

**West Virginia Clean-Up:
Coal Mine Chemical Spill**

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By Dominique Ward

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Outline

- I. Introduction—West Virginia chemical leak
 - A. Waking up to contaminated water and not being able to drink, inhale, or bathe in it.
 - B. Chemicals found in water
- II. Body
 - A. What is the leak?
 - 1. What is it chemical used for?
 - 2. How dangerous is it?
 - 3. Where did the chemical leak come from?
 - B. When will the water be safe?
 - 1. Can the water be cleaned up?
 - 2. Who is responsible?
 - C. How is coal involved?
 - 1. What is the process of coal-cleaning?
 - 2. What does the chemical found in the river have to do with coal and its process?
 - D. How dangerous is this spill?
 - E. Whom has the spill affected?
 - 1. What did residents have to deal with
 - 2. Who helped take action?

III. Conclusion

Waking up and not being able to bathe or drink water because it has become contaminated would be devastating. Unfortunately, this was the case for nearly 300,000 residents of Charleston, West Virginia (“Potable water in West Virginia,” 2014). The water supply in West Virginia has always been in danger, according to the Associated Press analysis of federal environmental data; the chemicals and waste from the coal industry “...have contaminated many of the waterways and groundwater supplies for decades” (Cappiello & Borenstein, 2014). On January 9, 2014, approximately 10,000 gallons of the industrial chemical 4 methylcyclohexanemethanol (MCHM) contaminated the Elk River (“West Virginia Chemical Release,” 2014). There is still incomplete understanding of MCHM's toxicology profile; how is it possible to know when the water is really safe? (“West Virginia Summary Report,” 2014). The Environmental Protection Agency (EPA) has always challenged West Virginia’s coal industry and its polluting ways of how they chose to retrieve their coal; why has not West Virginia taken action decades ago? (“West Virginia and Coal,” n.d.).

Coal has been used for energy for hundreds year, but the process of preparing it for use causes some environmental stresses. Coal was discovered in West Virginia in 1742 before West Virginia became a separate state, formerly called *Western Virginia*. It is the second biggest coal-producing state in the country (“West Virginia and Coal,” n.d.). Coal must go through a process by machinery in plants and physically by hand before it is ready to be used or shipped across the world. The first process necessary is to separate the valuables from the contaminants; the coal is separated physically by hand. This preparation helps exchange density and specific gravity. There are a couple of different ways to prepare coal:

The oldest forms of coal cleaning were called jigging; this is the process of particle stratification, due to secondary expansions and contractions of a bed of particles by a vertical pulsing fluid flow. [Another process was called]... a heavy media bath which is the most common. The Daniels vessel, a type of heavy media, [is a]...large open vessel through which an aqueous suspension [of] exquisitely powdered magnetite is circulated turning into coal slurry. (Luttrell, 2004).

Chemicals are added typically at before the thickening process. All processes for cleaning coal consist of using thousands of gallons per minute. It then quickly becomes vast amounts of dirty water; this process is called thickening. In order to continue to have clean water, solids are removed from the dirty water and recycled again for future use in the plant. During the thickening process, a large tank holds the particles and chemicals that settle. It produces a clean overflow and thickened underflow (Luttrell, 2004). Could this have been the process that led to thousands of residents learning that the tap water was unsafe due to the chemical MCHM to brush his or her teeth, brew coffee, or even shower? (Gabriel, 2014, p. A9).

The chemical properties of the contamination substances were troubling. On January 21, 2014, according to a plant manufacturer, there was another substance that was found blended with the MCHM chemical. The material was known as a proprietary mixture combined of propylene glycol phenyl ether (PPH), and dipropylene glycol phynyl ether (DiPPH) was in the same tank ("West Virginia Chemical Release," 2014). There was little information given on the chemical MCHM at the time of the spill until scientists were able to gather and

confirm the information on the chemical. In fact, the chemical MCHM was first misidentified as “methylcyclohexanol” (“Chemical information,” 2014). MCHM is the chemical used in the process for coal-cleaning. MCHM is considered to be an alcohol, meaning “...it has the hydrogen atom and an oxygen atom bound to one of its carbon atoms, but not the same compound used in moonshine” (Biello, 2014). A better collection of data is now published by the Centers for Disease Control (“Chemical information,” 2014). Although MCHM can burn, it is only when it is concentrated at high temperatures above 112° Celsius, proving it really is not an explosive. However, this chemical still can cause problems with rubber seals in the water system. Also, this chemical is poisonous when drunk in large doses, proven by a rat lab test (Biello, 2014). This is why residents were warned not to inhale or drink their tap water.

There have been many raised brows and asked questions from residents and the Environmental Protection Agency long before this incident. The Environmental Protection Agency (EPA) has always found many pollutants being made from the wastes and the coal mine plants and tanks. The Environmental Protection Agency (EPA) is an agency that focuses on the well-being of the environment and how we live in our environment. Regulations, such as ones for the coal-to-liquids plants, were introduced in a bill in February 2009 to continue to encourage construction of the new plants with better protections. Despite efforts from the EPA in pointing out all the hazards, coal-to-liquids plants were needed to bring in 2000 full-time jobs and 4000 construction jobs (“West Virginia and Coal,” 2014). Pollutants being made, such as in the “...mountaintop removal mining or MTR, a form of surface mining used to replace underground mining to extract coal from the Appalachian Mountain regions by

using explosives that are scraped into the valleys, [which becomes]...a valley fill that eventually dumps into the state's water supply" ("West Virginia and Coal," 2014). Though they were unsuccessful, EPA was able to slow the progression down of the different types of mines and "toughen the standards." EPA identified 79 mountaintop removal plant permits that had been issued because of more likely affecting the state's water quality. The agency has been trying to continue to give residents hope for a cleaner, healthier environment that they were promised from the Clean Water Act in 1972.

One particular example is when EPA revoked Arch Coal's permit for the Mingo Logan Mining Co. because of the environment and water quality issues; EPA effectively was able to veto the new discussed mine due to its likely environmental effect. This decision backfired for environmentalists in the same year (2010) when they sued the government for the strict mountaintop coal mining controls because it was hurting the economy; the suit is against the EPA and the Army Corps of Engineers ("West Virginia and Coal," 2014). It has been proven that the industry actually costs more than it generates. According to Rory McIlmoil, "... the coal industry provides jobs and revenue for state and local governments, but in all cases, including Virginia, the cost to the state and its taxpayers from supporting the industry far exceed the revenues residents"(qtd. in "Coal Industry Costs," 2014). However, it does generate jobs, so this is politically controversy.

Another company said to be responsible for the chemical spill, Freedom Industries, is reported to have filed for bankruptcy on January 17, 2014, announcing plans to liquidate. This allowed the industry company to operate while reorganizing. Later, the company released a

statement reporting that it will be sending its customers to competitors and instead sell its inventory. Freedom's chemical storage facility is about a mile and a half upstream of the Kanawha Valley water treatment plant. Due to the history of the controversial issue of their being a storage facility, the company agreed with the state's department of Environmental Protection to destroy the \$1- million-valued Etowah River Terminal where the leak happened ("West Virginia Chemical Spill," 2014). Freedom Industries was co-founded and created ten days prior to the spill through a union with three other companies. The companies incorporated with Freedom moved, changed management, and manipulated their corporate constructions to avoid legal and financial restrictions over time. The former Freedom Industry president was sued along with the other three counties he controlled. The IRS currently holds three liens against Freedom for about \$2.5 million unpaid taxes. It is reported that this industry used criminal and antisocial character and deserves to be arrested and its wealth seized (Daly, 2014). Clearly, the wheels of justice are moving.

West Virginia's profit and loss earnings come mainly from the coal industry, but over time it has become more hazardous than renewable. Chemicals were released in West Virginia's Etowah River on January 9, 2014. Approximately 300,000 residents had to suffer from being able to bathe, drink or inhale the tap water. Some residents were using their tap water to bathe and wash hair, or brushing their teeth at the time of announcement not to use the tap water, sending some into shock. There were many fingers pointed at companies to blame, but the question is "What is going to be done?" Children, parents, and other residents missed school or work. Restaurants and hotels refused reservations and locked their doors.

This was an environmental crisis for the state that residents could have imagined. Governor Earl Ray Tomblin of West Virginia was the person who ordered the ban on using the tap water in Charleston and nine other counties (Gabriel, 2014). The industrial chemical that seeped through to the waterways was from a ruptured tank, having the smell of licorice. Licorice is known to cause eye and skin irritation and headaches, and also difficulty breathing. A number of residents had to be hospitalized for evaluation from similar symptoms. President Obama decided it was then time for a federal emergency. Freedom Industries is the owner of the ruptured tank, but seems to dodge all angles for any blaming for their part; this is not the first time. They were issued a violation notice to immediately empty all fourteen tanks and chemicals. The president of Freedom Industries, Gary Southern, allegedly did not know the leak even occurred. The company has been known for the run-around and no comments. Residents had to gather around as semi-trucks delivered bottled waters for residents to buy. Even though many of the plants are closed down, residents do not understand why the chemical company is located so close to the waterways. Is this not maybe the primary source of the problem? West Virginia residents would like the state to clean up and start caring and doing what is best for them. That would be the real justice.

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