December 22, 2021

via email: president@whitehouse.gov
email message NOT delivered
via mail: December 27, 2021

U.S. President Biden
1600 Pennsylvania Ave. NW
Washington, DC 20460

Dear President Biden,

We the undersigned are elevating a matter in urgent need of your immediate attention and action. Many of us live in the Gulf coast region directly impacted by the 2010 BP Deepwater Horizon oil disaster and use of toxic chemical dispersants during spill response. Hazardous dispersants were staged in our public marinas and neighborhoods; they were sprayed in coastal seas where we swim and fish; they were used long after the "official" end date in July 2010. Hazardous oil spill waste was disposed of in several of our municipal landfills. Now our families, friends, and neighbors suffer with long-term diseases, disabling chemical illnesses, cancers, and early deaths linked with toxic exposures from this oil spill, and childhood cancer rates have soared in our coastal communities. Many of us have participated in the long-term studies that found that dispersants make oil more toxic. Local wildlife is also experiencing long-term health harm from this oil disaster. Yet dispersant use continues even now. We are joined by others who share our concerns, having experienced oil spills and dispersant use in other areas. We all pray for relief from these toxic chemicals.

We have sought relief from both the EPA and the courts, and we have played by the rules only to be frustrated by industry pressures. Some of us filed a rulemaking petition with EPA on November 14, 2012, urging an NCP update to rules governing dispersant use. On January 22, 2015, EPA issued a Notice of Proposed Rulemaking to revise the NCP's Subpart J, the rules governing dispersant use. EPA stated the proposed rule was "anticipated to encourage the development of safer and more effective spill mitigating products, and would better target the use of these products to reduce the risks to human health and the environment." Sounded good, but for years, EPA took no action to finalize its proposed rule.

After waiting through two federal administrations for a final rule, a group of environmental justice and tribal advocates and individuals, including some of us, sued EPA under the Clean Water Act (CWA) and the Administrative Procedures Act (APA) (*Earth Island Institute/ALERT Project et al. v. Andrew Wheeler et al.* 3:20-cv-00670-WHO).

We were elated when, on August 9, 2021, the federal district court ruled in our favor on both claims! Indeed, the court clarified an important part of the CWA, finding that "EPA has a nondiscretionary duty to revise or amend the NCP *when there is new information that shows that the current standards for efficient, coordinated, and effective action to minimize damage from oil and hazardous substance pollution are insufficient to safely provide for mitigation of any pollution*." See Order at 8 (p. 6, lines 9–12), interpreting 33 U.S.C. §1321(d)(3). And the court agreed that waiting through now three administrations and eight years "was unreasonable and compelling agency action." (p. 16, lines 12–13). The court imposed a deadline of May 31, 2023, for EPA to issue a final rule, under court supervision, in its 2015 proposed rulemaking.

Despite our victory, we have several reasons to remain concerned that EPA will continue to ignore critical new information in this rulemaking. On July 27, 2021, just prior to the court decision in August, the EPA signaled its intent to allow dispersant use in future spills when it issued a final rule, based on the 2015 Proposed Rule, to require monitoring of dispersant use in certain situations. Yes, that's right, it did. It's almost like EPA didn't really hear the court since this final rule does not include the current science from May 2015 to present. Given this action, we now also fear that EPA will ignore this science in its final rule in May 2023. This latest science contains the bulk of a growing number of independent studies that show deadly harm to human health and the environment from dispersant use during oil spill response under the NCP. *This is a solid block of new information that clearly meets the federal court's recent interpretation of the CWA and compels EPA to update the NCP accordingly.*

Mr. President, we have done everything we can to hold EPA accountable to the spirit and intent of the laws that are designed to protect the waters of the U.S. and our health and wellbeing. But we feel a higher hand is now needed to compel EPA to do the right thing. This is why we now ask *you*, the President of the United States, to take two specific and immediate actions: 1) order EPA to withdraw its final rule issued on July 27, 2021, before it goes into effect on January 24, 2022; and 2) order EPA to issue one comprehensive rule in its 2015 proposed rulemaking, on or before May 31, 2023, based on the latest science, i.e., to present. (More support for each of these requests is provided in Appendix A and B.)

Mr. President, we have paid the ultimate price for short-sighted, industry-driven public policy. Yet we are willing to wait until May 31, 2023, for one comprehensive rule that is revised to reflect the emerging proof of deadly harm to people and sealife from dispersant use. It is time to recognize that oil dispersants are a net environmental *loss*, not benefit. We believe that only you can make this happen. Please hear us.

Sincerely,
Gulf Coast advocates and allies

Eastern Shore Community Health Partners, Inc.
Lesley Pacey, Founder & Director
http://easternshorechp.org/

Healthy Gulf
Cynthia Sarthou, Executive Director
www.healthygulf.org

Gulf Coast Creation Care
Lella B. Lowe, Co-President
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ReThink Energy Florida
Kim Ross, Executive Director
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Surfrider Foundation
Nicole de Venoge, Florida Policy Manager
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Texas Environmental Justice Advocacy Services
Juan Parras, Executive Director
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Joanie Steinhaus, Gulf Program Director
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Dr. Yolanda Whyte Pediatrics
Yolanda Whyte, MD, President
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Kindra Arnesen (Plaintiff)
Plaquemines Parish, Louisiana

ALLIES

Dr. Rosemary Ahtuangaruak (Plaintiff)
Nuiqsit, Alaska

Alaska Community Action on Toxics (Plaintiff)
Pamela Miller, Executive Director
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ALERT, a project of Earth Island Institute (Plaintiff)
Riki Ott, PhD, Founder & Executive Director
www.alertproject.org

Cook Inletkeeper (Plaintiff)
Sue Mauger, Executive Director
https://inletkeeper.org/

Friends of the Earth
Hallie Templeton, Legal Director & Senior Campaigner
https://foe.org/

Friends of the San Juans
R. Brent Lyles, Executive Director
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Government Accountability Project
Tom Devine, Legal Director
www.whistleblower.org

cc:

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Founder & ED, Texas Environmental Justice Advocacy Services (TEJAS)

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Appendix A

A brief history to support our first request

The BP Deepwater Horizon (DWH) disaster raised serious concerns about dispersant use that EPA had failed to consider or address in its rules that were then (and still are) in effect. For example, should dispersants be used deep underwater, when oil spill response plans only contemplated and authorized surface use? How much dispersant can spill responders apply before toxic effects overwhelm local ecosystems and pose health hazards to first responders, contract workers, and the exposed public? EPA could not answer these questions, yet it allowed the federal response team and BP to proceed with unprecedented "atypical" dispersant use in large volumes through deep sea injection and surface spraying of long durations – and monitor effectiveness during operations – in effect, to make it up as it goes. This proved devastating for people living in coastal communities, oil spill responders, and wildlife.

During May through December **2010**, BP collected and analyzed literally tens of thousands of water samples between the ocean floor and sea surface, likely to test the efficacy of an experimental technology, subsea dispersant injection (SSDI), for response to offshore oil spills. BP reported that SSDI reduced levels of benzene and other volatiles at the sea surface, which BP claimed would (theoretically) lower health risks for oil spill workers at the surface.[1]

Based on BP's preliminary results, the federal government acted in November **2010**, requiring lessees and operators of oil and gas leases on the outer continental shelf to demonstrate capability to access and deploy subsea dispersant injection equipment.[2]

Encouraged by BP's preliminary analysis and the Dept. of Interior's actions, the National Response Team and American Petroleum Institute developed environmental monitoring requirements for atypical dispersant use by **2013**.[3]

In **2015**, the EPA issued its Proposed Rule, which addressed 1) the outdated testing protocols with updated authorization of use procedures and methods, and 2) the need for less toxic products with new data and information requirements, and promoted 3) the

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[1] This industry-sponsored paper ignores studies that disprove this claim (see footnotes 20, 24, and 2). Lin Zhao, D.A. Mitchell, R. Prince, et al. **2021**. [BP DWH] 2010: Subsea dispersants protect responders from VOC exposures. *Marine Pollution Bulletin,* 173(20):113034. DOI: 10.1016/j.marpolbull.2021.113034.

[2] US Interior Department, Bureau of Ocean Energy Management, Regulation, and Enforcement, 2010, National Notice to Lessees and Operators (NTL) of Federal and Gas Leases, Outer Continental Shelf, Statement of Compliance with Applicable Regulations and Evaluation of Information Demonstrating Adequate Spill Response and Well Containment Resources, NTL No. 2010-N10, effective Nov. 8, 2010 to Nov. 8, 2015.

[3] NRT **2013**. Environmental Monitoring for Atypical Dispersant Operations: Including Guidance for Subsea Application and Prolonged Surface Application. May.
API, American Petroleum Institute. **2013**. Industry Recommended Subsea Dispersant Monitoring Plan. Technical Report 1152, Sept.

industry-government monitoring protocol for atypical dispersant use in response to an oil discharge to waters of the United States.[4]

In March **2019**, environmental justice and Tribal advocates sued EPA over its failure to maintain and update the NCP based on current science.

On July 27, **2021**, EPA issued a new rule for monitoring atypical dispersant use, based on science through the close of the April 2015 public comment period.[5] This monitoring rule suggests that atypical dispersant use will ultimately be authorized in the final rule – even though it remains to be seen whether such use will be authorized in May **2023**, given that the post April 2015 science has consistently found that chemically-dispersed oil is more toxic than mechanically- or naturally-dispersed oil.[6]

Mr. President, we have a national contingency plan precisely to prevent the oil industry and our government from conducting such wide-scale experiments in our ocean. Yet this is exactly what is happening. The U.S. GAO even said so in its December **2021** report: "While epidemiological study of human health effects of dispersant use during the [BP] Deepwater Horizon oil spill is ongoing, additional epidemiological study into human health effects cannot occur until the next oil spill in which dispersants are used."[7]

Surely, it doesn't take much imagination to realize that deepsea oil drilling carries risk of deepsea oil spilling. Surely, this should drive scientific inquiry as to how to safely mitigate that risk *before any leasing and harm occur*, and it should result in contingency plans to mitigate that risk and harm, plans which engage the public in decision-making, as required by the law.

The rule for atypical dispersant use makes a mockery of public process. Allowing it to go into effect is a win for the oil industry and only encourages them to put even more pressure on policymakers to bend to the industry's will.

[4] EPA **2015**. National Oil and Hazardous Substances Pollution Contingency Plan; Proposed Rule. published January 22, 2015. EPA-HQ-OPA-2006-0090; FRL-9689-9-OSWER

[5] EPA **2021**. National Oil and Hazardous Substances Pollution Contingency Plan; Subpart J Product Schedule Listing Requirements. Final rules published July 27, 2021. EPA-HQ-OPA-2006-0090

[6] Baurick T. Oil dispersants used in BP disaster must undergo EPA health, safety review, judge rules. *New Orleans Times-Picayune*, Aug. 10, **2021**

[7] U.S. GAO. **2021**. Offshore oil spills. Additional information is needed to better understand the environmental tradeoffs of using chemical dispersants. GAO-22-104153. Dec., 59 pp.

Appendix B

A brief summary of science to support our second request

There is literally a scientific sea change in thinking about the utility and safety of dispersants in oil spill response. After the BP DWH oil disaster, it became plainly evident to the public and scientists that the scientific theory of the past forty years didn't square up with the reality of long-term harm to people and marine wildlife. An unprecedented amount of dispersant was used at the surface and subsea, yet an unprecedented amount of oil still came ashore, despite industry assurances to the contrary. It's also when more funding for dispersant research became available for independent studies – and these more recent studies (in particular, post April 2015) often counter the industry rhetoric.

For example, dispersants are very effective at sinking surface oil to the bottom of the ocean, something industry still maintains they do not do. Independent studies now find that up to 20% of the BP DWH oil disaster may have sunk through interaction with marine snow (derived from plant or bacteria interactions with oil droplets) and then sedimented on the ocean floor (through interactions with mineral particles). Sinking agents are prohibited under the NCP (40 CFR 300.910(e)(1)).

- "… sinking marine oil snow and oil-sediment aggregations during the [BP] DWH contributed appreciably to the unexpected, and exceptional, accumulation of oil on the seafloor…" (Francis and Passow 2020).[8]

- "Formation of marine snow, and resulting sedimentation, is greatly enhanced by dispersants, which increase the formation of microdroplets in the water column … with efficiency by up to 80%–100%..." (Chiu et al. 2019).[9]

Oil-dispersant mixtures also increase the toxicity of oil to sealife by increasing the concentrations and persistence of hazardous oil components (VOCs and PAHs) in the water column, and by increasing the photo-toxicity of oil.

- "Toxicity studies in the period of 2017-2021 (current period of this report) involved more than 27 individual studies conducted by more than 25 separate study groups… All of the studies found that chemically-dispersed oil was more toxic than mechanically-dispersed oil." Further, "[in] most studies, it was found that [the chemically-dispersed oil-water mixture] was from slightly to 1.5 to 100 to as much

[8] Francis S., Passow U. **2020**. Transport of dispersed oil compounds to the seafloor by sinking phytoplankton aggregates: A modeling study, *Deep-Sea Research Part I: Oceanographic Research Papers*, 156, 103192.

[9] Chiu, M.-H., Vazquez, C.I., Shiu, R.-F., et al. **2019**. Impact of exposure of crude oil and dispersant (Corexit) on aggregation of extracellular polymeric substances, *Science of the Total Environment*, 657, 1535-1542.

Ziervogal K., Joye S.B., Kleindienst S., Malkin S.Y., Passow U., et al. **2019.** Polysaccharide hydrolysis in the presence of oil and dispersants: Insights into potential degradation pathways of exopolymeric substances (EPS) from oil-degrading bacteria, *Elementa*, 7, 1, 31.

as 500 times more toxic than the [mechanically-dispersed oil-water mixture], depending on the variables" (Fingas 2021).[10]

- "Dispersants increase the amount of benzene, toluene, ethylbenzene, and xylenes (BTEX) into the water column, as is already known." Further, "Addition of dispersant to a [mechanically-dispersed oil-water mixture] always enhances the [PAH] content of the oil [which] may be a factor in the increased toxicity of the [chemically-dispersed oil-water mixture] (Fingas 2021).[11]

- Dispersants increase the photo-toxicity of chemically-dispersed oil as much as 48 times more than that of physically-dispersed oil, a finding that is extremely relevant for the overall health of the marine foodweb as many species spend all or part of their lives near or on the sea surface (Fingas 2017; Finch et al. 2017, 2018).[12]

Oil-dispersant mixtures cause rapid shifts in microbial community structure, which, ultimately, are much more likely to suppress populations of oil-degrading bacteria than enhance them, contrary to industry claims, while increasing populations of oil-tolerant pathogenic microorganisms that eat human flesh (*Vibrio*) or cause harmful red tides.

- "[T]he presence of dispersants alters both the numbers and succession of hydrocarbon degrading organisms. This appears to be the result of selective toxicity of dispersants to some species while other species are tolerant of dispersants. This effect is different for different dispersants and different dispersant constituents. The end result of this number and succession shift is generally a reduction in biodegradation compared to a situation where dispersants are not used. Further, "[m]ost authors conclude that dispersants suppress biodegradation… consistent with past reviews" (Fingas 2021). Exceptions tend to be studies sponsored by the oil industry as shown in Table 1 (from Fingas 2017).[13]

- "[O]il contamination has been associated with potential for increases in harmful algal blooms and numbers of pathogenic *Vibrio* bacteria in oil-impacted waters."[14]

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[10] Fingas M, **2021**. A summary of dispersants research: 2017–2021, on behalf of Prince William Sound Regional Citizens' Advisory Council, Anchorage, Alaska. PWSRCAC Contract Number 955.18.01.

[11] Fingas, **2021**, Summary of dispersant research, pp. 10 and 12, respectively.

[12] Fingas, M. **2017**. A review of dispersant literature.
Finch, B.E., Marzooghi, S., Di Toro, D.M., et al. **2017**. Phototoxic potential of undispersed and dispersed fresh and weathered Macondo crude oils to Gulf of Mexico Marine Organisms, *Environmental Toxicology and Chemistry*, 36,10, 2640-2650.
Finch, B.E., Stefansson, E.S., Langdon, et al. **2018**. Photo-enhanced toxicity of undispersed and dispersed weathered Macondo crude oil to Pacific (*Crassostrea gigas*) and eastern oyster (*Crassostrea virginica*) larvae, *Marine Pollution Bulletin*, 133, 828-834.

[13] Fingas, **2021**, Summary of dispersant research, p. 9 and 17 (Table 1).
Fingas, M., **2017**. A review of literature related to oil spill dispersants, on behalf of Prince William Sound Regional Citizens' Advisory Council, Anchorage, Alaska. PWSRCAC.

[14] Eklund R.L., Knapp L.C., Sandifer P.A., et al. **2019**. Oil Spills and Human Health: Contributions of the Gulf of Mexico Research Initiative, *GeoHealth*, 3, 12, pp. 391-406. doi.org/10.1029/2019GH000217
Almeda, R., Cosgrove, S., Buskey, E.J. **2018**. Oil Spills and Dispersants Can Cause the Initiation of Potentially Harmful Dinoflagellate Blooms ("Red Tides"), *Environmental Science and Technology*, 52,10, 5718-5724. doi: 10.1021/acs.est.8b00335

- The removal of key grazers due to oil and dispersant disrupts the predator-prey controls ("top-down controls") that normally function in plankton food webs. This disruption of grazing pressure opens a "loophole" that allows certain dinoflagellates with higher tolerance to oil and dispersants than their grazers to grow and form blooms when there are no growth limiting factors (e.g., nutrients). Therefore, oil spills and dispersants can act as disrupters of predator-prey controls in plankton food webs and as indirect inducers of potentially harmful dinoflagellate blooms" (Almeda et al. 2018).

Dispersants are also very effective at turning oil spills into toxic oily mists, composed of ultrafine particles that drastically increase the toxicity of oil to humans, in contrast to industry claims. This also conflicts with the number one priority in oil spill response: protection of human life and safety (40 CFR 300.910(d)).

- "The total number of concentrations of airborne particulates originating from oil-dispersant mixtures are 1–2 orders of magnitude [10 to 100 times higher] than those of crude oil across the entire nano-scale range… Conversely, the differences in concentration are small" (Afshar-Mohajer et al. 2018).

- "Inhalation of airborne particles emitted from the slick containing dispersant increased the total mass of deposited particles in upper respiratory regions compared to the slick of crude oil only… [T]he application of dispersant onto the pollution slick increased the total mass burden to the human respiratory system about 10 times…" (Afshar-Mohajer et al. 2019).[15]

- Results from the Coast Guard cohort study suggested strong relationships between oil and oil-dispersant exposures and acute respiratory symptoms – coughing (19.4%), shortness of breath (5.5%), and wheezing (3.6%) – among disaster responders. The combination of both oil and oil-dispersants presented associations that were much greater in magnitude than oil alone for these three symptoms. Further, prevalence ratios for all three acute respiratory symptoms were higher among responders who did not report any use of Personal Protective Equipment (PPE) compared to those who did report any use of PPEs. A similar pattern was found for responders reporting use of a respirator; i.e., those who did not report use had higher prevalence for shortness of breath and wheezing (Rusiecki et al. 2018). Statistically significant statistically significant associations for crude oil were also found with neurological symptoms of headaches and light-headedness/dizziness, dermal symptoms of skin rash/itching, gastrointestinal symptoms of diarrhea and stomach pain (associated with exposure response relationships) and nausea/vomiting, genitourinary symptoms of burning or painful urination.[16]

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[15] Afshar-Mohajer, N., Li, C., Rule, A.M., et al. **2018**. A laboratory study of particulate and gaseous emissions from crude oil and crude oil-dispersant contaminated seawater due to breaking waves, *Atmospheric Environment*, 179, 177-186.
Afshar-Mohajer, N., Fox, M.A., Koehler, K. **2019**. The human health risk estimation of inhaled oil spill emissions with and without adding dispersant, *Science of the Total Environment*, 654, pp. 924-932.

[16] Rusiecki J, Alexander M, Schwartz EG, et al. **2018**. The [BP] Deepwater Horizon oil spill Coast Guard cohort study. *Occup Environ Med.* **2018** Mar, 75(3):165-175. doi: 10.1136/oemed-2017-104343.

- Further, another Coast Guard cohort study found "evidence of positive associations between oil spill clean-up exposures and both acute and longer-term cardiovascular symptoms/conditions", including chest pain associated with increasing levels of crude oil exposure via inhalation and direct skin contact, and sudden heartbeat changes associated with being in the vicinity of burning oil exposure. "In prospective analyses, responders (vs. non-responders) had an elevated risk for mitral valve disorders during 2013–2015… Responders reporting ever (vs. never) crude oil inhalation exposure were at increased risk for essential hypertension, particularly benign essential hypertension during 2010–2012… Responders with crude oil inhalation exposure also had an elevated risk for palpitations during 2013–2015… Cardiovascular symptoms/conditions were generally stronger among responders reporting exposure to both crude oil and oil dispersants than among those reporting neither' (Alexander et al. 2018).[17]

- Unlike the Coast Guard study cohort, the Gulf Long-term Follow up (GuLF) study cohort represented a unique population of culturally, ethnically, and linguistically diverse peoples, and included areas with some of the highest rates of poverty and unemployment and the lowest rates of access to health care in the United States. Of the full cohort, 82.3% lived in Gulf Coast states. The GuLF study found that potential exposure to either of the Corexit dispersants used during the BP DHOS response was significantly associated with health symptoms from oil spill exposure, including cough wheezing, shortness of breath, skin irritation, burning in nose/throat/lungs, tightness of chest, and burning eyes. The last three had the strongest associations. Also, weaker, but still significant, associations were found between dispersant exposure and all outcomes except cough and itching eyes at the time of study enrollment (March 2011).[18]

- The Women and Their Children's Health (WaTCH) study involved women and their children who lived in southeast Louisiana, including a small number of responders, during the 8-months immediately following the BP DWH. Statistically significant associations between health and spill exposure were found for all thirteen physical health symptoms with the strongest associations for burning in the nose, throat, or lungs; sore throat; dizziness; and wheezing. Women who were spill responders or

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Alexander M, Engel LS, Olaiya N, et al. **2018**. The BP DHOS Coast Guard cohort study: A cross-sectional study of acute respiratory health symptoms. Environ Res. Apr, 162:196-202. doi: 10.1016/j.envres.2017.11.044.

[17] Hristina Denic-Roberts, N. Rowley, M. C. Haigney, et al. **2022**. Acute and longer-term cardiovascular conditions in the [BP DWH] oil spill Coast Guard cohort, *Environment International* 158: doi.org/10.1016/j.envint.2021.106937

[18] Resnik DB, Miller AK, Kwok RK, et al. **2015**. Ethical issues in environmental health research related to public health emergencies: Reflection on the GuLF Study. Environ. Health Propect. **Sep**, 123(9): A227-31. doi: 10.1289/ehp.1509889.

Stewart PA, Stenzel MR, Ramachandran G, et al. **2018**. Development of a total hydrocarbon ordinal job exposure matrix for workers responding to the BP DHOS: The GuLF STUDY. *J. Expo Sci Environ Epidemiol.* May, 28(3):223–230. doi: 10.1038/jes.2017.16.

McGowan CJ, Kwok RK, Engel LS, et al. **2017**. Respiratory, dermal, and eye irritation symptoms associated with Corexit™ EC9527A/EC9500A following the BP DHOS: Findings from the GuLF STUDY. *Environ Health Perspect.* Sep, 125(9): 097015. doi: 10.1289/EHP1677

commercial fishers were significantly more likely to report wheezing; headaches; watery, burning, itchy eyes; and stuffy, itchy, runny nose.[19]

During this same timeframe, a study on air quality in southeast Louisiana used all available data and health-protective standards and concluded that the ambient air concentrations of benzene and PAHs were likely a threat to public health and should have been a cause for concern *and preventative action* as the "geographic exposure disparities in air quality were measurable in real time and therefore could have been used to issue region-specific preventive health announcements and precautions."[20]

- "… the [BP DWH] oil spill of 2010 increased concentrations of PM2.5, NO2, SO2, and CO in affected coastal counties [and] increased incidence of low birth weight (<2500 g) and premature born infants (<37 weeks of gestation). Heterogeneity effects reveal more pronounced adverse infant health outcomes for black, Hispanic, less educated, unmarried, and younger mothers" (Beland and Oloomi 2019).[21]

Since this disaster, new and rare cancer clusters now dot the maps in several coastal counties from Florida to Louisiana, where childhood cancer rates have soared.[22] Yet none of this is surprising, given that this is a logical extension of the early science on the BP disaster that documented bioindicators predictive of long-term harm in people and wildlife[23] – and that it matches our lived experiences with the BP DWH oil spill disaster and others.[24]

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[19] Peters ES, Rung AL, Bronson MH, et al. **2017**. The women and their children's Health (WaTCH) study: Methods and design of a prospective cohort study in Louisiana to examine the health effects from the BP oil spill. *BMJ Open*. Jul 10, 7(7):e014887. doi: 10.1136/bmjopen-2016-014887
Peres LC, Trapido E, Rung AL, et al. **2016.** The [BP] Deepwater Horizon oil spill and physical health among adult women in southern Louisiana: The Women and Their Children's Health (WaTCH) Study. *Environ Health Perspect.* Aug, 124(8):1208–13. doi: 10.1289/ehp.1510348

[20] Nance E, King D, Wright B, Bullard RD. **2016**. Ambient air concentrations exceeded health-based standards for fine particulate matter and benzene during the BP DHOS. *J. Air Waste Manag. Assoc. Feb, 66(2):224-36. doi: 10.1080/10962247.2015.1114044.*

[21] Beland, L.-P., Oloomi, S. **2019**. Environmental disaster, pollution and infant health: Evidence from the [BP] Deepwater Horizon oil spill, *Journal of Environmental Economics and Management*, 98, 102265.

[22] Eastern Shore Community Health Project, using National Cancer Institute statistics for 2013–2017. http://easternshorechp.org/cluster-maps/

[23] D'Andrea MA, Reddy GK. The development of long-term adverse health effects in oil spill cleanup workers of the BP DHOS offshore drilling rig disaster. Front Public Health. **2018** Apr 26; 6:117. doi: 10.3389/fpubh.2018.00117

[24] Government Accountability Project, Shanna Devine and Tom Devine. **2013**. *Deadly dispersants in the Gulf: Are public health and environmental tragedies the new norm for oil spill cleanups?*
Government Accountability Project, S. Devine and T. Devine, **2015**, Addendum Report.
Government Accountability Project, T. Devine and A. Arnold, **2020**, Ten Years After [BP] Deepwater Horizon: Whistleblowers continue to suffer an unending medical nightmare triggered by Corexit.
For a synopsis of science on human health harm from oil spills and dispersant use up through April 2015, *see* Riki Ott, **2015**, Expert testimony on behalf of North Shore No Pipeline Expansion, intervenor in National Energy Board hearing on consideration of the Trans Mountain Expansion Project, British Columbia, Canada. OH-001-2014.
For a synopsis of science on human health harm from oil spills and dispersant use from May 2015 through 2018, *see* Riki Ott, **2018**. Expert testimony on behalf of North Shore No Pipeline Expansion, intervenor in National Energy Board hearing on reconsideration of the Trans Mountain Expansion Project, British Columbia, Canada. P.C. 2018-01177, MH-052-2018

And finally, relevant to the July 27 rule, when independent scientists re-analyzed BP's massive subsea dataset, they disagreed with BP's preliminary findings, concluding instead that oil distribution at depth was controlled by temperature and pressure, not SSDI.[25] The latest review by the National Academy of Sciences, sponsored in part by the American Petroleum Institute, even stated that SSDI was not effective as the available evidence from the BP DWH indicates that insignificant amounts (less than 5%) of the liquid oil was trapped as suspended microdroplets in the deep intrusion layers with or without SSDI: "Evidence… compiled by Gros et al. (2017)… indicates that ~5% or less of the liquid oil was trapped in the deep intrusion layers. *Evidence preceding the onset of SSDI is similarly consistent with low percentages of liquid oil in the deep intrusion layers* (emphasis added, p. 51).[26]

In light of the post April 2015 oil dispersant research, the rule on monitoring atypical dispersant use is clearly insufficient to safely mitigate harm from oil spills. So, too, will be the rest of the 2015 Proposed Rule, if not revised and reissued, based on current science. Our nation's oil spill emergency response plan is currently operating under science and rules governing dispersant use that are twenty-seven years old. These rules will be nearly thirty years old before they are updated in 2023. Every time dispersants are used during oil spill response, we sacrifice the health and wellbeing of ourselves, our children, our communities, and our marine life.

Fingas M., **2018**. A review of literature related to human health and oil spill dispersants, 2014–2018, on behalf of Prince William Sound Regional Citizens' Advisory Council, Anchorage, Alaska. PWSRCAC.

[25] Paris CB, Berenshtein I, Trillo ML, et al. **2018.** BP Gulf Science Data reveals ineffectual subsea dispersant injection for the Macondo blowout. Front. Mar. Sci., 30 October 2018. doi.org/10.3389/fmars.2018.00389

[26] National Academy of Sciences, Committee on the evaluation of the use of chemical dispersants in oil spill response, **2019**. *The Use of Dispersants in Marine Oil Spill Response*, Washington, D.C.

Gross et al. **2017.** Petroleum dynamics in the sea and influence of subsea dispersant injection during [BP] Deepwater Horizon. PNAS September 19, 114 (38) 10065–10070. doi.org/10.1073/pnas.1612518114