

Fetid floodwaters in the “chemical coast” carry toxins and disease

The incalculable human health consequences of Hurricane Harvey

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The human health consequences from Hurricane and Tropical Storm Harvey will be long lasting and all but incalculable. Houston, Texas and the surrounding Gulf communities comprise the acknowledged petrochemical capital of the world. The Texas, Louisiana and Mississippi Gulf Coasts are commonly referred to as the “chemical coast,” where almost half of all the refining of gasoline and natural gas in the US is done.

Houston proper, 30 miles from the coastline, is situated in Harris County, and is also home to at least 12 Superfund sites, the most of any county in the state. These are sites designated by the US Environmental Protection Agency (EPA) as polluted locations requiring a long-term response to clean up hazardous material contamination.

“The number one thing we’re concerned with in a flood is chemicals,” Renee Funk of the Centers for Disease Control and Prevention (CDC) told Reuters. Funk was recommending what has been unfeasible for most of the flooded area residents since the onset of the catastrophic storm: to bathe immediately after flood water contact. The EPA was recommending that people avoid skin contact with chemical containing water altogether.

But for those trapped by and wading through the fetid floodwaters, such recommendations are all but impossible to heed. Dr. Richard Bradley, chief of Emergency Medicine and Disaster Medicine at McGovern Medical School at University of Texas Health Science Center in Houston, told *Time*, “Flood water mixes with everything below it. If it covers a field with pesticides, it picks up the pesticides. It can also carry animal waste from fields and forests.”

Petrochemical plants and Superfund sites

There is also the risk of raw sewage and industrial compounds and solvents being mobilized from treatment plants, petrochemical facilities, and Superfund sites and moved into neighborhoods by the surging flood currents. These

pollutants are then deposited in yards, school grounds, ball fields and parks citywide, wherever the flooding occurred. Extremely toxic compounds will then be left in sediment residues to poison the city residents for decades to come.

Dr. Bradley also noted that “the bacterial count in the floodwater is extremely high” and that therefore “the chance of getting a skin infection is really quite serious.” *E. coli* and *Salmonella* bacteria from sewage treatment facilities can infect minor skin wounds and cause severe systemic illness. Health authorities also point out that keeping immunization up to date is key to preventing complications from exposure to foul floodwaters.

When the floodwaters recede, countless stagnant ponds will foster a mosquito bloom. *Aedes aegypti* mosquitos carry and transmit Zika, chikungunya, dengue and yellow fever. Cases of West Nile Virus encephalopathy, an inflammation of the brain and spinal cord, doubled the year after Katrina in Louisiana and Mississippi. Crowded shelters for flood victims are also breeding grounds for outbreaks of diarrheal illnesses that are very difficult to contain.

The hundreds of thousands of flooded homes will also put people at high risk for respiratory illnesses associated with the growth of molds on interior surfaces. After Katrina, 46 percent of the homes inspected by the CDC had hazardous levels of mold.

Wes Highfield, a Texas A&M University at Galveston scientist, told the *Washington Post* this week that he became alarmed at the flooding near the Brio Refining toxic Superfund site in south Houston, which drains into the watershed where he lives in Friendswood. He drove to the site during the storm and found neighborhood kids swimming in the residue ponds where Brio dumped ethylbenzene, chlorinated hydrocarbons and other deadly compounds before the EPA had them removed.

Other Superfund sites include the low-lying San Jacinto River Waste Pits, which the Army Corps of Engineers in a report last year designated as subject to flooding with storm surges inland from Galveston Bay, as well as the Many Diversified Interests site near central Houston, the Crystal Chemical Company site southwest of Houston, the Patrick Bayou site near the Houston

Ship Channel, and the Jones Road Plume dry cleaning waste site.

The Superfund sites are known to contain compounds that are dangerous to inhale and touch, including perchloroethylene, trichloroethylene, chlorinated hydrocarbons and an array of toxic substances that are known carcinogens, as well as kidney, liver, reproductive, and developmental poisons.

Toxic air pollutants

At least 11 refineries and chemical plants shut down due to Hurricane Harvey. During a shutdown, the plants often vent much greater amounts of toxic air pollutants, known in the industry as “spikes.” Since they report that such practices are undertaken to prevent plant explosions during shutdowns, they are exempted from pollution fines. Air quality monitors in Houston were shut off during Harvey, with the ludicrous explanation by city officials that they were expensive to replace.

Neighborhoods in Houston’s East End, near the petrochemical plants, have been exposed to high levels of air pollution for years. Residents have reported smells that are “unbearable.” Daniel Cohan, an associate professor of engineering at Rice University with a specialty in air pollution, says the low-income neighborhoods of the East End have “more exposure to air toxics than almost anywhere in the country.”

Juan Parras, director of the environmental justice group called TEJAS, told Democracy Now, “We know that we have elevated levels of cancers all along these areas. There have been many reports to show increased rates of childhood leukemia if you live within two miles of the Houston Ship Channel, for example.” TEJAS told *The New Republic* that during a shutdown for flooding, if East End people cannot evacuate, “they literally get gassed by these chemicals.”

In filings with the Texas Commission on Environmental Quality (TCEQ), ExxonMobil reported a shutdown of two refineries due to the heavy rains, including its facility in Baytown. During shutdown, it released double the allowed amount of volatile organic compounds.

Shell shut down its plant at Deer Park and released its share of deadly cocktails of benzene, toluene, and xylene. Dow Chemical in Freeport, Texas poured out benzene, hexane and toluene well over what is permitted by TCEQ. Equistar Chemicals in Channelview lost power during the storm and released a series of toxins not even listed on its polluting permit.

BASF’s Agro division in Beaumont, Texas reported that its toxic wastewater reservoirs were overflowing into the environment without any ability to stop the dangerous pollution

until the cessation of the heavy rains, if then.

In May of 2013, a study titled “The Toxic Flood” was published by Food and Water Watch of Washington, DC and the Political Economy Research Institute at the University of Massachusetts Amherst. Investigators concluded in an examination of the US EPA’s Toxic Release Program (TRP) documents and figures from 2009 that American corporations dumped over 200 million pounds of carcinogens, neurotoxins, reproductive and developmental poisons in US waterways.

Hospital evacuations

As a result of the flooding from Harvey, some 27 hospitals in Houston and the coastal area closed. Another 25 facilities reported problems functioning due to storm damage. Over 1,500 hospitalized patients were evacuated upstate to San Antonio and other communities. St. Luke’s Health hospital in Houston evacuated inpatients by airboat, after floodwater breached its power plant.

Memorial Hermann Sugar Land hospital evacuated all its patients after the Brazos River flooded the surrounding area. Cypress Creek flooded the neighborhood of Vintage Hospital in northwest Houston, and all inpatients were removed by airboat to higher ground hospitals. Victoria, Texas hospitals were all evacuated by large patient transport buses that each had 20 beds aboard.

The elderly and the mentally ill are most at risk of disease and infection from the floodwaters and the shortages of medicines and treatment facilities. A 2009 study showed that 60 percent of the deaths in Hurricane Katrina were of those who were 65 years and older. People of all ages are threatened with post-traumatic stress disorder as a result of the trauma of losing everything they have in the floods.

As people attempt to return to their waterlogged homes, those without adequate financial resources will be forced to live in unsanitary conditions, with their health endangered by mold, bacteria and other toxins left in the ruins of their homes.



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