Introduction

In Southern Legislative Conference (SLC) member states, the coal and chemical industries are essential to state economies. Because of the importance of these industries to the region, both in terms of economic development and employment opportunities, legislators often are faced with balancing business interests with the need for environmental protection and conservation. Recently, hazardous spills in two SLC states – West Virginia and North Carolina – have focused attention on this careful balance.

This SLC Regional Resource examines the spills in West Virginia and North Carolina and the immediate remedial action taken by each state. Understanding how these states reacted in the wake of water contamination can help other SLC states respond quickly and effectively if faced with similar challenges.

West Virginia

On January 9, 2014, an aboveground storage tank owned by Freedom Industries, a specialty chemical producer for the mining, steel and cement industries, leaked an estimated 10,000 gallons of 4-Methylocyclohexanemethanol (MCHM) into West Virginia’s Elk River, just 1.5 miles upstream from the principal water treatment plant for nine counties in the Charleston, West Virginia, metropolitan area. The resulting contamination left more than 300,000 West Virginians without access to safe water.

4-Methylocyclohexanemethanol (MCHM) is an organic compound used in a process for cleaning coal. It is one of the 64,000 chemicals already in use when the Toxic Substances Control Act (TSCA) was enacted in 1976, and information about the toxicity of this chemical is extremely limited. For this reason, it is not required to undergo testing for human safety.

The day of the spill, Governor Earl Ray Tomblin declared a state of emergency and activated the West Virginia National Guard. The nine affected counties in West Virginia were instructed not to drink, cook with, bathe in or boil their water, and Dr. Rahul Gupta, health officer for Kanawha and Putnam Counties, ordered all establishments holding a health department permit, including restaurants, schools, nursing homes and hospitals, to shut down until the state of emergency was lifted. Later that day, President Barack Obama declared a federal state of emergency; following that declaration, the Federal Emergency Management Agency (FEMA) was instructed to provide on-the-ground assistance and federal funding for West Virginia’s response.

Following these declarations, the West Virginia National Guard began delivering water to the nine affected counties. West Virginia residents were encouraged to bring their own containers to distribution sites to transport water home. To avoid price inflation, state Attorney General Patrick Morrisey issued a statement reminding businesses and consumers about state laws barring sellers from increasing the price of water, i.e. price gouging, during a state of emergency. Citizens were urged to report any business or individual that dramatically increased the price of water, ice or other goods in the affected counties.
Water Testing

The West Virginia Department of Environmental Protection (DEP), in their role as the state’s environmental protection and regulatory agency, was charged with overseeing the remediation at the site of the spill. The first step in the remediation process involved moving other chemicals stored at the Elk River site to another location. The Department hired Civil and Environmental Consultants, Inc., a Pittsburgh-based company specializing in "site assessment and remediation," to assist with corrective measures. As part of this process, the DEP began testing water samples hourly. Initially, state officials were unsure how much of the chemical was able to be safely consumed. It was widely reported that "no one in authority would say how long it would be before the water supply was potable again," breeding a sense of heightened fear and anxiety as the situation unfolded. This is attributable to the fact that MCHM is an unknown and little-tested chemical. In the days immediately following the spill, state officials did not provide information about how often water was being tested or how tests were conducted. However, West Virginia’s secretary of state ultimately called on the U.S. Centers for Disease Control and Prevention (CDC) to post the results of water testing online.

Thirty teams from the West Virginia National Guard and West Virginia American Water Company collected samples from more than 400 fire hydrants in the affected areas, totaling more than 1,000 samples. To test the presence of MCHM in the water, the samples were sent to five testing facilities; five mobile testing sites also were established at West Virginia American Water Company’s treatment plant in Charleston. The CDC determined that the chemical was safe in amounts below 1 parts per million (ppm). Although little data was available about the health effects of the chemical, local health and poison control officials used the CDC’s 1 ppm standard.

1 Samples were transported to TestAmerica laboratories in Canton, Ohio, and Pittsburgh, Pennsylvania. According to the company website, TestAmerica is the largest environmental testing laboratory in the country.

2 Scientists have recommended a screening level of 1 ppm (parts per million) for drinking water. According to the CDC, a level of 1 ppm or below is not likely to be associated with any adverse health effects. Additionally, the public may continue to use tap water for cooking and consume food which may have been prepared using tap water, as with food cooked in restaurants with water at or below 1 ppm. Also, there is no known risk for bathing in water at or below 1 ppm.

Two days after the spill, Governor Tomblin and other state officials announced that the ban would be lifted area by area. Residents were advised to use the Internet to access an interactive web map to determine when it would be safe to use tap water again and were notified that a series of automated calls would go out to residents as the ban was lifted. West Virginia American Water Company released detailed procedures for residents to use when flushing their household water system, stressing that the procedure should not be instituted until the “do not use” order had been lifted in their area.

Once water tests confirmed that levels of MCHM had fallen below the CDC standard, West Virginia American Water Company began pumping clean water through the 1,700 miles of pipeline that runs through the affected system. Work to lift the ban began in downtown Charleston and three other priority zones, including the area’s four major hospitals. By January 18, nine days after the contamination was discovered, all residents in affected areas were allowed to use and drink tap water.

Legislators React

The Freedom Industries spill occurred on the second day of West Virginia’s legislative session. As a result of the timing, lawmakers were able to begin crafting legislation immediately to address the crisis and to prevent future spills. The reaction of the West Virginia Legislature, according to Senate Majority Leader John R. Unger II, was “to thoroughly examine the situation and look at reasonable approaches … to ensure the citizens and businesses that their water resources are protected.” Within days of discovering the spill, Governor Tomblin and state Senate leaders both announced bills regulating aboveground storage tanks and outlining extra emergency preparedness and response guidelines. Ultimately, Senate Bill 373, introduced by Senator Unger, enjoyed unanimous support throughout the legislative process and was signed into law by Governor Tomblin on April 1, 2014.

The final measure addressed what the Legislature identified as vulnerabilities exposed by the recent Freedom tank leaks, the broad and lingering impact that leak may have on the affected water supply and the customers who rely upon it, and the response to that incident. For one, all public water utilities which draw their water supplies from surface waters must perform, in collaboration with local communities, a comprehensive review of their system’s ability to respond to spills and releases. Additionally, utilities are required to examine and identify all substantial threats of contamination which potentially could reach the water utility’s supply intake within five hours.
The legislation also instructs the West Virginia Department of Environmental Protection to increase oversight of facilities with aboveground storage tanks through registration and inspections, especially those located near public water intakes, and orders the West Virginia Bureau for Public Health to undertake a long-term study of the potential health effects of the 2014 spill. In addition, lawmakers requested an inventory of all chemical storage sites in West Virginia. Calls were made for chemical storage facilities to be moved away from bodies of water, particularly those that are a source of drinking water. Before the spill, DEP had no conclusive data on the number of aboveground storage tanks in the state. An inventory is still in its early stages, but DEP Secretary Randy Huffman told a state Senate committee there are at least 600 facilities with approximately 3,500 tanks. That estimate includes 100 facilities and at least 1,600 aboveground storage tanks that may sit near a public water source. The sponsor of SB373, Senator Unger noted, “[The people] want to have the assurance that this will never happen again, here or anywhere in West Virginia.”

Governor Tomblin pledged to look at emergency reporting requirements and DEP regulations to ensure no future incidents would occur and ordered Freedom Industries to remove the cluster of aboveground storage tanks on the banks of the Elk River. The governor’s order was included in a consent order issued by DEP and signed by Freedom Industries. After the company moved the chemical from the leaking tank to a second storage site, DEP cited the company, issuing five violations, and charged the second site with failing to meet existing safety standards.

Recognizing that West Virginia law did not require inspections for chemical storage facilities, lawmakers struggled to identify existing legislation that would hold Freedom Industries accountable for the spill, noting that several “loopholes” exempted the company from an “immediate notification” requirement. The situation was further complicated by the fact that the chemical is one of 80,000 substances not regulated under the federal Toxic Substances Control Act.

**Actions Taken**

By declaring a state of emergency, Governor Tomblin was able to secure funding and assistance from FEMA for relief efforts. Unfortunately, FEMA reimbursement allocations were less than the total cost of remediation. In addition
to requesting more funding, Governor Tomblin personally engaged in assuring citizens of the drinkability of the water once decontamination had been completed. Responding to House Speaker Tim Miley and Minority Leader Tim Armstead’s letter to Tomblin asking for water testing in homes, the governor created an in-home testing project to assess the effects of the spill. The governor also allocated $650,000 for a state Testing Assessment Project, an important step in improving consumer confidence in the drinking water, which allowed for in-home testing kits.

The West Virginia Division of Homeland Security and Emergency Management devoted a portion of its website to the water crisis. The website provided county emergency management contact information for all affected counties, advisories and health information from the West Virginia Department of Health and Human Services, health-related contacts, water sampling results, information on the chemicals released and other important documents.

North Carolina

On the afternoon of Sunday, February 2, 2014, a Duke Energy security guard noticed the waste level of a retired coal ash storage pond in Eden, North Carolina, approximately 130 miles north east of Charlotte near the Virginia state line, was conspicuously low. Later that day, specialists discovered that a 48-inch storm-water pipe beneath the unlined 27-acre pond had collapsed. The following morning, the North Carolina Department of Environment and Natural Resources (DENR) was notified of the spill by a Duke Energy representative. A public notice was issued in the afternoon. Duke Energy officials estimated that between 50,000 – 80,000 tons of coal ash, and 27 million gallons of water, were released from the retired plant into the Dan River. Duke Energy later lowered its estimate to 39,000 tons of coal ash. The Dan River also is a source of drinking water for Danville, Virginia.

Coal Ash

Electricity production through the combustion of pulverized coal leaves behind inorganic matter such as fly ash, bottom ash and boiler slag, all collectively referred to as “coal ash.” Coal ash contains an amalgamation of toxic elements such as selenium, mercury and lead. If ingested in large quantities, ash, a neurotoxin, can be poisonous.

Once released through smoke stacks, most coal ash is captured by control devices. Approximately 45 percent of captured coal ash is recycled to make concrete, pavement and other materials, while the remaining product is stored in landfills, quarries and ponds. Coal ash stored in ponds often is referred to as “wet ash” because it is mixed with water. Nationwide, there are more than 2,000 coal ash storage facilities, including more than 400 landfills and 676 wet ash ponds.

The U.S. Environmental Protection Agency has identified 53 wet ash ponds as “high hazard,” meaning if the encasement becomes fractured, wet ash could lead to loss of human life. Twenty-one of these “high hazard” ponds are located in SLC member states. For a list of High Hazard Potential Units, see Table 1. The prevalence of these ponds in SLC member states necessitates a close look at the remedial actions taken by North Carolina following the breach of an ash pond at Duke Energy’s Dan River facility. Effective corrective action to lessen the impact of future spills is an important policy discussion for state lawmakers and state regulatory agencies.

Water Testing

The day following the spill’s detection, the state began testing the Dan River for the presence of 28 toxic metals, including: potassium, cadmium, chromium, copper, nickel, lead, zinc, vanadium, silver, aluminum, beryllium, calcium, cobalt, iron, molybdenum, antimony, tin, thallium, titanium, lithium, magnesium, manganese, sodium, arsenic, selenium, mercury, barium and boron. The city water director of Danville, Virginia (six miles downstream of the Duke Energy site), tested water exiting a treatment facility and released a public statement announcing that the sample met health standards. Although treated water from the Danville facility met Virginia health standards, subsequent testing of the Dan River by North Carolina’s DENR found arsenic, copper, iron and aluminum in the river at levels above state standards for surface water quality.

On February 12, the North Carolina Department of Health and Human Services warned North Carolinians downstream of the spill to avoid contact with water and sediment from the stream and to avoid eating any fish or shellfish from the Dan River. Subsequently, DENR began collecting fish in the Dan River to determine if they were safe to eat. These fish will be tested and the samples taken will be compared to fish sampled periodically throughout the year. On February 18, the U.S. Fish and Wildlife Service advised that a pile of coal ash 75 feet long and 5 feet deep had been detected on the bottom of the Dan River.
The contamination of the Dan River has become a source of concern for farmers along the river’s banks. The North Carolina/Virginia border is dotted with cattle, dairy, soybean and wheat farms. The Dan River provides drinking water for livestock and a source of irrigation for crops. Farmers have raised concerns that using the contaminated water for farming purposes could negatively impact their cattle and crops in the long term.

Legislators React

Four days after the spill was identified, North Carolina Governor Pat McCrory, along with DENR’s John Skvarla and other state environmental officials, visited Duke Energy’s Dan River site to get a first-hand look at the spill. After the visit, McCrory, a former Duke Energy executive, said “this is a serious spill and we need to get it under control as quickly as possible…Our top priorities are ensuring the health and safety of the public as well as the wildlife in the Dan River vicinity and the river itself, and the best way to do that is to get this controlled and cleaned up.” That same day, North Carolina Senate President Pro Tempore Phil Berger called for a legislative inquiry into the spill in his hometown of Eden.

Actions Taken

North Carolina law requires Duke Energy (and other similar businesses), with state approval, to develop a plan to contain and clean up water contaminated by the spill. For its part, the state’s environmental agency created a task force to review all North Carolina coal ash ponds in the aftermath of the Dan River spill; the task force will operate independently from the state’s investigation and includes experts in water resources, dam safety and waste management. According to DENR, the task force is charged with assessing coal ash basins and developing procedures to prevent future environmental disasters at these facilities. In announcing the task force, Secretary Skvarla said his department will use “all available resources, including the knowledge we have gained during our environmental assessment and investigation into the spill of coal ash into the Dan River,” to avoid future spills.

<table>
<thead>
<tr>
<th>Company</th>
<th>Facility Name</th>
<th>Unit Name</th>
<th>Location/State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama Power Co</td>
<td>Ernest C. Gaston Electric Generating Plant</td>
<td>Ash Pond Dam</td>
<td>Wilsonville, AL</td>
</tr>
<tr>
<td>American Electric Power</td>
<td>Big Sandy</td>
<td>Fly Ash</td>
<td>Louisa, KY</td>
</tr>
<tr>
<td>American Electric Power</td>
<td>John E. Amos</td>
<td>Fly Ash Pond</td>
<td>St. Albans, WV</td>
</tr>
<tr>
<td>American Electric Power</td>
<td>Mitchell</td>
<td>Fly Ash Pond</td>
<td>Moundsville, WV</td>
</tr>
<tr>
<td>City of Columbia</td>
<td>Columbia</td>
<td>Ash Settling Pond</td>
<td>Columbia, MO</td>
</tr>
<tr>
<td>City of San Antonio</td>
<td>JK Spruce</td>
<td>SRH/ FGD Pond</td>
<td>San Antonio, TX</td>
</tr>
<tr>
<td>City of San Antonio</td>
<td>JT Deely</td>
<td>North Bottom Ash Pond</td>
<td>San Antonio, TX</td>
</tr>
<tr>
<td>City of San Antonio</td>
<td>JT Deely</td>
<td>South Bottom Ash Pond</td>
<td>San Antonio, TX</td>
</tr>
<tr>
<td>City of Sikeston</td>
<td>Sikeston Power Station</td>
<td>Bottom Ash Pond</td>
<td>Sikeston, MO</td>
</tr>
<tr>
<td>Duke Energy Corp</td>
<td>Belews Creek Steam Station</td>
<td>Active Ash Pond</td>
<td>Walnut Cove, NC</td>
</tr>
<tr>
<td>Duke Energy Corp</td>
<td>Riverbend</td>
<td>Secondary Pond</td>
<td>Mount Holly, NC</td>
</tr>
<tr>
<td>Georgia Power</td>
<td>Plant Branch</td>
<td>E</td>
<td>Milledgeville, GA</td>
</tr>
<tr>
<td>Georgia Power</td>
<td>Plant McDonough</td>
<td>Ash Pond 4</td>
<td>Smyrna, GA</td>
</tr>
<tr>
<td>Kentucky Utilities Co</td>
<td>E. W. Brown</td>
<td>Auxiliary Pond</td>
<td>Harrodsburg, KY</td>
</tr>
<tr>
<td>Kentucky Utilities Co</td>
<td>E. W. Brown</td>
<td>Ash Pond</td>
<td>Harrodsburg, KY</td>
</tr>
<tr>
<td>Kentucky Utilities Co</td>
<td>Ghent</td>
<td>Gypsum Stacking Facility</td>
<td>Ghent, KY</td>
</tr>
<tr>
<td>Kentucky Utilities Co</td>
<td>Ghent</td>
<td>Ash Pond Basin 1</td>
<td>Ghent, KY</td>
</tr>
<tr>
<td>Kentucky Utilities Co</td>
<td>Ghent</td>
<td>Ash Pond Basin 2</td>
<td>Ghent, KY</td>
</tr>
<tr>
<td>Louisville Gas &amp; Electric Co</td>
<td>Cane Run</td>
<td>Ash Pond</td>
<td>Louisville, KY</td>
</tr>
<tr>
<td>Progress Energy Carolinas Inc</td>
<td>Asheville</td>
<td>1982 Pond</td>
<td>Arden, NC</td>
</tr>
<tr>
<td>Progress Energy Carolinas Inc</td>
<td>Asheville</td>
<td>1964 Pond</td>
<td>Arden, NC</td>
</tr>
</tbody>
</table>

Source: The Centers of Disease Control and Prevention. This information is current as of March 2014.
In addition to the task force, DENR asked a superior court judge to postpone a decision on a settlement between the state and Duke Energy over ash contamination at two other sites. This request drew criticism from environmental advocacy groups. However, such a delay allows the state to reassess all North Carolina coal ash facilities. State officials indicated that the Dan River spill may cause them to reevaluate the settlement and the prioritization of the locations involved. Despite criticism, this action provides an opportunity for state lawmakers to take action to improve the safety of storage facilities statewide, which could prevent future spills.

Many legislators, citizens and environmental groups decried the delay in public notification of the spill. Likewise, Governor McCrory was criticized for waiting four days before visiting the site and the subsequent public statement. Officials at DENR have classified the incident and the Duke Energy Dan River site as the third largest coal ash spill in the nation’s history, focusing attention between McCrory’s administration and Duke Energy. Federal officials have launched an investigation into the relationship. This increased scrutiny made firm, decisive action essential to maintaining public confidence.

An analysis of news coverage of the spill and ongoing clean-up efforts considered, in conjunction with actual remedial steps taken by DENR, demonstrates that state and national media were unduly critical of the state’s efforts to mitigate the impact of the Dan River contamination. Despite concerns by environmental groups and the federal government over the nature of DENR’s close ties with Duke Energy, the Department took several important steps to mollify the damage caused by the spill and to provide stakeholders with critical information. Importantly, DENR coordinated with local, state, and federal agencies to regularly sample contaminated water, sediment and wildlife concurrently with Duke Energy; organized a weekly “agency stakeholders” meeting to discuss long-term sampling plans as well as near-and long-term remediation plans with the Environmental Protection Agency (EPA), Virginia Department of Environmental Quality, Virginia Department of Public Health, U.S. Fish and Wildlife, U.S. Army Corps of Engineers, the city of Danville, Virginia, and Duke Energy; and participated in community meetings organized by the EPA.

Following the spill, DENR took punitive action against Duke Energy. On February 25, Governor McCrory sent a letter to Duke Energy instructing the company to turn over details of what it planned to do with coal ash ponds at 14 locations across the state, including the one at the Dan River facility. Three days later, DENR officials issued two notices of violation to Duke Energy for infractions at the Dan River facility: one violation for failure to obtain a National Pollutant Discharge Elimination System (NPDES) storm-water permit and another for violations of the facility’s current NPDES wastewater permit. Notices of violation for five additional facilities also were issued by DENR.

Notably, DENR launched a website to provide information on the spill featuring daily updates of all actions taken, allowing interested parties to review the most current responses to the disaster. In addition to featuring daily updates, the website provided a map of North Carolina’s coal ash ponds, DENR media releases, enforcement actions and water quality test results. Creating this one-stop informational portal provided citizens, policymakers and media alike with timely and relevant updates.

**Best Practices**

To ensure optimal preparedness, it is prudent for states to inventory waste storage facilities and develop specific and unique emergency response plans for each individual site. While this represents a significant investment of personnel and resource allocation, the advance development of such plans guarantees a state’s ability to quickly, knowledgeably and methodically respond to an environmental hazard. Furthermore, doing so may reduce or eliminate harsh critiques of the state by media and other outside forces when environmental disasters occur.

In times of crisis, citizens look to their government officials, and especially their governors, to champion their concerns. When state leaders react accordingly, they increase public confidence in remedial actions. As with natural disasters, it is incumbent upon public officials to advocate for the safety of their constituencies when faced with environmental hazards. Finding a balance between protecting citizens, regulatory overreaction, environmental concerns and business vitality can pose challenges for lawmakers. It is important that they take responsible actions to ensure that the same disaster does not occur twice. For example, when feasible, waste storage facilities located near waterways should be relocated to ensure that spills/leaks do not cause water contamination; unlined coal ash ponds should be remediated or even closed and their contents relocated to more secure receptacles.
Open and transparent lines of communication are important components of harm reduction, allowing all parties affected a means of obtaining up-to-date information about disasters. In today’s hyper-connected society, current and steady informational updates are expected. Creating a comprehensive website designed to provide such communication can be a valuable tool for states to use during disasters. Other means of communication can include community meetings and daily media briefings.

Finally, it is important for state and federal agencies to work collaboratively during times of crisis. Both West Virginia and North Carolina demonstrated that collaborative efforts provide the best and most prompt outcomes. Working in partnership with multiple agencies increases a state’s ability to quickly address problems and to draw from valuable expertise. This practice can lessen strains placed on state resources during disaster remediation, but only if forethought and planning among all entities are coordinated at the front end.

**Endnotes**


3. Ibid.


7. Ferrell Smith, Craig, and Murphy, “Water Warning Now in 9 Counties; Emergency Supplies on Order.”


13. Ibid.


23 Davenport and Southall, “Critics Say Spill Highlights Lax West Virginia Regulations.”
24 Associated Press, “Congress.”
28 Ibid.
32 Ibid.
36 Ibid.
40 Ibid.
42 Ibid.
45 Ibid.
46 Ibid.