Center for Health, Environment & Justice
PVC Factsheet

Environmental Justice & the PVC Chemical Industry

PVC chemical plants have poisoned workers and fenceline neighbors, polluted the air, contaminated drinking water supplies.

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PVC plants are disproportionately located in low-income communities and communities of color, making the production of PVC an issue of environmental justice and racism for neighboring residents. PVC manufacturing facilities have poisoned workers and fenceline neighbors, polluted the air, contaminated drinking water supplies, and even wiped entire communities off the map.

PVC Chemical Plants Pollute Our Air

- Each year, in the U.S. PVC plants pump some 500,000 pounds of vinyl chloride – a known human carcinogen - and many other toxins into the atmosphere.[i]
- Cancer-causing Dioxins are released into the atmosphere from the production and eventual disposal of PVC. When its entire lifecycle is considered, PVC appears to be associated with the release of more Dioxins than any other single product.[ii]
- In 2009, the U.S. Department of Justice reached a $13 million agreement with Formosa Plastics, for "extensive" violations at their plants in Louisiana and Texas. According to the Department of Justice, "EPA identified extensive Clean Air Act leak detection and repair violations, including failing to properly monitor leaking components, failing to include chemical manufacturing equipment in its leak detection and repair program, and failing to timely repair leaking equipment. Inspectors also identified a variety of hazardous waste violations at both facilities. In addition, the inspectors found that Formosa had violated wastewater discharge limits under its CWA permits, and, at the Texas facility, had failed to comply with the CAA benzene waste operations requirements and to submit correct toxic release reporting information to EPA."[iii]
- A year earlier, the Justice Department announced they reached a similar agreement with Shintech,

the largest manufacturer of PVC in the world. The agreement was also for $12 million for violating the Clean Air and Water acts as well as the Resources Conservation and Recovery Act (RCRA).[iv]

- In Delaware City, Delaware, air-monitoring has revealed high concentrations of vinyl chloride near a PVC manufacturing facility, which has been under close state and federal scrutiny for pollution violations.[v]
- A new study found that cows downwind of the Formosa Plastics plant have DNA damage. The study found that cattle with the DNA damage were oriented around the facility, with the highest damage occurring with those nearby and those downwind. The changes in chromosome structure and other genetic damage can increase the animal's risk of cancer and reproductive damage.[vi]

PVC Chemical Plants Foul Our Water

- In Lake Charles, Louisiana, a jury found one of the United States' leading PVC manufacturers liable for "wanton and reckless disregard of public safety", caused by one of the largest chemical spills in the nation's history which contaminated the groundwater underneath the surrounding community.[vii] The company was charged with dumping an estimated 19-47 million pounds of ethylene dichloride, a suspected human carcinogen, into the local estuary. [viii]
- In Pottstown, Pennsylvania, chemical waste dumped in lagoons at the OxyChem PVC plant contaminated groundwater and is now targeted for cleanup under the federal Superfund program.[ix]
- In Point Comfort, Texas, vinyl chloride was discovered in wells near a Formosa PVC chemical plant, and the company had to spend one million dollars cleaning up contaminated groundwater. This same company was fined in 1991 for over $3 million (U.S.) for hazardous waste violations related to the groundwater contamination.[x]
- Borden Chemicals and Plastics and the federal government reached a settlement under which Borden would pay a $3.6 million penalty and clean up groundwater pollution at its plant in Geismar, LA. The fine was described by a U.S. Attorney as "the largest ever for hazardous-waste law violations in Louisiana." The settlement ended a case in which the EPA claimed Borden failed to investigate and clean up contamination at its site, failed to report toxic spills, and ran an incinerator without the proper license. Borden said in a news release that the penalty is "less than 1 percent of the $800 million judgment sought by the government." [xi]

PVC Fenceline Communities Demolished & Wiped Off the Map

- In 2003, in Plaquemine, Louisiana, a trailer park development was relocated after being contaminated by vinyl chloride groundwater contamination, but only after women suffered from an abnormal number of miscarriages in the tainted area. Residents had been drinking contaminated water for at least five years.[xii]
- Reveilletown, Louisiana was once a small African-American town adjacent to a PVC facility owned by Georgia-Gulf. In the 1980s, after a groundwater toxic plume of vinyl chloride began to seep under homes, Georgia-Gulf agreed to permanently evacuate the entire community of one hundred and six residents. Reveilletown has since been demolished. [xiii]
- Management at Dow Chemical's neighboring PVC factory followed suit soon afterwards, buying out all of the residents of the small town of Morrisonville. [xiv]

Workers Exposed to Highly Toxic Chemicals

- According to the International Agency for Research on Cancer and the U.S. National Toxicology Program, vinyl chloride is a known human carcinogen, and ethylene dichloride is a probable human carcinogen. Workers in plants that manufacture PVC or its feedstocks receive

PVC workers are regularly exposed to toxic chemicals such as vinyl chloride, a known human carcinogen.

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the highest exposures to these compounds in workplace air—81,000 U.S. workers are regularly exposed to vinyl chloride, while 77,000 are exposed to EDC. [xv]

- PVC workers are regularly exposed to toxic phthalates; according to the National Toxicology Program, "workers may be exposed to relatively high concentrations during the compounding of DEHP with PVC resins. The major route of exposure is inhalation." [xvi]
- Studies have documented links between working in PVC facilities and the increased likelihood of developing diseases including angiosarcoma, a rare form of liver cancer [xvii], brain cancer [xviii], lung and liver cancer [xix xx], lymphomas, leukemia, and liver cirrhosis [xxi].
- Workplace exposures in PVC facilities have been significantly reduced from the levels of the 1960s, however there is no threshold below which vinyl chloride does not increase the risk of cancer. Thus, current exposures in the U.S. continue to pose cancer hazards to workers. Furthermore, occupational exposure to VCM remains extremely high in some facilities in Eastern Europe and Asia. [xxii]
- In addition to chronic diseases, PVC workers face deadly hazards from accidents and explosions at PVC manufacturing plants (USCSB 2007). For instance on April 23, 2004, a PVC plant in Illinois exploded, sending a plume of toxic smoke for miles around surrounding communities. Five workers were killed, four towns were evacuated, several highways closed, a no-fly zone declared, and three hundred firefighters from twenty-seven surrounding communities battled the flames for three days. [xxiii] A report by a U.S. federal agency investigating the explosion revealed the plant owners were aware of the potential for a major catastrophe and didn't take sufficient measures to prevent the accident. [xxiv]

The Vinyl Industry Kept the Workers and the Government in the Dark about the Health Risks of Manufacturing PVC

- According to the Environmental Working Group, "The story of vinyl chloride is a tale of corporate deception in which chemical industry executives kept workers and government health officials in the dark about the debilitating and sometimes fatal consequences of working with the chemical. As evidence emerged over a 20 year period that vinyl chloride caused signature injuries such as disintegration of the bones in the fingers and then fatal liver cancer, and perhaps other cancers, the chemical industry engaged in an increasingly complex and coordinated plot to keep anyone from knowing the chemical's true hazards. Over a 15-year period: workers were exposed to levels of vinyl chloride that were known to cause injury and not told; scientists were pressured to rewrite publications; information was withheld from

government health officials; health exams were given under false pretense to keep workers in the dark about what was happening to them; studies were terminated to avoid producing damaging evidence; and pacts of silence were agreed to and executed." [xxv]

Mossville, Louisiana & Environmental Racism

Mossville, Louisiana is a historic African American community nestled amid an alarming number of PVC production facilities. It is the vinyl manufacturing capital of America, as the Calcasieu Parish region, is home to more PVC chemical plants than anywhere else in the country. A 1999 U.S. Environmental Protection Agency (EPA) study found vinyl chloride levels in ambient air greater than 100 times the state air quality standard.[xxvi] Companies located in the area (Georgia Gulf, Conoco Phillips, Entergy, PPG Industries, and Sasol) have reported releasing dioxins, a cancer-causing, highly toxic group of chemicals, according to EPA's Toxics Release Inventory.[xxvii] Independent studies have confirmed groundwater is threatened by liquid toxic leachate, and there are contaminated fish, vegetables, and fruit in the area.[xxviii]

The health and well being of Mossville residents has been harmed with elevated rates of disease. Studiesby the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) found alarming results — residents had more than three times the national average of dioxins in their blood, elevated dioxins in breast milk, and high cancer mortality rates.[xxiz] A university study found Mossville residents were two to three times more likely to suffer from health problems, including a high incidence of ear, nose, and throat illnesses, central nervous system disturbances, and cardiovascular problems, as well as increased skin, digestive, immune, and endocrine disorders.[xxx]

Ever determined to reclaim their lives, Mossville residents have fought back against the polluters and had real results, including winning relocation for many families due to a 1994 Condea Vista spill of one million pounds of ethylene dichloride that caused well water contamination.[xxxi] Mossville citizens also successfully advocated at the national level, achieving a 2005 U.S. Court of Appeals

David and Diane Prince in front of their former home across the street from a PVC chemical plant in Mossville, Louisiana. The Prince family battled pollution from the PVC chemical plants for many years.

Photo © Les Stone/Greenpeace

decision to change outdated and ineffective EPA emissions standards for vinyl chloride plants.[xxxii] Mossville Environmental Action Now (MEAN) brought the first ever environmental human rights legal challenge against the U.S. Government that is being reviewed by the Inter-American Commission on Human Rights of the Organization of American States. More recently, MEAN compiled data from the USEPA and ATSDR and found 77% of the mixture of dioxin compounds released by the Georgia Gulf PVC plant were the same dioxin compounds that made up 77% of the dioxins detected in the blood of Mossville residents. This finding shows that residents are accumulating the same mixture of dioxin compounds being released from the Georgia Gulf PVC plant and this mixture includes the most toxic forms of dioxin.[xxxiii]

Next time you pick up that PVC backpack or look at the PVC flooring in your children's school, think about communities such as Mossville, Louisiana where these products are created.

What Can I Do? Take Action for Healthy PVC-Free Schools

Safer and cost-effective alternatives are already available for virtually every PVC product in our nation's schools. Here's how you can help today:

- **Encourage your school** to renovate or build their school with PVC-free building materials such as PVC-free linoleum flooring and TPO roofing.
- **Encourage your school district, county or state** to adopt a healthy PVC-free policy to avoid the use of PVC building materials and office supplies in favor of safer cost-effective alternatives.
- **Educate parents, teachers and students! Organize a screening of Blue Vinyl and Sam Suds** for your PTA, teacher's union, or concerned students.
- **Encourage organizations**, such as teacher's unions and parenting groups, to endorse the campaign.
- **Back to school – go PVC-free!** When buying your back-to-school supplies, shop for PVC-free products.
- **Get involved today!** If you're interested in getting involved, contact CHEJ at mike@chej.org or 212-964-3680.

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