

**American Bar Association  
Forum on Construction Law**

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**Plenary 2, Workshop B: Environmental Issues Following a Natural Disaster**

**Dorsey R. Carson, Jr.  
Carson Law Group, PLLC  
Jackson, Mississippi**

**Tracey Dodd  
J.S. Held LLC  
New Orleans, Louisiana**

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## **A. INTRODUCTION**

Natural disasters occur all over the world, and with the presence of 24-hour media, we often have a close-up view of the conditions following a disaster. These disasters can have significant environmental consequences, posing risks to human health and property, which need short- and long-term management approaches to addressing the varying situations through restoration and final repairs.

In the last few decades, significant practice changes have been made to disaster response to reduce the severity of impact following a natural disaster as well as to shorten the timeframe to recovery, including allocation of significant government resources to increase resources and the knowledge base regarding emergency response to these environmental disasters, and community and university-based courses, classes, and degrees in disaster management are now available across the country.

While disaster management has evolved considerably over the decades, the environmental issues following disasters linger and can be significant to address and mitigate. Further, allocations of liability are ever-present following these disasters, necessitating experts to identify, control, and mitigate the associated damages.

## **B. DISASTERS**

A disaster is defined in many ways, but the term generally characterizes a sudden event or accident that occurs when people are exposed to situations or hazards that have the potential to cause impact to human health. Disasters involve damage to property or common infrastructure and impact communities and the resources they rely on. Disasters come in many forms and can be natural or stem from human activity.

Environmental disasters that are human-related or include well-studied events such

as:

- Chernobyl
- Kuwait Oil Fires
- Exxon Valdez
- Love Canal
- Bhopal
- Three-mile Island

These events have resulted in significant loss of life or injury, as well as loss of natural resources associated with significant pollution. Many of the environmental disasters listed above also have significant long-term damages to public health and the environment that continue to be studied.

Natural disasters include:

- Floods
- Hurricanes
- Tornados
- Earthquakes
- Tsunamis; and
- Wildfires

Sometimes, natural and human-made disasters can occur together. Consider the Fukushima nuclear disaster, where a devastating tsunami caused nuclear reactors to fail. Often, these types of disasters are particularly harmful because one problem exacerbates the other. What do all these events have in common? Whether human-made or naturally occurring, these disasters impact the environment and involve significant loss of life, loss of natural resources, and economic and infrastructure impact.

Some natural disasters with the highest number of fatalities include the Galveston Hurricane in 1900, the San Ciriaco Hurricane of 1899, and, more recently, Hurricane Mitch in 1998 and Hurricane Maria in 2017. Natural disasters such as those detailed previously involve the loss of natural resources, which can include contamination of surface and drinking water sources, destruction of wetlands or loss of vegetation, as well as the contamination of lands and waters with the release of wastes (hazardous or solid wastes), and the loss of agriculture with disruption to the food supply.

These disasters also impact power generation and transmission across communities, which in turn can prevent water supply and the supply of other utilities. In addition to the loss of power generation and transmission, communication means are often lost, further impeding response, even when access to the impacted communities is otherwise available. Loss of transportation infrastructure and accompanying access to impacted communities can significantly delay emergency response and recovery efforts, and emergency services and access to healthcare and response by police and firefighters are also delayed. All these damages can impact the economy (local, state and federal) overall and have both short- and long-term impacts. While environmental disasters typically precipitate loss of employment, commerce, and production, there are some studies that indicate some positive impacts to the economy in the aftermath.

### **C. DISASTER PREPAREDNESS**

How well a business or community responds to an environmental disaster has its roots firmly planted in how prepared the community or business was for the disaster. Disaster preparedness begins months or years before the environmental disaster occurs, and includes planning, drills, testing of vulnerabilities and resiliency to the disaster, as well

as the re-evaluation of past responses (success and failures) to the other environmental disasters, and also includes the continual updating of plans and associated roles and responsibilities of all of those involved in the response to the disaster.

Disaster preparedness also impacts the success of the emergency response efforts, which can last days or weeks, as these efforts clearly rely upon disaster management plans. The emergency response efforts for environmental disasters are designed to save lives, prevent further injury or property damage, and mitigate further damages. They can also include efforts directed at search and rescue; reestablishing security; and securing food, water, and utility supplies, including the provision of resources and housing for emergency response and restoration workers. These efforts involve provision of emergency relief through establishing supply chains to support response and recovery efforts following an environmental disaster, from providing supplies of boom to contain spills to providing skimming vessels to remove as much floating petroleum as possible from water.

The quicker the supply chain is reestablished, the quicker the recovery efforts take place following an environmental disaster. Recovery efforts, following an environmental disaster, can last many months and even years; New Orleans' response to Hurricane Katrina is a perfect example of recovery that occurs within a community well across the years and even a decade. Recovery efforts involve stabilizing the business or community, making long-term repairs to critical infrastructure or properties, and providing financial assistance.

Practically speaking, companies investing in preventative measures in order to reduce the impact of the next disaster, or, mitigating the effects of a disaster (and of

potential liability, for that matter), should adopt three policies in order to make safety and disaster preparedness a priority:

- Assess potential risk;
- Adopt “as low as reasonably practicable” risk standards; and
- Create a process by which disaster policies and/or equipment are evaluated and updated to ensure readiness for any potential disaster.

Further, companies should develop policies requiring regular testing, updates, and upgrades to ensure emergency disaster preparedness. This means ensuring that critical safeguards, such as backup power, function as intended during extreme weather events, including hurricanes or floods. Mitigating these potential effects on the front end is an invaluable tool—where companies create intuitive, meaningful disaster preparedness policies, companies reap the benefit of, first, avoiding the impacts of disaster, and second, avoiding liability for playing a role in exacerbating an already devastating disaster.

#### **D. GOVERNMENT RESOURCES FOLLOWING AN ENVIRONMENTAL DISASTER**

Due to the nature and severity of environmental issues associated with disasters, government reports are critical to rely upon. This includes Centers for Disease Control (CDC) advisories that may detail concerns regarding health and may include recommendations for immunizations and for ensuring quality of health associated with access to the affected location(s). Following Katrina, the CDC provided recommendations regarding water quality, immunizations, illness outbreaks, and issued precautions for the areas impacted. Some were helpful, but not always appreciated. Agencies such as the CDC also provide important guidance following floods and other disasters, providing necessary response recommendations and guidance prior to and following access to a community or area.

Many times, access to areas is limited following an environmental disaster. This is to allow for first-tier emergency responders to have access to allow for security and stabilization. In Louisiana, many parishes have a tiered access system through the Office of Homeland Security to allow only necessary responders access at certain times. This provides government agencies access to address issues that may be associated with protection of public health and the environment, so that further government advisories, as well as resources, can be made available.

Agencies with needed access following environmental disasters include the Federal Emergency Management Agency (FEMA), Alcohol, Tobacco and Firearms (ATF), the Environmental Protection Agency (EPA), and the Occupational Safety and Health Administration (OSHA), to name a few. These agencies evaluate risk associated with environmental hazards to workers, public health, and the environment, as well as become involved in the root cause of the disaster, in order to determine whether there is risk of future accident or injury. With issues that involve environmental pollution or contamination, such as with oil spills in open water, the U.S. EPA generally is the lead federal agency addressing these issues. The agency that takes the lead in a disaster depends upon the disaster itself. Some disasters may have the Office of Homeland Security as the initial lead, and this depends upon the disaster and the disaster type.

#### **E. ALTERNATE TOOLS IN A NATURAL DISASTER**

With technology has come significant advances in the tools available for us to assess damages that were not available a decade earlier. Technological advancements have given us the ability to evaluate environmental damages in areas with limited access. This allows for first-hand views of conditions, without the concerns of exposure and delays due

to site accessibility. Technology that involves remote sensing, with the use of fly-overs, radar, drone use (with or without the use of thermal imagery), and aerial/satellite photography, all aid in quicker response efforts to environmental disasters.

These technologies allow, even at night, resources to be expended for life and safety efforts, as well as for evaluating impact to sensitive or inaccessible areas with the use of tools such as thermography. Thermography is also used to enhance emergency response efforts when tanks of chemicals are at risk for explosion, following natural or human-made disasters. When pairing these technologies with computerized air dispersion modeling, real-time decisions can be made to allow or prevent access or determine areas that can be worked in for debris removal and transmission of utilities. Such was the case following Hurricane Harvey in and around Houston.

Geographic Information Systems (GIS) allow responders to evaluate damages by location, as well as determine the impact type. Use of government databases such as those provided through USGS, NOAA, and other agencies allow for quick determination of wind vs. flood surge impact to a large swath of properties, and permit adjusters and first responders to determine almost immediately when access to previously inaccessible areas due to flood waters can occur. Use of GIS also allows for the determination of resources in proximity to the damaged locations, in order to project whether vendors can respond timely with the necessary resources. While tools such as Light Detection and Ranging (LIDAR) have been in use for many, many years, other remote sensing tools are universally available to the government and the public to respond quickly to environmental disasters.

## **F. EXPERT USE**

A variety of experts are utilized following environmental disasters, and they can include professionals with expertise as engineers, environmental scientists, industrial hygienists, wetlands specialists, and other specialists, but also responding to these environmental disasters are insurance adjusters, government scientists, lawyers, and other professionals. The type of environmental disaster determines the specialty needed in response efforts. For instance, with an oil spill to open water, wetlands specialists, oil spill response contractors, and environmental regulatory specialists may be the first to respond or the primary response expert, whereas a tornado impacting a medical facility might need chemists, radiation safety experts, and licensed mold assessors to be first responders and determine damage.

In an environmental disaster, the primary damage assessment focuses on determining fatalities and injuries, but also determined are the direct damages to infrastructure that prevent stabilization and recovery. Whether pollutants impact stabilization efforts, from radiation leaks or chemical spills to evaluation of hazards associated with asbestos fiber release, all should be considered by licensed, accredited, or experienced experts. Failure to address these hazards may ultimately end up with further injury and litigation, as in the emergency response efforts following the 9/11 attacks, where state and municipal workers clearing debris from the wreckage of the Twin Towers claimed permanent injury to their respiratory systems and their health filed suit against the City of New York and its contractors, alleging negligence in monitoring the air and assuring appropriate safety in the workplace, particularly in not providing adequate respiratory equipment, and assuring proper use thereof.

Experts are also necessary in a variety of different response and stabilization efforts to environmental disasters. Where insurance issues prevail with damaged property, determining impacts to the property from different conditions such as those related to wind damage versus those related to flood damage is necessary, as different types of insurance coverage triggers may exist. Experts in these situations can also determine whether damage was caused by flooding from rising water due to excess rain or whether it occurred due to back up in a conveyance system, all of which may have some involvement in insurance coverage situations.

The presence of environmental pollutants may determine exclusion under some insurance policies versus coverage under others. How mold impact or the presence of asbestos is handled in a structure through insurance coverage following an environmental disaster may be different than how an insurance policy responds to pollutants released following a sinkhole, where property may be lost and groundwater contamination alleged. All of these situations require specific experts to address them and make recommendations. It is also important to note that states may have specific licensing laws requiring certifications specific to that expertise. For instance, states such as Florida, Texas, and New York have specific mold licensing laws, and unlicensed people cannot perform mold assessments. Many states also have asbestos and lead certifications, requiring people performing these inspections to hold specific licenses, without which they cannot opine on these specific subjects. Due to the possible presence of these environmental pollutants, the necessary assessments should be performed by appropriately licensed staff. Failure to do so may result in unnecessary exposure and can involve additional liability.

Secondary damage assessments of property impacted by disasters can include the evaluation of redevelopment or the economics of redevelopment of a business or enterprise in an area. This may trigger specific requirements associated with grants or insurance provisions, such as the relocation of Charity Hospital following Hurricane Katrina, where a 25% reduction in the monies provided to the State of Louisiana for redevelopment of the hospital occurred, as the hospital could not be redeveloped in its previous location. Again, this is a reminder of the importance of experts specific to their field and confirms the importance of the use of specialized contractors and consultants to evaluate conditions and regulatory code compliance.

## **G. DISASTERS**

There are five main types of natural disasters that may involve significant environmental impact. They include:

- Flood
- Tornado
- Wildfire
- Sinkhole
- Hurricane

Each of these natural disasters necessitate significant time and effort to address the environmental impacts. Areas across the world are regularly impacted by floods. Whether by rainwater, rising tides, or backups in conveyance systems, floods can cause the release of environmental pollutants.

Further compounding the problem, contact between water and building substrates often produces mold, necessitating the need for mold assessment and remediation. Through

the conveyance of rising waters that are unsanitary, flood waters also bring with them petroleum substances, pesticides, and herbicides. These can pose a risk to human health to occupants or workers performing restoration, demolition, repair, and rebuild. Contaminates also impact raw products and machinery used in production processes. These contaminants should be addressed by licensed professionals.

For instance, determining the presence of chemicals in water that may have made contact with food contact surfaces/equipment is generally the province of environmental scientists or chemists. However, the cleaning efforts followed by a restoration contractor should also be tested by these specialized staff in order to ensure that contaminant residue has been removed. Where asbestos is present on drywall texture that was degraded in a flood, a licensed asbestos inspector and contractor supervisor may have to collect samples to determine the extent of an asbestos fiber release. In many states, asbestos abatement certification is needed to provide an asbestos abatement plan for the restoration and abatement cleaning of the impacted surfaces. Failure to include the correctly credentialed and licensed experts can result in additional liability.

Environmental damages following tornadoes can be different from those that occur during a flood. For example, there may be enough advance warning to relocate susceptible items in advance of a flood, but not a tornado. When an F-5 tornado hit Joplin, Missouri, there was not enough warning to evacuate all of the helicopters from the city's hospital. While one helicopter had enough time to evacuate, the rotors of the other helicopter struck into emergency systems that impacted the ability of the hospital to operate, shutting off power to life sustaining systems, impacting patient care, pharmaceuticals, and other biological hazards that were located in the building. Without power, patient care was

drastically impacted. The facility lost climate control, conditions deteriorated, and ultimately the decision was made to demolish what remained of the structure. Considerable expense was made to address pollutants found in the hospital, as well as those pollutants that impacted equipment and instrumentation necessary for patient care in an interim field hospital. Further, debris cleanup and removal efforts were delayed in order to ensure they did not impact the health of recovery workers. Increased disposal costs to destroy these pollutants were also incurred.

### **Emergency Landfills, and FEMA Funding of Disaster-Related Debris Removal**

Disaster-related debris from windfall and flooding consists of construction materials, damaged buildings, sediments, green waste, and personal property, in addition to the downed trees and limbs which obstruct roads and disable electric power and communication systems. Clearing roads and public areas is a top priority, as these debris become a safety concern for local communities.

FEMA manages the federal response and recovery efforts following an incident of national significance. FEMA also works with state and local emergency managers, manages the National Flood Insurance Program and the U.S. Fire Administration, trains first responders, and initiates mitigation activities to reduce the risk of loss in future disasters. The FEMA Public Assistance (PA) program reimburses 100% of debris cleanup in public places such as roadways for 60 days from the date of declaration. After 60 days, FEMA will reimburse 75% of the cost while state/local governments share the remaining 25%. State and local governments apply for PA reimbursement, as well as certain private-non-profit groups.

The large volume of debris generated from Hurricane Katrina presented state and local governments with a huge challenge to collect, remove, and dispose of the unwanted debris. FEMA covered the cost of debris removal after Katrina, which generated more than 100 million CY of disaster debris, with an estimated 55 million CY of debris in the New Orleans area alone. In comparison, the previous largest disaster-related debris removal occurred when Hurricane Andrew struck Florida in 1992, when 43 million CY of debris was removed.

In the Katrina debris, segregation of wastes, as well as the volume of wastes and burden on disposal facilities was significant. Proper handling and disposal was paramount to protect public health and the environment. To better ensure protection of public health and the environment, and prevent the creation of future Superfund site, the EPA updated its 1995 guidance on managing disaster debris disposal in 2008. This guidance can assist communities with handling and resolving the issues associated with wastes and their emergency debris management decisions following disasters.

## **H. REPORTING**

Any time that pollutants are released, their release may have some reporting requirement or follow up documentation to ensure proper handling has occurred for restoration efforts. Whether these conditions require oversight or reporting to FEMA for documentation of environmental damage to contents or to support recommendations for repair versus replacement or to support relocation of the entire business operation in another space, reporting conditions may be necessary. For hospitals, this may include necessary documentation that environmental hazards have been resolved in documents that can be provided as part of the accreditation process with the Joint Commission on

Healthcare Accreditation (JC). For disposal of pollutants, this may involve documentation of handling, transportation, and disposal to state or federal environmental regulatory agencies. While failure to handle wastes properly may result in fines, disposal of waste in compliance with state and U.S. laws can still result in liability down the road, such as with disposal sites that have become Superfund sites, where documentation of disposal receipts have been used to determine Potentially Responsible Parties.

## **I. LESSENING THE DAMAGE AND POTENTIAL LIABILITY**

Is there anything that can be done to lessen the damage following environmental disasters, whether human-made or natural? As discussed previously, disaster management planning is the tool to lessen the severity of damage and reduce the time for stabilization and recovery. This begins prior to the disaster and includes determining the weakest link in a business or system for a business. Whether this is related to critical vendors and their ability to respond following an environmental disaster, the ability for staff to populate a business during or following a disaster, such as the U.S. Coast Guard office during Hurricane Harvey or a simple lack of preparedness or lack of redundancy in planning. All of these items should be evaluated in advance of a disaster, planned for, and response actions addressed. This includes annual drills, updating plans and roles and responsibilities, as well as performing triage and look-backs following response efforts to previous disasters. Successful businesses are ones that learn from the previous disasters, plan for them, and continually update their plans and response efforts.

Additionally, a business's post-disaster response is equally important. As far as litigation is concerned, a strategic and sometimes creative approach will limit potential liability and will help to end litigation in a reasonable amount of time.

## **J. CONCLUSION**

Disasters, be they human-made or natural, are a pervasive and unavoidable part of life for every facet of society, from government agencies charged with post-disaster cleanup, to contractors' compliance with environmental regulations, to private businesses engaging in potentially dangerous industry, to private citizens seeking to avoid further injury to their property. Every disaster not only imposes an economic cost, but also an environmental cost as well. The long-term effects of environmental damage frequently linger long after the economic consequences have faded from view. From contamination of soil and groundwater to lifelong health problems suffered by first responders, a comprehensive environmental response is a requirement for disaster management. Those contractors, owners, governments, and entities that ignore these issues often spend years in court paying for their mistakes.

What does comprehensive environmental disaster response entail? First, an ounce of prevention is worth a pound of cure. Careful planning by communities, contractors, and governments (local, state, and federal) to ensure awareness of local conditions and mitigation of potential environmental problems before a natural disaster strikes can save countless dollars and lives. From flooding of contaminated landfills to airborne pollutants released by a hurricane, tornado, or fire, proper preparation and planning can make a significant difference, especially in the first few critical hours following a disaster.