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Nary a Drop to Drink

Joe Kloc

When an aide walked into Danny Jones's office on January 9 to inform him that his city smelled like licorice, the Charleston, W.Va., mayor was not alarmed. It is a reality of life in the state's I-64 corridor that a cloud smelling of burnt potato chips or rotten eggs may at any time waft overhead from one of the area's chemical facilities. "Oh, come on," Jones thought. Since World War II, these plants, running on coal power and Kanawha River Valley sweat, have been churning out a full bar of chemical cocktails, from food dyes to pesticides to coal cleaners. It has long been resolved in the valley that if America is to have its no-tears shampoo and fire-engine-red ballpark franks, the proud people of West Virginia must endure a few foul odors. A hint of licorice was hardly cause for alarm.

"But then," Jones says, "I took a big drink of water and I knew we were in trouble."

As Jones and the rest of the valley's residents would soon discover, a tank used to store a clear, licorice-scented coal processing agent called MCHM had ruptured and leaked 10,000 gallons into the Elk River, 1.5 miles upstream from the water distribution facility for nine counties. The chemical was inadvertently pumped into the homes of more than a quarter-million residents. Almost immediately, local, state and federal officials took emergency action. A Do-Not-Use order was placed on tap water. The National Guard delivered pallets of bottled water to the area's five hospitals. Schools were closed. The National Science Foundation gave emergency grants to help scientists study the mysterious chemical. According to William Cooper, the foundation's director of environmental engineering who began coordinating scientists in the days after the spill, "This is one of the bigger disasters of the decade."

Worse, the severity of the spill was compounded by confusion: On January 19, 10 days after MCHM entered the Kanawha Valley's drinking water, state officials fully lifted their Do-Not-Use order. However, Rahul Gupta, the health officer and executive director of the county health department, openly expressed skepticism that the water was fit for drinking. "I could not finish a whole glass," he tells *Newsweek*. Two weeks after Gupta's

statement, the Centers for Disease Control and Prevention (CDC) reaffirmed its position that the water was safe; but that same day two schools were forced to close when children began experiencing fainting and nausea that appeared to be caused by MCHM. The next day, three more schools shut down. "Now," said Jones a month after the spill, "it seems everyone has shied away from making a public comment." (Neither of the state's senators responded to interview requests for this story.)

"We did the best we could," Jones says, looking back to the first days of the spill. "But I'm not sure we knew the depth of what we were facing." West Virginia has spent much of the past few weeks trying to come to terms with how little is known about MCHM or its interaction with the chlorine and various plumbing materials beneath the Kanawha Valley. And it remains unclear how much of the chemical is still flowing through residential taps, as most of the measurements taken by officials were of government buildings and fire hydrants. It will likely be months before all these simple facts are known. The long-term effects on humans and the environment (if there are any) will take a lot more time to determine. "We won't know for years if there's an end in sight," Jones says.

Of the 17 residents, officials, health care workers and activists living in West Virginia that *Newsweek* interviewed for this story, Jones is one of the few who, a month after the spill, will drink the water. Many don't know who to believe - some doctors advise their patients not to consume the water; others say its fine. Some residents report no signs of illness; others report sensations of burning, dizziness, diarrhea and vomiting.

Today, seven weeks after the spill, it is clear that there will be no straight answer to the licorice-scented question hanging over Chemical Valley: Is the water safe to drink?



A storage tank with the chemical designation MCHM, 4-methylcyclohexane methanol, the chemical that leaked into the Elk River, stands at Freedom Industries storage facility in Charleston, Va., Jan. 13, 2014. Steve Helber/AP

There should be a simple, scientific answer to that question. MCHM is 4-methylcyclohexanemethanol, an alcohol composed of hydrogen, oxygen and carbon atoms, so its effect on the human body should, theoretically, be well understood. But MCHM is also a chemical compound designed to process coal dug from the Appalachian Mountains, and so its interaction with the human body had never been considered, nor much investigated, despite the fact that it was stored in tanks on a river bank less than two miles upstream of the valley's drinking water distribution facilities.

What little we do know about MCHM comes from a handful of studies conducted on rats in the 1990s by Eastman Chemical Company, MCHM's sole manufacturer. Their findings: If you administer a dose of 100 milligrams per kilogram of MCHM orally to a rat over 28 days, it will exhibit "no observable effect"; if you administer 10 times that amount for only two weeks, you'll kill half the rats. From these scant observations, the CDC has had to calculate a safe level for drinking it in water, trying to account for uncertainties surrounding the chemical as well as the differences in human and rat physiology. The crudeness of the comparison is not lost on West Virginia residents Reverend Mel Hoover and his wife (and fellow reverend), Rose Edington. Neither have knowingly used their tap water since Hoover attempted to take a shower and his eyes swelled up for days. "We are the lab rats," he says.

Based on the Eastman rat studies, the CDC believes that 1 part per million of MCHM in the drinking water is acceptable. Others argue it should be 1 part per billion. Eastman's "Safety Data Sheet" for MCHM lists "no data available" 152 times in categories ranging from "Physical and Chemical Properties" to "Carcinogenicity," which indicates a chemical's tendency to cause cancer. The few tests done on the chemical weren't even required under U.S. law. This was defensible back when MCHM was developed in 1908, and it might still have been defensible in 1976, when America established its Toxic Substance Control Act, as the scientific tests used to determine how chemicals interact with the air, the water, and organic life all cost substantially more than they do today. But in the intervening decades, says Andrea Dietrich, a professor of civil and environmental engineering at Virginia Tech, the price of conducting many of these more sophisticated tests has dropped considerably. "We have new responsibilities," she argues.

Eastman told *Newsweek* it has not "conducted a comparison of the inflation adjusted costs of toxicity testing," and had no plans to further test MCHM, as it is "an industrial chemical intended to be used in a controlled industrial setting." The valley's 300,000 residents exposed to MCHM will have to decide for themselves when to begin trusting their water.

The Battle Over Chemical Valley

Trust has long been a volatile concept in West Virginia. Throughout the 20th century, many of its cities have epitomized the notion of *company town* - "Coal is gold!" and "Coal is king!" as the sayings go. Ellen Allen, who for the past four years has been the executive director of the Charleston homeless shelter Covenant House, grew up in southern West Virginia coal country. She explains the region's loyalty this way: "If we have good jobs, can take care of our families, we've been willing to not observe the impact" of the coal industry on their lands, their lives.

At times, however, the alliance between workers and industry has ruptured, leading to brutal labor disputes. In 1912, the Kanawha Valley became the scene of a violent strike when the Paint Creek mining company refused to raise the wages of its unionized workers to match those of surrounding mines. Thousands of workers marched to the Charleston capitol building and declared war: "It is an uprising of the oppressed against the master class!" labor activist Mother Jones declared on the statehouse steps. What followed was a three-way battle between state troopers, miners and an army of mine guards. The National Guard was sent in, telephone and telegraph wires were cut, train companies halted their service in the valley. When the Paint Creek Mine War finally ended months later, more than 50 lives had been lost. The result of such tensions has been a state often in a battle with itself over the wisdom of aligning with industry. Today, the vitriol behind words like *activist*, *hippie*, *coal* and *chemical* still reflect this conflict in the valley.

"It is a culture that has been created by the environment, by the government," says Krista Bryson, a native West Virginian researching the historical roots of the chemical spill at Ohio State University. West Virginia is a place of rugged individualism and labor rebellion; it ranks 43rd in the U.S. in poverty and 50th in college graduation. Its population has been dropping since the 1950s, and many who remain feel ignored by the rest of the country. "West Virginia is viewed as dumb hillbillies," Hoover says. This chemical spill, already passed over by much of the media for a months-old New Jersey traffic scandal, wasn't mentioned in the State of the Union address. What national image the valley does have seems defined by antiquated notions of Appalachian coal mining and the lyrics of a John Denver song that use its name but was, in fact, written about Virginia. "Most of us don't live in a coal mine," Bryson says of valley residents. "We live *next* to one."





A local resident fills jugs with water at a distribution center in Charleston, W.Va., after a chemical spill in the Elk River contaminated the public water supply in nine counties, Jan. 12, 2014. Michael Switzer/AP

Those repercussions have been substantial. The MCHM leak, which came from a storage tank owned by a small chemical company called Freedom Industries, was the third chemical accident in the valley in the past five years. In 2008, a Bayer CropScience pesticide plant in the town of Institute suffered a runaway chemical reaction, killing two workers and injuring eight. (The U.S. Chemical Safety Board determined that Bayer had not followed standard operating procedures and that its operators were inadequately trained.) In 2010, three chemical releases at the DuPont plant in Belle, W.Va., led to the death of another worker. That's the immediate impact. The long-term damage done by these companies is harder to measure. However, of the nine counties with water tainted by the Freedom Industries spill, eight have cancer rates higher than the national average. And while it's all but impossible to definitively link those rates to specific chemical facilities, statistically speaking, living and working in Chemical Valley increases one's chance of getting sick.

For much of Bryson's life in West Virginia, she says many locals viewed these dangers as "their cross to bear." But since the Freedom Industries spill, "I have seen such a dramatic shift. We see now how this influences our life."

There is also the question of who will pay for the cleanup and the answers to the slew of health and environmental unknowns that still surround the spill, given that Freedom Industries has filed for bankruptcy protection - Jones calls the owners "gangsters." Then there is the strain the spill has put on hospitals and their patients: At some medical facilities in the area, tap water is now used for all procedures, including bathing infants, despite the fact that some doctors advise against using it.

On top of all that, some residents tell *Newsweek* they are being billed for contaminated water they aren't even using by the area's distribution company, West Virginia American Water. For the month of January, one resident was charged almost \$50, a normal month's bill, even though the only water she used for 20 of those days

was to flush her toilet. The company's president, Jeff McIntyre, who drinks from the tap, says that the charge was based on monthly usage estimates and will eventually be corrected. In the meantime, add that bill to the \$70 a week she spends in gas to make water runs to her parents' house and the costs in cash-strapped West Virginia begin to mount.

Jim Strawn, marketing director of Highland Hospital, a Charleston-area mental health and substance abuse facility, says, "January was our busiest month in 18 years." Strawn notes that he can't say for sure if the spill has led to mental health and substance abuse issues, but there's "a lot of despair. I think that makes you weaker."



A sign warning residents that tap water is unfit for drinking and washing is taped to the front door of the West Virginia Board of Accountancy in Charleston, W. Va., Jan. 10, 2014. Ty William Wright/The New York Times/Redux

West Virginia is growing restless. In a Senate hearing on the spill in early February, Senator Jay Rockefeller, D-W.Va., called for an end to the "Appalachian Myth." "The idea that somehow God has it in his plan to make sure that industry is going to make life safe for them," Rockefeller said. "[It's] not true." Trust in officials, in politicians, in industry, even in science, has eroded in West Virginia. What will it take to restore that trust? "I'm not a religious man," says Bragg, "but it's gonna take a leap of faith."

We Are All at Risk

On January 10, the evening after West Virginians learned that thousands of gallons of MCHM had contaminated their water, reverends Hoover and Edington held a vigil along the Kanawha River. Residents gathered on the frozen banks, outside the state capitol where legislatures were busy debating their response to the spill. The service was nondenominational - there was a Native American blessing, then one written by Hoover and Edington: "We mourn for what has been destroyed," the group recited. "We thirst to feel safe in our homes and in our bodies,

for we don't know the long-term effects of MCHM and other pollutants that we eat, breathe, drink and bathe in."

There was a snowstorm that evening, another consequence of the "polar vortex" cold wave that Freedom Industries would soon hint was responsible for the spill. But the service nonetheless attracted hundreds of residents from around the area. "We got a glimpse across race, class and religion," Hoover says, of people "pitching in to help one another. We were all at risk."

Jen-Osha Buysse, a self-proclaimed environmental and social justice activist in a state where many prefer the safer term *community organizer*, says she has had many similar interactions with pro-industry residents since the spill, "laughing, telling stories, cutting on each other." When she brought water to a man in the valley who used to support the chemical industry, he joked, "You might be a hippie, but I sure do like your water." For all its difficulties, the spill has been, says Hoover, "an opportunity to forge a new social contract," both within West Virginia and the rest of the country. Since January 9, the services at his church have been packed.

Clean water has always been matter of faith in Chemical Valley: faith in the Appalachian Myth, in industry, in politics, in water companies, in hard work, in regulation, in a lack of regulation. But that faith is fading. Families that have lived in the valley for 240 years are moving away. The state's largest employer is now Walmart. Freedom Industries has been sold off to a coal company in Pennsylvania. And the federal government has denied further aid to the state. "The event was not of such severity and magnitude as to warrant grant assistance," the Federal Emergency Management Agency wrote. West Virginians, says Hoover, have a "hard spirit of survival. So people have made do with little. But they shouldn't have to."

A month after the spill, Hoover and Edington organized another gathering, this time at the First Baptist Church in Charleston. They, along with 150 other West Virginians, wrote bills to the water company for all the hidden costs they were forced to incur after failed oversight and poor regulation allowed MCHM-laced water to be pumped into their homes - the thousands of bottles of water, the replaced filters and hot water heaters, the lost days of work. They marched to the distribution facility along the Elk River to hand-deliver their bills, but the building was locked up, with only a single mailbox outside. The group stuffed each bill into an envelope, along with licorice nuggets, and mailed their protest to the company's corporate address: "American Water, 1600 Pennsylvania Ave, Charleston, West Virginia."

