

Chemical Hazards in Your Backyard

*Do Your First Responders Have the
Information They Need in an Emergency?*



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Executive Summary

As the second anniversary of the West, Texas fertilizer plant explosion nears, this report asks the question that haunted the community in the aftermath of the tragedy: why didn't the people who arrived to help fight the fire know that extremely flammable and explosive materials were inside? Ten volunteer firefighters who rushed toward the fire were among the 15 killed in the explosion that followed. In addition to the deaths, the explosion destroyed three schools, a nursing home, and 37 city blocks, and over 200 people were injured. But it seems that neither the firefighters nor the town officials who approved the school sitings fully understood the risks the fertilizer storage facility presented.

Congress passed a law almost three decades ago that was designed to ensure that local communities are fully aware of hazardous substances near them and that emergency personnel know what to do in the event of a disaster like West, Texas. A few years later, an additional law required more reporting and planning. But local communities in many areas of the country still seem unaware and unprepared to deal with emergencies. As the number of individual chemical facilities increases and population centers expand, as plants age and inspection funds decline, the number of individual Americans at risk from toxic emissions, leaks, and explosions will grow.

Local communities in many areas of the country still seem unaware and unprepared to deal with chemical emergencies.

This report examines the chemical reporting to states that occurs under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), using a sample of six states, and the reporting established under the 1990 Clean Air Act amendments, called the federal Risk Management Program.

EPCRA requires all facilities that produce, store, or use substantial quantities of hazardous substances to provide an inventory of the names and amounts to a state oversight body under a program known as "Tier II"; the state agency then sends the information to a State Emergency



As the number of chemical facilities increases and population centers expand, as plants age and inspection funds decline, the number of individual Americans at risk from toxic emissions, leaks, and explosions will grow.

Response Commission, which in turn sends it to Local Emergency Planning Committees. These local committees develop community response plans with local first responders. It's a multi-step, decentralized system.

The 1990 law directs chemical facilities to report quantities of 140 extremely dangerous chemicals to the federal Environmental Protection Agency (EPA) and to submit a detailed "risk management plan" outlining how a catastrophe would be handled. Facility management is supposed to share the plan with local emergency personnel.

Both approaches are inadequate and incomplete.

Key Findings

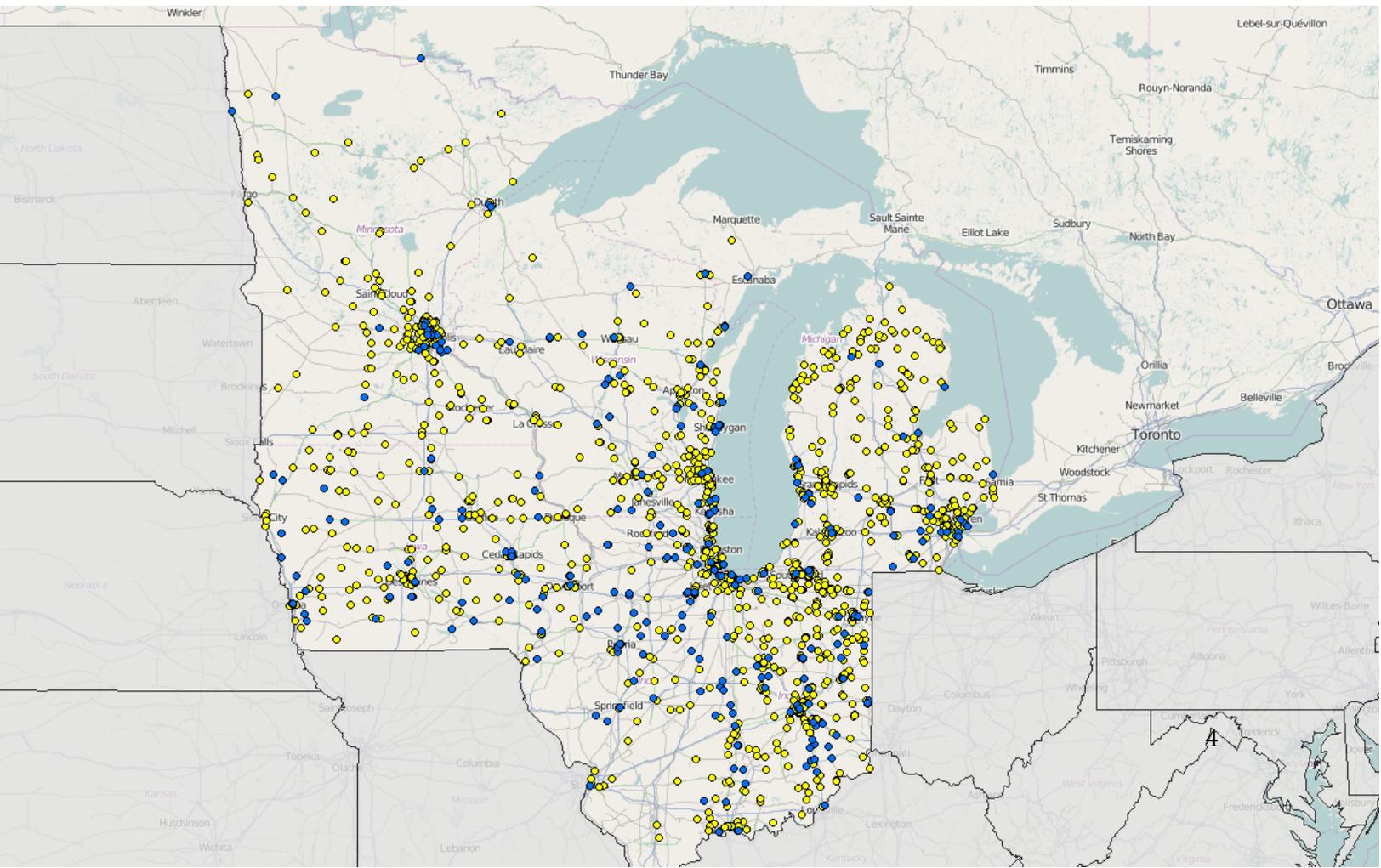
- **Access to state data on hazardous chemicals is difficult for the public to obtain in many states.** We were able to acquire the full hazardous chemical inventory that facilities report to state authorities under EPCRA for only five out of 50 states; we received partial inventories from five others. Only Illinois makes the full data available online. Texas does not release chemical information to the public at all, and Nevada refused our information request for dubious reasons.
- **In examining the chemical data reported to six states (Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin), we found nine very hazardous chemicals in common use in large quantities. In just these six states, 1,724 facilities kept over 600 million pounds of these nine highly toxic, flammable, or explosive chemicals on their premises.** The risks from these chemicals are significant. But because they are not included on EPA's Risk Management Program list, these facilities do not have to file detailed safety and risk assessments for these chemicals with the federal government.
- **In these six states, 3,161 facilities report to EPA because they have such large quantities of the 140 very hazardous substances that the agency tracks under the Risk Management Program.** These facilities must produce and send in risk management plans every five years because of the presence of these chemicals. But the risk management plans submitted to the federal government do not have to note or take into account dangerous chemicals that fall outside of the program's narrow list. (For example, at West, Texas, the risk management plan did not mention that tons of ammonium nitrate were at the site (it is not on the EPA list), though it did note that anhydrous ammonia was being stored there. If the anhydrous ammonia tanks would have ruptured in the explosion, a poisonous cloud could have enveloped the town.)

The Center for Effective Government has created [an interactive map](#) showing the facilities that report to the federal program and those with large quantities of the nine common hazardous chemicals that report only to state programs. Surprisingly, only about 15 percent of the facilities

with these nine toxins at the state level report to the federal program for highly hazardous chemicals.

Of course, the reason the data is important is because emergency responders and community residents need to understand what kinds of materials are involved in leaks, fires, and explosions and be prepared to respond appropriately. Under EPCRA, the information is supposed to be shared with local emergency planning committees (LEPCs). However, we found a surprising lack of reliable information on how LEPCs are operating.

Across the country, the ability of LEPCs to use data, update it regularly, and communicate effectively with residents appears uneven and haphazard. The most recent EPA survey of local committees across the country was conducted in 2008 and had a response rate of only 40 percent. Moreover, the local community plans focus on responding to an event *after the fact*, rather than reviewing or addressing chemical control equipment at the facilities that could *prevent* accidents.



Recommendations

- **Make state chemical reports (Tier II) available online.** EPCRA was passed in 1986 before the Internet became ubiquitous. If states posted this information online so it is easily accessible, it could encourage more citizens to participate in emergency planning and would provide first responders and residents a place to find information quickly and efficiently when an incident occurs. The events around the fire and toxic release that occurred in Richmond, California in 2012 demonstrate the confusion that can occur when there is not an easy-to-use, centralized source of information available to all.
- **Improve local emergency planning.** States can combine data from EPCRA Tier II reports and the federal Risk Management Program with advanced GIS software to target resources toward the communities with the greatest vulnerability to chemical threats – from all hazardous chemicals. We assume they will share this information and resources with fire departments, hospitals, and other first responders to prepare for accidents. States should also encourage local committees to ask local facility managers to reduce the amount of hazardous chemicals used or stored onsite and to use modern safety processes.
- **Conduct a new survey of Local Emergency Planning Committees to test their knowledge and identify needs.** A new study by EPA could identify best practices for emergency planning personnel and inform future guidance documents.
- **Add all highly hazardous chemicals to the Risk Management Program's list.** This six-state study easily identified chemicals with significant health and safety risks missing from the federal Risk Management Program (RMP). The advantage of the risk management plan requirements is that they force facilities handling dangerous chemicals to stop and assess their controls and processes and think carefully about risks every five years. No facility with highly dangerous chemicals should be exempt from this exercise. EPA should work with state agencies to collect and merge their Tier II records into a national database and then identify all toxic, flammable, and volatile chemicals that should be added to the federal list.

- **Put EPA Risk Management Program data online.** EPA does not post Risk Management Program information online. If it did, it would make it easier for first responders, local officials, residents, researchers, and others to have a complete picture of chemical risks when developing emergency plans.

As new scientific evidence shows the serious health risks from chronic and multiple chemical exposures, we need better reporting systems and more efficient dissemination of chemical information to the emergency personnel who use it. More centralized data collection and dissemination is a first step. Centralized management of the information about all toxic chemicals would also allow us to conduct more research on long-term and regional risks from exposure, to better prepare for incidents, and to track progress as the chemical industry establishes safer industrial production processes and shifts to safer chemical alternatives.

A Community's Right to Protect Itself

America has been slow to deal with the public health and environmental impacts of chemical risks. The Clean Air Act of 1963 was not passed until residents of some cities were choking on industrial emissions and lead from automobile exhaust. The toxic releases into the Cuyahoga River in Ohio ignited a fire before the Clean Water Act was passed in 1972.

Oversight of chemical facilities was hard-fought until a deadly gas release at a pesticide factory near Bhopal, India took the lives of thousands and the sight and health of tens of thousands more. Union Carbide had a second plant manufacturing that particular chemical – in the Kanawha Valley in West Virginia. After the Bhopal incident, it closed down the West Virginia factory and “modernized” its equipment. A few months after it re-opened, some of the same gas leaked out, sending 134 West Virginians to the hospital. A chemical accident in Romeoville, Illinois the same year as Bhopal killed 17 people, and a research study released around this time estimated that more than 6,000 serious chemical accidents had occurred in the previous five years.¹ Americans were anxious about the chemicals in nearby factories and wanted to understand and reduce the risks of industrial accidents and emissions.

The law that emerged after months of debate, the Emergency Planning and Community Right-to-Know Act of 1986, focused on information gathering and community preparedness. The law created the Toxics Release Inventory and required industrial production and storage facilities to report on the amount of toxins released to land, air, and water to the Environmental Protection Agency (EPA). Simply because their pollution was on display for all to see in a centralized public database, some companies significantly reduced their toxic emissions. In fact, the industry sectors included in the TRI program have reduced their toxic emissions by 70 percent. Adding new chemicals and industries to the public inventory seems to result in lower levels of toxic emissions.²

In addition to the Toxics Release Inventory, EPCRA established the *Tier II Emergency and Hazardous Chemical Inventory*. Industrial facilities that store chemicals and other hazardous substances above a certain threshold (usually 10,000 pounds, though for more dangerous chemicals, it can be just 10 pounds) must report the chemical names and quantities to designated

state agencies.³ This information is submitted annually and is supposed to be shared with local emergency planning committees and first responders via a State Emergency Response Commission and Local Emergency Planning Committees. The program covers approximately 500,000 different substances, from very toxic chemicals to more benign substances like sand and cement powder that can be hazardous in certain situations. (Sand or cement powder can be dangerous to the human respiratory system and asphyxiate people if a large cloud envelopes them.)

A few years later, Congress passed the Clean Air Act Amendments of 1990, which included provisions to create the *Risk Management Program* (RMP) administered by EPA. RMP requires facilities using 140 specified hazardous substances above a designated threshold (usually 10,000 pounds) to (a) report information on chemical names and quantities to EPA, and (b) create a risk management plan that includes an analysis of the areas at risk from a potential chemical incident. This information must be updated every five years. The 140 chemicals are included in RMP because they are airborne toxins and/or flammable, and an industrial accident involving these chemicals could potentially affect communities far beyond a facility's fence line.

The inventory of Tier II substances is reported to states, and risk management plans for 140 chemicals are submitted to the federal EPA. **Under Tier II reporting**, the facility provides the state with a complete inventory, but **the onus is state and local emergency planning committees to determine the risks they pose and the appropriate community response.**

Under the federal reporting requirement, management at the facility has to estimate the risks to the community, but no public authority ensures the information gets to local emergency personnel. This complicates efforts to understand the scope of chemical risks associated with a particular facility. For example, the West fertilizer plant's risk management plan included information on anhydrous ammonia (an RMP chemical) but did not indicate there was a flammable or explosive hazard – because ammonium nitrate is not reported to RMP. But accidents and chemical risks don't distinguish between programs and reporting requirements.

Both programs are focused on gathering information about toxic chemicals but do not require facilities to reduce the amount of toxic substances produced or used onsite. The focus is on community *response*, not on prevention.

How Is the Dual Reporting System Working?

We set out to examine the scope of coverage between the Tier II substances and the 140 chemicals on the RMP list. We began by requesting Tier II data from the appropriate authorities in each state. (See Appendix Table A.) The majority rejected our public records requests for full copies of their databases. Alaska only allows the public to view Tier II records in person. Idaho, Ohio, and several other states require requestors to name the facilities they want Tier II records for (an impossible task if you don't already know what Tier II facilities are in your state or community). Nevada flat-out denied our request, stating that our need was not justified and that dissemination may threaten homeland security. Several states charged fees to get copies of records. The governor of Texas (when he was still the state's attorney general) announced that this data will not be made available to the public – a strange fate for information collected under a law with the words “Community Right-to-Know” in its name. Nineteen state authorities simply failed to respond to our requests.

Table 1. Summary of How States Responded to Our Records Requests

Records Available Online	1
Fulfilled Request	9
Must Name Specific Facilities in Request	9
Records Must Be Viewed in Person	2
Charges Fees (so did not pursue)	2
Contact EPA Offices	1
Must Live Near Facility	1
No E-mail Requests	1
No Response or Request Denied	23
Will Not Release Tier II Data to Public	1

During this first round of requests, full Tier II data was obtained from only five states (Illinois, Minnesota, Oregon, Washington, and Wisconsin)⁴ for the last available reporting year (2012).⁵

From this, we identified the 100 most commonly reported substances (see Appendix Table D for a table of these substances) and then identified nine of the most common chemicals that are extremely hazardous – they are highly toxic and/or flammable. Having narrowed the request, we sent a more specific information request to 10 states and received information from Arkansas, Indiana, Iowa, Michigan, and Utah. We decided to focus our analysis on six contiguous states in the Upper Midwest – Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin.

Nine Common Tier II Chemicals that Pose Toxic, Fire, or Explosion Risks Do Not Trigger a Risk Management Plan

This report examines nine common hazardous Tier II chemicals that are not reported to the federal Risk Management Program, so facilities are not required to conduct or file a risk management plan for these chemicals. Yet, each of these chemicals poses significant health and safety risks (see Table 2 for a summary).

Table 2: Nine Hazardous Tier II Chemicals and Their Properties

Chemical	Industrial Uses	Short-Term Exposure Effects	Why We Chose It
Acetone	Plastics manufacturing; chemical solvent	Respiratory issues; nausea; loss of consciousness	Toxic, Flammable, ⁶ Volatile ⁷
Calcium Hypochlorite	Bleaching agent; water disinfectant	Corrosive to skin, eyes, and respiratory tract	Toxic, Unstable ⁸
Dimethoate	Chemical insecticide	Nervous system disruption; respiratory issues	Toxic, Flammable, Unstable
Fluosilicic Acid	Water fluoridation; chemical intermediate	Corrosive to skin, eyes, and respiratory tract; fluid buildup in lungs	Toxic, Volatile
Methanol	Motor fuel; chemical feedstock	Skin/eye irritation; nervous system disruption; blindness	Toxic, Flammable, Volatile
Phenol	Phenolic resins manufacturing	Skin burns; fluid buildup in lungs; loss of consciousness	Toxic, Flammable
Styrene	Manufacturing plastics and polyester resins	Eyes, nose, and throat irritation; nervous system disruption	Toxic, Flammable, Volatile, Unstable
Toluene	Fuel additive; chemical feedstock	Asphyxiation; nervous system disruption	Toxic, Flammable, Volatile
Xylenes	Fuel additive; chemical solvent	Skin and eye irritation; neurological and respiratory disruption	Toxic, Flammable, Volatile

Sources: U.S. Centers for Disease Control and Prevention; U.S. National Library of Medicine; U.S. Environmental Protection Agency; Toxipedia

Even short-term contact with most of these chemicals can burn skin and eyes, and inhaling vapors can lead to respiratory failure, loss of consciousness, and death. They would clearly represent serious health risks to anyone in the area should leaks, releases, or other disasters occur.

They are also hazardous to store. Seven out of nine are flammable, easily igniting when exposed to an open flame. Most are highly volatile, meaning they have a greater tendency to vaporize (change from a liquid to a vapor) than non-volatile chemicals. Vaporization can release toxic or flammable gases, which have caused countless industrial accidents.⁹

Two of the chemicals are unstable, meaning they can decompose under certain conditions to form toxic or explosive mixtures:

- Calcium hypochlorite can explode on contact with combustible materials like wood or oil, and it can form deadly chlorine gas when exposed to moisture.¹⁰
- Styrene can produce explosive vapors when heated above 87.8 degrees Fahrenheit. In one industrial accident, a worker removed the lid from a barrel of styrene, creating friction that ignited the chemical vapors and created a fatal explosion.¹¹

These nine chemicals are widely used in everything from manufacturing to farming to swimming pool sanitation. Facilities store thousands to millions of pounds of these chemicals, yet none trigger an independent risk management plan by management, nor do they have to be discussed if a facility is producing a plan for EPA related to an RMP chemical.

Over 632 Million Pounds of Toxic Chemicals Only Reported to State Agencies

The facilities using these dangerous chemicals are not storing trivial amounts. In just these six states, facilities are storing over 632 million pounds of toxic and flammable substances. (See Table 3.)

Table 3: Total Number of Facilities Reporting Nine Hazardous Chemicals, with Total Amounts, in Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin

Chemical	Facilities Reporting Chemical to State	Total Amount Reported by All Facilities, in Pounds ¹²
Acetone	266	44,128,906
Calcium Hypochlorite	77	1,454,686
Dimethoate	157	738,489
Fluosilicic Acid	323	6,550,299
Methanol	595	56,592,613
Phenol	121	36,179,354
Styrene	169	41,702,181
Toluene	282	130,138,955
Xylenes	304	314,789,600
Total	1,724¹³	632,275,082

Source: Tier II records from the 2012 reporting year

These chemicals pose serious risks to any communities near facilities that use large amounts. Phenol is one of the most dangerous chemicals we looked at and is included in EPA's "List of Extremely Hazardous Substances."¹⁴ (Dimethoate is also on this list.) Phenol is extremely flammable and can form explosive vapors when heated above 174 degrees Fahrenheit, making it dangerous to store. If phenol were released into a community, anyone that came into contact

with the chemical could suffer skin burns, difficulty breathing, and even numbness or unconsciousness.¹⁵

Xylenes are also extremely flammable and can ignite when exposed to heat, sparks, or an open flame. They are volatile, capable of forming explosive vapors that can travel to an ignition source. This makes them hazardous to store and puts workers and communities at risk. Exposure to these extremely toxic chemicals can cause fluid buildup in the lungs, unconsciousness, or even death.¹⁶

The amount of these toxic chemicals used at most of these facilities would trigger involvement in the Risk Management Program and the creation of a detailed plan to consider the accident prevention technologies used onsite and to communicate with local emergency officials – if the chemicals were among EPA’s 140 RMP chemicals. About 15 percent of the facilities we examined also store a chemical on the RMP list, so they file risk management plans with EPA (though they do not include any of the nine chemicals listed above).

In these six states, 85 percent of the facilities with nine highly toxic chemicals in large quantities (1,471 facilities) do not report any risk management plan to the federal EPA. Currently, the Risk Management Program requires 3,161 facilities in the six states – storing nearly 9 billion pounds of RMP chemicals – to file such plans. So, at least one third of the facilities that store hazardous chemicals in these states are not required to produce risk management plans.

Producing a risk management plan requires facilities to outline their *prevention* programs, equipment used to contain and control the chemicals, their emergency response plans, and procedures for informing emergency response teams during an incident. Facilities must also indicate the date of their most recent inspection and include an accident history. Finally, they engage in an offsite analysis to determine potential impacts to the surrounding community from the release of its largest container of the targeted chemical. In sum, reporting to EPA requires more analysis and produces much more information outlining the true risks for a community than sending in an annual inventory of all the chemicals onsite.

This detailed information is made available to local emergency planners and can help them prepare realistic response plans. The process of collecting and reporting this information also

helps facility managers to identify gaps in their prevention programs. Almost 1,500 of the facilities with the very toxic chemicals we've identified do not engage in these activities, and surrounding communities lose out as a result.

On the other side of the equation, facilities that report to EPA and do not include toxic Tier II chemicals in their risk management plans are providing an incomplete picture of the true risks to local communities. A facility can develop a detailed plan to address toxic chemicals like chlorine gas, but if it doesn't consider the risks associated with flammable and explosive chemicals like toluene or ammonium nitrate stored nearby, it won't be complete.

A Dow Chemical Company facility in Channahon, Illinois reports to both Tier II and RMP. Its risk management plan lists one RMP chemical: 35,000 pounds of propylene oxide, a toxic substance that is damaging to the eyes, skin, and respiratory system. The plan does not outline any flammable risks. However, the facility's Tier II report indicates that it stores up to *30 million pounds* of highly flammable styrene. Because of this, firefighters responding to an emergency at this plant may not be fully equipped for such a significant danger – much like what happened in West, Texas. Time is of the essence during an emergency, and firefighters, emergency medical technicians, and other first responders need quick access to risk management plans outlining *all* the hazards they are facing.

If the plan is incomplete, first responders and the community may not be fully prepared to respond to an accident or release involving a non-RMP chemical. This appears to be what happened at West Fertilizer.

But won't the State Emergency Response Commission and Local Emergency Planning Committees required by EPCRA ensure adequate emergency personnel are prepared to deal with hazards that are only reported to state authorities?

Technically, EPCRA does not require states to proactively release information to the public – just to emergency personnel in local communities. The program only requires that relevant state agencies and LEPCs be responsive to requests for information from the public. The request

process can often be so cumbersome and confusing that the public essentially can't access the information. So in practice, the law becomes an "emergency personnel right-to-know" policy.

Some states have become highly resistant to calls to make chemical information public because of "terrorism threats." But the track record of incidents over the past 14 years has shown that ignorance of risks is a greater threat to communities and first responders than sabotage.

For the current system to be effective, information must flow quickly and efficiently from the reporting facilities, to the State Emergency Response Committees, to the Local Emergency Planning Committees (to develop a response plan based on the data), and finally to local firefighters, hospitals, and police so they can be prepared to implement it. It also requires that the local committees are staffed with technically knowledgeable individuals. This is a tall order. We have little evidence that this decentralized, multi-step, complicated structure serves the public well.

Surprisingly little information on the performance of the local planning committees exists, itself a bad sign. We found three surveys, all dated.¹⁷ The first, conducted just eight years after the law was established, had the best response rate: 80 percent of a weighted random sample of local planning committees. It concluded that 77 percent were "functioning" – i.e., had staff and conducted formal meetings; 81 percent had completed a plan and submitted it to the state commission, but over half failed to publish a notice in the newspaper letting community residents know the emergency plans were available. But the most telling finding was this: **62 percent of the local planning committees reported having to use their emergency plan at least once in the last eight years because of a chemical incident.**

The ability of Local Emergency Planning Committees to analyze data to create response plans, update them quickly to reflect changes at the local sites, communicate these plans clearly to first responders and ensure they have adequate training, and ensure residents know what to do in an emergency seems questionable at best. The most recent EPA survey of local committees across the country, completed in 2008, had a response rate of only 40 percent, and almost 10 percent responded that they hadn't convened in over a year.

Looking at the six State Emergency Response Commissions, a cursory examination of their websites shows recent activity among three – Indiana, Iowa, and Michigan.

What Can Be Done to Accurately Assess Chemical Risks and Reduce Them?

This report examines nine very serious chemical hazards in just one region of the country that are not reported to EPA's Risk Management Program. We expect similar reviews of other regions and/or specific industry sectors would uncover additional hazardous chemicals that are not included on the EPA list. For example, an analysis of Gulf Coast states involved in petroleum refining would produce a different list of very toxic chemicals. New Jersey and New York would likely produce more.

But given the reluctance of most states to share their hazardous chemical inventory reports, the federal government may be the only entity able to compile, compare, and develop new high-priority chemicals of concern. It is disappointing that the Emergency Planning and Community Right-to-Know Act does not specifically direct states to make this information more freely available to the general public or the media. While local officials are required to notify the public that an emergency plan is available for public review (based on the chemical inventories that facilities produce), in practice, they can restrict public access to both the plan and the data. We think this is counterproductive, undermining the ability of first responders to do their jobs safely and reducing community preparedness.

Here are positive actions states can take to improve the flow of information and advance community preparedness:

- **Make Tier II chemical inventory records available online.** EPCRA was passed before the Internet and websites became the way most people look for information. Having an accessible website that explains to people what chemicals are in use in facilities near them and what the community response should be in the event of a disaster will save time, money, and expand community awareness. It is just common sense.

Moreover, public records are likely to yield another positive good: when their use of dangerous chemicals becomes more widely known, **chemical companies have an**

incentive to voluntarily shift to safer chemical alternatives and/or to reduce the amount of toxics they store onsite. Companies may complain about costs, but this is a shift that we all know needs to happen. Disclosure will speed it up. And speeding up the shift will also make communities safer from security threats.

- **Improve emergency planning.** In the meantime, states need to ensure that each community with a hazardous chemical facility nearby has an active local emergency planning committee (LEPC) that works closely with first responders and makes their response plans readily available to community residents. Additionally, each committee can produce recommendations to reduce chemical hazards at facilities.
- **Require facilities to use safer chemical alternatives.** Only New Jersey requires facilities using large quantities of RMP chemicals to *explore* alternatives to hazardous chemicals, although facilities do not have to adopt these alternatives. States can require all facilities storing hazardous substances to analyze alternatives and adopt them whenever feasible. The surest way to prevent a chemical catastrophe is to remove these dangers in the first place.

EPA can strengthen its chemical reporting programs by doing the following:

- **Conduct a nationwide study of state Tier II chemical data to identify toxic, flammable, and volatile chemicals currently unreported to the Risk Management Program.** Our existing system of requiring federal reporting and risk management plans for a very limited set of chemicals, while leaving more complete records under the authority of states, is inefficient and ineffective.

EPA needs to better understand the data being reported at the state level and work with state agencies to collect and merge their Tier II records into a national database. The agency can then identify all toxic, flammable, and volatile chemicals to fully understand regional and local risks. The agency can make the national inventory data available to first responders, local officials, researchers, media, and the public as a resource until the RMP program can be expanded.

- **Add hazardous chemicals to the Risk Management Program list.** RMP currently covers only 140 chemicals, yet this six-state study shows that there are easily identified chemicals with significant health and safety risks that are missing from the program. The nine chemicals examined here should be included in the RMP program, but there are certainly other hazardous chemicals being used in other states that should also be added to the list.
- **Restore online access to Risk Management Program data.** The EPA does not post the Risk Management Program information online. This creates an unnecessary barrier for all that might need to use this information to improve emergency planning and response, including first responders, local officials, residents, researchers, and others. In today's age, if the information isn't online, many will assume that there is no information available. While the agency might seek to push the information out directly to key groups like first responders, this approach is almost sure to miss important organizations as contact information changes or personnel turns over. This is important information for emergency planning, and communities deserve better access to it.
- **Require facilities to use safer chemical alternatives.** We can avoid these risks simply by using less dangerous chemicals. For instance, resin manufacturers can replace the toxic chemical phenol with bio-oils (oils from natural materials).¹⁸ Similarly, resin facilities that currently use highly flammable and volatile styrene can switch to less hazardous chemicals (including trimethylolpropanediallyl ether).¹⁹ EPA has the authority to require facilities to adopt safer chemicals whenever feasible. This is by far the best investment in emergency planning.

The time is ripe for federal action. President Obama issued an executive order in August 2013 directing EPA and other federal agencies to improve chemical safety regulations. EPA received numerous public comments in the fall of 2014 that affirmed the need for stronger safeguards and safer alternatives. It has committed to start a rulemaking in the fall of 2015.²⁰

Industrial chemical facilities have significantly reduced the pollutants they release in nearby communities since EPCRA was passed. But we have miles to go with chemical safety. It's time to start the journey.

Methodology

In January 2014, we researched Tier II programs in all 50 states and sent public records requests to 42 of them,²¹ requesting all Tier II records from the 2012 reporting year.²² Minnesota, Oregon, Washington, and Wisconsin fulfilled our requests. We also accessed Illinois's data, which is publicly available online.²³ In total, this amounted to over 127,000 individual records.²⁴

We combined records from each state and found the 100 most-reported substances that are not covered by EPA's Risk Management Program (RMP). Note that not everything included in Tier II is a dangerous chemical. For instance, sand is one of the most commonly reported substances because a large release could cloud the air and damage workers' eyes and lungs. For this report, we focused on chemicals that have toxic or flammable risks. We researched the toxicity and flammability of many of these chemicals and identified nine that are significantly hazardous and have a history of industrial accidents.

In January 2015, we sent additional public records requests for these specific chemicals.²⁵ We targeted Midwestern and Western states because we already had records from states in those regions. Arkansas, Indiana, Iowa, Michigan, and Utah fulfilled our requests. We decided to focus our report on the Midwest, where we now had 2012 Tier II records for six contiguous states (Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin).

We compared our list of Tier II facilities with those reporting to RMP in the same states. Often, facility names and even street addresses can vary between reporting programs. To account for this, we mapped all facilities using global information software (GIS) and identified the RMP facilities within closest proximity to Tier II facilities (one mile or less). We manually checked these submissions and identified 253 matches.

Appendix Tables

Table A: How States Responded to Our Records Requests

State	Agency that Handles Tier II	Response
Alabama	Alabama Department of Environmental Management	No response
Alaska	Alaska Department of Environmental Conservation	Must view records in person
Arizona	Arizona Emergency Response Commission	Must name specific facilities in request
Arkansas	Arkansas Department of Emergency Management	Fulfilled request
California	California Emergency Management Agency	Must contact regional EPA offices
Colorado	Colorado Department of Public Health and Environment	Must name specific facilities in request
Connecticut	Connecticut Department of Energy and Environmental Protection	Must name specific facilities in request
Delaware	Delaware Department of Natural Resources and Environmental Control	Must name specific facilities in request
Florida	Florida Division of Emergency Management	No response
Georgia	Georgia Department of Natural Resources	No response
Hawaii	Office of Hazard Evaluation and Emergency Response	Must view records in person
Idaho	Idaho Bureau of Homeland Security	Must name specific facilities in request
Illinois	Illinois Emergency Management Agency	Records available online
Indiana	Indiana Department of Environmental Management	Fulfilled request upon follow-up
Iowa	Iowa Department of Natural Resources	Fulfilled request upon follow-up
Kansas	Kansas Department of Health and Environment	Confirmed receipt of request but did not follow up
Kentucky	Kentucky Emergency Management	No response
Louisiana	Louisiana Department of Public Safety & Corrections	No response
Maine	Maine Emergency Management Agency	Charges fees
Maryland	Maryland Department of the Environment	Charges fees
Massachusetts	Massachusetts Emergency Management Agency	No response
Michigan	Michigan Department of Environmental Quality	Fulfilled request upon follow-up
Minnesota	Minnesota Department of Public Safety	Fulfilled request
Mississippi	Mississippi Emergency Management Agency	No response
Missouri	Missouri Emergency Response Commission	No response
Montana	Montana Department of Environmental Quality	No response
Nebraska	Nebraska Department of Environmental Quality	Confirmed receipt of request but did not follow up
Nevada	Nevada Department of Public Safety	Request denied (on basis that our needs were not justified under EPCRA)

New Hampshire	New Hampshire Department of Safety	No response
New Jersey	New Jersey Department of Environmental Protection	Must name specific facilities in request
New Mexico	New Mexico Department of Homeland Security and Emergency Management	No response
New York	The New York State Emergency Management Office	No response
North Carolina	North Carolina Department of Public Safety	No response
North Dakota	North Dakota Department of Emergency Services	No response
Ohio	Ohio Environmental Protection Agency	Must name specific facilities in request
Oklahoma	Oklahoma Department of Environmental Quality	Must name specific facilities in request
Oregon	Oregon Office of State Fire Marshal	Fulfilled request
Pennsylvania	Department of Labor and Industry	No response
Rhode Island	Rhode Island Department of Labor and Training	No response
South Carolina	South Carolina Department of Health and Environmental Control	Must live near facility in order to request information
South Dakota	South Dakota Dept. of Environment and Natural Resources	Does not accept electronic requests
Tennessee	Tennessee Emergency Management Agency	Must name specific facilities in request
Texas	Texas Department of State Health Services	Does not disclose Tier II records
Utah	Utah Department of Environmental Quality	Fulfilled request (for a fee)
Vermont	Vermont Department of Public Safety	No response
Virginia	Virginia Department of Environmental Quality	Confirmed receipt of request but said it prioritizes requests from Virginia residents
Washington	Washington Department of Ecology	Fulfilled request
West Virginia	West Virginia Division of Homeland Security & Emergency Management	No response
Wisconsin	Wisconsin Department of Military Affairs	Fulfilled request
Wyoming	Wyoming Office of Homeland Security	No response

*We first contacted 42 of the states above in January 2014. The eight states we didn't contact were Delaware, Hawaii, Maine, Maryland, South Carolina, South Dakota, Utah, and Texas. The state agencies that handle Tier II records in these states indicated on their websites various barriers to disclosure, as noted above.

In January 2015, we contacted 10 states asking for records on a narrow list of Tier II chemicals. These states were Arkansas, California, Idaho, Indiana, Iowa, Michigan, Missouri, Nevada, Ohio, and Utah. Their responses to our second requests are noted above.

Table B: Number of Facilities Reporting Each of Nine Hazardous Tier II Chemicals, by State

	Indiana	Illinois	Michigan	Wisconsin	Iowa	Minnesota
Acetone	80	45	54	45	23	19
Calcium Hypochlorite	15	4	14	6	21	17
Dimethoate	49	29	27	32	9	11
Fluosilicic Acid	64	17	59	34	47	102
Methanol	115	59	248	69	56	48
Phenol	29	20	18	37	9	8
Styrene	57	16	34	34	11	17
Toluene	72	49	63	42	37	19
Xylenes	70	49	64	50	51	20
Total Facilities Reporting at least One of Nine Chemicals*	429	187	452	239	207	210
Total Pounds of these Chemicals Reported (per state)	301,748,171	220,017,700	59,407,509	28,052,482	15,674,060	7,375,160

Source: Tier II Records for the 2012 reporting year

* Many facilities report more than one chemical. We looked at the facility records and eliminated any double-counting. Therefore, the sum of facility reports per chemical does not equal the total number of facilities reporting to the program.

Table C: Total RMP Facilities, by State

State	Total Number of RMP Facilities	Total Pounds of Toxic RMP Chemicals	Total Pounds of Flammable RMP Chemicals	Total Pounds of All RMP Chemicals
Illinois	938	1,382,892,840	1,557,171,959	2,940,064,799
Michigan	197	62,327,738	2,456,014,491	2,518,342,229
Iowa	875	1,210,169,785	170,118,485	1,380,288,270
Indiana	457	561,518,931	459,476,745	1,020,995,676
Minnesota	429	459,938,050	320,257,084	780,195,134
Wisconsin	265	34,949,395	113,729,388	148,678,783

Source: The Right-to-Know Network, www.rtknet.org

Table D: Top 100 Most-Reported Tier II Substances in Illinois, Minnesota, Oregon, Washington, and Wisconsin²⁶

Chemical Name	Number of Records	Total Amount from All Records (in Pounds)
Lead Acid Batteries	11,034	525,681,796
Diesel Fuel	7,069	1,774,083,119
Gasoline	3,503	2,401,956,401
Oxygen	2,918	65,823,489
Fuel Oil	2,493	580,303,071
Nitrogen	2,367	252,854,690
Argon	2,164	24,048,409
Lead	2,090	148,186,124
Motor Oil	1,997	47,224,761
Sodium Hydroxide	1,797	255,650,847
Carbon Dioxide	1,096	55,528,864
Sodium Chloride	941	1,964,771,397
Sand	879	31,436,059,072
Urea	834	320,910,205
Ethylene Glycol	802	118,951,755
Sodium Hypochlorite	771	41,524,836
Kerosene	696	976,745,001
Portland Cement	691	1,072,132,928

Ammonium Sulfate	682	367,100,471
Diesel Fuel	611	692,977,301
Asphalt Cement	573	1,681,149,039
Helium	562	4,477,951
Lube Oil	519	74,270,083
Methanol	491	115,260,959
Surestart	488	7,452,730
Glyphosate	485	8,113,303
Limestone	483	1,885,808,587
GramoxoneInteon	477	756,134
Calcium Chloride	475	48,706,125
Ethanol	474	468,175,182
Roundup Powermax	463	12,840,092
Phosphoric Acid	437	15,473,322
Paint	425	33,097,810
Crude Oil	417	1,532,486,324
Atrazine 4L	408	6,380,126
Propylene Glycol	381	22,973,781
Potassium Hydroxide	361	27,289,880
Soda Ash	349	42,280,842
Ammonium Nitrate	330	167,479,252
Ammonium Hydroxide	327	33,143,180
Isopropyl Alcohol	324	9,510,404
Potassium Chloride	323	209,818,670
Toluene	307	110,240,548
Calcium Hydroxide	291	50,741,899
Aluminum Oxide	286	256,215,011
Hydrogen Peroxide	275	13,333,018
Gasoline	263	141,440,752
Sulfur	263	49,803,647
Monoammonium Phosphate	254	158,657,520
Titanium Dioxide	251	33,670,124
Aluminum Sulfate	249	12,672,016
Acetone	248	14,256,449
Grease	245	34,485,231
Dielectric Oil	227	38,133,017
Halex Gt	227	4,779,989
Lime	226	117,213,990

Xylene	223	90,308,178
Sodium Bisulfite	212	6,992,068
Lumax	200	3,094,822
Lorsban 15G	195	1,230,422
Ferric Chloride	186	11,338,081
Acetic Acid	184	4,475,480
Dimethoate	183	180,730
Fly Ash	183	1,042,539,899
Sulfuric Acid	183	4,124,292
Motor Oils	182	4,677,714
Diammonium Phosphate	180	162,445,204
Glycol Ether Eb	180	3,745,456
Activated Carbon	172	1,129,551,790
Hydrofluorosilicic Acid	171	3,952,071
Citric Acid	168	5,181,272
Mineral Oil	167	31,954,304
Styrene	161	20,629,739
Aluminum	158	41,362,608
Transformer Oil	158	21,368,116
Methyl Ethyl Ketone	149	4,058,276
Mineral Oil	149	27,231,768
Diesel Fuel Mixture	143	83,266,982
Kaolin Clay	137	19,978,581
Paint Thinner	137	33,573,032
Calcium Hypochlorite	136	1,552,071
Ammonium Thiosulfate	132	19,954,601
Force 3G	130	1,702,007
Durango Dma	129	3,290,633
Copper	125	70,729,808
Iron	125	61,381,869
Freon 22	122	1,068,646
Ammonium Polyphosphate	121	21,881,209
Fly Ash	119	235,210,405
Calcium Nitrate	118	1,215,892
Diuron 80 Df	118	799,217
Salvo	118	1,650,943
Weedar 64	118	1,539,918
Zp Rodent Bait	118	959,118

Compressed Air	117	442,384
Carbon Black	116	90,540,103
Thionex 3Ec	114	57,683
Calcium Carbonate	112	211,640,918
Phenol	112	13,501,057
Zinc	112	32,085,682

ENDNOTES

¹ Stewart Diamond. The New York Times. U.S. Toxic Mishaps in Chemicals Put at 6,298 in 5 Years (1985). Available at <http://www.nytimes.com/1985/10/03/us/us-toxic-mishaps-in-chemicals-put-at-6298-in-5-years.html>.

² Based on trend report for core chemicals and industries from EPA's TRI Explorer. Available at http://iaspub.epa.gov/triexplorer/tri_release.trends.

³ The agency collecting this information varies by state. Some states have their own environmental protection agencies that manage Tier II records. In other states, Tier II is administered by emergency planning or hazardous waste management offices.

⁴ We submitted requests to 42 states. Eight states were left out because they require records to be viewed in person, charged fees, or had clear policies of nondisclosure. For more details, visit the Methodology section of this report.

⁵ Tier II reports are due in March of each year, and they cover the previous calendar year. In January 2014, the most recent Tier II reports covered the 2012 reporting year.

⁶ Based on National Fire Protection Association (NFPA) flammability ratings.

⁷ Volatility includes chemicals with a vapor pressure of 10 mm or higher Hg at 25 degrees Celsius. It also includes chemicals classified by EPA as Volatile Organic Compounds (VOCs) and Semivolatile Organic Compounds (SVOCs), as well as others indicated as volatile in studies.

⁸ Based on NFPA reactivity ratings.

⁹ In one such instance, acetone vapors leaked from a chemical unit and traveled to where a worker was welding a pipe. The acetone vapors ignited, and the worker was fatally burned. Occupational Safety and Health Administration (OSHA). Fatality and Catastrophe Investigation Summaries. Available at https://www.osha.gov/pls/imis/establishment.inspection_detail?id=309516045.

¹⁰ New Jersey Department of Health and Senior Services. Hazardous Substance Fact Sheet. Available at <http://nj.gov/health/eoh/rtkweb/documents/fs/0323.pdf>.

¹¹ OSHA. Available at https://www.osha.gov/pls/imis/accidentsearch.accident_detail?id=14346365.

¹² We summed the average amount (or the midpoint, if they provided a range) from each Tier II chemical report to obtain the total amount of a given chemical reported by all facilities.

¹³ Many facilities report more than one chemical. We looked at the facility records and eliminated any double-counting. Therefore, the sum of facility reports per chemical does not equal the total number of facilities reporting to the program.

¹⁴ The List of Extremely Hazardous Substances and Their Threshold Planning Quantities. Located in Title 40 of the Code of Federal Regulations, Appendix A to Part 355. Available at http://www.ecfr.gov/cgi-bin/text-idx?SID=ffc2c6a6e18da61621e0331e74fd017&node=ap40.28.355_161.a&rgn=div9.

¹⁵ The PubChem Project. <http://pubchem.ncbi.nlm.nih.gov/compound/996#section=Top>.

¹⁶ Ibid. <https://pubchem.ncbi.nlm.nih.gov/compound/6850715#section=Safety-and-Hazards>.

¹⁷ The 1994 survey came eight years after EPCRA's passage, had an 80 percent response rate out of a sample of Local Emergency Planning Committees (LEPCs), and found 21 percent were "inactive." The survey conducted in 1999 queried all LEPCs. It had a 51 percent response rate. Of the LEPCs responding, 59 percent were "active," and 41 percent were "inactive," twice as many as in 1994. The third survey, conducted in 2008, was sent to all known LEPCs and had a response rate of just 40 percent. It did not inquire whether LEPCs were "active" or "inactive," but it did note that about 10 percent of respondents had not met in over a year. See The George Washington University. Department of Public Administration. Nationwide LEPC Survey (1994). Available at <http://www.foreffectivegov.org/files/info/1994LEPCsurvey.pdf>; the George Washington University. Department of Strategic Planning and Public Policy. 1999 Nationwide LEPC Survey (2000). Available at http://www2.epa.gov/sites/production/files/2014-01/documents/lepcsurv_2000.pdf; the U.S. Environmental Protection Agency (EPA). 2008 Nationwide Survey of Local Emergency Planning Committees (LEPCs) (2008). Available at http://www2.epa.gov/sites/production/files/2013-08/documents/2008_lepcsurv.pdf.

¹⁸ EPA. Final Report: Non-Formaldehyde Biobased Phenolic Resins (2012). Available at http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.highlight/abstract/9666/report/F.

¹⁹ Toxics Use Reduction Institute. Reducing Use of Styrene Monomer In Unsaturated Polyester Resins (2013). Available at http://www.turi.org/TURI_Publications/TURI-Technical-Reports/Reducing_Use_of_Styrene_Monomer_In_Unsaturated_Polyester_Resins_2013.

²⁰ The Coalition to Prevent Chemical Disasters, which includes the Center for Effective Government, sent a letter to President Obama in March 2015, urging him to ensure these regulations go into effect before he leaves office. Available at <https://preventchemicaldisasters.files.wordpress.com/2015/03/coalition-ltr-to-pres-obama-final-march-2015.pdf>.

²¹ We did not send requests to states that charge fees or require requestors to view records in person. We also didn't send a request to Texas because the state no longer discloses Tier II data.

²² Tier II reports are due in March of each year, and they cover the previous calendar year. In January 2014, the most recent Tier II reports covered the 2012 reporting year.

²³ You can access Tier II records from the Illinois Emergency Management Agency webpage, at <http://tier2.iema.state.il.us/FOIAHazmatSearch/TII302search.aspx>.

²⁴ Records were sorted by chemical, and individual facilities often reported more than one chemical.

²⁵ We used Chemical Abstracts Service (CAS) numbers to identify chemicals. Some facilities reported multiple records for the same CAS number, and we treated these as a single record.

²⁶ This list was created after our first round of public records requests and does not contain every state included in our report. We narrowed our list before doing the second round of requests and do not have information on all of these chemicals for Indiana, Iowa, and Michigan.



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