



Living.
Poisoned daily.

Driving Dangerously

The truth about DOW

A photograph of a long, straight asphalt road stretching into the distance under a clear blue sky. The road is flanked by dry, desert-like terrain with sparse vegetation. In the background, there are low, hazy mountains. In the foreground, a white rectangular warning sign with black text is placed on the road. Above the sign is a small, round, black object, possibly a light or a sensor. The sign reads:

**WARNING
HEALTH HAZARD
AHEAD**

Driving Dangerously – The truth about Dow

The Dow Global Public Report instructs us to:

Let us
know
what you
think

Here, people with an interest in Dow or affected by the company take Dow up on the offer and ask Dow to live up to its goals on human rights, sustainability and environmental protection.

People from communities affected by Dow's operations tell the company how and why they have suffered and ask Dow to address the problems it has caused.

Dow's neighbors and stakeholders explain how – in Herbert Dow's phrase – it can “do it better”.

Is Dow listening?

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On behalf of the Dow Accountability Campaign

This report is a testimony to the struggles for justice waged by the people of Vietnam, India, Latin America, the US and around the world who have been poisoned by Dow's products, toxic wastes and emissions.

Dear Reader

This report examines the performance of one of the world's largest companies.

In 2003 Dow had annual sales of nearly \$33 billion, employed approximately 46,000 people, and served customers in 183 countries through 180 manufacturing sites, supplying 3,500 products. Dow also invested in good image projection. Its website is full of statements hailing the company as a model of social and environmental responsibility. This report examines the reality behind the rhetoric. Even though the case studies in this report only provide a snapshot of Dow's behaviour around the world, they go some way to illustrate the truth about Dow:

- Nearly 30 years after the Vietnam War people are continuing to suffer dioxin poisoning from the Agent Orange defoliant Dow supplied the US military. Health impacts are passing from generation to generation,
- in Michigan, over 22 miles of dioxin contamination stretch from Dow's plant in Midland, along the Tittabawassee River to Saginaw and beyond. Children may not play in their own gardens. Many fish must not be eaten. There are clusters of thyroid problems, cancers and diabetes in the area,



© Raghu Rai/Greenpeace



- in Nicaragua, Costa Rica and the Philippines, thousands of banana farmers have been poisoned by DBCP, a pesticide Dow produced. Dow and other US companies continued to ship this pesticide around the world long after they were aware of the appalling health problems it causes,
- up to 300 people from the Myrtle Grove Trailer Park in Louisiana were drinking, cooking, washing and swimming in polluted well water for up to five years. Just two miles up the road Dow produces vinyl chloride at a plant that has been experiencing toxic waste disposal problems for decades,

-
- when Dow acquired Union Carbide in 2001 it inherited the liabilities for the world's biggest industrial disaster to date. The consequences of the 1984 disaster at the Union Carbide pesticide plant are still taking their physical and emotional toll. Dow has not taken responsibility for the harm caused, adequately compensated the victims, cleaned up the contaminated site or faced justice in India, and
 - Dow's chemicals are accumulating in the bodies of ordinary people in the US and worldwide. Scientists have found pesticides and industrial chemicals in nearly every American tested. Before people are even born, Dow's synthetic chemicals begin building up in their bodies. Studies have shown levels of chlorpyrifos (*Dursban*) in children twice as high as in adults. The full health impacts are yet to be discovered, but early evidence suggests all of these exposures are compromising our health.

What matters to people in India, Nicaragua, Vietnam, the US and across the world is not what Dow says in glossy brochures. People suffering from reproductive disorders, skin lesions, cancer or developmental problems because of Dow or its subsidiaries want the company to address the problems it has caused, and reform its product line so that it doesn't continue to create more poisonous legacies.

Specifically Dow must accept its legal and moral obligations to those it has poisoned. Where communities are legitimately seeking medical monitoring, cleanup, and compensation for poisoning, the company must resolve these claims. Where the company has contaminated neighborhoods, workers, and communities and left a legacy of ongoing harm, the company must seek to provide redress. Finally, addressing historical wrongs is not enough if the company continues to poison others. The company must reform its product line so that it no longer poisons people and the planet.

Rashida Bee
The Bhopal Gas Peedit Mahila Stationery Karmachari Sangh

Betty Damore
Tittabawassee River Watch

Dr Phan Thi Phi Phi
The Vietnam Association for Agent Orange Victims

Agent Orange – Vietnam trauma

“In Vietnam, the poorest, the most miserable and the most discriminated ones are the Agent Orange victims.”

Dr Phan Thi Phi Phi, The Vietnam Association for Agent Orange Victims, 2004

The tragedy of the Vietnam war is well documented and ranks among the most terrible holocausts of the twentieth century. Less known is that twenty-nine years after the war's formal conclusion in 1975, the suffering caused by chemicals used in Vietnam is still passing from generation to generation.¹ These victims are largely unknown and unheard in the US. Nor have they received any assistance or compensation from the US government or the manufacturers of the chemicals including Dow.²

Although the final death toll from the war will never be known it may be as many as four million, with millions more injured and traumatized. The number of victims of Dow's chemicals which were liberally sprayed over ten per cent of South Vietnam during the war is also incalculable. What is certain is that between 1962 and 1971 US planes sprayed an estimated 21 million gallons of chemicals over Vietnam in order to defoliate forests where they believed communist troops might be hiding.

The most extensively used of these defoliation herbicides was known as Agent Orange because of orange stripes on the drums it was shipped in. Most was produced by Dow which supplied approximately one

third of nearly 13 million gallons of Agent Orange which was dropped by the plane load over thousands of acres in Vietnam.³ Lush forests wilted under the onslaught. By the mid 1960s there were reports of increased miscarriages, stillbirths and birth defects among Vietnamese people and animals.

The collateral damage

As we now know, this was just the beginning. Spraying was abruptly halted in 1971 after it was confirmed that Agent Orange was highly contaminated with a very toxic form of dioxin and caused cancer in rats. Toxic dioxins remain in Vietnam's soil 28 years after the fighting and have been shown to cause various cancers, birth defects and organ dysfunction.⁴ The full list of diseases associated with Agent Orange also includes Type II diabetes, spina bifida, Hodgkins disease, acute and sub-acute neuropathy, a large number of soft tissue sarcomas and multiple myeloma. Many of these diseases occur long after the initial exposure.⁵

This news comes as no surprise to many American veterans or to the Vietnamese veterans and their families who have long blamed Agent Orange for a plethora of illnesses. US veterans finally sued

the makers including Dow because the US Government wouldn't take responsibility for their suffering. Meanwhile Dow claimed that as Government suppliers they were indemnified from prosecution and that in any case they were ordered to continue production for the war after the government knew about the contamination. Nevertheless, in an out-of-court settlement, Dow and the other six major producers of Agent Orange agreed to pay \$180 million to a veteran fund. Fifty-two thousand veterans received money from the fund before it ran out of cash in 1994. To this day researchers are continuing to find links between Agent Orange and various illnesses in US Vietnam veterans. But the issue isn't going away. The US Supreme Court recently ruled in favour of a new group of veterans who say their Agent Orange exposure related illnesses occurred after the 1984 settlement funds were closed to new applicants in 1994, and thus reopened the possibility of another payout to veterans.⁶

Apocalypse without end?

Meanwhile, in Vietnam, the impacts of Agent Orange and dioxin are overwhelming. The number of people suffering from exposure to chemical defoliants used during the

war is somewhere between five hundred thousand and one million. Up to five hundred thousand have died as a result and another five hundred thousand Vietnamese children are suffering from deformities related to the spraying of Agent Orange as its effects pass from generation to generation.^{7,8}

In 2002 dioxin contamination was found in food samples approaching levels found during the war.⁹

Some of today's sufferers were doused in Agent Orange during the war, others are farmers who lived off land that was sprayed. The second generation are the sons and

daughters of people who had been exposed. Now there is a third generation of victims. Adults are suffering from skin lesions and goitres and children are born with various birth defects including large heads, enlarged, bubble eyes and altered limbs.¹⁰ Others suffer from severe depression and mental disorders.

According to the former vice president of Vietnam, Madam Nguyen Binh, returning veterans in Vietnam were eager to have children and build families to repopulate their devastated country. However many of the first born children in these families had birth defects, so the

veterans tried again and again. As a result, according to Madame Binh, there are a number of Vietnamese families that now have four or five disabled children.¹¹ The Vietnamese Government has urged the US Government to clean up the areas affected by Agent Orange on numerous occasions.¹² Recently, under an agreement with Vietnam, the US Government has pledged to conduct joint scientific research on the defoliant but has consistently declined to discuss any compensation.¹³



“Vietnam testimonies

The Vietnam Association for Agent Orange Victims is a group campaigning for justice. In 2004 they filed the first lawsuit against the makers of Agent Orange in a New York Court, seeking unspecified damages from Dow, Monsanto and other companies that made the herbicide. The plaintiffs and their families consist of people who have become ill from Agent Orange.

Lawsuits have also been brought by New Zealand and South Koreans who served in Vietnam. Veterans organizations in South Korea estimate tens of thousands were exposed.

Agent Orange survivor, Tran thi Hong Ha is now 45 years old:

“My husband worked and was exposed indirectly to unknown chemicals of US army from 1972-1976 in Quang Tri old citadel, Tay Ninh and Khe Sanh. He ate food and drank stream water in these regions.

“I was first pregnant in 1986 with a breech presentation. The foetal heart sound was lost during labour and the foetus died several hours before delivery.

“My second daughter Hoang Ha My, born in 1987, is now 16 years old. The labor and delivery was normal. But at eight months of age we realised she had physical and mental growth retardation and the diagnosis was cerebral palsy. She stays in bed all day, cannot sit nor stand. She



Hoang Ha My

must be served everything in bed, including her personal hygiene.

“In 1989 I was pregnant again but lost the baby in the second month. My fourth and fifth children are almost normal.

“The illness of Hoang Ha My, brings upset to my whole family. We have faced many psychological and economic difficulties. Our life is really not stable. My family wants to represent ourselves and other families who have similar circumstances.”

Agent Orange survivor Huynh thi Phuong is now 63:

“After graduating from Hanoi Medical University in 1965 I returned to the South and worked in a Vaccine Production Center in the Mid-Central area, located along Pui stream and Ngheu, Oa, Vin streams.

“In 1969, when we were working in our lab, we smelt an unpleasant odor. We quickly ran out and saw a big airplane flying slowly over leaving a dense foggy cloud. We realized it was Agent Orange as just after several minutes, the leaves on the trees fell down. We had to rescue what we had cultivated for survival.

“We rushed to our cassava garden and wallowed in the toxic air without thinking of the danger. All of us tried to save our products and we caught the toxic agent. We soaked our products in the stream nearby, but the stream was also toxic. We boiled cassava carefully to eat but the odor remained.

“There was no other choice. Daily, we had to eat the foods in these areas. Weeks after that, trees around died.

My friends Luong, Toan and Hung had haematoria. In 1972 due to a recurrent illness I went to the North for treatment.

“I married in 1972 and had an underweight boy, but luckily he was normal. In 1979 I had a second child. Due to 12 tumors clinging to my uterus and ovaries, doctors had to perform caesarean and forceps procedure to deliver my baby.

“They had to remove my entire uterus and ovaries due to these tumors. At that time we had no drugs (our country was isolated – closed) for maintaining the family life of a young couple.

"My younger sister Huynh thi Phuong Anh, born in 1943, who lived and worked as bank officer in, Quang Nam Province from 1968 to 1971 also had a uterine fibroid tumor which was removed in 1990 at Hanoi.

"None of our relatives had this kind of disease. It was terrible. I condemn individuals who bring these consequences to me and my colleagues."

Agent Orange survivor Pham thi Hao is now 48:

"As young volunteer, I worked as a road worker or a cook at Ashaw. Although I was not directly exposed to Agent Orange, I lived in the regions



Pham thi Hao after chemotherapy

with dead trees. I used to forest vegetables like cassava, as foods and spring water. I fear I acquired exposure indirectly.

"I was pregnant five times and had three miscarriages. From 1999 I was hospitalized in the Central Hospital of Obstetrics and Gynecology in Hanoi because of severe gynaenological complications and cancer.

"I needed six courses of chemotherapy. No cancer nor reproductive disorders were previously documented among my relatives."

Dioxin

There are 75 different forms of dioxin making up a family of chemicals containing carbon, hydrogen and chlorine. Agent Orange contained 2,3,7,8-tetrachlorodibenzo-p-dioxin or TCDD which is considered the most toxic form of dioxin.¹⁴ Agent White was another dioxin-contaminated herbicide produced by Dow and widely used by the US during the Vietnam war. Agent White and Agent Orange both contained 2,4-D dioxin which is also a possible carcinogen, suspected endocrine disruptor and potential ground water contaminant.¹⁵

Dioxins aren't deliberately manufactured. They are merely the unintended by-product of industrial

processes that use or burn chlorine in the presence of organic materials. Three main sources are municipal waste, hospital incinerators and backyard burn barrels.¹⁶ Other sources are chemical processing facilities that use chlorine to make products such as polyvinyl chloride (PVC) and pesticides.¹⁷ Dioxin is an inevitable by-product of most of Dow's organochlorine chemical manufacture.¹⁸

Scientific evidence of severe health impacts surrounding exposure to dioxin has serious implications for many products central to Dow's business.¹⁹ A recent report prepared by Innovest Strategic Value Advisors, *Dow Chemical: Risks for investors*

highlights how Dow's efforts to reduce dioxin emissions at its facilities, while welcome, do not go far enough to address the full extent of the problems.²⁰ Dow is one of the largest makers of PVC plastic, pesticides and solvents. PVC plastic creates dioxin when it is burned.²¹ Many of Dow's dioxin-containing manufacturing wastes must be land-filled. The tragedy of Agent Orange is only the tip of the dioxin contamination iceberg. Dow is still contributing to dioxin contamination to this day as people living in the area surrounding its Michigan corporate headquarters are finding out.

Midland's dubious endowment

“As a kid my family would mention the river was polluted. Dow was mentioned. You could see a yellow haze in the sky when you drove through Midland and you had to roll up your windows near Dow’s factories. In February 2001 I heard about the dioxin levels around our properties. I had no doubts it was from Dow Chemical.”

Betty Damore, Tittabawassee River resident

In 1899 Herbert H. Dow sunk the foundations of his historic homestead into a naturally beautiful area on the border of Midland and Saginaw in the State of Michigan. He did not foresee he had also laid the foundations of the area’s ruin. The headquarters of his nearby chemical company has grown into a notorious giant since its origins as humble brine well. Today 22 miles of dioxin contamination emanate from the plant along the Tittabawassee River, to Saginaw and probably well beyond.¹

Dow gets affluent, Tittabawassee gets effluent

The Midland headquarters has played a central role in Dow’s quest to supply the world with some of the most notorious 20th century products, various pesticides, mustard gas, saran wrap, styrofoam, agent orange, napalm and other dubious chemicals. To this day Dow’s purported mission goes on, *“to constantly improve what is essential to human progress by mastering science and technology.”*²

But people living on the Tittabawassee flood plain have little faith in Dow’s mission. They are

suffering from the impact of its emissions – which have been risking health since the 1900s. In those days tankfuls of waste were often deliberately released into the Tittabawassee River.³ Even so, the cumulative effect of over a century’s worth of poisoning has only recently been exposed. It wasn’t until 1985 that the US Environmental Protection Agency (EPA) realized levels of dioxin in fish taken from the river were the highest in the whole of the US.⁴

Bad news for wildlife. And people. Dioxins and other bio-accumulative toxicants are by-products of the chlorine industry – the daily business of the Dow Midland plant. Dioxin is considered the most toxic man-made compound ever tested. It doesn’t break down easily and bioaccumulates in animal tissue.⁵ The effects of its poisoning make pretty grim reading and include birth defects, miscarriages, cancer, immune and hormone system damage, developmental disabilities, endometriosis, diabetes, dermatitis



The Tittabawassee river – tests reveal toxic concentrations up to 80 times higher than acceptable levels 22 miles from the Dow Midland plant

© d.linhart dioxinSpin.com

and a range of other problems.⁶ Studies on animals found dioxin causes cancer at unexpectedly low levels.⁷

The heaviest flooding on record compounded the contamination in 1986. Dow's waste treatment facilities were overwhelmed and the contents of their vast holding tanks were flushed into the river. Water levels reached 15 feet above normal and further contaminated 22 miles of river frontage downstream.⁸

Poisoning its own backyard

The efforts of environmental groups, residents and some government officials finally revealed the full extent of the problems. In 2000 the Michigan Department of Environmental Quality (MDEQ) oversaw sampling of soil from the floodplain near the confluence of the Tittabawassee and Saginaw rivers. The shocking results showed toxic concentrations up to 80 times higher than the MDEQ criterion as far as 20 miles from the Dow Midland plant and tests on higher ground showed 13 out of 15 samples were above the criterion.⁹ Recent MDEQ sampling revealed 77 per cent of flood plain properties tested are contaminated with levels exceeding the maximum mandated by state law.^{10, 11}

The 2003 Michigan Family Fish Consumption Guide gives some idea of the implications. Catfish, carp and white bass are too full of chemicals to eat. Even the least contaminated smaller fish, need to

be specially prepared and should only be eaten once a week.¹² Studies of wildlife show high levels of dioxin contamination accumulating even further up the food chain.

Strong evidence surely that Dow has continuously dumped chemicals on its own doorstep.¹³ But the human concerns of people living in 2000 properties along the river are most pressing. Until recently most property owners along the Tittabawassee were unaware of the dangers due to lack of testing and outpourings of misinformation from Dow's PR machine. And despite overwhelming evidence of contamination, Dow's spin is not abating.

Dow spokesperson, Terri M. Johnson, described the samples showing the highest levels of 5,660 parts per trillion total toxic equivalence (TEQ) retrieved 15 inches below ground as "*assuring*".¹⁴

No wonder residents are confused. Martha Stimpson expresses the frustration of many describing the results as anything but "*assuring*" she is not alone in being, "*disgusted at Dow's happy talk and their efforts to minimise the problem*".¹⁵

The sophistication of Dow's PR developed over the past 100 years is frighteningly convincing and far outstrips its ability to guarantee safety.

Way back in 1987, Paul Oreffice, President of Dow Chemical was saying,

"The air of Midland is our air; the Tittabawassee is our river. The vast majority of us don't come from some other community and put in our workday and then go back to that other community... Midland is home... We want to take pride (and do take pride) in the environmental quality of Midland and its health record and its safety achievements."

But all the spin and the PR in the world won't make the contamination go away. Dow is poisoning the people living in its own backyard.

Tittabawassee riverside residents tell Dow what they think

Now, three hundred seventy three plaintiffs have launched a class action lawsuit seeking redress for falling property values and a fund to monitor and treat the health implications. Despite the 13,000 pages of documents produced by the plaintiffs, Dow insisted they hadn't provided sufficient information. Meanwhile nothing is being done to clean up the floodplain.

According to the plaintiffs' attorney, Jan Helder, "*every act that Dow takes makes it absolutely clear that they want to avoid doing anything about it for as long as possible.*"

In 2004 Dow claims its latest clean up proposals will meet the MDEQ's satisfaction. Tittabawassee residents aren't holding their breath. In such an unhealthy environment perhaps they should.

“Tittabawassee testimonies

Betty Damore



“I am 55 and have always lived on Stroebel road. I grew up here. The property we live on was owned by my grandfather. We are about a quarter of a mile back from the river. Our property is connected by Stroebel drain to the Tittabawassee River. As water levels change due to heavy rains or melting snow, the floodwaters flow into Stroebel drain flooding the back portion of our property. Sometimes we have 8 foot of water in our back yard.

“As a kid my family would mention the river was polluted. Dow was mentioned. You could see a yellow haze in the sky when you drove through Midland and you had to roll up your windows near Dow’s factories. In February 2001 I heard about the dioxin levels around our properties. I had no doubts it was from Dow Chemical.

“It is difficult to know whether health problems my family and I suffer are a consequence of the dioxin. However, it is known that dioxin may cause cancer, diabetes, hormonal problems, and a list of other problems.

“Why do we have a clustering of individuals with a multiple sclerosis diagnosis and cancer? It is known that there are much higher incidents of thyroid problems in this community.

“When the DEQ tested our neighborhood, the results showed levels from three parts per trillion total toxic equivalence (TEQ) by Stroebel Rd to 90 parts per trillion TEQ approximately 50 feet from the back of our property line.

“Government departments have sent out serial newsletters with recommendations of what residents should do to limit their exposure to dioxin. We have not had a garden for three years because this area was flooded in the 1986 flood. As far as cutting grass, my husband always wears a mask. If there is a need to go to the end of our property line we wear boots and specific work clothes.

“Less than a quarter of a mile from us people have levels of more than two thousand parts per trillion TEQ in their backyard. Their kids are older but they have young grandchildren that play in their backyard. Children are closer to the ground and they are more susceptible.

“Dow representatives have mentioned people may not need to use their property entirely and if they are aware that area is contaminated don’t use it. It is our property and we should be able to use it as we see fit.

“We built our home here and put our life savings into our home. It is a nice area, close to work and shopping. We routinely see wild turkey, deer, and other wildlife. Our youngest is in high school so we have no intentions of moving at this time.

“We may want to move in the future but because we live in the floodplain our property has been declared by the DEQ as a waste facility. Being a responsible property owner it is our moral responsibility to tell potential buyers about this dioxin contamination.

“Our kids are aged 17 to 24. There should be a trust fund set up for medical monitoring. They are young now but what may occur in the future for them health wise remains to be seen. Our lifestyles have changed as a result of the contamination.

“Dow continues to want more studies done. This has been an ongoing problem. Why duplicate studies that have already been done by state agencies.

“Dow needs to address this problem and clean it up now. For two years there continues to be a dispute about how to warn people about the contamination on park signs. Needless to say innocent children, adults, and family pets continue to be exposed to dioxin. Dow suggested placing wood chips on frequently used areas in local parks but after the most recent flood those wood chips would have been washed away. Their solution is like putting a small bandage on a massive bleeding wound.”

Kathy Henry



"My life changed forever the day I read a Saginaw newspaper article that local environmental groups had discovered state agencies had been withholding information about contamination of the Tittabawassee River with a dangerous toxin called dioxin. I had never heard of it before, but had a sick feeling in my stomach.

"You see, many years prior to this, I had come to suspect there was something very wrong with our property, but had no idea what. I am an avid wildlife and bird watcher, and had noticed there were basically no rabbits living around us even though we have perfect habitat for them. A stray one would show up once in awhile, but they were never around for long.

"A species of woodpecker known to live in the area, a Flicker, who's primary diet is ants, never could seem to establish a population here, where other types who primarily ate other insects off of trees did well.

"There seems to be no worms in the floodplain soils that I have dug up over the years. Some of the mice my cats would catch and bring home had large tumors in their livers. The two cats that ate a lot of mice also died of strange cancers. And of course there were the fish, walleye people would catch during the walleye festival that had tumors on them.

"There are actually very few species that seem to thrive in this area, considering what should be here.

"Over the past two years, I have attended many meetings and find it disturbing to hear the stories from many, many families that live on the river. There doesn't seem to be one household that does not have multiple illnesses in their families. Is this normal?

"I feel that in the greater community, there is still much denial as to how bad the situation really is. People don't want to believe there is such a problem, for various reasons, and accept Dow's misinformation with open arms, hoping the problem will just go away. Sad.

"After a year of trying to find answers and solutions from state agencies, environmental groups, politicians and even Dow, we felt our only option was to file a law suit against the polluter. It was obvious to us by then that we needed to protect ourselves.

"We also fully support the environmental groups in their efforts to get Dow to clean up the contamination disaster they created. It is the only right thing to do.

"This is an effort to correct something that is terribly wrong and needs to be fixed.

"But for now, every day I wake up and look out into the yard that I once loved, felt tremendous joy in being here, and only feel sadness. I no longer care about the yard, flowers, birds and animals. When I see the flock of wild turkeys pecking on the ground looking for food, I want to cry.

"The State of Michigan tested our yard, and the highest level of 12 samples they took, was 1130 parts per trillion TEQ."

DBCP – A tragedy forewarned

“There was absolutely no adequate warning on these barrels to prevent exposure to innocent people living and working on these banana plantations...the DBCP was used and sprayed in wide swathes onto unsuspecting people who lived within and around the banana plantations, some of whom never even saw a DBCP barrel.”

Juan Dominguez, US lawyer representing the Nicaraguan Association of Workers and Former Workers with Claims against Nemagon, (ASOTRAEXDAN), 2003

A widely used Dow product, dibromochloropropane (DBCP), is a very effective worm killer. It is also a carcinogen, ground water contaminant, reproductive toxin and suspected endocrine disruptor. Today, up to 65,000 banana workers and their families are suffering from sterility, testicular atrophy, birth of deformed or miscarried babies, skin diseases, permanent headaches, bone pains, vision loss, severe depression, and five types of terminal cancer as a result of exposure to DBCP. These people have worked or lived on giant banana plantations in Central America, the Caribbean and the Philippines producing fruit for US multinationals.¹ Many children are now inheriting their parent's ill-health.

The profit-making potential of the pesticide was discovered in 1952 when scientists were experimenting with ethylene dibromide or EDB - marketed as *Dowfume*. DBCP promised even more spectacular results in the battle to save bananas and other fruit from the ravages of the microscopic, root-eating, nematode worm.² Dow and the Shell

Chemical Company liked it so much they rushed to develop DBCP which they marketed by the brand names of *Fumazone* and *Nemagon* respectively. Sales were already looking very healthy by 1958 when an internal Dow report gave an early indication of the scale of the problems on the horizon.³

A can of worms

Skin tests on rats, rabbits, guinea pigs and monkeys revealed that DBCP was readily absorbed by the skin or through inhalation. Test animals suffered from liver, lung and kidney damage. Half died as a result

of inhaling the equivalent quantity of DBCP many laborers would be exposed to in three months. These and further tests confirmed that dramatic testicular atrophy results after prolonged and repeated exposure to DBCP.⁴ But Dow and Shell neglected to report these findings when they submitted information for registration and labeling in the US.⁵ And as the toxicity of their products became clearer, Dow and Shell merely swapped a few internal memos and issued some feeble advice about protective clothing and avoiding fumes.⁶



©Nick Shaw/Banana Link

Pesticides are often sprayed in swathes over banana plantations. They can affect people and wildlife living in the area and can leach into soil and ground water

Despite the evidence, companies continued to produce and supply DBCP. From 1964, the Occidental Chemical (Oxy) plant near Lathrop formulated *Fumazone* for Dow. Workers regularly inhaled vapors and dust. They also splashed DBCP onto their skin and clothes. When seven plant workers were tested in 1977, their sperm counts were so low or non-existent that one doctor thought they had undergone vasectomies. Reports of widespread infertility led to such frenzied news coverage that Dow, Shell and Oxy finally suspended their US operations - just one month ahead of a federal suspension.⁷

As part of a television documentary in 2001 one worker expressed the feelings of betrayal many feel: *"After telling me that I shouldn't worry about anything out there because it can't hurt me, now to find out that I'm sterile from it, their answer was, don't worry about that because you can always adopt children."*⁸

Poisonous export

Despite the furor and distress DBCP was causing back home, Dow and other companies continued to ship it to countries all over the world until 1985. Initially it had no labels warning it was extremely toxic and no instructions on using it safely. As a result its widespread use has caused the permanent sterility of thousands. One study found that approximately 20-25 per cent of the male working population in banana plantations on Costa Rica's Atlantic coast, where workers had mixed DBCP by hand, were sterile.⁹

An all-star cast of multinationals faced lawsuits from plantation workers in 11 countries. But Dow, Shell, Oxy and Chiquita settled out of court in 1997 for just \$41 million. As a result the farmworkers only got about of \$1,500 each after legal fees.¹⁰ These miserly settlements go some way to explain the companies' traditional preference for hearings in foreign countries whose archaic legal systems have been inadequate for such vast and technical class actions.¹¹

Nicaraguan farmers tell Dow what they think

Thousands of DBCP victims in Nicaragua have formed unions to demand compensation from the companies that poisoned them. In 2001 associations of banana workers, led by the Association of Workers and Former Workers with Claims against *Nemagon*, (ASOTRAEXDAN) mobilised protests and influenced public opinion to the point where the National Assembly passed new law specifically for people affected by pesticides derived from DBCP. Known as law 364, it provides the legal framework through which people affected by DBCP can sue corporations that produced and applied the chemical.¹²

The first judgement under the law decided in favour of 466 DBCP affected workers in 2002. The Nicaraguan court ordered Dow, Shell, and Dole to pay workers \$489 million as compensation for their suffering. By July 2003 at least 5000

other banana workers were plaintiffs in similar legal cases.

Subsequent to this ruling, Dow and the other companies, that had been arguing cases should be heard in the countries where the purported injuries occurred, revised their opinions. Dow now *wants* the cases tried in the US.¹³ Neither Dow nor any of the other companies participated in the trial and Dow say they will not pay. Dow absolves itself, saying the law, *"offends virtually every notion Americans have of fair play and substantial justice"*.

In March 2002, the then US Ambassador to Nicaragua, Oliver Garza, put pressure on the administration of President Enrique Bolaños to have the country's Supreme Court declare Law 364 unconstitutional. The resulting uproar in Nicaragua's media led the National Assembly to affirm it will not allow one comma in the law to be changed.¹⁴

In another forum, during the negotiations of the Central American Free Trade Agreement, chemical companies lobbied the United States Trade Representative to include a clause that would make laws such as the Nicaraguan Law 364 a violation.¹⁵

Meanwhile the thousands of Nicaraguan plantation workers who marched on Managua and camped out for months are still waiting for justice. Dow failed to prevent the tragedy. A cure is not possible. Compensation is overdue.

Nicaraguan testimonies

Juan Dominguez, the US lawyer representing the Association of Workers and Former Workers with Claims against Nemacon, (ASOTRAEXDAN):¹⁶

"The DBCP was used and sprayed in wide swathes onto unsuspecting people who lived within and around the banana plantations, some of whom never even saw a DBCP barrel.

"The law is clear that once you place a dangerous product in the stream of commerce, you are liable for harm caused, no matter where it is ultimately used.

"The scientific evidence is abundantly clear that sterility is caused by DBCP. Moreover, there is ample scientific evidence that DBCP causes cancer and also birth defects.

"[The companies] simply do not want to be responsible in any court, in any country, or in any forum...It is simple why they do not wish to defend themselves and it is because they know full well they will lose."

Flor de Maria Mendoza and her husband José Romero worked on banana plantations during the 1970s. They have four children. Two died at birth. Their 11-year old daughter, Ana Maria, was born with

physical deformities that do not allow her to walk, talk, or grasp. Ana's parents must feed her a constant supply of medicine to control her liver inflammation, frequent fevers, pneumonia, and diarrhea while Ana sits in a wheelchair, staring blankly into space.¹⁷

Cristobal Acetuno picked and bagged bananas on plantations for eight years. He is now nearly blind, often feels nauseous, has no appetite and lives with rashes on his skin and lesions on his feet. Cristobal's two sons suffer from similar ailments that require medication, and his wife, also a former banana worker, has stomach cancer. Cristobal and his wife had been mistaking the cancerous tumor in her stomach for pregnancy until one day when

she lost consciousness, she was rushed to the hospital, and underwent a nearly fatal operation that revealed her terminal disease.

Manuel Guido Montoya was unable to have the children he once hoped would ease his workload and bring home a few extra dollars. Years ago, he tried to start a family but the woman left him once she realized he was sterile.¹⁸ He says he and his co-workers were drenched in the pesticide.

*"Walking through the plantations, we breathed in the vapors, I'd get headaches, a bloody nose, stomach-aches...You put up with a lot of pain."*¹⁹



©Manuel Esquivel/La Prensa

Roberto is only one of many children suffering from physical deformities in the banana growing area of Chinandega in Nicaragua

Intoxicating Louisiana

"The plight of the poor people is the same the world over. We empathize with the Myrtle Grove residents who have been exposed to dangerous chemicals. What they're going through is a slow-motion Bhopal"

Champa Devi, Bhopal survivor, 2003

The town of Plaquemine on the banks of the Mississippi, just south of Baton Rouge is dominated by a web of chemical tanks and pipes courtesy of Dow.

Now one of the biggest chemical plants in the world, the complex was built on the site of an old sugar plantation in 1956. Known then for its clean air and good fishing, things have changed irrevocably since. Nearly everyone would say for the worse. In the 1970s the petrochemical industry moved into Louisiana and effected its transformation. Today over a hundred chemical and oil companies occupy a stretch known as 'Cancer Alley'. Dow's plant kept expanding until it was generating about ten per cent of the company's worldwide sales by the early nineties.¹

Dow's website boasts of the plethora of products made from chemicals produced in Plaquemine. Millions of pounds of polyethylene plastic are made into non-breakable bottles, computer and electronic components, automobile parts, disposable diapers, football helmets, CDs and CD players, adhesives, strengtheners for tires,

athletic shoes, hoses and cables. Its chemicals are everywhere. No wonder sales have boomed.²

Dow messes up

But with the profits came toxic waste, caustic odors and polluted water. In typical cavalier fashion, Dow simply buried waste on the Plaquemine site until 1974. Each successive layer was covered with a few feet of dirt.³ By the 1980s Dow realized its landfills were leaking and switched to incineration.⁴ This non-solution ushered in a new load of risky emission problems, the toxic wastes already dumped have haunted Dow ever since. Dow's rough estimate was that approximately 121,800 tons of chemicals were dumped in the area.⁵ Many were known to be human carcinogens, others are very toxic at low levels. Over time and out of sight 275 million pounds of toxic sludge spread outwards until it occupied a 30-acre underground area.⁶ Dow has been cleaning up the mess over the years but it seems to be a process without end. Asked how long it would take to clear up the underground contamination Dow officials have said they expected the cleanup would last "forever".⁷

A major concern was that the waste would find its way into the Plaquemine aquifer, a large underground layer of drinking water.⁸

Dow down the drain?

Today the pool of vinyl chloride contamination stretches for miles under homes, businesses, schools and playgrounds in Iberville Parish, Plaquemine.⁹ In the Myrtle Grove neighborhood, two miles from Dow's manufacturing facilities, there was poison in the well water.

Vinyl chloride is a colorless, flammable gas at normal temperatures, with a mild, sweet odor. It is a manufactured chemical that is used to make polyvinyl chloride, more commonly known as PVC plastic. PVC is used to make a variety of plastic products such as pipes, cable coating, furniture and car seats. Vinyl chloride is a known carcinogen.¹⁰ It is also a member of a group of chemicals known as ethylenes which have been found to be neurotoxins.¹¹ The EPA classifies vinyl chloride as a 'medium' cancer hazard when inhaled and has associated it with increased risk of cancer of the liver, brain, lung and digestive tract.

Intoxicating Louisiana cont

Animal testing has shown long term exposure can cause reproductive problems including miscarriage. Dow is one of the largest makers of vinyl chloride in the world.

Although the Louisiana Department of Health and Hospitals detected the vinyl chloride in the Myrtle Grove groundwater back in 1997 it failed to tell the people living there until 2001. The EPA wasn't initially informed either. At this point the Department of Health and Hospitals did help residents get access to safe water.¹² But the damage was done. For at least five years and perhaps more, approximately 300 residents were drinking, cooking, washing and swimming in well water from the Plaquemine aquifer that was known to be polluted.¹³

Locals were concerned because of the number of miscarriages. *"Me and Tammy, and Michelle, we all had miscarriages"*, resident Faye Robertson has explained. Children burned and itched from bathwater and wading pools and health experts warned the residents that exposure could cause liver damage, nerve damage, circulatory problems and skin lesions. Surprisingly however, little is known about the effects of vinyl chloride in water. Because incidents of drinking or bathing in such contaminated water are so rare, scientists are unsure just how toxic it is and no acceptable dose level has been established.¹⁴

Other health concerns among residents included mild headaches, rashes, changes in skin pigment, numbness, high blood pressure, nose bleeds, stomach problems, nausea, asthma, breast cancer, behavior problems and learning disabilities in children.¹⁵ People call the source of their ill health, *'Dow water'* and they believe the Dow Chemical plant is responsible for the contamination and their health problems.¹⁶

As a result of the contamination the trailer park has been shut down and the mobile homes dragged away. The once vibrant African American community is no more. Meanwhile Dow officials still maintain that the underground waste that has seeped out from the Plaquemine plant is contained and protected by a clay

layer and has not entered the water in the aquifer. Dow continues to maintain it is not the source of the pollution and accepts no responsibility. Dow has denied responsibility while also seeking to maintain their reputation in the community:

"Regardless of the source(s) of the contamination, Dow is part of the community, and we're committed to being part of the solution."

Dow spokeswoman, Rebecca Bentley also proudly announces that *"Tests in the aquifer underneath the plant itself showed no vinyl chloride."* Other Dow tests have apparently showed waste water from the plant flows mainly to the west and not towards the trailer park in the south-west.



©Greenpeace/Les Stone

In Louisiana today over a hundred chemical and oil companies occupy a stretch known as *'Cancer Alley'*.

But EPA tests have shown that the aquifer 190 feet below the surface flows in a south to southwest direction which would carry it directly under the trailer park. Wilma Subra, a scientist from the Louisiana Environmental Action Network agrees.

"It appears to be originating from the area where Dow has its production facilities. They produce vinyl chloride. They sell it."

She suggests that Dow's monitoring wells may be located in such a way they are missing the migrating contaminants.¹⁷ Dow plant employees also claim that for years they were instructed to clean railway cars used to transport vinyl chloride and other chemicals by filling them with water and dumping the resultant mix on the ground.¹⁸

Few think Louisiana will make Dow accountable. Dow employs too many people and has too much economic clout. After a two-year investigation, the Louisiana Department of Environmental Quality is reluctant to conclude that the contamination emanates from Dow although it does concur that Dow is the prime suspect.

In December 2003 a construction company began building a new housing development on the site of the Myrtle Grove Trailer Park – soon to be known as Iberville Trace. The first homes should be completed early in 2004. The old Myrtle Grove

residents are mostly long gone, *"It was a nice place"* said Joyce Barrett, ex-Myrtle Grove Resident ruefully.¹⁹

Myrtle Grove residents ask for justice

In 2002 over 200 current and former residents of the now closed Myrtle Grove Trailer Park in Plaquemine signed onto a lawsuit claiming Dow illegally and knowingly released vinyl chloride and other poisonous chemicals into their water.²⁰

Resident Tammy Green lived in Myrtle Grove for 19 years

She and her husband Lloyd have two children. She is also leading the Myrtle Grove Trailer Park Residents Association. In 2003, before the Park was shut down she explained to New York Times reporter, Rick Bragg how the poisoning had touched all their lives.

"Once, before the water scared them, there would have been a baby in a wading pool in almost every yard, and people washing their cars in the driveways.

And we just all went on with life, cooking with it, not knowing."

On Father's Day in 2000 she had a miscarriage, but no one had told them yet about the threat.

When she and the other women here learned about the vinyl chloride, they began to count the number of miscarriages in recent years. *"Thirteen"* she said. *"That many women on one street? Something is wrong."*

"I know I'll never try again," she said of her pregnancy. *"I'll never do that again."*

In another interview Tammy voiced the concerns of many residents: *"When are we going to get some help for us. Who is going to pay (for health screening and health problems)? I didn't contaminate myself."*

Two world class betrayals

“After being exposed to gas from Union Carbide’s factory my family and I continue to suffer from a barrage of health problems. I suffer from breathlessness, chronic headaches, loss of eyesight and I am unable to do any hard labour...our earnings are cut in half due to health problems.”

Laxmi Bai, Bhopal disaster survivor

As a result of its merger with the Union Carbide Corporation in 2001 Dow has inherited the legacy of the 1984 Bhopal gas tragedy. This is not only the world’s biggest industrial disaster to date but its physical and emotional repercussions continue to traumatize the capital of the central Indian province of Madhya Pradesh to this day.

Clearly this was a tragic inheritance for Dow, but one that gave it an opportunity to atone for the suffering Union Carbide had caused by properly compensating the victims. Instead, Dow has continued with the policy of betrayal and denial Union Carbide initiated.

The betrayal is such, that while few of us have heard of Bhopal’s spectacular eleventh century artificial lakes and impressive collection of mosques, palaces and bazaars, we are all familiar with the city’s suffering at the hands of these two companies. The failures of Union Carbide and subsequently Dow, to adequately compensate the victims of the disaster and the extraordinary lengths both have gone to in order to evade their liabilities have astounded people around the world.

The avoidable disaster

In Bhopal itself, people can’t make sense of it. Why do survivors of the explosion of up to 40 tons of methyl isocyanate (MIC) at the Union Carbide India pesticide plant on the night of the 2nd/3rd of December 1984 continue to suffer? Union Carbide located an inherently hazardous factory in a crowded area of Bhopal despite knowing that the technology was unproven and the risks unknown. It is alleged that it decided to go ahead with substandard technology in India, even when a safer technology was used at its West Virginia factory.^{1,2}

Litigation allegations against Union Carbide assert dangers found in safety audits of the Bhopal plant had not been fixed even though remedial measures were undertaken at Union Carbide’s identical MIC plant in West Virginia.³ On the night of the disaster water entered the tank containing MIC through leaking valves.⁴ The refrigeration unit, which should have kept the MIC close to zero degrees centigrade, was allegedly switched off by company officials to save on electricity bills. Safety systems which were not adequately designed to control such a runaway situation, were awaiting



The explosion at the Union Carbide factory in Bhopal in 1984 caused – and is still causing – appalling suffering, yet Dow is not willing to be held responsible in any way

in Bhopal

repair. To avoid having the community be “*unduly alarmed*” due to occasional leaks, the siren in the factory had been switched off.

Toxic hotspot contamination

Twenty years later the Union Carbide factory is desolate and overgrown, but widespread health problems continue. The explosion not only killed up to eight thousand Bhopalis in its immediate aftermath. Since the disaster, over 20,000 people have died from exposure-related illnesses. Community organizations in Bhopal put the injury figure at approximately 500,000.⁵ An estimated 120,000 remain chronically ill at least a third of whom are too ill to work for a living.⁶ The problems have been passed to children born since the disaster, the most visible of which include reproductive and physical development deficits and high rates of morbidity. Incidences of TB, respiratory disorders, cancers, infertility, panic attacks menstrual disorders and cataracts are also way above the national average. About 30 gas victims continue to die in hospitals every month. One study found growth retardation in boys who were exposed as toddlers or were born to exposed parents.⁷

At the site itself Union Carbide left behind at least five thousand tons of waste chemicals when it vacated the site four years before the Dow Chemicals merger.⁸ These chemicals lie in open sheds and warehouses.

The environmental contamination of the site has rendered the neighbourhood a dangerous place to live. Greenpeace has declared the site a “*global toxic hotspot*”.⁹ Poisons leaching from these wastes have contaminated the groundwater supplying 20,000 people. Studies have found many of these poisons in the breast milk of mothers living near the factory.¹⁰

Dow's liabilities

But despite the scale of the continuing tragedy, Union Carbide and now Dow have not been willing to be held responsible in any way. The original settlement claim of \$3 billion was reduced to \$470 million dollars in an out of court settlement negotiated between the Government of India and the company without involving the survivors. It took until 1989 for Union Carbide to pay even this. The amount worked out to approximately \$1170 for death and \$520 for lifelong injury per person. The compensation didn't address the issue of lost livelihoods and didn't even cover loans for medical bills. In total the compensation amounted to less than a tenth of the penalty against Exxon for the Valdez oil spill in Alaska – where nobody died. Dow's subsidiary, Union Carbide is an “*absconder from justice*” by the Chief Bhopal Magistrate for failing to appear before the court on criminal charges relating to the disaster.¹¹ Likewise, an extradition order has been issued

by the Indian government for Warren Anderson, former CEO of Union Carbide at the time of the disaster. He is also absconding from justice. Efforts are underway to summon Dow to deliver Union Carbide to appear in the criminal case and to have Dow clean up the Bhopal site.¹²

Since Dow absorbed Union Carbide for \$11.6 billion it has been quick to proclaim itself the world's largest chemical producer. Has it also become the world's most irresponsible? Dow, like Union Carbide before it, accepts no responsibility for the continued suffering in Bhopal. In its 2002 public report the company tells us, “*When Union Carbide Corporation became a subsidiary of The Dow Chemical Company in February 2001, the civil litigation in India had been resolved for a decade.*”¹³

Putting things more bluntly, Kathy Hunt, Dow's Public Affairs specialist, said in July of 2002 that, “*\$500 is plenty good for an Indian.*”¹⁴

Indeed, rather than accept its responsibilities Dow has taken a very combative stance. For example, in 2003 it initiated a \$10,000 lawsuit against a group of Bhopal survivors that held a peaceful protest outside the company's Mumbai headquarters, claiming damages due to lost productivity.¹⁵

Bhopal testimonies

Rashida Bee



Rashida Bee, winner of the 2004 Goldman Environmental Prize, is president of the Bhopal Gas Peedit Mahila Stationery Karmachari Sangh, a trade union of women survivors working for justice for the survivors. She has lost five gas-exposed family members to cancers since the disaster.

“Those who escaped with their lives are the unlucky ones; the lucky ones are those who died on that night.

“Dow is responsible for the toxic contamination of ground water and soil in and around the abandoned factory premises.

“The dumping of tons of chemical waste is a major health hazard and is causing all kinds of illnesses to over 20,000 area residents.

“Dow must take responsibility for cleansing the water in the locality, undertake rehabilitation of the people and ensure proper medication to two generations of sufferers.

“The compensation should directly be deposited into the gas victims’ accounts rather than be given to the Government.

“Already great injustice has been done to the people of Bhopal, who have been paid measly sums as compensation and denied their legal rights in receiving interest.”

Laxmi Bai was 24 at the time of the gas disaster

“At the time of the disaster I was living in Jai Prakash Nagar with my three kids and my husband. Jai Prakash Nagar is located right across from the factory. On the night of the disaster I was sleeping with my family and around midnight I went to urinate. I had this burning sensation in my eyes as if someone was burning chillies. I looked outside my house and all I could see was a thick cloud of smoke.

“All of us were under the blanket and we were all vomiting. We couldn’t see anything and all our eyes were swollen. Only in the morning we found out that it was the gas from the Union Carbide factory that had leaked.

“My family and I continue to suffer from barrage of health problems. I suffer from breathlessness, chronic headaches, loss of eyesight and I am unable to do any hard labor.

“My daughters suffer from chronic stomach problems; loss of appetite, headaches. There are even health problems in my grandkids. They are weak and suffer from problems of breathlessness.

“Our earnings are cut into half due to our health problems. We all merely received compensation worth Rs 25000 (US \$500) each and we have spent all of that money if not more in medical bills because we have taken loans to cover our medical costs.”

Nazeer Ahmed was 20 years old on the night of the disaster

“All my family members received compensation of Rs 25000 (US \$500) each, which was barely enough to cover our medical bills. All my siblings had to quit school because there was no money left for their education.

“Union Carbide cannot give back my father and my childhood where I was forced to work when I should have been studying. All my family and community members didn’t only suffer on the night of Dec 2nd, 1984 but they continue to suffer even after 19 years. Everyone has lost their health, their ability to work; lost their family members.

“I would like Dow Chemical Company to take its responsibility for Bhopal disaster and provide for economic rehabilitation, social support for widows and orphans, medical treatment for next two generations.”

Rubina was three years old on the night of the disaster

“The gas leak from the Carbide factory has left scars on my family and me that will never heal.

"I hold Union Carbide and now Dow Chemical fully responsible for this disaster. Union Carbide never told any of the residents living around the factory about the toxic and lethal chemicals that were being manufactured in the factory. I want Dow Chemical to assume their responsibility for Bhopal.

"I would never want anyone in this world to suffer like Bhopal gas survivors have been suffering for last 20 years. We not only have to fight to ensure justice for Bhopal, but also to ensure that there are 'No more Bhopals anywhere in the world."

Sameena Khan was 14 on the night of the disaster

"The medical treatment that started on the day of the disaster is on till date. I suffer from frequent headaches, joint pain, heartburn and breathlessness. My other family members and other people from my community also suffer from similar medical and economic problems. I lost both of my parents within two years after the disaster.

"Dow needs to assume its responsibility in cleaning up the factory premises. There are still tons of toxic waste sitting in the factory that has contaminated soil and water around the factory and about 20,000 people are affected on a daily basis. The water is polluted with mercury and mothers' breast milk now contains mercury. This is the situation of my

family and community after 20 years and it is time that Dow Chemical starts listening to us."

Sheila Devi was 43 on the night of the disaster

"After being exposed to MIC my family members have never been healthy. I suffer from breathlessness and constant pain in my joints. My husband suffered from weak eyesight and his lungs were completely destroyed.

"After struggling with several complex problems induced by gas exposure he eventually died in 1997. My daughter's kidney has been damaged due to gas exposure. My other children complain of constant pain in joints, weakness, breathlessness, diminished vision, and reproductive health problems.

"The total compensation received by my 9 family members was Rs 10,800 (US \$ 2,200) and I must have spent at least 500,000 (US \$11,500) on my family's medical treatment.

"I want Dow Chemical the new owner of Union Carbide to provide jobs to gas survivors and social support to those who are not able to work due to gas exposure. I also want Dow Chemical to release the toxicology information on MIC and all the chemicals that leaked that night so that at least we can get effective treatment."

Survivors campaign for justice

Female victims of the gas leak have launched a campaign to make sure Dow is held responsible for the disaster.

The survivors are asking Dow to:

- Ensure that the accused face trial in India,
- provide long term health care for the continuing and long-term health consequences among the exposed persons and their children,
- provide economic and social support to those have lost their ability to work or their livelihood due to gas exposure, and
- clean up the toxic wastes, contaminated material and poisoned groundwater in and around the abandoned Union Carbide factory site in Bhopal.

Dow has not only refused to clean up the factory site, it has not even provided any further information on the nature of the toxic gas so as to help with the treatment of the survivors.

The Dow in all of us

“Human milk, is the most chemically contaminated human food on the planet. Breast milk occupies one rung higher on the human food chain, than the food that adults eat...toilet deodorisers, moth-proofing agents, flame retardants, pesticides, dioxins, PCBs. These are the most common contaminants of breast milk. They are commonly found in the food, but are ten to a hundred times higher in breast milk because they are persistent and concentrate as they move up the food chain.”

Sandra Steingraber, Rachel Carson Memorial Lecture, 2003

Every person alive today has synthetic chemicals running through their veins.¹ Many of these chemicals did not even exist before WW II. A good number have been produced by Dow. Its chemicals are collecting in our fatty tissue and confusing our hormone systems. Much of our food contains pesticide residues. Other chemicals are sprayed on fields or gardens and enter the air, soil and water. So chemicals enter our bodies when we eat, breath and drink. We pick up contaminants by touching dust or earth.

In 2003 the Center for Disease Control (CDC) undertook the most extensive study to date of pesticides and industrial chemicals in the bodies of people across the US.² The scientists looked for just 116 of the thousands of chemicals in modern use and they found all 116 of these chemicals the blood and urine of the random people they tested. There are likely to be hundreds more. It is estimated that there are 700 contaminants in each of us.³ Of up to 1.2 billion pounds of pesticides used each year in the US no one knows exactly how many end up in our bodies or what the

long term effects of exposure might be. Virtually nothing is understood of how these chemicals interact with each other inside our bodies.

Scientists have already discovered potential harm from exposure to some individual chemicals ranges from reduced fertility and developmental damage in our unborn children to neurological disorders and cancers. Even exposure to miniscule amounts of some chemicals can be harmful, especially to infants and children whose bodies are developing quickly and taking in much more food, water, air and chemicals per pound of body weight than adults. The pesticide residues and other chemicals are in our food, our cosmetics and our pets' flea collars. They are in the water we drink and the air we breathe. They are even present in mothers' wombs and breast milk.⁴

Accumulating pesticides

The burden of pesticides in our bodies increases throughout our lives because of ongoing exposure to contaminated air, water and food. Dow is one of a handful of companies producing the over-

whelming majority of an estimated 940 million pesticides used in the US every year.⁵ Our exposure to its pesticides increases over the course of our lives. Some pesticides stay in our bodies for decades and are passed to the next generation. Although others are more temporary, if they are constantly used, we are constantly exposed.

For example, Dow was one of the companies that produced the notorious organochlorine insecticide, dichloro diphenyl trichloroethane (DDT).⁶ This pesticide affects the human nervous system, can cause liver damage, is carcinogenic, is a developmental/reproductive toxin and suspected endocrine disruptor.⁷ Once considered a cure-all, it was used for agricultural production around the world from the 1940s until 1973 when it was finally banned in the US. Even today it is used as an insecticide in some countries.⁸

Not only can DDT remain in the body for 50 years, residues could still be finding their way into the food chain. A recent analysis of organochlorine residues in the US food by the Pesticide Action

The implications

Network, found chemicals that have been banned for decades are showing up consistently in food samples tested by the US Food and Drug Administration. Breakdown products of DDT can remain in the soil and are easily carried on the wind and in water.⁹

Some of Dow's products, like DDT, have been banned in the US but they are still being found in the remotest regions of the planet and in most people's blood or body fat. Others cause birth defects and reproductive problems. Some cause cancer or are suspected to be mimicking and tricking hormones, causing metabolic and developmental havoc in people and wildlife around the world.¹⁰

Health activists on the chemical body burden we all share

The following extracts are from Sharyle Patton and Gary Cohen's paper, *Building the Right to Know About Chemical Body Burden and Stopping the Chemical Industry's Toxic Trespass*.¹¹

"In general the public is more aware of chemicals found in the fish they consume or the data from toxic release inventories than they know about the chemicals found in their own bodies. But there is a deep psychological significance in knowing that the tissues of one's body are being used as a chemical storage site.

"...the United Nations Human Rights Commission has recognized the right to a non-polluted environment as a basic human right. The Convention on the Rights of a Child protect the child's right to integrity of person and right to the highest possible standard of mental and physical health. By anyone's definition of basic human rights, the fact that infants are starting life with a body burden of chemicals represents a gross violation of human rights and a violation of the sacredness of life itself.

"One of the results of the Nuremburg Trials after World War II was a universal agreement that civilized nations should not engage in chemical experimentation on humans, even in times of war. Yet for the last sixty years, the chemical industry has engaged in a massive chemical experiment on the world's human population and the entire web of life.

"No one has ever given their consent for this experiment. Most people don't even know it is happening."

Sandra Steingraber on the implications of this body burden

In her book, *Having Faith: An Ecologist's Journey to Motherhood*, Steingraber reveals the alarming extent to which environmental hazards – from industrial poisons found in amniotic fluid to the toxic contamination of breast milk – now threaten each crucial stage of infant development.¹²

"If our daughter asks, 'What's a trout stream?' what will I say? Will I explain that freshwater trout are now among the most contaminated fish in America, far too poisonous for her to eat? Will I tell her that our government is willing to warn her against eating trout but reluctant to stop trout from being poisoned in the first place?"¹³

"If a mother's body is contaminated, so too is the child who inhabits it. These truths should inspire us all – mothers, fathers, grandparents, doctors, midwives, and everyone concerned about future generations – to action."¹⁴

"We need to remind everyone – friends, neighbors, and political leaders – that all toxic chemicals capable of accumulating in the human food chain will, sooner or later, reach their highest concentrations in the milk of human mothers."¹⁵

"...human milk, is the most chemically contaminated human food on the planet...Breast milk occupies one rung higher on the human food chain, than the food that adults eat...toilet deodorisers, moth-proofing agents, flame retardants, pesticides, dioxins, PCBs. These are the most common contaminants of breast milk. They are commonly found in the food, but are ten to a hundred times higher in breast milk because they are persistent and concentrate as they move up the food chain."¹⁶

Our *Dursban* burden

“Pesticides are toxic substances that should be used with great caution...By misleading consumers about the potential dangers associated with the use of their products, Dow's ads may have endangered human health and the environment by encouraging people to use their products without proper care.”

New York State Attorney General, Eliot Spitzer, December 2003

Among Dow's most poisonous legacies is the pesticide, chlorpyrifos, marketed by Dow as *Dursban* and *Lorsban*. Well-known as a home and garden insect spray, *Dursban*, was the most widely used household pesticide in the US until 2000.¹ Millions of pounds of *Lorsban* are used on agricultural products. But the ordinary people who have relied on chlorpyrifos to kill their garden pests or protect their crops have been largely unaware of the extent of its toxicity.

The pesticide is a nerve toxin and suspected endocrine disruptor with the potential to alter and interfere with the hormonal systems of insects, wildlife and people. Since the 1960s, chlorpyrifos has made thousands of people sick each year in the US.^{2,3} It causes neurological damage to children and can result in blurred vision, fatigue, muscle weakness, memory loss and depression. It has been associated with carcinogenicity, reproductive and developmental toxicity, neurotoxicity, and acute toxicity.^{4,5}

When the Center for Disease Control (CDC) specifically tracked levels of chlorpyrifos in the bodies of people across the US, its findings were ominous. Chlorpyrifos was found in 93 per cent of people tested and levels in children were twice as high as those found in adults.^{6,7}

Unhealthy profits?

By 1998 the evidence that *Dursban* can cause severe health problems was overwhelming, but not only were *Dursban* products still being sold over the counter, Dow was prepared to risk the health of 60 Nebraskans paid to be tested with the insecticide.⁸

The US Environmental Protection Agency (EPA) finally fined Dow \$732,000 in 1995 for failing to disclose reports of the adverse effects associated with *Dursban*. Even then, in the face of overwhelming evidence to the contrary, Dow continued to assert it was safe for humans. Although Dow still professes the chemical is safe, it finally and reluctantly entered into a voluntary agreement with the EPA. *Dursban* was removed from the market in over-the-counter products in 2000.⁹



BarbaraStock

Levels of chlorpyrifos have been found to be twice as high in children as in adults

Somehow, Dow has still managed to avoid an outright ban however. It is still using chlorpyrifos in the US for a limited number of domestic uses although some are being phased out. It is still used on a number of agricultural products such as cotton, almonds, alfalfa, oranges and walnuts. Up to ten million pounds of chlorpyrifos are applied annually for agricultural purposes and in California, more than two million pounds of chlorpyrifos were used in 2000.¹⁰

We can be exposed to chlorpyrifos by touching treated surfaces, breathing air near application sites and eating food contaminated with chlorpyrifos residues. These exposures take place in pesticide production plants, agricultural fields, homes schools and parks. Symptoms of exposure include excessive salivation, uncontrolled

urination, weakness, nausea, diarrhea, headaches, confusion, convulsions and respiratory paralysis.¹¹ According to the EPA, even a single application of chlorpyrifos poses risks to small mammals, birds, fish and aquatic invertebrate species for nearly all registered outdoor uses.¹²

Double standards

Even so, US citizens can count themselves lucky that at least most chlorpyrifos used around the home is being phased out. But it is one rule for the US and another rule for the rest of the world. Dow continues to produce and sell chlorpyrifos in countries in the Global South including India.

In 2003 tests conducted by the Delhi NGO Centre for Science and Environment found pesticide

residues in Indian Coca Cola and Pepsi Cola products, including chlorpyrifos in excess of EU drinking water standards.¹³ Dow also continues to market *Dursban* as a ready-to-use formulation in India where its sales literature claimed *Dursban* has "an established record of safety regarding humans and pets", uses which are banned in the US.

But even back in the USA people aren't safe from Dow's irresponsible and deceitful advertising. Dow continued to illegally advertise safety claims about *Dursban* and other pesticides. In December 2003 Attorney General Eliot Spitzer finally awarded Dow the largest pesticide enforcement penalty in U.S. history.¹⁴

Cruel profile – a selection of

Dow's impacts stretch well beyond the cases illustrated in this report. A selection of the company's other historical and current, social and environmental liabilities include:

Chemical warfare: Dow has an ignominious history of weapon production. In World War I Dow produced mustard gas. During World War II it was the leading manufacturer of Phenol, a major explosives ingredient, and during the Cold War Dow produced plutonium triggers for nuclear weapons. In addition to Agent Orange, Agent White and other defoliants used in the Vietnam war, Dow also produced napalm which consisted of benzene, gasoline and polystyrene. The jellied liquid explosive stuck to the skin, burned through muscle and bone and often killed people on contact. The unique properties of napalm were so offensive Dow became a prime target of anti-war protestors.

Asbestos: In addition to the Bhopal inheritance, Dow's merger with Union Carbide has brought with it a range of other legacies such as asbestos.¹ Carbide used asbestos for insulation in its chemical plants and marketed chrysotile asbestos for a variety of products such as floor and ceiling tiles.² Asbestos poses a serious health risk. Inhaling the fibers greatly increases the odds of contracting asbestosis, mesothelioma, lung cancer, gastrointestinal cancer and other cancers.³ EPA has called asbestos a "*highly potent carcinogen*" that

causes "*severe health effects after even short-term, high-level or longer-term, low-level exposure.*"⁴ Union Carbide has been found liable for thousands of asbestos-related illnesses and deaths.⁵ As a result, Dow has declared its potential asbestos liabilities could be up to 2.2 billion dollars.⁶

Semiconductor chemicals: Union Carbide has also been a major supplier to the semiconductor industry which uses its chemicals in the manufacturing of silicon chips for computer devices. Workers are claiming their exposure to hazardous substances is linked to a variety of cancers, miscarriages and birth defects. Union Carbide, IBM and National Semiconductor have all been named in lawsuits.⁷

Forgotten workers: The Metals Department of the American Federation of Labor – Congress of Industrial Organizations (ALF-CIO) released a report titled *Dow's Union Workers – The Forgotten Stakeholders* in 2003 that highlighted Union Workers concerns that the company's rank and file workers end up paying the price for its legal liabilities. The company's executives and board are ultimately responsible for Dow's environmental and social impacts. The report asks why then, it appears to be the workers that get laid off, whose contracts suffer and whose pay gets cut.⁸

Silicone: Another key Dow product that brought health problems in its wake is the silicone used in plastic surgery. Marketed by Dow Corning, a joint enterprise half owned by Dow, it was first used for breast implants in the early 1960s.⁹ Many implants leaked and ruptured and thousands of women alleged adverse reactions to the implants.¹⁰ A plethora of lawsuits ensued.¹¹ Dow Corning expects to emerge from bankruptcy in 2004.¹²

Genetic modification: Since Dow announced in 1998 that it would begin "*pursuing long-term, value-added growth opportunities through biotechnology*", it has been true to its word.¹³ Today, Dow, led by its subsidiary Dow AgroSciences, is a major player in the agricultural biotechnology world. Product lines include Mycogen Seeds, Bt corn and Atlas Roundup Ready soybeans. Dow is also pursuing industrial and pharmaceutical biotechnology applications.

Genetically modified (GM) crops are created when bioengineers insert one or more genes into a plant's DNA. There is worldwide concern that GM crops increase reliance on pesticides, deepen agribusiness control over farmers and undermine food security and sovereignty.¹⁴ Most biotech seeds are licensed to farmers, not sold. It then becomes illegal for farmers to engage in traditional practices such as replanting, saving, trading, sharing or breeding seeds. In its 2002 annual report Monsanto admitted

other impacts

that research and development of GM crops will result in the spreading of GM traits to non-GM crops.¹⁵

In 2002 Dow contributed nearly \$400,000 to a \$5 million advertising campaign opposing a ballot initiative that would have led to the labeling of GM foods. Dow and the other opponents spent 61 times the amount supporters of labeling were able to spend on their advertising.¹⁶

Blocking European chemical regulation: The US chemical industry, including Dow, was instrumental in persuading the Bush Administration to block the efforts of the European Union to reduce the risks of chemical exposure. According to a 2004 report from US House Representative, Henry A Waxman, *The Chemical Industry, The Bush Administration, and European Efforts to Regulate Chemicals*, Dow and the rest of the industry vigorously lobbied in opposition to draft European policy known as Registration, Evaluation, and Authorisation of Chemicals (REACH).^{17, 18}

REACH would require stricter management of chemicals depending on their risk and require companies to provide scientific data on the intrinsic properties and hazards of each substance.¹⁹ The European Commission estimates REACH could prevent between 2,200 to 4,300 occupational cancer cases per year. Health benefits of REACH could be up to \$61 billion over a 30-year period.²⁰ Dow

operated through industry trade organisations such as the American Chemistry Council to lobby against these new protective measures.²¹

No expense is spared in the lobbying game. The American Chemistry Council spent \$4.68 million lobbying in Washington in the first half of 1996 alone.²² The chemical industry is also a regular campaign contributor with access to senior Administration officials. From 1998 to 2002 Dow spent \$12,210,000 on Washington lobbying – an average of more than \$2.4 million a year.²³ As a whole the industry has given over \$21 million in campaign contributions since the start of the 2000 election cycle.²⁴

A few more pesticides: Dow's pesticide and herbicide portfolio extends well beyond the DDT, DBCP, chlorpyrifos, Agent Orange and Agent White already discussed. Dow has also produced:

- Clopyralid, a herbicide used widely on lawns and wheat crops.²⁵ This has been found at harmful levels in commercial and municipal compost in Washington, California, Pennsylvania and New Zealand.²⁶ Dow withdrew clopyralid for use on residential lawns in the US in 2002. The chemical is a potential groundwater contaminant.²⁷
- Haloxyfop, a herbicide that the EPA would not register because of concerns that it is a probable human carcinogen. This herbicide is sold throughout the world as Gallant and



Verdict.²⁸ It is just one of many pesticides that can be manufactured in the US, applied abroad and then return as residue on imported foods.²⁹

- Nuarimol, a fungicide causing cancer and birth defects in animals.³⁰ Not registered in the US but sold in Africa, Colombia, Honduras and Europe.³¹
- Oxyfluorfen, a herbicide classified by EPA as a possible human carcinogen.³²
- Telone, a soil fumigant that is also a ground water contaminant and carcinogen. One of its active ingredients, 1,3-dichloropropene produces cancer and birth defects in animals.³³
- Sulfuryl fluoride (Vikane), a fumigant used to kill termites and other pests. Restricted for extreme acute toxicity. In 2002 EPA granted Dow a three year experimental permit to use sulfuryl fluoride as a post-harvest crop fumigant on walnuts and raisins to evaluate its efficacy and safety.³⁴

Greenwash and corporate

Dow assures us: It is meeting the corporate sustainability challenge and is quick to report that it is *"among the top companies in terms of corporate sustainability in the chemical industry"* according to the Dow Jones Sustainability index.¹

The truth is: Dow has not only been polluting property and poisoning people since it was established in the 1890s – Dow continues to pollute and poison to this day.

- There are toxic concentrations of dioxin up to 80 times higher than the Michigan state criterion for 20 miles from the Dow Midland plant,²
- chlorpyrifos is in the bodies of up to 93 per cent of Americans. Dow is the primary manufacturer of chlorpyrifos. An estimated ten million pounds are still applied annually for agricultural purposes,³
- Dow is still marketing chlorpyrifos for use in over-the-counter products outside the US, and
- in Louisiana 275 million pounds of Dow's toxic sludge stretches for miles under homes, businesses, schools

and playgrounds.^{4,5}

Dow profits: Breaking through to the 'Fortune 50' in this year's magazine ranking of the largest publicly held companies, Dow came in at No. 44 with \$5 billion more in revenue than rival DuPont.⁶ Chief Executive and Chairman W. S. Stavropoulos also received a bonus of \$2.3 million in 2003.⁷

Meanwhile: As Stavropoulos and the company reap these financial gains, farmworkers suffering from DBCP poisoning, victims of the Bhopal gas disaster, Vietnamese Agent Orange survivors and Midland and Saginaw residents whose properties are contaminated with dioxins are all still waiting for appropriate financial compensation from Dow. Union Workers are also concerned that it is the company's rank and file workers who end up paying the price for its legal liabilities.

Dow aspires: *"As a multinational corporation with growth aspirations in a more complex world, we also believe that stakeholder engagement is a valuable, collaborative effort based on a mutual commitment to a shared goal - a sustainable world."*

The truth is: Dow has not engaged in meaningful dialogue with Bhopal's gas victims, DBCP poisoned farmworkers in Nicaragua or Myrtle Grove trailer park residents who drank vinyl chloride contaminated water for five years. When Dow and other companies were sued by DBCP affected workers in Nicaragua in 2002 it did not even participate in its own

trial. In India, too, Dow has taken no steps to make Carbide appear in the criminal trial ongoing against it in a Bhopal court. Dow has been swift to deny any links between its wastes and well water contamination in Myrtle Grove, Plaquemine. People in Nicaragua, Bhopal and Myrtle Grove are not impressed with Dow's talk of stakeholder engagement.

Dow reassures: *"Like other Saginaw Valley residents, we care about the health of the river."*⁸

Says Dow. In 2004 Susan Carrington, Dow's vice president and director of the company's Michigan dioxin initiative said, Dow *"is committed to stepping up and doing what is right"*, however, *"Based on everything we know, it's unlikely that anyone in this community has absorbed enough dioxin from soils to have any health effects."*⁹

The truth: If Dow is genuinely committed to stepping up and doing what is right by the Tittabawassee residents it will stop prevaricating. Dow will clean up the dioxin contamination and fund the monitoring and treatment of health implications. Dow's own studies in the 1970s showed cancer at very low levels as a result of exposure to dioxins which also can cause a wide range of non-cancer health effects including reproductive, developmental, immunological, and endocrine system disruption.^{10,11} Some levels of the Tittabawassee far exceed state safety requirements set to protect people's health. It is difficult to square these findings with

irresponsibility

Susan Carrington's confidence in the health of the community.

Dow boasts: It takes *"Responsible Care®"*, through *"a voluntary initiative within the global chemical industry to safely handle our products from inception in the research laboratory, through manufacture and distribution, to ultimate disposal, and to involve the public in our decision-making processes."*

The truth is: In addition to Dow's implication in the suffering illustrated in this report and elsewhere, Dow facilities had more accidents in the US than any other Responsible Care® company except BP between 1990 and 2003. A 2004 report from the US. Public Interest Research Group (US PIRG), *Irresponsible Care: How the Chemical Industry Fails to Protect the Public From Chemical Accidents* reveals Dow and the other chemical companies enrolled in the Responsible Care® voluntary safety program had more than 1,800 accidents a year since 1990.¹² There was also no downward trend among companies implementing Responsible Care® between 1999 and 2004.¹³

Dow empathises: *"The terrible tragedy that occurred in Bhopal more than 18 years ago should never be forgotten. Industry, including Dow, has learned from such events and we try to do all we can to assure that similar events never happen again."*¹⁴

But as far as Dow is concerned, *"All responsibility related to the Bhopal accident has been fully and fairly*

resolved."

The truth: Eighteen members of Congress sent a letter to Dow in July 2003 condemning the corporation for *"refusing to address"* its liabilities associated with the Bhopal gas disaster. The letter states, *"It is disheartening to note that a company such as Dow, who professes to lead the chemical industry towards 'responsible care' shies away from its obligations when truly responsible care can be demonstrated."* *"More disturbing is the manner in which Union Carbide and Dow Chemical have ignored the summons of the Bhopal court. This exposes a blatant disregard for the law."*¹⁵

William S. Stavropoulos Chairman and Chief Executive Officer pronounces: *"While the Codes of Practice may vary from country to country, the spirit of Responsible Care is the same: to protect people and the environment."*¹⁶

The truth: Dow's historical track-record and current failures suggest it is swift to profit from the differences between countries' ability to protect their citizens' health. Dow continued to ship DBCP around the world years after it was banned in the US. It still markets chlorpyrifos for domestic use in India, a practice discontinued in the US. Dow's out-of-court settlements for Bhopalis and Nicaraguans suffering from the aftermath of the gas explosion and DBCP poisoning do not even cover medical costs. Populations everywhere should be protected from Dow's poisons.

Poorer countries or those with weaker legislation shouldn't be any exception.

Dow says it delivers valued products: *"Our materials play a critical role in meeting the world's needs for pure water. FilmTec membranes are used to tap into previously unusable water sources to make safe affordable drinking water around the world."*¹⁷

The truth: At the abandoned Union Carbide factory in Bhopal, volatile organic compounds have been seeping into the water that supplies about 20,000 people for at least 20 years. Some Tittabawassee River fish are too contaminated to be eaten. People were drinking vinyl chloride contaminated water in Louisiana for at least five years without being informed of the contamination. The source of the poison is still unidentified although a Dow facility is an alleged source. In Vietnam people are still suffering from the effects of severe dioxin poisoning because they had no alternative but to drink water contaminated with Agent Orange. People living and working on banana plantations around the world have been at risk of drinking DBCP pesticide contaminated water. CDC studies suggest we are all at risk of drinking water contaminated with pesticides or synthetic chemicals due to the widespread contamination of groundwater.

Conclusion

Dow spends millions on its marketing and PR and employs some of the world's leading public relations agencies such as Ketchum Inc. It produces a glossy and reassuring Global Public Report and a plethora of regionally focused Public Reports around the world. Dow's chairman, President and Chief Executive Officer, William S. Stavropoulos, is quick to boast of Dow's values and its high standards of environmental stewardship, and corporate social responsibility.

Through campaign contributions, at conferences, in lobby groups and through targeted donations Dow makes sure it isn't adequately regulated and doesn't pay compensation commensurate to the suffering it has caused. Through its PR Dow attempts to detract attention from its poisonous legacies. Through financial

contributions Dow has sought to evade transparency. By conducting in-house research, participating in university research and donating thousands of dollars aimed at funding research studies that will further their business, Dow ensures its own world view prevails.

The ordinary people featured in this report urge William S. Stavropoulos and the other senior executives at Dow to spend less time on the lobbying, advertising and influencing science and more time making a difference where it matters most - cleaning up its poisons, reforming its product line, and compensating the victims of its toxic legacies.

Dow's to do list

- Dow must stop producing chemicals and chemical products, and stop chemical processes that jeopardize health or the environment,
- Dow must stop producing persistent organic pollutants or products which create POPs in their life cycle, and stop selling products that are known to cause cancer, birth defects and/or genetic damage, and those that disrupt hormonal messaging, cause developmental changes or diminish intelligence,
- Dow must not launch any new product until all its toxicological and ecological effects have been thoroughly investigated and made public,
- Dow must not produce or sell products anywhere else in the world which are banned in the US. Specifically Dow must stop all sales of chlorpyrifos in other countries for uses prohibited in the US,
- in Michigan Dow must dredge and clean up the dioxin contaminated Tittabawassee floodplain and surrounding areas, set up a fund to monitor and treat the health implications of the contamination and adequately compensate residents for falling property values,
- Dow must take responsibility for the continuing tragedy in Bhopal. Dow must ensure that the accused face trial in India, provide long term health care for the continuing health consequences among the exposed, provide economic and social support to those that have lost their ability to work or their livelihoods due to gas exposure, clean up the poison that contaminates the ground water and soil in and around the abandoned Union Carbide factory and provide relevant information on the nature of the toxic gas to help with the treatment of survivors.
- in Plaquemine, Louisiana Dow must clean up all the toxic waste it is responsible for and compensate the people poisoned by its toxic wastes as appropriate,
- Dow must stop evading justice in Nicaragua and pay compensation to Nicaraguan workers and their families suffering from its DBCP poisoning, and
- Dow must address the damage it has caused in Vietnam and adequately compensate the Vietnamese victims of Agent Orange contamination and Vietnam veterans seeking redress for health effects associated with Agent Orange exposure.

Want to know more?

More about Agent Orange and Vietnam's trauma

The Britain-Vietnam Friendship Society has initiated a petition to the US Government. In March 2004 more than 4,000 concerned people from around the world had put their signatures to the petition demonstrating the global reach of solidarity and sympathy with the Agent Orange sufferers. The petition can be signed at www.petitiononline.com/AOVN/petition.html

The Vietnam Association of Agent Orange Victims may be contacted at Hanoi, str, Linh Lan, 11/41 Vietnam

More information on the Tittabawassee River contamination

Tittabawassee River Watch (TRW)
An organization of concerned property owners along the river promoting the protection of their homes, health, and river from the effects of Dow's dioxin contamination:
www.trwnews.net

Lone Tree Council

A community-based, environmental organization. The group works toward cleaner air, water and soil in the Saginaw Valley.

The Ecology Center (EC)

A membership-based, non-profit environmental organization based in Ann Arbor, Michigan. The Center is

a regional leader in the struggle for clean air, safe water, healthy communities, and environmental justice.
www.ecocenter.org/healthdow.shtml

Michigan Department of Environmental Quality (DEQ)

Information on dioxins in Michigan.
www.michigan.gov

Michigan Department of Community Health

More information on dioxins in Michigan.
www.michigan.gov

DioxinSpin

Established to gather and share information about the many issues associated with dioxin contamination in Midland and in the adjacent Tittabawassee River. David Lindhardt, A former Dow Chemical Engineer with 28 years of tenure, has created this web site.
www.dioxinspin.com

The Center for Health, Environment and Justice (CHEJ)

Coordinates the Alliance for Safe Alternatives a national campaign to eliminate persistent toxic chemicals such as dioxin. The campaign is made up of over 500 groups, including farmers, environmental justice groups, faith-based groups, public health advocates, Vietnam Veterans, scientists, and community leaders all working to get persistent chemicals out of our air, soil, water and food.
www.chej.org/

Scorecard

A source of free and easily accessible local environmental information. Type in a zip code to learn about environmental issues in your community. Scorecard ranks and compares the pollution situation in areas across the US. Scorecard also profiles 6,800 chemicals, making it easy to find out where they are used and how hazardous they are.
www.scorecard.org

More information on DBCP, bananas, multinationals and Central America

The Nicaragua Network

Is committed to social and economic justice for Nicaragua, Latin America and the world, based on respect for sovereignty and self-determination. The Network advocates for sound US foreign policies that respect human rights and international law. The Nicaragua Network provides information and organizing tools to a network of 200 solidarity, sister city, and peace and justice committees across the US.
www.nicanet.org

US/Labour Education in the Americas Project (US/LEAP)

Is an independent organization that supports economic justice and basic rights for workers in Central America, Colombia, the Dominican Republic, Ecuador, and Mexico. Focuses on the struggles of workers who are employed directly or indirectly by US companies.
www.usleap.org

Want to know more cont

Bananalink

A UK organisation working alleviate poverty and prevent further environmental degradation in banana exporting communities, Bananalink is working towards a sustainable banana economy. It aims to achieve this by working co-operatively with partners in Latin America, the Caribbean, West Africa and the Philippines and with a network of European and North American organisations.
www.bananalink.org.uk

More information on Dow, Union Carbide and the ongoing tragedy of Bhopal

International Campaign for Justice in Bhopal (ICJB)

An umbrella organisation of groups and individuals who have joined forces to campaign for justice for the gas survivors of Bhopal. Spearheaded by survivor groups and long-time supporters.
www.bhopal.net

The Sambhavna Trust

Run by a group of eight doctors, scientists, writers and social workers involved with various aspects of the Union Carbide disaster ever since its occurrence in December 1984.
www.bhopal.org

Students for Bhopal

A national network of students campaigning for the victims of the Bhopal disaster, the world's worst industrial tragedy.
www.studentsforbhopal.org

Greenpeace International

Toxic Hotspots campaign – featuring Bhopal
www.greenpeace.org/international_en/campaigns/intro?campaign%5fid=3991

Union Carbide Corporate Profile

Profile of Union Carbide including a list of major spills, a corporate history and executive compensation.
www.endgame.org/carbide.html

More information on our chemical body burden

Centers for Disease Control

Second National Report on Human Exposure to Environmental Chemicals

The second in a series of publications that provide an ongoing assessment of the exposure of the US population to environmental chemicals using biomonitoring. Biomonitoring is the assessment of human exposure to chemicals by measuring the chemicals or their metabolites in human specimens such as blood or urine.
www.cdc.gov/exposurereport

Chemical Body Burden

More information about the chemical body burden we all carry and its health effects - known and unknown from Coming Clean, a network of groups and individuals whose common goal is to work together on chemical policies and campaigns to protect public health and the environment from exposures to harmful and unstudied chemicals.
www.chemicalbodyburden.org

The Sandra Steingraber website

Has resources on chemicals and reproduction including breastfeeding.
www.steingraber.com/

More about chlorpyrifos

Pesticide Action Network North America (PANNA)

Dow Chemical, overview including information on *Dursban*.
www.panna.org/resources/documents/dow.pdf

Pesticide Action Network (PAN) Pesticides Database

PAN North America's pesticide database allows you to search for toxicity, regulatory and other information by chemical or product.
www.pesticideinfo.org

Center for Disease Control

Second National Report on Human Exposure to Environmental Chemicals

The second in a series of publications providing an ongoing assessment of the exposure of the US population to environmental chemicals, using biomonitoring.
www.cdc.gov/exposurereport

Dow Chemical. A rap sheet

More information about Dow Chemical and *Dursban*:
www.bhopal.net/gda/dow%20-%20rapsheet%20final.doc

Agency for Toxic Substances and Disease Registry (ATSDR)

Agency of the U.S. Department of Health and Human Services provides information to prevent harmful exposures and disease related to toxic substances. Its fact sheet on chlorpyrifos is at:
www.atsdr.cdc.gov/tfacts84.html

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