

## Environmental Law

## Expert Analysis

# Extreme Weather and Chemical and Waste Management Regulations

The changing climate is strengthening coastal storms and inland flooding, possibly endangering many chemical and oil storage facilities, chemical manufacturing operations and waste disposal sites that were not built for such extreme weather. According to the U.S. Government Accountability Office (GAO), “Over 11,000 facilities across the nation make, use, or store extremely hazardous chemicals in amounts that could harm people, the environment or property if accidentally released.”

This column discusses the chief U.S. laws that may protect against these hazards.

### Clean Air Act

Section 112(r) of the Clean Air Act created a program on prevention of accidental releases of hazardous chemicals from stationary sources. It provides that owners and operators of these sources “have a general duty ... to identify hazards which may result from such releases using appropriate



By  
**Michael B.  
Gerrard**



And  
**Edward  
McTiernan**

hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.” EPA was directed to adopt regulations and to require facility owners and operators to prepare and implement “risk management plans.” These plans came to include “off-site consequences analyses,” but in 1999 Congress, two years before 9/11 but already concerned that terrorists might use this information to find targets, amended the law to make it much more difficult for the public to obtain these analyses. Then in 2013 the explosion of a fertilizer plant in the town of West, Tx. killed 15 people, and President Obama directed EPA to strengthen the chemical safety rules. EPA issued stronger regulations in January 2017, one week before President Obama left

office. The Trump administration rescinded the stronger rules. In February 2022, GAO found that about 3,200 facilities covered by the program are in locations that may be at risk from the effects of climate change—flooding, storm surge, wildfire and sea level rise. In August 2022, EPA proposed a new rule that followed the GAO’s recommendation to explicitly require risk management plans to consider climate change.

Similar to the risk management plans required by EPA, which are designed to protect the environment and the community, the Occupational Safety and Health Administration requires “process safety management plans” to protect workers. There is no explicit requirement to consider climate change. Both EPA and OSHA require companies, in carrying out these plans, to follow “recognized and generally accepted good engineering practices” (RAGAGEP). The RAGAGEP practices are established by such non-profit organizations as the American Society of Mechanical Engineers, the American National Standards Institute, and the National Fire Protection Association. Some of these practices consider various risks associated with climate change (such

MICHAEL B. GERRARD is a professor at Columbia Law School, director of the Sabin Center for Climate Change Law, and Senior Counsel to Arnold & Porter. EDWARD MCTIERNAN is a partner with Arnold & Porter and a former General Counsel of the New York State Department of Environmental Conservation.

as flooding and wildfires), but few if any explicitly discuss climate change or the conditions it will cause in the future.

### RCRA

EPA has issued detailed regulations under the Resource Conservation and Recovery Act (RCRA) for the storage of certain chemicals, but they apply only to hazardous *wastes*, not to useful products. Moreover, RCRA regulates the units that are most vulnerable to storms—above-ground storage tanks—only if they are holding oil or its products like gasoline. A law enacted after the chemical disaster in Bhopal, India in 1984, the Emergency Planning and Community Right-to-Know Act of 1986, requires companies storing large quantities of certain hazardous substances to report their inventories and make some other disclosures, but it does not impose substantive requirements that would help make sure the tanks do not leak or burst.

This gaping regulatory gap was on display in January 2014 in Charleston, W.V. when a large leak developed at a tank holding a chemical used as a cleansing agent in the coal mining industry. The liquid poured into the Elk River and rendered the water supply for 300,000 people undrinkable for weeks. The spill occurred during a spell of record low temperatures caused by a “polar vortex” (a phenomenon that some link to climate change), which caused “frost heaving” that deformed the ground surface on which the tank was sitting. Though the tank was corroded, it was not subject to EPA’s tank regulations because it contained a useful product, not either waste or oil. The company

and some of its managers were prosecuted criminally and fined, not because the tank was substandard but because the company did not have a permit under the Clean Water Act to discharge into the river and had not taken adequate precautions to prevent a spill. After this incident West Virginia adopted legislation regulating above-ground storage tanks.

EPA has promulgated very detailed regulations under RCRA for hazardous waste disposal facilities. These include special precautions for facilities sited in a 100-year floodplain. Rising seas and more intense storms mean that many more areas will have that level of flood risk, but based on past experience it is not clear that many operators will be taking the necessary precautions.

### Clean Water Act

As enacted in 1972, the Clean Water Act requires EPA to “establish procedures, methods, and equipment and other requirements for equipment to prevent discharges of oil and hazardous substances.” In 1973 EPA issued standards for the storage of oil. The current regulations require oil storage facilities to have Spill Prevention Control and Countermeasure (SPCC) plans. These plans are very elaborate and no doubt have greatly reduced the amount of oil that gets into the environment, but they are required only for oil. In 2015, several environmental groups sued EPA to compel it to issue similar regulations for hazardous substances, as the Clean Water Act requires. EPA agreed in a 2016 consent decree to begin a rulemaking to correct this gap, but the Trump administration then concluded that new rules were not

necessary. The Biden administration has not indicated if it will take a different position.

In 2019 the Natural Resources Defense Council and others sued EPA under a related provision of the Clean Water Act (added by the Oil Pollution Act of 1990) that required the President to issue regulations requiring owners or operators of certain onshore facilities to prepare plans “for responding, to the maximum extent practicable, to a worst case discharge, and to a substantial threat of such a discharge, of oil or a hazardous substance.” The parties entered into a consent decree in March 2020 requiring EPA to propose regulations complying with this requirement within two years, and in March 2022 EPA issued its proposed rule on “Clean Water Act Hazardous Substance Worst Case Discharge Planning.” EPA indicated that climate change could cause or worsen these worst case events, and should be considered in the plans.

Even when SPCC plans are required, they often ignore the perils that climate change poses to tanks that hold large amounts of oil. In 2016 the Conservation Law Foundation sued ExxonMobil alleging that its oil tank farm on the Mystic River near Boston is not prepared for storm surge or other possible impacts of climate change, in violation of the Clean Water Act and RCRA. The same group followed with similar suits against Gulf Oil and Shell Oil concerning different tank farms. These cases are in active litigation.

### CERCLA

The best-known program for contaminated sites that are no

longer active (as opposed to operating factories) is under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). EPA places the worst sites on its National Priorities List; these are commonly called Superfund sites. These sites are disproportionately located in or near communities of color. After listing, each site undergoes an elaborate process called the remedial investigation and feasibility study, leading to EPA's selection of a way to address the contamination, called a "remedy." Some common remedies include digging up the material and hauling it to a licensed disposal site; leaving it in place and placing an impervious cover over it; or pumping out contaminated groundwater, treating it, and putting it back in the ground. Of the Superfund sites not on federal property, at least 60% (945 of 1,571) are in locations that under current conditions are vulnerable to flooding, storm surge, wildfires, or sea level rise. Even more sites will be at risk as climate conditions worsen.

Extreme storms do not necessarily release contaminants from Superfund sites. An EPA study of three 2017 hurricanes (Harvey, Irma and Maria) found that 252 Superfund or similar sites were exposed to tropical force winds or higher and 63 experienced flooding, but only 16 reported minor damage. One that was affected was the San Jacinto Waste Pits, where Hurricane Harvey damaged a temporary protective cap on a pit of toxic sludge, exposing waste with high levels of dioxins and washing some of it downriver. Hurricane Maria stirred up

already high levels of PCBs in Guanica Bay, Puerto Rico.

EPA has identified many ways that a changing climate can worsen the already toxic conditions at contaminated sites. For example, it can transport pollution offsite; mobilize formerly stable contaminants, especially those in sediments at the bottom of bodies of water; damage the often thin caps that cover contaminants that are left in place; and make contaminants more volatile with higher temperatures. Climate change can also increase erosion, raise or lower groundwater levels, flood drainage systems beyond their design conditions, and force soil vapor to migrate, further complicating Superfund remedies.

In 2021 EPA suggested that its officials implementing CERCLA "should assess the vulnerability of a remedial action's components, including its associated site infrastructure and evaluate whether the long-term integrity of a selected remedy may be impaired by adverse effects of climate change," and that "intensities and frequencies of extreme weather events over a timeframe corresponding to a remedy's anticipated duration" should be considered. The remedies recently chosen for some sites do include protections against extreme flooding.

EPA has legal options if it finds that climate change has rendered a site remedy inadequate. CERCLA provides that if any contaminants remain at the site, EPA must review the remedial action at least every five years "to assure that human health and the environment are being protected,"

and if they are not, EPA must take action. Most cleanups of Superfund sites are carried out through consent decrees with the potentially responsible parties, and EPA's model consent decree allows EPA to compel further action at closed sites if required by the circumstances. Therefore if EPA concludes that the remedy at a Superfund site is vulnerable to climate change, it has considerable authority to require a change, though in practice it has seldom done so. EPA could also go further and amend the regulation that governs the CERCLA cleanup process, called the National Contingency Plan, to require more systematic consideration of climate change when identifying sites to the listed as Superfund sites, selecting the remedy, and monitoring its effectiveness.

## Conclusion

Several regulations exist to protect chemical and waste facilities against extreme weather events. It is not clear that they all are being adequately implemented, and the existing rules leave many holes. The worsening climate will require that the regulations and their enforcement be considerably strengthened going forward.