A series of major calamities in recent years has placed the national spotlight on the lower Mississippi River industrial complex—a sinuous arrangement of petrochemical plants and working-class communities set amid the sugarcane fields on the alluvial floodplain. Hurricanes Katrina and Rita damaged offshore oil rigs and onshore refineries in 2005, caused oil releases, and increased gasoline prices, thereby exposing the region’s significant position in the energy economy. The 2010 Deepwater Horizon event showcased the environmental costs of extractive activities; and the near-record Mississippi River flood of 2011 disrupted waterborne commerce and raised the specter of levee failures. As those events displayed, this nationally prominent ensemble of industries occupies a location susceptible to a host of environmental forces and a place where industrial activities have produced dramatic consequences. Testing the environment’s capacity to absorb human impacts has been going on for decades and has left enduring traces on the Louisiana landscape.

Erection of petroleum refineries in this region began in the first decade of the twentieth century, during a time of almost nonexistent environmental regulation. Yet, even in the early decades of petrochemical growth, the state, its citizens, and industry acknowledged both human safety risks and environmental threats posed by the arrival of this new enterprise. Industry took the position that self-regulation would minimize personal, property, and environmental harm. Government bodies largely consented to this approach until calamities revealed the accumulating human and environmental costs that had turned the lower Mississippi River corridor into an environmental “sacrifice zone.” That term derives from the study of traditional agricultural practices where cultivators deliberately degraded one area to increase productivity in another area, but scholars have begun using the term in explicitly accusatory ways to refer to areas degraded by modern industrial societies in the pursuit of economic and military gain. Environmental degradation in the lower Mississippi River industrial complex was not the result of a coordinated assault; rather it reflected negligent behavior by industries and government authorities. And significantly, those behaviors defied what contemporary trade literature presented as good industry practice. Sacrifice zone here refers to the result of disconnected actions that over time had
an undeniable and lasting cumulative impact. I use it to emphasize that the drive for industrialization and economic gain took precedence over environmental stewardship. As refineries transformed crude oil into marketable products, operators and regulators discounted the known costs of environmental damage.\(^1\)

The gradual buildup of Louisiana’s chemical corridor, the dispersed geographic arrangement of the corridor, and the gargantuan diluting capacity of the Mississippi River all contributed to decisions about plant locations, waste management, and, ultimately, to the creation of a sacrifice zone. Over time, however, the number and size of petrochemical plants and the increasingly hazardous discharges into the river forced a reconsideration of the prevailing dogma of simply isolating dangerous facilities. Likewise, incremental adjustments to pollution regulation proved inadequate as industrial growth and waste releases greatly outpaced the capacity of on-site controls. Industry neglected to live up to its proclaimed safety and pollution-control capabilities. Consequently, headline-grabbing events became all too frequent, impossible to ignore, and drove public opinion and policy toward tighter regulation.

This pattern had parallels in the Deepwater Horizon event. Offshore extraction operations had also grown slowly and prompted safety and environmental concerns, particularly after serious incidents. Officials at BP, the company drilling the well, claimed the company had cultivated a “culture of safety,” but government reports indicate that the company only inconsistently adhered to its own standards. Further, postcalamity statements by BP officials suggest that the company viewed the Gulf of Mexico as a limitless environmental sink—or at least too big to harm. As with riverfront refineries, practices at offshore sites suggest that application and enforcement of environmental safety controls was uneven and that preparedness for a massive release lapsed between major events.\(^2\)

Creating a Landscape of Risk and Injustice

Discovery of rich crude oil deposits in south central Louisiana in 1901 propelled the state into the ranks of petroleum producers. Rapid exploration and development of the Jennings field near Lafayette and subsequent discovery of abundant reserves outside

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Shreveport positioned Louisiana as a prominent player in the burgeoning industry. In addition to an abundance of accessible raw materials, several other factors contributed to the industrialization of the lower Mississippi River. The massive river enabled ocean-going ships to navigate two hundred miles upstream, provided ample water for industrial processes, and offered a seemingly inexhaustible flushing system for industrial wastes. A formidable federal levee system provided essential protection from spring floods, and sizable tracts of agricultural lands were available for modest prices. Despite claims by boosters that the lower river corridor was a natural site for development, the indirect federal subsidy in the form of levees, along with state policies that were exceptionally accommodating, made a good location even more desirable. In such a setting, three refineries selected sites along the lower river and initiated the industrial transformation of the riparian landscape between 1909 and 1929.3

Industrial trade literature at the time offered clear safety guidance for the selection of factory sites. For industries working with explosive or poisonous materials, such as oil refineries, the standard principle was to avoid building adjacent to populated areas or to acquire open space as a safety buffer. Standard Oil basically followed this guidance when it selected a site just beyond the urbanized area of Baton Rouge. Likewise, two refineries near New Orleans—at Chalmette and Norco—were well beyond that city’s boundaries and thus safely buffered from major populations. However, the two downriver operations were adjacent to rural communities typical of the lower-river agricultural settlement pattern. The locations of the three sites enabled them to avoid urban nuisance regulations and to adhere partially to industry expectations regarding safe locations.4

Following an economic lull during the Great Depression, Louisiana’s petrochemical industry grew considerably between 1940 and 1970. A major infusion of federal funding during World War II enlarged processing capacity along the lower Mississippi. Near Baton Rouge, War Production Board investments enabled construction of new artificial rubber and aviation fuel facilities, and existing refiners expanded to meet wartime demands. During the 1940s the petrochemical complex remained clustered on the northern edge of Baton Rouge and in the two refining nodes on either side of New Orleans. In the absence of local regulations to the contrary, worker housing encroached on the buffer areas and eliminated much of the original safety zones around the three enlarging complexes.5


Following World War II, chemical and metallurgical facilities assiduously pushed into more rural locations. The process of site selection during this expansion adhered in some ways to the isolation principle; however, several facilities acquired property immediately adjacent to rural hamlets whose populations were predominately African American. Given prevailing racial attitudes, those communities were, in effect, invisible to the floodplain developers. Production capacity grew both within individual plants and through new plants rising along the river. Statewide, the number of refineries in Louisiana increased from twenty-five in 1947 to fifty-seven in 1977, and the number of chemical facilities rose from 147 to 236 during the same period. Manufacturing activity within the chemical corridor experienced a tenfold increase in twenty years. That enlargement of industry severely reduced any buffers, and new industrial construction was not inhibited by zoning or other regulations from building near populated areas.

A by-product of the growth in production was a corresponding rise in industrial accidents. Despite an extensive safe-practice literature and on-site safety programs, the complete elimination of accidents was impossible. By the 1990s the Baton Rouge–New Orleans industrial corridor stood out as one of the most prominent zones of chemical plant explosions. In addition to the threat from a deadly chlorine leak when a barge sank during Hurricane Betsy in 1965, major explosions at the Shell refinery at Norco (in 1979 and 1988) and at the Exxon (former Standard) refinery at Baton Rouge (in 1989) caused fatalities and inflicted damage on neighboring communities.

Shifting racial demographics during the last quarter of the twentieth century, particularly near the Esso/Exxon facility in Baton Rouge, saw the out-migration of the white refinery workers and the in-migration of African Americans, who found few jobs at the adjacent plant. In addition, petrochemical plants expanded into rural areas—while moving away from large metropolitan population concentrations. Both the rural and urban adjustments juxtaposed industrial giants and poor African American communities and added a new environmental justice issue to the question of industrial plant sitting. The loss of safety buffers had become obvious and the risk was spread unevenly.

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Public and corporate concern over toxics, heightened by the discovery of tons of toxic chemicals buried in a residential neighborhood adjacent to Love Canal in upstate New York in the late 1970s and the deadly release of toxic chemicals from a manufacturing facility in Bhopal, India, in 1984, manifested itself in two distinct ways. Citizen environmental-justice activists began voicing their opposition to industry and its toxic discharges and dubbed the lower Mississippi region “cancer alley.” Local citizens engaged with national environmental groups and labor unions, expanding their base of support and drawing in disenchanted employees who previously had sympathized with their employers. Local news media began offering a more critical perspective as well. The image of the industry became tarnished. During the 1990s collaboration among local environmental groups, an official in the attorney general’s office, and Tulane University law students forced the Japanese chemical manufacturer Shintech to retreat from its plan to build a facility near a riverfront community in St. James Parish. While Shintech ultimately developed a more remote site, Louisiana’s environmental-justice movement has raised awareness of the relationship between industry and public health that stems from geographic proximity.9

Amid the environmental-justice outcry, industry revisited advice offered half a century before, and several companies created buffer zones adjacent to plants by removing neighbors. Dow Chemical, Exxon, and Georgia-Pacific all purchased residences adjacent to their operations and in some cases helped relocate families. Their actions removed neighbors from chronic exposure and also greatly reduced off-site risks in the event of a chemical plant accident. Additionally, these buffers minimized corporate risk from damage suits. While the companies were subject to criticism for destroying minority communities, residents in one community immediately adjacent to the Norco plant fought for years to secure a company buyout and considered Shell’s acquisition of their homes a hard-won victory.10

Creating a Sacrifice Zone

Just as with plant-siting safety, companies and trade associations involved in the petrochemical industry were also concerned with pollution. Discussions in specialty periodicals and manuals focused on individual plants, making scant reference to the compounding effects of multiple operations in an industrial complex. By the 1930s, trade literature cautioned plant builders to be wary of local pollution regulations and an


increasing tendency for localities to sue polluters. The American Petroleum Institute (API), the industry’s leading trade association, sought to deter government oversight and maintain industry self-regulation. During the 1930s, API members collaborated on a series of waste-disposal manuals. These publications downplayed the threat to public drinking-water supplies and advocated “good practices” that called for plants to install adequate treatment equipment. This guidance placed the responsibility on the individual refiners and suggested that existing treatment capabilities were sufficient to handle the problem.11

The relatively small size of refineries before 1940 and the Mississippi River’s ample dilution capacity protected manufacturers against litigation and thereby minimized deterrents to corporate investment in the corridor. A pair of federal inquiries in the 1930s noted that refineries were releasing untreated waste into the river but concluded that the practice posed no serious threat. Likewise, the Louisiana government expressed no alarm over pollution, other than with the Norco facility just upstream from New Orleans’s water intakes. State regulations imposed modest restrictions on industrial discharges to protect commercial fisheries in the 1920s and 1930s. In the absence of dramatic fish kills, pollution regulation and enforcement remained minimal at the state level.12

Without enforcement of its weak pollution regulations, Louisiana was unable to keep pace with emerging public disapproval of pollution even before the massive World War II industrial expansion. In response to growing public pressure, state legislators created the Stream Control Commission (SCC) in 1940. It advocated cooperation as a way to retain industries and protect their payrolls, and it relied in part on industrial expertise to set pollution thresholds. Touting its early accomplishments, the SCC claimed its policy resulted in an “almost 100% correction of that [pollution] from oil refineries.”13 Thus on the eve of the wartime industrial build up, the state admitted that refineries had created pollution but claimed that the SCC was an effective response and had pollution under control.

Federal investment in plant expansion along the lower Mississippi in the 1940s not only produced vital war matériel but also contributed to increasing discharges that regularly exceeded the river’s dilution capacity. During the war, effluent regularly tainted New Orleans’s potable water supply, and the SCC acknowledged that refineries were a concern. After the war, with falling production, the state reassessed the refineries’ pollution-treatment efforts and concluded that the abatement efforts were satisfactory. By the early 1950s the SCC suggested that pollution was only noticeable during low-river stages and that “little remains to complain about regarding the effluent coming from this [Baton

Escalating pollution problems, however, exposed the inadequacies of the system and prompted a series of water-quality investigations. Federal studies in the 1950s asserted that pollution was a pressing problem, but the prevailing view among state officials was that pollution was a limited, localized issue; their permitting and enforcement actions, which did little to impede uncontrolled discharges to the river, reflected this perception. The state’s lackluster response continued into the 1960s. Following an industrial spill that contaminated public water supplies in 1960, the state created a warning system that placed the burden on water-supply operators to close their intakes and imposed no penalties or new requirements on industries responsible for spills.

A major fish kill during the winter of 1963–1964 created a nationally significant event that served as the tipping point for a policy shift. Endrin, an agricultural chemical used in sugarcane fields in south Louisiana, was responsible for an estimated 5 million fish deaths that winter. Louisiana officials were unable to pinpoint the source and requested assistance from the U.S. Public Health Service. The federal investigation pointed toward an Endrin manufacturer far upriver in Memphis, Tennessee, not lower-river sugar planters or grinding mills. Occurring shortly after the publication of Rachel Carson’s *Silent Spring* (1962), this event captured public attention. Congress conducted hearings on the calamity, and the Public Health Service convened a public conference on interstate pollution of the lower Mississippi. This event transformed public and government opinions about the scale of pollution and recast lower-Mississippi River pollution as a regional problem that could harm people, not just fish.

Industrial pollution came under even more intense scrutiny in 1974 when a national exposé reported that the New Orleans water supply contained cancer-causing organic chemicals and that the city’s residents had a history of above-average cancer rates. The exposé sparked a debate among Louisiana officials and garnered considerable national attention as it cast the Mississippi River as a waterway sacrificed for industrial gain. While the degradation of the river...
was not a discrete calamity like an oil spill, the report and a related study by the Environmental Defense Fund proved to be critical impetuses for the passage of the Safe Drinking Water Act (1974), which expanded federal authority from raw river water to municipal drinking-water supplies. The notion that home taps were delivering toxic chemicals implied that not only was the river being sacrificed but so too were those who drank from it.\(^{17}\)

As federal pollution laws increasingly restricted discharge of toxics into waterways during the 1970s, diversion of industrial wastes to land disposal sites expanded concern to the banks of the river. Well before the federal Superfund legislation in 1980, which identified abandoned hazardous waste sites, industry experts cautioned manufacturers about the lasting impacts of toxic materials discarded in the ground. The National Safety Council’s 1948 *Industrial Waste Disposal and Bibliography on Chemical Wastes* safety guide advised chemical plant operators to keep a plan of past dumping grounds that could impact future construction activity. Analyses of the persistence of organic chemicals in the soil added impetus to this fundamental guidance by the 1960s. Although the river continued to serve as the principal sink and land disposal remained less prominent, industry increasingly looked landward for waste disposal (despite knowing the threats associated with it) after federal laws restricted releases to waterways. This change generally shifted the dumping to off-site locations and liabilities to private contractors. Beginning in 1980, federal investigators inventoried a string of chemical waste–dumping grounds near the riverfront towns of Baton Rouge, Dutchtown, Sorrento, and Darrow, and a rural site near Bayou Sorrel. The inclusion of these sites on the Environmental Protection Agency’s Superfund list alerted the public that environmental damage was reaching toward residential neighborhoods. This unwanted intrusion into communities heightened suspicion about the public health threats posed by the petrochemical complex.\(^{18}\)

Chemicals released into the atmosphere further amplified public concerns. As the Environmental Protection Agency began compiling its Toxics Release Inventory statistics on industrial releases in the late 1980s, Louisiana’s petrochemical corridor helped the state earn the dubious distinction as one of the nation’s top-ranked sources of toxic releases. This inventory highlighted the downwind threat posed by airborne pollutants. By the end of the century, the sacrifice zone encompassed water, land, and air, and the lower river landscape bore the indelible scars of petrochemical processing.\(^{19}\)


Oil and Water: A Mixture, Not a Solution

Long before the Deepwater Horizon incident, industrial authorities warned corporations selecting sites for new plants to beware of potential safety and health risks. Industry trade groups and experts cautioned about building too close to populations and maintained that manufacturers could adequately manage their wastes without intrusive government intervention. Yet in the second half of the twentieth century industry failed to live up to its self-proclaimed capacities in terms of selecting safe locations and controlling pollution. Accidents and environmental contamination increased in tandem with the growth of the lower Mississippi River petrochemical corridor, and government authorities tolerated the ensuing damages that rendered the river and the land along its banks a sacrifice zone. It took dramatic events, played out on the national stage, to force adjustments to the lax corporate and public policies toward safety and pollution.

Offshore operational safety and environmental harm came under intense scrutiny following the spectacular failure of the BP Macondo well (drilled from the Deepwater Horizon platform) in April 2010, and the subsequent federal inquiry produced conclusions that reveal striking parallels between the century of petrochemical processing along the lower Mississippi River and decades of oil extraction in the Gulf of Mexico. The federal commission that investigated the calamity in the Gulf of Mexico concluded: “The Deepwater Horizon disaster exhibits the costs of a culture of complacency.”

From their beginnings, offshore oil exploration and extraction impacted the state’s coastal wetlands—with companies treating the Gulf of Mexico and the coastal wetlands as an environment too big to harm. As the industry gradually expanded into deeper waters and continued to enjoy lax government oversight, it engaged in short-lived, sporadic emergency-response preparations and became complacent about the chances of a major incident. While oil producers responded to dramatic events, their lack of emergency-response capabilities and procedures for environmental damage control created a situation where one platform failure could become a massive calamity. Obviously, the drama of the Deepwater Horizon has placed outer-continental shelf drilling safety in the public eye, but will that event be sufficient to inspire effective federal policy adjustments?

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20 National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, Deep Water, ix.