

GREENPEACE

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Living. Poisoned Daily.

Dow: The Toxic Machine

The Dow Chemical Company has over 36 manufacturing locations in 19 states. These include units of its newest acquisition – Union Carbide (Union Carbide merged with Dow on February 6, 2001). It is the world's largest manufacturer of chemicals, with annual sales exceeding \$30 billion.¹ As the world's largest producer of chlorine, an essential component of the potent cancer-causing chemical dioxin, Dow is arguably the single largest root source of dioxin on the planet. In addition, through its subsidiary Dow AgroSciences, Dow is one of the largest producers of insecticides (e.g., Dursban), herbicides (e.g., Clincher) and fungicides, and has produced some of the most dangerous pesticides known to humans including DDT and 2,4,5-T, the active ingredient of Agent Orange. Dow is now increasing its investment in genetically engineered crops that can withstand high doses of its pesticides.

Chlorine

Dow is the world's largest producer of synthetic chlorine, with a capacity to produce 6.3 million metric tons of chlorine per year, nearly 14 percent of the world's total.

Pesticides

Dow is one of the largest producers of chlorinated pesticides, which constitutes another major source of dioxin in the environment. Many of Dow's pesticides, including Agent Orange, Dibromochloropropane (DBCP), and most recently Dursban, have been found to cause cancer, neurological damage, and infertility, and have been banned or severely restricted in the U.S.

Polyvinyl Chloride (PVC)

PVC, or vinyl, produces dioxin throughout its lifecycle and is thought to be the largest source of dioxin formation than in any other single material. Dow is the world's largest producer of materials that are used to produce PVC (chlorine, ethylene dichloride and vinyl chloride monomer). Dow's total vinyl chloride monomer (VCM) production capacity globally is approximately 2.5 million metric tons per year.

Chlorinated Solvents

Dow is the largest producer of chlorinated solvents, which are used for cleaning and coating in industries ranging from automobile manufacturing to dry cleaning. As with PVC, chlorinated solvents produce dioxin at multiple points of their life cycles.

Dow's Environmental Track Record

DDT: One of the 12 Persistent Organic Pollutants (POPs) slated for elimination under the Stockholm Convention, this deadly pesticide, whose effects were captured in Rachel Carson's book, *Silent Spring*, was finally banned in the U.S. in 1973. U.S. manufacture of DDT started in 1939, shortly after its application as a pesticide was discovered. The U.S. Environmental Protection Agency (EPA) cancelled all uses of DDT as of January 1, 1973, except for emergency public health, quarantine and export purposes. DDT is an endocrine disrupter and remains in the environment for long periods of time.

Agent Orange (2,4,5-T and 2,4-D): Produced by Dow prior

to and during the Vietnam war, Agent Orange resulted in widespread dioxin contamination, resulting in serious health effects to those exposed. Producing it as a defoliant for use in South Vietnam, Dow settled a class action suit brought by 4,000 chemically exposed Vietnam veterans for \$180 million in 1984. Some estimates have put the number of dioxin related deformities of Vietnamese children related to spraying Agent Orange at 500,000.

Silicon Breast Implants: Dow Chemical and its subsidiary, Dow Corning, were defendants in a class action lawsuit over the health effects associated with silicon breast implants. In 1998, Dow Corning and Dow Chemical entered into a settlement agreement for \$3.2 billion to cover claims associated with silicon implants.

Toxic waste sites: Dow is named as a Potentially Responsible Party (PRP) under federal or state Superfund laws at 24² different sites.

Asbestos: In January 2002, Dow settled a case brought against its subsidiary Union Carbide. Union Carbide, prior to its being acquired by Dow, was one of the companies named in a suit brought forward by workers exposed to asbestos in their work place. Dow, having acquired Union Carbide, reached a settlement in this case. In addition, Dow has claims waged directly against it for personal injury related to exposure to asbestos on various Dow premises.

Dursban: One of the most common pesticides in the U.S., Dursban was found to be a cause of illness to thousands each year, including neurological damage to children. The U.S. EPA fined Dow \$732,000 in 1995 for failing to disclose reports of adverse effects associated with the use and exposure to Dursban. Despite maintaining Dursban's safety, Dow entered into a voluntary agreement with the EPA to remove Dursban from over-the-counter products by the end of 2000. However, Dow was successful in pressuring the EPA to refrain from an outright ban, allowing its continued production and use on a number of agricultural products in the U.S. Dow Chemical still manufactures and sells this pesticide in other countries such as India.

DBCP: Dibromochloropropane (DBCP) is a pesticide that was banned in the U.S. in 1978 following evidence linking its use to both sterilization and cancer. Dow and other chemical manufacturers continued to produce DBCP for export to newly industrializing countries. Twenty-five thousand farm workers in Costa Rica and other countries brought suit against Dow for sterility from DBCP's use in banana crops. Dow initially attempted to block the suit from being brought, but ultimately was forced to settle for \$41.7 million along with Shell and Occidental Petroleum in 1997.

Dow has increased its investment in a joint venture with Cargill to form "Nature Works." Nature Works will produce PVC-free biodegradable plastics from corn. A \$300 million plant in Blair, Nebraska opened recently.

Dow's Effects on Local Communities Myrtle Grove, Louisiana: Vinyl Chloride Contamination

Myrtle Grove is a trailer park close to the Dow Chemical vinyl chloride monomer (VCM) facility in Plaquemine, Louisiana. State officials are investigating whether Dow is the source of vinyl chloride, a cancer causing chemical, that has contaminated the nearby groundwater systems. Although the Louisiana Department of Health and Hospitals first learned about the vinyl chloride-contaminated water in Myrtle Grove as early as 1997, the community was not notified until 2001.

Dr. Wilma Subra, a scientist working with the Louisiana Environmental Action Network, states that, "...some samples, especially some near Dow, showed concentrations of vinyl chloride 4 to 10 times greater than the allowable limit of 2 parts per billion."³

On January 8, 2002, current and former residents of Myrtle Grove filed suit against Dow Chemical in Baton Rouge alleging that the company knew and covered up information about the vinyl chloride contamination in their community.

According to the Baton Rouge Advocate, efforts on the part of the Louisiana Department of Environmental

Quality to prove the source of the vinyl chloride in Myrtle Grove's drinking supplies has drastically reduced. All the while, Dow plans to expand in the area.

Midland, Michigan: Dioxin Contamination

Dow's production facility in Midland has an onsite wastewater facility. During a flood in 1986, 10 feet of water overflowed from the system and entered the nearby Tittabawassee River. Later in 2001, extensive dioxin contamination was discovered in the area. It is thought that dioxin-contaminated wastewater from the Dow facility was spread over a wide area during the 1986 floods. Twenty-nine of 34 soil samples taken in Midland contained dioxin at levels higher than the state cleanup standard. According to state regulations, cleanup is required if dioxin levels are higher than 90 parts per trillion (ppt) in a residential area. Some of the samples registered levels as high as 80 times this criteria, according to documents from the Michigan Department of Environmental Quality (MDEQ).

Federal toxicologists from the Agency for Toxic Substances and Disease Registry⁴ (ATSDR), in a draft report, called for widespread testing of possible dioxin contamination caused by Dow Chemical that may have spread well beyond the company's Midland facility. The December 7, 2001 report adds that MDEQ should "immediately implement sampling plans to determine if dioxin contamination is present – the data necessary to determine if dioxin-contaminated floodplain soil in the Tittabawassee River watershed poses a public health risk are not available; therefore, the site poses an indeterminate public health hazard."⁵ The report further adds "... additional soil sampling is immediately necessary to determine the extent and severity of dioxin contamination [there and in nearby areas]."

Bhopal, India: Lethal Gas Legacy

On February 6, 2001, Dow Chemical acquired Union Carbide. With this acquisition, Dow assumed legal responsibility for Union Carbide's liabilities.

Union Carbide operated a pesticide plant in the city of Bhopal, India. On the night of December 2nd – 3rd 1984,

a large quantity of water entered a methyl isocyanate (MIC) storage tank "through leaking valves and storage pipes."⁶ This caused a runaway reaction that generated enormous heat and a poisonous cloud of "MIC, hydrogen cyanide, mono methylamine, carbon monoxide and possibly 20 other chemicals."⁷ Reports state that the safety systems were grossly under-designed, switched off, malfunctioning or under repair.

The cloud of gas hugging the ground rose to between 20-30 feet and slowly enveloped the city.

Conservative estimates made by independent agencies put the toll at over 8,000 men women and children killed within the first three days of the disaster. A leading government aided research body – the Indian Council of Medical Research came to the conclusion that over 520,000 exposed persons had poisons circulating in their bloodstream that caused damage to almost all systems in the body.⁸ Survivors of the disaster suffer from a range of health problems including chronic bronchitis and emphysema, gastrointestinal problems, chronic conjunctivitis, early cataracts as well as neurological disorders such as memory and motor skill loss. Women suffer from gynecological problems and suppression of lactation.⁹ The children of the survivors have various medical problems too, including lower IQ's, respiratory problems and menstrual irregularities.

Union Carbide and Union Carbide India Limited claim to have settled all personal injury and related claims through an out-of-court settlement with the Government of India.. With the settlement, the gas-affected people received anywhere between \$300-500 USD per person.

And the toxic legacy of Bhopal continues. The site is heavily contaminated with mercury and pesticides. During the monsoons, waste from the Solar Evaporation Ponds (pools of toxic sludge) leach into the groundwater. The people who were affected by the disaster now live in the shadow of an ongoing environmental and health catastrophe.

Dow's Chemical Burden on the Environment

Dow Chemical Toxic Release Inventory (TRI) for U.S. Manufacturing Facilities¹⁰

Total Production Related Waste	1,684,176,496
Air Releases	8,459,729
Water Releases	290,826
Total Releases (on & off site)	10,091,097

Totals are in pounds per year (lbs./yr.) and are the aggregate reported releases from Dow's sixteen U.S. facilities.

What You Can Do

Greenpeace and Bhopal survivors* are calling on Dow Chemical to:

- **clean up the factory site at its expense as would be required in the U.S.,**
- **secure long-term medical treatment facilities and medical rehabilitation for the survivor's of the poison gas leak,**
- **ensure economic compensation for the gas-affected people and their families, and**
- **provide clean drinking water to communities that are forced to consume contaminated groundwater.**

Additionally, Greenpeace and the survivor organizations are calling for international law to be established to hold corporations criminally and financially liable for industrial disasters and ongoing pollution.

Write or call the President and CEO of Dow Chemical and urge him to accept responsibility for the ongoing problems in Bhopal resulting from the gas leak.

William Stavropoulos

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For more in depth information about the ongoing pollution in Bhopal, see the Greenpeace report, the Bhopal Legacy at www.greenpeaceusa.org/toxics. Also visit www.bhopal.net

* Greenpeace is part of a coalition, International Campaign for Justice in Bhopal, that is composed of the Bhopal-based organizations Bhopal Gas Affected Women Stationary Workers Association, and Bhopal Group for Information and Action and their allies: Association for India's Development, Bhopal Action Resource Center, CorpWatch, UK Campaign for Justice in Bhopal and The Other Media. The campaign is also supported by the Ecology Center of Michigan, Environmental Health Fund, Environmental Health Watch, Pesticide Action Network, Essential Action and the Center for Health, Environment and Justice.

1 Equivalent to the annual GNP of Vietnam, making Dow bigger than the national economies of more than two-thirds of the worlds nations. World Bank – 2000 World Development Indicators

2 <http://www.bhopal.net/corpprofiledow.html>

3 ibid

4 Chemical Policy Alert: Draft Toxicity Study Urges Widespread Testing Of Dioxin That May Be Linked To Dow Midland Plant. February 5, 2002

5 Draft toxicity study urges widespread testing of dioxin that may be linked to Dow Midland plant. Chemical Policy Alert. Feb, 5, 2002

6 <http://www.bhopal.net/factsheet.html>

7 ibid

8 ibid

9 TED case studies: Bhopal Disaster;

<http://gurukul.ucc.american.edu/TED/BHOPAL.HTM>

10 <http://www.rtk.net>