

Toxic Sites Flooded by Hurricane Harvey

Officials are still trying to confirm whether Texas floodwaters have spread contamination from the toxic waste sites known as "Superfund sites" to residential areas. The Environmental Protection Agency says 13 Superfund sites were flooded and potentially damaged by Hurricane Harvey. The following is a list of those locations, along with the contaminants at the sites and associated health concerns.



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Superfund Site	History	Contaminants of Concern	Health Impacts
1. Highlands Acid Pit	Received waste from oil and gas refining in the 1950s	Arsenic, benzene, beryllium, cadmium, chromium, lead, manganese, pyridine, sulfuric acid, toluene, xylene	Benzene, cadmium and chromium are known carcinogens, associated with leukemia, kidney cancer and lung cancer respectively. Sulfuric acid has been tied to larynx cancer and stomach tumors. Lead exposure damages the nervous system, the brain, and kidneys, increases blood pressure, may decrease the mental ability and stunt the growth of young children. Exposure to a large quantity of beryllium can lead to chronic beryllium disease, which makes you feel weak and tired, causes difficulty breathing, weight loss and heart disease. Repeated exposure to toluene can cause brain damage, along with hearing and color vision loss.
2. San Jacinto River Waste Pits	Disposal of pulp and paper mill waste in the 1960s	Dioxins and furans	Dioxins and furans are associated with several types of cancers in humans, including soft-tissue sarcoma, non-Hodgkin's lymphoma, respiratory cancer, prostate cancer and bone marrow cancer. Exposure can also lead to changes in hormone levels and a skin disease called chloracne.
3. Patrick Bayou	Since the mid-1990s, permitted industrial and municipal wastewater and stormwater runoff	PCBs, mercury, bis(2-ethylhexyl) phthalate, lead, dioxins, furans	PCBs are probable carcinogens, and can contribute to nose and lung irritation, depression and fatigue. Long-term exposure to phthalates can affect the nervous system and liver, and decrease fertility. Mercury and lead contamination can lead to kidney damage; affect the brain and nervous system of infants and children; and cause nervous and muscular changes, headaches, and emotional changes.
4. Bailey Waste Disposal	Disposal of industrial and municipal waste until the 1970s	Arsenic, chromium, ethylbenzene, lead, styrene, zinc	Chromium is a known carcinogen. Ethylbenzene, lead and styrene are also suspected to cause cancer. Long-term exposure to arsenic can lead to skin discoloration and the appearance of small corns or warts. Styrene exposure causes nervous system damage, including tiredness, slowed reaction times, difficulty concentrating or balancing. Zinc contamination can cause anemia, pancreatic damage, and lower levels of good cholesterol. Lead contamination can lead to nerve damage; increased blood pressure; brain damage; kidney damage; and decreased mental ability, learning difficulties and stunted growth in young children.
5. French LTD	Sand mining and petrochemical waste storage facility, 1950 - 1973	Arsenic, benzene, PCBs, pentachlorophenol	Benzene, PCBs and pentachlorophenol are all known or possible carcinogens. Additional health impacts from this collection of chemicals include nose and lung irritation, depression and fatigue, skin discoloration, and other organ damage.
6. Geneva Industries/ Fuhrmann Energy	Petrochemical production and petroleum exploration	Benzene, PCBs, trichloroethylene (TCE)	Benzene is a known carcinogen. PCBs have been determined to be probable carcinogens, and also contribute to nose and lung irritation, depression and fatigue. TCE is a known carcinogen that has been linked to kidney, liver and blood cancers, and can also cause autoimmune disease.
7. Gulfco Marine	Barge maintenance facility, 1971 - 1998	1,1,1-TCA, 1,1-DCE, 1,2,3-Trichloropropane, 1,2-DCA, benzene, chloroethene, methylene chloride, PCE, TCE, cis-1,2-dichloroethene	Benzene is a known carcinogen and 1,2-DCA is a possible carcinogen. This set of chemicals can have long term impacts on liver function and contribute to kidney or nervous system diseases.

Superfund Site	History	Contaminants of Concern	Health Impacts
8. Malone Services	Disposal and storage for waste chemicals and oils	1,1,2,2-Tetrachloroethane, 1,2-dibromoethane, 2-methylnaphthalene, aldrin, aluminum, arsenic, benzene, cadmium, chloroethene, chloroform, chromium, copper, hexachlorobenzene, mercury, methylene chloride, naphthalene, nickel, pentachlorophenol, selenium, silver, tetrachloroethene, PCBs, trichloroethene, zinc	Benzene, cadmium, chromium, trichloroethene and tetrachloroethylene are known carcinogens, and hexachlorobenzene, pentachlorophenol, lead and aldrin are suspected to cause cancer. Exposure to tetrachloroethylene can cause changes in mood, memory, attention, reaction time, and vision. Breathing high doses of 1,1,2,2-tetrachloroethane over a long period of time can cause liver damage. Breathing 1,2-dibromoethane over a long period of time has been linked to sperm damage in men. Exposure to moderate levels of aldrin has led to headaches, dizziness, irritability, vomiting, and uncontrolled muscle movements. Selenium contamination can cause respiratory irritation, bronchial spasms, and coughing, as well as selenosis, a condition associated with hair loss, nail brittleness, and neurological abnormalities.
9. U.S. Oil Recovery	Former wastewater treatment plant	Benzene	Long-term exposure to benzene, a known carcinogen, has been linked to leukemia, particularly acute myelogenous leukemia (cancer of the bloodforming organs). Arsenic contamination can lead to skin discoloration and the appearance of small corns or warts.
10. Petro-Chemical Systems	Waste oils dumped nearby and stored in unlined pits	2-Butanone, Benzene, Ethylbenzene, Lead, Naphthalene, Styrene, Toluene, Xylenes	Benzene, ethyl benzene, lead, naphthalene, and styrene are all known or possible carcinogens. Additionally, these chemicals can contribute to nervous system damage; hearing and color vision loss; nose, eye, and throat irritation; and dizziness and lack of muscle coordination
11. Triangle Chemical	Chemical mixing site until 1981	Acetone, carbon disulfide, chlorobenzene, dichlorobenzene, ethyl benzene, nitrate/nitrite, trans-1,2-dichloroethylene	Ethyl benzene is a possible carcinogen. Additional health impacts from this list of chemicals include nose and throat irritation, headaches, trouble sleeping, nerve damage, ear and kidney damage, and reduced blood oxygen.
12. Falcon Refinery[†]	Former oil refinery	Benzene, ethylbenzene, methyl butyl ether (MTBE), 2-methylnaphthalene, naphthalene, manganese, hexavalent chromium, arsenic	Benzene and hexavalent chromium are known carcinogens; naphthalene and ethylbenzene are labeled possible carcinogens. Long-term exposure to arsenic can lead to skin discoloration and the appearance of small corns or warts. Prolonged exposure to hexavalent chromium can cause sores to develop in the nose, or cause asthma symptoms like wheezing or shortness of breath.*
13. Brine Services[†]	Former waste disposal pits, 1940s - 1960s	Barium, cadmium, chromium, lead, mercury, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene, benzene, ethylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, xylenes, 2,4-dimethylphenol, acenaphthene, 2-methylphenol (o-cresol), 3&4 methylphenol (m&p cresol), and phenol	Chromium, benzene and cadmium are all known carcinogens that can lead to leukemia and lung, stomach, or other kinds of cancer. Lead and ethylbenzene are both probable carcinogens as well. This full list of contaminants can lead to other health impacts, including lung damage, nerve damage, increased blood pressure, headaches and dizziness, kidney damage, anemia, and ear damage.

Factsheet compiled by TexPIRG, Environment Texas and Frontier Group, which are members of The Public Interest Research Group.

Site information comes from U.S. Environmental Protection Agency. Health impacts are from the Centers for Disease Control and Prevention, unless otherwise noted.

* Occupational Safety and Health Administration

† After initial assessments, the EPA determined these two sites “do not require emergency cleanup; although, additional sampling in the area will continue to be conducted.”

At the time of writing on September 5, 2017, the other 11 sites had not yet been investigated.