-	-	-	38.3	5.0	486.0	0.038%	0.008%	0.787%
p-Dichlorobenzene	22.3	-	-	-	22.3	141.0	44,818.0	0.030%	2.094%	1.531%
TBBPA*	-	-	-	-	-	-	-	-	-	-
DBP	6.0	-	-	-	6.0	24.0	20,397.0	0.0004%	0.002%	1.825%
Phthalic anhydride	171.8	-	-	-	171.8	-	852,904.0	0.011%	-	7.871%
Formaldehyde	298,230.4	14,957.8	546.3	-	313,734.4	29,671.0	1,114,868.9	0.279%	0.077%	2.916%
1,3-Butadiene	2,885,991.2	293.4	-	-	2,886,284.6	181,092.6	6,301,871.4	28.962%	0.611%	20.752%
o-Dichlorobenzene	65.3	-	-	-	65.3	155.0	613.0	0.013%	0.003%	0.012%
DEHP	20.0	-	-	-	20.0	1,080.0	-	0.004%	0.005%	-
trans-1,2-Dichloroethylene	-	-	-	-	-	-	1,546.4	-	-	1.239%
EDC	1,667.0	-	-	-	1,667.0	284.0	2,308,136.0	0.054%	0.001%	7.759%
Total lbs released	**3,186,930.8**	**15,251.1**	**546.3**	**-**	**3,202,728.2**	**218,385.6**	**12,888,419.3**			
HHCB**										
TPP**										
TCEP**										
DCHP**										
DiBP**										
BBP**										

* There are no known releases or transfers of this chemical in the Port Arthur region.

**No reporting requirements under TRI. See individual chemical tab for more info.

Dashes (-) indicate that there is no known data on releases or transfers. Limits on data may be due to factors such as information withheld as Confidential Business Information (CBI) or failure to accurately report.

1,1,2-TCE Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Veolia	Port Arthur, TX	692.0	-	-	-	692.0	2,227,498.0	5,933.0
Total		**692.0**	**-**	**-**	**-**	**692.0**	**2,227,498.0**	**5,933.0**

1,2-DCP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Veolia Es Technical Solutions	Port Arthur, TX	26.6	-	-	-	26.6	15,235.0	-
Total		**26.6**	**-**	**-**	**-**	**26.6**	**15,235.0**	**-**

EDB Releases & Waste Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Veolia Es Technical Solutions	Port Arthur, TX	-	-	-	-	-	45.6	-
Total		-	-	-	-	-	**45.6**	-

1,1-DCA Toxic Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Well	Total Releases	Incoming Waste Transfers	Offsite Transfer
Veolia Es Technical Solutions	Port Arthur, TX	38.3	-	-	-	38.3	486.0	5.0
Total		**38.3**	**-**	**-**	**-**	**38.3**	**486.0**	**5.0**

p-Dichlorobenzene Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Veolia Es Technical Solutions	Port Arthur, TX	22.3	-	-	-	22.3	44,818.0	141.0
Total		**22.3**	**-**	**-**	**-**	**22.3**	**44,818.0**	**141.0**

DBP Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Veolia Es Technical Solutions	Port Arthur, TX	6.0	-	-	-	6.0	20,397.0	24.0
Total		**6.0**	**-**	**-**	**-**	**6.0**	**20,397.0**	**24.0**

Phthalic anhydride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Veolia Es Technical Solutions	Port Arthur, TX	171.8	-	-	-	171.8	852,779.0	-
Dupont Sabine River Works	Orange, TX	-	-	-	-	-	125.0	-
Total		**171.8**	**-**	**-**	**-**	**171.8**	**852,904.0**	-

Formaldehyde Releases & Transfers, 2013-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
BASF Corp	Beaumont, TX	1,978.0	-	-	-	1,978.0	-	28,202.0
Big Hill Ind Waste Processing Inject Facility	Winnie, TX	-	-	-	-	-	141,813.0	-
Dupont Sabine River Works	Orange, TX	144,302.0	-	-	-	144,302.0	-	-
International Paper Orange Mill	Orange, TX	54,698.5	6,745.8	472.3	-	61,916.6	-	-
Suez Water Technologies Inc	Beaumont, TX	542.0	-	-	-	542.0	-	813.0
Veolia ES Technical Sol. LLC	Port Arthur, TX	-	-	-	-	-	28,002.0	-
Veolia Es Technical Solutions LLC	Port Arthur, TX	469.0	-	-	-	469.0	945,029.9	656.0
Westrock Texas LP	Evadale, TX	96,240.9	8,212.0	73.9	-	104,526.8	-	-
United Unlimited Sales	Port Neches, TX	-	-	-	-	-	11.0	-
City Of Beaumont	Beaumont, TX	-	-	-	-	-	10.0	-
Republic Services	Beaumont, TX	-	-	-	-	-	3.0	-
Total		**298,230.4**	**14,957.8**	**546.3**	**-**	**313,734.4**	**1,114,868.9**	**29,671.0**

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1,3-Butadiene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Total Petrochemicals	Port Arthur, TX	1,038,887.7	-	-	-	1,038,887.7	-	-
TPC Group	Port Neches, TX	379,164.0	-	-	-	379,164.0	6,100,000.0	-
Arlanxeo	Orange, TX	315,153.6	-	-	-	315,153.6	-	4,511.3
BASF Total Petrochemicals LLC	Port Arthur, TX	294,594.2	-	-	-	294,594.2	-	20,455.0
Goodyear Tire & Rubber Co.	Beaumont, TX	207,477.0	-	-	-	207,477.0	-	2,624.0
Exxonmobil Oil Corp Chemical Plant	Beaumont, TX	198,518.0	-	-	-	198,518.0	-	-
Chevron Phillips Chemical Co	Port Arthur, TX	40,066.0	-	-	-	40,066.0	-	133,627.0
Invista Sarl - Orange Site	Orange, TX	146,500.0	-	-	-	146,500.0	-	139.0
Dupont Sabine River Works	Orange, TX	74,026.7	-	-	-	74,026.7	113.0	-
Lion Elastomers LLC	Port Neches, TX	69,642.0	-	-	-	69,642.0	-	3,351.0
Flint Hills Resources Port Arthur LLC	Port Arthur, TX	60,035.0	-	-	-	60,035.0	-	1,018.0
Firestone Polymers LLC	Orange, TX	32,705.0	16.0	-	-	32,721.0	-	5,901.0
Huntsman Petrochemical LLC Port Neches Facility	Port Neches, TX	10,322.0	-	-	-	10,322.0	3,351.0	28.4
Veolia Es Technical Solutions LLC Port Arthur Facility	Port Arthur, TX	27.0	-	-	-	27.0	63,657.4	9,438.0
Exxonmobil Oil Beaumont Refinery	Beaumont, TX	8,956.0	-	-	-	8,956.0	-	-
Phillips 66 Pipeline LLC-Beaumont Terminal	Nederland, TX	5,789.0	-	-	-	5,789.0	-	-
Premcor Refining Group Inc Port Arthur	Port Arthur, TX	2,471.0	-	-	-	2,471.0	133,552.0	-
Motiva-Port Arthur Refinery	Port Arthur, TX	1,657.0	-	-	-	1,657.0	-	-
Port Arthur Refinery	Port Arthur, TX	-	-	-	-	-	1,018.0	-
"Port Arthur, TX"	Beaumont, TX	-	-	-	-	-	87.0	-
BASF Corp - Beaumont	Beaumont, TX	-	-	-	-	-	80.0	-
Ecoserv Environmental Svcs LLC	Winnie, TX	-	-	-	-	-	13.0	-
Total		**2,885,991.18**	**16.00**	**-**	**-**	**2,886,007.18**	**6,301,871.39**	**181,092.64**

o-Dichlorobenzene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Veolia	Port Arthur, TX	65.3	-	-	-	65.3	-	155.0
Dupont Sabine River Works	Orange, TX	-	-	-	-	-	613.0	-
Total		**65.3**	**-**	**-**	**-**	**65.3**	**613.0**	**155.0**

DEHP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Veolia Es Technical Solutions LLC	Port Arthur, TX	20.0	-	-	-	20.0	-	1,080.0
Total		**20.0**	**-**	**-**	**-**	**20.0**	**-**	**1,080.0**

trans-1,2-Dichloroethylene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Veolia Es Technical Solutions LLC	Port Arthur, TX	-	-	-	-	-	1,546.4	-
Total		-	-	-	-	-	**1,546.4**	-

Ethylene Dichloride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Veolia Es	Port Arthur, TX	1,667.0	-	-	-	1,667.0	2,308,136.0	284.0
Total		**1,667.0**	**-**	**-**	**-**	**1,667.0**	**2,308,136.0**	**284.0**

Releases & Transfers of High Priority Chemicals (Houston, TX Area) 2012-2018 (lbs)	Air	Water	Land	Underground Injection Wells	Total Releases (Air, Water, Land Un. Inj.)	Offsite Transfer	Incoming Waste Transfers	% of Nationwide Total (releases)	% Nationwide Total (Offsite Transfers)	% Nationwide Total (Incoming Waste Transfers)
1,1,2-TCE	17,524.50	37.00	84.00	-	17,645.50	29,244,936.00	30,793,503.00	7.766%	76.553%	80.837%
1,2-DCP	33,778.40	1,084.00	4,974.00	-	39,836.40	9,235,002.00	8,248,107.00	12.015%	99.817%	89.134%
EDB	244.79	-	-	-	244.79	163.00	-	1.803%	25.914%	-
1,1-DCA	1,733.40	12.00	10.00	2,200.00	3,955.40	57,316.30	58,156.15	3.973%	92.871%	94.233%
p-Dichlorobenzene	89.00	-	-	-	89.00	53,787.00	1,133,497.00	0.030%	2.094%	38.723%
TBBPA	-	-	145,916.00	-	145,916.00	68,894.00	146,041.00	40.118%	24.119%	21.559%
DBP	4,745.72	-	-	-	4,745.72	131,372.00	128,115.90	0.325%	11.375%	11.465%
Phthalic anhydride	29,550.63	-	-	97,426.00	126,976.63	1,714,083.49	1,116,624.71	7.930%	15.819%	10.305%
Formaldehyde	644,011.25	50,852.72	19,684.00	591,994.00	1,306,541.98	1,549,873.66	1,411,854.19	1.162%	4.047%	3.693%
1,3-Butadiene	3,895,577.20	59.48	-	-	3,895,636.68	445,862.75	16,606,166.25	39.091%	1.504%	54.685%
o-Dichlorobenzene	1,319.00	442.00	-	28,138.00	29,899.00	1,756,149.00	2,451,003.00	5.758%	34.146%	47.830%
DEHP	553.10	-	-	-	553.10	28,649.31	994,637.99	0.110%	0.134%	4.666%
trans-1,2-Dichloroethylene	240.51	4.80	0.40	-	245.71	55,057.86	65,086.97	1.699%	41.030%	52.131%
EDC	429,405.00	11,420.20	310.93	208,387.00	649,523.13	13,390,546.00	19,172,628.34	21.058%	43.128%	64.447%
Total (lbs)	**5,058,772.50**	**63,912.20**	**170,979.33**	**928,145.00**	**6,221,809.03**	**57,731,692.37**	**82,325,421.51**			
HHCB*										
TPP*										
TCEP*										
DCHP*										
DiBP*										
BBP*										

* There are no reporting requirements for this chemical under TRI, so releases and transfers for the region are unknown.

Dashes (-) indicate that there is no known data on releases or transfers. Limits on data may be due to factors such as information withheld as Confidential Business Information (CBI) or failure to accurately report.

1,1,2-TCE Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Oxy Vinyls LP La Porte VCM Plant	LaPorte, TX	1,849.00	-	-	-	1,849.00	-	19,637,534.00
Olin Blue Cube	Freeport, TX	9,212.00	10.00	7.00	-	9,229.00	-	6,836,765.00
Formosa	Point Comfort, TX	735.00	-	-	-	735.00	-	2,609,927.00
Dow Chemical	Freeport, TX	4,829.00	27.00	77.00	-	4,933.00	6,649,139.00	82,974.00
Oxy Vinyls LP Deer Park - VCM Plant (Occidental Chemical)	Deer Park, TX	776.00	-	-	-	776.00	16,815,411.00	53,738.00
Ascend Performance Materials - Chocolate Bayou Plant	Alvin, TX	0.50	-	-	-	0.50	-	3.00
Clean Harbors	LaPorte, TX	123.00	-	-	-	123.00	7,328,953.00	23,995.00
Total		**17,524.50**	**37.00**	**84.00**	-	**17,645.50**	**30,793,503.00**	**29,244,936.00**

1,2-DCP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Dow Chemical	Freeport, TX	31,278.00	1,082.00	4,974.00	-	37,334.00	8,148,977.00	1,333,897.00
Clean Harbors Deer Park	LaPorte, TX	12.40	-	-	-	12.40	99,125.00	1.00
Clean Harbors Environmental Services	LaPorte, TX	-	-	-	-	-	5.00	-
Olin Blue Cube	Freeport, TX	2,343.00	2.00	-	-	2,345.00	-	7,888,720.00
Texas Barge & Boat Inc	Freeport, TX	126.00	-	-	-	126.00	-	12,384.00
Southwest Shipyard LP	Channelview, TX	19.00	-	-	-	19.00	-	-
Total		**33,778.40**	**1,084.00**	**4,974.00**	-	**39,836.40**	**8,248,107.00**	**9,235,002.00**

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EDB Releases & Waste Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Ethyl Corp	Pasadena, TX	243.00	-	-	-	243.00	-	163.00
Clean Harbors Deer Park LLC	LaPorte, TX	1.79	-	-	-	1.79	-	-
Total		**244.79**	**-**	**-**	**-**	**244.79**	**-**	**163.00**

1,1-DCA Toxic Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Well	Total Releases	Incoming Waste Transfers	Offsite Transfer
Oxy Vinyls VCM Plant	LaPorte, TX	1,399.00	-	-	-	1,399.00	14,711.00	53,770.00
Olin (formerly Dow)	Freeport, TX	35.00	2.00	-	-	37.00	-	3,331.00
Clean Harbors	LaPorte, TX	105.00	-	-	2,200.00	2,305.00	36,415.00	16.30
Dow Chemical	Freeport, TX	37.00	10.00	10.00	-	57.00	3,443.00	199.00
Formosa Plastics	Point Comfort, TX	123.00	-	-	-	123.00	-	-
Oxy Vinyls	Deer Park, TX	34.40	-	-	-	34.40	-	-
Occidental Chemical	Ingleside, TX	-	-	-	-	-	3,579.00	-
Waste Management-Coastal Plains	Alvin, TX	-	-	-	-	-	8.15	-
Total		**1,733.40**	**12.00**	**10.00**	**2,200.00**	**3,955.40**	**58,156.15**	**57,316.30**

p-Dichlorobenzene Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Clean Harbors Deer Park LLC	La Porte, TX	89.00	-	-	-	89.00	1,133,497.00	53,787.00
Total		89.00	-	-	-	89.00	1,133,497.00	53,787.00

TBBPA Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
US Ecology Texas Inc	Robstown, TX	-	-	145,194.00	-	145,194.00	145,194.00	-
Clean Harbors	LaPorte, TX	-	-	722.00	-	722.00	722.00	-
Clean Harbors Deer Park	Deer Park, TX	-	-	-	-	-	125.00	-
Dow Chemical	Freeport, TX	-	-	-	-	-	-	68,894.00
Total		**-**	**-**	**145,916.00**	**-**	**145,916.00**	**146,041.00**	**68,894.00**

DBP Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total	Incoming Waste Transfers	Offsite Transfer
Lanxess Corp-Baytown	Baytown, TX	1,218.00	-	-	-	1,218.00	-	86,312.00
Grace -Pasadena Catalyst Site	Pasadena, TX	3,487.00	-	-	-	3,487.00	-	39,644.00
Clean Harbors Deer Park LLC	LaPorte, TX	35.70	-	-	-	35.70	127,082.90	5,332.00
Akzo Nobel Functional Chemicals LLC	Pasadena, TX	-	-	-	-	-	-	84.00
Packaging Services Co Inc	Pearland, TX	5.02	-	-	-	5.02	-	-
Seabreeze Environmental Landfill	Angleton, TX	-	-	-	-	-	976.00	-
Univar USA Inc Houston FM 529	Houston, TX	-	-	-	-	-	57.00	-
Total		**4,745.72**	**-**	**-**	**-**	**4,745.72**	**128,115.90**	**131,372.00**

Phthalic anhydride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
BASF Corp Pasadena Plant	Pasadena, TX	8,125.00	-	-	-	8,125.00	-	1,575,100.00
Texas Molecular	Deer Park, TX	-	-	-	97,426.00	97,426.00	-	72,739.00
Reichhold LLC 2	Houston, TX	213.60	-	-	-	213.60	-	45,322.00
Polynt Composites USA Inc	Houston, TX	20,144.80	-	-	-	20,144.80	-	12,850.00
Clean Harbors Deer Park LLC	LaPorte, TX	17.46	-	-	-	17.46	1,053,042.71	3,483.49
Huntsman International LLC	Houston, TX	750.00	-	-	-	750.00	-	2,399.00
Trecora Chemical Inc	Pasadena, TX	12.77	-	-	-	12.77	-	1,490.00
BASF Corp - Freeport Site	Freeport, TX	287.00	-	-	-	287.00	-	700.00
The Dow Chemical Company	Freeport, TX	-	-	-	-	-	46,795.00	-
Philip Reclamation Services Houston	Houston, TX	-	-	-	-	-	5,350.00	-
TM Deer Park Services LP	Deer Park, TX	-	-	-	-	-	4,170.00	-
US Ecology Texas	Robstown, TX	-	-	-	-	-	3,880.00	-
3M Cottage Grove Utilities/Support Svcs	Galena Park, TX	-	-	-	-	-	3,387.00	-
Total		**29,550.63**	**-**	**-**	**97,426.00**	**126,976.63**	**1,116,624.71**	**1,714,083.49**

Formaldehyde Releases & Transfers, 2013-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Afton Chemical Corp	Pasadena, TX	343.00	-	-	-	343.00	-	2,169.05
American Acryl LP	Seabrook, TX	850.00	-	-	-	850.00	-	47,496.00
Arkema Inc Clear Lake	Pasadena, TX	249.72	-	-	-	249.72	247,522.00	-
Ascend Performance Materials Bayou Plant	Alvin, TX	6,698.00	-	-	485,798.00	492,496.00	-	1,924.10
Athlon Solutions LLC	Pasadena, TX	1,604.00	-	-	-	1,604.00	-	3,571.00
Baker Petrolite Bayport Facility	Pasadena, TX	41.28	120.72	-	-	162.00	-	14,939.21
BASF Corp	Freeport, TX	11,821.00	2,777.00	-	-	14,598.00	-	238.92
Bfi Mccarty Road Landfill	Houston, TX	-	-	-	-	-	138,541.00	-
Blanchard Refining Co LLC	Texas City, TX	112,299.00	-	-	-	112,299.00	-	-
BP Amoco Chemical Company	Texas City, TX	26,330.00	-	-	-	26,330.00	-	-
Celanese LTD Clear Lake Plant	Pasadena, TX	248.58	-	-	-	248.58	-	247,522.00
Centauri Technologies	Pasadena, TX	38.00	-	-	-	38.00	-	5,426.40
Chemicals Inc	Baytown, TX	304.82	-	-	-	304.82	-	-
Chemsep Bayport	Pasadena, TX	-	-	-	-	-	30,614.37	-
Clean Harbors Deer Park LLC	LaPorte, TX	1,474.13	-	-	-	1,474.13	502,161.70	42,681.51
Clean Harbors Laporte	LaPorte, TX	-	-	-	-	-	41.10	-
Covestro LLC	Baytown, TX	5,128.00	-	-	-	5,128.00	-	46,501.00
D B Western Inc Texas	LaPorte, TX	5,650.00	-	-	-	5,650.00	-	-
Deer Park (Roh)	Deer Park, TX	18,070.00	-	-	-	18,070.00	-	-
Dixie Chemical Co Inc	Pasadena, TX	30.87	-	-	-	30.87	-	-
The Dow Chemical Company	Freeport, TX	-	-	-	-	-	3.00	-
Dow Chemical Co	Freeport, TX	93,640.00	-	-	-	93,640.00	1,081.00	114.00
E R Carpenter LP	Pasadena, TX	9.00	-	-	-	9.00	-	509.00
Ethyl Corp	Pasadena, TX	368.00	-	-	-	368.00	-	2,363.00
Evonik Corp - Pasadena PMD Plant	Pasadena, TX	377.00	-	-	-	377.00	-	51,768.00
Exxonmobil Baytown Chemical Part	Baytown, TX	7,052.00	-	-	-	7,052.00	-	-
Exxonmobil Chemical Co Baytown Olefins Plant	Baytown, TX	165,683.00	-	-	-	165,683.00	-	-
Exxonmobil Refining & Supply Baytown Refinery	Baytown, TX	110,041.00	-	-	-	110,041.00	-	-
Geo Specialty Chemicals	Deer Park, TX	15,566.26	-	-	-	15,566.26	-	330.00
Gulf Coast Authority	Pasadena, TX	-	-	-	-	-	5,935.40	-
Hexion Inc	Baytown, TX	18,654.08	-	-	-	18,654.08	-	576.03
Huntsman Petrochemical LLC	Conroe, TX	679.00	-	-	-	679.00	-	175.00
KMCO Crosby Plant	Crosby, TX	742.10	-	-	-	742.10	-	132,639.00
Lamberti USA Conroe Plant 8910	Conroe, TX	3,714.80	-	-	-	3,714.80	-	1,457.00
Lonestar Ecology	Pasadena, TX	-	-	-	-	-	30,167.00	-
Lubrizol Corp Bayport Facility	Pasadena, TX	445.00	-	-	-	445.00	-	19,683.07
Marathon Petroleum Co LP	Texas City, TX	3,720.00	-	-	-	-	-	-

Mauser Corp	Houston, TX	322.61	-	-	-	322.61	-	124.00
Nalco Champion	Freeport, TX	2,102.08	47,955.00	-	-	50,057.08	-	26,121.00
Nalco Champion	Fresno, TX	881.85	-	-	-	881.85	-	562,875.00
Nalco Co LLC	Sugar Land, TX	538.45	-	-	-	538.45	-	126,345.60
Nov Coating Houston	Houston, TX	5.00	-	-	-	5.00	-	16,939.61
Olin Blue Cube	Freeport, TX	347.00	-	-	-	347.00	-	2,063.00
Philip Reclamation Services Houston	Houston, TX	-	-	-	-	-	5,966.30	-
Republic Services Blue Ridge	Fresno, TX	-	-	-	-	-	17,262.80	-
Republic Services Gulf West Landfill	Anahuac, TX	-	-	-	-	-	2,570.57	-
Texas Molecular	Deer Park, TX	-	-	-	-	-	64,612.35	-
The Lycra Co La Porte Plant	LaPorte, TX	27,182.40	-	-	-	27,182.40	-	186,324.50
Third Coast Terminals Pearland	Pearland, TX	8.00	-	-	-	8.00	-	6,844.00
TM Deer Park Services LP	Deer Park, TX	1.30	-	-	70,079.00	70,080.30	192,075.96	113.50
US Ecology Texas	Robstown, TX	-	-	-	-	-	19,431.64	-
US Ecology Texas Inc	Robstown, TX	750.93	-	19,684.00	-	20,434.93	50,609.00	40.16
Vopak Logistics Services USA Inc	Deer Park, TX	-	-	-	36,117.00	36,117.00	10,048.41	-
Washburn Tunnel Facility	Pasadena, TX	-	-	-	-	-	51,768.00	-
Waste Management Coastal Plains	Alvin, TX	-	-	-	-	-	3,705.25	-
Western Waste Industries	Conroe, TX	-	-	-	-	-	31,696.00	-
Seabreeze Environmental Landfill	Angelton, TX	-	-	-	-	-	2,109.55	-
Liquid Environmental Solutions	Houston, TX	-	-	-	-	-	844.00	-
Phoenix Oil Humble	Humble, TX	-	-	-	-	-	675.00	-
Bayer Materialscience Baytown	Baytown, TX	-	-	-	-	-	551.42	-
Dupont La Porte Plant	LaPorte, TX	-	-	-	-	-	514.00	-
Blue Ridge Landfill Gas Compressor Plant	Fresno, TX	-	-	-	-	-	400.00	-
Rhodia, Inc	Houston, TX	-	-	-	-	-	200.00	-
Effective Environmental Pasadena Facility	Pasadena, TX	-	-	-	-	-	195.37	-
Set Environmental	Houston, TX	-	-	-	-	-	177.00	-
Waste Management Of Pasadena	Pasadena, TX	-	-	-	-	-	153.00	-
Albemarle Corp Pasadena Plant	Pasadena, TX	-	-	-	-	-	73.00	-
Deer Park WWTP	Deer Park, TX	-	-	-	-	-	55.00	-
Orourke Petroleum	Houston, TX	-	-	-	-	-	36.00	-
Waste Management - Conroe	Conroe, TX	-	-	-	-	-	33.00	-
Evoqua Water Technologies LLC	Houston, TX	-	-	-	-	-	25.00	-
Total		**644,011.25**	**50,852.72**	**19,684.00**	**591,994.00**	**1,302,821.98**	**1,411,854.19**	**1,549,873.66**

1,3-Butadiene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Lyondell Chemical Co	Channelview, TX	999,246.00	-	-	-	999,246.00	-	194,869.50
Ineos USA LLC - Chocolate Bayou Plant	Alvin, TX	712,744.00	-	-	-	712,744.00	-	-
Shell Chemical LP	Deer Park, TX	709,848.00	-	-	-	709,848.00	-	-
Exxonmobil Chemical Co Baytown Olefins Plant	Baytown, TX	245,260.00	-	-	-	245,260.00	-	-
Targa Downstream LLC - Galena Park Marine Terminal	Galena Park, TX	112,804.00	-	-	-	112,804.00	-	113,317.04
Chevron Phillips Chemical Co LP Sweeny Complex	Sweeny, TX	59,488.00	-	-	-	59,488.00	-	125,082.00
TPC Group LLC	Houston, TX	170,201.00	-	-	-	170,201.00	-	281.00
Dow Chemical Co Freeport Facility	Freeport, TX	131,404.00	-	-	-	131,404.00	9,284.00	1,180.00
Goodyear Tire & Rubber Co	Houston, TX	106,683.00	-	-	-	106,683.00	-	-
Deer Park Refining LP	Deer Park, TX	92,518.00	-	-	-	92,518.00	-	-
Formosa Plastics Corp Texas	Point Comfort, TX	79,837.00	-	-	-	79,837.00	-	0.40
Exxonmobil Refining & Supply Baytown Refinery	Baytown, TX	68,240.00	-	-	-	68,240.00	-	-
Lcy Elastomers LP	Baytown, TX	58,442.27	5.00	-	-	58,447.27	-	7,035.74
Chevron Phillips Chemical Co LP	Baytown, TX	56,398.98	-	-	-	56,398.98	-	3,654.35
Kaneka North America LLC	Pasadena, TX	44,734.00	-	-	-	44,734.00	-	8.00
Dixie Chemical Co Inc	Pasadena, TX	35,180.21	-	-	-	35,180.21	-	-
Equistar Chemicals LP	LaPorte, TX	31,520.00	-	-	-	31,520.00	-	-
Phillips 66 Co Sweeny Refinery Complex	Old Ocean, TX	29,819.46	-	-	-	29,819.46	125,082.00	-
Pasadena Refining System Inc	Pasadena, TX	27,589.15	-	-	-	27,589.15	-	-
Blanchard Refining Co LLC	Texas City, TX	22,809.00	-	-	-	22,809.00	-	-
Chevron Phillips Chemical Co - Pasadena Plastics Complex	Pasadena, TX	14,694.00	-	-	-	14,694.00	-	109.10
Jx Nippon Chemical Texas Inc	Pasadena, TX	14,605.55	-	-	-	14,605.55	-	-
Houston Refining LP	Houston, TX	13,505.00	-	-	-	13,505.00	-	-
Lubrizol Corp Deer Park Facility	Deer Park, TX	9,804.00	35.80	-	-	9,839.80	-	-
Exxonmobil Baytown Chemical Plant	Baytown, TX	9,053.00	-	-	-	9,053.00	-	-
Kuraray America Inc Septon Bu	Pasadena, TX	7,115.00	-	-	-	7,115.00	-	-
BP Amoco Chemical Company	Texas City, TX	6,735.00	-	-	-	6,735.00	-	-
Valero Refining-Texas LP	Texas City, TX	5,839.00	13.68	-	-	5,852.68	-	255.00
Valero Refining - Texas LP Houston Refinery	Houston, TX	4,710.00	-	-	-	4,710.00	-	26.00
Southwest Shipyard LP	Channelview, TX	3,902.40	-	-	-	3,902.40	41,027.00	-
Flint Hills Resources Houston Chemical LLC	Houston, TX	2,558.00	-	-	-	2,558.00	-	-

Enterprise Products Operating LLC	Mont Belvieu, TX	2,551.00	-	-	-	2,551.00	-	-
Si Group Baytown	Baytown, TX	2,550.20	-	-	-	2,550.20	-	-
Ineos Styrolution America LLC	Pasadena, TX	1,870.00	-	-	-	1,870.00	-	-
BASF Corp Pasadena Plant	Pasadena, TX	844.00	-	-	-	844.00	-	-
Marathon Petroleum Co LP	Texas City, TX	271.00	-	-	-	271.00	-	-
Purity Isobutylene Plant	Pasadena, TX	145.00	-	-	-		-	-
Clean Harbors Deer Park LLC	LaPorte, TX	14.58	5.00	-	-	19.58	195,637.29	42.62
Morgan's Point Complex	LaPorte, TX	36.40	-	-	-	36.40	-	-
Eco Services Operations Corp	Houston, TX	4.00	-	-	-	4.00	-	-
Lyondell Chemical Co - Chocolate Bayou Chemicals Plant	Alvin, TX	4.00	-	-	-	4.00	-	-
Olin Blue Cube	Freeport, TX	-	-	-	-	-	-	2.00
Equistar Chemicals LP	Channelview, TX	-	-	-	-	-	16,000,000.00	-
Philip Reclamation Services Houston Inc. (Dba Eltex)	Houston, TX	-	-	-	-	-	116,357.67	-
Petro-Tech Environmental	Houston, TX	-	-	-	-	-	77,438.00	-
Bfi Mccarty Road Landfill	Houston, TX	-	-	-	-	-	26,121.00	-
TM Deer Park Services Limited Partnership	Deer Park, TX	-	-	-	-	-	9,561.00	-
Enterprise Products - Oil Tanking Facility	Houston, TX	-	-	-	-	-	4,921.00	-
US Ecology	Robstown, TX	-	-	-	-	-	372.49	-
Chevron Products Co	Galena Park, TX	-	-	-	-	-	218.04	-
Atascocita Recycling Dispos	Humble, TX	-	-	-	-	-	97.10	-
Duratherm Inc.	San Leon, TX	-	-	-	-	-	23.66	-
Coastal Plains RDF	Alvin, TX	-	-	-	-	-	12.00	-
Merichem C/O Gatx Terminal	Galena Park, TX	-	-	-	-	-	5.00	-
Gulf Coast Waste Disposal Authority	Pasadena, TX	-	-	-	-	-	8.00	-
Republic Services Inc.	Anahuac, TX	-	-	-	-	-	1.00	-
Total		3,895,577.20	59.48	-	-	3,895,491.68	16,606,166.25	445,862.75

o-Dichlorobenzene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Covestro LLC	Baytown, TX	1,186.00	-	-		1,186.00	-	1,707,570.00
Clean Harbors	LaPorte, TX	133.00	442.00	-	27,625.00	28,200.00	2,445,466.00	14,700.00
Texas Molecular (TM)	Deer Park, TX	-	-	-	513.00	513.00	513.00	33,879.00
Solvay	Houston, TX	-	-	-		-	5,024.00	
Total		**1,319.00**	**442.00**	**-**	**28,138.00**	**29,899.00**	**2,451,003.00**	**1,756,149.00**

DEHP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Nov Wellbore Technologies - DDS - Willis	Willis, TX	-	-	-	-	-	-	15,237.31
Nov Rig Systems Rubber Plant & Controls Building	Houston, TX	-	-	-	-	-	-	11,385.00
Powell Electrical Systems Inc	Houston, TX	553.00	-	-	-	553.00	-	1,660.00
Nov Rig Systems West Little York	Houston, TX	-	-	-	-	-	-	336.00
Akzo Nobel Functional Chemicals LLC	Pasadena, TX	-	-	-	-	-	-	31.00
Clean Harbors Deer Park LLC	LaPorte, TX	0.10	-	-	-	0.10	1,412.00	-
TM Deer Park	Deer Park, TX	-	-	-	-	-	693,240.00	-
Us Ecology Texas Inc	Robstown, TX	-	-	-	-	-	284,600.99	-
Phillip Reclamation Services	Houston, TX	-	-	-	-	-	11,385.00	-
Atco-Mission Industrial Inc	Houston, TX	-	-	-	-	-	1,160.00	-
Avangard Innovative	Houston, TX	-	-	-	-	-	1,159.00	-
Waste Management Of Pasadena	Pasadena, TX	-	-	-	-	-	910.00	-
Proler Southwest	Houston, TX	-	-	-	-	-	750.00	-
Univar USA Inc Houston Fm 529	Houston, TX	-	-	-	-	-	21.00	-
Total		**553.10**	**-**	**-**	**-**	**553.10**	**994,637.99**	**28,649.31**

trans-1,2-Dichloroethylene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Olin Blue Cube	Freeport, TX	7.08	-	-	-	7.08	-	37,723.00
Oxy Vinyls LP La Porte VCM Plant	LaPorte, TX	27.20	-	-	-	27.20	-	16,854.54
Dow Chemical Co Freeport Facility	Freeport, TX	202.40	4.80	0.40	-	207.60	-	92.80
Accella Polyurethane Systems (Prev	Spring, TX	-	-	-	-	-	-	258.64
Clean Harbors Deer Park LLC	LaPorte, TX	0.24	-	-	-	0.24	31,523.93	128.88
Oxy Vinyls LP Deer ParkVCM Plant	Deer Park, TX	3.59	-	-	-	3.59	-	-
BFI - Colonial Landfill	Freeport, TX	-	-	-	-	-	32,744.40	-
BFI - Colonial Landfill	Robstown, TX	-	-	-	-	-	560.00	-
Clean Harbors La Porte LP	LaPorte, TX	-	-	-	-	-	258.64	-
Total		**240.51**	**4.80**	**0.40**	**-**	**245.71**	**65,086.97**	**55,057.86**

Ethylene Dichloride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Oxy Vinyls	LaPorte, TX	113,332.00	48.20	-	-	113,380.20	-	7,473,532.00
Formosa Plastics	Point Comfort, TX	100,296.00	254.00	-	-	100,550.00	-	3,708,201.00
Olin (Blue Cube)	Freeport, TX	62,239.00	7.00	2.00	-	62,248.00	-	1,862,644.00
Oxy Vinyl VCM Plant	Deer Park, TX	88,470.00	-	-	-	88,470.00	8,501,754.00	143,091.00
Texas Molecular	Deer Park, TX	700.00	-	-	208,387.00	209,087.00	194,163.00	20,438.00
Dow Chemical	Freeport, TX	59,234.00	11,075.00	128.00	-	70,437.00	1,536,898.00	83,786.00
Texas Barge & Boat Inc	Freeport, TX	1,619.00	-	-	-	1,619.00	-	69,551.00
Clean Harbors Deer Park	LaPorte, TX	224.00	-	-	-	224.00	8,923,300.00	25,507.00
Huntsman	Freeport, TX	1,861.00	36.00	-	-	1,897.00	-	1,747.00
Ethyl Corp	Pasadena, TX	559.00	-	-	-	559.00	-	2,049.00
Pasadena Refining System	Pasadena, TX	871.00	-	-	-	871.00	-	-
Waste Management Coastal Plains	Alvin, TX	-	-	120.00	-	120.00	120.00	-
Seabreeze Environmental Landfill	Angelton, TX	-	-	46.40	-	46.40	46.40	-
Allied Waste	Houston, TX	-	-	10.00	-	10.00	10.00	-
Republic Services Blue Ridge Landfill	Fresno, TX	-	-	3.46	-	3.46	3.46	-
Allied Waste Gulf West Landfill	Anahuac, TX	-	-	1.07	-	1.07	1.07	-
Lonestar Ecology	Pasadena, TX	-	-	-	-	-	10,000.00	-
Shell Chemical LP	Deer Park, TX	-	-	-	-	-	4,818.00	-
Chemsep Bayport	Pasadena, TX	-	-	-	-	-	1,417.00	-
US Ecology	Robstown, TX	-	-	-	-	-	93.00	-
Clean Harbors San Leon	San Leon, TX	-	-	-	-	-	4.41	-
Total		**429,405.00**	**11,420.20**	**310.93**	**208,387.00**	**649,523.13**	**19,172,628.34**	**13,390,546.00**

Releases & Transfers of High Priority Chemicals (Mossville, LA Area) 2012-2018 (lbs)	Air	Water	Land	Underground Injection Wells	Total Releases (Air, Water, Land Un. Inj.)	Offsite Transfer	Incoming Waste Transfers	% of Nationwide Total (releases)	% Nationwide Total (Offsite Transfers)	% Nationwide Total (Incoming Waste Transfers)
1,1,2-TCE	50,652.00	100.00	-	-	50,752.00	243,343.00	-	22.336%	0.637%	-
1,2-DCP	-	-	8.00	-	8.00	-	11.00	0.002%	-	0.00
EDB	-	-	-	-	-	-	60.60	-	-	13.032%
1,1-DCA	50,436.00	132.00	33.30	-	50,601.30	240.00	38.30	50.826%	0.389%	0.062%
p-Dichlorobenzene	1.00	-	1.00	-	1.00	-	-	0.030%	0.00004%	-
TBBPA	2.00	-	134,000.00	-	134,002.00	-	120,000.00	36.843%	-	17.715%
DBP	-	-	-	-	-	-	1,126.00	-	-	0.101%
Phthalic anhydride	-	-	-	-	-	-	3,606.27	-	-	0.033%
Formaldehyde	-	-	-	-	-	-	1,076.00	-	-	0.003%
1,3-Butadiene	560,487.02	301.44	130.00	-	560,918.46	22,246,217.00	8,356.00	5.629%	75.035%	0.028%
o-Dichlorobenzene*	-	-	-	-	-	-	-	-	-	-
DEHP*	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	2,200.40	-	-	-	2,200.40	6,163.38	33,988.00	15.212%	4.593%	27.222%
EDC	282,781.00	2,033.00	3,246.00	-	288,060.00	1,462,513.00	3,489.00	9.339%	4.710%	0.012%
Total lbs released	946,559.42	2,566.44	137,418.30	-	1,086,544.16	23,958,476.38	171,751.17			
HHCB**										
TPP**										
TCEP**										
DCHP**										
DiBP**										
BBP**										

* There are no known releases or transfers of this chemical in the Mossville region.

** There are no reporting requirements for this chemical under TRI, so releases and transfers for the region are unknown.

Dashes (-) indicate that there is no known data on releases or transfers. Limits on data may be due to factors such as information withheld as Confidential Business Information (CBI) or failure to accurately report.

1,1,2-TCE Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Westlake Chemical	Westlake, LA	49,381.00	100.00	-	-	265,876.00	-	216,395.00
Westlake Lake Charles North	Westlake, LA	1,271.00	-	-	-	28,219.00	-	26,948.00
Total		**50,652.00**	**100.00**	**-**	**-**	**294,095.00**	**-**	**243,343.00**

1,2-DCP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Chemical Waste Management	Sulphur, LA	-	-	8.00	-	8.00	11.00	-
Total		**-**	**-**	**8.00**	**-**	**8.00**	11.00	-

EDB Releases & Waste Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Chemical Waste Management	Carlyss, LA	-	-	-	-	-	60.60	no data
Total		**-**	**-**	**-**	**-**	**-**	**60.60**	**-**

1,1-DCA Toxic Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Westlake	Westlake, LA	50,436.00	132.00	-	-	50,808.00	5.00	240.00
Chemical Waste Management	Sulphur, LA	-	-	33.30	-	33.30	33.30	-
Total		**50,436.00**	**132.00**	**33.30**	**-**	**50,601.30**	**38.30**	**240.00**

p-Dichlorobenzene Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total	Incoming Waste Transfer	Offsite Transfer
Chemical Waste Management	Sulphur, LA	1.00	-	1.00	-	1.00	-	-
Total		**1.00**	**-**	**1.00**	**-**	**1.00**	**-**	**-**

TBBPA Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Chemical Waste Management	Sulphur, LA	2.00	-	134,000.00	-	134,002.00	120,000.00	-
Total		**2.00**	**-**	**134,000.00**	**-**	**134,002.00**	**120,000.00**	**-**

DBP Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Chemical Waste Management - Lake Charles Facility	Sulphur, LA						1,126.00	
Total		-	-	-	-	-	**1,126.00**	-

Phthalic anhydride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Chemical Waste Management - Lake Charles Facility	Sulphur, LA	-	-	-	-	-	3,606.27	-
Total		**-**	**-**	**-**	**-**	**-**	**3,606.27**	**-**

Formaldehyde Releases & Transfers, 2013-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Chemical Waste Management - Lake Charles Facility	Sulphur, LA	-	-	-	-	-	1,076.00	-
Total		**-**	**-**	**-**	**-**	**-**	**1,076.00**	**-**

1,3-Butadiene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Firestone Polymers LLC	Sulphur, LA	473,400.00	-	130.00	-	473,530.00	8,350.00	22,100,000.00
Westlake Petrochemicals Ethylene	Sulphur, LA	67,364.00	-	-	-	213,581.00	-	146,217.00
Citgo Petroleum Corp	Sulphur, LA	4,923.00	-	-	-	4,923.00	-	
Sasol Chemicals (USA) LLC-Lake Charles C	Westlake, LA	12,503.00	-	-	-	12,503.00	-	
Phillips 66 Lake Charles Refinery	Westlake, LA	2,297.02	301.44	-	-	2,598.46	-	
Chemical Waste Management	Sulphur, LA	-	-	-	-	-	6.00	
Total		**560,487.02**	**301.44**	**130.00**	**-**	**560,918.46**	**8,356.00**	**22,246,217.00**

trans-1,2-Dichloroethylene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Eagle US 2 LLC	Westlake, LA	2,200.00	-	-	-	2,200.00	25,132.00	6,163.38
Westlake Lake Charles North	Westlake, LA	0.40	-	-	-	0.40	-	
PPG Industries Inc - Lake Charles Co	Lake Charles, LA	-	-	-	-	-	8,856.00	
Total		**2,200.40**	**-**	**-**	**-**	**2,200.40**	**33,988.00**	**6,163.38**

Ethylene Dichloride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Westlake	Lake Charles, LA	282,781.00	2,033.00	-	-	284,814.00	66.00	1,462,513.00
Chemical Waste Management	Sulphur, LA	-	-	3,246.00	-	3,246.00	3,246.00	-
Sasol	Westlake, LA	-	-	-	-	-	177.00	-
Total		**282,781.00**	**2,033.00**	**3,246.00**	**-**	**288,060.00**	**3,489.00**	**1,462,513.00**

Releases & Transfers of High Priority Chemicals in Cancer Alley, 2012-2018 (lbs)	Air	Water	Land	Underground Injection Wells	Total Releases (Air, Water, Land Un. Inj.)	Offsite Transfer	Incoming Waste Transfer	% of Nationwide Total (releases)	% Nationwide Total (Offsite Transfers)	% Nationwide Total (Incoming Waste Transfers)
1,1,2-TCE	73,072.00	23.40	0.08	-	73,095.48	8,688,021.00	-	32.169%	22.742%	-
1,2-DCP	17,268.00	1,969.00	4,469.00	-	24,119.00	15,733.00	421.00	7.275%	0.170%	0.005%
EDB	6,041.00	2.00	-	-	6,043.00	-	-	44.509%	-	-
1,1-DCA	39,856.00	-	-	-	39,856.00	1,126.00	-	40.033%	1.824%	-
p-Dichlorobenzene	359.00	-	1.00	-	359.00	73,906.00	-	0.030%	2.094%	-
TBBPA*	-	-	-	-	-	-	-	-	-	-
DBP	3,594.20	-	1,126.00	102,300.00	105,951.20	45,000.00	-	7.263%	3.896%	-
Phthalic anhydride	123,603.10	-	-	-	123,603.10	3,510,695.36	3,320,451.40	7.719%	30.644%	32.400%
Formaldehyde	737,673.31	107,389.00	258.00	64,700,000.00	65,545,320.31	112,927.22	80,996.71	58.274%	0.211%	0.295%
1,3-Butadiene	1,225,797.56	304.00	130.00	-	680,414.56	3,970,186.94	3,920,312.77	6.828%	13.391%	12.910%
o-Dichlorobenzene	1,260.00	7.00	-	-	1,267.00	882.43	-	0.244%	0.017%	-
DEHP	-	-	-	-	-	147.03	-	-	0.001%	-
trans-1,2-Dichloroethylene	164.00	-	-	-	164.00	15.60	-	1.134%	0.012%	-
EDC	1,147,288.00	1,688.20	549.30	3,246.00	1,149,525.50	12,387,101.70	1,723.00	37.268%	39.897%	0.006%
Total lbs released	**3,375,976.17**	**111,382.60**	**6,533.38**	**64,805,546.00**	**67,749,718.15**	**28,805,742.28**	**7,323,904.88**			
HHCB**										
TPP**										
TCEP**										
DCHP**										
DIBP**										
BBP**										

* There are no known releases or transfers of this chemical in the Cancer Alley region.

** There are no reporting requirements for this chemical under TRI, so releases and transfers for the region are unknown.

Dashes (-) indicate that there is no known data on releases or transfers. Limits on data may be due to factors such as information withheld as Confidential Business Information (CBI) or failure to accurately report.

1,1,2-TCE Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Formosa	Baton Rouge, LA	11,256.00	-	-	-	11,256.00	-	7,274,231.00
Occidental Chem.	Convent, LA	263.00	13.90	0.08	-	276.98	-	813,906.00
Dow Chemical	Plaquemine, LA	2,056.00	3.00	-	-	2,059.00	-	293,847.00
Olin Blue Cube	Plaquemine, LA	1,393.00	-	-	-	1,393.00	-	288,641.00
Shintech	Plaquemine, LA	31,527.00	-	-	-	31,527.00	-	
Occidental Chem.	Geismar, LA	10,898.00	6.50	-	-	10,904.50	-	7,793.00
Westlake Vinyls Co	Geismar, LA	13,458.00	-	-	-	13,458.00	-	
Westlake (formerly Axiall)	Plaquemine, LA	2,221.00	-	-	-	2,221.00	-	9,603.00
Totals		**73,072.00**	**23.40**	**0.08**	**-**	**73,095.48**	**-**	**8,688,021.00**

1,2-DCP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Dow Chemical	Plaquemine, LA	9,675.00	1,969.00	4,461.00	-	16,105.00	-	14,636.00
Hexion Inc	Norco, LA	5,555.00	-	-	-	5,555.00	-	720.00
Blue Cube (Olin)	Plaquemine, LA	1,327.00	-	-	-	1,327.00	-	377.00
Occidental Chemical	Geismar, LA	610.00	-	-	-	610.00	-	-
Waste Management Woodside Landfill	Walker, LA	-	-	421.00	-	421.00	421.00	-
Westlake Vinyls	Geismar, LA	80.00	-	-	-	80.00	-	-
The Dow Chemical Grand Bayou Operations	Paincourtville, LA	21.00	-	-	-	21.00	-	-
Totals		**17,268.00**	**1,969.00**	**4,469.00**	**-**	**24,119.00**	**421.00**	**15,733.00**

EDB Releases & Waste Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
ExxonMobil	Baton Rouge, LA	6,041.00	2.00	-	-	6,043.00	-	-
Totals		**6,041.00**	**2.00**	**-**	**-**	**6,043.00**	**-**	**-**

1,1-DCA Toxic Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Olin (formerly Dow)	Plaquemine, LA	23,141.00	-	-	-	23,141.00	-	220.00
Formosa Plastics	Baton Rouge, LA	9,340.00	-	-	-	9,340.00	-	-
Shintech	Plaquemine, LA	4,143.00	-	-	-	4,143.00	-	-
Westlake	Plaquemine, LA	1,605.00	-	-	-	1,605.00	-	333.00
Occidental Chemical	Geismar, LA	617.00	-	-	-	617.00	-	573.00
Westlake Vinyls Co	Geismar, LA	995.00	-	-	-	995.00	-	-
Occidental Chemical	Convent, LA	15.00	-	-	-	15.00	-	-
Totals		**39,856.00**	**-**	**-**	**-**	**39,856.00**	**-**	**1,126.00**

p-Dichlorobenzene Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Rubicon LLC	Geismar, LA	359.00	-	-	-	359.00	-	73,905.00
The Dow Chemical	Plaquemine, LA		-	-	-	-	-	1.00
Totals		359.00	-	-	-	359.00	-	73,906.00

DBP Waste Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Rubicon LLC (Huntsman)	Geismar, LA	3,594.00	-	-	102,300.00	105,894.00	-	44,923.00
Solvay USA Inc	Baton Rouge, LA	0.20	-	-	-	57.20	-	57.00
Eco-Services Operations	Baton Rouge, LA	-	-	-	-	-	-	20.00
Totals		**3,594.20**	**-**	**-**	**102,300.00**	**105,951.20**	**-**	**45,000.00**

Phthalic anhydride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Exxonmobil Baton Rouge Chemical Plant	Baton Rouge, LA	123,570.00	-	-	-	123,570.00	-	3,459,511.00
St Charles Operations (Taft/Star) Union Carbide Corp	Hahnville, LA	26.00	-	-	-	26.00	-	50,071.00
Eco-Services Operations	Baton Rouge, LA	3.40	-	-	-	3.40	2,039,000.00	557.36
Solvay USA Inc	Baton Rouge, LA	3.70	-	-	-	3.70	530,488.80	504.00
The Dow Chemical Co - Louisiana Operations	Plaquemine, LA	-	-	-	-	-	-	52.00
3M Cottage Grove	Baton Rouge, LA	-	-	-	-	-	750,962.60	
Totals		**123,603.10**	**-**	**-**	**-**	**123,603.10**	**3,320,451.40**	**3,510,695.36**

Formaldehyde Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Monsanto Luling	Luling, LA	89,400.00	20,200.00	-	64,700,000.00	64,809,600.00	-	4,559.00
International Paper Bogalusa Mill	Bogalusa, LA	224,239.00	106.00	140.00	-	224,485.00	-	80.00
Hexion Inc	Geismar, LA	116,260.00	5.00	-	-	116,265.00	-	43,400.00
St Charles Operations (Taft/Star) Union Carbide Corp	Hahnville, LA	87,366.00	61,003.00	-	-	148,369.00	-	0.02
BASF Corp	Geismar, LA	40,952.00	17,364.00	-	-	58,316.00	-	60,531.00
The Dow Chemical Co - Louisiana Operations	Plaquemine, LA	81,238.00	-	-	-	81,238.00	-	3.00
CF Industries Nitrogen LLC	Donaldsville, LA	35,587.00	-	-	-	35,587.00	-	-
Georgia-Pacific Consumer Operations LLC	Zachary, LA	21,560.00	8,200.00	118.00	-	29,878.00	-	-
Praxair Inc	Geismar, LA	22,765.31	-	-	-	22,765.31	-	1,607.50
Hexion Luling Facility	Luling, LA	10,701.00	-	-	-	10,701.00	-	600.00
Rubicon LLC	Geismar, LA	4,905.00	-	-	-	4,905.00	-	1,296.00
BASF Corp	Zachary, LA	1,500.00	511.00	-	-	2,011.00	-	833.00
Nalco Co	Garyville, LA	704.00	-	-	-	704.00	-	17.70
Westlake Vinyls Co	Geismar, LA	496.00	-	-	-	496.00	8,400.00	-
Clean Harbors Baton Rouge	Baton Rouge, LA	-	-	-	-	-	41,967.88	-
L&B Transport	Port Allen, LA	-	-	-	-	-	18,118.23	-
Clean Harbors White Castle LLC - Landfarm Facility	White Castle, LA	-	-	-	-	-	12,014.60	-
Solvay USA Inc.	Baton Rouge, LA	-	-	-	-	-	496.00	-
Totals		**737,673.31**	**107,389.00**	**258.00**	**64,700,000.00**	**65,545,320.31**	**80,996.71**	**112,927.22**

1,3-Butadiene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Shell Norco Chemical Plant	Norco, LA	328,118.00	-	-	-	328,118.00	3,887,357.77	3,911,073.00
Exxonmobil Baton Rouge Chemical Plant (Part)	Baton Rouge, LA	62,800.00	1.00	-	-	62,801.00	-	1,373.00
The Dow Chemical Co - Louisiana Operations	Plaquemine, LA	53,687.00	276.00	-	-	53,963.00	-	9,373.00
Nova Chemicals Olefins LLC	Geismar, LA	56,066.00	-	-	-	56,066.00	-	-
Exxonmobil Baton Rouge Chemical Plant North	Baton Rouge, LA	23,310.00	-	-	-	23,310.00	-	28,731.00
Dexco Polymers LP	Plaquemine, LA	28,700.09	-	-	-	28,700.09	-	11,042.27
St Charles Operations (Taft/Star) Union Carbide Corp	Hahnville, LA	30,565.00	-	-	-	30,565.00	-	1,433.67
Shell Norco Chemical Plant West Site	Norco, LA	17,641.70	-	-	-	17,641.70	-	7,087.00
Dupont Pontchartrain Works	La Place, LA	18,887.00	-	-	-	18,887.00	-	13.00
Exxonmobil Anchorage Tank Farm	Port Allen, LA	18,753.77	27.00	-	-	18,780.77	-	16.00
Chalmette Refining LLC	Chalmette, LA	11,938.00	-	-	-	11,938.00	-	-
Denka Performance Elastomer LLC	La Place, LA	11,244.00	-	-	-	11,244.00	-	5.00
Valero Refining - Meraux LLC Meraux Refinery	Meraux, LA	5,570.00	-	-	-	5,570.00	-	-
Exxonmobil Baton Rouge Refinery (Part)	Baton Rouge, LA	3,015.00	-	-	-	3,015.00	-	-
Valero Refining - New Orleans LLC	Norco, LA	2,937.00	-	-	-	2,937.00	-	40.00
Phillips 66 - Alliance Refinery	Belle Chasse, LA	2,947.00	-	-	-	2,947.00	-	-
Marathon Petroleum Co LP	Garyville, LA	1,777.00	-	-	-	1,777.00	-	-
Hexion Inc	Norco, LA	-	-	-	-	-	30,894.00	-
Eco Services Operations	Baton Rouge, LA	-	-	-	-	-	865.00	-
Clean Harbors LLC	Baton Rouge, LA	-	-	-	-	-	665.00	-
BFI - Colonial Landfill	Sorrento, LA	-	-	-	-	-	531.00	-
All others <1000 lbs total		2,154.00	-	-	-	2,154.00	-	-
Totals		**680,110.56**	**304.00**	**-**	**-**	**680,414.56**	**3,920,312.77**	**3,970,186.94**

o-Dichlorobenzene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfers	Offsite Transfer
Denka Performance Elastomers (formerly Dupont Pontchartrain Works)	La Place, LA	1,260.00	7.00	-	-	1,267.00	-	882.00
Dow Chemical	Plaquemine, LA	-	-	-	-	-	-	0.43
Totals		**1,260.00**	**7.00**	**-**	**-**	**1,267.00**	**-**	**882.43**

DEHP Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Westlake (formerly Axiall LLC)	Plaquemine, LA	-	-	-	-	-	-	146.00
The Dow Chemical Co - Louisiana Operations	Plaquemine, LA	-	-	-	-	-	-	1.03
Totals		**-**	**-**	**-**	**-**	**-**	**-**	**147.03**

trans-1,2-Dichloroethylene Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Westlake (formerly Axiall LLC)	Plaquemine, LA	131.60	-	-	-	131.60	-	4.80
The Dow Chemical Co - Louisiana Operations	Plaquemine, LA	11.60	-	-	-	11.60	-	10.40
Westlake Vinyls CO	Geismar, LA	19.20	-	-	-	19.20	-	-
Blue Cube Operations LLC	Plaquemine, LA	1.60	-	-	-	1.60	-	0.40
Totals		**164.00**	**-**	**-**	**-**	**164.00**	**-**	**15.60**

Ethylene Dichloride Releases & Transfers, 2012-2018 (lbs)	Location	Air	Water	Land	Underground Injection Wells	Total Releases	Incoming Waste Transfer	Offsite Transfer
Formosa Plastics	Baton Rouge, LA	260,035.00	93.00	-	-	260,128.00	-	7,293,900.00
Occidental Chemical	Convent, LA	48,308.00	11.20	517.00	-	48,836.20	-	2,717,289.00
Honeywell International	Baton Rouge, LA	749.00	336.00	-	-	1,085.00	-	1,118,119.00
Olin	Plaquemine, LA	35,618.00	-	-	-	35,618.00	-	587,020.00
Westlake Vinyls Co	Geismar, LA	340,900.00	164.00	-	-	341,064.00	-	215,248.00
Dow Chemical	Plaquemine, LA	23,203.00	914.00	-	-	24,117.00	-	421,258.00
Shintech (Shin-Etsu)	Plaquemine, LA	169,389.00	-	-	-	169,389.00	-	367.00
Occidental Chemical	Geismar, LA	151,986.00	146.00	32.30	-	152,164.30	-	12,477.00
Westlake (formerly Axiall)	Plaquemine, LA	116,525.00	24.00	-	-	116,549.00	-	21,031.00
Dow Chemical	Paincourtville, LA	313.00	-	-	-	313.00	-	381.00
Union Carbide corp.	Hahnville, LA	262.00	-	-	-	262.00	-	11.70
Clean Harbors	Baton Rouge, LA	-	-	-	-	-	1,049.00	-
Solvay USA (formerly Rhodia Inc) Unit #6	Baton Rouge, LA	-	-	-	-	-	674.00	-
Totals		**1,147,288.00**	**1,688.20**	**549.30**	**-**	**1,149,525.50**	**1,723.00**	**12,387,101.70**

Appendix 5: Population and Area Comparisons
May 2020

Population & Area of Four Regions in TX/LA as Compared to the Entire United States	Area (mi^2)	Area % of U.S.	Population	Pop. % of U.S.
Port Arthur Region	3,034.40[i]	0.0797%	410,233[ii]	0.1250%
Greater Houston	9,444[iii]	0.2479%	7,100,000[iv]	2.1633%
Mossville	1,094[v]	0.0287%	203,436[vi]	0.0620%
Cancer Alley	4352.43[vii]	0.1143%	1,690,858[viii]	0.5152%
United States	3,809,525	100.0000%	328,200,000	100.0000%

[i] Census Reporter, "Beaumont- Port Arthur Metro Area," https://censusreporter.org/profiles/31000US13140-beaumont-port-arthur-tx-metro-area/ (last visited May 22, 2020).
[ii] *Id.*
[iii] City of Houston, "About Houston," http://www.houstontx.gov/abouthouston/houstonfacts.html (last visited May 22, 2020).
[iv] Greater Houston Partnership, "Houston Population Expected to Exceed 7.1 Million by 2020" (May 7, 2019), https://www.houston.org/news/houston-population-expected-exceed-71-million-2020.
[v] U.S. Census, "Calcasieu Parish," https://www.census.gov/quickfacts/calcasieuparishlouisiana (last visited May 22, 2020).
[vi] *Id.*
[vii] Index Mundi, "Louisiana Land Area in Square Miles, 2010 by County," https://www.indexmundi.com/facts/united-states/quick-facts/louisiana/land-area#table (last visited May 24, 2020).
[viii] Wesley James et al., *Uneven Magnitude of Disparities in Cancer Risks from Air Toxics*, 9 Intl. J. Envtl. Res. & Pub. Health 4365, Table A1 (Dec. 2012). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3546767/table/ijerph-09-04365-t002/.