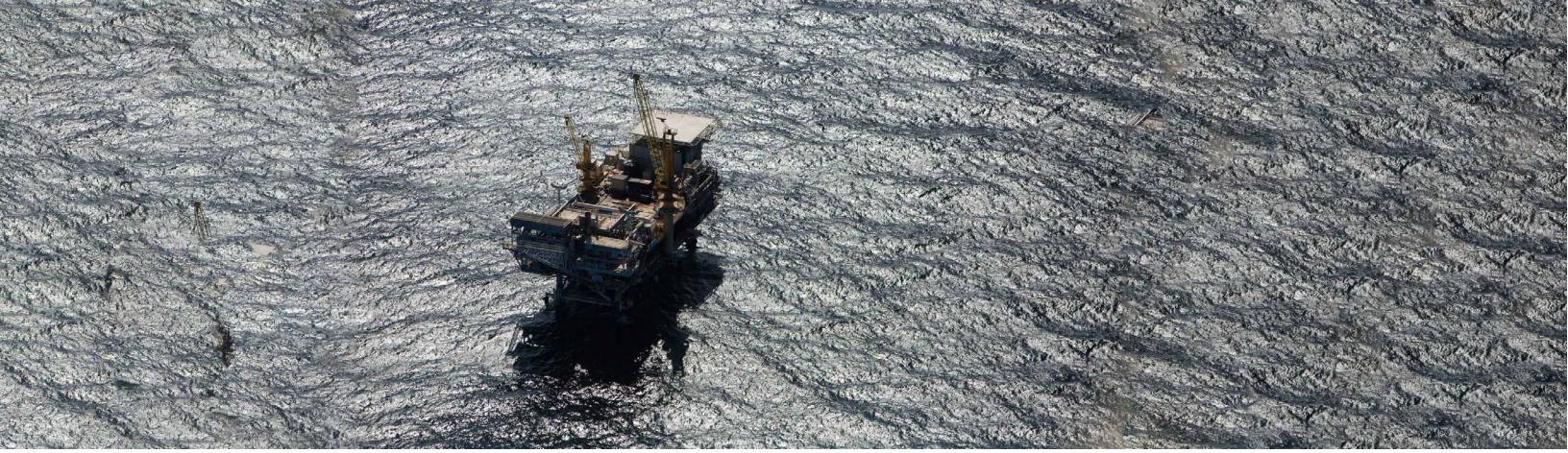
TOXIC WATERS

How Offshore Fracking Pollutes the Gulf of Mexico

Center for Biological Diversity • July 2021



Offshore oil platform above and on cover by Drew Bird Photography

Extreme oil and gas extraction methods such as fracking and acidizing have become increasingly common in offshore oil and gas production. Federal waters off the Gulf Coast of Alabama, Mississippi, Louisiana and Texas generate about 98% of all offshore oil and gas produced in the United States,[1] making the area ground zero for offshore fracking and its threats to wildlife and public health.

This report from the Center for Biological Diversity's science and policy experts analyzes industry reports, publicly available data, federal permitting documents and published scientific studies to develop the following findings:

- The federal government has approved **fracking more than 3,000 times and acidizing at least 700 times since 2010 in the Gulf of Mexico alone,[2] with no meaningful oversight or environmental review.**
- **With no limits on toxic discharge,** oil companies have dumped at least 66.3 million gallons of fracking fluids, containing many substances known to be toxic to both people and wildlife, into the Gulf from 2010 through 2020.[3]
- Chemicals used in offshore fracking and acidizing pose significant **health risks to people and wildlife**; these include reproductive harm, neurotoxicity, cancer and even death.
- Extreme oil and gas extraction **worsens the climate crisis.**
- The fossil fuel industry **hurts tourism and fishing, which create about 2.85 million jobs,[4]** more than 10 times the jobs created by the fossil fuel industry[5] in the Gulf of Mexico. Tourism and fishing also provide more in tax revenue.
- State and federal agencies have failed to adequately monitor and regulate fracking and acidizing; **these extreme oil and gas extraction techniques should be banned.**

Offshore fracking pollutes the Gulf of Mexico with hazardous chemicals. The federal government allows oil companies to dump produced wastewater, including fracking and acidizing chemicals, into the Gulf without limit. The Gulf's communities and ecosystem experience a heavy pollution burden from concentrated fossil fuel infrastructure and cannot bear additional fracking pollution.

OFFSHORE FRACKING IS NOW COMMON

According to federal data, there has been a fracking boom over the past 10 years in the Gulf of Mexico, with some form of offshore oil and gas well stimulation happening almost every day. There have been at least 3,039 instances of fracking and at least 760 instances of acidizing from 2010 through 2020 in the Gulf.[6] Offshore fracking (also called hydraulic fracturing) blasts water and industrial chemicals into the seafloor to fracture the

[1] BOEM: https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2019-2024/DPP/NP-Draft-Proposed-Program-2019-2024.pdf (2018)

[2] Federal data from FOIA 2016, 2018 and BSEE.gov

[3] AECOM. Year 1 Interim Report: Joint Industry Project Study of Well Treatment, Completion, and Workover Effluents. (discharges from fracking averaged 520 bbls with a range of 30 - 1,577 bbls). (2021)

[4] Stokes and Lowe. Datu. Wildlife Tourism and the Gulf Coast Economy. (2013)

[5] BOEM https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2019-2024/DPP/NP-Economic-Benefits.pdf

[6] FOIA data provide by BSEE (2010-2019); also see: https://www.data.bsee.gov/Well/eWellAPM/Default.aspx (2020)

rock and release oil and gas. Acidizing injects hydrofluoric and hydrochloric acid to etch channels in the rock walls, creating pathways for oil and gas to escape[7]

A majority of offshore production wells are anticipated to undergo some form of well stimulation during their production life.[8] The reported fracks from 2010 through 2020 in the Gulf of Mexico are mapped below. Many of these wells have been fracked multiple times.

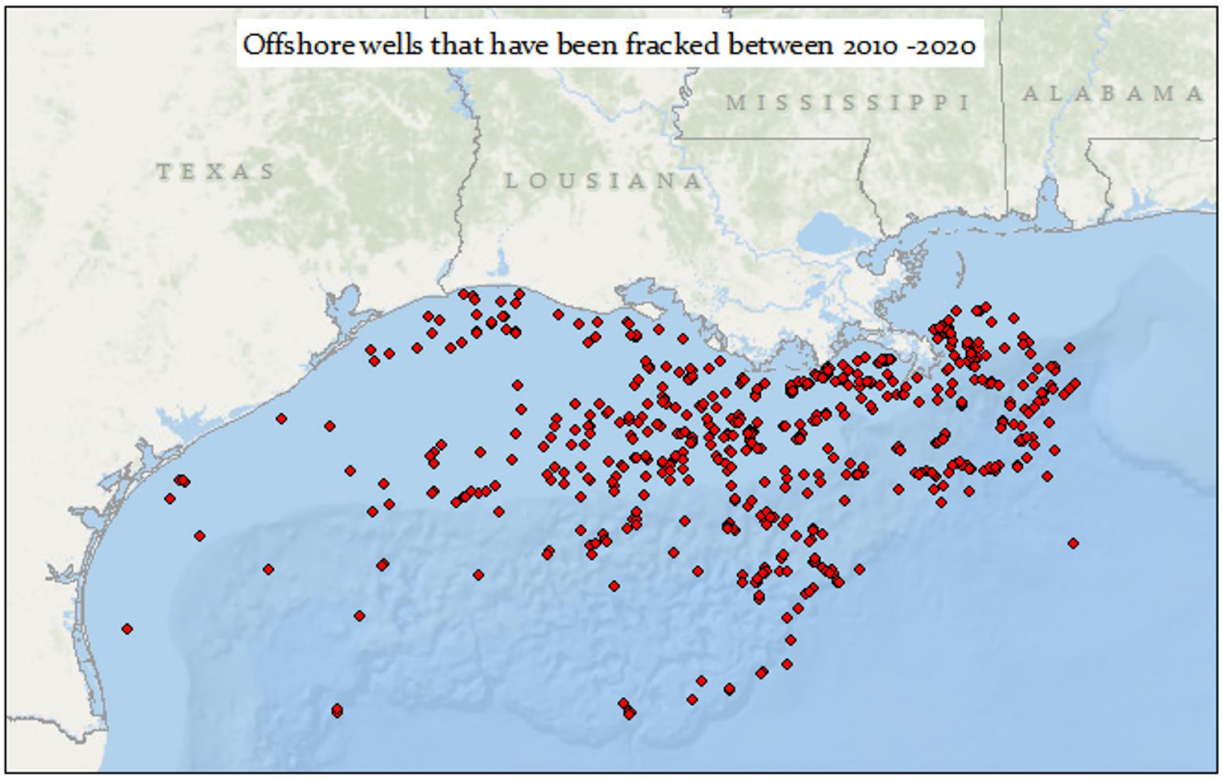


Figure 1: Fracking and acidizing in federal waters in the Gulf of Mexico (2010 – 2020). Data from BSEE FOIA records (2010-2019) and BSEE.gov 2020.

MILLIONS OF GALLONS OF TOXIC FRACKING WASTEWATER POLLUTE THE GULF OF MEXICO

The U.S. Environmental Protection Agency permits companies to discharge unlimited volumes of fracking wastewater into the Gulf. Chemicals used in fracking and acidizing can be discharged either as well treatment, completion and workover fluids (collectively called TCW fluids) or as part of produced wastewater.[9]

A 2021 preliminary report provided to the EPA by the oil industry analyzed fracking waste in concentrations likely to occur around offshore drilling platforms. The report found that fracking effluent kills species in laboratory tests.[10] The report indicated that 520 barrels, or 21,840 gallons, of TCW fluids with industrial chemicals like biocides, polymers and solvents were discharged with every frack. From 2010 through 2020, the oil industry discharged an estimated 66.3 million gallons of TCW fluids chemicals into the Gulf of Mexico.[11] The actual amount discharged is likely higher as the industry is not required to report or track the amount of fracking chemicals discharged along with produced wastewater.

Toxicity data indicate that fracking fluid discharges from offshore platforms in the Gulf may cause acute toxicity to marine organisms such as fish and mysids in concentrations that are likely to occur near offshore wells.[12] Many

[7] https://ci.carson.ca.us/content/files/pdfs/planning/oilcodeupdate/staffreports_04142015/A_New_Calif_Oil_Boom_Drill_Monterey_Shale.pdf

[8] BOEM. Gulf of Mexico OCS: Oil and Gas Lease Sales 2017-2022. (2017)

[9] CCST 2015

[10] AECOM 2021

[11] AECOM, 2021 (discharges from fracking averaged 520 bbls with a range of 30 - 1,577 bbls).

[12] AECOM 2021

of the reported chemicals[13] found in biocides, surfactants, gels, emulsifiers and other fracking and acidizing fluids are known to cause reproductive and behavioral harm and even kill wildlife.[14]

An analysis of substances present in wastewater for 14 fracks in federal waters and 15 reports from fracking in state waters in the Gulf of Mexico shows that the chemicals are toxic to aquatic life and may have damaging impacts on the environment. The table below summarizes those chemical disclosures, which represent a very small share of the total chemical compounds used in extreme oil and gas extraction methods offshore.

Chemical Ingredient Name	CAS No.	Harmful Effects
1,2,4-trimethylbenzene	95-63-6	Toxic to aquatic life with long lasting effects
2-bromo-2-nitro-1,3-propanediol	52-51-7	Very toxic to aquatic life; harms reproduction
2-butoxyethanol	111-76-2	Causes mutation; harms reproduction; causes tumors
2-mercaptoethanol	60-24-2	Very toxic to aquatic life with long-lasting effects; harms reproduction; causes organ damage
2-monobromo-3-nitrilopropionamide	1113-55-9	Very toxic to aquatic life with long lasting effects
2,2 dibromo-3-nitrilopropionamide	10222-01-2	Very toxic to aquatic life with long lasting effects
Ammonium chloride	12125-02-9	Retarded growth in small mouth bass; long-term, high dose exposure affected the blood of coho salmon.
Chlorous acid, sodium salt	7758-19-2	Very toxic to aquatic life with long lasting effects; causes organ damage; harms reproduction; causes tumors
Cinnamaldehyde	104-55-2	Fish exposed to cinnamaldehyde in combination with ethanol experienced cardiovascular and pigmentation defects and delayed hatching.
Crystalline silica, quartz (X-cide)	14808-60-7	Reductions in species richness and biodiversity in benthic communities; human carcinogen
Ethanol	64-17-5	Carcinogenic to animals; harms reproduction; mutagenic; causes hyperactivity in zebrafish
Ethoxylated nonylphenol	9016-45-9	Extremely toxic to aquatic organisms as an endocrine disruptor and inhibitor of development, behavior, growth and survival
Formaldehyde	50-00-0	Carcinogenic; mutagenic
Gluteraldehyde	111-30-8	Very toxic to aquatic life with long-lasting effects; reproductive effects
Hydrochloric acid (Hydrogen chloride)	7647-01-0	Causes developmental abnormalities in fetuses; the effect of hydrochloric acid on the organisms depends on the buffer capacity of the aquatic ecosystem
Methanol (Methyl Alcohol)	67-56-1	Causes organ damage; harms reproduction; negative effects on swimming behavior in aquatic organisms; possibly causes tumors
Naphthalene	91-20-3	Very toxic to aquatic life with long lasting effects; confirmed animal carcinogen & reasonably anticipated to be a human carcinogen; harms reproduction
Nonylphenol	9016-45-9	Toxic to aquatic life with long lasting effects

[13] See: www.FracFocus.org

[14] MSDS https://www.msdsonline.com/sds-search/

Phenol	108-95-2	Very toxic to fish; suspected mutagen; prolonged exposure causes organ damage; harms reproduction
Polyalkylene glycol (DB-964)	9003-11-6	Harmful to aquatic life with long lasting effects
Poly(oxy-1,2-ethanediyl), a-isotridecyl-w-hydroxy-	9043-30-5	Harmful to aquatic life with long lasting effects
Poly(oxy-1,2-ethanediyl,alpha-(4-nonylphenyl)-omega-hydroxy-branched	127087-87-0	Toxic to aquatic life with long lasting effects; endocrine disruptor
Polyoxyalkylene glycol butyl ether	9004-77-7	Confirmed animal carcinogen and possible human carcinogen; harms reproduction
Potassium chloride	7447-40-7	Study of native Gulf of Mexico species revealed toxicity to sensitive life stages of fish and invertebrates
Propanol	71-23-8	Reproductive harms and fetotoxicity; carcinogenic in animals
Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	Very toxic to aquatic life with long lasting effects
Sodium chlorite	7758-19-2	Very toxic to aquatic life with long-lasting effects; causes organ damage; harms reproduction; causes tumors
Tetrakis(hydroxymethyl)phosphonium sulfate	55566-30-8	Very toxic to aquatic life with long-lasting effects; causes genetic defects; harms reproduction
Tributyltetradecylphosphonium chloride	81741-28-8	Very toxic to aquatic life with long-lasting effects
Trisodium nitrilotriacetate	5064-31-3	Harms reproduction; causes tumors; known animal and possible human carcinogen

Figure 2: Known toxic chemical compounds discharged as reported by the AECOM 2021, Federal and industry disclosures for well stimulation in state waters as reported by FracFocus. Chemical effects are from the Material Safety Data Sheets (MSDS).[15]

The disclosed chemicals in fracking fluids and wastewater include hundreds of known toxic pollutants, but most of the chemicals are unnamed or their impacts are unstudied. A study evaluating 1,021 fracking chemicals found that information on human health impacts was lacking for 76% of the chemicals; of the remaining 240 substances, evidence suggested reproductive toxicity for 103 (43%), developmental toxicity for 95 (40%), and both for 41 (17%).[16] Similarly, most of the chemical products used in the Gulf of Mexico lacked an aquatic toxicity hazard assessment,[17] but many that had been assessed were ranked as very toxic, toxic, or harmful to aquatic life and people.[18]

Produced water containing toxic fracking chemicals flows back from the well once the production of oil and gas has begun. It can contain additional substances mobilized from underground such as arsenic, lead and naturally occurring radioactive materials.[19] Fracking chemicals can also enter the water through leaks and spills at wells, platforms and pipelines, and during transportation of chemicals to or from the well.[20]

When wastewater is not dumped into the ocean, it is reinjected into the seafloor or transported onshore in pipelines. Even injection as a disposal method can result in leaks. Studies show that 30% of offshore oil wells in the Gulf of Mexico experienced well-casing damage in the first five years after drilling, and damage increased

[15] MSDS 2021
[16] Elliott , et al. A systematic evaluation of chemicals in hydraulic-fracturing fluids and wastewater for reproductive and developmental toxicity. (2016)
[17] AECOM, 2021.
[18] MSDS https://www.msdsonline.com/sds-search/
[19] [CCST] California Council on Science and Technology. Advanced Well Stimulation Technologies in California: An Independent Review of Scientific and Technical Information. Downloaded at http://ccst.us/publications/2014/2014wst.pdf Volume III. (2015)
[20] CCST 2015

Exxon Mobil Refinery in Baton Rouge, Louisiana by WClarke, CC-BY-SA

over time to 50% after 20 years.[21] Fracking may also raise the risk of well failure and consequent oil or chemical spills.[22]

A study of Marcellus and Fayetteville hydraulic fracturing flowback fluids and Appalachian conventional produced waters found high levels of bromide, iodide and ammonium in these fluids at levels that pose risks to both human health and the environment if discharged.[23] The routine use of biocides, such as glutaraldehyde and quaternary ammonium compounds, in fracking fluids has spurred concern regarding the impact on ecosystem and human health of inadvertent releases into the environment.[24]

Harmful chemicals present in these fluids can include volatile organic compounds (VOCs), such as benzene, toluene, xylenes and acetone.[25] The oil and gas industry has self-reported fracking products containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health,[26] or (3) listed as hazardous air pollutants under the Clean Air Act. [27]

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[21] Vengosh et al. A critical review of the risks to water resources from unconventional shale gas development and hydraulic fracturing in the United States, 48 Environmental Science & Technology 8334-8348 (2014)

[22] Davies, R.J. et al., Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation, 56 Marine and Petroleum Geology 239-254 (2014)

[23] Harkness, J.S. et al. 2015

[24] Kahrilas, G. et al. Biocides in hydraulic fracturing fluids: a critical review of their usage, mobility, degradation, and toxicity. Environmental Science and Technology 49: 16-32. (2014)

[25] United States Environmental Protection Agency. Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources. (2011)

[26] United States House of Representatives, Committee on Energy and Commerce Minority Staff Chemicals used in hydraulic fracturing ("House Report") at 8, 11-12 (2011)

[27] McKenzie, Lisa et al. Human health risk assessment of air emissions form development of unconventional natural gas resources, Sci Total Environ doi:10.1016/j.scitotenv.2012.02.018 (2012)

ENVIRONMENTAL JUSTICE AND HUMAN HEALTH IMPACTS

Offshore drilling takes a heavy toll on Gulf Coast communities and imposes a disproportionate burden on communities of color. There are 1,751 active offshore drilling platforms in federal waters in the Gulf of Mexico.[28] There are also 35 refineries on the Gulf Coast, making up 46% of the nation's refinery capacity,[29] as well as numerous support facilities and pipelines. This industrial landscape pollutes the air, land and water and causes coastal erosion. The industry's negative impacts include oil spills, air and water pollution, wetlands loss and contributions to climate change.

Four of the top 10 toxic pollution-emitting oil refineries in the United States, and all 10 of the worst polluting petrochemical facilities, are located in Texas and Louisiana. Most of them are in low-income communities of color.[30] Compounding the persistent exposure to criterion pollutants from standard oil and gas industry operations are the all-too-frequent and devasting impacts of oil leaks, spills and explosions. Federal records show that between 2011 and 2020, U.S. pipelines had an average of 298 significant incidents per year that involved death, injury and property or environmental damage.[31]

Offshore fracking and other forms of extreme oil and gas extraction only intensify the risk of such accidents and add additional toxic chemicals to the environment. Exposing these communities and workers to more hazardous chemicals is compounding the existing environmental racism on the Gulf Coast.

People living near an oil or gas well reported reproductive, neurological, gastrointestinal, dermatological, respiratory and musculoskeletal health effects in humans, food animals and companion animals. Food animals displayed a significant spike in reproductive symptoms, which the researchers attributed to extreme initial exposure to toxic chemicals from the extraction site.[32] Numerous studies also suggest that higher maternal exposure to fracking and drilling can increase the incidence of high-risk pregnancies, premature births, low-birthweight babies and birth defects.[33]

More than 75% of the chemicals used in fracking could affect the skin, eyes and other sensory organs and the respiratory and gastrointestinal systems; approximately 40% to 50% could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37% could affect the endocrine system; and 25% could cause cancer and mutations.[34]

Numerous studies have highlighted the fact that health assessments of drilling and fracking emissions often fail to consider impacts on vulnerable populations, including environmental justice communities[35] and children.[36]

Fracking increases onshore truck traffic, oil production and ship traffic, all of which lead to increases in air pollution. The people living closest to shipping ports in the Gulf and the petrochemical chemical plants and refineries where oil and gas are processed should not suffer any more air-quality impacts from the fossil fuel industry. Places like St. James Parish, Louisiana, Houston and Port Arthur, Texas, Cherokee, Alabama, and other low-income communities of color see elevated levels of asthma, heart and lung disease and cancer, in addition to elevated rates of COVID-19 mortality that have been linked to air pollution.

Oil and gas production creates conditions that amplify the risks associated with COVID-19. A major study of air pollution and COVID-19 mortality in the United States found that exposure to even a small increase in fine particulate matter (PM2.5) was linked to an 8% greater chance of dying from COVID-19.[37]

[28] BOEM https://www.data.boem.gov/

[29] US Energy Information Administration, supra note 3. (2016)

[30] Donaghy. Research Brief. Environmental Justice Across Industrial Sectors. (2021)

[31] US Department of Transportation, Pipeline and Hazardous Material Safety database. (2021)

[32] Bamberger and Oswald Long-term impacts of unconventional drilling operations on human and animal health. Journal of Environmental Science and Health, Part A 50: 447-459 (2015)

[33] Currie, et al., Hydraulic fracturing and infant health: New evidence from Pennsylvania, 3 Science Advances e1603021 (2017)

[34] Colborn, et al. Natural Gas Operations from a Public Health Perspective Pages 1039-1056 | Received 08 Jun 2010 (2011)

[35] NRDC [Natural Resources Defense Council], Drilling in California: Who's At Risk?, (2014); Clough, et al. Just Fracking: A Distributive Environmental Justice Analysis of Unconventional Gas Development in Pennsylvania, USA, 11 Environmental Research Letters 025001 (2016); McKenzie, et al., Population Size, Growth, and Environmental Justice Near Oil and Gas Wells in Colorado, 50 Environmental Science & Technology 11471 (2016)

[36] Webb et al., Potential Hazards of Air Pollutant Emissions From Unconventional Oil and Natural Gas Operations on The Respiratory Health of Children And Infants. 31 Reviews on Environmental Health 225 (2016)

[37] Xiao 2020; see also: https://www.nytimes.com/2020/04/07/climate/air-pollution-coronavirus-covid.html

A pod of sperm whales by Gabriel Barathieu, CC-BY-SA

Many chemicals emitted during fracking are designated as Hazardous Air Pollutants (HAPs), which can enter the air during the venting of gases during fracking or the evaporation of chemicals from fracking and produced fluids, leading to dangerous human exposures.[38] For instance, ethylbenzene, formaldehyde and methylene chloride are all known or suspected carcinogens, while methanol is linked to reproductive harm and hydrochloric acid and hydrofluoric acid can cause both eye irritation and respiratory harm.[39] Therefore, being near fracking operations can lead to serious health effects, putting workers in particular at risk.

Drilling and fracking jobs are among the most dangerous jobs in the nation, with a fatality rate five times higher than the national average, as workers suffer high risks from toxic exposure and accidents.[40] At the same time, research shows that many gas field workers, despite these serious occupational hazards, are uninsured or underinsured and lack access to basic medical care.[41]

WILDLIFE IMPACTS

While the biological diversity and economic importance of species located in the Gulf are well understood, the effects of the persistent dumping of fracking and acidizing chemicals are unknown and unregulated.[42] However, the available scientific evidence indicates that offshore fracking threatens marine life.

Many of the species found in the Gulf of Mexico are listed as threatened or endangered under the Endangered Species Act. For example, the Gulf is home to critically endangered Rice's whales — among the most imperiled marine animals on Earth — endangered sperm whales, threatened coral species, threatened and endangered sea turtles and threatened Gulf sturgeon.[43]

The Gulf of Mexico is also home to many marine mammals, including killer whales, beaked whales, dolphins and melon-headed whales.[44] Fish species, mussels and oysters are also essential species in the ecosystem of the Gulf Coast and are important global food sources. Just 100 miles south of the Texas-Louisiana border is the Flower Garden Banks National Marine Sanctuary, which is a one-of-a-kind subtropical coral reef.[45] The numerous wetlands and islands dotted along the Gulf's shores also provide a breeding ground for about 75% of the migratory waterfowl traversing the United States.[46]

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[38] Esswein et al. Occupational Exposures to Respirable Crystalline Silica During Hydraulic Fracturing (2013)
[39] (Journal of Occupational and Environmental Hygiene (2013); Esswein et al., Evaluation of Some Potential Chemical Exposure Risks during Flowback Operations in Unconventional Oil and Gas Extraction: Preliminary Results (2014)
[40] Harrison, et al., Sudden Deaths Among Oil and Gas Extraction Workers Resulting from Oxygen Deficiency and Inhalation of Hydrocarbon Gases and Vapors (2013)
[41] United States, January 2010–March 2015. 65 MMWR Morb Mortal Wkly Rep 6 (2016); PSR at 80 (2016)
[42] CCST 2015
[43] Case: 18-60102 Document: 00514503503 Page: 28 Date Filed: 06/06/2018
[44] GMG0000674
[45] NOAA https://oceanservice.noaa.gov/ocean/sanctuaries/flower-garden.html
[46] See: https://www.gulfbase.org/environmental-issue/tourism#:~:text=It%20is%20estimated%20that%20the,tens%20of%20thousands%20of%20jobs. (2004)

Fracking fluids can have adverse impacts on marine species at concentrations likely to occur from offshore fracking. A study of mahi mahi exposed to fracking wastewater showed muscle depletion affecting their ability to swim after they were exposed to a 2% dilution.[47] According to a scientific review of fracking chemicals routinely used offshore in California, at least 10 could kill or harm a broad variety of marine species, including sea otters, fish and benthic invertebrates.[48]

There is significant scientific evidence of the impacts on aquatic life from onshore fracking. For example, water-treatment plants in Pennsylvania had been accepting wastewater from hydraulic fracturing activity and subsequently discharging it into streams. Fish in the Susquehanna River have been exhibiting abnormalities. Studies show that 40% of adult smallmouth bass within one river section had black spots and lesions; 90% to 100% of fish observed were cases of intersex, possibly due to endocrine disruption.[49] Even one week's exposure to produced water from fracking was linked to decreased growth and survival of fish and mussels. [50]

Furthermore, the toxicity of fracking chemicals can increase when they are combined with other chemicals and environmental stressors such as climate change. For example, when combined with other chemicals, some endocrine disruptors become more dangerous and produce effects even when the chemicals are below the threshold known to cause endocrine disruption.[51]

Fracking chemicals raise grave ecological concerns because the waters in the Gulf of Mexico are already suffering from significant environmental pressures, including a large annual hypoxic zone, depletion of essential coastal mangroves and wetlands, and other climate-related stressors. The marine environment of the Gulf is constantly exposed to pollution because oil spills are routine; the U.S. Coast Guard documented 42,041 oil spills in the Gulf of Mexico between 1973 and 2011.[52] In 2010 the Deepwater Horizon disaster spilled 206 million gallons of oil into the Gulf.[53] Following the spill, the Gulf experienced the longest mortality event recorded for marine mammals and sea turtles.[54] The areas around offshore drilling platforms are important for whales, seabirds, sea turtles and fish and are the most impacted as they are likely in the flow of the effluent stream from produced water and other discharge from extreme oil and gas extraction.

CLIMATE IMPACTS

Current levels of carbon emissions will drive the global average temperature to rise far above the 1.5 degrees Celsius climate limit established under the international Paris Agreement to avoid catastrophic harms to people and life on Earth. Exceeding 1.5°C will cause devastating biodiversity loss, crop failure and greater harms to coastal communities from more powerful storms and higher sea-level rise.[55] The world must cut global carbon emissions by half by 2030 and reach near zero emissions by 2050 to keep warming below 1.5°C, and that means ending new fossil fuel production and phasing out existing production.[56]

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[47] Folkerts, et al. Environmental Science & Technology 2020 54 (21), 13579-13589

[48] Diehl, J. et al. 2012. The distribution of 4-nonylphenol in marine organisms of North American Pacific Coast estuaries. Chemosphere 87:490-497

[49] Pennsylvania Fish & Boat Commission, "Ongoing problems with the Susquehanna River smallmouth bass, A case for impairment," (2012)

[50] Wang, et al. Biological Effects of Elevated Major Ions in Surface Water Contaminated by a Produced Water from Oil Production Ning (2019)

[51] CCST 2015

[52] US Coast Guard, Polluting Incidents In and Around U.S. Waters, A Spill/Release Compendium: 1969-2011 (2012)

[53] Pallardy. "Deepwater Horizon oil spill". *Encyclopedia Britannica*, (2021)

[54] NOAA. Sea Turtles, Dolphins, and Whales 10 years after the Deep Horizon Oil Spill. (2020)

[55] Allen, et al. Framing and Context. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.* (2020)

[56] Id., Oil Change International, The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production (September 2016), http://priceofoil.org/2016/09/22/the-skys-limit-report/, Oil Change International, Drilling Toward Disaster: Why U.S. Oil and Gas Expansion Is Incompatible with Climate Limits (January 2019), http://priceofoil.org/drilling-towards-disaster, IEA. *Net Zero by 2050*, IEA, Paris https://www.iea.org/reports/net-zero-by-2050 (2021)

Current U.S. climate commitments are not compatible with continuing fossil fuel extraction from federal waters. The 2017–2022 OCS Oil and Gas Leasing Proposed Final Program stated that lifecycle greenhouse gas emissions coming from past offshore oil and gas leasing and the 2017-2022 Program could represent up to 9% of the total remaining carbon pollution the United States can emit for a reasonable chance of constraining global temperature rise to 2°C — itself a reckless target. Well stimulation enhances oil and gas production by making the reservoir rocks more permeable, thus allowing more oil or gas to flow to the well[57] and increasing production, thereby worsening the climate crisis.

The United Nations' November 2019 "Production Gap" report shows that countries like the United States are on course to extract vastly more fossil fuels than what's consistent with meeting a 1.5°C or even 2°C target.[58] The United States is a primary contributor to this dangerous overproduction of fossil fuels as the world's largest oil and gas producer and third-largest coal producer, with current policies projected to lead to a 30% increase in oil and gas production by 2030.[59]

According to data from the Bureau of Ocean Energy Management, as of May 2021 there were 29.57 billion barrels of oil and 54.83 trillion cubic feet of gas in undiscovered, technically recoverable resources (UTRR) in the Gulf of Mexico.[60] UTRR are defined to include oil and gas that could be produced using other secondary recovery methods[61] like extreme extraction techniques such as fracking. If extracted and burned, this reserve would unleash 12.7 billion metric tons of carbon pollution,[62] which is vastly incompatible with staying below the 1.5°C limit.

Climate change is already wreaking havoc on the Gulf Coast by, for example, increasing the risk of extreme weather. In 2020 the southeastern United States endured a record number of named storms,[63] and many of them caused flooding in vulnerable communities.[64] While global average temperatures continue to rise, shifting Arctic currents hit Texas in February 2021, causing massive power outages[65] and killing people and wildlife unprepared for the extreme freezing event. We need a just transition to clean, renewable energy sources as quickly as possible to protect coastal communities, and rather than doubling down on dangerous and polluting extreme oil and gas extraction that will only worsen the climate emergency.

ECONOMIC IMPACT

Tourism, commercial fishing and sport fishing are huge drivers of the Gulf Coast economy and generate billions in dollars in revenue for local, state and federal taxes. These industries provide jobs for a diverse cross section of people in all regions of the Gulf Coast but are directly threatened by environmental degradation, including climate change, caused by the oil and gas industry.

The northern Gulf provides fish nursery and feeding grounds in the form of expansive marshes, mangrove stands, swamp forests and seagrass beds. It boasts some of best beaches and waters in the United States for recreation and tourism. All forms of tourism generate 2.6 million jobs in the Gulf states, nearly five times the number of jobs provided by the region's other three largest resource-based industries: commercial fishing, oil and gas, and shipping.[66] One study estimated that wildlife tourism along the Gulf Coast supports more than $19 billion in spending and generates more than $5 billion in federal, state and local taxes each year. [67]

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[57] CCST 2015

[58] See: https://www.unep.org/resources/report/production-gap-report-2019; https://www.sei.org/publications/trends-in-fossil-fuel-extraction/

[59] See: https://www.eia.gov/international/data/country/USA

[60] See: https://www.boem.gov/sites/default/files/documents/oil-gas-energy/resource-evaluation/2021_National_Assessment_Map_BOE_COLORS_UpdatedScale.pdf

[61] See: https://www.boem.gov/sites/default/files/documents/oil-gas-energy/resource-evaluation/2021%20Fact%20Sheet.pdf

[62] See: https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

[63] NOAA: Record-Breaking Atlantic Hurricane Season Draws To An End. (2020)

[64] See how extreme oil and gas production contribute to climate change in the climate impact section.

[65] NOAA: https://www.noaa.gov/news/us-had-its-coldest-february-in-more-than-30-years

[66] Stokes and Lowe. Datu. Wildlife Tourism and the Gulf Coast Economy. (2013)

[67] See: https://www.govinfo.gov/content/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf

According to the National Oceanographic and Atmospheric Administration, commercial and recreational fishing in the five Gulf states produced $31.89 billion in revenue in 2017. [68] For fiscal year 2015, commercial fishing created 146,004 jobs and recreation fishing created 107,549 jobs in Gulf Coast states, for a total of 253,553 full-time equivalents. [69] These jobs tend to be distributed among a diverse workforce.[70]

For comparison, the Bureau of Ocean Energy Management estimates that in fiscal year 2016, only 220,500 jobs in the offshore oil and gas industry are held by people located in the Gulf Coast.[71] BOEM estimates that the offshore oil and gas industry contributed more than $30 billion, but that includes a multiplier effect based on the spending of employees.[72]

POLICY RECOMMENDATIONS

Offshore fracking and other extreme oil extraction techniques are inherently dangerous. These practices pose an unacceptable risk to the Gulf of Mexico's ecosystem and our climate and communities. Additionally, because fracking and acidizing expand the lifespan of offshore oil and gas development and increase production, allowing these practices is inconsistent with the national interest in addressing the climate crisis. In light of these threats, bold leadership is needed to move quickly to end the use of offshore fracking and acidizing.

State and federal agencies should prohibit the use of extreme oil and gas techniques and stop issuing permits for offshore fracking and acidizing. They should also immediately stop permitting oil companies to discharge toxic chemicals into the Gulf of Mexico.

The secretary of the Interior should create a comprehensive program that restores, supports and protects communities and workers affected by offshore oil and gas development. As part of the program, the Interior secretary should examine how offshore fracking impacts the climate, the Gulf of Mexico's wildlife, and frontline communities that bear the burden of pollution from the oil industry.

In developing the program, the secretary should establish a task force that consults with affected communities, including meaningful consultation with labor and unions and Indigenous, Black and other communities of color. Doing so would be consistent with the policy of this administration to create well-paying jobs, deliver environmental justice and hold polluters accountable for their actions.[73]

[68] NOAA https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-economics-united-states#current-report (2017)
[69] NOAA https://www.st.nmfs.noaa.gov/Assets/economics/publications/FEUS/FEUS-2015/Report-Chapters/FEUS%202015%2009-GulfofMexico_Final2_508_v4.pdf (2016)
[70] See:https://www.lsuagcenter.com/~/media/system/3/0/e/e/30eeed5170ea8fabada44a411a55b3fb/rr117racialandethnicgroupsinthegulfofmexicoregiona.pdf
[71] BOEM https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2019-2024/DPP/NP-Economic-Benefits.pdf
[72] BOEM https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2019-2024/DPP/NP-Economic-Benefits.pdf
[73] Executive Order On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Jan. 20, 2021) and Executive Order on Tackling the Climate Crisis at Home and Abroad (Jan. 27, 2021)