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CHEMICAL SECURITY ACT, S. 1602

HEARING

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, TOXICS, RISK, AND WASTE MANAGEMENT

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

ON

A BILL TO HELP PROTECT THE PUBLIC AGAINST THE THREAT OF CHEMICAL ATTACKS

NOVEMBER 14, 2001

Printed for the use of the Committee on Environment and Public Works

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ONE HUNDRED SEVENTH CONGRESS
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CHEMICAL SECURITY ACT, S. 1602

WEDNESDAY, NOVEMBER 14, 2001

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, TOXICS,
RISK AND WASTE MANAGEMENT,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:08 p.m. in room 406, Senate Dirksen Building, Hon. Barbara Boxer (chairman of the subcommittee) presiding.

Present: Senators Boxer, Inhofe, Specter, Corzine, Clinton, Carper, and Smith, ex officio.

Senator BOXER. The hearing will come to order.

I'm going to ask the people on the second panel to please come up and sit at the table since we really only have one person speaking on the first. Then the staff person can move directly behind the person who is speaking. If all the people on the second panel can come forth and take seats, I think it's better because we want to hear from all of you.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Today, the Superfund, Toxics, Risk and Waste Subcommittee will hear about the threat proposed by toxic chemicals and the need to assure the security of those chemicals. Specifically, we will hear testimony on the Chemical Security Act introduced and written by Senator Corzine and co-sponsored by Senators Jeffords, Clinton and myself. We have had to reorder our priorities on a number of issues, and this has taken on a new urgency since September 11. The security of toxic chemicals throughout the United States is very high on that list of priorities.

Whether there is a serious threat posed by toxic chemicals in communities throughout the country, to my mind, is not in question. One of our witnesses today, Frederick Webber, president of the Chemistry Council, is representing 180 major companies including Dow and Dupont. He said it well in an article on toxic chemical security in the *Washington Post* just this week. He said, "No one needed to convince us that we could be and indeed would be a target at some future date. If they are looking for a big bang, obviously you don't have to go far in your imagination. Just think about what the possibilities are."

Others have taken note of the terrible threat and taken rapid steps to address it. Since September 11, the District of Columbia's Blue Plains Wastewater Treatment Plant quietly at night, and

under guard, removed 900 tons of liquid chlorine and sulfur dioxide. Practically overnight they accelerated a program to use fewer toxic chemicals like bleach, instead of chlorine gas, for wastewater treatment. Chlorine and sulfur dioxide are so volatile that a rupture of just one 90-ton tanker could release a lethal cloud that could spread over a 10-mile radius, killing thousands in just a few minutes.

My State of California is near the top of the list of States with facilities with extremely hazardous chemicals onsite. In fact, California has over 150 facilities with over 100,000 pounds of extremely hazardous substances near 34 million people who live in California. The threat is real and it requires immediate attention.

Senator Corzine has introduced S. 1602, the Chemical Security Act. I believe this is just the kind of thing we need to do. We need to get ahead of the problem and not just react to a tragedy. The Chemical Security Act provides the Environmental Protection Agency and the Department of Justice with the authority to intervene and issue an order when there is a serious threat posed by problems with chemical security. It also requires that those agencies develop regulations that define priority sites and assure that basic security precautions are taken which can include limiting the chemicals stored onsite.

Let me just say that I understand the value of chemicals in our society. We are not here today to question whether we need chemicals. We do. May be not quite so much of them, but we do need chemicals. What we need to do is to protect those chemicals, especially the hazardous ones, from terrorist threats. Let's be careful not to mix up those two issues.

I want to hear from Senator Corzine, since he authored the Act; and then we will go to Senator Inhofe and Senator Clinton for opening statements.

I want to sadly note the absence of the Environmental Protection Agency and the Department of Justice. They were both invited to come here. They declined to come, and I have these nameplates in case they show up. They are right here and I will put them out if they change their minds.

Frankly, I am at a loss as to why they wouldn't choose to comment on these issues, whether they agree with Senator Corzine's bill or not. We really wanted to hear from them. I don't know whether we will have to have another hearing where we require their presence but I hope they will, of their own accord, choose to engage with us.

We don't have the luxury of time. We need to get ahead of these threats. We need to act. Industry frequently resists additional regulation but I hope we can keep our eye on this ball. All of us have a responsibility to make sure we do everything we can to keep our country safe. Let us rise to the challenge.

Now, I will turn it over to the author of this very important bill, Senator Corzine. Thank you for your leadership.

[The prepared statement of Senator Boxer follows:]

STATEMENT OF HON. BARBARA BOXER,
U.S. SENATOR FROM THE STATE OF CALIFORNIA

Today, the Superfund, Toxics, Risk Subcommittee will hear about the threat posed by toxic chemicals and the need to assure the security of those chemicals. Specifi-

cally, we will hear testimony on the Chemical Security Act, introduced by Senator Corzine and co-sponsored by myself, Senator Jeffords and Senator Clinton.

We have had to reorder our priorities since a number of issues have taken on a new urgency since September 11. The security of toxic chemicals throughout the United States is very high on the list.

Whether there is a serious threat posed by toxic chemicals in communities throughout the country is not in question. In fact, one of our witnesses today, Frederick Weber, president of the American Chemistry Council, representing 180 major companies, including Dow and DuPont, said it well in an article on toxic chemical security in the *Washington Post* just this week.

He said, "No one needed to convince us that we could be—and indeed would be—a target at some future date. If they're looking for a big bang, obviously you don't have to go far in your imagination to think about what the possibilities are."

Others have taken note of the terrible threat and taken rapid steps to address it. Since September 11, the District of Columbia's Blue Plains Waste Water Treatment Plant, quietly at night and under guard, removed 900 tons of liquid chlorine and sulfur dioxide. Practically overnight, they accelerated a program to use fewer toxic chemicals like bleach instead of chlorine gas for wastewater treatment.

Chlorine and sulfur dioxide are so volatile that a rupture of just one 90-ton tanker could release a lethal cloud that could spread over a 10-mile radius, killing thousands in just a few minutes.

My State of California is near the top of the list of States with facilities with extremely hazardous chemicals onsite. In fact, California has more than 150 facilities with over 100,000 pounds of extremely hazardous substances.

The threat is real, and it requires immediate attention.

Senator Corzine has introduced S. 1602, "the Chemical Security Act." This is just the kind of thing we need to do—we need to get ahead of the problem and not just react.

The Chemical Security Act provides the Environmental Protection Agency and the Department of Justice with the authority to intervene and issue an order when there is a serious threat posed by problems with chemical security.

It also requires that those agencies develop regulations that define priority sites and assure that basic security precautions are taken, which can include limiting the chemicals stored onsite.

Let me just say that I understand the value of chemicals in our society. We are not here today to question whether we need chemicals. We do, maybe not quite so much of them, but we do need them.

What we need to do is protect those chemicals, especially the very hazardous ones, from terrorist threats. Let's be careful not to mix up these issues.

I also want to note the absence of EPA and DOJ. They were invited, but declined to come. I am disappointed that they have chosen not to comment on this issue or this legislation. We need to address this head-on and work out our differences quickly. I certainly hope they quickly join us in this process.

We do not have the luxury of time. We need to get ahead of these threats. We need to act. Industry frequently resists additional regulation, but I hope we can keep our eye on the ball. All of us have a responsibility to make sure we do all we can to keep our country safe. Let's rise to the challenge.

OPENING STATEMENT OF HON. JON S. CORZINE, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator CORZINE. Thank you, Madam Chairman. It's great to work with you, Senator Jeffords and Senator Clinton on S. 1602, the Chemical Security Act. Your longstanding leadership in environmental and public health issues is a great asset to the Senate. I certainly, like many of my colleagues, we look to you for leadership in this area. I truly support your efforts and appreciate your help here.

We also want to thank Senator Chafee for joining in holding this hearing.

I think one of the fundamental facts you brought out so clearly, is that chemical facilities are an obvious vulnerability. As opposed to waiting until after the fact, it occurs to many of us, including some of the witnesses today, that we ought to be working on these

obvious vulnerabilities and get ahead of the curve. This area with regard to chemical production processing, transportation and disposal is an obvious area where terrorists could work.

The Justice Department called the terrorist threat to chemical facilities real and credible. An April 18, 2000 report goes in detail to describe where some of those vulnerabilities might exist. It really laid down the marker for us to act with regard to these areas, not only with stationary facilities, but ones that are on our rail and mobile systems as well.

So I think there is a lot for us to do. Unfortunately, the Justice Department, which was asked to bring forward a vulnerability assessment of the nation's chemical industry, was required in 1999 law, has not issued the assessment. We are still waiting for it. I know Mr. Webber has spoken about this as an important study. I think all of us should expect to have it completed, brought forward and presented in a way so that we can use the results.

My own view, and I think it is shared by a number of people, is that additional regulations are necessary. We didn't really need the Justice Department study to tell us that there have been serious accident problems. These findings could be translated into discoveries of more serious vulnerabilities with regard to terrorists attacks if they had been brought on a basis other than only accidents. We don't have to go back to Bhopal or to recent events in France to see that there is quite a bit of uncertainty about what causes of accidents, Lodi Dye Company in New Jersey, where we lost life, and the Baltimore rail tunnels.

I'm going to mention a circumstance on which I won't give all the details, but one of the investigative reporters at one of the New York television stations, either tonight or in the next 2 days, will document literally walking into two chemical and refining facilities in New Jersey along the New Jersey Turnpike with a camera unchecked for over a hour. I think reveals that some of the concerns one has with regard to the security of these plants is real.

I personally think regulatory response is necessary. A voluntary approach, in my view, while desirable, may be one that I think the American public would not take great comfort from. It's not unlike the kind of conversations and debate we are having with regard to aviation security. Sometimes bottom lines get in the way of people doing the right thing, particularly with respect to the lowest common denominator of some of the participants in the industry.

So I think self regulatory standards are a good concept, but not always ones that work. I came from an industry where we had a mixture of self-regulation and external regulation. I think they are workable together. That is what we are trying to do with this bill. This is a common-sense approach. We need to prioritize chemical threats, take measures to reduce them.

We don't have to do all things, but we do need to reduce comprehensive threats. This bill directs the EPA Administrator to consult with the Attorney General, States and localities to identify high-priority categories within our chemical production, processing, transportation and disposal infrastructure; designates those categories; allows the Administrator to set factors, including severity of the harm from a potential release or proximity to population centers, threats to critical infrastructure that may surround these

issues, national security; and other things that the Administrator may think are appropriate.

The bill directs the Administrator to consider threshold quantities of chemicals. I think this is one thing we will hear from one of the witnesses. We can protect small business where there is little broad-based risk. On the other hand, it doesn't leave out the fact that we need to act with regard to the serious potential risks associated with explosions, non-accidental, criminal and terrorist acts.

It gives the Administrator the ability to act quickly in cases of severe risk that is identifiable now, but does allow for a process to unfold over the next 2 years both in identifying high priorities and developing the regulations over a 2-year period. So it's not a crash program other than for those places that, on a case-by-case basis, are particularly threatening.

I hope people will look at my home State of New Jersey which does have a regulatory approach, not to find an absolute match; but one I hope Commissioner Shinn will describe that I think has worked reasonably well. I think regulation can play a positive role if applied properly. Again, this is not overly proscriptive. We want to work with the EPA, the Attorney General's Office, industry, State and localities to come up with it.

I hope the Administration gets to work on this and we can come up with a relatively rapid response. We should not be acting after the fact when many times our responses might have to be more draconian, more severe and more difficult. I think we have before us a more pragmatic approach.

Like Chairman Boxer, I too am somewhat frustrated that we have not had the kind of participation from EPA and the Attorney General's Office with regard to this. It seems like we can talk about it on CNN but not necessarily in a hearing room of the Congress. I hope we can get to those areas quickly.

Thank you, Madam Chairman, for holding the hearing, and I appreciate all the participants and their insights.

[The prepared statement of Senator Corzine follows:]

STATEMENT OF HON. JON S. CORZINE,
U.S. SENATOR FROM THE STATE OF NEW JERSEY

Thank you, Madame Chairman. I want to start by thanking you, Senator Jeffords and Senator Clinton for working with me on S. 1602. Madame Chairman, your longstanding leadership in environmental and public health protection is a great asset to the Senate, and I am proud to have you as an original co-sponsor of this bill. I also want to thank you and Senator Chafee for holding this hearing today. I think we need to get moving on this issue, and today's hearing gives us an opportunity to gather information about how best to proceed.

Madame Chairman, in the wake of the attacks in New York and Washington, it is clear that we need to look at all of our nation's assets and people as potential terrorist targets. We need to shore up vulnerabilities that have already been exploited, such as airline security. But just as importantly, we need to identify other vulnerabilities and address them proactively, before the fact.

I believe that one of our most obvious vulnerabilities is our nation's chemical production, processing, transportation and disposal infrastructure. Like the chairman's home State, my State of New Jersey is the site of numerous industrial chemical facilities. These businesses have helped to build New Jersey's economic strength, and they produce valuable products that are essential to the nation's economy. But the chemicals found at these businesses also pose potentially grave risks to their workers and the communities that surround them. Some of these chemicals are highly

toxic, such as chlorine, ammonia or hydrogen sulfide; others are highly flammable. They can all have major impacts on our communities.

In 1995, an explosion at a facility in Lodi, New Jersey killed five people. In June 1998, a release of cresol from a facility in Paterson, New Jersey forced the evacuation of a nearby school, and caused nausea and headaches in more than 50 kids, two of whom were hospitalized overnight. These incidents are troubling, but they pale in comparison to the most catastrophic chemical accidents that have occurred. The release of methyl isocyanate gas from a chemical plant in Bhopal, India in 1984 caused more than 2,000 deaths and many thousands of injuries. And in September of this year, an explosion in a fertilizer plant in France caused 29 deaths, thousands of injuries, and damaged thousands of buildings.

Fortunately, we have not had such catastrophic accidents here in the United States. But there is no question that the potential for severe harm exists at some facilities. Some of the most compelling evidence in this regard are the worst-case release scenarios that have been developed by approximately 18,800 chemical facilities as part of EPA's Risk Management Plan. One component of the worst-case scenarios is an estimate of the number of people that could be adversely affected by a "worst-case" release. An EPA analysis of the data shows that the median number of people affected by a toxic worst-case release is 1,500. That means that the worst-case scenario at thousands of plants has the potential to impact thousands of people. In the case of some plants that are close to large population centers, the number of people potentially impacted by a worst-case scenario is more than a million. I certainly don't want to name any of those facilities in this forum, but suffice it to say that New Jersey, with its dense population, has its share.

Because of the potential to harm so many people by causing a chemical release, chemical plants are attractive targets to terrorists.

This is not just my opinion, Madame Chairman. The Department of Justice studied this matter last year and concluded in an April 18, 2000 report that there is a "real and credible threat" that terrorists would try to cause an industrial chemical release in the foreseeable future. The Department noted that attacking an existing chemical facility, for example, presents an easier and more attractive alternative for terrorists than constructing a weapon of mass destruction. In addition, the Department concluded that many plants that contain hazardous chemicals would be attractive targets for terrorists because of the plants' proximity to densely populated areas.

Apart from this Justice Department threat assessment, the Agency for Toxic Substances and Disease Registry, conducted a study of more than 60 chemical plants in West Virginia, Georgia and Nevada. The Agency found that security at those plants ranged from fair to very poor.

Unfortunately, the Justice Department has not yet completed a related vulnerability assessment of the nation's chemical industry that is required by law. I want to join with the American Chemistry Council in urging the Justice Department to complete this important study. It is more necessary than ever.

I know that the chemical industry takes safety seriously, and has been working hard to address security issues since September 11. The American Chemistry Council has issued security and transportation guidelines, and has scheduled meetings with its members to promote them. I applaud these actions, but I don't think that they are a substitute for regulations. I believe that most companies will do the right thing, but I'm worried about the least common denominator. A company that wants to cut corners is not likely to implement voluntary guidelines. The American Chemistry Council or any other industry association cannot and should not be put in the position of having to self-regulate security standards. This is clearly a government role, and one that requires new tools at the Federal level. Having said that, I want to add that I want to work with industry on this bill, and fully expect industry to play a key role in developing the regulations that the bill would require, as they typically do. But I believe there should be no dispute that new regulations are needed.

The primary reason is that there are currently no mandatory Federal security standards for any chemical facilities. Even those in densely populated areas. Even those with large quantities of extremely hazardous chemicals. We do require owners and operators of such facilities to prepare risk management plans that analyze the potential offsite consequences of an accidental release of regulated substances. These reports must include plans to prevent an unintended release, and to mitigate the effects of such a release, should it occur. However, no Federal requirements are currently in place that require specific steps to prevent releases caused by criminal or terrorist activity.

Madame Chairman, S. 1602, the Chemical Security Act of 2001, would give the Administration the mandate and the tools to take common sense steps to address

the highest priority threats from accidents and attacks involving hazardous chemicals.

To enable the Federal Government to take action upon enactment to address the most serious risks on a case-by-case basis, the bill provides EPA and the Attorney General the authority to issue administrative orders and secure relief through the courts to abate an imminent and substantial endangerment from a potential accidental or criminal release.

To reduce threats in a more comprehensive way, the bill directs the EPA Administrator to consult with the Attorney General, States and localities to identify "high priority" categories within our chemical production, processing, transportation and disposal infrastructure. In designating these "high priority" categories, the Administrator is to consider a set of factors, including the severity of potential harm from a release, proximity to population centers, threats to critical infrastructure and national security, and other factors the Administrator considers appropriate. The bill also directs the Administrator to consider threshold quantities of chemicals in establishing high priority categories. This is to ensure that small businesses that pose little risk are not subject to the regulations.

The bill then directs EPA to work with the Justice Department to develop regulations for the high priority categories that will require them to take adequate actions to prevent, control and minimize the potential consequences of an accident or attack.

The bill includes other provisions to enable the EPA and the Attorney General to carry out and enforce the act, such as the authority to obtain information that may be needed, while providing for protection of trades secrets and national security information.

Madame Chairman, the legislation is not overly prescriptive, and this is intentional. I believe that in the wake of September 11, it is self-evident that the possibility of chemical attacks is something we need to examine. So the heart of the bill is a requirement that EPA and DOJ work with State and local agencies to ensure that the highest priority threats from chemical

facilities are being addressed. But I don't want to tie the hands of the Administration. I think that they should have wide latitude in determining what types of chemicals and facilities need to implement better security measures and take other measures to reduce risks. But I do think they need identify the biggest risks and go after them.

Madame Chairman, strengthening security at high priority chemical sources is an immediate and necessary step to safeguard our communities. Over the longer term, however, I believe that our desire to protect our communities and our environment will be best served by reducing the use of hazardous chemicals. That's why this bill includes provisions to require high priority chemical sources to reduce risks where practicable by using inherently safer technology, well-maintained secondary control equipment, robust security measures, and buffer zones.

We have seen this type of approach work in New Jersey, where the legislature enacted a law requiring facilities to implement alternate processes that would reduce the risk of a release of extremely hazardous substances. After the enactment of this law, the number of water treatment plants using levels of chlorine at a level considered extremely hazardous decreased from 575 in 1988 to 22 in September of 2001. Chlorine, which can cause a number of problems include burning of the skin and eyes, nosebleeds, chest pain, and death, was replaced by sodium hypochlorite or other much less hazardous chemicals or processes.

Finally, Madame Chairman, I want to say that like you, I am very disappointed that the Administration chose not to send witnesses to the hearing today. Congress and the Administration need to work together on chemical security, as we do on all of the post-September 11 challenges and vulnerabilities that we face. I know that EPA has been working on this issue, because I saw Administrator Whitman talking about it on CNN last Friday. Even if the Administration was not prepared to provide detailed testimony on the bill, they could have sent someone to answer whatever questions they are prepared to answer at this point. So I want to reiterate my call to the Administration to work with this committee and this Congress on chemical security. If you believe, as I do, that new Federal authorities and regulations are needed, then help us craft a proposal. If you're opposed to new security regulations, you need to explain that view to Congress and the American people.

Thank you Madame Chairman.

Senator BOXER. Thank you, Senator Corzine, for authoring this bill.

Senator Inhofe, we will hear from you.

Senator INHOFE. Thank you, Madam Chairwoman.

First, I'd like to ask unanimous consent that Senator Voinovich's statement be placed in the record at this point.

Senator BOXER. Without objection, so ordered.

[The prepared statement of Senator Voinovich follows:]

STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM OHIO

Thank you, Madam Chairman for calling this hearing on the Chemical Site Security Act. While I agree with the goals of this legislation, to safeguard our nation's chemical facilities and reduce the vulnerability of our nation to the release of hazardous chemicals. I believe we need to be very careful in how we go about this.

First, I believe the appropriate subcommittee to consider this Bill is the Clean Air Subcommittee. This issue is an outgrowth of the Risk Management Plan program under the Clean Air Act. Last Congress, the Air Subcommittee considered S. 880, Chemical Safety Information Site Security Act, which was enacted into law. In addition, the Chemical Safety Board, the board this committee created to investigate chemical accidents is also within the Clean Air Act. I will be asking Senator Lieberman, the Chairman of the Clean Air Subcommittee to hold a hearing on this Bill before it is considered by the full committee.

Second, I hope we don't use the urgency of September 11 to justify fast tracking this Bill because the legislation does not address the immediate issue of site security. Like most members of this subcommittee, I would like to see our hazardous chemical sites better protected, however, categorization is only required within 1 year of passage of this legislation. Moreover, it will take 1 year to establish all the rules to address high priority chemicals and it will take even more time to implement those rules. Overall, we may not even see the full effect of this bill for some 4 or 5 years, therefore there is no urgency to rush this legislation through the process.

Third, the regulatory process is not conducive to this issue since everything, including proprietary information, would need to be made public. The comment period alone would likely address how to prioritize, give locations and quantities of high priority chemicals and in general provide great amounts of sensitive data publicly available through the rulemaking process. Such a dissemination of information could be a tremendous public safety risk and possibly an even greater threat to national security. Last Congress the FBI told this committee that the publication of the "worst-case scenario" plans under the Risk Management Program could be used by terrorists for targeting of facilities.

We must be certain that the information called for by this legislation will not create a similar risk.

Finally, the bill places a significant burden on small businesses, even those just trying to determine whether the bill or subsequent regulations would apply to their particular company. Because of the unique dynamic of batch and specialty chemical production, these businesses need operational flexibility. This bill would take away that flexibility by mandating specific processes, hampering small companies from reacting quickly to the marketplace. This could restrict a small company's ability to compete globally. We must ensure that any legislation considered by the committee will not result in releasing trade secret information or cause a national security risk by disclosing information which could be used by potential terrorists.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. I, first, want to welcome Mr. Bill Stanley, the sourcing-regulatory manager of Deepwater Chemicals from Woodward, OK. As everyone knows, Oklahomans are no strangers to terrorism. It will be very interesting to hear Mr. Stanley's testimony not only from the perspective of a small chemical company, but also as a citizen and father.

Security must be our top priority, and we need to figure out what are the potential problems and what is the best way to address those problems. I know everyone is ready to do their part to fight and respond to terrorism, but that is why Congress needs to work with the President to develop a well-thought-out strategy. As a

matter of process, I am concerned about us getting ahead of the President and Homeland Security Director Ridge on this issue. Governor Ridge is working hard to assess the threats and corresponding security measures to the chemical industry as well as other potential terrorist targets. I know Governor Ridge is working with all the agencies to assess needs and coordinate responses. Additionally, Governor Ridge should be working with the various sections of industry to assess their security needs. I'm still waiting for the Office of Homeland Security to develop proposals in order to see what security issues we as a nation need to address.

I have some real problems S. 1602. In particular, I feel many of the titles of this bill would do nothing to address the terrorism threats. I hope this hearing is the beginning of a well-thought-out process. FEMA, the EPA and other agencies have been working hard to coordinate response efforts. When addressing relevant legislative issues, Congress should follow FEMA's and EPA's example so we, as lawmakers, can make our nation proud.

Thank you, Madam Chairman.

[The prepared statement of Senator Inhofe follows:]

STATEMENT OF HON. JIM INHOFE, U.S. SENATOR FROM OKLAHOMA

Thank you, Mrs. Chairwoman. I first want to welcome Mr. Bill Stanley, the sourcing-regulatory manager of Deepwater Chemicals, from Woodward, OK. As everyone knows, Oklahomans are no strangers to terrorism, and it will be very interesting to hear Mr. Stanley's testimony not only from the perspective of a small chemical company, but also that of a citizen and father.

Security must be our top priority, but we need to figure out: what are the potential problems; and what is the best way to address those problems? I know everyone is ready to do their part to fight and respond to terrorism, but, by firing before we have aimed, all Congress could end up doing is wasting precious resources on nonexistent problems while neglecting real problems.

That is why Congress needs to work with the President to develop a well thought out strategy. As a matter of process, I am very concerned about us getting out ahead of the President and Homeland Security Director Ridge on this issue—among others. Governor Ridge is working hard to assess the threats and corresponding security measures of the chemical industry as well as other potential terrorist targets. I know that Governor Ridge is working with all the agencies to assess needs and coordinate responses. Additionally, Governor Ridge should be working with the various sects of industry to assess what their security needs are.

While I am still waiting for the Office of Homeland Security to develop proposals in order to see what security issues we as a nation need to address, I have some real problems with S. 1602. In particular, I feel like many of the titles of this bill would do nothing to address terrorism threats.

I hope that this hearing is the beginning of a well thought-out process. FEMA, EPA, and other agencies have been working hard to coordinate response efforts. When addressing relevant legislative issues, Congress should follow FEMA's and EPA's example, so we, as lawmakers, can also make our nation proud.

Senator BOXER. Thank you so much.

I recognize Senator Clinton, who is an original co-sponsor of this bill.

OPENING STATEMENT OF HON. HILLARY RODHAM CLINTON, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator CLINTON. Thank you very much, Madam Chairman, and thank you for holding this hearing.

Thank you also, Senator Corzine, for bringing attention to this important issue. I think it is one that all of us on this committee know needs to be addressed. We may have some differences of opinion about timing or content, but I think it's clear that the chal-

lenges that confront us since September 11 require a new level of alertness and preparedness and certainly increased security has become a major focus for the Federal Government as well as for State and local governments and private industry.

We are taking hard looks at our nation's airports, at our water treatment plants, at our nuclear power plants, at all of our critical infrastructure and certainly our chemical plants which do provide so many of the products that are important to our quality of life and the functioning of our economy fall into the category of important infrastructure and security challenges.

I think it's our job to try to find out the best ways to help provide State and local governments, as well as private industry with the tools and resources they need to address any challenges we confront. I'm concerned that the Justice Department assessment has not yet been completed as required by law. An April 2000 DOJ assessment concluded that, "The risk of terrorists attempting in the foreseeable future to cause an industrial chemical release is both real and credible." Terrorists are likely to view the potential of a chemical release from an industrial facility as a relatively attractive means of achieving their goals.

Because we don't have a comprehensive assessment of this problem and I hope we will soon, we have gone on the basis of the information available to date including this preliminary assessment from the Department of Justice. A number of States as well as the chemical industry have engaged in their own assessment and certainly the underlying need that Senator Corzine's legislation addresses I think is without contradiction. It is a question of how we proceed from here to provide the maximum security that we possibly can.

Tomorrow, I will be introducing legislation, the Homeland Security Block Grant Act of 2001, which will provide relief to local and State governments to support them because clearly if there is a chemical problem, either accidental or deliberate, those who are on the front lines of emergency response are going to be the soldiers in that battle to try to contain whatever has occurred. Under this legislation, cities, counties and towns across America would be able to access Federal funds to better prepare themselves to provide additional law enforcement, fire and emergency resources. I've been meeting with emergency readiness experts and they tell me there is a tremendous gap between what we require in terms of the equipment, the uniforms, the spacesuits that are required to encounter a lot of these dangers and what is available at the local level.

We also have to continue to provide help to local agencies to design, review and improve their disaster response systems, to train our personnel and to better coordinate among all levels of government as well as with the private sector. I applaud our Ranking Member, Senator Smith of New Hampshire, for his attention to the needs that FEMA under the Stafford Act has in order to be totally up to date and well prepared.

I look forward to the witnesses testimony and to the work we can do in this committee along with the Administration and the chemical industry to try to make sure we are prepared and despite the failure of the Justice Department to meet its legally mandated,

statutory deadline of August 5, 2000 for this interim study, we will be paying close attention to the challenges that we now know are not just imagined but real but potential terrorist attacks.

I thank Senator Corzine for his leadership on this issue.

Senator BOXER. Thank you, Senator.

Senator Smith.

OPENING STATEMENT OF HON. BOB SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. Thank you, Senator Boxer, for holding this hearing today on a topic that is very important to all of us. Thanks to each of the witnesses for coming today to discuss security.

Also, let me express my apologies for having to leave after I do a brief statement because of other conflicting obligations. I will try to come back but if I don't, it doesn't mean I'm not interested.

The attacks that we saw on September 11 have left us all with a certain sense of vulnerability. All of us have been reevaluating security measures, what could be potential targets all over the nation ever since that day. In New Hampshire, I visited airports, water facilities, nuclear powerplants, transportation infrastructure, manufacturing, an old air base which is now a National Guard facility as well as a shipyard. Like it or not, September 11 has changed us all forever. We are now caught in the ongoing process of adjusting to the new normal, if you will. What was normal yesterday is not normal today.

We certainly want to get the most effective security possible. We've all been involved in that. I've authored legislation to deal with security matters for water infrastructure and have joined Senator Inhofe in a bill to address nuclear powerplant security and am pleased to be working with Chairman Jeffords to address many other security and terrorism response issues. Of course I would work with any member of the committee to try to address needs we might have.

Protection of our country is not a partisan issue and I think we all recognize that. When we talk about security, we must realize there comes a responsibility to legislate in an effective and efficient manner, as much as possible. We have to base our decisions on the accurate assessment of the situation, what the needs are and understanding of the role of the private sector and the role and responsibility of government. We try as best we can to base our response on facts as opposed to what might be fear tactics or even in some cases, sensationalism.

I commend Senator Corzine for bringing this matter to the front. I do not believe, however, that his legislation is the right answer, respectfully, and I just want to briefly point out why. I share his desire for our chemical infrastructure to be safe and prepared but I would advocate a different approach, especially as it comes to achieving security.

Security, in my view, should be a cooperative effort between the facility we are talking about, whatever it might be, and the local, State and Federal law enforcement. It shouldn't be confrontational. It should be a partnership with an open line of communication. It's only through working together and building trust that we're ever going to be able to deal with these issues. We can't anticipate

what's going to happen or the extent of it. Usually we can't. Sometimes we get a heads up but unfortunately, not often enough. Cooperation, partnership, team work, coordination are the hallmarks of successful security, not confrontation.

With respect, I would say to the Senator from New Jersey this bill takes a different approach. It seems to me to make an assumption that somehow the chemical industry doesn't seem to share the concern and must be mandated to take responsibility to see that the protection would occur. There is a new regulatory punitive regime that creates frankly an adversarial relationship under S. 1602. That might not be the intent of the author, but I think that is the result.

A strained relationship between the private sector and government is not going to lead to increased security; it's got to be cooperative. We've seen tremendous cooperation since the horrible events of the past few weeks between all levels of government and the private sector. I don't want to weaken that. That's not how we are going to protect the public. I know it's not the goal of the author to do that and I respect that.

There is another fundamental question the bill brings to the forefront and that is what is the proper role of the private sector. I think it's good you brought that forward. What is the role of the private sector in protecting itself against potential criminal acts or an act of war? Clearly the acts of terrorism that we have seen are acts of war but it's a question, not being here, that I would pose to the witnesses. Where do you believe the line of responsibility is for protection against criminal acts? Where does the private sector's responsibility end and law enforcement begin? I'm not sure how we would ever assess that. We all pay taxes that support the military and local law enforcement. The Constitution mandates a primary responsibility of the government to "provide for the common defense." In this bill, that law enforcement responsibility is that of the facility, in my view. It actually makes it a crime for not being able to prevent and act of terrorism. I think we have to think very carefully about this. It would be a crime under this bill to be the victim of a criminal act that caused a release. That's a disconcerting proposition for many small businesses around the nation who would fall under this legislation.

I want to support measures that improve our industrial security. I believe it is the responsibility of these private facilities to make all reasonable measures in providing security. You do it to protect your assets, you do it to protect the population, you do it to protect your workers. Certainly you don't want to provide releases into the environment. A post–September 11 security assessment of all the nation's infrastructure is something we need to do. I think we all have a responsibility to do that and I think this legislation gets that debate started but security measures by individual facilities should not be expected to take the place of law enforcement. I think it is very important to make that distinction. They need to be done in concert with law enforcement, not replacing.

I'm also very concerned that the bill might give the Federal Government the power to determine manufacturing processes and even changes in the physical structure of the plant, again, maybe not

the intention but certainly it could happen. It puts the Government in the position of making business decisions.

Finally, let me say S. 1602's role, if you really look at it, is basically one of role reversal here. The bill would put the Government in charge of chemical manufacturing and chemical manufacturers in charge of fighting terrorists. It should be the opposite. That's not what we want to happen here. That's not the responsibility. We need to work together but it shouldn't be one or the other.

I hope, Madam Chairman, as we move through the discussion that we can address some of these concerns and I, in all sincerity, commend Senator Corzine for bringing the matter to the forefront and we will have a good debate.

[The prepared statement of Senator Smith follows:]

STATEMENT OF HON. BOB SMITH,
U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Thank you, Senator, for holding this hearing today on a topic that is important to all of us. I want to thank our witnesses for coming here to discuss chemical security.

The attacks of September 11 have left us all with a sense of vulnerability. Since that day, we have been reevaluating security measures at what are potential targets across this nation, whether it is our airports, water facilities, nuclear power plants, transportation infrastructure, or our manufacturing facilities. Sadly, September 11 changed us forever—we are now caught in an on-going process of adjusting to a new "normal."

I continue to be a strong supporter of ensuring the most effective security possible. I have authored legislation to deal with security measures for our water infrastructure facilities and I have joined Senator Inhofe in introducing a bill to address security measures at nuclear power plants. I am pleased to be working with the chairman of the full committee to address many other security and terrorism response related issues. I will work with any member of this committee to ensure that any potential security gaps are identified and properly addressed.

The protection of our country is not a partisan issue—and I will never treat it as such. When we talk about security, we must realize that there comes a responsibility to legislate in the most effective and efficient manner possible.

We must base our decisions on an accurate assessment of the situation, needs, and clear understanding of the role of the private sector—and the role and responsibility of the government. We cannot base our decisions on sensationalism or in response to fear tactics B, we must rely on the facts.

I want to commend Senator Corzine for his interest and efforts with regard to chemical site security—but, unfortunately, I do not believe his legislation is the right answer. I certainly share with him a desire for our chemical infrastructure to be safe and prepared, but I would advocate a different approach for achieving security.

Security should be a cooperative effort between the facilities and local, State and Federal law enforcement. It should be a partnership with a constant line of open communication. It is only through working together and building trust that will provide for the highest level of security against any potential attack. Cooperation, partnership, teamwork and coordination are the hallmarks of a successful security apparatus.

Unfortunately, this bill takes a different approach. S. 1602 establishes a new regulatory, punitive regime that will create an adversarial relationship between industry and government. A strained relationship between the private sector and government will not lead to increased security, but will only serve to weaken our ability to protect the public. And I know that is not the goal of the author of this bill, and it is certainly not the outcome I desire.

Another fundamental question that this bill brings to the fore is: What is the proper role of a private sector entity in protecting itself against potential criminal acts or acts of war?

Clearly the acts of terrorism that we have seen are acts of war. It is a question that I wish to pose to each of our witnesses: Where do you believe the line of responsibility is for protection against criminal acts? Where does the private sector's responsibility end and law enforcement's begin?

We all pay taxes that support a military and local law enforcement. The Constitution mandates a primary responsibility of the government to "provide for the common defense." In this bill that law enforcement responsibility is that of the facility.

This bill actually makes it a crime for not being able to prevent an act of terrorism. In fact, it would be a crime to be the victim of a criminal act that caused a release. That is a disconcerting proposition for the many small businesses around this nation who would fall under this legislation.

I do support measures that will improve our industrial security, and I do believe that it is the responsibility of these private facilities to take all reasonable measures in providing security, preventing releases and responding if one occurs. And a post-September 11 security assessment of all this nation's infrastructure is an absolute must.

I am disappointed that the previous Administration did not do this—as the law did require. But any security measures by individual facilities should not be expected to take the place of law enforcement. They should be done in concert with law enforcement.

I am also very concerned with provisions in this bill that gives the Federal Government the power to determine manufacturing processes and changes in a facility's physical structure. It puts the government in a position of making business decisions.

S. 1602 is basically one of role reversal—the bill would put the government in charge of chemical manufacturing and chemical manufacturers in charge of fighting terrorism. I do have a number of other concerns with the bill—such as the redundancies with other laws, including transportation laws, that could cause problems. But given that I am short on time, I will stop here.

I would like to ask unanimous consent that a letter from the Association of American Railroads expressing opposition to S. 1602 be placed into the record. I do, again, want to commend Senator Corzine on his efforts, and I hope to work with him to address these concerns and the mutual desire we all share with protecting this nation from terrorists' attacks.

Thank you.

Senator BOXER. Thank you, Senator.

I think the debate has started. I'm going to make a couple of responses. That's what we are fighting for, isn't it—the ability to debate these matters. I want to respond very briefly to the comments made by my colleagues and my Republican friends.

First, the comment that we shouldn't get in front of the Bush Administration in taking on this issue; we should wait for Secretary Ridge and so on. I don't agree that it's the role of the Senate to do nothing on important issues, whether we have a Democrat in the White House or a Republican. I have a theory that not all wisdom resides at the White House, regardless of who the President is. I think we have a role to play and that's why I think this is so important.

I think more to the point is the terrorists might not wait for Secretary Ridge to have his plan in place. That's another reason why I think it's important to act and important to push to do what the right thing eventually we decide will be. I think this bill is certainly on track.

The other question Senator Smith points out, that we should have cooperation, we shouldn't mandate, is an important issue and I would like him to think about this. If we didn't mandate that there were hand baggage checks at airports, would the airlines do it? If we didn't mandate checking for bombs in the cargo hold, would the airlines do it?

Senator SMITH. Frankly, I think they would, with all due respect, if they wanted anyone to fly.

Senator BOXER. If we didn't mandate background checks on employees with access to planes, would the airlines do it? The answer is, they haven't, they still aren't and today, Secretary Mineta had

to demand they do the background checks on the new employees. So let's get real. The fact is we do work with the business community but the other fact is there are times when you have to pass laws and you work with the industry in passing the laws, but there may be some good apples and some bad apples out there, some people who do the right thing, some companies who do the right thing and some who are so concerned about the bottom line that they don't. That's why we need fair laws.

I think the debate we've seen so far has been a good one, but I think it goes to the heart and soul of some deeper issues.

I see that Senator Carper has arrived. Do you have an opening statement before I ask Senator Corzine to respond to the attacks on his bill and to introduce Mr. Shinn?

OPENING STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR FROM THE STATE OF DELAWARE

Senator CARPER. The frontal attacks? He's got broad shoulders, I'm sure he's up to it.

Let me just say the chemical industry, probably no surprise to the folks in this room, is clearly important to our country, and is important to Delaware as well. I think Senator Corzine is asking a lot of the right questions. I want to make sure with the help of the folks at the table and a lot of others that aren't at the table, we end up with the right answers.

Senator BOXER. That's the point of this hearing really to listen to all the comments and try to help move this process forward. Senator Corzine, will you take some time to respond and also to introduce Mr. Shinn. Then I'll introduce the other four panelists we have and we will get started.

Senator CORZINE. I'll be brief but I do think some response might be in order.

First of all, I couldn't agree more that I think we were elected by the constituents of our various States to respond to their needs and be attentive to the kinds of risks they associated with. So I think it would be kind of hard for Senators to ignore the kinds of problems that potentially put their lives at risk. I will repeat, we have an immediate example in New Jersey where the security associated with one of the local plants broke down. We'll find more about the specifics of that over the next 48 hours, but a very clear situation of a breakdown in security.

I believe this is a cooperative effort. I've tried to sit down with some of the folks in industry, and I don't think these regulations should be written in a vacuum. They should take into account the kinds of perspectives that individual businesses might bring. As a matter of fact, I think proscriptive legislation and detail is something we've tried to stay away from in this bill. It is giving time for the evolution of the specific regulatory structure and prescribes only that industry be involved in that process. I think cooperation is the fundamental element of it. I believe that to be the case in regulation in general.

As regards victims as criminals, which I think we will hear more about, this bill was specifically written that people would only have criminal liability when there was negligence that had been identified through a regulatory process and discussed and then criminal

liability could occur if there were an event that was concurrent or followed after there had been an identification of an issue. It's not the first order of penalties or incentives, but for the life of me, I don't understand how we would be able to justify that we have a regulatory investigation or supervision and identification of a problem, and a recommendation of a solution, but it is ignored and becomes a problem that threatens the public or actually involves the public. Why wouldn't that be subject to criminal responsibility? I think that's different than going straight to criminal responsibility.

As far as government making decisions about the chemical industry and turning things around and indicating the government is running the chemical business, I think that would fly in the face of almost every regulatory regime that we have in the country. I came from a very strongly regulated industry and the securities business for the SEC is very much involved in supervising certain aspects of how the securities business works. We are having enormous national debate with regard to the aviation security. I think that is on its surface an argument that has failed in the context of seeking to reach out and work with the industry to come to these points of view.

We should have those discussions. We should have them with all the people at the table and all the others to try to bring an effective, cooperative program that gives the public a sense of security as well as just only looking at the bottom line of the industry.

It is my pleasure to introduce the commissioner of the Department of Environmental Protection of New Jersey. He is one of my favorites because he's bald and has a beard. That obviously means he has great insights to these kinds of issues.

He has served under the current Director of the Environmental Protection Agency, Governor Whitman; was appointed in 1994 as commissioner for New Jersey's Environmental Protection; has a very strong reputation in our State; spent many, many years as an elected official at local, county and State levels; a very strong record and devotion to open space, the Pinelands, which is a special natural risk of New Jersey, farm preservation, water supply and solid waste management, very skilled.

It's my pleasure to welcome Commissioner Shinn to our hearing.

Senator BOXER. Thank you, Senator, and we will hear from him. Following Mr. Shinn, we are going to hear, in the following order, from Mr. Webber, president and chief executive officer, American Chemistry Council, an industry group representing major chemical companies. The chemical industry is certainly an important partner in chemical security and we all hope we can work together with you as we move forward on this bill.

Next will be Mr. Paul Orum, director, Working Group on Community Right-to-Know, which serves among other things, as a clearinghouse on environmental risk information. Mr. Orum has worked for more than a decade on issues related to the reduction of chemical hazards and on efforts to reduce toxic pollution.

Then we will hear from Mr. Bill Stanley, the sourcing-regulatory manager of Deepwater Chemicals in Woodward, OK. We heard you praised by our good colleague from Oklahoma. Mr. Stanley is here today on behalf of the Synthetic Organic Chemical Manufacturers Association. Mr. Stanley brings a little different perspective in that

his focus is more on small business. Assuring the security of toxic chemicals at small as well as large facilities is important if communities are to be adequately protected.

Our last witness is Ms. Rena Steinzor, academic fellow, National Resources Defense Council. Ms. Steinzor is a fellow with the Council. The Council is a national nonprofit organization of scientists, lawyers, economists and other environmental specialists focused on protecting the public health and the environment. NRDC has more than half a million members nationwide.

We will start with Mr. Shinn. We will use the clock for 5 minutes but after that, you can go for another minute or so and when it gets really over time, I will remind you. Please proceed.

STATEMENT OF ROBERT C. SHINN, JR., COMMISSIONER, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Mr. SHINN. Thank you for inviting me to testify today.

I am Bob Shinn, commissioner of the New Jersey Department of Environmental Protection. I sincerely appreciate this opportunity to talk about chemical plants, not only containment but security as well.

I want to take this opportunity to also commend Senator Corzine for the leadership in addressing this issue. It is certainly a controversial one as we've seen already. In light of September 11, discussion on the need to ensure adequate safeguards to protect the public from any accidental or intentional releases of hazardous chemicals, is especially pertinent and timely. Due to security concerns and our nervousness in New Jersey about the sites and chemicals, my testimony will be general and not specific. I'm sure everyone understands that.

There are two major themes I'd like to touch upon today. First, I'd like to give the committee the benefit of New Jersey's experience and successes in the area of chemical safety preparedness and response. The second point I'd like to make is that even in a State such as New Jersey with a successful and comprehensive chemical safety program, there are certain areas in which augmented Federal authority would enhance our efforts.

While New Jersey's program is focused on prevention of accidental releases of extraordinary hazardous substances and not those releases caused by terrorist actions, we feel the system we have set up and the preparedness we have instituted positions us in a good way. We are not only on guard against such an unfortunate occurrence but we must better be able to respond if it did occur.

In the course of nearly two decades, we have built a coordinated, effective program that not only works to prevent releases of hazardous chemicals but also provides us with the information and infrastructure so that we can respond on very short notification. The release of hazardous substances does happen. In this way, any releases that do occur, whether accidental or intentional, can be contained and the impact minimized. While our program in its entirety may not be transferable to the Federal level, I hope this committee will be able to take components of what New Jersey has done and use pieces of it for the national benefit.

New Jersey is the nation's most densely populated State and there are also a large number of facilities that produce or use highly toxic chemicals. This has compelled us to be especially diligent in ensuring there is little possibility that the public will be exposed to the releases of these substances. I'm not here to imply there our level of regulation would be appropriate for or should necessarily be imposed upon other States that do not have New Jersey's population dynamics or the proximity of a number of facilities to the public.

In 1986, shortly after the tragic accident in Bhopal, India, the New Jersey Legislature passed the centerpiece of the effort I'm discussing, the Toxic Catastrophe Prevention Act, commonly known as TCPA. It enabled our State to develop what is the most comprehensive program in the country to prevent accidental releases. Before I describe some of the more salient points regarding our regulatory process, there is one feature of the program I would like to highlight. While it's a regulatory program, it was designed in cooperation with the regulated community. Cooperation has been in place since the very beginning of the program when we created the initial rules in the 1986–87 timeframe with a very heavy industrial population and very heavy industrial involvement.

Professional chemical safety experts from the chemical industry and the insurance industry helped us write the rules in the first place. A lot of time was spent with these professionals to make sure that the technical requirements were valid and appropriate. A few years ago when we readopted our TCPA, we readopt regulations on a 5-year cycle, we incorporated the Federal Accidental Release Prevention Requirements and to make other improvements we had again intense interaction and discussion with the regulated community over a period of months. We asked for and received up front input from the regulated community. We feel this hand in hand approach has made for a more effective regulatory concept. This cooperative spirit has also been reflected in the implementation of our program.

In the past an environmental inspection could often an adversarial encounter resulting in fines, penalties and orders. We found it very effective to use these inspections to emphasize compliance assistance rather than solely as a violation spotting visit. When we perform an inspection of the TCPA regulated facility, a typical inspection will be performed over the course of an entire week during which we will work with the facility managers to examine alternatives and in many cases, involving the use of pollution prevention, innovative technologies and some process change to bring facilities into compliance. Many facilities realize efficiencies and enhance their profitability and reduce liability once they implement changes to their process.

We would strongly recommend that any Federal legislation in this regard promote a compliance assistance approach to regulation, without sacrificing appropriate enforcement response when necessary. I realize this is a fine line and has to be considered what it is well worth the effort to achieve the optimal goal.

There are several key features in New Jersey's TCPA Program that have contributed to the success of the program which you may wish to consider in working through the Federal program. The

main thing I would suggest is that the overall philosophy is expressed in Section 112(r) of the Clean Air Act place a greater emphasis on prevention and preparedness. In New Jersey we emphasize identification of risks and the steps that should be taken to reduce those risks. At this time, we need to be cognizant not only of accidental releases but those that may be intentional as well with a renewed emphasis on front end pollution prevention and quantitative risk analysis.

In New Jersey our law requires regulated facilities to perform comprehensive reviews and risk assessments of all possible release scenarios that may be caused by offsite impacts. Presently Federal regulation only requires facilities to perform analysis of worse case scenarios and one alternative case scenario. Furthermore, in New Jersey we realize these facilities quantitatively assess and characterize risk going a step beyond any other process safety management and risk management programs in the United States. This means that potential releases and resultant offsite impacts that may occur after each scenario must be quantified. To date, Federal regulation does not require that process. We'd recommend quantification be required where it is appropriate.

Senator BOXER. Thank you very much, Mr. Shinn.

We have been joined by Senator Specter who has said he will forego an opening statement. He is here to listen. We are very honored he has joined us.

We will next hear from Mr. Fred Webber, president and chief executive officer of the American Chemistry Council. Welcome.

As you see, we have the 5-minute clock and I allowed an extra 2 minutes, so please avail yourself of that time.

STATEMENT OF FREDERICK L. WEBBER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, AMERICAN CHEMISTRY COUNCIL

Mr. WEBBER. Thank you, Chairman Boxer, and good afternoon. My name is Fred Webber; I am president and CEO of the American Chemistry Council's 180 members here today to share their views on the important subject of security in the chemical industry.

I believe it is very important for members of this subcommittee and for all of the Congress to understand three basic facts about our industry. First, as you mentioned, Chairman Boxer, our industry is a critical and indispensable part of the nation's infrastructure. We make significant and sustained contributions to America's economic and national security. We make thousands of products that make peoples' lives better, healthier and safer products that go into making medicines and medical equipment, the space age materials used by the military in stealth aircraft, aviation fuel and night vision equipment, satellite communications systems and products that make the water we drink safe and clean. What's more, every manufacturing industry in the United States depends on the products of chemicals for their survival and indeed their growth.

Second, we have a culture of safety going back many years. The nature of our operations requires it. This culture of safety has created what the Department of Labor data shows is one of the safest industries in the United States and indeed the world. Our longstanding safety culture has in the last decade has all been a cul-

ture of security that extends beyond our industry to those with whom we do business, with whom we work, with whom we supply. This commitment to both safety and security is expressed through our industry's own voluntary safety and security initiatives and our adherence to and support for governmental standards and research and our longstanding and effective partnerships with local, State and Federal Government agencies including the all important first responders.

Third, we have an important role to play in strengthening our national security. We are working with EPA, the Department of Justice and other law enforcement agencies to review and strengthen security at our manufacturing facilities and to protect against the diversion and misuse of our products. This work was going on long before September 11. It has been accelerated since then. For example, we have urged President Bush to proceed with plans to conduct a comprehensive security assessment of the chemical industry that Congress requested a year ago to enhance our industry's security, programs and practices. Our industry will benefit from a comprehensive assessment conducted by appropriate Federal law enforcement, national security and safety experts. We are working with the Department and its contractor to improve its methodology. Lots of things have changed since September 11, but one thing hasn't. Security at our nation's industrial facilities continues to be the result of a collaborative effort between industries and government at all levels. I know I don't need to remind you that the first line of defense in terms of security is law enforcement.

As the Congress begins to consider proposals that might further strengthen safety and security at industrial facilities, we believe it should do so by building on this basic framework. For example, we believe Congress should develop legislation to require the development of a formal information sharing system between law enforcement and national security agencies and U.S. industries. That's because planning and actions by industries must be based in large measure on what law enforcement and national security agencies say is the threat of a terrorist attack. Security also requires that the right information get to the right people at the right time.

We also believe Congress should take advantage of and build on existing mandatory and voluntary safety and security programs and avoid reinventing any wheels. The legislation—and I say this, Senator Corzine, very respectfully—introduced by you we believe should be debated and examined. Overall, we think the goal you've sent forth is easy to support, however, we don't believe it is the right vehicle, at least in its current design, to take us where we think we ought to go.

I'm not saying that more can't be done to strengthen security and safety at our industrial facilities; rather, I'm suggesting that there are alternatives that Congress might consider. The GAO recommended one. In recent testimony before the Senate, the GAO recommended that any programs designed to combat terrorism must be based on sound risk management principles that systematically analyze threats, vulnerabilities and the critical nature or relative importance of our national assets. We agreed with the GAO.

Senator Corzine's bill takes a different approach than the one recommended by the GAO. It attempts to remedy theoretical vulnerabilities before we've assessed what and where the actual vulnerabilities exist. In a very real sense, it seems to prescribe a cure before any diagnosis has been made.

We believe the Environment and Public Works Committee and this subcommittee have important roles to play in this issue. For example, we believe there needs to be a program that provided financial assistance and tools to local emergency planning committees. I think this is what Senator Clinton was referring to earlier. In addition to the partnerships I mentioned earlier in my testimony, we believe the Department of Justice vulnerability study must be completed. I mentioned that earlier, that an efficient and timely intelligence and information sharing mechanism should be established and significant Federal funding be made available to increase security of the entire national transportation network.

In closing, our nation and its peaceful people face a new threat. This new threat demands that we throw off old ways of doing things and in their place, embrace new and more creative approaches.

Thank you.

Senator BOXER. Thank you very much.

We will next hear from Mr. Paul Orum, director, Working Group on Community Right-to-Know.

STATEMENT OF PAUL ORUM, DIRECTOR, WORKING GROUP ON COMMUNITY RIGHT-TO-KNOW

Mr. ORUM. I'm Paul Orum, director, Working Group on Community Right-to-Know. Thank you for the opportunity to testify and especially for your leadership introducing S. 1602, the Chemical Security Act.

We are here about one fundamental question: will there be a Federal program to reduce chemical industry hazards that endanger nearby communities, whether from criminal activity or accidents, or not?

The terrorist attacks of September 11 show plainly how chemical plants and refineries could suffer a worst-case fire or toxic-gas release. No longer can the chemical industry claim that a worst-case release is too improbable to occur as we have heard for years. No longer can the USEPA claim that hazard reduction is strictly a local matter with no need for a national program as we've also heard for years.

No longer can the Department of Justice neglect its duty to review chemical security practices and recommend ways of reducing vulnerabilities which unfortunately we have also seen for years.

I hope that no one would now seriously propose that a voluntary program would be enough to fix the problem and its source. Congress has both an opportunity and a duty to fill a big hole in our laws by requiring chemical producing facilities to evaluate safer alternatives and use them wherever feasible. The Chemical Security Act truly proposes constructive steps toward a national prevention and security program and gives government the tools it needs to protect communities in the new era of terrorism.

People might think the right programs are already in place but they are not. Currently no Federal law actively regulates the vulnerability zones that hazardous chemical industries impose on surrounding communities, nor does any Federal law require firms to even examine safer alternatives. As a result, thousands of communities across the country have chemical hazards that may be wholly unnecessary.

Current laws generally speaking are limited to clean up, planning, response and risk management. The Chemical Security Act would also address eliminating and reducing chemical hazards wherever practicable as the option of first resort. Both government reports and other incidents show serious security problems. You've mentioned several of them. I mention more in my testimony, so I don't need to go back over them.

We've also been trying for some time to communicate with the Department of Justice about its security study which you also mentioned has not been concluded. I guess I will mention one of those vulnerabilities. I was struck by an article in which a professor since September demonstrated that he was able to buy all the ingredients for nerve gas. Also, there are chemical industry websites that assure buyers they will remain anonymous after simply registering when buying chemicals. Chemical fires and spills occur frequently and I provide figures in my written testimony for the record.

I want to stress that the mostly volunteer local emergency planning committees are no substitute for urgent national efforts to reduce chemical hazards. A recent study of 32 active LEPCs found that most of these committees believe they do not have the time, resources or expertise to encourage hazard reduction. There is a role for local volunteer efforts but those efforts are no substitute for a national program. Again, if site security at airports were voluntary, it would not make me feel very safe.

I believe that only major policy changes will create a successful national effort. For example, few chemical companies have set measurable goals and timelines to reduce the inherent hazards they bring to communities. In fact, only four out of more than 350 facilities and companies we contacted in two surveys had done so. The USEPA has also not taken obvious steps to encourage inherent safety despite hearings on this topic in 1994 and 1995.

The Chemical Security Act proposes constructive steps to fix the problem. Among the most important, it makes it a duty of high priority industries to identify their chemical hazards, take steps to reduce the possibility of releases wherever feasible and minimize the consequences of any releases that do occur. Second, it puts prevention first, truly a new stage in U.S. chemical safety laws. Third, it encourages technological innovation before static add-on security measures. It provides a consistent definition of what inherently safer technology is. It should encourage healthy competition to produce and market new safer technologies and it gives Government the tools to act and ensures the Government will act to protect communities.

I'll conclude by citing a relevant poll that suggests people support a Federal role. It's the very last thing in my testimony. Between 81 and 88 percent of people living within one mile of a chemical

plant say they would feel safer knowing that EPA or OSHA were providing prevention assistance to that facility. That poll took place prior to the September attacks.

Thank you for the opportunity to come here today and I'd be happy to answer any questions.

Senator BOXER. Thank you very much. We will put your entire statement in the record. That goes for all of our witnesses.

Mr. Stanley, you're next. You are representing the Synthetic Organic Chemical Manufacturers Association. We welcome you.

STATEMENT OF BILL STANLEY, SOURCING-REGULATORY MANAGER, DEEPWATER CHEMICALS; ON BEHALF OF THE SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION

Mr. STANLEY. Chairwoman Boxer, members of the subcommittee, my name is Bill Stanley. I am the sourcing-regulatory manager, Deepwater Chemicals in Woodward, OK. I am appearing today on behalf of the Synthetic Organic Chemical Manufacturers Association. I appreciate the opportunity to speak with you on the issue of chemical industry site security.

My company, Deepwater Chemicals, is small. It has 30 employees. We produce fine chemicals, specializing in organic and inorganic iodine derivatives. Deepwater Chemicals uses batch manufacturing processes, a manufacturing method typical of many smaller chemical companies. SOCMA represents the batch and specialty chemical manufacturing segments of the chemical industry, a segment mainly comprised of small businesses. With this prospective SOCMA has been actively addressing process safety and site security issues well before the tragic events of September 11.

I will focus my remarks today on three specific areas. First, I will describe batch manufacturing and its role in the chemical industry. Second, I will explain how Deepwater Chemicals and SOCMA are addressing site security. Third, I will provide SOCMA's perspective of how industry and government can most effectively collaborate to address security within the industry.

The batch and specialty sector of the U.S. chemical industry has played an integral though less visible role in the success of the industry. These companies make the ingredients used in both commercial and consumer goods. In this sector, chemicals are produced in batches one at a time using the same equipment to meet specific needs and customer demands. By innovatively and efficiently fluctuating chemical processes, batch producers are able to make different products within a short period of time. As a result, a one-size-fits-all regulatory approach does not work for these innovative companies. This approach holds true in addressing site security. Ensuring the safety of our facilities, employees, neighbors and the environment is embedded in our industry culture.

In February, SOCMA collaborated with others in the industry to co-author a guidance manual onsite security. In October, this manual was made available to SOCMA members and the public at large on our website, SOCMA.com. To reach both association members and nonmembers, SOCMA is also co-sponsoring a series of regional site security workshops. At the company level, SOCMA members like Deepwater have taken proactive measures to aug-

ment existing environmental health and safety practices. These include conducting vulnerability and security assessments at the facilities and/or processes; communicating with law enforcement or emergency responders; tightening access by contract personnel; further controlling vehicle access and security awareness training.

In addition, Deepwater Chemicals must also comply with nearly 30 different regulations that have a cumulative effect on security at the facility. Furthermore, we participate in various community level programs such as our local emergency planning committee or LEPC. In this capacity, we provide technical expertise in the planning process, assist with the training of local responders in handling hazardous chemicals and provide information about chemicals and transportation routes. As you can tell, handling chemicals to develop extensive plans to address potential incidents covering both onsite and offsite consequences.

SOCMA applauds this subcommittee for recognizing the importance of chemical industry site security in S. 1602. However, SOCMA has a number of concerns about the proposed approach and its likely consequences. Under the bill, any small batch company that produces or even handles a high priority substance may be required to adopt and use new processing techniques. Such requirements would hinder a company's ability to innovate and grow by removing operational flexibility. In our industry, the ability to innovate drives the ability to compete globally. The chemical industry is already facing increasing competition from abroad. Our industry currently employs over 1 million workers. Neither our industry nor our economy can afford to have these jobs move overseas.

SOCMA is also concerned with the bill's general duty clause. Even the most extreme criminal actions by a third party could subject a chemical producer to sanctions. This bill makes it a crime to be a victim. These provisions also place the entire burden of preventing criminal and terrorist activity on the company. SOCMA is also concerned with the bill's presumption that security will be enhanced by mandating safer technology. S. 1602 assumes that processes can be redesigned and inputs substituted based on a single perspective, potential impacts on national security. This simplistic analysis overlooks the realities of chemical processing. Process changes must be preceded by a comprehensive assessment of the consequences. For examples, will emissions increase, will emissions be more toxic, will product quality and effectiveness suffer? S. 1602 authorizes EPA to require changes without considering realistic factors.

In moving forward, I urge the members of this subcommittee to keep in mind that not all chemicals and facilities are likely targets for terrorist attacks. A small company would be better equipped to prioritize resources for those areas that are most vulnerable by utilizing a tiered, risk-based approach. SOCMA envisions a six step approach that begins with determining which chemicals, processes and facilities are likely targets. Once these six steps are complete, it will be easier to assess whether or not the security measures in place are appropriate for the potential threat.

I would like to conclude by confirming that there are plenty of incentives to ensure safety and security in all of our processes. We

do not want accidents, nor do we want to be the victim of an attack. I work in my facility, my friends work in the facility. My friends and neighbors are important to me. My failure to address these issues would impact me directly. We are all in this together, our businesses, our communities, our government leaders. We want to continue to work together on a cooperative basis to evaluate and to respond to potential risks in an effective manner.

I would be glad to answer any questions at this time.

Senator BOXER. Thank you very much.

Ms. Steinzor, you are next and our final witness today. You are representing the Natural Resources Defense Council as a fellow with that organization. We welcome you.

STATEMENT OF RENA STEINZOR, ACADEMIC FELLOW, NATIONAL RESOURCES DEFENSE COUNCIL

Ms. STEINZOR. Thank you. I appreciate the opportunity to appear today to testify in support of S. 1602. In the wake of the tragedies that began on September 11, this legislation is one of the most important, proactive steps the Federal Government can take in response to the threat of sabotage involving toxic chemicals which belongs on anyone's top-10 list of national priorities.

Existing law does not address this problem effectively. Waiting for States to erect a patchwork of inconsistent requirements could take years and would cost excessive amounts. The American people clearly want their government to protect them from the risk threats and they want those activities begun yesterday. Not incidentally, the proposal you have before you today, like the one Congress passed in 1986 in the wake of the Bhopal tragedy will enable our nation's brave police, firefighters and emergency personnel to combat accidental releases of hazardous materials with the knowledge that the Federal Government and private industry have done everything possible to avoid placing them in harms way. For the sake of these brave men and women and the public at large, NRDC urges you to move this legislation toward enactment as quickly as possible.

As you may remember, the Bhopal tragedy occurred when equipment at a pesticide manufacturing plant malfunctioned causing the release of a cloud of lethal methylisocyanate gas. People in the crowded neighborhoods around the plant saw the plume, assumed it was a fire and ran toward the factory to help extinguish the blaze or simply to watch the excitement. As the plume drifted over the plant gates toward the crowd, some 3,000 people dropped dead in their tracks.

Overcoming the temptation to view Bhopal as an example of Third World ineptitude, a congressional panel traveled to a twin Union Carbide facility in Institute, West Virginia only to discover that although the county had prepared an emergency plan, the plant manager did not realize it existed. Today, there is still a tank of methylisocyanate at that Institute plant even though other companies have converted to a closed loop system that avoids the need to store such large quantities of the deadly gas. This fact speaks volumes about the potential of volunteerism to solve this problem.

Congress responded to Bhopal and its aftermath by passing the 1986 Emergency Response and Community Right-to-Know Act,

which was refined and expanded by the 1990 Clean Air Act amendments. Neither law addresses the all important task of preventing such incidents, by reducing hazards and ensuring plant transportation system security.

Human error in operating complex machinery killed several thousand people in Bhopal. What price will we pay for deliberate sabotage at such a facility? Indeed, it is commonly understood by everyone involved at the grassroots level from firefighters, police and other municipal officials to the companies that own and operate the factories, railroads, pipeline and truck fleets that local emergency response capacity, even in large cities, falls far short of either legal requirements or safe practice. Despite the valiant efforts of fire departments nationwide, local governments under pressure to fund other services simply have not given firefighters, police and emergency medical personnel what they need to do a very difficult job.

To date there have only been two confirmed attempts to perpetrate terrorist attacks on facilities handling toxic chemicals both of which fortunately were prevented. However, there have been numerous accidents involving such materials. Fifteen accidental gas releases of greater amount and toxicity than Bhopal occurred in the United States between 1980 and 1990. Press accounts of these incidents indicates that luck rather than preparation is the reason we have not yet seen widespread fatalities. These realities demonstrate beyond any reasonable doubt the importance of the legislation before you.

Although devolution of traditional Federal functions through the States is a popular approach to government at the moment, the events of September 11 have reminded us why we operate under a system of Federal environmental laws. First and foremost, the terrorist threat is an international threat and we traditionally rely on the Federal Government to protect our national security. Second, we must address hazards that cross State boundaries. Many plants that experience an accident would affect populations living in more than one State. Third, asking 50 States and thousands of local governments to assess the threat of sabotage to chemical plant and transportation systems would consume enormous resources and might well result in failure in far too many places.

As for the question of whether industry volunteerism is enough to meet this challenge, the information released thus far suggests that industry is focusing on physical security with prevention by hazard reduction a distant and far lower priority. The instinct of most companies will be to post security guards, strengthen fences and make alarms louder all of which may well be appropriate but are an incomplete answer in the face of the kind of coordination and determination displayed by the terrorists who attacked us on September 11.

We appreciate your interest in moving this legislation quickly and we plan to do anything we can to assist you in that effort.

Senator BOXER. Thank you very much, Ms. Steinzor, and thank you all. I thought you all made very important points for us to consider in our deliberations.

We are going to have 7-minute rounds by each Senator and we'll go as long as it takes. I'll start it and then pass it to my Republican friend and we'll go as long as people have questions.

Mr. Webber, when I opened, I made the point I was disappointed that EPA wasn't here. You had nothing to do with that but I wanted to ask you this. At a White House briefing with Tom Ridge last Friday, Administrator Whitman specifically addressed the issue of chemical security. She indicated at that time that chemical security is just an extension of what EPA already does. Administrator Whitman also indicated EPA is dealing with this issue primarily through discussions with the American Chemistry Council, which is your organization. Have you been involved in such discussions with her?

Mr. WEBBER. Yes, I have, Chairman Boxer. I've met several times with Governor Whitman and her top staff, specifically on the issue of security, not only to exchange information but to try to figure out really what her expectations of the industry were or are and they were clear.

For example, she did expect us to issue site-security guidelines not only for our own members but for the chemical industry at large. Mr. Stanley and I both know that there are a lot of chemical companies not represented at this table. We are all concerned about them. We promised Governor Whitman and the EPA that we would work to reach out to all of them. Indeed, we have published site security guidelines as well as distribution guidelines.

Senator BOXER. I don't mean to cut you short except I want to make sure I understand. You have had several meetings with Administrator Whitman on the subject of chemical security?

Mr. WEBBER. Absolutely.

Senator BOXER. Mr. Stanley were you involved in any of those meetings?

Mr. STANLEY. No, I was not.

Senator BOXER. Was your organization invited and attended some of those meetings?

Mr. STANLEY. Yes, SOCMA was.

Senator BOXER. Mr. Orum, was your organization invited, your Community Right-to-Know organization?

Mr. ORUM. No.

Senator BOXER. Ms. Steinzor, was your organization included?

Ms. STEINZOR. No.

Senator BOXER. Mr. Shinn, were you invited as someone who has an active involvement in this issue?

Mr. SHINN. No.

Senator BOXER. Is anyone here from the EPA in the audience today? Did they send anybody at all? We were hoping they would have sent someone. I'm not going to ask you anything. I just want to know if you're here. I would like to say as far as the EPA is concerned, if you're meeting with the chemical companies, it would be really nice to meet with the people of the country who are frightened about this and who speak up for safety. If no one is here then I intend to write a letter to Administrator Whitman and hope to get some signatures from my colleagues.

[Audience member stands.]

Senator BOXER. Did you say you were from the EPA? There is someone from the EPA.

Mr. HEIMLICH. I am Doug Heimlich from the EPA. I'm just starting my job today.

[Laughter.]

Senator BOXER. Well, if I might, first of all, welcome you, and second of all, tell you I have heard of a baptism by fire and this is it. If you could just take a message back to the Administrator that we're very glad she's speaking with the chemical companies but speaking for myself as chair of the subcommittee, I hope she would include or meet separately with the people who advocate for public's right to know and public safety because we have to be balanced. That's why this committee chose to have people from all sides. We don't just meet with one group, we meet with everyone and I think that's something she ought to do if she hasn't done it. It's just a friendly suggestion.

Let me say further, Mr. Stanley you made an interesting comment. You said, we don't want to have an accident. Our people work in these plants. You said, I work in these plants. Do you think the airlines want to have accidents, want to have terrorism?

Mr. STANLEY. Absolutely not.

Senator BOXER. Of course not. They have beloved employees. I'm wearing on my wrist a bracelet dedicated to one of the pilots who was in the plane that crashed into the Pentagon. So of course our industry are good people and none wants to have an accident to themselves, to their employees they put so much into. You, yourself, are working in the plant. That's understood.

The point I hope you'll think about today—I'm not asking you to comment on it unless you want to—is that you may take every precaution and go far beyond even a reasonable response to the threat that Mr. Webber described in the newspaper as being a very real threat but your neighbor who produces a chemical may not have that same set of values you have or even your intelligence or expertise and may do lesser precautions. That's one of the reasons I think Senator Corzine is onto something here. That's why we don't let the airlines—I'm hoping we won't—decide their own security, because if it isn't uniform, you'll have some airlines doing a whole lot being the greatest citizens and the best workers, best employers and working with their employees and doing everything right, and you may have another that is more of a risk-taking operation that puts the bottom line ahead of public safety. You don't know that and to have some national law in place that says we're all going to march down together as good citizens and work together. I hope you will consider the fact that Senator Corzine in writing this bill and my going on as a co-sponsor, we know everyone means the best. That's not the question, but how can we do something together where we have some uniform standards and can make sure as Ms. Steinzor said that we are protecting everyone, including the heroes who came in to mop up after an accident happened.

I have 14 seconds left so rather than continue, I'm going to ask my good friend from Oklahoma to take his 7 minutes at this time.

Senator INHOFE. Thank you.

Since Senator Smith was criticized for some of the statements or perhaps questioned the accuracy in his statements, let me bring

out a couple of these that I found to be of interest to me. One of them was this bill actually makes it a crime for not being able to prevent an act of terrorism. In fact it would be a crime to be the victim of a criminal act that caused a release. That's precisely, Mr. Stanley, what you said in your opening remarks, isn't it?

Mr. STANLEY. That is correct.

Mr. INHOFE. Mr. Webber, do you believe that would be the position you might be in, not being able to prevent an act of terrorism, that you could in fact be committing a crime for being a victim?

Mr. WEBBER. Yes, sir. The way I think we would put it is that it would appear in reading this bill carefully that it would be a crime to be a victim of a crime.

Mr. INHOFE. Have either of you talked to some of your legal advisers and so forth when you assessed this bill in preparation for coming here?

Mr. WEBBER. Very carefully. I'm not an attorney but I certainly rely on their expertise and that is their interpretation.

Mr. INHOFE. Mr. Stanley, did you do the same thing?

Mr. STANLEY. I was not directly involved with those conversations but with SOCMA, my organization, yes.

Mr. INHOFE. Another thing Senator Smith said, reading from his statement, "I'm also very concerned with provisions in this bill that gives the Federal Government the power to determine manufacturing processes and changing in a facility's physical structure." I've read a bit and am reading directly from the bill under Inclusions it says "reduce or eliminate storage, transportation, handling, disposal, discharge of substance of concern." I think that's probably what Senator Smith was referring to when he's concerned about the provisions of the bill giving the Federal Government that power. Do you share that concern? Do you feel you are as concerned as Senator Smith, Mr. Stanley, about the powers that seem to be given the Federal Government in the affairs of your business?

Mr. STANLEY. Yes, I do.

Mr. INHOFE. Let me ask you this. Let's say you had to change. I think it one of you who said you might have to change your facility as a result of this, making a change. In the event that happened and there was an increase in emissions, could it be that would trigger a new source review? What do you think? Have you thought about that, Mr. Webber?

Mr. WEBBER. Not really. I agree with the general proposition that Mr. Stanley described.

Mr. INHOFE. I know this is mostly in refineries. We had several hearings back when Republicans were important and I chaired the Clean Air Committee, we held quite a number of hearings on this. We went to Illinois where we saw the minor changes, even if it did not affect emissions in refineries could trigger a new source review which is a very elaborate process whereby you have to back with an old facility and bring everything up to the newest standards. This has application to my understanding with you except before it would trigger that, it would have to show that perhaps emissions were increased.

Mr. Webber.

Mr. WEBBER. You raise a very interesting point, Senator. With your permission, I brought two colleagues with me, one of whom

could address this question. He is an expert in process safety management. His name is Arthur Burke from DuPont. Would you be willing to have him answer Senator Inhofe's statement?

Senator BOXER. Within the timeframe, if Senator Inhofe would like, I'm delighted.

Mr. BURKE. I'd like to start by acknowledging some common ground between the Government, the American Chemical Council and regulatory agencies, the Environmental Protection Agency in dealing with the subject of inherently safer technology which is the main thrust of Senator Corzine's bill. That common ground is that we all promote and encourage the application of inherently safer technology. Where we differ perhaps is how we do that.

Both OSHA's safety management rule and EPA's Risk Management Program rule require multidiscipline teams to conduct process hazards analyses. PHA teams in conducting these studies work to identify hazards, examine lines of defense and make recommendations to reduce risk and strengthen those lines of defense.

Typically, American Chemistry Council member companies apply inherently safer technology through the conduct of these process hazards analyses. ACC believes this is the proper approach to applying and implementing inherently safer technology. We believe that the Government could contribute in a positive way to the application of ISP by giving consideration to tax incentives to companies that implement inherently safer technology. It's a way to go back to building partnership relationship with the Government, industry, the communities, working to implement inherently safer technology.

Senator INHOFE. But the specific question I'd ask is do you think this could have the effect in the event that emissions increased of triggering a new source review?

Mr. BURKE. I'm not sure.

Senator INHOFE. I'm going to ask that you try to get me the answer to that for the record.

Some criticized the Administration for not working with each of these organizations. I'd like to ask both Mr. Stanley and Mr. Webber did your organization work with Senator Corzine in the drafting of this legislation?

Mr. STANLEY. No, sir.

Mr. WEBBER. No, sir.

Senator INHOFE. It was contended in the opening statement by Mr. Orum that there is not enough dialog between the industry and the community. I'd like to ask Mr. Stanley, could you please tell us what your company does with the local community?

Mr. STANLEY. Deepwater came to northwest Oklahoma after being approached by the Woodward Industrial Foundation. The town wanted to bring in more industry to develop the community from that standpoint, so they knew up front what we did. That began a relationship with the local community and exactly what Deepwater does as a business. That continued on not only with Deepwater Chemicals but several other local industries and companies. We deal directly with the local emergency planning commission and also with the SEPC. It's an open line of communication and we just have developed that even further since September 11 and we plan to keep on pursuing that also.

Senator INHOFE. I asked that question because I was doing a talk show up Inwood when somebody came on talking about what kind of citizen you are, who you work with, your concern for the safety of the public and I appreciate that very much.

My time has expired but Madam Chairman, unfortunately we have an amendment on the stimulus bill that started 5 minutes ago.

Senator BOXER. Was it drilling in ANWR?

Senator INHOFE. No.

Senator BOXER. Because I was going to go over there.

Senator INHOFE. I would remind everyone out of 3,000 pages in H.R. 4 dedicated to energy, only two of those pages addressed ANWR, so the answer is no.

Senator BOXER. That's two pages too much for me.

Senator CORZINE. Senator Inhofe, since you addressed a question to Mr. Webber with regard to whether I had met with the chemical industry, staff did actually sit down with a number of folks if I have information correct. We didn't agree on the direction that we were taking and there have been several meetings from time to time in my own State with people in the industry, specific individual companies.

Senator INHOFE. I appreciate that, Senator Corzine. I was just asking since they are the witnesses here, if they had been consulted.

Senator BOXER. We're going to stop the clock here. We're going back to 7 minutes but go ahead.

Mr. WEBBER. I saw you frown when I gave my answer. I've just been told by staff that indeed there had been staff meetings and those staff meetings can best be characterized as your staff presenting the outline of the legislation. Whether there was room for input or not is anybody's guess but there were those meetings and I paid a courtesy call on you yesterday.

Senator CORZINE. I wasn't speaking about the courtesy call.

Mr. WEBBER. I also want to acknowledge that you did meet with representatives of our industry in New Jersey I think last month.

Senator CORZINE. I hope that once and for all, we will put aside the view that this is a confrontational element. It is a cooperative one. I think anyone that looks at a bill that's going to take 2 years to make an assessment and then to write regulations is leaving plenty of time for the evolution of this in a cooperative sense. In a very technical area, I think it's absolutely necessary that they be done and there is no intent.

I also find it hard to understand, I can't remember who said there were no threat assessment facts that were underlying this. The Department of Justice is in the midst of that. They were supposed to have presented the threat assessment I think it was in April 2000, if I'm not mistaken. I think a lot of us are frustrated that hasn't been completed. The only thing we do have from the Department of Justice says there is a clear and present danger from these kinds of activities, terrorist attacks applied to chemical plants. I'd like to have that threat assessment too. I think that's a proper quantitative, qualitative analysis that should be a part of this legislation as we put that together. So I hope no one thinks that.

With regard to the sense that there may be differences in a rural located plant in Oklahoma versus one on the New Jersey Turnpike, we have been very specific, very specific that EPA should identify high priority projects and then make different assessments for different risk threats associated with it. I hope when we talk about this bill we talk about it in the context of how it is actually written.

With regard to victims as criminals, I think different lawyers may be reading this differently because at least my lawyers would tell me it is written that you have to have not dealt with the substance of understanding what high priority risk would be, followed by identified hazards and not dealing with actions that were recommended by the EPA in the context the regulations are written.

I am in no way trying to say that somebody that has an airplane flying into their chemical plant is criminally liable but if people haven't taken precautionary steps like having security guards and high fences and other kinds of things or high alarms even, where people can walk on plants and plant bombs and create problems, I think there may be reason to presume that there is some liability for those individuals that go beyond civil. At least that is the intent of the legislation.

I would ask Mr. Shinn that in your testimony you suggested that sometimes when regulators work with industry, you may find savings in new operations and new activities. I think you were very specific about that if there is a cooperative element about how one works together with processes and equipment. Would you comment?

Mr. SHINN. I think we're finding more and more across our program lines we just can't get to where we need to go alone. We can't do it in the traditional regulatory fashion. A good example is in this program, talking about the TCPA. In our water treatment facilities, we had 500 pound or greater threshold for chlorine. In less than 3 years, 375 of these facilities had reduced the amount of chlorine on hand or below the threshold, essentially removing them from the program. The incentive was to have your storage below a certain threshold to be out of the program altogether.

Senator CORZINE. Was this a case where regulatory agents were actually working with industry in a cooperative way?

Mr. SHINN. The other really valid benefit that came out of it, 100 facilities, water treatment facilities, eliminated the use of chlorine altogether and used other technologies, ozonation and the list goes on but we really dramatically reduced the storage of chemicals onsite for water treatment facilities.

Senator CORZINE. I'd ask any of the witnesses to respond to a question I have about risk management plans that are part of the Clean Air Act of 1990. EPA states there are 15,040 risk management plans in place. Unfortunately, that only represents 80 percent of the facilities that are subject to them. There are currently 18,800 facilities. That is a requirement by law.

Do we have some perspective on why these other facilities are not meeting these risk management plans that I presume deal with just accidental and mechanical issues? Any of the witnesses want to comment?

Ms. STEINZOR. There is virtually no enforcement of those requirements by the agency and you point out that a large number of the

plants have not even prepared them. There is an additional concern of their content and what they do say, and whether they are adequate.

If things keep going the way they have, we may never get access to them because there is even talk of pulling them out of local reading rooms, much less off the Internet. I think that would be the answer I'd offer, that there is not enough enforcement.

Mr. ORUM. I hope you will ask EPA that question about enforcement. What I wanted to add is the risk management plans were developed before the present era and do not include a protocol or annex that would address specifically terrorism. Likewise, the thresholds under that law were established without terrorism in mind. So you have examples such as a one ton tank of chlorine that can cause serious harm two miles offsite not being included by itself in the program.

Senator CORZINE. I asked that question because I have some concerns about voluntary efforts in meeting guidelines if we are not actually meeting the risk management plans that are now in place with regard to the Clean Air Act.

Ms. STEINZOR. It also is worth noting that it's my understanding that DuPont was one of the companies that did a closed loop system for methylisocyanate but the facility in Institute, West Virginia did not take similar steps. Certainly there are many members of the chemical industry, as Senator Boxer said, who are very responsible and have really broken new ground on preventing new hazards but something as simple as that in the wake of Bhopal with all the notoriety of that particular chemical, it's discouraging.

Senator CORZINE. I think one of the reasons we feel that legislation may be appropriate at this time is not for the highest standards that are being executed by companies and participants in the chemical industry, but we are fearful of what the lowest common denominator may be doing with regard to this.

I think the reality that not even today over a decade later these risk management plans are in place should give people some cause for concern.

Senator BOXER. I think that point is well taken because as I said before, the same with any industry, there are good actors and bad. It's refreshing if we could find some of the good actors come out and say, we want our industry to reach the highest standards. It's hard to find that happening. I'm not critical here. It's just hard to find that.

I want to get to the industry mantra about this bill makes it a crime to be a victim of a crime. Mr. Stanley, if a terrorist blows up a chemical plant and there are lots of casualties and the terrorist dies, he's a victim. Is he also a criminal?

Mr. STANLEY. Yes, he is.

Senator BOXER. I wanted to make sure we got that clear and got that out of the way. We're not talking about that.

If a company knowingly fails to conduct a background check on employees and hires a criminal and that criminal blows up a plant or causes great damage, do you think there should be any culpability there?

Mr. STANLEY. Yes, I think there should be but I think our industry as a whole has that viewpoint to make sure that we have the

assessments or security measures in place already. I feel we are a safe industry. A small batch plant I think has a little more flexibility. As far as Deepwater's own hiring policy, we do a full background check because we are aware of that, because of the chemicals already onsite.

Senator BOXER. The point I'm making is when you read Senator Corzine's bill what you realize is what he's done is allow the EPA which you are meeting with on a regular basis, chemical companies are, to determine the regulations, and also the Justice Department to come up with what penalty should be. He doesn't even put any penalties in this bill. This mantra about you're making victims criminals makes no sense at all since this is going through the Justice Department and the EPA.

The fact is I think if a company knowingly avoids doing criminal background checks, if this law were to pass, ignores safety rules such as putting a dangerous chemical in the back of a plant without a fence or a guard, you're darned right I want to hold people responsible for that kind of irresponsible behavior, just as I would an airline that doesn't do an engine check and an engine blows up. Yes, you've got to make sure people are responsible for their actions. I thought that was what being a good citizen was about.

You have nothing to fear because you're doing the right thing. Ninety percent of the companies, maybe more, maybe 99 have nothing to fear.

I want to ask Ms. Steinzor because she said something which I wanted to probe a little bit. You said there were a couple other near accidents. Could you elaborate a bit on that, in America?

Ms. STEINZOR. I think Paul has the precise number of near misses which is a very important thing to take into consideration.

Mr. ORUM. Yes and no. No one has the total number of near misses and no one actually has the big picture of chemical accidents, however, 25,000 fires, spills and explosions each year, small, medium and large is what we hear from the National Response Center. About 1,000 of those have death, injury or evacuation.

The point about near misses is that some analysts suggest each time you have a catastrophic failure, you have 30 loss time incidents, 300 recordable incidents and 30,000 near misses. So the pattern of these many, many incidents suggests we will have big incidents. If you count everything, even the smallest spills, you get as many as 50,000 incidents a year.

Mr. WEBBER. I'd like to respond to that and get back to background checks because we need your help on this.

First, on the National Response Center, it's important to note that data is very limited in several important ways. First, the data base NRC maintains includes non-chemical related events, such as railroad crossing events. Second, the NRC records that report incidents it is common for the Senate to receive multiple reports of the same incident and they don't distinguish.

Senator BOXER. What do you think the number is?

Mr. WEBBER. A fraction of what is reported.

Senator BOXER. Give me a number.

Mr. WEBBER. I can't give you a number.

Senator BOXER. A fraction of it is what?

Mr. WEBBER. A fraction of that which is reported.

Senator BOXER. You've got to give me a number.

Mr. WEBBER. I don't have it. I could do it for the record.

Senator BOXER. Would you do it for the record? Does your assistant know?

Mr. WEBBER. I can find out. Case after case has demonstrated to us there are multiple reports. We've gone to the NRC and said, let's find out what the true rate of incidents is involving chemicals specifically and we know it's a fraction.

Senator BOXER. Is it more than 100?

Mr. WEBBER. I dare not speculate.

Senator BOXER. Nobody here from the chemical industry knows how many incidents there are today, for the record?

Mr. WEBBER. We'd be pleased to respond in writing.

Ms. STEINZOR. If I could add to that, first of all, there is an opportunity if an incident is not what people thought it was to begin with to correct the record with the National Response Center and perhaps companies should start doing that rather than questioning the figures the Center has.

Second, it certainly is true that railroad crossings would be reported. Senator Corzine's bill and your bill, Senator Boxer, cover transportation concerns.

Senator BOXER. It's a big issue.

Mr. WEBBER. I can give you an example and I hope this is accurate. Last year, 170 deaths were reported in our industry, 158 were traffic accidents including railroad crossings including the overturning of a milk truck. You have to put this in perspective.

Senator BOXER. We're talking about incidents. What I'm trying to get at here are the number of incidents. We were told one number, you said it's a fraction. We'll hold open the record. How long do you think it will take you to get me that number?

Mr. WEBBER. Hopefully in a few days. We'll do it as quickly as we can.

Senator BOXER. We will check our mail.

I'm going to have to leave. I'm proud to introduce the President's choice for the head of the Peace Corps. That hearing is down the hall, and I need to do that. I'm going to give the gavel to my colleague.

Mr. Webber, if you need our help in terms of background checks, I think that's a very legitimate point and maybe when I leave, you can let the good Senator from New Jersey know that. We want to be helpful and maybe he can put that in his bill if you need that.

In closing, let me thank Senator Corzine so much. I had the privilege of serving on this committee with Senator Lautenberg and you have come right in. He was just unrelenting in his desire to protect the public from toxic materials and you've come right in and have that same fervor. I could not appreciate it more than I do.

I want to say to the EPA individual who I believe is under CPR in the back of the room if he could make the point to Administrator Whitman one more time that this committee has both sides at the table and they are distinguished people, different perspectives, different points of view, that's what America is. We debate things. It's important that she include the environmentalists and the advo-

cates for ordinary men and women who may well be a victim of this kind of terror to the table.

Senator Corzine did it and it isn't easy, I know, when you're writing a bill that's going to say to an industry you've got to do more. It isn't easy. He met with people in his State his staff met with people here. I think that's good and I would hope she would do the same. If you would let me know if that's going to happen because I believe Ms. Steinzor you are ready, willing and able to meet with Administrator Whitman, correct, Mr. Orum?

Mr. ORUM. Yes.

Senator BOXER. Then I think the Administration will come out with a more credible proposal that we can support. If it comes from a narrow industry that clearly has a particular interest in terms of economics, it's not going to have the kind of reception here that it deserves.

With that controversial statement, I will go off to the Foreign Relations Committee. Thank you, Senator, and carry on, please.

Senator CORZINE [assuming the chair]. I appreciate it.

We have tried to put in the bill encouragement to have safer equipment. I think we talked about how it would be easier to accomplish if we had tax credits that made that attractive. That in itself has embedded in it the question are there processes we know are safer that are not being done because tax credits aren't available with regard to either accidental or criminal or terrorist releases of chemical processes? I understand it as an old business hack myself, I wouldn't mind having tax credits for investment purposes, it's a good thing, but are there generally recognizable initiatives that because tax credits aren't available we are not taking those steps?

Mr. SHINN. To generalize, I think going in the direction of incentives and indicators to track the progress, I think you're right on the money because we've tried to do a certain amount of that. One of the things we recognize is the smaller batch plants are harder to keep track of from a process, from a right to know perspective, from a facility emergency response perspective because their processes change all the time. They may be making this batch today but next week they'll bid on a different process.

You mentioned the lodi situation which will be embedded in my memory a long time, a real tragic situation. Part of that problem was the proper expertise for the batch they were producing was not available when that batch ran away in the chemical process.

I haven't figured out how to do it but you mentioned credits and incentives. We think an area that has a lot of promise is having the larger chemical companies mentor. I know there is a lot going on through chemical organizations to do this. We applaud that but some more incentivized way for larger chemical companies to work with batch plants when they are in complex issues because I think there is an expertise demand that may not be satisfied.

Senator CORZINE. You found that in some situations where you've been able to work through a constructive and cooperative relationship with some of the chemical processors, you've actually saved money, people have come back after the fact and said this was a good thing on a business basis as well as from a regulatory perspective.

Mr. SHINN. I think when you look at the different laws we have both Federal and State, discharge prevention, containment, the Worker and Community Right-to-Know Act, the Emergency Response and our TCPA Program, when you look at all those in context, there's a lot of coordination that is needed between those programs, and pollution prevention. If you put all those together with a pollution prevention concept, you really get to the ultimate goals I think everyone in this room is trying to achieve.

When you jump to programs and have different guidelines it's hard to get an overall concept together. I think we could improve that process up to and including the Department of Transportation commerce clause issues, when you get to know what's in a box car that's unloading in your community. That is another issue that weaves into this whole topic you engaged. They are all part of a need for a coordinated approached that involves many Federal agencies.

Senator CORZINE. I would ask if anyone has anything they'd like to comment on for a minute before we end.

Mr. Stanley.

Mr. STANLEY. Especially batch plants, I'm not sure what Mr. Shinn meant by mentoring some of the companies similar to Deepwater Chemicals. We have an extensive staff as far as technical and educated people from the standpoint of process chemistry, chemistry and engineers. It's part of our education when we design a process and the equipment to make sure it can be done financially and from a safety standpoint, and the environment.

I'm not sure where the thought goes with that. We don't look at things like that. It's ingrained in our industry from that standpoint. We are product specific. If we run a chemistry, we realize there are certain routes that can work. If you're meeting a specification of a customer, sometimes there's very limited ways to go down there. You make the business decision to produce that product.

It's difficult when you face a regulatory hurdle. That is what kills the project. As a small company, we get few chances to succeed and it becomes more difficult to compete when we have more burden.

Mr. ORUM. I want to again commend your interest in inherent safety as the option of first resort. In my testimony, one of the reports I cite was the recent study in Europe of four firms, two in the Netherlands and two in Greece. They quickly identified more than two dozen feasible, inherent safety alternatives, the majority of which had a payback period of less than 2 years.

To answer your previous question, I'd be very happy to put you in touch with the authors of that and maybe in future hearings, you can have them lay out specifics.

Tax incentives, it seems to me it runs the risk of having to then do what this bill does not which is to designate specific technologies you are rewarding. There can be problems with that if you take that approach. For example water treatment plants from chlorine gas that can drift offsite to sodium hypochlorite, they don't have that particular risk anymore but they still have a process that does not necessarily have the capacity to take care of all the things a terrorist might want to put into the water what you might have if you went to a different process, say ultraviolet light. So it seems

if you do tax incentives, you have to set a standard rather than pick technologies.

Mr. SHINN. As a response, I am sure the Deepwater plant is well staffed from an expertise standpoint. I know our Deepwater plant in New Jersey is, a different corporate person but the plant I was talking about from our experience was the lodi situation. I can't give you the specific chemical details but that was a batch that was mixed and the temperature control of the batch ran away and the chain of command to get to the person that knew how to rectify that run away situation was not immediately available and a whole lot of miscommunications resulted in the explosion that ensued shortly thereafter.

I can tell you with the number of processes that go on in New Jersey, there is a strong expertise that's present in 99 percent of the processes that go on. You only need an underfunded, struggling company that takes a low bid to get into a situation where it has trouble controlling its processes. Quite frankly, I don't know the answer to that, I don't know there is a good one but I know plants that go out for subcontractors for low bids need to take an extra look at the expertise in providing completion of that contract.

We have good experience with mentoring in other industries and the chemical industry association we've had has done an outstanding job in policing its entities. I think we have to go further in this because we're in an atmosphere where we need to go further.

Mr. WEBBER. A cornerstone of your bill calls on companies to implement inherently safer technologies. I want to say for the record my industry supports the use of inherently safer technologies. It's an admirable objective and goal.

In Texas, one of our members replaced a bulk storage of raw materials with a process that produces the same raw material at the rate it is used. That means the company was able to eliminate the need to store the material onsite. That's a good example, shows initiative that Mr. Stanley doesn't want to see diminished.

The real issue is should government mandate the use of inherently safer technology? The Clinton Administration looked at that hard and said, no and we think they made the right decision. What do you do? You base it on performance. We think the focus should be on performance. Then you would say are we continually improving the safety and security of our operations? Absolutely. It's not only good business, but we all know it means better security, safer technologies, a safer workplace.

The answer is a very, very strong yes. We follow procedures outlined in OSHA's process safety management rule. They are rigorous and tough. We adhere to them. Every chemical company ought to be adhering to them and also EPA's risk management plan rule. They are in place. That's why we worry about redundancies, why we feel we are making progress and have safer and more secure facilities.

I could go through the process of how we form teams and work on all these issues, but I have to say that our approach we think is making good use of inherently safer technology.

In terms of tax incentives, if the smaller company has a financial barrier, our position still would be let's examine ways to provide tax incentives so they can get there.

Ms. STEINZOR. In 1999 there was a three alarm fire in Baltimore and the reason for it was just as Commissioner Shinn said, the day crew knew not to use steam in cleaning out a plugged pipe, they forgot to tell the night crew and there was an explosion. We are all human beings and we make mistakes. That's why you are emphasizing pollution prevention.

NRDC has had a lot of experience with that. Attached to my testimony is an article by Linda Greer, "Anatomy of a Successful Project," which talks about her work with Dow on preventing pollution.

We have found is that when projects come to a company and are all lined up, evaluating on the basis on the return on the investment, very often, too often pollution prevention for reasons that are frustrating to us do not make the cut because we do not yet see the return on the investment will be very much worth it in the same timeframe compared to other uses of the money. Until we change that dynamic, we may well have a situation where hazard reduction just doesn't take hold the way we would like. That's one of the reasons we support your legislation because it is a very good time to start looking at those things again.

There was an economic analysis of airline security done a few years ago where there was a calculation that if people had to wait half a hour for a plane, it would cost billions of dollars because of the price of their time. Looking at it now, the conclusion was the benefits didn't equal the cost for airline security. With the benefit of 20/20 hindsight, the airline industry at stake, we would say it would have been worth it. We always must be careful how we quantify benefits.

Senator CORZINE. Thank you all for your participation and lively discussion. I hope we can continue some of these out of the hearing room. If there are ways we can make the victim is a criminal language match with lawyers, I am more than happy to work on that as long as there are real incentives to make sure people move to correct problems. I'm not married to a particular language if that is the sole objection.

On the other hand, I feel as strongly as I ever did that we need to protect against lowest common denominator risk. I am troubled by the fact that we have now laws that ask for risk management plans that are not fully attended to, and we have a different environment today than we had previous to September 11. I think there are enough examples in our society that would lead one to believe there is room for improvement in this area. There is a question basically of whether that can be done voluntarily or whether it should be done through a regulatory mode.

I would say in New Jersey, we don't have a perfect record but I do think our regulatory structure has moved us down the ball field in providing greater safety and assurance to our public in a very densely populated State. I don't think anybody is suffering the worse for the wear for it. Maybe we should be a little stronger even.

I feel we have had a great discussion here. I appreciate everyone coming and participating.

The hearing is adjourned.

[Whereupon, at 4:11 p.m., the hearing was adjourned, to reconvene at the call of the chair.]

[Additional statements submitted for the record follow:]

STATEMENT OF HON. JAMES M. JEFFORDS,
U.S. SENATOR FROM THE STATE OF VERMONT

I would like to thank Senator Boxer for her diligent work on today's hearing. I also would like to commend Senator Corzine on his fastidious efforts to promote chemical site security.

In the wake of September 11 and the ensuing war in Afghanistan, it behooves us to think about the heightened threat of terrorist attacks on our soil. No one ever imagined using a commercial airliner as a weapon of mass destruction. No one ever thought that anthrax could seep out of a sealed envelope and spread through the mail. No one ever predicted that our very infrastructure, such as our water systems and agricultural centers, would be vulnerable to terrorist threat. In fact, such speculation seemed unlikely, almost ludicrous. Today is different. Some say that the next level of potential targets is major chemical and oil facilities. We can argue about whether that is the case, but it does not hurt to be prepared. We must evaluate all potential domestic threats now, and respond accordingly.

Two-and-a-half weeks ago, 400 pounds of methyl bromide was stolen from a chemical storage facility in Florida. The thieves cut a hole in the fence unnoticed by security personnel. Last week, 1,000 gallons of ethylene diamine were spilled at a Texas chemical facility. The toxic gas incident sent 15 to the hospital and, although believed to be an accident, the cause of the spill is under investigation. Also last week in Texas, a fire at a city sewage plant caused a chlorine leak. Between 100 and 200 residents were evacuated from their homes. The cause of the fire has not been determined. These stories are chilling under any circumstances. These days, they are particularly alarming.

It is important to note that small rural States are just as much at risk of terrorist threat as traditional chemical producing States. While my own State of Vermont is not a center for chemical manufacturing, we do deal with large quantities of agricultural chemicals as well as chlorine dioxide used to disinfect our water supply and wastewater systems.

The Federal Government has the legislative tools it needs to clean up, prepare for, and manage the accidental risks of chemicals. However, we lack a mechanism to eliminate and reduce criminal behavior associated with chemicals. While I appreciate the efforts of the chemical industry in issuing draft security guidelines and educating its members, the Federal Government can and should do more. The Environmental Protection Agency and the Department of Justice must work with our State and local governments, as well as industry, to develop regulations addressing the most serious threats. And we need to do so immediately.

The Environmental Protection Agency (EPA) and the Department of Justice (DOJ) were invited to attend today's hearing. Both agencies declined to send a representative. This concerns me. Last week, EPA Administrator Christine Todd Whitman said that the chemical industry is "doing as good a job as they can do right now, and [that] they're very aware of where their vulnerabilities might be." I appreciate knowing that but have not heard from EPA directly despite repeated briefing requests. As chairman of the Senate Environment and Public Works (EPW) Committee, it is my job to understand and oversee EPA's actions. My goal is to work with EPA to mitigate potential threats; their role in this extremely important and timely effort is critical.

Again, I thank my colleagues for their efforts on behalf of chemical site security; and I look forward to moving S. 1602, the Chemical Safety Act, through the EPW Committee.

STATEMENT OF ROBERT C. SHINN, JR., COMMISSIONER,
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Good afternoon. My name is Robert C. Shinn, Jr. I am commissioner of the New Jersey Department of Environmental Protection. With me is Allan Edwards, assistant administrator for the Office of Release Prevention. We appreciate the opportunity to come before you today to discuss the important topic of chemical plant

safety and security. I especially want to take this opportunity to acknowledge and thank Senator Corzine for the leadership he is showing in this area.

In light of September 11th, a discussion on the need to ensure that there are adequate safeguards to protect the public from any accidental or intentional releases of hazardous chemicals is especially pertinent and timely. I trust that you will understand that, due to security concerns, my testimony will be general and not refer to specific facilities or specific security measures we have implemented in New Jersey.

There are two major themes that I would like to touch upon today. First, I would like to give the committee the benefit of New Jersey's experience and success in the area of chemical safety preparedness and response. The second point I will make is that, even in a State such as New Jersey with a successful an comprehensive chemical safety program, there are certain areas in which augmented Federal authority would support our effort.

While New Jersey's program has focused on prevention of accidental releases of extraordinarily hazardous substances and not those releases caused by terrorist actions, we feel that the system we have set up and the preparedness we have instituted positions us in good stead. We are not only on guard against such an unfortunate occurrence, but we must be better able to respond if it did occur.

Over the course of nearly two decades, we have built a coordinated, effective program that no only works to prevent releases of hazardous chemicals but also provides us with the information and infrastructure so that we can be ready at a moment's notice to respond if a release of a hazardous substance does happen. In this way, any releases that occur, whether they are accidental or intentional, can be contained and the impacts minimized.

While our program in its entirety may not be transferable to the Federal level, I hope that this committee will be able to take what New Jersey has done and use it, or components of it, as a model for Federal action where appropriate.

New Jersey is the nation's most densely populated State. It also has a large number of facilities that produce or use highly hazardous chemicals. This has forced us to be especially diligent in ensuring that there is little to no possibility that the public will be exposed to the release of these substances. I am not here to imply that our level of regulation would be appropriate for or should necessarily be imposed upon other States that do not have New Jersey's population or number of facilities.

In 1986, shortly after the tragic accident in Bhopal, India, the New Jersey State Legislature passed the centerpiece of our effort, the Toxic Catastrophe Prevention Act, commonly known as TCPA. It has enabled our State to develop what is still the most comprehensive program in the country to prevent accidental releases. I may be biased, but we think it is also the most effective.

Before I describe some of the more salient points regarding our regulatory process, there is one feature of our program that I would like to highlight. While it is a regulatory program, it was designed in cooperation with the regulated community. Cooperation has been in place since the very beginning of the program. When we created the initial rules in 1986–87, we had very heavy industry involvement. Professional chemical safety experts from the chemical industry and the insurance industry helped us write the rules in the first place. A lot of time was spent with these professionals to make sure that the technical requirements were valid.

Then, a few years ago when we readopted our TCPA regulations to incorporate the Federal Accidental Release Prevention requirements and to make other improvements, we again had intense interaction and discussions with the regulated community over a period of months. We asked for and received up-front input from the regulated community. We feel that this hand-in-hand approach has made for a more effective regulatory scheme.

This cooperative spirit has also been reflected in the implementation of our program. In the past, an environmental inspection could often be an adversarial encounter resulting in fines, penalties and orders. We have found it very effective to use these inspections to emphasize compliance assistance rather than solely as violation spotting visits. When we perform an inspection of a TCPA-regulated facility, a typical inspection will be performed over the course of an entire week where we work with the facility to examine alternatives—in many cases involving the use of innovative technologies—to get the facility into compliance.

To their surprise, many facilities realize efficiencies and increased profits once they implement the changes to their processes that were decided upon in this cooperative manner.

We would strongly recommend that any Federal legislation in this regard promote a compliance assistance approach to regulation, without sacrificing appropriate enforcement response, when necessary. I realize that it is a fine line that has to be considered, but it is well worth the effort.

There are several key features of New Jersey's TCPA program that have contributed to the success of this program and which you may wish to consider for incorporation into the Federal scheme. The main thing I would suggest is that the overall philosophy, as expressed in section 112(r) of the Clean Air Act, place a greater emphasis on prevention and preparedness. In New Jersey, we emphasize identification of risks and the steps that should be taken to reduce those risks. At this time, where we need to be cognizant not only of accidental releases but those that may be intentional as well, an emphasis on up-front prevention and quantitative risk analysis is called for.

In New Jersey, our law requires regulated facilities to perform comprehensive reviews and risk assessments of all possible release scenarios that may cause offsite impacts. Presently, Federal regulation only requires facilities to perform analysis of worst-case scenarios and one alternate case scenario. Furthermore, in New Jersey, we require that facilities quantitatively assess and characterize risk, going a step beyond any other process safety management and risk management program regulations in the U.S. This means that the potential releases and resultant offsite impacts that may occur under each scenario must be quantified. To date, Federal regulation does not require quantitative analysis of risk. We would recommend that such quantification be required.

Our requirement that any and all release scenarios that may possibly result in offsite impacts be analyzed and planned for has had positive benefits not only for the public but also, in many cases, for the facilities themselves. Because of the intense review and planning efforts, State and local emergency response officials, as well as the response officials for the plants themselves, have comprehensive plans that cover a whole range of situations.

This review process has also benefited businesses, which invariably improve their processes as they have gone through the scenario review. Many improvements that otherwise would not have been considered come to light. Some of the process improvements performed by the facility were not specifically required by our regulations, but instead were inspired by the facility itself. These are processes that make good economic sense but would never have been done had the analysis not been performed.

For example, the use of remote control shut off valves on chlorine rail cars has become pretty common practice. However, this was not always the case. It was not until facilities began to analyze scenarios that it became obvious that in certain situations, emergency workers would have to endanger themselves by going into what could be the thickest part of the plume, find the switch and shut down the release. There would also be the danger that the switch could not be reached and the release would continue unabated. Remote switches make good business safety and health decision sense.

As a practical matter, we would recommend the incorporation of threshold amounts into any legislation that is considered. TCPA only kicks in if a facility handles, uses, manufactures, stores or has the capability to generate an extraordinarily hazardous substance at specified threshold quantities. These thresholds have been developed for each individual substance through scientific analysis of the respective potential offsite impacts. The fact that there are thresholds, and also the fact that there are fees applied based on the amounts maintained over that threshold, provide real financial and regulatory incentives to convince facilities that it would be in their best interest to reduce inventories of extraordinarily hazardous substances.

Over the life of this program, we have seen numerous facilities either reduce the amount of the substances they keep on hand or change their processes altogether so that they use more benign substances to accomplish the same ends. For example, when our program first got up and going in the fall of 1988, New Jersey had 575 TCPA-regulated water treatment facilities meeting the then 500-pound or greater threshold quantity of chlorine. In less than 3 years, 375 of these facilities had reduced the amount of chlorine on hand to levels below the threshold, removing them from the program. Another 100 facilities changed their processes and ceased the use of chlorine altogether; instead using alternatives that have the potential for only very limited offsite impacts.

As I have emphasized, we are very proud of the program we have developed in New Jersey to minimize the risk of catastrophic releases. The TCPA program, working in conjunction with other programs such as Discharge Prevention Containment and Countermeasures, Worker and Community Right-to-Know and Emergency Response has established a prevention and response system that is second to none. The DPCC Program, for example, covers the universe of facilities whose releases would not have the dire consequences of a TCPA release, but would still cause adverse impact to the public and the environment. This program has some require-

ments that mirror the TCPA requirements regarding secondary containment and preparedness and prevention.

Still, however, there are areas where additional Federal regulation would improve our efforts. Let me briefly describe those areas.

One thing that we would support is Federal promotion of the use of inherently safer technology. It goes beyond what we feel we could require at the State level in New Jersey, but we do believe that it would be proper policy to promote safer technology at the Federal level. Installation of inherently safer equipment would help to ensure that facilities and emergency responders would have the most up-to-date technology at their disposal in the event of a release.

It would also be helpful to New Jersey if a Federal statute allowed for State regulation of the transportation of extraordinarily hazardous materials. DOT regulations have historically been unclear as to when freight is in transit and when it is not. Our TCPA program generally regulates material once it enters onto a plant site. However, the longer freight is in transit, the less opportunity we have to impose regulations as a State. For example, there are some who are pushing for railcars to be exempt from State regulation until they are completely unloaded. Due to interstate commerce concerns, a State's jurisdiction over the railcar and its contents is unclear while in transit.

DOT is currently taking comments on a proposal to define when a commodity is to be considered "in transit." This might be an appropriate time for Congress to weigh in on this issue.

I thank you for this opportunity to come before you and discuss this vital topic. We are available to answer any questions that you may have.

STATEMENT OF FREDERICK L. WEBBER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, THE AMERICAN CHEMISTRY COUNCIL

Good afternoon. My name is Fred Webber. I am president and CEO of the American Chemistry Council. I am pleased to speak today on behalf of the Council's members on the important subject of security in the chemical industry, a critical component of America's infrastructure.

I believe it is very important for members of this subcommittee, and Congress as a whole, to understand three basic facts about our industry.

First, our industry is a critical and indispensable part of the nation's infrastructure. We make significant—and sustained—contributions to America's economic and national security. We make thousands of products that make people's lives better, healthier, and safer—from medicines to medical equipment, from the space-age materials used by the military in stealth aircraft to aviation fuel and night vision equipment, from satellite communications systems to ensuring that the water we drink is safe and clean. What's more, every other manufacturing industry in the United States depends in some way on the products of chemistry for their survival and growth.

Second, we have a culture of safety going back many years. The nature of our operations requires it. This culture of safety has created what Labor Department data reveals is one of the safest industries in the United States—and the world. Our longstanding safety culture has, in the last decade, evolved into a culture of security that extends beyond our industry into those with whom we work. This commitment-to both safety and security—is expressed through our industry's own voluntary initiatives such as Responsible Care, our adherence to and support for governmental standards and research, and our longstanding-and effective-partnerships with local, State and Federal Government agencies.

Third, we have an important role to play strengthening our national security. We are working with the Department of Justice and other law enforcement agencies to review and strengthen security at our manufacturing facilities and to protect against the diversion and misuse of our products. This work was going on before September 11. It has been accelerated since then. For example, in addition to the things we were doing either voluntarily or with others before September 11, we have urged President Bush to proceed with plans to conduct a comprehensive security assessment of the chemical industry that Congress requested a year ago. We plan on conducting our own assessment of industry security. Our industry will benefit from a comprehensive assessment conducted by appropriate Federal law enforcement, national security, and safety experts.

I intend to address these issues today within the structure of the following outline. First, I will describe briefly some of the ways our industry contributes to making our lives better, healthier, and safer—in short, why the products of chemistry are so vital to our nation, its people, our economy and our collective security. In

doing so, I will also describe some of the important industry programs and practices that illustrate our industry's culture of safety—and the effect of this in establishing and strengthening our culture of security. I will describe the types of actions our industry has taken to enhance the security of its facilities since the unspeakable events of September 11.

Second, I will identify many of the comprehensive and effective laws and regulations that currently address chemical safety and security.

Third, I will identify specific actions that we believe Congress and the Executive Branch should take that would help our industry and many other industries—improve security. And I will suggest some creative ways in which the chemical industry can help Congress in further improving our nation's overall security.

Finally, I will detail our views of the legislation currently under consideration by this subcommittee—which has been introduced by Senator Corzine and others—and ways in which we believe it can—and should—be improved.

I. THE CHEMICAL INDUSTRY MAKES OUR LIVES BETTER, HEALTHIER & SAFER

The chemical industry is a critical asset of our economy and our nation's infrastructure. The science of chemistry and its benefits are interwoven into our daily lives. The business of chemistry is essential to the nutrients in our food, the purification of our water, the military that defends us, the vests our police officers wear, the suits our firefighters and pilots wear, the antibiotics so many people recently have been forced to take, and the products that we rely upon to heal and save lives. Chemistry not only makes life possible, it helps make all our lives healthier, safer, and more enjoyable.

The chemical industry is committed to the highest standards to safeguard our employees, our customers, our processes, our products, and our communities. During the last decade, the chemical industry has devoted significant attention and resources to improving security. Our industry concentrated more heavily on security issues as cyber and computer security issues began to arise. As our industry developed Risk Management Plans under the Clean Air Act and began analyzing in greater detail the possible offsite consequences of an accidental release, we devoted even greater effort and attention to security.

The events of September 11 very starkly demonstrate how differently the government and private industry must now think in order to protect our critical assets and national infrastructure.

A. Knowledge Is Security

The cornerstone of effective security is knowledge—intelligence about potential threats that allows the threat to be intercepted and allows the target of the threat to be properly prepared. In fact, knowledge is our best defense. Our industry believes it is critically important to establish formal procedures for circulating information about potential and, importantly, credible and specific threats to the nation's critical infrastructure. At the same time, such a system can provide government decisionmakers with the full range of information on which to make their decisions.

After September 11, everyone began to revisit potential threat scenarios. Our estimations of the probability of a worst-case scenario have changed, and we are moving rapidly to prepare for these potential new threats. Our preparations are most effective when we have high quality and timely intelligence regarding threats. Our industry is moving aggressively to establish better information-sharing mechanisms with Federal, State, and local officials—especially with the FBI's National Infrastructure Protection Center, the main body of government responsible for communicating threats to the private sector. More can be done in this area, especially with the Office of Homeland Security, and we intend to do our part in this regard.

Security in the face of these threats is derived from planning and executing security strategies. Our industry has an advantage in this area because of our longstanding expertise in risk management. We have spent many years instituting progressively more sophisticated safety and security programs. We applaud the recent GAO testimony before Congress calling for a more thorough risk analysis of the nation's critical infrastructure, and the mechanisms to manage those risks.

Response is another area in which we have demonstrated expertise. The chemical industry is one of the best-trained and equipped private sector emergency responders in the world. We coordinate closely with local responders and participate in joint training programs where multiple plants are clustered.

After September 11, chemical companies across the country went on higher alert. Many existing security procedures have been enhanced and contacts with law enforcement officials intensified. The security efforts at each facility vary depending upon its particular needs and those of the local community. However, some examples of the security measures taken by many of our companies include:

• Working closely and cooperatively with Federal, State and local law enforcement and emergency management officials, including the FBI, the Coast Guard, and the Federal Emergency Management Agency (FEMA). The Coast Guard, in particular, has stepped up security at chemical terminals and ports across the country, including escorting vessels coming in and out of major ports.
• Increasing surveillance and the number of security guards at sites.
• Enhancing access control measures, including restricting access of scheduled visitors and deliveries onsite and restricting access within the site.
• Permitting employee vehicles only on facility premises.
• Moving rail tank cars are being moved inside the fence-line.
• Centralizing receiving operations.
• Conducting background checks on company and contract employees.
• Requiring carriers to perform background security checks on their drivers.
• Reassessing crisis management, response and evacuation plans.
• Permitting cleaning crews to work only during business hours.
• Increasing communications with plant communities.
• Reviewing distribution routes and, where possible, reducing shipments of hazardous materials to urban centers.
• Adding second drivers to shipments of certain chemicals and requiring direct transit so that no overnight layovers are required.

We are intensifying our outreach to and information sharing with our partner trade associations. The Council is hosting a weekly security meeting of the heads of more than a dozen chemistry-related trade associations representing manufacturing and distribution enterprises.

B. Site Security and Distribution Guidelines

One of our more important actions since September 11 is the publication of our Site Security Guidelines for the chemical industry. Although we just recently published these guidelines, chemical industry security experts have been working on them for the past year. After September 11, these chemical security experts took a fresh look at the guidelines in light of the terrorist attacks and revamped some of the recommendations before publication. These guidelines are intended for use by anyone responsible for securing chemical manufacturing operations. They are available to anyone by visiting our website at *www.americanchemistry.com*. We have asked every one of our 180 members to distribute these guidelines broadly to their customers and their customers' customers. We anticipate the guidelines will be useful to anyone who is concerned about security.

We have distributed the guidelines to our 20 State chemical industry councils. These councils, operating in the largest chemical manufacturing States, include member companies of the American Chemistry Council and hundreds of smaller firms.

We have distributed these guidelines to our Responsible Care Partner Network. That network is composed of 60 chemical supply chain related companies and trade associations. Importantly, this network includes most of the firms responsible for transporting chemicals in commerce. We have made the guidelines available to the 20,000 companies registered in the Council's CHEMTREC emergency response center (which I will discuss in more detail later in my testimony).

We have intensively publicized the availability of the guidelines to the chemical industry trade press, public policy-related media organizations, major dailies and periodicals, and electronic news services. These news services deliver news and information to thousands of local newspapers. We have also registered them on all major Internet search engines.

We have distributed the guidelines to trade associations outside the traditional chemical supply chain, including the National Federation of Independent Businesses, U.S. Chamber of Commerce and National Association of Manufacturers. We have made the Guidelines available to many professional societies and organizations in the hope that they will find them useful as well.

We are also asking the FBI to consider sending the guidelines to the 27,000 private sector security professionals registered to receive the Bureau's ANSIR alerts so that the Guidelines will reach as many persons as possible who are in the business of protecting the critical assets of out national infrastructure.

The guidelines are receiving attention and are being used. They are the most frequently visited and heavily downloaded documents we have ever posted on our website.

On November 9, 2001, the new Transportation Security Guidelines were published. These guidelines adopt a risk-based approach to addressing security considerations relevant to the transportation of hazardous materials on all modes of transportation. The document provides chemical shippers with information on conducting

a risk-based transportation security assessment, as well as examples of preventive measures and alternatives that could be implemented to address potential security concerns. The American Chemistry Council, The National Association of Chemical Distributors, and The Chlorine Institute developed the guidelines with the assistance of a number of other associations and Responsible Care partners. These guidelines are available on our website at *www.americanchemistry.com*. We intend to disseminate them as broadly as has been done with our Site Security Guidelines.

C. Regional Security Briefings

My staff is working with EPA, DOT, FBI and others to organize regional security briefings around the country. Five have been scheduled between Thanksgiving and Christmas. A similar conference held earlier this month in New Jersey drew 225 attendees, twice the number expected. We intend to encourage additional face-to-face discussions between government security officials and companies throughout the chemical supply chain. We have pledged our full support and cooperation to work with government agencies to continuously improve the safety and security of the chemical industry.

D. Emergency Preparedness Programs

Our 180 member companies continually evaluate their security measures, and have increased efforts since September 11. When they evaluate their security practices, they work closely with their Local Emergency Planning Committees, called LEPCs. Members of LEPCs include fire fighters, health officials, representatives from government and the media, community groups as well as representatives from industrial facilities. LEPCs engage in a collaborative effort with respect to planning and responding to chemical emergencies. The member companies of the American Chemistry Council have a long history of working as part of the LEPC network to ensure the safety and health of plant communities.

Our member companies work with LEPCs in many ways. They help communities prepare for transportation related incidents, and help LEPCs develop and test emergency plans and systems, train emergency responders, and raise community awareness of the potential emergencies related to our production sites. Our companies hold public meetings to communicate worst case and worst probable scenarios to our communities and the plans to minimize the risk.

While local emergency responders, chemical facilities and the surrounding communities can do many things to prepare for and mitigate the potential impact of a terrorist attack; we are not in a position by ourselves to prevent such an attack. We must have advance intelligence and clear communications to assist our military in its response to such an event.

E. Chemical Industry Vulnerability Assessment

For the past year, the Council has been involved in a congressionally established study with the Department of Justice designed to assess the vulnerabilities of plant sites and to recommend ways to deal with those vulnerabilities. We have consistently supported this study and have cooperated fully with the Department of Justice and its contractor, Sandia Laboratories. In fact, we recently wrote to President Bush urging him to ask Congress to provide adequate additional funding to ensure that it will be the most comprehensive study possible.

At this stage in my remarks, I would like to briefly comment on a report Senator Corzine referred to in his floor speech when he introduced his legislation. The report, issued in 1999 by Agency for Toxic Substances and Disease Registry (ATSDR), was incomplete because it was based on a sampling of only two plant communities. It therefore led to an inaccurate portrayal of the State of the industry's security when it was published more than 2 years ago. It remained an inaccurate portrayal on September 11. It continues to be an inaccurate portrayal of the industry's security actions and efforts. We have produced an analysis of the report and will furnish it to you and your staff.

Despite our concerns with the ASTDR report, we have already begun a dialog with ATSDR on how we can work together to improve the security of our industry.

I also would like to direct the subcommittee to testimony delivered to the Senate recently by the General Accounting Office (GAO). In that testimony, the GAO recommended to the Senate that any programs designed to combat terrorism must be based on sound risk management principles that systematically analyze threats, vulnerabilities and the critical nature (or relative) importance of our national assets, such as the chemical industry. As the GAO testified, threat assessments are an important first step in this process—but only the first step. The second is a vulnerability assessment—which is a way to identify weaknesses. Finally, the third step in this process is what the GAO calls a "criticality assessment-which are necessary to prioritize assets for protection." We agree with the GAO. We also agree that the

government's use of these risk management principles has been inconclusive. This subcommittee could do much to further this approach.

F. Responsible Care And Other Industry Initiatives

The business of chemistry has many voluntary programs that support efforts to improve the safe distribution of our products. The most comprehensive is the American Chemistry Council's Responsible Care Code of Management Practices. This Program emphasizes performance. When first adopted in 1988, the Codes of Management Practices were designed to help our member companies develop systems to continuously improve the industry's responsible management of chemicals. Today, members still must adhere to the Codes. But they also report to the American Chemistry Council their progress toward the vision of no accidents, no injuries, and no harm to the environment.

Under this program, chemical companies implement additional measures to achieve safer operations. Responsible Care has received considerable recognition by independent external organizations because of the progress our member companies have achieved. For example, in 2000, the American Chemistry Council was awarded the Keystone Center Leadership in Industry Award for its commitment to making a better, healthier and safer world through chemistry.

There are 6 Codes of Management Practices in Responsible Care.

(1) *The Community Awareness And Emergency Preparedness Code.* The goal of the CAER Code is to assure emergency preparedness and to foster communities' right-to-know. It demands a commitment to openness and community dialog. The Code has two major components. First, member facilities that manufacture, process, use, distribute, or store hazardous materials initiate and maintain a community outreach program to communicate relevant, useful information responsive to the public's questions and concerns about safety, health, and the environment. Second, members help protect employees and communities by assuring them that each facility has an emergency response program to respond rapidly and effectively to emergencies. Many companies have established community advisory panels as forums to share issues between plant sites and their surrounding communities. More than 300 community advisory panels are in operation around the country.

(2) *The Pollution Prevention Code.* This Code is designed to achieve ongoing reductions in the amount of all contaminants and pollutants released to the air, water, and land from member company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and the environment.

(3) *The Employee Health and Safety Code.* The goal of this Code is to protect and promote the health and safety of people working at or visiting member company work sites. To achieve this goal, the Code provides Management Practices designed to improve work site health and safety. These practices provide a multidisciplinary means to identify and assess hazards, prevent unsafe acts and conditions, maintain and improve employee health, and foster communication on health and safety issues.

(4) *The Process Safety Code.* This Code is designed to improve operations and performance to reduce the potential for fires, explosions, and accidental chemical releases. The principal foundation of the Practices is that facilities will be safe if they are designed according to sound engineering practices; built, operated and maintained properly; and periodically reviewed for conformance. The Practices encompass process safety from the design stage through training, operation, and maintenance, and are applicable to existing operations as well as new facilities. The Code also requires that our members share relevant safety knowledge and lessons learned from incidents with industry, government and the community. Additionally, the Code mandates programs to assure that employees in safety critical jobs are fit for duty.

(5) *The Distribution Code.* The purpose of the Distribution Code is to reduce the harm posed by the distribution of chemicals to the general public, carriers, distributors, contractors, chemical industry employees, and the environment. The Distribution Code of Management Practices applies to all modes of transportation and to the shipment of all chemicals, including chemical waste.

(6) *The Product Stewardship Code.* The purpose of the Product Stewardship Code of Management Practices is to make health, safety, and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling, and disposing of our products. The Code provides guidance, as well as a means of measuring continuous improvement in the practice of product stewardship. The scope of the Code covers all stages of a product's life. Successful implementation is a shared responsibility. Everyone involved with the product has responsibilities to address society's interest in a healthy environment and in products that can be

used safely. All employers are responsible for providing a safe workplace, and all who use and handle products must follow safe and environmentally sound practices.

The Council is also developing an accredited, third party audit process that will result in ISO 14001 and Responsible Care certificates.

Our companies are committed to improving our safety record. We are continually working to improve our processes and eliminate accidents. One single injury or death is too many. Each year every member of the American Chemistry Council receives data relating to its process safety reportable incidents and distribution incidents for the previous year. Each company evaluates that information and takes steps to prevent those incidents in the future.

G. CHEMTREC

Since 1971, the Council has operated, as a public service, the 24-hour-a-day/7-day-a-week emergency communication center known as CHEMTREC, which stands for CHEMical Transportation Emergency Center. When an incident occurs, CHEMTREC provides emergency responders with technical assistance from industry product safety specialists, emergency response coordinators, toxicologists, physicians and other industry experts to safely mitigate the incident. All calls are free of charge to emergency responders. Additionally, CHEMTREC has agreements in force with the U.S. Department of Transportation, the U.S. Army, and the Department of Defense to provide information and assistance to those organizations whenever and wherever it is needed. Shortly after September 11, CHEMTREC and the FBI's Hazardous Materials Response Team augmented and improved their information-sharing and coordination activities.

Several organizations have joined together to form networks of private sector emergency responders and response contractors to further enhance the timely and efficient response to chemical transportation incidents. Other programs similar to Responsible Care include the National Association of Chemical Distributors Responsible Distribution Program, and the American Waterways Operators Responsible Carrier Program.

Joint initiatives between the Council, the Association of American Railroads, and the Railway Progress Institute led to the publication of recommendations for the safe transport of hazardous materials by rail, addressing a range of issues from train speed and training to loading, unloading and preparation of tank cars.

A partnership between the Council and the National Tank Truck Carriers, Inc. led to the publication of a manual of recommendations addressing issues including: motor carrier selection, equipment and product handling, training, route selection, incident reporting, shipment documentation, risk management and others.

H. TRANSCAER

A major initiative sponsored by 10 trade associations and known as TRANSCAER, for Transportation Community Awareness and Emergency Response, is designed to provide information directly to communities through which hazardous materials are transported. This program educates the community on the products that flow through the community, provides guidance and expertise on how to develop contingency plans in the unlikely event that an incident does occur, provides guidance on how to test the plan, and provides training to local emergency responders on how to deal with incidents and where to obtain information to assist in planning and preparedness.

I. Chemical And Biological Weapons

After the September 11 attacks, interest turned toward a potential "second wave" of terrorist attacks. Many in the law enforcement community have said this next wave may consist of attacks using biological or chemical weapons.

The chemical industry has been a strong and steadfast supporter of the Chemical Weapons Convention. In fact, President Clinton cited the American Chemistry Council for its "extraordinary, sustained commitment to eliminating the threat of chemical weapons" after the convention became effective in 1997.

The goal of the convention is praiseworthy and it is one-of-a-kind in its approach. Members of the CWC commit to exclude completely the possibility of the use of chemical weapons worldwide through the combined efforts of their respective militaries and private industry.

In practice, the convention prohibits the manufacture of any chemical and certain specifically listed chemicals for use as a weapon, and mandates the destruction of all chemical weapons stockpiles. It also bans trade in certain chemical weapons agents and direct chemical weapons precursors between members and non-members. Private industry submits regular and detailed reports to the U.S. Government on operations that involve chemicals that can be precursors to chemical weapons.

The convention is the first of its kind in permitting onsite inspections of commercial facilities to verify compliance with the spirit and letter of the convention.

Since the CWC became effective in 1997, 143 countries have committed to the global cause of chemical weapons elimination under these terms. In the United States, there is an additional incentive to comply with the convention. The U.S. criminalized the failure to submit required reports and to host onsite inspections. Failure to comply comes at an exceedingly high price.

At the same time, the CWC is just one among a number of chemical controls applied by American chemical companies. Chemical companies maintain comprehensive and current systems to "red-flag" potential sales of chemicals with potential for diversion and misuse in making chemical weapons. The systems are based on a company's product line, customer markets, and regulatory obligations, and also incorporate extensive and informative guidance on effectively screening and identifying your customer. Combined with the company's knowledge of chemistry and the business of chemistry, these systems protect the legitimate and intended use of chemicals in the vital and varied downstream industries we supply including, electronics, pharmaceuticals, computers and healthcare.

The CWC essentially requires government licenses on international sales of dual-use chemicals (chemicals manufactured for commercial use, but capable of being converted into a chemical weapon). The Convention imposes strict government reporting requirements on manufacturers of listed chemicals. They are required to keep records, provide access by appropriate officials to those records, and to submit appropriate periodic reports to the government. The treaty is also the first of its kind to permit onsite inspection of commercial facilities.

II. A COMPREHENSIVE NETWORK OF EXISTING LAWS AND RULES ALREADY PROMOTE SECURITY

The safety and security of America's chemical manufacturing sites is the subject of many existing laws and regulations. These laws and regulations complement—and in some cases were inspired by—the Responsible Care Management Practices that I discussed previously.

A. Toxic Substances Control Act (TSCA)

TSCA gives EPA comprehensive authority to regulate any chemical substance whose manufacture; processing, distribution in commerce; use or disposal may present an unreasonable risk of injury to health or the environment. Among other requirements, it mandates that chemical companies submit premanufacture notices that provide information on health and environmental effects for each new product and to test existing products for these effects. It also gives EPA authority to prohibit, limit or ban the manufacture, process, and use of chemicals.

B. Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the Superfund Amendments Reauthorization Act (SARA)

CERCLA and SARA provide the basic legal framework for the Federal "Superfund" program to clean up abandoned hazardous waste sites. CERCLA imposes specific taxes on chemicals and petroleum to fund the cleanup program. Title III of SARA, the Emergency Planning and Community Right-to-Know Act, established the "right-to-know" standards. Since 1986, the chemical industry has been among the thousands of manufacturing sites regulated by EPCRA. The basic requirement of EPCRA is information sharing among manufacturers, State and local emergency planning and response agencies, and the public. Another important aspect of SARA is Section 313, Toxic Chemical Release Inventory (TRI) reporting. According to 1999 figures, since 1988, emissions have declined 65 percent.

EPCRA requires manufacturers to prepare and submit hazardous chemical inventory form to the appropriate local emergency planning committee, the State emergency response commission and the local fire department. Companies are required to report the amount of chemicals present at the facility, their location and manner of storage. The information is automatically made public through local emergency planning committees, and the law requires fire department access for onsite inspections. Companies must supply more detailed information upon request by local authorities.

EPCRA was derived largely from CAER, the Community Awareness and Emergency Response (CAER) program developed by the American Chemistry Council in 1985 in the immediate aftermath of Bhopal. As I discussed earlier, CAER is the Code of Management Practices that requires participating facilities to develop emergency response plans, and to conduct live drills to rehearse those plans on at least an annual basis.

C. Clean Air Act (CAA)

The CAA provides EPA the authority to regulate air pollutants from automobiles, electric power plants, chemical plants and other industrial sources. Its 1990 amendments set control standards for industrial sources of 189 toxic air pollutants. Key provisions include:

• EPA's Risk Management Program (RMP) Rule. The RMP is a set of regulations established under Section 112(r) of the Clean Air Act that provide guidance for the prevention and detection of accidental releases of regulated hazardous substance and preparation of facility risk management plans. This rule requires regulated facilities to prepare offsite consequence analyses in the event of a worst-case accidental release or exposure. These analyses help companies plan for effective emergency response and to take the appropriate measures to prevent offsite consequences from occurring.

• The Chemical Safety Information, Site Security and Fuels Regulatory Relief Act. This Act required facilities to hold a public meeting to summarize their RMP information, prohibits offsite consequence analyses from being posted by the government on the Internet, and mandates the DOJ vulnerability assessment of the chemical industry that I referred to previously.

• Clean Air Section 112(r) Act General Duty Clause directs owners and operators of facilities producing, using, handling or storing extremely hazardous substances (regardless of whether they are regulated substances) to design and maintain a safe facility to prevent accidental releases, and to minimize the consequence of any that occur.

D. Clean Water Act (CWA)

The CWA authorizes EPA to regulate effluents from sewage treatment works, chemical plants, and other industrial sources into waters. The CWA also requests that States identify and alleviate pollution problems. Currently, there are proposals in Congress to reauthorize the Act.

E. Safe Drinking Water Act (SDWA)

Establishes standards for public drinking water supplies.

F. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

FIFRA provides EPA authority to register and assess the risks of agricultural pesticides, industrial biocides, and other non-agricultural pesticides.

G. Federal Food, Drug and Cosmetics Act (FFDCA)

The FFDCA provides the Food and Drug Administration authority to regulate the manufacturing of drugs and pharmaceuticals and the use of packaging and additives in food and cosmetics.

H. Food Quality Protection Act (FQPA)

The FQPA amends FIFRA and FFDCA to provide EPA with authority to regulate pesticides. It mandates a single, health-based standard for all pesticides in all foods; provides special protections for infants and children; expedites approval of safer pesticides; creates incentives for the development and maintenance of effective crop protection tools for American farmers; and requires periodic re-evaluation of pesticide registrations and tolerances to ensure that the scientific data supporting pesticide registrations will remain up-to-date in the future.

I. Resource Conservation and Recovery Act (RCRA)

RCRA provides EPA with authority to establish standards and regulations for handling and disposing of solid and hazardous wastes. These requirements include access controls, secondary containment, emergency preparedness plans and other plant security and safety measures.

J. Occupational Safety and Health Act (OSHA)

OSHA provides the Department of Labor authority to set comprehensive workplace safety and health standards, including permissible exposures to chemicals in the workplace, and authority to conduct inspections and issue citations for violations of safety and health regulations. A key provisions is:

OSHA's Process Safety Management Standard (PSM). The PSM Standard is intended to prevent or minimize the employee consequences of a catastrophic release of toxic, reactive, flammable, or highly explosive chemicals from a chemical manufacturing process. Under the standard, regulated companies are required to conduct accident prevention assessments, known as a process hazard analyses (PHAs). PHAs are required for every step of a covered chemical manufacturing process. Based on these analyses, companies are required to take appropriate steps to prevent chem-

ical explosions or accidental releases. The standard also requires written operating procedures, including steps for each operating phase and safety system, and that these and other process safety information be made readily available to employees. The PSM standard is designed to protect worker safety, but many of the procedures implemented as a result of the PHAs also offer security benefits. The PSM Standard is a complement to the RMP rule under the Clean Air Act that I discussed previously. The RMP rule adds the offsite consequence component to the PSM Standard that focuses on employee safety.

K. Hazardous Material Transportation Act (HMTA)

The HMTA provides the U.S. Department of Transportation (DOT) with the authority and responsibility to regulate the movement of hazardous materials. DOT's comprehensive "hazmat" regulations cover the packaging, labeling and movement of hazardous materials by railroad, truck, aircraft, and ships. (DOT also regulates hazmat pipeline safety under a separate statute, the Pipeline Safety Act.) Additional DOT hazmat regulations require training for employees, reports of transportation-related releases, and the provision on emergency response information, including a 24-hour telephone number on each hazmat shipment. Through this regulatory process, DOT provides the American public, the chemical industry, and our transportation partners with consistent national regulations governing the transportation of hazardous materials to customers across the country and around the world. In conjunction with representatives of other nations, DOT also participates in the development of international standards for the movement of hazardous materials. This further enhances safety and promotes commerce by harmonizing transport standards among nations.

L. Chemical Diversion and Trafficking Act (CDTA)

The CDTA is designed to prevent the diversion of chemicals to illegal drug producers. It gives the Drug Enforcement Agency the authority to control exports of chemicals to designated drug source countries.

M. Pollution Prevention Act (PPA)

The PPA makes it the national policy of the United States to reduce or eliminate the generation of waste at the source whenever feasible and directs EPA to undertake a multimedia program of information collection, technology transfer, and financial assistance to the States to implement this policy and to promote the use of source reduction techniques.

N. Flammable Fabrics Act (FFA)

The FFA gives the Consumer Product Safety Commission (CPSC) the authority to set flammability standards for fabrics that protect against an unreasonable risk of the occurrence of fire.

O. Poison Packaging Prevention Act (PPPA)

The PPPA provides the CPSC the authority to set standards for the special packaging of any household product to protect children from a hazard.

P. State Regulations

Many State governments are increasingly active in the environmental and safety areas. In addition to implementing Federal programs like those described above, the States themselves are active in a range of issues that impact the chemical industry. These include hazardous waste and State right-to-know statutes.

In sum, thousands of pages of rules and regulations regulate the chemical industry.

III. GOVERNMENT SECURITY ACTIONS NEEDED

Let me now identify for you the things that our industry and others need in order to enhance our ability to secure our facilities and the safety of this country.

1. We need to have the DOJ chemical industry vulnerability study completed in a comprehensive manner. Currently, the only phase of the study that has been funded by Congress is the development of a methodology for use in the assessment. This is insufficient. In addition to our own actions to improve security, our industry would benefit from a comprehensive assessment conducted by law enforcement, security and safety experts. We have asked that funding be dedicated to complete the entire DOJ project so that the study will be completed in the most comprehensive manner possible.

We need to work together to devise performance-based and flexible approaches that address what needs to be accomplished, not how it is accomplished. This type

of outreach program has a far better chance of actually reaching the broadest segment of chemical companies.

2. We need an efficient and timely intelligence and information sharing mechanism established at the highest level and in the timeliest manner possible. One method of facilitating this need would be for Congress to act quickly to pass a bill that would enable critical infrastructures and government to share information relating to physical and cyber security. A hybrid version of H.R. 2435, sponsored by Representatives Davis (R-VA) and Moran (D-VA), and S. 1456, sponsored by Senators Bennett (R-UT) and Kyl (R-AZ), provides the critical protections—such as exemptions from antitrust and freedom of information laws—that would allow industries to share this critical and sensitive information with one another and with government. I would be pleased to share a copy of this hybrid bill with you if requested.

3. Significant Federal funding is necessary to increase the security of the entire rail transportation network; the security of our nation's critical communications, computer, and train control systems; investment in the physical hardening of critical railroad infrastructures; research and development of improved technology for sealing rail cars.

4. Another action that would assist industries and communities throughout the country would be a program that provides financial assistance and tools to Local Emergency Planning Committees (LEPCs) that are struggling.

LEPCs are critical to planning for emergency response and preparedness. We need to do all we can to enhance these critically important organizations.

IV. CHEMICAL SECURITY ACT OF 2001

As I turn now to address the Chemical Security Act of 2001, let me first say that the American Chemistry Council supports this subcommittee's desire to improve the security of the chemical industry from a terrorist attack. We would like to cooperate with Senator Corzine and this subcommittee to improve that security. However, we are concerned about several important aspects of this bill.

• Security begins by knowing the areas in which you are vulnerable. We should press forward with full funding and the early completion of the DOJ vulnerability assessment. Let us devote our time and money to the areas where the greatest risks lie.

• As we consider the best ways to enhance our nation's safety and security, it is imperative that we understand the vital products supplied by the business of chemistry, and thoroughly understand the ramifications of our actions. Precipitous restrictions on the business of chemistry can have serious unintended consequences. For example, just last month the railroads invoked a short-term moratorium on shipments of chlorine, presumably as a security measure. Because they did not involve stakeholders in their decisionmaking process, they apparently did not know what effect that decision could have had on the safety of the nation's water supply. Chlorine-based disinfectants are used by 98 percent of modern water purification plants to kill bacteria and viruses. This is an essential factor in delivering safe water to homes for drinking, cooking and bathing. But many water utilities have only a few days' supply of these chemicals on-hand at any given time—and sudden stoppages in our ability to deliver those products can have dire consequences.

• Our industry currently uses safe technologies and continually works to develop and implement safer ones. We conduct process hazard analyses of our facilities and as a result change processes, modify procedures and substitute materials to reduce and manage risks. Risk management decisions are made with several objectives in mind, including reduction of environmental impacts, worker safety, safety of the community in the vicinity of the plant and.

For example, low air emission standards require the use of vapor recovery systems that create closed systems that have a greater potential for fires and explosions. In these analyses it is important that the facility be given flexibility to choose management options that will reduce risk and meet existing regulatory requirements. In some cases this will involve process and equipment changes, but more effective choices might include modification of process controls. Imposing regulatory requirements that focus solely on equipment and raw materials, such as those in this bill can complicate these analyses and lead to decisions that may not address the largest risk and risk reduction opportunities.

We also need to keep in mind the complexity of the chemical industry processes. There are no "standard processes" and thus to expect meaningful and helpful regulatory oversight may be very difficult and very expensive. In fact, EPA concluded in the context of the RMP rulemaking that it would be impossible for EPA to understand the myriad of processes that exist and thus to determine how to propose regulations.

• The bill would duplicate existing legislative authority and regulations in several ways. First, the transportation of hazardous substances is already extensively regulated by the Department of Transportation. These regulations address all aspects of the transportation continuum, including training, packaging, loading, transport, unloading, storage incidental to transportation, and routing. Additionally, United Nations (UN) standards apply to packaging, labeling and handling of hazardous materials. The business of chemistry assists government agencies and the U.N. to develop safe and efficient transportation standards. The Department of Transportation should continue to have primary regulatory oversight for transportation issues, and every effort should be made to avoid overlapping and/or duplicative requirements.

Second, as I mentioned earlier, the Clean Air Act already contains a general duty clause applicable to owners and operators of stationary sources producing, processing, handling or storing any extremely hazardous substance to prevent against accidental releases. Thus, the bill appears simply duplicative of that authority, while at the same time extending it in very broad and unpredictable ways.

Third, the imminent and substantial endangerment provisions of this bill appear to overlap completely with Section 106 of CERCLA which authorizes response and cleanup actions when there is an "imminent and substantial endangerment" to the public's natural resources from an actual or threatened release of hazardous substances. However, it expands unnecessarily what is already sufficiently broad authority. Section 5 also fails to preserve the President's power under CERCLA to delegate his authorities to agencies besides EPA (e.g., the Coast Guard).

• The scope of the bill is overly broad in several respects. First, the substances of concern under the bill would be not just hazardous substances under CERCLA, but also pollutants and contaminants under that law, as well as petroleum in all its manifestations. This is a potentially infinite range of materials, particularly since there is no list of "pollutants and contaminants," only a very inclusive definition. Congress and Federal agencies have already identified those highly hazardous substances that may pose the greatest threat from accidental releases, and they are identified under EPA's Risk Management Plan rule and OSHA's Process Safety Management standard. Those lists were identified based upon their likely impact upon surrounding communities. Unless there is some new information, these do not need to identified again in a new law.

Second, many features of the bill are not limited to the "high priority" combinations of substances and sources that EPA would designate. Sections 5 ("abatement action"), 6 ("record keeping and entry") and 7 ("penalties") would apply to the owner or operator of any chemical source. That would include, for example, any person driving an automobile.

• This bill appears to establish absolute responsibility for any release no matter what the cause. Although it is unclear how it would be enforced, the bill appears to make it a crime to be a victim of a crime. Any owner or operator of a chemical facility would potentially become criminally responsible if a terrorist or other criminal attacked the facility. This is simply untenable and possible unconstitutional. The General Duty Clause of the Clean Air Act already requires industry to design and maintain a safe facility to prevent accidental releases, and to minimize the consequence of any that does occur. This is perfectly appropriate. But to enhance that duty to require industry to prevent acts of crime is completely improper. We cannot be expected to assume the role of a law enforcement authority. This is the government's job.

• The bill presumes the public availability of "information relating to a potential accidental release or criminal release." We have grave concerns about the unsupervised availability of this information. The American Chemistry Council fully supports the principles espoused in most legislation concerning the public's right to know important information about their communities. However, we must find a way to achieve this without offering terrorists a roadmap.

• We now have an Office of Homeland Security that is charged with the responsibility of coordinating the multiple government agencies that influence and affect our national security. The security of the chemical industry is properly reserved to that office.

Thank you for the opportunity to testify regarding the very important subject of security in the chemical industry, a critical component of America's infrastructure. The chemical industry stands ready to continue to work closely with Congress, EPA, law enforcement and security experts to improve the security of our facilities.

STATEMENT OF PAUL ORUM, DIRECTOR, WORKING GROUP ON COMMUNITY RIGHT-TO-KNOW

Thank you for the opportunity to testify today. I am Paul Orum, director of the Working Group on Community Right-to-Know. Since 1989 I have worked with many non-governmental organizations in all 50 States that are concerned with efforts to reduce chemical hazards and toxic pollution.

We are here about one fundamental question: will there be a Federal program to reduce chemical industry hazards that endanger communities—whether from criminal activity or accidents—or will there not?

The terrorist attacks of September 11 show plainly that chemical plants and refineries could suffer a worst-case fire or toxic gas release. No longer can the chemical industry claim that a worst-case release is too improbable to occur. No longer can the U.S. Environmental Protection Agency claim that hazard reduction is a local matter with no need for a national hazard reduction program. No longer can the U.S. Department of Justice neglect its duty to review chemical security practices and to recommend ways of reducing vulnerabilities. No longer can the Federal Government impede public information about dangerous industry practices while taking no obvious steps to eliminate and reduce those dangers. No longer can anyone seriously propose that voluntary local programs are sufficient to fix the problem.

Congress has an opportunity and a duty to fill a big hole in our laws by requiring chemical-using facilities to evaluate safer alternatives and use them wherever practicable. The Chemical Security Act of 2001 (S. 1602) proposes constructive steps toward a national prevention and chemical security program, and gives government the tools it needs to protect communities in the new era of terrorism.

There is a Big Hole in Our Chemical Safety Laws

People might think that the right programs are already in place, but they are not. Currently, no Federal law actively regulates the vulnerability zones that hazardous chemical facilities impose on surrounding communities (in terms of size, intensity, or population at risk). Nor does any Federal law require firms to even examine safer alternatives. Nor is terrorism a specific planning element in the Risk Management Program established by the Clean Air Act. Nor were regulatory thresholds under this act and other laws established with potential terrorism in mind.[1]

No Federal law systematically encourages inherently safer alternatives at facilities that could suddenly release dangerous chemical plumes into surrounding communities. As a result, thousands of communities across the country have chemical hazards that may be wholly unnecessary. Current laws, generally speaking, are limited to clean up, planning, response, and risk management:

- In the early 1980s, U.S. chemical safety laws addressed cleaning up emergencies (i.e., CERCLA).
- By the mid-1980s, U.S. chemical safety laws addressed preparing for emergencies (i.e., EPCRA).
- From 1990, U.S. chemical safety laws addressed managing the risks of emergencies (i.e., EPA's Risk Management Plans and the Department of Labor's Process Safety Management of Highly Hazardous Chemicals).
- The proposed Chemical Security Act, S. 1602, will address eliminating and reducing chemical hazards in communities wherever practicable as the option of first resort.

Chemical Site Security is Often Poor

Both government reports and other incidents show serious security problems at chemical facilities. In addition, Congress should by now have in hand an interim report from the Department of Justice (DOJ) onsite security for chemical facilities and transportation. Congress mandated this review in 1999 in the Chemical Safety Information, Site Security, and Fuels Regulatory Relief Act, with an interim report and recommendations due by August 2000. DOJ is apparently ignoring this requirement.

Congress should make sure that DOJ produces this review and recommendations.[2] DOJ is preparing a voluntary self-assessment tool for use by industrial facilities. This effort lacks a public docket. It uses an "acceptable risk" methodology that

[1] For example, a one-ton cylinder of chlorine falls below the Risk Management Planning thresholds set by EPA, but can create levels of chlorine gas 2 miles offsite that are considered "immediately dangerous to life and health." Department of Energy, "Example Process Hazard Analysis of a Department of Energy Water Chlorination Process," DOE/EH-0340.

[2] Letter to the Attorney General from Senator Harry Reid of June 14, 2001; letter to the Attorney General from Senators Frank Lautenberg and Max Baucus of February 11, 2000; and, letter to the National Institute of Justice from Senator James Jeffords of August 24, 2001.

does not consult people at risk in surrounding communities. DOJ has not fulfilled a Freedom of Information Act request of July 30, 2001 on this project. The Department has also not directly addressed detailed concerns raised by a dozen environmental and labor groups in a letter first sent in August 2000, despite repeated attempts (see attached letters).

• The Agency for Toxic Substances and Disease Registry has reported that site security at chemical plants ranges from "fair to very poor" and at chemical transportation assets from "poor to non-existent."[3] The American Chemistry Council has pointedly criticized this work, apparently to get the agency to retract or revise the report. We do not believe that the agency should do so.

• Greenpeace published photographs from inside a Dow Chemical plant in Plaquemine, Louisiana. The photos show the inside of an unoccupied building that controls big pumps that dump 500 million gallons of wastewater into the Mississippi River each day. Greenpeace reports that there were no guards at the perimeter, no security cameras, no alarms, and the door was unlocked. (See the photographs at: *www.greenpeaceusa.org/media/press—releases/01—03—23.htm*).

• In 1999, a reporter roamed about inside the Washington, DC's Blue Plains sewage treatment facility, which at that time stored tons of chlorine and sulfur dioxide, without being stopped or asked for identification.[4]

• A recent news article cited a professor who had confirmed that he could purchase all the essential ingredients for nerve gas—even after the September terrorist attacks.[5] In addition, some commercial web sites assure buyers that they will remain anonymous (after simply registering) when buying chemicals.

• The Pacific Northwest National Laboratory found inadequate security at several Department of Energy military facilities that store hazardous chemicals.[6]

• Under existing regulations, a terrorist organization can set up a new trucking company in the United States or Canada, and obtain operating authority in the United States for an 18-month period without any Federal or State safety review or security check simply by paying a fee. After obtaining a hazardous materials endorsement for a commercial drivers license by merely passing a written exam, drivers can legally drive semi-trailers carrying up to 80,000 pounds of placarded hazardous materials on nearly all roads and through all cities in the United States.[7]

Chemical Fires and Spills Occur Frequently

Each year, companies in the United States report more than 25,000 fires, spills, or explosions involving hazardous chemicals to the National Response Center, a broad but incomplete Federal record of mishaps involving oil or chemicals.[8] At least 1,000 of these events each year involve deaths, injuries, or evacuations. Combined data from additional Federal sources suggest that in 1998 there were over 100 deaths, nearly 5,000 injuries, and when including small spills, almost 50,000 incidents related to ordinary industrial use of chemicals in the United States.[9] Some analysts suggest that for each catastrophic chemical accident that causes a fatality, there are 30 lost-time incidents, 300 recordable incidents, and 30,000 near misses.[10] Serious incidents often cost jobs, and uncounted people suffer long-term consequences from being exposed to the dangerous chemicals. One estimate suggests costs of about $5 billion for major U.S. chemical accidents each year.[11]

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[3] Agency for Toxic Substances and Disease Registry, *Industrial Chemicals and Terrorism: Human Health Threat Analysis, Mitigation and Prevention.*

[4] "Much Work Remains at Blue Plains, Officials Say," *Washington Post,* November 8, 1999.

[5] "Chemical Industry Rallies to Security Needs, But Perhaps Too Late, Experts Say," Newhouse News Service, 2001.

[6] Judith Bradbury, Environmental Technology Division, Pacific Northwest National Laboratory, U.S. Department of Energy, 1999.

[7] Testimony of Joan Claybrook, Advocates for Highway and Auto Safety and Public Citizen, before the Senate Subcommittee on Surface Transportation and Merchant Marine, Senate Committee on Commerce, Science, and Transportation, October 10, 2001.

[8] National Response Center. The NRC is the central Federal agency to which chemical companies and transporters report oil and chemical spills. Reports to the NRC cover incidents small and large. Reports are initial and subject to verification and change (*www.nrc.uscg.mil/foia.htm*).

[9] Sam Mannan, Michela Gentile, and Mike O'Connor, "Chemical Incident Data Mining and Application to Chemical Safety Trend Analysis," Mary Kay O'Connor Process Safety Center, Texas A&M University, 2001.

[10] Mannan, et. al, adapted from Richard H. Squire, "Zero Period Process—A Description Of a Process to Zero Injuries," *Process Safety Progress,* March 2001.

[11] Larry Collins, Carmen D'Angelo, Craig Mattheissen, and Michael Perron, Estimating Chemical Accident Costs in the United States: A New Analytical Approach.

Mostly Volunteer Local Emergency Planning Committees are No Substitute for an Urgent National Effort to Reduce Chemical Hazards

A recent study of 32 "active" Local Emergency Planning Committees (LEPC) found that "with a few exceptions, LEPCs do not believe they are positioned to effectively encourage facilities to reduce chemical hazards." Most of these LEPCs believe they "do not have the time, resources or expertise to encourage hazard reduction."[12] Again, these were "active" LEPCs. An earlier national survey found that 21 percent of LEPCs were "inactive," 39 percent were "quasi-active," 16 percent were "compliant," and 24 percent were "proactive."[13] Among many additional barriers, LEPCs lack the authority and mandate for hazard reduction; can be hampered by dependent relations with industry; have no formal role in implementing Risk Management Planning; and can become discouraged by a perceived unwillingness of government and industry to act. Many lack funding. According to one report, "many LEPCs exist only on paper, and many others exist, but have not succeeded in meeting even their basic responsibilities.[14] There is a role for local volunteer efforts, but these efforts are no substitute for a national chemical hazard reduction program, and indeed would benefit from the leadership provided by an effective national program.

Only Major Policy Changes Will Create a Successful National Effort

We need a national response to potential terrorism, not just voluntary self-assessment programs. If site security at airports were voluntary, it wouldn't make Americans feel very safe. The following examples help illustrate the problem.

• Few chemical companies have set measurable goals and timelines to reduce inherent hazards. In a 1999 survey of 175 chemical industry facilities we found only one facility with a measurable goal and timeline for eliminating or reducing the size of its vulnerability zone for a worst-case accident.[15] In a separate 1999 survey of nearly 200 major chemical companies, only three had developed measurable goals and timelines to reduce worst-case vulnerability zones.[16]

• The Environmental Protection Agency (EPA) has also side stepped obvious opportunities to encourage inherent safety. At EPA public hearings in 1994 and 1995, public interest groups vigorously supported having companies review inherently safer technologies as part of Risk Management Planning. The agency did not incorporate this approach. As an example of what can be achieved, Blue Plains sewage plant will complete work to replace chlorine gas in 2002, a welcome development.[17] However, public interest groups, whistleblowers, and nearby facilities pushed for changes for years, and the problem has been known since 1982.[18] This 20-year turnaround suggests why we need a more proactive effort. Congress should ensure that we don't have to wait another 20 years to make high priority facilities safer on a national scale.

• Several chemical industry trade associations recently published voluntary site security guidelines for chemical companies.[19] However, these guidelines are voluntary and lack standards, timelines, or measurable hazard reduction goals. They contain no third party verification and are not enforceable. They still dismiss worst-case scenarios and assume that mitigation will not be disabled (e.g., by an airplane crash). They don't address the added security risks of contract workers. They don't apply margins of safety. They don't weigh security costs against safer design. They don't include accounting methods to help identify theft. They don't address Internet sales and needed knowledge of customers. In general, they are not designed to protect public health and safety.

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[12] National Institute for Chemical Studies (Charleston, W.V.), "Local Emergency Planning Committees and Risk Management Plans: Encouraging Hazard Reduction," prepared for U.S. EPA, Chemical Emergency Preparedness and Prevention Office (#CX 824095), June 2001.

[13] George Washington University, Department of Public Administration, *Nationwide LEPC Survey*, 1994.

[14] Resources for the Future, *The Future of Local Emergency Planning Committees,* 1993.

[15] U.S. Public Interest Research Group and Working Group on Community Right-to-Know, *At Risk and In the Dark: Will Companies in Our Communities Reduce Their Chemical Disaster Zones?,* June 1999.

[16] Environmental Defense, National Environmental Trust, OMB Watch, Sierra Club, Unison Institute, U.S. Public Interest Research Group, and Working Group on Community Right-to-Know, *Hazard Reduction Challenge*, June 1999.

[17] "Toxic Chemicals' Security Worries Officials," *Washington Post*, November 12, 2001.

[18] Radian Corporation, *Air Dispersion Model Assessment of Impacts From a Chlorine Spill at the Blue Plains Wastewater Treatment Plant (Final Report),* December 15, 1982.

[19] American Chemistry Council, Chlorine Institute Inc., and Synthetic Organic Chemical Manufacturers Association, *Site Security Guidelines for the U.S. Chemical Industry,* October 2001.

The Chemical Security Act, S. 1602, Proposes Constructive Steps to Fix the Problem

The Chemical Security Act will give government the mandate and tools it needs to ensure that hazardous chemical industries reduce hazards and protect chemicals from theft or intrusion. The act:

• Makes it a duty of high-priority industries to identify their chemical hazards, take steps to reduce the possibility of releases, and minimize the consequences of any releases that do occur.

• Puts prevention first, a new stage in U.S. chemical safety laws. The bill establishes a prevention hierarchy for accidental and criminal releases—from prevention as the first resort, to add-on controls, security, and buffer zones. This hierarchy is similar to the one already used to prevent routine toxic pollution under the Pollution Prevention Act.[20]

• Inherently safer technologies eliminate or reduce the possibility of a chemical release;

• Well-maintained secondary containment, control, or mitigation options reduce the potential severity of a chemical release;

• Site security and training further reduce the likelihood of incidents; and,

• Buffer zones keep hazards away from vulnerable populations (and vice versa).

This approach addresses the fundamental difference between preventing a hazard and controlling it. There may not be safer alternatives to all chemical processes. But the Chemical Security Act proposes a hierarchy of responses that covers all bases and in all cases will identify feasible measures to protect lives, property, and the environment.

• Encourages technological innovation before static, add-on security measures. Add-on security always costs money. Innovation sometimes saves money. This approach recognizes that choice of technology determines safety features and site security. The bill does not prescribe "one-size-fits-all" technologies.

• Provides a consistent definition of inherently safer technologies.

• Ensures that each safer technology used "reduces or eliminates the threats to public health and the environment" of a potential chemical release. This provision guards against shifting hazards to other environmental media or venues.

• Encourages healthy competition to produce, market, and use inherently safer technologies.

• Provides the Administrator and the Attorney General with necessary authorities (for abatement, record keeping, site entry, and penalties for non-compliance).

• Helps to ensure that government acts to protect people and communities.

There are Many Opportunities for Inherently Safer Technologies

Specific examples, recent reports, and government efforts all suggest that there are opportunities to reduce inherent chemical safety hazards.[21] A few examples help to illustrate what is possible:

• The European Union has issued guidance for its principle chemical accident prevention directive (the "Seveso Directive") that places inherent safety as a preferred approach to preventing chemical accidents.[22]

• The EPA has recommended in a chemical accident prevention site security alert that "eliminating or attenuating to the extent practicable any hazardous characteristic during facility or process design is generally preferable to simply adding on safety equipment or security measures."[23]

• A recent project conducted at four European firms (two each in the Netherlands and Greece) identified more than two-dozen feasible inherent safety alternatives, the majority with a payback period of less than 2 years.[24]

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[20] The Pollution Prevention Act, 42 U.S.C.A. 13101(b), made it "the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible" followed by a hierarchy of waste management options.

[21] General sources on inherently safer design include: Health and Safety Executive (of the United Kingdom), Technology Division, *Designing and operating safe chemical reaction processes (www.hse.gov.uk)*; and, Trevor Kletz, *Process Plants: A Handbook for Inherently Safer Design,* 1998.

[22] The Directive on the Major Accident Hazards of Certain Industrial Activities (the "Seveso Directive") requires member countries to ensure that manufacturers prove a "competent authority" to identify major hazards, adopt appropriate safety measures, and inform, train, and equip employees. Directive guidance adopted in 1997 addresses inherent safety.

[23] U.S. Environmental Protection Agency, *Chemical Accident Prevention: Site Security* (EPA-K-550-F00-002), February 2000.

[24] Gerard I.J.M. Zwetsloot and Nicholas A. Ashford, "The Feasibility of Encouraging Inherently Safer Production in Industrial Firms," to be published in *Safety Science*. Zwetsloot is a professor at Erasmus University Rotterdam, Netherlands. Ashford is a professor at Massachusetts Institute of Technology.

• In Washington, DC, the city's large Blue Plains Sewage Plant is switching from volatile chlorine gas to less volatile sodium hypochlorite bleach, which has far less potential for airborne offsite impact (as noted above).

• In New Jersey, hundreds of water treatment plants have switched away from or below threshold volumes of chlorine gas as a result of the State's Toxic Catastrophe Prevention Act—from 575 such water treatment facilities in 1988 to just 22 in 2001.[25]

• In Cheshire, Ohio, American Electric Power selected a urea-based pollution control system rather than one involving large-scale storage of ammonia that would have endangered the surrounding community.[26]

• In Cuyahoga County, Ohio, ALCOA reduced its potential offsite impact by working with local emergency planners and ending onsite storage of hydrofluoric acid and nitric acid.[27]

• A recent study of Local Emergency Planning Committees identified successful examples of hazard reduction in eight communities, involving ammonia, chlorine, toluene diisocyanate, and cyanide.[28]

EPA and DOJ Could Designate "High Priority" Categories in Several Ways

The Chemical Security Act does not prejudge which industries EPA and DOJ will determine pose the highest hazard. However there are several possible approaches, which EPA and DOJ could use in combination. For example:

• A draft screening analysis of EPA's Accidental Release Information Program reveals that 12 industry and chemical combinations account for 75 percent of serious accidents. The same approach identified 12 industry and chemical combinations that account for some 70 percent of the serious accidents reported under EPA's Risk Management Planning program.[29]

• In a 1995 analysis, EPA selected 19 high priority chemicals based on toxicity, volatility, production volume, accident history, and generic vulnerable zones. All but one of these chemicals had caused injuries or death in accidental releases. EPA then considered the storage, production, or use of these chemicals in conjunction with population density to identify approximately 2,000 high priority facilities in certain areas.[30]

• EPA's Risk Management Planning program includes some 15,000 facilities that use large amounts of extremely hazardous substances. Some 8,000 of these facilities project worst-case vulnerability zones in which more than 1,000 people live (not all of whom could usually be affected at once). Over 3,000 facilities project worst-case vulnerability zones in which more than 10,000 people live; about 700 facilities project vulnerability zones in which more than 100,000 people live, and 125 facilities project vulnerability zones in which more than 1,000,000 people live.[31]

• EPA and DOJ could set a minimum standard for high priority categories so as to include any facility that could cause death or serious injury offsite.

People Support a Federal Prevention Role

A recent survey found that between 81 percent and 88 percent of people living within a one-mile radius of a Risk Management Plan facility would feel safer knowing that the EPA or the Occupational Safety and Health Administration were providing accident prevention and hazard reduction assistance to hazardous chemical industries. This survey predated the September attacks. The survey also found that between 50 percent and 67 percent of these "near neighbors" were unaware of the specific Risk Management Plan facility.[32] The Chemical Security Act will help assure people that the government is legitimately taking steps to protect them.

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[25] New Jersey Department of Environmental Protection, Communication from Reggie Baldini, September 19, 2001.

[26] American Electric Power, *Press Release*, December 18, 2000.

[27] Information provided by Stuart Greenberg, member, Cuyahoga County (Ohio) Local Emergency Planning Committee, 1998.

[28] National Institute for Chemical Studies, *Ibid.*

[29] National Chemical Safety Program, Mary Kay O'Connor Chemical Process Safety Center, Texas A&M University, *Annual Assessment Report—2001 (Draft Report)*; Neither the NCSP nor the National Chemical Safety Roundtable have endorsed as final the figures in this draft report.

[30] U.S. Environmental Protection Agency, *Priority Risk Areas for CEPP Activities,* June 1995.

[31] James Belke, U.S. Environmental Protection Agency, "Chemical accident risks in U.S. industry—A preliminary analysis of accident risk data from U.S. hazardous facilities," September 25, 2000

[32] National Chemical Safety Center, Mary Kay O'Connor Chemical Process Safety Center, Texas A&M University, *Survey of Public Trust and Community Interaction, 2001.* This survey contacted over 700 people in randomly selected households near facilities that use, manufacture, or distribute chemicals around the United States.

RESPONSES OF PAUL ORUM TO ADDITIONAL QUESTIONS FROM SENATOR CORZINE

Question 1. S. 1602 requires the Administration to identify and reduce high priority chemical risks. Your testimony identifies several possible ways that the Administration might approach this challenge. In fact, you note that EPA has already conducted analyses that would lend themselves to identifying high priorities. Do you think that the Administration could readily identify high priority risks in a sensible way?

Response. The Administration can easily identify high-priorities from the vulnerabilities that Risk Management Plan (RMP) facilities pose to workers and surrounding communities. The chemical industry has for several years proclaimed that disclosing worst-case chemical release scenarios on the Internet would provide a "blueprint" or "roadmap" for terrorists.[1] [2] Proponents of this theory explicitly claimed that a terrorist could use a data base of worst-case scenarios to realize "one-stop shopping" for "targeting quality" information.[3] The Department of Justice amplified this claim in testimony and reports.[4] The House Commerce Committee held hearings titled "Internet Posting of Chemical 'Worst Case' Scenarios: A Roadmap for Terrorists."[5] Congress implicitly accepted the roadmap theory in restricting public access to the worst-case scenarios in 1999.[6] Given this history, it is perplexing that anyone would now claim that the Administration could not identify high priority facilities for preventing chemical site terrorism.

In setting priorities, EPA and DOJ should read the blueprint and follow the roadmap. According to one industry analysis, the roadmap consists of bringing together three elements: chemical inventory, worst-case assessment, and population at risk.[7] These three elements present EPA and DOJ a means to identify high-priority facilities for chemical terror prevention. Indeed, the DOJ is already working with EPA's complete data base of Risk Management Plans (RMP*Info). Congress should ask EPA and DOJ to provide the appropriate committee(s) with the RMP roadmap, including populations at risk. Congress needs the roadmap from EPA and DOJ to make informed decisions. Reducing these vulnerabilities will provide a basic measure of progress on homeland security.

At the same time, to ensure that the Administration effectively identifies high priorities, Congress should define minimum standards in the Chemical Security Act. Without such a default "backstop," the Administration may not set priorities that protect public safety. The Chemical Security Act should therefore require EPA and DOJ to consider by default as high-priority those facilities that put any person off-site at risk of death or serious injury. Alternatively, the Act could define as high-priority any facility that puts more than a specified number of persons at risk. The Act could then require those facilities to either drop below a threshold number of persons at risk or justify why they cannot do so and apply mandatory site security standards. Using an objective standard, such as population at risk, would ensure that inherent safety changes (involving production) are selected by the company and not, as industry charges, by the government. Facilities that are unable to meet the objective population standard, however, should meet rigorous, mandatory site security standards established by the government to prevent chemical terrorism. In addition, S. 1602 currently directs EPA and DOJ to address threats to national security, critical infrastructure, and threshold quantities of substances of concern (to which could be added worker safety, in consultation with the Department of Labor, and environmental protection.) This authority enables the EPA and DOJ to select particular industry sectors and substances of concern for additional scrutiny.

As noted in my testimony, EPA identified in 1995 some 2,000 "high priority/high risk facilities and areas" for attention to prevent chemical releases.[8] In this analysis, EPA used a number of criteria for selecting priority risk areas, including industrial concentration, population density, accident history, transportation density, en-

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[1] American Chemistry Council (FKA Chemical Manufacturers Association), *The Terrorist Threat in America,* April 1998.

[2] Coalition for Effective Environmental Information, *Government Accountability for Environmental Information Policy*, 1999.

[3] American Chemistry Council, Part Two, p. 9.

[4] Statement of Robert M Burnham, Federal Bureau of Investigation, before the Senate Committee on Environment and Public Works, March 16, 1999; and, U.S., Department of Justice, *Assessment of the Increased Risk of Terrorist or Other Criminal Activity Associated With Posting Off-Site Consequence Analysis Information on the Internet*, April 18, 2000.

[5] U.S. House of Representatives, Committee on Commerce, February 10, 1999.

[6] Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (Public Law 106–40).

[7] Arthur F. Burke, DuPont Corporation, *Communication of Risk Management Plan Information: Some "Principles & Concerns,"* March 4, 1997.

[8] U.S. Environmental Protection Agency, *Priority Risk Areas for CEPP Activities*, June 1995.

vironmental justice, sensitive environments, and natural disasters. The agency also selected 19 high priority substances based on chemical toxicity, volatility, production volume, accident history, and vulnerability zones. To my knowledge, however, the agency has not targeted any hazard reduction assistance to the high priority facilities and has no plans to do so.

Unfortunately, DOJ has not produced as required a site security review that could help identify high priority sectors and substances.[9] Neither has EPA promulgated required rules that would enable an independent "qualified researcher" to identify priorities.[10] Nor has the chemical industry suggested which industry sectors or substances may require attention for improved security (other than the three factors noted above: chemical inventory, worst-case assessment, and population at risk). Identifying priorities is not the problem; getting government and industry to act is the problem.

Question 2. In your testimony, you state that 125 facilities project vulnerability zones in which more than one million people live. It seems there are really two basic elements to such worst-case analyses—the probability of the event, and the consequences of such an event. It seems to me that the probability of such an event is up sharply since September 11. Would you agree, and how do you think this affects the way in which we should view the worst-case scenario analyses?

Response. The tragedy of September 11 made clear not only the vulnerability of major buildings and symbolic sites, but also the vulnerability of the nation's chemical facilities. However, there is little reason to believe that the security agencies can accurately assess the probability (i.e., "risk") of all potential terrorist attacks on chemical facilities. Indeed, on September 11 the security agencies once again were unable to effectively anticipate major developments, despite major resource expenditures for security programs. Any program to protect the public against chemical terrorism must acknowledge that security agencies: a) cannot foresee all potential attacks among all potential chemical targets, b) cannot warn facilities in advance of all specific attacks, and c) cannot anticipate the nature of all such attacks. In the new era of terrorism, it is decidedly inappropriate to base security decisions on the ability to predict probability (risk); to do so is to base public protection on false assurances. Chemical security programs must therefore address the potential consequences of industrial releases, including the potential worst-case release in which all safety controls and active mitigation measures fail or are disabled.

Question 3. The testimony of Fred Webber points out that there are many existing safety requirements that apply to chemical facilities. In your view, do the authorities and security and hazard reduction measures contained in S. 1602 exist elsewhere in current law?

Response. Existing Federal regulations do not address terrorism prevention to the extent envisioned in S. 1602. Existing regulations are from a different, pre-terrorism era. These regulations did not, as a rule, address terrorism in selecting covered substances, thresholds, and industrial sectors. Those few security measures that are contained in current regulations are not equivalent to those contained in S. 1602 and are plainly insufficient to prevent chemical terrorism. To be sure, no existing Federal law regulates the scope and extent of the vulnerability zones that chemical facilities present to surrounding communities in terms of distance, chemical intensity, or populations at risk. Further, current laws do not require companies to assess safer alternatives to practices that can send toxic fumes into nearby schools or neighborhoods. In addition, many existing chemical safety laws do not address terrorism involving industrial chemicals (such as programs that regulate food quality, flammable fabrics, pesticide registration, pollution permits, and drugs and cosmetics).

The Clean Air Act (CAA) contains certain authorities that EPA could use to address chemical terror prevention. Section 112(r) established the Risk Management Planning (RMP) program to prevent accidents involving extremely hazardous substances.[11] However, EPA did not consider chemical terror prevention when selecting the chemicals, thresholds, and processes regulated under the RMP program. Nor did EPA include any requirement for firms to identify safer technologies in the RMP program, despite vigorous prompting from environmental and labor organizations.[12] In addition, the CAA section 112(r)(7)(a) provides EPA authority to compel dan-

[9] 42 U.S.C. 7412(r)(7)(H)(xi).
[10] 42 U.S.C. 7412(r)(7)(H)(vii)
[11] 42 U.S.C. 7412(r)
[12] U.S. Environmental Protection Agency, Supplemental Notice of Proposed Rulemaking, "Accidental Release Prevention Requirements: Risk Management Programs Under Clean Air Act Section 112(r)(7); Proposed Rule," 60 Federal Register 13525, March 13, 1995; and EPA public hearings, March 31, 1995.

gerous chemical facilities to reduce worst-case chemical vulnerabilities imposed on surrounding communities. However, the agency has never used this authority and has no plans to do so.[13] Congress should ask EPA to explain if the CAA 112(r)(7)(a) is for some reason insufficient to reduce the chemical terror vulnerabilities that hang over many communities. Alternatively, if this authority is sufficient, Congress should ask the agency to explain when it intends to use it. If the CAA 112(r)(7)(a) is to contribute to chemical terror prevention, Congress will apparently have to make this provision mandatory, not optional, and direct EPA to use it and to include inherent safety solutions.

The Clean Air Act's general duty clause, Section 112(r)(1), enables EPA to bring enforcement cases if a firm fails to identify and use available inherently safer technologies that reduce the possibility of chemical terrorism.[14] However, EPA has never used the general duty clause where a firm has failed to reduce unnecessary chemical hazards. Further, EPA's implementation of the general duty clause does not adequately address terrorism prevention in several ways. First, EPA's guidance does not clearly identify a structured process by which firms should identify, document, and select inherently safer options. Second, EPA's guidance necessarily follows "generally accepted" or "recognized" industry practices—which routinely subject communities to extremely hazardous substances stored in large, dangerous amounts. Third, EPA's guidance does not set forth the agency's expectations for firms to prevent criminal releases, which may dissuade EPA from enforcing the general duty if a firm fails to take sufficient security precautions. These shortcomings, together with the agency's pervasive inactivity on inherent safety, illustrate the need for much more direct and vigorous Congressional intervention to ensure that the agency incorporates and uses design for inherent safety and terrorism prevention in general duty enforcement.

Aside from these unused Clean Air Act authorities, Federal environmental laws and regulations are plainly insufficient to prevent terrorism involving extremely hazardous chemicals:

• The Resource Conservation and Recovery Act (RCRA) includes limited security requirements for hazardous waste sites.[15] However, these provisions "prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock."[16] In other words, these RCRA security provisions keep people and livestock from wandering onto sites that store hazardous waste and hurting themselves or others. These provisions are neither sufficiently robust nor intended to address determined terrorists. Further, only some 21 percent of facilities that must prepare Risk Management Plans for extremely hazardous substances are also covered by these limited RCRA site security requirements.[17]

• The Toxic Substances Control Act (TSCA) Section 6 gives EPA broad power to control any chemical that poses an "unreasonable risk of injury to health or the environment." However, this standard has proven indisputably cumbersome in practice and was never intended to address terror prevention across a diverse array of industries. Nonetheless, EPA could use TSCA Section 4 authority to require chemical companies to field-test the dispersion plumes of high-volume chemicals that they produce and use.[18] Congress previously directed EPA to conduct chemical dispersion tests under the Clean Air Act, including field tests on two chemicals each year.[19] However, EPA has not actually field tested any chemical under this program, citing lack of funding, among other impediments. Given the lack of testing progress under the Clean Air Act, Congress should direct EPA to obtain chemical dispersion test information from manufacturers under TSCA.

• The Process Safety Management (PSM) standard of the Occupational Safety and Health Administration (OSHA) is intended to protect workers onsite from chemical accidents.[20] The PSM standard requires firms to identify hazards, but not to address how terrorists could defeat add-on safety controls, and not how safer alternative processes or chemicals could reduce the firm's vulnerability to terrorism. Many serious chemical accidents involve chemicals that are not covered by the PSM standard. For example, the U.S. Chemical Safety Board recently examined 167

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[13] Personal communication of Jim Makris, Director, Chemical Emergency Preparedness and Prevention Office, U.S. Environmental Protection Agency, December 17, 2001.

[14] 42 U.S.C. 7412(r)(1)

[15] 42 U.S.C. 6901 et seq.

[16] 40 CFR 264.14, 265.14.

[17] Paul R. Kleindorfer, Harold Feldman, and Robert A. Lowe, *Accident Epidemiology in the U.S. Chemical Industry: Preliminary Results from RMP*Info,* Center for Risk Management and Decision Processes, The Wharton School, University of Pennsylvania, March 6, 2000.

[18] 40 CFR 766, 790–799

[19] 42 U.S.C. 7403(f)

[20] OSH Act, Section 6; 29 CFR 1910.119

deadly reactive chemical accidents that together killed more than 100 Americans: over half of the chemicals involved in these deadly incidents are not currently covered by PSM or RMP.[21] Further, more than half of the facilities covered by the RMP program are not covered by PSM requirements.[22]

• The OSHA Hazard Communication Standard informs workers about hazardous chemicals with which they work.[23] OSHA notes that these standards "do not address the precautions necessary to prevent large accidental releases that could result in catastrophes."[24]

• The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and Superfund Amendments and Reauthorization Act of 1986 (SARA) address responding to spills and emergencies and cleaning up "superfund" and other contaminated sites.[25] These cleanup programs do not require companies to investigate safer alternatives or reduce chemical hazards that a terrorist could use as an expedient weapon.

• The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), a freestanding title of SARA, addresses preparing for spills or emergencies, through Local Emergency Planning Committees (LEPC) and other means, and encourages chemical hazard communication to the public.[26] EPCRA does not require, however, that companies assess or implement chemical hazard reduction strategies or even prevent releases. Further, EPA-sponsored studies show that LEPCs generally believe they lack the resources, expertise, and mandate for hazard reduction work with facilities.[27] In addition, EPCRA's most successful community right-to-know provision, the Toxics Release Inventory, primarily addresses routine toxic pollution, not emergency releases.

• The Chemicals Safety Information, Site Security and Fuels Regulatory Relief Act (CSISSFRRA) restricted public disclosure and oversight of chemical industry hazards, including the public's ability to readily track progress in reducing those hazards.[28] This law also required DOJ to conduct a review of site security at chemical plants and to produce recommendations. However, DOJ has not apparently conducted this review, including an interim report due in August 2000. DOJ has not addressed substantial concerns raised by environmental and labor groups about this review. These concerns include more than three-dozen specific site security recommendations and a framework for incorporating inherent safety design in improving site security.[29] Congress should ensure that DOJ completes this statutory requirement and responds to public concerns. However Congress should also condition resources provided to the security agencies on completion of specific tasks by explicit deadlines.

• The Pollution Prevention Act (PPA) makes it the national policy of the United States to reduce toxic waste at the source wherever feasible.[30] The PPA also directs the EPA to consider how agency actions affect source reduction of toxic waste. Source reduction, broadly considered, covers both routine releases and one-time events. However, the focus of the PPA is to prevent routine industrial toxic pollution rather than emergencies.

• The Hazardous Materials Transportation Act (HMTA) governs transportation of hazardous materials.[31] The Department of Transportation's (DOT) hazardous materials regulations under HMTA have significant gaps. Railcars held on leased track (on sidings or under "rolling" leases), often in populated areas, pose major chemical release hazards but may not be covered by either DOT regulations or EPA's RMP program.[32] Railcars may in some cases sit just outside the fence at an RMP facility without being included in hazard assessments, public disclosure, and risk manage-

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[21] Presentation of John Murphy, U.S. Chemical Safety and Hazard Investigation Board, *Reactive Chemicals Hazard Investigation, Draft Work Product,* November 9, 2001.

[22] Paul R. Kleindorfer, Harold Feldman, and Robert A. Lowe, *Accident Epidemiology and the U.S. Chemical Industry: Preliminary Results from RMP*Info,* Center for Risk Management and Decision Processes, The Wharton School, University of Pennsylvania, March 6, 2000.

[23] OSH Act, Section 6; 29 CFR 1910.1200

[24] Occupational Safety and Health Administration, *Process Safety Management of Highly Hazardous Chemicals.*

[25] 42 U.S.C., Chapter 103

[26] 42 U.S.C., Chapter 116

[27] National Institute for Chemical Studies (Charleston, W.V.), *Local Emergency Planning Committees and Risk Management Plans: Encouraging Hazard Reduction,* prepared for U.S. EPA, Chemical Emergency Preparedness and Prevention office (#CX 824095), June 2001.

[28] 42 U.S.C. 7401 (Public Law 106–40)

[29] Working Group on Community Right-to-Know et al, letters to the Attorney General of August 14, 2000; April 23, 2001; June 15, 2001; and, September 27, 2001 (*www.rtknet.org/wcs*).

[30] 42 U.S.C. 13101 et seq. (Public Law 101-508)

[31] 42 U.S.C. 5101 et seq.

[32] 66 Federal Register 32420

ment planning. DOT has recently noted that the threat of continuing terrorism makes it more important to address such regulatory gaps.[33] Ubiquitous graffiti scrawled on railcars also suggests weak or non-existent security.

Question 4. The American Chemistry Council and SOCMA testified about the security and transportation guidelines that they have developed and are working to implement. What do you think of the adequacy of the guidelines? Do you think that a voluntary approach to implementing such guidelines would be more effective than the regulatory approach in S. 1602?

Response. The American Chemistry Council's voluntary "Site Security Guidelines for the U.S. Chemical Industry," recently released with SOCMA and the Chlorine Institute, are neither intended nor suited to protect public health and safety. Voluntary chemical site security is no more appropriate than voluntary airport security, and is no more likely to succeed. Voluntary efforts can economically penalize industry leaders who do a thorough job and reward laggards who don't. The ACC's voluntary industry guidelines also suffer major deficiencies. The guidelines:

- Have no standards;
- Have no timelines;
- Suggest no hazard reduction policies;
- Have no measurable hazard reduction goals;
- Offer no accountability to workers and communities;
- Do not address added security risks of contract or temporary workers;
- Do not apply any safety margins;
- Neglect inherent safety options that can reduce add-on security needs;
- Contain no cost accounting to understand total security costs (and weigh these costs against safer design, which reduces security needs);
- Do not account for security costs imposed on local governments, police, and firefighters;
- Neglect to treat chemical hazards as a liability (or lack thereof as an asset) to the firm's "social license" to operate;
- Contain no materials accounting to help identify theft of bomb-making materials;
- Lack standard procedures for assessing inherently safer technologies;
- Do not address anonymous chemical sales on the Internet and needed knowledge of customers;
- Assume that terrorists or accidents will not disable add-on protections (as could happen, for example, if an airplane were to crash into a chemical plant);
- Dismiss the need to reduce potential worst-case scenarios—still, even after September 11;
- Do not contain third party verification ("trust but verify");
- Are not enforceable;
- Are not intended to protect public health and safety.

As noted in my testimony, studies and case examples show that site security measures do fail. Beyond these examples, CBS New York recently broadcast a tape of journalists easily entering a chemical tank farm.[34] Other observers have noted that terrorists or drunks could use high-powered rifles to pierce and explode chemical storage tanks even without penetrating site security.[35] An industry publication points out in graphic terms the vulnerabilities to terrorism of refineries and other facilities that use hydrofluoric acid.[36]

Voluntary approaches are plainly insufficient. Current voluntary efforts have not led many chemical manufacturers to reduce the size of the danger zones that their facilities impose on surrounding communities (in terms of vulnerable distance, population at risk, or toxic intensity). For example, as noted in my testimony:

- In 1999, the Working Group and six other organizations asked 192 major chemical companies to set measurable goals and timelines to reduce the size of their worst-case vulnerability zones for chemical fires and spills. These 192 companies were members of the American Chemistry Council and often have multiple facilities. Some 78 companies responded. Of those, 14 stated that they were not required to file Risk Management Plans (the basis document for the worst-case scenarios). Among the remaining 64, only three provided measurable goals and timelines to re-

[33] 66 Federal Register 59220

[34] CBS Channel 2 New York City, Chemical Plant Security Story, November 26, 2001.

[35] Violence Policy Center, *Voting From the Rooftops,* October 2001.

[36] Neil C. Livingstone, et al, *American Bophals (SIC)*, Energy Safety Council (Washington, DC).

duce the size and danger to the community of their vulnerability zones. Two more asked for more time, but then didn't set any later goals.[37]

• In 1999, the Working Group and U.S. PIRG surveyed 175 specific chemical facilities that had active community dialog efforts. Only one facility out of 175 proved to have publicly announced a measurable goal and timeline for reducing the zone of vulnerability in which people could be hurt or killed in a worst-case chemical fire or spill.[38]

In the past, chemical industry representatives have insisted that voluntary initiatives such as Responsible Care should not be used to oppose government actions. In the words of John Holtzman, a former director of public affairs at the American Chemistry Council (then the Chemical Manufacturers Association):

"We don't want anyone to say, 'We don't need this regulation, because we have Responsible Care.' We don't view the program as a shield [against regulation.]"[39]

AUGUST 14, 2000.

Hon. JANET RENO,
Attorney General of the United States,
Department of Justice,
950 Pennsylvania Ave., NW, Room 4545,
Washington, DC.

DEAR ATTORNEY GENERAL RENO: The Department of Justice has asserted, in response to chemical industry lobbying,[1] that extremely hazardous substances (EHS) at industrial facilities present attractive targets for criminal activity.[2] The Agency for Toxic Substances and Disease Registry confirms that site security at chemical-using industries ranges from fair to very poor.[3]

For these reasons, Congress directed the Department of Justice, in consultation with government, industry, and the public, to report on "actions, including the design and maintenance of safe facilities, that are effective in detecting, preventing, and minimizing the consequences of releases of regulated [extremely hazardous] substances that may be caused by criminal activity." Congress further directed the Department to make "recommendations for reducing vulnerability of covered stationary sources to criminal and terrorist activity". Congress directed the Department to produce an interim report by August 5, 2000.[4] The Department did not meet this non-discretionary deadline.

Environmental, labor, and public health organizations have vigorously supported a serious reduction in the potential for onsite and offsite consequences of chemical fires and explosions at EHS facilities. Our organizations have, in particular, championed the use of inherently safer design to reduce and eliminate chemical hazards that may be wholly unnecessary.

We strongly urge the Department not to limit its review and recommendations to the reactive control of existing EHS hazards. Rather, the Department should include, *as the option of first resort,* the possibility of reducing, eliminating, or removing these hazards. This proactive approach is consistent with the Department's new emphasis on preventing, rather than simply responding to, terrorism and other crimes.

The advantages of preventive design are widely acknowledged, but seldom acted upon. For example, the "Handbook of Loss Prevention and Crime Prevention" notes that:

"All too frequently insufficient consideration is given to security factors before and during construction; security protection is too often added as an afterthought, if at

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[37] Environmental Defense, National Environmental Trust, OMB Watch, Sierra Club, Unison Institute, U.S. Public Interest Research Group, and Working Group on Community Right-to-Know, *Hazard Reduction Challenge,* June 1999.

[38] U.S. Public Interest Research Group and Working Group on Community Right-to-Know, *At Risk and In the Dark: Will Companies in Our Communities Reduce Their Chemical Disaster Zones?,* June 1999.

[39] Chemical Marketing Reporter, *What's in a Logo,* January 6, 1992.

[1] Chemical Manufacturers Association, The Terrorist Threat in America, 1998; also, Arthur F. Burk, Communication of Risk Management Plan Information: Some Principles & Concerns, March 4, 1997; also U.S. Environmental Protection Agency, Final Report of the Electronic Submission Workgroup (Section 2: Access System), 1997.

[2] Federal Register, Volume 65, p. 24833, and supporting documents, April 27, 2000.

[3] Agency for Toxic Substances and Disease Registry, Industrial Chemicals and Terrorism: Human Health Threat Analysis, Mitigation and Prevention, 1999.

[4] Chemical Safety Information, Site Security and Fuels Regulatory Relief Act of 1999, Section 3(a)(xi).

all." The author recommends that "model security codes must be established and built into all new construction."[5]

Further, the Environmental Protection Agency (EPA) recently encouraged EHS users to consider that:

"Facility and process design (including chemicals used) determine the need for safety equipment, site security, buffer zones, and mitigation planning. Eliminating or attenuating to the extent practicable any hazardous characteristic during facility or process design is generally preferable to simply adding on safety equipment or security measures."[6]

We therefore respectfully urge the Department in its recommendations to Congress to:

• Incorporate hazard reduction as a fundamental component of terrorism and crime prevention at EHS facilities as a first resort, and;

• Propose mandatory, uniform model safety and security standards for hazards that cannot be reduced or eliminated.

To back up these prevention policies and security standards, we urge the Department to: identify appropriate legal means to codify terrorism prevention standards, including an annex to the Risk Management Planning (RMP) program[7]; intensify compliance assistance and enforcement at EHS facilities, including facilities covered by the RMP program, and; encourage worker involvement in systems of safety analysis and prevention-oriented, root cause investigations of EHS incidents and near misses.

Following a prevention hierarchy, EHS facilities first reduce or eliminate the hazard where feasible, before using add-on secondary containment, control, or mitigation equipment and improving site security to address remaining vulnerabilities. As a last resort, enhanced buffer zones separate EHS facilities from surrounding areas and sensitive populations (such as schools, residences, or hospitals).[8]

We do not suggest that safer design can avoid every safety and security hazard. In fact, even the best security systems will be breached and the best safety systems will fail. Therefore, we suggest that safer design should be the first alternative in the hierarchy of safety and security options: first *prevent*, then *control*, then *mitigate*, and only last, *buffer*.

Add-on security measures (such as guards, alarms, and access controls) frequently are costly. In contrast, inherently safer design can help firms to simultaneously control costs and improve security and reduce hazards. While best considered during design, existing plants can retrofit many inherent safety features.

We recognize that the Department may not view preventive design as within its traditional field of expertise. Certainly local police and security consultants often know little about inherently safer design for EHS facilities. We therefore urge the Department to actively obtain, as needed, necessary expertise on design for inherent safety and security, both to report to Congress and to assure sufficient long-term access by local, state, and Federal security agencies to such expertise.

The chemical process industry's leading expert in inherently safer design, Trevor Kletz, has identified more than a dozen ways to reduce hazards by improving plant design:[9]

• *Intensification* minimizes inventories of hazardous materials.

• *Substitution* replaces hazardous materials with safer materials.

• *Attenuation* uses hazardous materials under the least hazardous conditions.

• *Limitation* changes designs or conditions to reduce potential effects.

• *Simplification* reduces complexity to reduce the opportunity for error.

• *Other* means include using designs that: avoid potential "domino" effects; make incorrect assembly impossible; tolerate misuse; keep controls and computer software easy to understand and use; keep process status clear; have well-defined instructions and procedures; employ passive safety; and minimize hazards throughout the material's life-cycle.

While these measures target non-criminal releases, the principle "what you don't have, can't leak" applies equally to criminal releases. The Department should foster facilityspecific national benign by design standards for EHS facilities to eliminate or reduce features that allegedly make a plant attractive to criminals or that require

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[5] Lawrence J. Fennelly, Handbook of Loss Prevention and Crime Prevention, Second Edition, 1989, p.35.

[6] U.S. Environmental Protection Agency, Chemical Safety Alert, *Chemical Accident Prevention: Site Security*, February 2000 (EPA-K–550–002), p.3.

[7] Clean Air Act Amendments of 1990, Section 112(r).

[8] Senator Frank Lautenberg, U.S. Senate, Chemical Security Act of 1999 (S. 1470).

[9] Trevor Kletz, Process Plants: A Handbook for Inherently Safer Design, 1998.

costly add-on security arrangements. (Please refer to the attached list of Minimum Safety and Security Standards for EHS Facilities.)

In addition to the concerns raised above, some observers claim that persons outside an EHS facility could seize control electronically of key safety systems and cause a release. The Department should evaluate this claim and, if it is valid, ensure that EHS facilities effectively counter such computer intrusion. In all areas, the Department should fully and publicly document vulnerabilities, if any, and methods used to prevent and counter specific threats.

Finally, increasing electronic commerce may raise EHS security issues that parallel the Department's previously stated Internet disclosure concerns. We urge you to review industry plans for a one-stop "e-marketplace" that will present unmonitored purchasing opportunities and connect the supply chain of chemicals worldwide. We urge you to address such Internet activity in your review and recommendations, to the same degree that the Department scrutinized public communication of EHS hazards on the Internet, and to apply parallel standards of disclosure.

As you are no doubt aware, we are dismayed with the Department's role in impeding community right-to-know about chemical industry dangers while taking no apparent steps to eliminate these hazards at the source. We look forward to your Department's report to Congress, now overdue, as an opportunity to recommend affirmative steps for worker and community safety through hazard reduction and improved security at EHS facilities.

Sincerely,

John Chelan, Center for Public Date Access; Lois Epstein, Environmental Defense; Stuart Greenberg, Environmental Health Watch; Frank D. Martino, International Chemical Workers Union Council/UFCW; Thomas Natan, National Environmental Trust; Rick Engler, New Jersey Work Environment Council; Boyd Young, Paper, Allied-Industrial, Chemical, and Energy Workers International Union; Robert K. Musil, Physicians for Social Responsibility; Carl Pope, Sierra Club; Mike Wright, United Steelworkers of America; Jeremiah Baumann, U.S. Public Interest Research Group; Paul Orum, Working Group on Community Right-to-Know.

MINIMUM SAFETY AND SECURITY STANDARDS FOR EHS FACILITIES*

Uniform security design codes for extremely hazardous substances (EHS) at industrial facilities should protect workers and communities from criminal activity that targets EHS chemicals. Such codes should follow a prevention hierarchy and strictly regulate the design, construction, materials, location, operation, and maintenance of EHS facilities. If terrorism at chemical plants is a legitimate concern, then standards should address, at a minimum, each of the following elements:

- Crime Impact Forecasts determine the potential worst-case impact from terrorism involving EHS materials, in terms of injuries, deaths, and property damage onsite and offsite.
- Safer Design Studies weigh inherently safer alternatives and security needs during design both prior to construction and major reconstruction at EHS sites, and during safer redesign of existing security risk facilities.
- Policy Statements commit companies to determine if chemical hazards can be readily reduced or eliminated before analyzing risks and potential consequences of these hazards, and help engage senior managers and full corporate resources in design for safety and security.
- Architectural Design Standards ensure that architects incorporate safer design and security elements into new construction, reconstruction, and redesign of EHS areas.
- Construction Materials Guidelines specify materials that are appropriately resistant to fire, blast, and forced entry, among other safety and security concerns.
- Materials Accounting makes evident any theft of EHS chemicals, facilitates site safety and prevention planning, and helps managers to keep unwanted substances out of a facility (the hazardous materials pharmacy concept).

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*These safety and security elements are derived from, among other sources: Lawrence J. Fennelly, *Handbook of Loss Prevention and Crime Prevention*, Second Edition, 1989; and Russell L. Bintliff, *The Complete Manual of Corporate and Industrial Security*, 1992. Elements related to inherent safety are derived from, among other sources: Trevor Kletz, *Process Plants. A Handbook for Inherently Safer Design*, 1998.

• Security Records Systems document security deficiencies, malfunctions, case reports, and corrective actions in a written retrievable format sufficient to support planning, budgeting, and maintenance schedules.

• Administrative Controls ensure that facilities operate within design capacity, and eliminate or reduce chemical hazards through mandatory review of: proposed process changes; EHS purchases; order frequency and volume; and chemical uses.

• Security Lighting provides protective illumination in all weather, including through secure automatic auxiliary systems and power sources (such as generators or batteries), underground circuits, and redundant wiring.

• Intrusion Detection Systems and Alarms protect EHS operations by detecting motion, heat, smoke, sound, or pressure at the facility perimeter, in critical areas (such as computer centers and EHS areas), and at all potential access points (such as doors, windows, floors, roof hatches and skylights, gates, manholes, drains and discharge outfalls, adjoining buildings, and air vents).

• Physical Barriers prevent unauthorized access by persons and vehicles (including air and watercraft) through building design, well-maintained and monitored fences, walls, truck barriers, locks, window bars, safety glass, etc., including compartmental barriers around EHS areas.

• Projectile Shields protect EHS tanks and vessels from airborne and propelled explosive devices and projectiles (as well as from blast fragments).

• Emergency Exits ensure that workers can quickly vacate buildings and grounds through clearly marked and maintained exits. Self-contained alarms and warning signs prevent non-emergency use.

• Blast and Fire Safe Control Rooms and Safe Rooms protect workers and visitors from explosions and fires that originate from criminal activity or plant design, and contain breathing devices, first aid supplies, and secure independent external communications.

• Cyber Barriers block persons outside a facility from electronically manipulating computers that control critical valves, pressures, temperatures, facility access, and other safety systems (using cyber "firewalls," encryption, and electronic pass keys with changing codes).

• Physical Computer Security safeguards critical computer systems through: fire/water/blast safe construction; access controls; dedicated security officers; safe distances from EHS hazards; secure air vents safe from EHS gas leaks; fully compatible backup computers and expertise; backup electricity and communications, and; automatic shutdown capabilities.

• Failsafe Computer Backup Systems independently monitor critical security and safety systems and take over to prevent catastrophic failure.

• Closed Circuit TV maximizes intrusion-monitoring capabilities.

• Add-on Safety Equipment contains, controls, and mitigates releases (such as containment buildings, water spray curtains, automatic shutoff valves, and blast mitigation barriers).

• Safe Shutdown Procedures enable operators to shut down facilities in emergencies; they must be clearly documented, simple, and robust enough to function in urgent situations, including clear procedures, exercises, and authority.

• On-site Response Teams shut down or reestablish power or water, contact outside assistance (police, fire, medical, bomb squad), provide first aid, direct evacuations, and operate and troubleshoot backup computer systems.

• Joint Response Planning coordinates, revises, and exercises response plans with local emergency responders and planning committees (LEPCs), addressing emergency notification and response, hazmat response teams, decontamination facilities, drills, evacuation routes, medical care and pharmaceutical stockpiles, trauma counseling, community restoration, emergency resources, and additional elements listed in Section 303 of the Emergency Planning and Community Right-to-Know Act.

• Transportation Planning reduces hazards through delivery route planning (avoiding tunnels, downtown areas, and sensitive populations), random timing, alternate routes, driver training, security escorts, equipment maintenance, secure valves, compatible cargoes, and appropriate volume packaging.

• Testing and Maintenance Schedules ensure that firms evaluate security equipment and systems, including periodic fire and emergency drills, and daily review of grounds, fences and barriers, utilities, backup systems (such as lighting and computers), fire and intrusion detection systems, alarms, sprinklers, and other security elements.

• Access Controls address personal identification and clearance, key control, parcel inspection, metal detection, visitor logs, escorts for outside service vendors, remote locks, and lock change schedules (including upon changes in employees).

• Security Device Standards specify suitable materials, hardware, construction, inspection, and maintenance of locks and frames.

• Secure Backup Utilities ensure continuous safety and emergency response capabilities upon loss of electricity, telephones, water, sewers, or cyber systems, including redundant wiring (onsite and incoming), secure electrical panels, and backup generators.

• Grounds Maintenance and Landscaping keep EHS zones and sightlines free from obstructions, such as double fences with vegetation-free medians.

• Guard Force Requirements ensure sufficient and well-prepared staffing, with accurate and updated written duties and standards for supervision, training, and performance evaluation.

• Certified Training prepares and certifies security and other staff on safety, fire protection, weapons, bomb threats, hostage situations, arson, access controls, security devices, first aid, self defense, case reports and records, communications, human relations, and special training on EHS dangers and response.

• Labor Dialogue ensures that workers are involved in security problem solving.

• Theft Prevention Guidelines ensure that firms track and safely store EHS materials to prevent theft, and address legal liability for harm associated with inadequate theft and fraud prevention.

• Financial Analysis Standards ensure that prevention investments receive comprehensive treatment during the capital budgeting process, including costs of EHS operations avoided through specific projects (such as heightened security, liability, regulatory compliance, add-on safety equipment, and remedial cleanups).

• Line Item Security Budgeting informs senior managers about security costs for EHS operations in existing and proposed projects.

• Internal Security Audits periodically assess security systems and safer alternatives.

• Certified Third-party Audits regularly review security systems and propose safer alternatives.

• Buffer Zone Setback Guidelines provide land use planners and zoning boards with guidelines for establishing sufficient separation between EHS facilities and public receptors such as schools, homes, day care centers, sports arenas, shopping malls, major highways, businesses, and hospitals.

SEPTEMBER 27, 2001.

Attorney General JOHN ASHCROFT,
U.S. Department of Justice,
950 Pennsylvania Ave. NW,
Washington, DC.

DEAR ATTORNEY GENERAL ASHCROFT: We are once again sending to the Department of Justice our concerns and proposals for reducing the vulnerability of chemical facilities to terrorist attack. For some time, DOJ officials have warned of the vulnerability of chemical plants to terrorism. Now it is time for the DOJ to act. Given the terrible recent events of September 11, we hope that whatever impediments have blocked progress on this issue can now be quickly overcome.

Our letter cites the Department's legal responsibility under P.L. 106–40, the Chemical Safety Information, Site Security and Fuels Regulatory Relief Act, to submit to Congress a report and recommendations for reducing the vulnerability of chemical industries to terrorist attack. This law requires the Department to consult with appropriate agencies, affected industries, and the public in preparing its report and recommendations. The Department's work on a voluntary self-assessment methodology for use by chemical industries does not diminish the requirement to produce this report and to make suitable recommendations by August 2002.

Our concern is straightforward: prevention must play a central role in addressing potential terrorism and accidents. Reducing or eliminating chemical hazards where possible is as a rule preferable to using add-on safety equipment or security measures.

In three previous written responses, the Department first twice referred us to other agencies, and then later referenced other laws administered by the Department. As we have previously requested, please provide the schedule for public consultation (including a publicly accessible docket of all comments) by which you intend to address each of our concerns as well as comments that may be raised by others.

PAUL ORUM,
Director.

STATEMENT OF WILLIAM STANLEY, SOURCING-REGULATORY MANAGER, DEEPWATER CHEMICALS

I. INTRODUCTORY COMMENTS

Chairwoman Boxer, members of the subcommittee, my name is Bill Stanley. I am the sourcing-regulatory manager of Deepwater Chemicals in Woodward, OK. I am appearing today on behalf of the Synthetic Organic Chemical Manufacturers Association, known as "SOCMA."

I appreciate the opportunity to speak with you on the issue of site security for the chemical industry. My goal is to provide you with perspective on the activities of SOCMA and its members with respect to process safety and site security, while also explaining the unique nature of the batch and specialty chemical manufacturing sector of the chemical industry.

Deepwater Chemicals is a small company. It has 30 employees, 16 of which are process operators. Deepwater is a manufacturer of fine chemicals, specializing in organic and inorganic iodine derivatives. Our products are chemical intermediates that are key building blocks for important products of the chemical industry, such as pharmaceuticals, biocides, disinfectants, and heat stabilizers. I should also note that Deepwater Chemicals uses batch-manufacturing processes, a manufacturing method typical of many smaller chemical companies.

A primary focus of SOCMA is representation of the batch and specialty chemical manufacturing segments of the chemical industry, with a particular focus on the interests of small businesses. I,serve on SOCMA's Employee and Process Safety Committee.

This committee, along with other groups within SOCMA, had been actively addressing process safety and site security issues well before the tragic events of September 11.

I will focus my remarks today on three specific areas. First, I will explain the nature of batch manufacturing, the contributions of this industry sector, and the unique challenges that these operations present relative to the broader chemical industry. Second, I will provide information on how both Deepwater Chemicals and SOCMA more generally are addressing site security and process safety. Third, I will explain SOCMA's perspective on how industry and Federal, State and local agencies can most effectively collaborate to address these challenges and why S. 1602 is not an effective vehicle for accomplishing the common goal of further improving site security within the chemical industry.

II. THE UNIQUE NATURE AND ROLE OF THE BATCH AND SPECIALTY CHEMICAL MANUFACTURING SECTOR

The U.S. chemical industry has long been an integral part of the growth, development, and stability of the United States. The industry has made significant contributions to the well-being, peace and prosperity of our country, in areas ranging from national security to health and safety, We have all benefited from these efforts.

When SOCMA was formed 80 years ago, the U.S. chemical industry was playing a vital role in supplying the military with products that were necessary during the war. Our industry's contributions to the war on terrorism are just as essential today: SOCMA members play a key role in the production of these materials. This is often a less visible role, however, due to the nature of our industry. SOCMA members typically produce intermediates, specialty chemicals or ingredients that are used as feedstock in the manufacture of a wide range of commercial and consumer products.

The term "specialty chemicals" refers to a category of chemicals that are specially formulated to meet detailed specifications. Specialty chemicals usually have unique, special purposes, such as to make nylon fibers stronger, or to make an active ingredient in medicine. Specialty chemicals are often essential ingredients in the manufacture of another product. Making these products is an ever-changing business, often requiring small quantities in a timely manner. The specialized nature of SOCMA's members' products thus often calls for batch manufacturing operations.

Batch manufacturing provides an efficient, and frequently the only, method to make small quantities of chemicals to meet specific needs and customer demands for specialized products. Batch processes are very different from continuous chemical manufacturing operations that produce commodity chemicals. A continuous chemical operation constantly feeds the same raw material into the process. That process consistently and constantly manufactures the same product.

By contrast, production at a batch manufacturing facility is not continuous. Both the processes and the raw materials used can change frequently. Products are manufactured in separate, distinct "batches," by operations that start and finish within

relatively shorter periods of time. Because the products and the processes change, the process operating conditions and even the configuration of the equipment can change as well. A single piece of equipment can be put to multiple uses and may well contain a range of different materials over the course of a year. In fact, a SOCMA study found that one member company produced a total of 566 different products over a 7-year period at one facility.

To remain competitive in a tough global market, batch producers must be able to respond quickly to new requirements by customers, fill small market niches and develop new products. U.S. batch producers are at the cutting edge of new technology and provide products often made nowhere else in the world.

Just as batch and specialty chemical manufacturing differs from commodity chemical manufacturing, so do the challenges faced by this industry sector. SOCMA thus has a role to play in representing this industry sector. SOCMA constantly advocates on behalf of its members for regulatory flexibility. "One size fits all programs" for the chemical industry often do not fit SOCMA members. This is especially true when one considers that over 75 percent of SOCMA's active members are small businesses.

Over the years, SOCMA and its members have identified and addressed many areas in which standard assumptions about chemical operations would be detrimental to SOCMA members. This is true with respect to chemical site security as well.

III. HOW SOCMA AND ITS MEMBERS ARE ADDRESSING SITE SECURITY AND PROCESS SAFETY

The events of September 11, 2001 have changed our nation and its approach to security. The chemical industry is no exception. We are in a state of heightened awareness of the risks posed by terrorist and criminal activity. Ensuring the safety of our facilities, employees, neighbors and the environment is embedded in our industry culture. This culture of safe handling, manufacturing, and distribution of chemicals has produced results. According to data compiled by the Department of Labor, chemical manufacturing is one of the safest manufacturing industries in the nation. Preserving and building on this dedication to safety will continue to be a priority for our industry sector.

Since September 11, our industry has taken numerous proactive measures to augment existing environmental, health and safety practices. Typical security practices modified or implemented at SOCMA member companies after September 11 include: conducting vulnerability or security assessments of the facilities and/or processes, communicating with law enforcement or emergency responders, tightening access by contract personnel, further controlling vehicle Access, and security awareness training.

On behalf of its members, SOCMA has actively participated in the development of site security guidelines, has met frequently with government officials, and is planning and promoting a series of site security workshops to be conducted free of charge across the nation. SOCMA intends to build upon and expand these efforts to advance site security practices across the industry.

Site security at chemical plants is being, addressed in other ways as well. SOCMA members participate in Responsible Care, a management system, which is the chemical industry's voluntary initiative for continuous improvement in environmental, health, and safety performance. Under Responsible Care, there are management practices dedicated to site security, employee health and safety, process safety, and distribution. Site security is addressed within the Employee Health and Safety code.

In February 2001, SOCMA formed a partnership with the American Chemistry Council and The Chlorine Institute to proactively address site security. Together, we coauthored a guidance manual onsite security for the chemical industry. In October, this manual, "Site Security Guidelines for the U.S. Chemical Industry'", was made available to SOCMA members and also to non-members as a public service. It is available on our website, *www.socma.com.* SOCMA has reached out, in particular to share the guidelines with other associations that represent small business. These guidelines are not intended to provide an all-inclusive list of security considerations for chemical companies. They are intended to be a resource.

It was important for SOCMA to bring the unique perspective of the specialty batch and custom chemical industry to the development of these guidelines. Because of the many differences between these facilities and larger operations, it is critical for a plant manager to have the flexibility to prioritize resources and implement security appropriate measures for that facility which would be most effective.

SOCMA has also met with the U.S. Department of Justice and its contractor, Sandia National Laboratories, on the congressionally mandated vulnerability assessment of chemical facilities. To date, Sandia's assessment has been based on six, large commodity chemical manufacturers. SOCMA members have volunteered to host a site visit by DOJ to "test" the prototype vulnerability assessment methodology. It is critical that specialty batch and custom chemical manufacturers participate in this project to ensure that the assessment report is balanced and accurately reflects industry diversity in plant size, processing techniques, and production lines.

Since September 11, SOCMA has continually been in contact with various Federal agencies including the U.S. Environmental Protection Agency (EPA) and the Federal Bureau of Investigation (FBI) to share information. We are also engaged in an ongoing dialog to discuss ways that industry and government can work cooperatively together to combat terrorism. We are planning to co-host regional workshops on security to share information between the agencies and industry, present case studies and practical information on developing a security plan at a facility, and discuss best practices related to transportation security and product stewardship. Every effort is being made to ensure that workshops will be held in several States by the end of 2001.

B. Current Activities Underway

At the facility level at Deepwater Chemicals, safety and security is a top priority. Our goal is to produce a quality product in a manner that is beneficial to our customers, employees, company, community and environment. Security is an essential part of this process. Security measures at Deepwater include perimeter fencing, controlled access, motion detectors in critical areas, and pre-employment hiring screening.

We already have two-way radio communication that is constantly monitored between plant operations and management. We are in the process of implementing verbal confirmation for authorized entry of all truck traffic into the plant. These measures allow management to make informed decisions regarding site access and security.

Following the tragic events of September 11, Deepwater is in the process of evaluating further improvements to our security measures and conducting a vulnerability assessment of our facility. We have met with State officials, including the Oklahoma Highway Patrol and the Oklahoma State Bureau of Investigation, to participate in an assessment survey of chemical plants and potential impacts on the surrounding community in the event of catastrophic release as a result of a terrorist act. This information will assist the State Emergency Planning Committee (SEPC) and Local Emergency Planning Committee (LEPC) in further developing response plans.

In addition, the manufacture, handling, and distribution of chemicals at Deepwater is highly regulated under a range of programs—each intended to prevent and mitigate the release of hazardous chemicals. The Clean Air Act already has a General Duty Clause [Section 112 (r)] that states that facilities have a general duty to prevent and mitigate accidental releases of extremely hazardous substances. At present, Deepwater Chemicals must comply with nearly 30 different regulations. Unless one is out in the field implementing these multiple programs, it is easy to lose track of their cumulative effect. I think you would be interested to know how comprehensive these programs and our voluntary efforts are.

I would like to share with you some of our activities in this regard.

Process Safety

For example, the Occupational Safety and Health Administration (OSHA) Process Safety Management Standard, or PSM, [29 CFR 1910.119] requires facilities that have a highly hazardous substance above a certain threshold to implement measures to mitigate hazards, including conducting process hazard analysis and maintaining the mechanical integrity of equipment. Deepwater already conducts a process hazard analysis on all new manufacturing processes. A process hazard analysis is a periodic assessment of hazards associated with chemical manufacturing operations. It also includes implementation of actions to minimize risks.

In addition, Deepwater reviews processes if decided by management review. Manufacturing processes are also reviewed if a new product is under development in the R&D facility or is being transferred to plant operations. OSHA requires revalidation and review of processes that fall under PSM every 5 years. Deepwater has two processes that fall under this PSM program, and these will also be reviewed according to regulations.

Worker Training and Safety

Worked training and safety is another area critical to plant safety and security. The OSHA PSM standard requires employers to train employees involved in oper-

ating a process on the specific health and safety standards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks. Additionally, OSHA's Hazard Communication standard requires that the hazards of all chemicals produced or, imported are evaluated, and that information concerning their hazards is transmitted to employers and employees.

Deepwater Chemicals has developed a comprehensive training program. In fact, in June 2001, Deepwater hosted SOCMA's 40-hour Chemical Process Operator Training Workshop and invited neighboring chemical companies to also participate in the course. This was done in collaboration with the Oklahoma Department of Career and Technology Education that makes available funding for private industry to develop or enhance training that is specific to their industry. This ongoing program allows for further advancement in developing communication and relationships between other industry and the community.

Coordination with Emergency Responders

Another important aspect of our Environmental, Regulatory, Heath and Safety Program is involvement with local emergency response teams.

Under Title III of the Superfund Amendments and Reauthorization Act (SARA), States are required to establish LEPCs. Each LEPC is responsible for working with industry to develop emergency response plans for its community that take potential risks from a chemical related accident into account; collecting and storing information provided by facilities; and making it available to the public. Representatives to the LEPC include individuals from the fire department, emergency management agencies, local health agencies and hospitals, local officials, community groups, media, and local businesses.

Deepwater Chemicals, in collaboration with other local companies and industry, participates in the Woodward County LEPC by providing technical expertise in the planning process, assisting with the training of local responders in handling hazardous chemicals, providing information about chemicals and transportation routes, offering inkind assistance in the planning process and hosting regular plant tours and emergency response drills for local responders.

Under the Emergency Planning and Community Right-to-Know Act (EPCRA), facilities that have listed chemicals above a certain threshold quantity are required to prepare and submit a hazardous chemical inventory form to their local emergency planning committee, State emergency response commission, and local fire department.

Responsible Care plays a significant role in site security, as well as in Deepwater's interaction with local emergency responders. As part of the Community Awareness and Emergency Response Code, or CAER code, facilities are encouraged to communicate with plant community residents and emergency response personnel, further enhancing safety and emergency preparedness. As part of Responsible Care, facilities are to implement security procedures and systems to control the entry and exit of personnel and materials. SOCMA's guidance for the Responsible Care Employee Health & Safety Code and the recently released industry site security manual provides guidelines for company practices regarding site security. The CAER Code encourages facilities to take a leadership role in the LEPC and initiate activities that go beyond the requirements of SARA. For example, the CAER Code provides guidelines on participation in the community emergency response planning process to develop and periodically test the comprehensive community emergency response plan developed by the LEPC.

As you can tell, handling chemicals has led the industry to develop extensive plans to address potential incidents covering both onsite and offsite consequences. Industry is already coordinating with emergency responders and local communities regarding these issues. This effort has already been expanded to consider further steps in light of the events of September 11. We are committed to continuing these efforts for the sake of our employees and our communities.

IV. SOCMA'S PERSPECTIVE ON THE PATH FORWARD

SOCMA believes that these cooperative, government/industry efforts, at both the national level and the facility level, are the right way to address further improvements. to site security in the chemical industry. SOCMA applauds Senator Corzine and this subcommittee for recognizing the importance of this issue in S. 1602. However, SOCMA has a number of significant concerns about the proposed approach and its likely consequences.

A. Burdens Placed on Small Companies

One of the greatest concerns that SOCMA has with S. 1602 is its potential impact on small batch and specialty chemical producers. As a small business specialty

chemical producer, I know first hand the regulatory challenges already imposed on this industry sector. Due to the broad scope of the bill, any small company that produces, mixes, blends, modifies, or even handles a high priority substance may be subject to the new regulatory obligations. In fact, due to the nature of our operations, it would be burdensome even to ascertain whether and when subsequent regulations apply.

As I discussed previously, batch manufacturing has many unique characteristics that distinguish it from continuous commodity production. Due to these characteristics, regulations developed in accordance with S. 1602 would impose disparate impacts on the industry's small businesses. Because batch and specialty producers are customer driven, their product lines fluctuate regularly. They may be producing one chemical for a pharmaceutical company one week, and then making a pesticide intermediate the next.

As a result, a batch producer could handle a variety of high priority chemicals—each requiring different regulatory standards and mandated processes. Such requirements would eliminate a company's operational flexibility. The ability to produce niche chemicals efficiently is of paramount importance to compete in the batch and specialty chemical sector. These companies spend extensive resources to develop new ways to meet customer demands. By promulgating prescriptive production standards under S. 1602, the government would adversely affect a company's ability to innovate and compete.

It is no secret that the chemical industry has been facing challenging times. With the economy in its current State and the overvalued dollar overseas, the batch and specialty chemical industry is facing increasing competition from abroad. The effects of this competition are reflected in the industry's decreasing trade surplus. Though the industry remains the largest exporting sector in the United States, with trade surpluses for over 75 years, Department of Commerce data show that the industry's trade surpluses have decreased from $19.1 billion in 1997 to $6.3 billion in 2000.

Limiting a U.S. company's ability to innovate and produce chemicals impairs its ability to compete globally. Developing countries are already increasing their production capacity to undercut and replace U.S. specialty chemical producers. Neither our industry, nor our economy, can afford to have jobs move overseas. The U.S. chemical industry employs over one million workers, with 96,000 jobs in New Jersey, 83,000 jobs in Texas, 82,000 jobs in California, and 57,000 jobs in New York. Competition in the batch and specialty chemical sector is already high. Imposing additional constraints on this industry section could hurt domestic competitiveness, to the benefit of our global competitors.

B. Concerns With General Duty Clause

Under S. 1602, a general duty clause is imposed on each owner and operator of a chemical source that is within the high priority category. As a result, it would be the duty of every owner or operator of a chemical source to, among other things, ensure safer design and maintenance of a facility by taking such actions as are necessary to prevent accidental releases and criminal releases.

The general duty clause thus potentially subjects companies to both civil and criminal penalties if an accidental or criminal release were to occur. As I have previously stated, the industry has a culture of safety with numerous measures taken daily to prevent such incidents. However, under the language of the bill, any such incident could subject a company to penalties. Furthermore, even the most extreme criminal actions by a third party could result in civil and criminal sanctions being imposed on the site owner or operator. Under this approach, the criminal act of a terrorist would serve as the basis for imposing civil or criminal liability on the actual victim, the site owner or operator.

Furthermore, this approach unfairly places the entire burden of anticipating and preventing criminal and terrorist activity on the company. For a small business, this challenge is all the more difficult. I think that a better approach is for the government to maintain its lead role in criminal enforcement and the war on terrorism, while sharing critical intelligence information and working cooperatively with a, company when a clear and present danger is discovered. SOCMA's work with the FBI and other Federal agencies is already based on the premise that more can be accomplished when industry and government collaborate to work together constructively.

I am also concerned that the approach in S. 1602 seems likely to put EPA in a command-and-control, adversarial posture with industry. This would greatly hamper the emerging paradigm of industry partnership and collaboration with EPA and other government agencies. It would certainly be difficult for a site owner or operator to work cooperatively with the FBI after a terrorist attack, when the critical

information supplied to the FBI and other Federal entities might later be used for criminal enforcement against the site owner or operator.

C. S. 1602 Blurs Current Regulatory Jurisdiction

SOCMA also has concerns with the broad delegation of authority to EPA to regulate chemical sources—including motor vehicle and rolling stock. The bill is silent on whether it trumps or even preempts existing regulatory jurisdiction. Currently, the shipment of chemical goods is regulated by the Department of Transportation (DOT). If enacted, EPA and the DOT would both be responsible for such regulation, potentially leading to jurisdictional conflicts.

S. 1602 would also give EPA broad authority to ban the production of high priority chemicals. This role would potentially conflict with other agencies such as the Food and Drug Administration (FDA). For example, if a pharmaceutical intermediate, or a fine chemical were categorized as high priority, it would apparently be the EPA, not the FDA, regulating its production.

Furthermore, the authority to ban chemical production based on quantifiable hazards exists in other statutes. Provisions in these laws take numerous factors in account—factors that are missing from S. 1602. For example, section 6 of the Toxic Substances Control Act authorizes EPA to take regulatory action to protect against unreasonable risk of injury to human health or the environment due to the manufacture, import, processing, distribution in commerce, use or disposal of a chemical substance or mixture. Regulatory decisions are to be based on risk assessments, and EPA is required to regulate risks by using the "least burdensome" means. Judicial interpretation of these provisions has confirmed that, when banning a chemical, EPA must consider and rule out other alternatives to ensure that the method chosen is in fact the least burdensome. It is impossible to reconcile these provisions with S. 1602.

S. 1602 also gives me pause insofar as it casts EPA in the role of an expert with respect to both threats to national security and threats to critical infrastructure. Not only would EPA be the purported expert, S. 1602 would endow EPA with final decisionmaking and rulemaking authority. The FBI, the CIA and the Homeland Defense Office need not be consulted and need not be in agreement with EPA's assessment of these factors.

Yet, today's world underscores the need for sophisticated, current expertise as a critical weapon in the war on terrorism. Our nation's management and assessment of terrorist threats must be streamlined, focused and effective. The question is how to most effectively coordinate the expertise within our various Federal, State and local agencies. Creating a new dominant national security bureaucracy within EPA is not the right response.

D. Provisions Regarding Safer Technology

The language in this bill is explicit regarding the promulgation of rules, leading to "safer designs" and processes for manufacturing. Developing and proposing such measures would require extensive knowledge of chemical processes and formulations—many of which vary from facility to facility. And, as we have discussed, with the batch manufacturing sector, chemical processes, formulations and raw materials can vary almost from week to week.

Yet, S. 1602 assumes that processes can and should be redesigned, inputs substituted, and carriers and catalysts substituted based on a single perspective—potential impacts on national security due to potential releases. This simplistic analysis overlooks the real world of chemical processing, and batch manufacturing in particular.

Any responsible chemical manufacturer will confirm that process changes of any sort must be preceded by a comprehensive assessment of the likely consequences of the change. A multitude of impacts must be considered. Will emissions increase? Will emissions be more toxic? Would the change affect the surrounding operations and areas? Will the facility be able to get permits for changes in air, water and waste emissions? Will product quality and effectiveness suffer? Will the process pose more immediate hazards to workers? Will the process be less stable or more difficult to control? Will the changes promote or hinder waste minimization and recycling? Are the new substitutes consistently and reliably available? What is the overall impact on costs? Will the resulting product still be able to be manufactured to customer specifications? A comprehensive assessment must be made of the feasibility, benefits, costs and risks attendant upon any process change. We absolutely agree that site security is an essential and increasingly important part of this assessment. But it still must be a multi-faceted assessment.

The batch manufacturing industry has substantial expertise in evaluating the potential ramifications of process changes. We continually strive to find innovative ap-

proaches to making certain chemical compounds. However, it is important that this subcommittee also understand that we are limited by the natural laws and bounds of chemistry and physics as to how much we can do to change our processes. For instance, when making an intermediate that will eventually be turned into an ingredient for medicine, we may have to go through several steps to get groups of atoms in exactly the right place to make the product useful. To do that, we may have to use a specific type of chemical or process, because there are no substitutes that allow us to achieve the same result. In this case, forcing process change or input substitution should not be considered a feasible alternative. Yet, S. 1602 seemingly would authorize EPA to require such a change.

E. Timing

As a final point, SOCMA questions the timeliness of the regulatory program proposed in S. 1602. On its face, the regulatory program envisioned in S. 1602 would not be fully implemented for at least 4 to 5 years. The legislation first requires EPA to designate from the universe of regulated chemicals, certain substances and sources as "high priorities." Even if completed on time, this provision is to be conducted within 1 year. However, due to the enormity of the task, subjecting the hazard ranking of every regulated chemical and source through the administrative process would take significantly longer than 1 year to be done accurately.

The bill would then require EPA to promulgate rules to take adequate actions to prevent, control, and minimize the potential consequences of a release by one of the aforementioned high priority combinations. Again, EPA is to complete this process within 1 year. The bill recommends that regulations should require development and use of safer design and maintenance of the chemical source. Like the categorization provisions, this in and of itself would be a Herculean task for EPA to undertake—let alone to complete in 1 year. Even if completed on time, final rules addressing high priority chemical risks would not be completed for 2 years.

After the rules are promulgated, additional time would be needed for the regulated community to come into compliance with such extensive measures. The type of process changes suggested by the language of S. 1602 could be further delayed by the need for facilities to assess the feasibility of compliance through comprehensive assessments of the potential ramifications of any changes. In addition, environmental permits would have to be obtained before changes could be implemented, or construction even begun in some cases.

As I have already stated, the industry has already been working on the specific issue of site security. Our work, which began before September 11, is addressing the immediate need to prevent accidental and criminal releases. These measures are comprehensive and designed to help companies to customize their security measures on a facility-by-facility basis.

V. RISK-BASED APPROACH

I urge members of this subcommittee to keep in mind that not all chemicals and facilities are likely targets for terrorist attacks. In fact, most are not. How then, do we work together in a partnership with government and determine the likelihood that a facility will be an attractive target for a terrorist? And when we determine the degree to which certain facilities can be potential targets, how do we ensure the appropriate level of security? These are the two fundamental questions that prompted our industry to begin developing a tiered, risk-based approach to chemical site security. A tiered approach is nothing more than starting with simple evaluation techniques, usually qualitative in nature, and identifying areas in which more information would be useful to reach a riskbased conclusion.

We envision a six-step process, which is detailed in our site security guidance, that begins with determining which chemicals, processes and facilities would be likely targets. Our guidance further outlines areas that companies can consider when assessing vulnerability, such as chemical hazards, physical and reactivity properties, engineering, containers, physical appearance, release mitigation, potentials for exposure, and other important factors.

Once these six steps are complete, it will be easier to assessment whether or not the security measures in place are appropriate for the potential threat. Companies have already begun this process because we share a sense of immediacy about ensuring the safety of the communities in which we live.

Interestingly, our security measures often exceed what would be appropriate for potential terrorist threats because we also consider other factors, such as vandalism, trespassing and theft. In fact, batch and specialty facilities are hard to discern from other types of businesses because most of their production processes take place indoors. The physical appearance of our facilities very much decreases the likelihood that they would be targets. In addition, our products are made according to the

needs of our customers, so a terrorist would have to know the details of our production schedules to know what we are making, and, more importantly, when.

Considering all the factors that make certain chemicals and processes likely candidates for terrorist attacks, I think it is reasonable to State that batch and specialty facilities require a flexible approach to vulnerability assessment and security countermeasures to meet potential terrorist threats. We think we have the right approach and have already begun implementation.

IV. CONCLUSION

I would like to conclude by confirming that there are plenty of incentives to ensure safety and security in all of our processes. We do not want accidents, nor do we want to be the victim of an attack. I work in my facility. My failure to address these issues would impact me directly. We are all in this together, our businesses, our communities and our government leaders. We want to continue to work together on a cooperative basis, to evaluate and respond to potential risks in an effective manner.

I would be glad to entertain any questions at this time.

STATEMENT OF RENA STEINZOR, ACADEMIC FELLOW, NATURAL RESOURCES DEFENSE COUNCIL

Madame Chairman, and members of the subcommittee: Thank you for the opportunity to appear here today to testify in support of S. 1602, the Chemical Security Act of 2001, on behalf of the Natural Resources Defense Council (NRDC). NRDC is a national, non-profit organization of scientists, lawyers, economists, and other environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 500,000 members nationwide, and four national offices in New York, Washington, Los Angeles, and San Francisco.

In the wake of the tragedies that began on September 11, 2001, this legislation is one of the most important, proactive steps that the Federal Government can take in response to this particular threat, which belongs on the "top ten" of anyone's list.[1] No reasonable observer could dispute that the events covered by this legislation must be a national priority: namely, terrorist attacks that result in releases of acutely toxic chemicals at factories, petroleum storage facilities, and hazardous materials transportation locations, as well as the possibility that terrorists could steal chemicals from such facilities to make their own weapons of mass destruction.

Existing law does not address this problem. Waiting for States to erect a patchwork of inconsistent requirements could take years, and would cost excessive amounts. To its credit, the American Chemistry Council recognizes that these hazards must be an immediate priority and has already put in motion special programs to help its members upgrade plant security. However, the notion that we would leave industry to implement these efforts voluntarily, without government oversight, makes as much sense as leaving airport security to the exclusive discretion of the world's air carriers.

The American people clearly want their government to protect them from the worst threats, and they want those activities begun yesterday. Not incidentally, the proposal you have before you today, like the one that Congress passed in 1986 in the wake of the Bhopal tragedy, will enable our nation's brave police and firefighters to combat accidental releases of hazardous materials with the knowledge that the Federal Government, and the chemical, petroleum, and transportation industries, have done everything possible to avoid placing them in harm's way.

For the sake of these brave men and women, and the public at large, NRDC urges you to move this legislation toward enactment as quickly as possible. The remainder of my testimony will address (1) the need for the legislation; (2) why a Federal law is necessary, as opposed to consigning responsibility for this issue to the States or industry volunteerism; and (3) possible ways to strengthen the legislation.

NEED FOR THE LEGISLATION

As you may remember, the Bhopal tragedy occurred when equipment at a pesticide manufacturing plant malfunctioned, causing the release of a cloud of lethal methyl isocyanate gas.[2] People in the crowded neighborhoods around the plant saw

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[1] See, for example, Eric Pianin, *Toxic Chemicals' Security Worries Officials; Widespread Use of Industrial Materials Makes Them Potential Target of Terrorists,* Washington Post, November 12, 2001, at A14, attached as Appendix A-1.

[2] Diamond, Stuart, *The Bhopal Disaster: How It Happened,* New York Times, January 28, 1985, at A1, attached as Appendix A-2.

the plume, assumed it was a fire, and ran toward the factory to help extinguish the blaze or to watch in excitement. As the plume drifted over the plant gates toward the crowds, some 3,000 people dropped dead in their tracks. Overcoming the temptation to view Bhopal as an example of Third World ineptitude, a congressional panel traveled to a twin Union Carbide facility in Institute, West Virginia, only to discover that although the county had prepared an emergency plan, the plant manager did not realize that it existed.[3]

Congress responded to Bhopal and its aftermath by passing the 1986 Emergency Response and Community Right-to-Know Act (EPCRA), which was refined and expanded by the 1990 Clean Air Act (CAA) amendments. Under both statutes, State and local governments are responsible for dealing with such incidents, with the Federal Government playing a very small role in providing technical support for their efforts. Emergency response has two distinct components in this context: first, the containment of the explosion, fires, and toxic releases that typically accompany such incidents and, second, the successful protection of the affected populations near the facilities. But neither law addresses the all-important tasks of preventing such incidents by reducing hazards and ensuring plant and transportation system security. Human error in operating complex machinery killed several thousand people in Bhopal. What price would we pay for deliberate sabotage at such a facility?

In the decade-and-a-half since EPCRA went on the books, funding shortfalls have undermined local efforts to make progress on either containing accidents or protecting the public and, until recently, very few cities and towns had even thought about reducing the use of toxic chemicals or improving the technology of storage equipment. Indeed, it is commonly understood by everyone involved at the grassroots level—from firefighters, police, and other municipal officials to the companies that own and operate the factories, railroads, pipelines, and truck fleets—that local emergency response capacity, even in large cities, falls far short of either these legal requirements or safe practice. Despite the valiant efforts of fire departments nationwide, local governments under pressure to fund other services simply have not given firefighters, police, and emergency medical personnel what they need to do a very difficult job.

As a classic example of this problem, I refer you to press accounts of a fire caused by a train derailment in a tunnel running through the center of Baltimore City last summer; I have attached one comprehensive analysis of the implications of the incident to my testimony.[4] The short story is that it took several days to put out the fire, and everyone involved with the response was enormously relieved that no acutely toxic chemicals were involved because the City was fundamentally unprepared to deal with such a catastrophe.

To understand the gravity of the situation in Baltimore and elsewhere, consider the following realities of any emergency that involves the release of an acutely toxic chemical. Experts agree that there are only two possible alternatives when a toxic plume is released near a population center: (1) shelter-in-place or (2) evacuation. They further agree that the first of these is only as effective as the shelter itself. In the absence of measures to seal off ventilation systems, and plug other leaks in a building, shelter-in-place can serve to compound chemical exposures. Evacuation therefore remains an essential component of any emergency response plans. EPCRA recognized this reality, explicitly requiring that "local emergency response committees" include detailed evacuation scenarios in their plans.

Many cities have made little, if any, progress on these critical tasks, again as indicated by the Baltimore incident.[5] They have not deployed effective warning systems; they have no contingency plan for dealing with vulnerable populations; they have made no effort to train the public on shelter in place techniques, and they have no idea how they would conduct an evacuation if one was necessary. Even worse, most cities have not yet mastered the important challenge of integrating fire department efforts to contain fires, explosions, and releases with police efforts to evacuate or otherwise aid the public. Police lack equipment to protect themselves in the event of an acutely toxic release, do not routinely train with firefighters to develop effective coordination procedures, and have no concrete plan for controlling traffic, much less organizing a large-scale evacuation of affected neighborhoods.

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[3] Pienciak, Richard T., Flaws found in emergency plans near toxic plants, Los Angeles Times, January 6, 1985, at 2, attached as Appendix A–3.

[4] Heather Dewar, *When Chemical Safety is a Matter of Security,* Baltimore Sun, October 17, 2001, at 1A, attached as Appendix A-4.

[5] *Tunnel Damage Assessed After Derailment Blaze,* Houston Chronicle, July 23, 2001, at 8. See also Editorial, *There When You Need Them,* Baltimore Sun, July 20, 2001, at 20A, attached as Appendix A-5.

To date, there have been only two confirmed attempts to perpetrate terrorist attacks on facilities handling toxic chemicals, both of which were prevented by the authorities.[6] However, there have been numerous accidents involving such materials, with several involving severe injuries or even fatalities, primarily among the workers at such facilities but under circumstances that could easily have posed a threat to the public.[7] Fifteen accidental gas releases of greater amount and toxicity than Bhopal occurred in the United States between 1980 and 1990.[8] A careful review of press accounts of these incidents indicates that luck rather than preparation is the reason such incidents have not resulted in widespread fatalities.

The vast majority of hazardous chemicals are stored in tanks or other containers that require electricity to maintain the correct temperature and pressure. Power outages of any significant duration could have the same disastrous effects as a direct attack on such facilities. Consequently, the facilities covered by S. 1602 are in jeopardy from the indirect effects on attacks on the power grid, as well as direct assaults. For further information on this too-often overlooked aspect of the problem, I have attached a recent paper regarding the vulnerability of the nation's power grid to terrorist attack.[9]

These realities, partnered with the lessons of September 11, demonstrate beyond any reasonable doubt the importance of increased prevention of hazards and physical security, as required by the legislation before you. Some enlightened local governments have begun such initiatives, demonstrating that they are indeed possible. As reported in this Monday's Washington Post, the Blue Plains sewage treatment plant has accelerated its efforts to replace lethal chlorine gas with a far less hazardous chemical, demonstrating the feasibility of the requirements contained in S. 1602.[10]

WHY A FEDERAL LAW

Although devolution of traditional Federal functions to the States is a popular approach to government at the moment, the events of September 11 have reminded us why we operate under a system of national environmental laws. Three major reasons were articulated by congressional sponsors of the legislation that created the Federal regulatory system, and by commentators on federalism ever since:

1. The need to address transboundary pollution. For example, there are a large, albeit uncounted, number of plants that use, store, or produce toxic chemicals in this country located in a place where an emergency release would affect populations living in two States. Of course, trucks and trains carrying toxic chemicals routinely cross state lines.

2. The superior performance and economic efficiency achieved by regulation at the national level. Asking 50 state and thousands of local governments to assess the threat of chemical plant and transportation system sabotage and regulate accordingly would not only consume enormous resources but would inevitably result in failure in far too many places. Federal expertise is needed desperately in this endeavor, and is far more efficient economically. It is also worth noting that a patchwork of state and local requirements would only drive industry into your offices to beg for a uniform Federal system. Indeed, this is exactly the scenario that occurred when states tried to regulate hazardous materials transportation.

3. Establishing a Federal regulatory framework leaves a role for first responders at the state and local levels. States and local governments must be indispensable partners in this effort, as the legislation recognizes when it directs EPA and the Department of Justice to consult closely with their sister agencies and elected officials.

As for the question of whether industry volunteerism is enough to meet this challenge, the information released thus far suggests that industry is focusing on physical security, with prevention by hazard reduction a distant and far lower priority. NRDC's experiences over the last decade in working with industry to encourage haz-

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[6] U.S. Department of Justice, 2000. Assessment of the Increased Risk of Terrorist or Other Criminal Activity Associated with Posting Off-Site Consequence Analysis Information on the Internet, at 27, attached as Appendix B.

[7] U.S. Environmental Protection Agency, Chemical Emergency Preparedness and Prevention Office, 2000. Assessment of the Incentives Created by Public Disclosure of Off-Site Consequence Analysis Information for Reduction In the Risk of Accidental Releases, at 2, 11-12, attached as Appendix C.

[8] Mukerjee, Madhusree, *Toxins Abounding,* Scientific American, July 1995, at 22, attached as Appendix D.

[9] David Wagman, *A Vulnerable System Looks for Security,* Energy Insight Today (September 14, 2001).

[10] See Eric Pianin, *Toxic Chemicals' Security Worries Officials; Widespread Use of Industrial Materials Makes Them Potential Target of Terrorists, Washington Post, November 12, 2001, at A14, attached as Appendix A-1.*

ard reduction (aka "pollution prevention") illustrate just how very difficult it is going to be to change corporate culture to accomplish this crucial component of any reasonable response to the terrorist threat.[11] Rather, the instinct of most companies will be to post security guards, strengthen fences, and make alarms louder, all of which may well be appropriate but are an incomplete answer in the face of the kind of coordination and determination displayed by the terrorists who attacked us on September 11.

Even if increased security was an adequate agenda for the moment, every past experience with volunteerism indicates that compliance with such programs is spotty at best. With an economic downturn ahead of us, we simply cannot afford to leave decisions whether to invest in complex new systems up to senior management, no matter how well-meaning they may be. Indeed, it is likely that the economically weakest companies with the most neglected and therefore more vulnerable physical infrastructures, will be the ones that never quite get around to doing their share to satisfy their civic responsibilities.

Of course, there are other incentives to make plants, trucks, and trains more secure, and we would be foolish to ignore them. The most important is liability for damages if a company ignores this crucial imperative, and we trust that the subcommittee will leave these incentives in place no matter what the outcome of this valuable legislative debate.

STREAMLINING THE BILL

The legislation, as drafted, is comprehensive, covering all conceivable manifestations of the terrorist threat. It anticipates that EPA, in consultation with the Justice Department and the states, will prioritize facilities and chemicals in order to develop a workable list of high priority targets for the final regulatory regime.

While we appreciate your interest in moving this legislation quickly, and we plan to do anything we can to assist you in that effort, we are also aware that the history of the Agency's regulatory performance over the last decade and a half suggests that the more broad its mandate, and the more endless the regulatory possibilities, the more attenuated the rulemaking process becomes. Accordingly, we offer to continue to work on developing information that will help you target the worst threats. Of some 22,000 facilities now reporting to the Toxics Release Inventory, approximately 200 account for over 50 percent of reported releases. (This calculation is based on Toxic Release Inventory data, and excludes acids and bases, focusing instead on other toxic chemicals that are not readily neutralized.) We are confident that with some additional research, it will be possible to focus on a significantly smaller subset of facilities posing the greatest risk.

For example, I have attached to this testimony a report by the Agency for Toxic Substances and Disease Registry entitled Industrial Chemicals and Terrorism: Human Health Threat Analysis, Mitigation and Prevention.[12] This extraordinarily useful document suggests several steps that could be taken to prioritize the risks in this arena, and also proposes a 10-step procedure for upgrading emergency response plans. The experts who produced this document, and others like them at EPA, the Federal Emergency Management Administration, and the Federal Bureau of Investigation, should make themselves available right now to assist you in the effort to isolate the top priorities and get the regulatory process moving at a fast clip.

Thank you for the opportunity to appear before you today. I would be pleased to answer any questions you may have.

[From the Washington Post, Nov. 12, 2001]

TOXIC CHEMICALS' SECURITY WORRIES OFFICIALS; WIDESPREAD USE OF INDUSTRIAL MATERIALS MAKES THEM POTENTIAL TARGET OF TERRORISTS

(By Eric Pianin)

Last February, environmentalists concerned about security problems in the chemical industry made their point by scaling the fence of a large Dow Chemical plant

[11] Greer, Linda, *Anatomy of a Successful Pollution Reduction Project,* 34 Environmental Science and Technology 254A (2001), attached as Appendix E.

[12] U.S. Public Health Service, Agency for Toxic Substances and Disease Registry, *Industrial Chemicals and Terrorism: Human Health Threat Analysis, Mitigation, and Prevention* (1999), attached as Appendix F.

near Baton Rouge, La., and gaining access to the control panel that regulates potentially dangerous discharges into the Mississippi River.

The plant manufactures and stores large quantities of chlorine, a highly toxic chemical that could kill many if released as a gas through an explosion or fire. The Greenpeace activists who organized the foray said it was a snap because there were no guards or security cameras along the plant's lengthy perimeter and because the door to the wastewater discharge control room was unlocked. Though some industry officials played down the raid's significance, experts say it underscores another serious homeland security vulnerability after the September 11 terrorist attacks. Industry and government officials alike are looking for ways to make. sure that, like commercial airliners, another component of U.S. technology isn't turned into a horrific weapon against Americans.

"No one needed to convince us that we could be—and indeed would be—a target at some future date," said Frederick L. Webber, president of the American Chemistry Council, an industry group representing 180 major companies including DuPont, Dow, and BP Chemical. "If they're looking for the big bang, obviously you don't have to go far in your imagination to think about what the possibilities are."

Industrial chemicals such as chlorine, sulfuric acid and hydrochloric acid potentially provide terrorists with "effective and readily accessible materials to develop improvised explosives, incendiaries and poisons," according to a 1999 study by the Federal Agency for Toxic Substances and Disease Registry. Yet the report, which focused on West Virginia and Nevada as a way to sample the situation nationwide, found that security at chemical plants "ranged from fair to very poor."

"Most of the security gaps were the result of complacency and lack of awareness of the threat," the report stated. "Chemical plant security managers were very pessimistic about their ability to deter sabotage by employees."

Some of the chemicals used or produced in plants throughout the country—and transported by rail through densely populated areas including Baltimore and Washington—have the potential to match or exceed the 1984 disaster in Bhopal, India, in which a methyl isocyanate gas leak at a Union Carbide Corp. pesticide plant killed at least 2,000 people and injured tens of thousands.

"I think that if one had to think about what is the next level of potential targets, you would have to think about major chemical and oil facilities," said Fred Millar, a consultant on chemical accident prevention.

Immediately after the United States began bombing Afghanistan on October 7, the railroad industry took the precaution of imposing a 72-hour moratorium on carrying toxic or dangerous chemicals. But the shipments were resumed after the chemical industry argued that chlorine was essential to the continued operations of sewage treatment plants and that there was no evidence the shipments were being targeted by terrorists.

Chemical industry officials say that, long before September 11, plants had begun to tighten security and put in place safeguards including well trained and equipped hazardous materials response crews, vapor suppression equipment and barriers around chemical storage tanks. Since the attacks, the industry has issued tough new site security guidelines, and officials say they are in daily contact with the FBI and other Federal authorities to prepare for a direct threat against a chemical plant. So far, there hasn't been one.

Environmental Protection Agency Administrator Christine Todd Whitman, who has met several times with industry leaders, said Friday, "I don't know that you could get any higher awareness than we have today on the importance of directing resources to those efforts of securing chemicals onsite."

"So they are doing as good a job as they can do right now, and they're very aware of where their vulnerabilities might be," she added.

But Paul Orum, director of the Working Group on Community Right-to-Know, a national clearinghouse on hazardous risk information, said the chemical industry "continues to maintain excessive volumes of extremely hazardous substances in heavily populated areas, materials that if they get loose can cover schools, hospitals and residential areas with toxic fumes at dangerous levels."

"The industry has been in denial about the need to reduce those hazards and set measurable goals and time lines," Orum added.

Chlorine is a telling example of the complexity of the problem. While potentially a lethal weapon, it is also a safeguard: Among other uses, it is a key ingredient in Cipro, an antibiotic used to treat anthrax exposure. "Chlorine is the first line of defense against bioterrorism," said C.T. "Kip" Howlett Jr. of the Chlorine Chemistry Council, as he strongly defended the widespread use and storage of the gas.

Last year, U.S. chemical companies and related industries reported 32,435 fires, spills or explosions involving hazardous chemicals to the National Response Center, an extensive but incomplete Federal record of mishaps involving oil or chemicals.

At least 1,000 of these events each year involve death, injury or evacuation. Combined data from additional Federal sources suggest that in 1998—the last year for which full data were available—there were more than 100 deaths and nearly 5,000 injuries, according to Orum's group.

A single accident at any of the nearly 50 chemical plants operating between Baton Rouge and New Orleans potentially could put at risk 10,000 to 1 million people, according to "worst-case" scenarios that companies are required by law to file with the EPA.

Those scenarios provide an estimate of the radius of a dangerous cloud of escaping gas and how many people it could affect. The Dow Chemical plant targeted by Greenpeace reported as its potential "worst case" the release of 800,000 pounds of hydrogen chloride, a suffocating gas that would threaten 370,000 people. Rick Hind, legislative director of the Greenpeace toxics campaign, said that the ease with which his group infiltrated that plant "shows the absolute porous nature of these facilities" and their vulnerability to terrorist attacks.

Environmental and hazardous chemical experts say that serious security problems also persist to varying degrees at chemical manufacturing centers in Texas, New Jersey, Delaware, Philadelphia and Baltimore.

Last July, a CSX train derailment and fire in a Baltimore tunnel paralyzed the city for 5 days while hydrochloric acid and other toxic chemicals contained in the tanker cars burned off or seeped into storm drains that flowed into the Inner Harbor.

Around Washington, the D.C. Water and Sewer Authority's Blue Plains Waste Water Treatment Plant houses one of the region's largest supplies of toxic chemicals, including liquid chlorine and sulfur dioxide. Since September 11, Blue Plains plant operators have stepped up security and considered ways to disperse, shelter or eliminate the need to maintain a stockpile of chemicals.

Sen. Jon S. Corzine (D-N.J.) and Senate Environment and Public Works Committee Chairman James M. Jeffords (I-VT.) introduced a bill last week that would order the EPA and the Justice Department to impose tough new regulations to guard against the threat of a terrorist attack at high-risk chemical facilities.

[From the New York Times, January 28, 1985]

THE BHOPAL DISASTER: HOW IT HAPPENED

(By Stuart Diamond)

The Bhopal gas leak that killed at least 2,000 people resulted from operating errors, design flaws, maintenance failures, training deficiencies and economy measures that endangered safety, according to present and former employees, company technical documents and the Indian Government's chief scientist.

Those are among the findings of a 7-week inquiry begun by reporters of The New York Times after the December 3 leak of toxic methyl isocyanate gas at a Union Carbide plant in the central Indian city of Bhopal produced history's worst industrial disaster, stunning India and the world. Among the questions the tragedy raised were how it could have happened and who was responsible.

The inquiry involved more than 100 interviews in Bhopal, New Delhi, Bombay, New York, Washington, Danbury, Conn., and Institute, West Virginia. It unearthed information not available even to the Union Carbide Corporation, the majority owner of the plant where the leak occurred, because the Indian authorities have denied corporate representatives access to some documents, equipment and personnel.

EVIDENCE OF VIOLATIONS

The Times investigation produced evidence of at least 10 violations of the standard procedures of both the parent corporation and its Indian-run subsidiary.

Executives of Union Carbide India Ltd., which operated the plant, are reluctant to address the question of responsibility for the tragedy, in which about 200,000 people were injured. The plant's manager has declined to discuss the irregularities. The managing director of the Indian company refused to talk about details of the accident or the conditions that produced it, although he did say that the enforcement of safety regulations was the responsibility of executives at the Bhopal plant.

When questioned in recent days about the shortcomings disclosed in the inquiry by The Times, a spokesman at Union Carbide corporate headquarters in Danbury characterized any suggestion of the accident's causes as speculation and emphasized that Union Carbide would not "contribute" to that speculation.

SUMMARY OF IRREGULARITIES

A review by The Times of some company documents and interviews with chemical experts, plant workers, company officials and former officials disclosed these and other irregularities at Bhopal:

• When employees discovered the initial leak of methyl isocyanate at 11:30 P.M. on Dec. 2, a supervisor—believing, he said later, that it was a water leak—decided to deal with it only after the next tea break, several workers said. In the next hour or more, the reaction taking place in a storage tank went out of control. "Internal leaks never bothered us," said one employee. Indeed, workers said that the reasons for leaks were rarely investigated. The problems were either fixed without further examination or ignored, they said.

• Several months before the accident, plant employees say, managers shut down a refrigeration unit designed to keep the methyl isocyanate cool and inhibit chemical reactions. The shutdown was a violation of plant procedures.

• The leak began, according to several employees, about two hours after a worker whose training did not meet the plant's original standards was ordered by a novice supervisor to wash out a pipe that had not been properly sealed. That procedure is prohibited by plant rules. Workers think the most likely source of the contamination that started the reaction leading to the accident was water from this process.

• The three main safety systems, at least two of which, technical experts said, were built according to specifications drawn for a Union Carbide plant at Institute, W.Va., were unable to cope with conditions that existed on the night of the accident. Moreover, one of the systems had been inoperable for several days, and a second had been out of service for maintenance for several weeks.

• Plant operators failed to move some of the methyl isocyanate in the problem tank to a spare tank as required because, they said, the spare was not empty as it should have been. Workers said it was a common practice to leave methyl isocyanate in the spare tank, though standard procedures required that it be empty.

• Instruments at the plant were unreliable, according to Shakil Qureshi, the methyl isocyanate supervisor on duty at the time of the accident. For that reason, he said, he ignored the initial warning of the accident, a gauge's indication that pressure in one of three methyl isocyanate storage tanks had risen fivefold in an hour.

• The Bhopal plant does not have the computer system that other operations, including the West Virginia plant, use to monitor their functions and quickly alert the staff to leaks, employees said. The management, they added, relied on workers to sense escaping methyl isocyanate as their eyes started to water. That practice violated specific orders in the parent corporation's technical manual, titled "Methyl Isocyanate," which sets out the basic policies for the manufacture, storage and transportation of the chemical. The manual says: "Although the tear gas effects of the vapor are extremely unpleasant, this property cannot be used as a means to alert personnel."

• Training levels, requirements for experience and education and maintenance levels had been sharply reduced, according to about a dozen plant employees, who said the cutbacks were the result, at least in part, of budget reductions. The reductions, they said, had led them to believe that safety at the plant was endangered.

• The staff at the methyl isocyanate plant, which had little automated equipment, was cut from 12 operators on a shift to 6 in 1983, according to several employees. The plant "cannot be run safely with six people," said Kamal K. Pareek, a chemical engineer who began working at the Bhopal plant in 1971 and was senior project engineer during the building of the methyl isocyanate facility there 8 years ago.

• There were no effective public warnings of the disaster. The alarm that sounded on the night of the accident was similar or identical to those sounded for various purposes, including practice drills, about 20 times in a typical week, according to employees. No brochures or other materials had been distributed in the area around the plant warning of the hazards it presented, and there was no public education program about what to do in an emergency, local officials said.

• Most workers, according to many employees, panicked as the gas escaped, running away to save their own lives and ignoring buses that sat idle on the plant grounds, ready to evacuate nearby residents.

A TOP PRIORITY

At its headquarters in Danbury, the parent corporation said last month: "Union Carbide regards safety as a top priority. We take great steps to insure that the plants of our affiliates, as well as our own plants, are properly equipped with safeguards and that employees are properly trained."

Over the weekend, in response to questions from The Times, a corporate spokesman described the managers of the Indian affiliate as "well qualified" and cited their "excellent record," adding that because of the possibility of litigation in India "judicial and ethical rules and practices inhibit them from answering questions."

However, the spokesman said: "Responsibility for plant maintenance, hiring and training of employees, establishing levels of training and determining proper staffing levels rests with plant management."

V.P. Gokhale, the chief operating officer of Union Carbide India Ltd., in his first detailed interview since Dec. 3, would not comment on specific violations or the causes of the accident, but he said the Bhopal plant was responsible for its own safety, with little scrutiny from outside experts.

The Indian company has one safety officer at its headquarters in Bombay, Mr. Gokhale said, but that officer is chiefly responsible for keeping up to date the safety manuals used at the company's plants.

Despite the Bhopal plant's autonomy on matters of safety, it was inspected in 1982 by experts from the parent company in the United States, and they filed a critical report.

In the interview, however, Mr. Gokhale contended that the many problems cited in the 1982 report had been corrected. "There were no indications of problems," he said. "We had no reason to believe there were any grounds for such an accident."

Mr. Gokhale, who become managing director of Union Carbide India in December 1983 and has been with the company 25 years, added: "There is no way with 14 factories and 28 sales branches all over the country and 9,000 employees that I could personally supervise any plant on a week-to-week basis."

At perhaps a dozen points during a two-hour interview, he read his answers into a tape recorder, saying he would inform the parent corporation's Danbury headquarters of what he had said. He also made notes of some of his comments and said he would send them to Danbury for approval by Union Carbide lawyers.

RELATIONSHIP OF THE COMPANIES

The precise relationship between Union Carbide's American headquarters and its Indian affiliate is a subject that Mr. Gokhale and other company officials have refused to discuss in detail. But an understanding of that relationship is a key element in pinpointing responsibility for the disaster at Bhopal. Lawyers from both the United States and India say it is also central to the lawsuits brought by Bhopal residents damaged by the accident.

Although the situation remains unclear, some evidence of the relationship between the Indian and American companies has begun to emerge. The United States corporation has direct representation on the Indian company's board. J.M. Rehfield, an executive vice president in Danbury, sits on that board, Mr. Gokhale acknowledged, as do four representatives of Union Carbide Eastern Inc., a division based in Hong Kong. Mr. Gokhale said the board of directors reviews reports on the Indian affiliate's operations.

Moreover, some key safety decisions affecting Bhopal were reportedly made or reviewed at the corporate headquarters in Danbury.

Srinivasan Varadarajan, the Indian Government's chief scientist, said his staff had been told by managers of the Bhopal plant that the refrigeration unit designed to chill the methyl isocyanate, which he said was very small and had never worked satisfactorily, had been disconnected because the managers had concluded after discussions with American headquarters that the device was not necessary.

A spokesman at corporate headquarters in Danbury, Thomas Failla, said: "As far as we have been able to establish, the question of turning off the refrigeration unit was not discussed with anyone at Union Carbide Corporation."

The methyl isocyanate operating manual in use at Bhopal, which was adapted by five Indian engineers from a similar document written for the West Virginia plant, according to a former senior official at Bhopal, says: "Keep circulation of storage tank contents continuously 'ON' through the refrigeration unit."

And a senior official of Union Carbide India said few if any people would have died Dec. 3 had the unit been running because it would have slowed the chemical reaction that took place during the accident and increased the warning time from 2 hours to perhaps 2 days.

Workers said that when the 30-ton refrigeration unit was shut down, electricity was saved and the Freon in the coils of the cooling unit was pumped out to be used elsewhere in the plant.

Mr. Gokhale specifically declined to answer questions about the refrigeration unit.

EMPLOYEES CRITICIZE MORALE

Many employees at the Bhopal plant described a factory that was once a showpiece but that, in the face of persistent sales deficits since 1982, had lost much of its highly trained staff, its morale and its attention to the details that insure safe operation.

"The whole industrial culture of Union Carbide at Bhopal went down the drain," said Mr. Pareek, the former project engineer. "The plant was losing money, and top management decided that saving money was more important than safety. Maintenance practices became poor, and things generally got sloppy. The plant didn't seem to have a future, and a lot of skilled people became depressed and left as a result."

Mr. Pareek said he resigned in December 1983 because he was disheartened about developments at the plant and because he was offered a better job with Goodyear India Ltd. as a divisional production manager.

Mr. Gokhale termed the company's cost-cutting campaign simply an effort to reduce "avoidable and wasteful expenditures."

The corporate spokesman in Danbury said Union Carbide has "an ongoing operations improvement program which involves, among other things, a regular review of ways to reduce costs." He said Union Carbide India was involved in such programs, "but the details of those programs at the Bhopal plant are not known to us."

The spokesman added: "Financial information supplied to us indicated that the Bhopal plant was not profitable."

In the absence of official company accounts, details of the accident and its causes have been provided by technical experts such as Dr. Varadarajan and Mr. Pareek and by three dozen plant workers, past and present company officials and other people with direct knowledge of the factory's operations. Many of them agreed to be interviewed only on condition that they not be identified. Most of the workers knew little English and spoke in Hindi through an interpreter.

They provided some documents but often relied upon their recollections because many plant files and even public records have been impounded by the Indian authorities investigating the accident.

POTENTIAL FOR SERIOUS ACCIDENT

Nearly all those interviewed contended that the company had been neither technically nor managerially prepared for the accident. The 1982 inspection report seemed to support that view, saying the Bhopal plant's safety problems represented "a higher potential for a serious accident or more serious consequences if an accident should occur."

That report "strongly" recommended, among other things, the installation of a larger system that would supplement or replace one of the plant's main safety devices, a water spray designed to contain a chemical leak. That change was never made, plant employees said, and on Dec. 3 the spray was not high enough to reach the escaping gas.

The spokesman in Danbury said the corporation had been informed that Union Carbide India had taken "all the action it considered necessary to respond effectively" to the 1982 report.

Another of the safety devices, a gas scrubber or neutralizer, one of the systems said to have been built according to the specifications used at the West Virginia plant, was unable to cope with the accident because it had a maximum design pressure one-quarter that of the leaking gas, according to plant documents and employees.

The third safety system, a flare tower that is supposed to burn off escaping gases, would theoretically have been capable of handling about a quarter of the volume of the leaking gas were it not under such pressure, according to Mr. Pareek. The pressure, he said, was high enough to burst a tank through which gases must flow before being channeled up the flare tower. The tower was the second system described by technical experts as conforming to the specifications used in West Virginia.

In any case, the pressure limitations of the flare tower were immaterial because it was not operating at the time of the accident.

GUIDELINES FOR DESIGN

A former executive at the Bhopal plant said the parent corporation had provided guidelines for the design of the scrubber, the flare tower and the spray system. But detailed design work for those systems and the entire plant, he said, was performed by Humphreys & Glasgow Consultants Pvt. Ltd. of Bombay, a subsidiary of Humphreys & Glasgow Ltd., a consulting company based in London. The London company in turn is owned by the Enserch Corporation of Dallas.

The spokesman in Danbury said the Union Carbide Corporation had provided its Indian affiliate with "a process design package containing information necessary and sufficient" for the affiliate to arrange the design and construction of the plant and its equipment.

The spokesman said the corporation had only incomplete information on the scrubber, flare tower and other pieces of equipment, and he declined to comment on their possible relationship to the accident.

It was unclear whether the limitations of the safety systems resulted from the guidelines provided by the Union Carbide Corporation or from the detailed designs.

Employees at the plant recalled after the accident that during the evening of Dec. 2 they did not realize how high the pressures were in the system. Suman Dey, the senior operator on duty, said he was in the control room at about 1 P.M. and noticed that the pressure gauge in one tank read 10 pounds a square inch, about five times normal. He said he had thought nothing of it.

Mr. Qureshi, an organic chemist who had been a methyl isocyanate supervisor at the plant for 2 years, had the same reaction half an hour later. The readings were probably inaccurate, he thought. "There was a continual problem with instruments," he said later. "Instruments often didn't work."

LEAK FOUND, BUT TEA IS FIRST

About 11:30 P.M., workers in the methyl isocyanate structure, about 100 feet from the control room, detected a leak. Their eyes started to water.

V.N. Singh, an operator, spotted a drip of liquid about 50 feet off the ground, and some yellowish-white gas in the same area. He said he went to the control room about 11:45 and told Mr. Qureshi of a methyl isocyanate leak. He quoted Mr. Qureshi as responding that he would see to the leak after tea.

Mr. Qureshi contended in an interview that he had been told of a water leak, not an escape of methyl isocyanate.

No one investigated the leak until after tea ended, about 12:40 A.M., according to the employees on duty.

Such inattention merely compounded an already dangerous situation, according to Dr. Varadarajan, the Government scientist.

He is a 56-year-old organic and biological chemist who holds doctoral degrees from Cambridge and Delhi universities and was a visiting lecturer in biological chemistry at the Massachusetts Institute of Technology. He heads the Council of Scientific and Industrial Research, the Government's central research organization, which operates 42 national laboratories.

In the 2 weeks after the accident, Dr. Varadarajan said, he and a staff gathered from the research council questioned factory managers at Bhopal, directed experiments conducted by the plant's research staff and analyzed the results of those tests. Some of the experiments were conducted on methyl isocyanate that remained at the Bhopal plant after the accident, he said, and some were designed to measure the reliability of testing procedures used at the factory.

Dr. Varadarajan said in a long interview that routine tests conducted at the Bhopal factory used a faulty method, so the substance may have been more reactive than the company believed.

For example, he said, the Bhopal staff did not adequately measure the incidence in methyl isocyanate or the possible effects of chloride ions, which are highly reactive in the presence of small amounts of water. Chlorine, of which chloride is an ion, is used in the manufacture of methyl isocyanate.

Dr. Varadarajan argued that the testing procedure used at Bhopal assumed that all of the chloride ions present resulted from the breakdown of phosgene and therefore the tests measured phosgene, not chloride ions. Phosgene is used in the manufacture of methyl isocyanate, and some of it is left in the compound to inhibit certain chemical reactions.

When his staff secretly added chloride ions to methyl isocyanate to be tested by the factory staff, Dr. Varadarajan said, the tests concluded that 23 percent of the chloride was phosgene.

"As yet," the scientist said, "Union Carbide has been unable to provide an unequivocal method of distinguishing between phosgene and chloride" in methyl isocyanate.

TESTS "MADE ROUTINELY"

The Union Carbide spokesman in Danbury said: "Tests for chloride-containing materials, including chloride ions in the tank are made routinely."

Dr. Varadarajan said his staff had produced its own hypotheses of the accident's causes after Union Carbide failed to provide any, even on request.

The spokesman in Danbury said that a team of "exceptionally well qualified" chemists and engineers from Union Carbide had been studying the accident for 7 weeks "and still has not been able to determine the cause." He added: "Anyone who attempts to state what caused the accident would be only speculating unless he has more facts than we have and has done more analysis, tests and experiments than we have. Anyone who speculates about the cause of the accident should conspicuously label it as speculation."

Dr. Varadarajan's analysis, along with internal Union Carbide documents and conversations with workers, offers circumstantial evidence for at least one explanation of what triggered the accident.

There were 45 metric tons, or about 13,000 gallons, of methyl isocyanate in the tank that leaked, according to plant workers. That would mean the tank was 87 percent full.

Union Carbide's spokesman in Danbury said the tank contained only 11,000 gallons of the chemical, "hich was well below the recommended maximum working capacity of the 15,000-gallon tank."

However, even that lower level—73 percent of capacity—exceeds the limit set in the Bhopal operating manual, which says: "Do not fill MIC storage tanks beyond 60 percent level." MIC is the abbreviation for methyl isocyanate.

And the parent corporation's technical manual suggests an even lower limit, 50 percent.

The reason for the restrictions, according to technical experts formerly employed at the plant, was that in case of a large reaction pressure in the storage tank would rise less quickly, allowing more time for corrective action before a possible escape of toxic gas.

For 13,000 gallons of the chemical, the amount reported by the plant staff, to have reacted with water, at least 1.5 tons or 420 gallons of water would have been required, according to Union Carbide technical experts.

But those experts said that an analysis of the tank's contents had not disclosed water-soluble urea, or biuret, the normal product of a reaction between water and methyl isocyanate.

Furthermore, all of those interviewed agreed that it was highly unlikely that 420 gallons of water could have entered the storage tank.

HYPOTHESIS ON THE CAUSE

Those observations led Dr. Varadarajan and his staff to suggest that there may have been another reaction: water and phosgene. Phosgene, which was used as a chemical weapon during World War I, inhibits reactions between water and methyl isocyanate because water selectively reacts first with phosgene.

But Dr. Varadarajan said his study had found that the water-phosgene reaction produced something not suggested in the Union Carbide technical manual: highly corrosive chloride ions, which can react with the stainless steel walls of a tank, liberating metal corrosion products—chiefly iron—and a great deal of heat.

The heat, the action of the chloride ions on methyl isocyanate, which releases more heat, and the chloride ions' liberation of the metals could combine to start a runaway reaction, he said.

"Only a very small amount of water would be needed to start a chain reaction," he said, estimating the amount at between one pint and one quart.

Beyond its routine checks for the presence of chloride, the corporate spokesman said in Danbury, Union Carbide specifies that tanks be built of certain types of stainless steel that do not react with methyl isocyanate. He did not say whether the specified types of stainless steel react with chloride ions.

Dr. Varadarajan said his hypothesis had been confirmed by laboratory experiments in which the methyl isocyanate polymerized, or turned into a kind of plastic, about 15 tons of which was found in the tank that leaked.

OTHER CONTAMINANTS POSSIBLE

But that is not the only possible explanation of the disaster at Bhopal. Although water breaks down methyl isocyanate in the open air, it can react explosively with the liquid chemical in a closed tank. Lye can also react with it in a closed tank, but in the gas neutralizer, or scrubber, a solution of water and lye neutralizes escaping gas. Beyond water and lye, methyl isocyanate reacts strongly, often violently, with a variety of contaminants, including acids, bases and metals such as iron.

Most of those contaminants are present at the plant under certain conditions. Water is used for washing and condenses on pipes, tanks and other equipment colder than the surrounding air. Lye, or sodium hydroxide, a base, is sometimes used

to clean equipment. Metals are the corrosion products of the stainless steel tanks used to store methyl isocyanate.

Union Carbide Corporation's technical manual on methyl isocyanate, published in 1976, recognizes the dangers. It says that metals in contact with methyl isocyanate can cause a "dangerously rapid" reaction. "The heat evolved," it adds, "can generate a reaction of explosive violence." When the chemical is not refrigerated, the manual says, its reaction with water "rapidly increases to the point of violent boiling." The presence of acids or bases, it adds, "greatly increases the rate of the reaction."

SOURCES OF CONTAMINANTS

Investigators from both Union Carbide India and its parent corporation have found evidence of at least five contaminants in the tank that leaked, according to nuclear magnetic resonance spectrographs that were obtained by The New York Times and analyzed by two Indian technical experts at the request of The Times. Among the contaminants, a senior official of the Indian company said, were water, iron and lye.

The water came from the improperly sealed pipe that had been washed, workers speculated, or perhaps was carried into the system after it had condensed in nitrogen that is used to replace air in tanks and pipes to reduce the chance of fire.

In the days before the accident, workers said, they used nitrogen in an unsuccessful attempt to pressurize the tank that leaked on Dec. 3. The nitrogen is supposed to be sampled for traces of moisture, but "we didn't check the moisture all the time," said Mr. Qureshi, the supervisor.

During the same period, the workers said, they added lye to the scrubber, which is connected to the storage tanks by an intricate set of pipes and valves that are supposed to be closed in normal conditions but that workers said were sometimes open or leaking.

Dr. Varadarajan said he was particularly troubled that, in the absence of what he considered sufficient basic research on the stability of commercial methyl isocyanate, it was stored in such large quantities. "I might keep a small amount of kerosene in my room for my stove," he said, "but I don't keep a large tank in the room."

The Union Carbide Corporation decided that it would be more efficient to store the chemical in large quantities, former officials of the Indian affiliate said, so that a delay in the production of methyl isocyanate would not disrupt production of the pesticides of which it is a component.

Many plants store methyl isocyanate in 52-gallon drums, which are considered safer than large tanks because the quantity in each storage vessel is smaller. The chemical was stored in drums at Bhopal when it was imported from the United States. Tank storage began in 1980, when Bhopal started producing its own methyl isocyanate.

The Union Carbide technical manual for methyl isocyanate suggests that drum storage is safer. With large tank storage, it says, contamination—and, therefore, accidents—are more likely. The drums do not typically require refrigeration, the manual says. But it cautions that refrigeration is necessary for bulk storage.

TRAINING WAS LIMITED

Although the storage system increased the risk of trouble at Bhopal, the plant's operating manual for methyl isocyanate offered little guidance in the event of a large leak.

After telling operators to dump the gas into a spare tank if a leak in a storage tank cannot be stopped or isolated, the manual says: "There may be other situations not covered above. The situation will determine the appropriate action. We will learn more and more as we gain actual experience."

Some of the operators at the plant expressed disatisfaction with their own understanding of the equipment for which they were responsible.

M.K. Jain, an operator on duty on the night of the accident, said he did not understand large parts of the plant. His 3 months of instrument training and 2 weeks of theoretical work taught him to operate only one of several methyl isocyanate systems, he said. "If there was a problem in another MIC system, I don't know how to deal with it," said Mr. Jain, a high school graduate.

Rahaman Khan, the operator who washed the improperly sealed pipe a few hours before the accident, said: "I was trained for one particular area and one particular job. I don't know about other jobs. During training they just said, 'These are the valves you are supposed to turn, this is the system in which you work, here are the instruments and what they indicate. That's it.'"

IT WAS NOT MY JOB

As to the incident on the day of the accident, Mr. Khan said he knew the pipe was unsealed but "it was not my job" to do anything about it.

Previously, operators say, they were trained to handle all five systems involved in the manufacture and storage of methyl isocyanate. But at the time of the accident, they said, only a few of about 20 operators at Bhopal knew the whole methyl isocyanate plant.

The first page of the Bhopal operating manual says: "To operate a plant one should have an adequate knowledge of the process and the necessary skill to carry out the different operations under any circumstances."

Part of the preparatory process was "what if" training, which is designed to help technicians react to emergencies. C.S. Tyson, a Union Carbide inspector from the United States who studied the Bhopal plant in 1982, said recently that inadequate "what if" training was one of the major shortcomings of that facility.

Beyond training, workers raised questions about lower employment qualifications. Methyl isocyanate operators' jobs, which once required college science degrees, were filled by high school graduates, they said, and managers experienced in dealing with methyl isocyanate were often replaced by less qualified personnel, sometimes transfers from Union Carbide battery factories, which are less complex and potentially dangerous than methyl isocyanate operations.

MAINTENANCE TEAM REDUCED

The workers also complained about the maintenance of the Bhopal plant. Starting in 1984, they said, nearly all major maintenance was performed on the day shift, and there was a backlog of jobs. This situation was compounded, the methyl isocyanate operators said, because since 1983 there had been 6 rather than 12 operators on a shift, so there were fewer people to prepare equipment for maintenance.

As a result of the backlog, the flare tower, one of the plant's major safety systems, had been out of operation for 6 days at the time of the accident, workers said. It was awaiting the replacement of a 4-foot pipe section, they said, a job they estimated would take 4 hours.

The vent gas scrubber, the employees said, had been down for maintenance since October 22, although the plant procedures specify that it be "continously operated" until the plant is "free of toxic chemicals."

The plant procedures specify that the chiller must be operating whenever there is methyl isocyanate in the system. The Bhopal operating manual says the chemical must be maintained at a temperature no higher than 5 degrees centigrade or 41 degrees Fahrenheit. It specifies that a high temperature alarm is to sound if the methyl isocyanate reaches i 1 degrees centigrade or 52 degrees Fahrenheit.

But the chiller had been turned off, the workers said, and the chemical was usually kept at nearly 20 degrees centigrade, or 68 degrees Fahrenheit. They said plant officials had adjusted the temperature alarms to sound not at 11 degrees but at 20 degrees centigrade.

That temperature, they maintained, is well on the way to methyl isocyanate's boiling point, 39.1 degrees centigrade, or 102.4 degrees Fahrenheit. Moreover, Union Carbide's 1976 technical manual warns specifically that if methyl isocyanate is kept at 20 degrees centigrade a contaminant can spur a runaway reaction. The manual says the preferred temperature is 0 degrees centigrade, or 32 degrees Fahrenheit.

If the refrigeration unit had been operating, a senior official of the Indian company said, it would have taken as long as 2 days, rather than 2 hours, for the methyl isocyanate reaction to produce the conditions that caused the leak. This would have given plant personnel sufficient time to deal with the mishap and prevent most, if not all, loss of life, he said.

The methyl isocyanate operating manual directs workers unable to contain a leak in a storage tank to dump some of the escaping gas into a 13,000-gallon tank that was to remain empty for that purpose. But the workers on duty said that during the accident they never opened the valve to the spare tank, and their supervisors never ordered them to do so. The workers said they had not tried to use the spare tank because its level indicator said it was 22 percent full and they feared that hot gas from the leaking tank might spark another reaction in the spare vessel.

The level indicator, according to the operators on duty that night, was wrong. The spare tank contained only 437 gallons of methyl isocyanate, not the 3,300 gallons indicated by the gauge.

Nonetheless, standard procedures had been violated. The operating manual says, "Always keep one of the storage tanks empty. This is to be used as dump tank during emergency." It provides that any tank less than 20 percent full be emptied completely.

The spokesman in Danbury said, "Our investigators did find some MIC in a spare tank," adding: "We do not know when and how the MIC got into the spare tank."

[From the Los Angeles Times, January 6, 1985]

FLAWS FOUND IN EMERGENCY PLANS NEAR TOXIC PLANTS

(By Richard T. Pienciak)

It is known as Chemical Valley, a 20-mile stretch of poison makers squeezed into a narrow chasm plagued by a slow breeze and frequent fog.

The region is filled with chemical giants such as Monsanto, Allied Chemical, E.I. duPont de Nemours, Exxon, FMC and Union Carbide—members of an industrial club that claims the world's best safety record but is also burdened with the world's worst industrial accident.

Until a Dec. 3 leak of methyl isocyanate from a Union Carbide facility in India killed more than 2,000 persons and left 60,000 injured, MIC also had been produced at a Carbide plant here.

Since then, many of the valley's 250,000 residents, and no doubt millions more clustered around other U.S. chemical centers, have been wondering how they would fare in such a crisis.

An Associated Press study of several regions with large concentrations of chemical plants indicates that emergency plans in those areas often lack the coordination and resources needed to make them workable.

Emergency plans often lack the coordination and resources to make them workable.

While emergency preparedness around nuclear plants is required and supervised by the Federal Emergency Management Agency, no Federal regulations require plans for areas near chemical facilities.

Frequently, there are lengthy, elaborate plans, but they do not tell the general public where to go and what to do if an evacuation is necessary. In West Virginia, for example, there are no provisions for evacuating the elderly, schoolchildren, prisoners or persons without autos.

So-called transportation plans are more like traffic plans, detailing where police would stand to direct fleeing residents and to block roads approaching the disaster.

The Associated Press found that participation of chemical and oil refining companies in local emergency planning is usually voluntary, with State and county officials rarely having the statutory ability, or expertise, to oversee existing industry plans.

Plans for the public are not specific about possible emergency sites or kinds of incidents. Local officials generally do not know what kinds of chemicals are in the plants or what damage they are capable of inflicting.

In a crisis, the decisions of if and when the public should be informed about an explosion or leak are generally left to the discretion of industry.

For the most part, chemical companies face no fines or other disciplinary measures for inadequate emergency planning or for failing to inform the public when events dictate they should.

In all, many of the communities seem to have an attitude of "it can't happen here." Nowhere are the problems with emergency preparedness more apparent than in Chemical Valley, a region filled with phosgene, chlorine and a variety of phenols.

Chemical Valley runs eastward through Kanawha County from Nitro, a town named for its nitroglycerin production in World War I, past Institute and the State capital of Charleston and on to Belle.

"POOR VENTILATION"

The wind usually runs slow and to the east, from the largest plants toward the major population centers. The valley's "ventilation is historically poor," said Carl G. Beard III, director of the State Air Pollution Control Commission. "Air stagnation is frequent." The valley has four general emergency plans—one each for the State police, State emergency services, the county and the industrial emergency council—and one for each major plant as well.

The county plan emphasizes protection from nuclear fallout after an enemy attack. The State plan says "the primary responsibility for evacuation lies with local government." At times, the plans contradict each other, especially on the length and type of warning sirens.

The few evacuation drills held are only for plant employees. The general public doesn't participate.

"DIFFERENT SOUNDS"

"To refer to it as an evacuation plan is a misnomer. It's pathetic," said Donald Wilson, a schoolteacher from Institute. "You're supposed to listen to a number of different sounds, go outside and sense the wind, and then get involved in a lot of traffic." Under the plans, many emergency duties would fall on local fire departments, the overwhelming majority of which are volunteer squads lacking the specialized equipment needed to cope with a major chemical explosion or fire.

One volunteer team has four gas masks for 12 men.

"You can't ask people who fund themselves on bake sales and community suppers to finance the purchase of this type of equipment. We're talking about very sophisticated, expensive equipment," Rep. Barbara Mikulski (D-Md.) said.

In some other parts of the country, things are little better.

Two years ago officials near Taft, La.—situated along a 120-mile stretch of the Mississippi River dubbed Chemical Row—were able to evacuate about 17,000 persons in 2½ hours after a Union Carbide plant exploded.

DANGER AT PLANT

But a reconstruction of the accident compiled for the owners of a nearby nuclear plant showed that Union Carbide knew for hours that its tank was in danger of blowing up but delayed before informing local emergency preparedness officials.

In addition, the reconstruction showed, local Union Carbide workers were calling home to order their families to evacuate more than 2 hours before the first call to emergency officials.

In Texas' Golden Triangle, a dense complex of oil refineries and petrochemical plants east of Houston, the role of coordinating agency seems to change from crisis to crisis.

"There still is no clear delineation of who does what. It still has not been, in my mind, ultimately resolved," said Michael Peters, a regional director with the Texas Air Control Board. "There is no real coordinating agency in that sense. There's nothing really written down, no formalized plan."

Several Members of Congress got a glimpse of Chemical Valley's emergency preparedness at a hearing last month at West Virginia State College, which is adjacent to the Union Carbide facility.

Mikulski asked plant manager Hank J. Karawan to explain the county plan, which she held up in her hand. "I'm unaware of that plan. I know about the KVIEPC plan," Karawan said, referring to the Kanawha Valley Industrial Emergency Planning Council plan.

"One group thinks that this is the plan, and the other group thinks the other one is the plan," Mikulski said.

In September, Union Carbide, the region's largest employer with 7,000 jobs, sent a letter telling residents near its Institute plant to go outside and "check wind direction" if they hear continuing blasts from the plant steam whistle.

"If wind is blowing from plant toward you, immediately evacuate by going crosswind. In the case of a gas release you should be easily able to walk far enough crosswind to get away from the fumes," the letter said.

SWIMMING RIVER

But citizens point out that, if the wind is blowing in its usual eastward direction, crosswind would mean swimming the Kanawha River or scrambling up a mountain ridge.

At a public meeting attended by about 100 residents a week after the leak in India, State health director Dr. L. Clark Hansbarger suggested that residents, before going outside, put wet cloths over their mouths. He also said: "This area's emergency plan is a model for the State and indeed the nation." The Charleston Gazette expressed its pique in an editorial, comparing the plan to that of some underdeveloped country that "prepared its aspiring astronauts for the rigors of space by requiring them to occupy metal drums and old automobile tires and rolling them down hillsides." It is no surprise that, with so many emergency plans, there is confusion over the meaning of each plan's warning signals.

Union Carbide, for example, tells residents that in the event of an emergency with possible offsite consequences it will sound its steam whistle for 2 seconds every 3 seconds for a 2-minute period, followed by 2-second blasts every 30 seconds until the emergency ends.

OTHER POSSIBILITIES

There are three other alarm possibilities, according to a copy of the county emergency plan provided by William H. White, director of Kanawha County Emergency Services.

First comes the nuclear attack warning signal, "a 3-to-5 minute wavering tone on sirens, or a series of short blasts on horns or other devices signifying that an actual attack against the county has been detected. This signal shall be used for no other purpose or meaning." However, a penned addition says the attack warning signal will also be used for "disaster evacuation." Another penned addition says the attack-evacuation signal will be "3 off—3 on—3 off." The third possibility mentioned in the county plan is a 3-to-5 minute steady tone signal "to gain public attention in the event of a peacetime emergency." In the midst of the congressional hearing, a loud siren started to blow. "What do we do now?" Rep. Gerry Sikorski (D-Minn.) asked.

"I think that's the campus whistle, but I'm not sure," said Paul Nuchims, an art professor who was testifying at the time.

No one was timing the length of the alarm.

"Do you have sirens often?" Rep. Henry A. Waxman (D-Los Angeles), the subcommittee chairman asked.

"That's the point," said Nuchims, who lives 300 yards from the Carbide plant. "We hear all sorts of sirens all the time. We don't understand which ones are which, so what happens is we do nothing."

Fifteen minutes later, enough time for any leaking gas to have reached the campus, it was announced that the alarm had sounded to call members of the Institute Volunteer Fire Department to a house fire.

[From the Baltimore Sun, October 17, 2001]

WHEN CHEMICAL SAFETY IS A MATTER OF SECURITY

(By Heather Dewar)

Precautions: Steps are being taken to prevent accidents—or attacks—at Baltimore industrial plants, which could affect the area's residents.

When a train loaded with dangerous chemicals derailed and caught fire in a downtown tunnel this summer, Baltimoreans were aghast at the hellish spectacle of black smoke pouring out of sewer grates and manhole covers. But chemical accident experts looked at the train's chemical manifest and breathed a sigh of relief.

Thank heaven, they agreed, the accident didn't involve something really dangerous—like a 90-ton tank car filled with potentially deadly chlorine gas.

Since September 11, emergency planners here and across the country face a far more unsettling concern: that factories and municipal water and sewage plants could become targets for terrorists. Their chemical stockpiles can be turned into weapons—and are sometimes lightly guarded. In Baltimore, as in practically every other American city, it's a real concern—one that counter-terrorism planners have been dealing with "every day since September 11," said Mayor Martin O'Malley.

Five Baltimore industrial and municipal plants have 90 tons or more of chlorine on their property at any time, according to reports the facilities provided to the Environmental Protection Agency that were made public last year.

Chlorine, widely used in water and wastewater treatment and in manufacturing, was the first modern chemical weapon, used by German and British forces to poison enemy troops en masse during World War I. It is also often released in industrial accidents, according to the National Response Center, which tracks oil and chemical spills.

Up to 1.7 million people—nearly two-thirds of those living in the Baltimore metropolitan area—are theoretically within range of the poisonous plume that could result if one of the 90-ton tanks failed, the Baltimore companies' reports to the EPA show.

The tanks are double-walled and equipped with safety valves; catastrophic failures are rare—but the consequences would be grave.

In the most-recent such accident, a 90-ton rail car carrying chlorine derailed and ruptured in the small town of Alberton, Mont., in 1996. One man was killed, 350 people were treated for chlorine inhalation and about 1,000 people were evacuated. Interstate 90 through the town was closed for 17 days.

Public records on file at EPA headquarters in Washington show that 31 Baltimore-area plants report keeping large amounts of dangerous chemicals. Almost half are city-owned water and wastewater treatment facilities, which, as in almost every other community in the country, rely on chlorine for disinfection.

Managers of 14 of the Baltimore-area facilities said a catastrophic leak at one of their sites has the potential to injure 100,000 or more people who live within the plants' danger zones. The Baltimore-area companies estimated that in smaller accidents, considered more likely, anywhere from two to 2,300 residents would be endangered.

An attack on a U.S. chemical plant probably would not cause enormous numbers of casualties, said Eric Croddy, a senior researcher at the Monterey Institute of International Studies. Nonetheless, he said, such an attack could accomplish a terrorist's goal.

"It would cause a lot of terror and consternation. It wouldn't necessarily cause a lot of deaths," said Croddy, who has written a book on chemical and biological warfare that is scheduled to be published next month.

"A terrorist could fail miserably to cause many deaths, but he still could succeed," Croddy said.

Responsible officials have known that chemicals stockpiled in American communities pose a threat to the public at least since 1984, when a leak at a Union Carbide Corp. insecticide plant in Bhopal, India, killed more than 2,000 people. In the wake of that accident, Congress passed laws requiring companies to tell the public about their chemical stockpiles and help communities reduce the risk from accidents.

But in most places, chemical accident prevention and preparedness was a low priority, and progress was slow.

"We haven't had our Bhopal yet in the United States," said Fred Millar, an independent chemical safety consultant.

But last month, the nation experienced something even more traumatic: Terrorists "turned our infrastructure against us as a weapon," in Millar's words. Suddenly, protecting the public from dangerous chemicals became an urgent matter.

In the weeks since the jetliner attacks on the World Trade Center and Pentagon, government and industry have scrambled to improve security around hazardous chemical stockpiles. Uniformed police officers now help guard factory entrances, and gates that previously had been left open are padlocked.

O'Malley, who has vowed to make Baltimore a national model for counter-terrorism, said he believes the odds of an attack on a chemical plant are slim.

"More people are going to be killed by car accidents, cancer or heart disease than by a chemical plume," he said.

Environmental lawyer Rena Steinzor, who has been pushing the city to improve emergency preparedness, contends that until now, local officials have been complacent about the risk of a large chemical incident, whether accidental or deliberate.

"The city has had a series of wake-up calls over the years," Steinzor said, "and lately the alarms have gotten louder. This is major unfinished business." For years, Federal anti-terrorism studies acknowledged that industrial plants are potential "soft targets" for attackers.

A study in 1999 by the General Accounting Office called such an assault somewhere in the United States "likely"—though it noted that uncontrollable factors like weather would probably limit the damage.

"Toxic industrial chemicals can cause mass casualties and require little if any expertise or sophisticated methods," the GAO study said. The office said the FBI should assess the likelihood of terrorist attacks using industrial chemicals.

In 1999, Congress ordered the Justice Department to find out how vulnerable U.S. chemical companies are to terrorist attack. They were to report back by last August.

But despite repeated prodding from senators, the Justice Department had not begun gathering the information before September 11, blaming a lack of funds and confusion about the deadline. Lawmakers are still waiting to hear from the Justice Department, said a spokesman for Sen. James M. Jeffords, the Vermont Independent who is chairman of the Environment and Public Works Committee.

The only existing Federal study of chemical plants' vulnerability to terrorism was conducted in 1999 by the Department of Health & Human Services' Agency for Toxic Substances and Disease Registry, which specializes in the health effects of hazardous substances.

Agency staffers surveyed two unnamed communities where chemicals are made and reported that antiterrorism measures in government buildings were "excellent," but "security at chemical plants ranged from fair to very poor" and at chemical-shipping sites was "poor to non-existent." "Most security gaps were the result of complacency and lack of awareness of the threat," the agency reported.

The study found that many plants failed to take simple precautions—for example, they were not fenced or did not do criminal background checks of would-be workers.

Long before the prospect of terrorists turning factories into chemical weapons surfaced, Congress required companies to go public with "worst-case" accident scenarios

describing what would happen if a large amount of their most dangerous chemical escaped. Local companies' reports, filed with the EPA and made public last year, show that most people in the Baltimore area live within more than one chemical plant's danger zone.

The EPA classifies 245 chemicals as "extremely hazardous"—that is, capable of causing injury or death. The most common threats to Baltimore-area residents are two chemicals that practically everyone has at home in much-diluted form: chlorine and ammonia.

Undiluted chlorine and ammonia are gases that can be stored safely only under pressure, as liquids. When exposed to air, they vaporize and form thick clouds that cling to the ground. Moderate doses can burn the eyes, skin, eyes, throat and lungs. Large doses can cause permanent lung damage or death.

In the reports, 18 of the 31 Baltimore-area facilities said the worst accident that could occur at their plants involved chlorine. Eight companies said their most dangerous chemical was ammonia, widely used in industrial refrigeration.

"Chlorine and ammonia account for at least 75 percent of the safety concerns in this region and any other region around the country," said William McHale, head of chemical accident prevention for the EPA's MidAtlantic office.

Troubling as they are, the reports don't provide a full picture of the risks. At least 40 more plants have dangerous chemicals onsite m large amounts—but not enough to require Federal reporting. And many classes of chemicals, like gasoline and propane, are exempt from reporting.

The worst-case reports were meant to teach residents about the risks in their back yards, help emergency workers plan for the greatest dangers and encourage companies to reduce hazards.

Safety experts say the law was beginning to accomplish those goals.

"Every company that has submitted an (accident scenario)—all of them have changed their process in some way," McHale said. For example, South Baltimore's Condea Vista Co., which makes ingredients used in household detergents, is phasing out chlorine.

The company filed a worst-case report that said 1,560,000 people are in the danger zone of the most lethal accident possible at the plant. Four other companies reported a similar number of people living in their danger zones.

Within the next few weeks, Condea Vista's process is "going to be a different reaction that does not use chlorine or any other hazardous chemical," said Dave Mahler, the plant's environmental officer.

Another large manufacturer, Grace Davison, a Baltimore plant that is part of chemical giant W.R. Grace & Co., has eliminated chlorine and reduced amounts of several other chemicals, plant managers said.

Chemical executives dislike the worst-case scenarios, which they say are unrealistic and alarmist.

The guidelines require the companies to assume a rapid, complete spill of their most dangerous chemical, figure out how far its toxic plume might travel, and draw a circle that includes everything in that range.

Such an incident "is physically impossible," Mahler said. Most toxic chemicals don't vaporize that quickly, he said, and the wind would limit the spread of a poisonous vapor cloud.

"A plume is going to go in one direction in a rather narrow path, and you're talking about a small fraction of people in the path of the plume," he said.

City firefighters agreed.

"When you look at worst-case scenarios, you're looking at a situation that is not very credible," said Battalion Chief Hector L. Torres, spokesman for the Baltimore Fire Department. In a cash-strapped city, planning for a worst-case accident "will have us devoting resources in a way that just is not feasible, just not effective." Chemical manufacturers responded to the law by trying to limit public access to information about plants' accident scenarios. In 1999, an industry association urged the EPA not to post companies' worst-case scenarios or accident histories on the Internet, citing concerns about terrorism.

With the FBI sharing the industry's worry, the EPA compromised: Though most of the information was available online until recently, the public can see the worst-case scenarios only at EPA or Justice Department reading rooms, where they are kept under tight security.

Within days of the attacks of September 11, the EPA removed companies' chemical accident scenarios from its Web site. The American Chemistry Association, representing 200 manufacturers, has urged the EPA to close the reading rooms as well.

Amy Smithson, a chemical and biological weapons expert at the Henry L. Stimson Institute, a Washington think tank, called the decision to drop the information from the Internet "a no-brainer." "Slapping information about these facilities up on the

World Wide Web so they could be searched by chemical and by geographic location was a very bad idea," Smithson said.

But chemical-safety advocates take a different view.

"This is real head-in-the-sand-type stuff," Millar said. "If we continue to keep citizens in the dark, we're just going to add to their anxiety. We really need to have very measurable, visible improvements in security." Before September 11, neither the Federal Government nor the chemical industry association offered chemical companies and public utilities much guidance on counter-terrorism measures.

The industry association, which has voiced terrorism concerns since the mid-1990s, is working on a counterterrorism manual. On the day of the attacks, the group forwarded to its members an EPA bulletin urging stepped-up security.

Association spokesman Jeff Van said most U.S. chemical plants added guards and patrols, restricted visitors, and began searching packages and shipments.

Some began running background checks on their own workers and required their shippers to do checks on their employees as well. Others limited cleaning crews' access. Many are in regular contact with local FBI offices, Van said.

"We've tried to, as one security professional put it, 'screw the lid down,'" Van said.

The EPA is 2 years behind schedule in preparing counter-terrorism recommendations for water utilities, which could face attacks on chemical supplies or on wells and reservoirs. The report should be finished this winter, EPA's McHale said.

In the meantime, utility managers in the Middle Atlantic States are calling for advice. "And I'm saying, 'monitor your reservoirs and dams and make sure the chlorine supplies are locked up.'" McHale said.

The Agency for Toxic Substances and Disease Registry, in its 1999 report, recommended a laundry list of security measures. They include routine searches of people, vehicles and bags, video surveillance, chemical leak alarms and earthen barriers around chemical tanks to protect them and absorb an explosion or spill.

The report also recommended design changes like moving chemical tanks away from roads and reducing or eliminating the use of hazardous chemicals.

Some Baltimore facilities have taken those steps, though others lack basic precautions like fences, city officials said.

"You have to recognize these plants were built in a different time in America when these concerns didn't exist," said Louis R. Anemone, the former New York police official who is the city's counter-terrorism adviser.

Anemone, hired in the wake of the attacks, said he has recommended security improvements to local plant managers.

"I've met with absolutely no resistance," he said. "They are all aware of the issues, and they've all been extremely cooperative." Some city-owned facilities that use large amounts of chlorine, like the Back River Wastewater Treatment Plant, have sophisticated security systems.

The plant's chlorine tank and valves are monitored by television cameras, tested at the start of every eighthour shift and surrounded by ultra-sensitive sensors that sound alarms if they pick up traces of chlorine in the air, plant manager Nick Frankos said.

Similar measures are in place at drinking-water treatment plants, city Department of Public Works officials said.

O'Malley said police officers are posted at all treatment facilities but that more needs to be done.

"There's places where tanks may need to be moved," the mayor said. "There's other places where buildings may need to be built to enclose some equipment. We're going to have to invest in perimeter security, smart fences" and other measures.

It's too soon to say how long the changes might take, how much they might cost and where the money would come from, the mayor said.

Ralph Cullison, who is in charge of environmental services for the department's water and wastewater plants, said the utility is considering replacing gaseous chlorine with a less-dangerous, watered-down version.

Many utilities are getting rid of gaseous chlorine for safety reasons even though the substitutes are more expensive, Cullison said.

"We all feel that now that we are in a different world, it will be easier to get the support for spending the money to convert than it would have been" before September 11, he said. "We were going that way anyway." To the extent that the past is a guide to the future, accidents are far more common than assaults on chemical plants.

During the 1990s there were two publicly disclosed plots to attack U.S. chemical plants, the General Accounting Office reported. Both involved homegrown criminals, not international terrorists, and the FBI foiled both before anyone was harmed.

Meanwhile, a Federal survey of 13 states reported that 36 people died and 537 communities were evacuated because of chemical accidents in 1998, the most recent year for which data are available.

Smithson, the chemical terrorism expert, estimated there are 60,000 chemical accidents a year in the United States. In the past few months in Baltimore, three chemical accidents, including the train derailment, have forced residents from their homes, closed main streets, filled downtown with smoke and sent manhole coveflying.

"I am hoping that in our concern about terrorism we address a far more ubiquitous threat of accidents," said Steinzor, the environmental lawyer.

"From a public health point of view it doesn't matter what the cause is," she said. "It only matters what you do to protect people."

[From the Houston Chronicle, July 23, 2001]

TUNNEL DAMAGE ASSESSED AFTER DERAILMENT, BLAZE

BALTIMORE—Crews worked to pull the last smoldering boxcars from a downtown tunnel Sunday, days after a train derailment and fire shut down parts of the city and disrupted Internet service across the country.

Above the 1½-mile tunnel, a broken 40-inch water main continued gushing onto downtown streets and public works officials said damage to the street and tunnel may be significant.

City crews said the leak—which has spewed at least 60,000 gallons of water—cannot be stopped until the fire is extinguished and the tunnel walls are declared safe. The water main break was just feet above the 106-year-old tunnel, said public works director George Winfield.

DEPARTMENT OF JUSTICE ASSESSMENT OF THE INCREASED RISK OF TERRORIST OR OTHER CRIMINAL ACTIVITY ASSOCIATED WITH POSTING OFF-SITE CONSEQUENCE ANALYSIS INFORMATION ON THE INTERNET

EXECUTIVE SUMMARY

On August 5, 1999 the President signed into law the Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (CSISSFRRA). This legislation requires the President to promulgate on or before August 5, 2000, regulations to address public access to information describing the worst possible impact that a release of toxic or flammable chemicals from a facility could have on the nearby populace and environment. This data, called off-site consequence analysis (OCA) information, is contained in documents known as Risk Management Plans (RMPs). Approximately 15,000 chemical facilities throughout the United States have submitted RMPs to the EPA.

The statute requires that the regulations be based on an assessment of whether release of OCA information over the Internet would increase the risk of terrorism or other criminal acts directed at the chemical facilities submitting such data, and an assessment of whether such release of OCA information would reduce the risk of accidental releases of chemicals from the facilities. The statute further requires that the regulations balance, to the extent possible, the potential risks and the potential benefits, thereby minimizing the overall risk to public health. On January 27, 2000 the President delegated the drafting of the assessments to the Environmental Protection Agency (EPA) (to describe the benefits of release of the OCA data) and to the Department of Justice (DOJ) (to describe the risks associated with the release of such information). The President also delegated jointly to EPA and DOJ the task of drafting the regulation.

For purposes of this risk assessment, we posed three questions: (1) what is the likelihood that a terrorist or other criminal would attempt to use an industrial chemical release as a weapon for purposes of causing casualties among the public and/or damaging property and the environment; (2) what effect would the public release of OCA data have on the possibility of a terrorist or other criminal attempting to cause such a chemical release; and (3) how would release of OCA data specifically over the Internet affect the likelihood of such a chemical release being attempted by a terrorist or other criminal. Our analysis concludes that posting most pieces of OCA information on the Internet would increase the risk of a chemical release caused by a terrorist or other criminal.

2. The Feasibility of a Criminal or Terrorist Causing a Release of Toxic or Flammable Industrial Chemicals[21]

Our discussions with experts in container breaches have suggested that breaching a hazardous material container using conventional explosives is feasible. While there are multiple methods of possibly breaching a containment vessel (one scenario considered by EPA in a 1995 study involved a plane crashing into a tank), explosives are the most likely means to be employed by terrorists. Among terrorist attacks committed in 1998 against U.S. citizens or facilities, explosives were by far the preferred method of attack. It is also one of the most obvious means of attempting to rupture a large metal vessel. Furthermore, use of a conventional explosive for purposes of causing an industrial release that would harm the public would be a force-multiplier–the scale of the damage and the amount of disruption that could be caused by an explosive that causes a chemical release in a public place could surpass the effects of the same conventional explosive alone.

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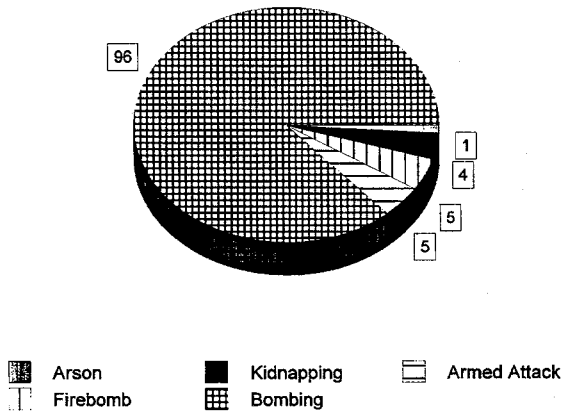
[21] This assessment does not limit itself to considering whether a criminal or terrorist attack produces a chemical release identical to that projected by the worst case or alternative release scenarios. The likelihood of human casualties on a par with the projected population within the distance to endpoint in the worst case or alternative scenario projections is slim. Those figures are based upon the total number of individuals who live within the distance to endpoint rather than a projection of the number who would be affected by a chemical release. EPA has suggested that approximately one-sixth to one-tenth of the area within the distance to endpoint would likely be affected by a chemical plume projected under the worst-case or alternative release scenarios. Nonetheless, even if a fraction of those who live or work in a distance to endpoint were affected, that discounted figure could constitute a terrorist event of unprecedented scale in the United States. As noted above, almost half of the RMP facilities reported that over 1,000 people live within their distance to endpoints. This assessment also takes into consideration the collateral disruption and long term damage that could be caused by a chemical leak. Such leaks may trigger large scale evacuation that would provoke exactly the sort of panic and fear intended by terrorists. Further, release of some chemicals could have long-term health and environmental ramifications.

Type of Terrorist Attacks in 1998



It is noteworthy that chemical tanks have been intentionally ruptured during attacks involving explosives and have resulted in chemical releases, some of which have produced grave damage. Serbian attacks on some industrial facilities attacks did result in the release of toxic chemicals. Fortunately, large evacuations took place in advance. An attack upon a chemical plant in Jovan resulted in the release of 72 tons of anhydrous ammonia. Thankfully, that plant was located 30 km from the town and local public safety officials had time to evacuate its 32,000 residents.[22] Successful chemical releases have also occurred in other countries. In December 1995, members of the Revolutionary Armed Force of Colombia (FARC), Colombia's largest guerrilla group, blew up a pesticides warehouse in Une, Colombia, resulting in large volumes of toxic materials being released into the air. Approximately 9,000 people living in the vicinity of the warehouse were evacuated in order to prevent mass poisoning from the toxic emissions. It is noteworthy that FARC has sympathizers in the United States and the FARC in Colombia has threatened U.S. air carriers.

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[22] Examples of the Serbian military's efforts to create chemical releases are particularly troubling because terrorist organizations sympathetic to Serbian causes are currently operating in the United States.

Components of the U.S. government have also considered the possibility of a release of toxic chemicals from an industrial facility to be a credible threat in U.S. interests. In 1995, EPA and an LEPC (Local Emergency Planning Committee) recognized the potential dangers of chemical releases resulting from terrorist activity and factored the possibility of a terrorist threat into their assessment of safety at facilities storing anhydrous ammonia in the Tampa Bay area.[23] In addition, the Agency for Toxic Substances and Disease Registry (ATSDR), a branch of the Centers for Disease Control and Prevention, has recognized the threat posed by attacks on chemical facilities and, in response, devised a ten-step procedure for analyzing, mitigating, and preventing public health hazards resulting from terrorism involving industrial chemicals. It is noteworthy that among the "soft targets" that the ATSDR identified as potential terrorist sites were chemical manufacturing plants (chlorine, peroxides, other industrial gases, plastics, and pesticides); compressed gases in tanks, pipelines, and pumping stations; and pesticide manufacturing and supply distributors. OCA data contains information about many such "soft targets." For example, there are 68 pesticide and other agricultural chemical manufacturing facilities that have submitted RMPs.

There has yet to be a toxic chemical release from a facility in the U.S. as a result of terrorist or criminal activity. The predictive value of this fact is limited, however. First, in contrast to the lack of terrorist incidents aimed at industrial chemical releases during the entire history of the United States, in the last two years alone law enforcement thwarted two attempts to cause such a chemical release. These recent events suggest that there may be a change in trends relating to such crimes and that the past may not be the most reliable barometer of future events in regard to criminal and terrorist efforts to cause mass damage and casualties through means that may include toxic industrial chemical releases.

B. Industrial Facilities Are Attractive Targets to Terrorists and Criminals

Industrial facilities such as those that have submitted RMPs may be attractive targets for criminal and terrorists intent on causing massive damage. First, many such facilities exist in well-populated areas, where a chemical release could result in mass casualties and would result in widespread disruption. Many of the facilities that submitted RMPs reported significant populations living within their distance to endpoints, i.e., the zone that would be affected by a chemical release under the worst case or alternative case scenarios.

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[23] In 1995, EPA conducted a study of storage facilities for anhydrous ammonia in the Tampa Bay area. The study was prompted by concerns about the huge ammonia facilities located in the Tampa Bay area situated in close proximity to the approximately half a million people who live there. The study took into consideration the possible results of several scenarios in which ammonia was released. Among the scenarios under consideration was an "absolute worst case scenario" resulting in the release of ammonia from a tank, perhaps as the result of a plane crash, and a "nightmare scenario" resulting from the simultaneous release of the contents of all storage tanks, perhaps by earthquake or terrorist action. Ultimately, the report raised concerns about the lack of security at the Tampa Bay facilities.

Number of facilities reporting populations within the area that might be affected by a worst case or alternative release scenario					
	Population within Area that Might be Affected by Worst Case and Alternative Case Scenarios				
	0-199	200-499	500-999	1000 and up	# of facilities
Toxic Worst Case	2604	1543	1356	7308	12,811
Toxic Alternative Release	8489	1443	906	1669	12,507
Flammable Worst Case	1928	308	173	279	2688
Flammable Alternative Release	2153	69	37	37	2296

The RMP data above illustrates that over 7,000 facilities, or nearly half of the total number of facilities, have over 1,000 people within the distance to endpoint.

Second, as illustrated in the chart below, most facilities reported that there was more than one public or environmental receptor within the distance to endpoint. Accordingly, a chemical release at an industrial facility might prove attractive because it would both harm a large number of people and public and environmental receptors (for instance, a national park or landmark).

Number of facilities reporting OCA data affecting 1 or more public or environmental receptor					
	1 Public Receptor	Multiple Public Receptors	1 Enviro Receptor	Multiple Enviro Receptors	Total Facilities
Toxic Worst Case	1648	10,842	2055	750	12,811
Toxic Alternative Release	4450	6483	873	102	12,507
Flammable Worst Case	798	1386	198	18	2688
Flammable Alternative Release	950	561	104	5	2296

Third, many facilities submitting RMP data are also the types of facilities that terrorists are apt to target. Military installations, federal facilities, and utility companies are among the facilities that are required to submit RMP data. Such facilities have been the preferred targets of terrorist attacks. Terrorists often select a target because of its symbolic value both to the terrorist and to the victims. International targets of terrorism include entities that represent United States interests abroad, such as the military. The bombings in Riyadh, Beirut, and at Khobar Towers are vivid examples of the targeting of the military by international terrorists that produced devastating results. There are an estimated 80 Defense Department facilities included among the RMP submissions. Among these submissions is one for Fort George G. Meade, where an intelligence agency is located. Moreover, federal facilities have been prime targets among domestic terrorists. The rationale for such attacks have varied. For example, individuals aligned with militia organizations often attack IRS offices because of the IRS' role in collecting funds from citizens of the United States, which some view as an unlawful act. Forest Service facilities have been bombed by those who believe in the absolute sovereignty of the states or in a divine right to unregulated ownership of property. These individuals assert that the federal government has illegitimately usurped states' or individual property owners' rights.

Infrastructure facilities have also been targeted by terrorists. The U.S. infrastructure consists of a broad array of components: telecommunications systems, electrical power systems, gas and oil storage and transportation facilities, banking and finance institutions, transportation facilities, water supply systems, emergency services, and continuity of government entities. Approximately 15 percent of infrastructure facilities across the country are required to submit RMP data. For example, 1,903 of the facilities that submitted RMPs are water supply and irrigation facilities across the country; 56 facilities are involved in the generation, transmission, or control of electrical power; and

14 are involved in natural gas distribution. Infrastructure facilities are apt to be targeted because their disruption can cripple a city or an entire region of the country. For these reasons, hostile countries would be particularly interested in damaging or disrupting such facilities if hostilities broke out between the U.S. and those countries. These underlying concerns are exactly what prompted the extensive efforts and expenditures under PDDs 62 and 63.

In regard especially to military and infrastructure facilities, it is important to recognize that an attempted release of toxic chemicals may be directed at on-site consequences, as well as off-site consequences. A chemical release would be particularly effective at disrupting the operations of strategic sites, even if no off-site consequences resulted. A chemical release may be more effective than a bomb in causing such disruption, since a leak of toxic chemicals may necessitate large-scale evacuation.

Lastly, RMP facilities may also be choice targets because security at many industrial facilities is generally not as substantial as the security at other comparable potential terrorist targets that could cause a harmful release. For example, the security at nuclear facilities is tested and assessed by a Nuclear Regulatory Commission anti-terrorism unit that identifies security weaknesses at commercial nuclear power plants. No comparable effort exists industry-wide for chemical manufacturers.[24]

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[24] CSISSFRRA states that the Department of Justice shall, in consultation with relevant federal, state and local agencies, as well as members of the industry and the public, submit to Congress a report examining issues relating to site security at RMP facilities and to security of transportation of regulated substances.

ASSESSMENT OF THE INCENTIVES CREATED BY PUBLIC DISCLOSURE OF OFF-SITE CONSEQUENCE ANALYSIS INFORMATION FOR REDUCTION IN THE RISK OF ACCIDENTAL RELEASES

EXECUTIVE SUMMARY

Under the Chemical Safety Information, Site Security and Fuels Regulatory Relief Act, the President delegated to the Administrator of the U.S. Environmental Protection Agency (EPA) the task of assessing the incentives for reduction in accidental chemical releases created by public disclosure of off-site consequence analysis information. This document reports the results of EPA's assessment.

In the wake of the chemical tragedy in Bhopal, India, and a series of large chemical accidents in the U.S. in the late 1980s, Congress added new provisions to the Clean Air Act for the prevention of accidental chemical releases. In particular, Congress directed EPA to require facilities that pose the greatest risk of harm to the public and the environment as a result of an accidental chemical release prepare and submit risk management plans (RMPs). An RMP must describe the facility's chemical accident prevention program, emergency response program, and off-site consequence analysis (OCA). The OCA must evaluate the potential for hypothetical worst-case and alternative accidental release scenarios to harm the public and environment around the facility. Congress mandated that RMPs be available to state and local governments and the public.

EPA promulgated RMP requirements in June 1996; the first RMPs were due three years later. To reduce paperwork burden and to take advantage of today's technology, EPA designed software tools and forms so that all RMPs could be submitted electronically to EPA and stored in a central information system. All levels of government would have immediate access to the system and the most recent RMP submissions. The vast majority of RMPs have been submitted electronically to EPA.

EPA originally planned to place the RMP information system on the Internet for easy access by the public, as well as by governments, based on the recommendation of many members of a Subcommittee created under the Federal Advisory Committee Act. However, concerns were raised that Internet access to a large, searchable database of OCA results could be used as a targeting tool by terrorists and other criminals. Although EPA subsequently decided not to place the OCA sections of RMPs on the Internet, new concerns were raised that recent amendments to the Freedom of Information Act (FOIA) would compel EPA to release this information in electronic format. Congress responded by passing the Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (CSISSFRRA), which the President signed on August 5, 1999.

CSISSFRRA temporarily exempts OCA information from public disclosure under FOIA. It requires the President to "assess the increased risk of terrorist and other criminal activity associated with the posting of [OCA] information on the Internet, and the incentives created by public disclosure of OCA information to reduce the risk of accidental chemical releases." Based on these assessments, the President is to issue regulations "governing the distribution of [OCA] information in a manner that, in the opinion of the President, minimizes the likelihood of accidental releases and [any increased risk of terrorist activity associated with Internet posting of

OCA information] and the likelihood of harm to public health and welfare."

FINDINGS OF INCENTIVES ASSESSMENT

- **Public disclosure of RMPs including OCA information would likely lead to significant reduction in the number and severity of accidental chemical releases. In addition, widespread access to OCA information by all stakeholders would serve the function Congress originally intended in the Clean Air Act Amendments — to inform members of the public and allow them to participate in decisions that affect their lives and communities. The public is not likely to generate such information on its own, and thus the greater the public access to OCA information, the more likely potential public safety benefits would be realized.**

- **Multiple segments of the public, particularly citizens, citizens' groups, and the media**, are likely to become more interested in chemical safety and chemical release risk reduction, to the extent they become aware of the potentially large consequences associated with worst-case scenarios and, to a lesser extent, alternative release scenarios. The interest and concern about potential consequences will likely trigger comparisons and detailed analyses of not only OCA information but safety and environmental performance of facilities as well. Widespread awareness of the comparisons and analyses would likely lead industry to make changes and would stimulate dialogue among facilities, the public, and local officials to reduce chemical accident risks.

- **Chemical accidents continue to impose considerable costs** in terms of human lives and health, property damage, and public welfare. Facilities covered by the RMP rule reported that from mid-1994 to mid-1999 there were about 1,900 serious accidents that caused 33 deaths, 8,300 injuries, and the evacuation or sheltering of 221,000 people. These accidents cost the affected facilities more than $1 billion in direct damages and two to four times that in business interruption losses. Almost 80% of these accidents occurred at facilities already subject to the OSHA process safety management standard, which is designed to reduce accidents. These accidents also represent less than 10 percent of all unintended releases of hazardous substances reported to the government during this period. Additional efforts are needed in order to reduce the number and severity of chemical accidents.

- **Given the opportunity, the public uses hazard information to take action that leads to risk reduction.** Various segments of the public have strong incentives to use OCA information in ways that reduce risk. For example, there is a broad consensus that national publication of the Toxics Release Inventory (TRI) data by the government, followed by analysis by citizens' groups and the news media, led to action by industry to reduce emissions. Nationally, reported TRI emissions have fallen 43 percent since 1988, a time in which industrial production has risen 28 percent. Although other factors likely contributed to the decline in emissions, negative press coverage directed at certain

facilities appears to have led these facilities to achieve reductions in their TRI emissions. It is not possible to quantify the exact level of risk reduction that would be gained from public dissemination of OCA information, but the effect would likely be significant.

- **Ease of access to information is important to public use and risk reduction.** Data available in paper form on request from state or local agencies are rarely sought. For example, data on the location and identity of hazardous chemicals are requested about 3,500 times a year from Local Emergency Planning Committees (LEPCs). (There are about 3,200 LEPCs in the country and about 560,000 facilities subject to requirements to report information on hazardous chemicals to LEPCs.) Meanwhile, environmental data on Environmental Defense's "Scorecard" website are at least 250 times more likely to be reviewed by the public than information from LEPCs. Likewise, early indications are that the meetings which facilities were required to conduct by CSISSFRRA to explain OCA information to the public have drawn very few attendees, even when citizens received individual invitations. In contrast, when industry has gone out to places the public already frequents (for example, a shopping mall) and provided consequence information directly to citizens, outreach and communication about chemical accident risks have been more successful.

- **Information that puts hazards into context, as OCA data do, is far more likely to be used by the public than "raw" data.** The importance of such "interpreted" information (already analyzed in order to be understandable) is demonstrated by the increased use of TRI data when they were made available as part of Scorecard on the Internet. Although TRI data are available electronically through EPA's Envirofacts and the RTK-Net (Right-To-Know Network) websites, Scorecard ranks each facility on various indicators by county, state, and nation, and explains the health effects of chemicals emitted by that facility. The raw TRI data on RTK-Net were drawing 240,000 searches a year; Scorecard draws over a half million page views per month.

- **Although OCA data could be derived from other available data, the public is unlikely to do so.** Derivation of OCA data requires some technical knowledge and time. While motivated and skilled individuals and organizations can use widely available existing data, guidance, and models to estimate off-site consequences with relative ease, evidence suggests that the general public is unlikely to be able and willing to do so.

- **A complete RMP containing OCA information is necessary to understand the extent of the hazard** posed by a particular facility in comparison to other facilities in an area, within an industrial sector, or handling the same chemicals. While the OCA data address the hazard, the RMP information addresses the steps to control those hazards. Understanding the extent of a hazard and how it is controlled leads to understanding the risk posed by that facility.

- **The penalties for disclosure contained in CSISSFRRA are having a chilling effect,**

even though the statute provides for access to OCA information for state and local officials, including emergency planners and responders, and allows those officials to communicate OCA data to the public. Many of these officials are not willing to obtain or to communicate the data and thereby to risk accidental or inadvertent disclosure of OCA information, even though CSISSFRRA penalizes only its willful disclosure. More fundamentally, making the provision of OCA data to the public discretionary leaves in the hands of government the decision about whether and to what extent to convey the data. CSISSFRRA also allows facilities to release their OCA information to the public, but that, too, is at their discretion. CSISSFRRA's requirement for facilities to conduct a public meeting or post a public notice summarizing OCA information provided only a one-time opportunity to learn about local hazards.

- **Actual chemical releases are different from the releases evaluated for OCA purposes.** No one can control all of the conditions (for example, weather) used to develop an off-site consequence analysis; actual conditions at a facility can vary widely from those used in the analysis. The accident prevention rule requires facilities to conduct OCAs in a specified, systematic manner so that the public and others can understand the relative hazards and risks posed by facilities as a result of the type and amount of chemical handled and the mitigation measures used.

This assessment finds that convenient public access to OCA information has the power to reduce real impact associated with chemical accidents. America needs to be further educated about chemical risks. Dissemination of OCA information could make an important contribution to a public dialogue about risk reduction and protection of lives. This public dialogue among community members, emergency planners and responders, and facilities at the local level is key to risk reduction.

CHAPTER 1

INTRODUCTION

"I know of no safe depository of the ultimate powers of society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion" (Thomas Jefferson, letter to William Charles Jarvis, September 28, 1820).

The federal government's efforts to prevent and mitigate chemical accidents have come largely in the wake of the 1984 accidental chemical release in Bhopal, India, that killed more than 3,000 people and injured more than 100,000 (1). This incident demonstrated to the world the magnitude of the potential consequences of a single chemical accident.

But this was not an isolated event. Less than one month prior to the Bhopal accident, an accidental release of liquefied petroleum gas (i.e., propane) from a storage terminal in Mexico City resulted in a large fire and series of explosions, killing 500 people and destroying a residential area (2). Other catastrophic chemical accidents have occurred in countries throughout the world, including the United States. In 1985, an accident at a Union Carbide plant in Institute, West Virginia, led to a release of a noxious mixture of methylene chloride and aldicarb oxime, resulting in the hospitalization of 134 people living in surrounding areas.

As a result, Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA) in 1986 as a part of the Superfund Amendments and Reauthorization Act. EPCRA calls on states to create State Emergency Response Commissions (SERCs) and communities to form Local Emergency Planning Committees (LEPCs) to prepare local emergency response plans for chemical accidents. EPCRA also requires facilities to provide LEPCs with information necessary for emergency planning, and to submit to SERCs, LEPCs and local fire departments annual inventory reports and information about hazardous chemicals. The statute also established the Toxics Release Inventory (TRI), which requires certain facilities to annually report the quantities of their emissions of toxic chemicals. These data are to be available to the public and EPA is to maintain a national database containing these toxic chemical release reports.

However, EPCRA contains no provisions for the prevention of chemical accidents and, because major accidental releases continued to occur, Congress included two provisions in the Clean Air Act (CAA) Amendments of 1990 to institute federal regulatory programs to prevent chemical accidents that harm workers, the public and the environment. Section 304 of the Amendments calls for chemical accident prevention and emergency response regulations to protect workers on-site, while section 112(r) of the amended CAA calls for regulations to prevent and respond to chemical accidents that could affect the public and environment off-site (3).

In Section 112(r), Congress established a general duty on facilities handling extremely hazardous chemicals to do so safely (section 112(r)(1)), and required EPA to establish regulations to ensure that facilities that pose the greatest risk develop and implement chemical accident prevention and detection programs (section 112(r)(7)). Congress further directed that the chemical accident prevention regulations require that facilities prepare and submit risk management plans (RMPs); these plans must include a hazard assessment that estimates the potential consequences of hypothetical worst-case releases, an accident history, a program for preventing accidental releases, and an emergency response program (section 112(r)(7)(B)(ii)). Finally, Congress required that these RMPs be submitted to the federal Chemical Safety and Hazard Investigation Board, state and local emergency response officials, and be made available to the public (section 112(r)(7)(B)(iii)).

EPA issued a rule in 1994 that lists the most potentially acutely hazardous toxic and flammable substances along with a threshold quantity for each. In 1996 the Agency issued a rule requiring every facility handling more than the threshold quantity of a listed substance to develop and implement a risk management program based on an assessment of the hazards at that facility (the "RMP rule"). As required by section 112(r), EPA specified in the rule that the hazard assessment include an off-site consequence analysis (OCA) of the potential consequences of worst-case and alternative scenario chemical releases and that the results of the OCA be reported in the facility's RMP.

The OCA provides a rough estimate of the potential consequences to a surrounding community of one or more hypothetical accidental releases, without evaluating the likelihood or probability of such an accident occurring. Potential consequences are expressed in terms of potentially exposed population, as well as the types of buildings, parks, and other public and environmental areas that could be seriously affected by a release.

Chemical Emergency Preparedness and Prevention - Legislative and Regulatory History

1986 - Emergency Preparedness and Community Right-to-Know Act (EPCRA); PL99-499

1987 - Extremely Hazardous Substances List and emergency planning and reporting requirements (40 CFR 355 and 370).

1988 - Toxic Release Inventory (TRI) reporting requirements (40 CFR 372).

1990 - Clean Air Act (CAA) Amendments, containing Sections 112(r) and 304; PL101-549

1992 - Occupational Safety and Health Administration (OSHA) Process Safety Management Standard (PSM); (29 CFR 1910.119)

1994 - EPA List of Substances and Threshold Quantities for accident prevention program (40 CFR 68.130).

1996 - EPA Accidental Release Prevention Requirements: Risk Management Program (40 CFR 68).

Rather than impose new requirements for specific accident prevention measures, EPA chose to rely in part on the public availability of RMPs, including the OCA information in RMPs,

to help ensure that facilities take all reasonable steps to reduce their risk of accidental releases. For many facilities covered by pre-existing accident prevention and response rules or voluntary industry standards, the requirements to conduct an OCA and prepare a publicly available RMP containing certain data elements from the OCA may be the only significant additional regulatory requirements under the RMP rule.[1] A complete description of the RMP elements, how an OCA is conducted, and the various elements of OCA information contained in an RMP is available in **Appendix A.**

The Agency decided that all RMPs would be submitted to EPA, which would handle dissemination to state and local officials and the public. The Agency believed that this approach would enhance dissemination and use of the RMP information. EPA's past experience in implementing EPCRA had shown that many state and local officials needed assistance in managing the chemical information submitted to them on paper by industry under that law, and that the public often did not take advantage of this information since it was not conveniently available.

With the help of the Accident Prevention Subcommittee[2], EPA designed an RMP reporting form that lent itself to the creation of an electronic database. The form consists of an Executive Summary and sections for reporting OCA results, prevention program data, and other information. In the Executive Summary, reporting facilities are required to explain in prose the facility's risk management program, including a brief summary of the facility's OCA. The remaining RMP sections, including the OCA sections, are in check-off box, yes/no and other formats that allow compilation of an electronic database. As a result, the information in those sections is relatively general in nature (e.g., the form calls for the facility to identify the types of prevention devices it uses in a chemical process, but not where they are used or how many are used). The vast majority of RMPs submitted by June 21, 1999, were submitted electronically to EPA. The Agency developed and maintains a central database of RMPs from which immediate access can be provided to stakeholders who are designated recipients of the information as mandated by Congress.

To satisfy the section 112(r) requirement that RMPs be made available to the public, nearly all members of the Accident Prevention Subcommittee recommended that EPA place

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[1] The list and RMP rules are codified at 40 CFR Part 68.

[2] The Accident Prevention Subcommittee to the Clean Air Act Advisory Committee was established to provide the Chemical Emergency Preparedness and Prevention Office (CEPPO) with stakeholder advice and counsel on scientific and technical aspects of its programs. The Subcommittee considers technical issues, methodologies, and/or products which CEPPO provides for review. These form the basis for Subcommittee findings and recommendations which enable CEPPO to strengthen its technical program and specific technical products. The Subcommittee is made up of representatives from industry, state and local government, public interest groups, academia, trade associations, and professional organizations. The Clean Air Act Advisory Committee and the Accident Prevention Subcommittee were created under the Federal Advisory Committee Act.

RMPs on the Internet for easy access by the public. However, concerns were raised that Internet access to a large, searchable database of OCA results would provide a targeting tool for terrorists and other criminals. In response, EPA decided not to place the OCA sections of RMPs on the Internet, but concerns were next raised that recent amendments to the Freedom of Information Act (FOIA) would compel EPA to release these sections in electronic format. Congress responded by passing Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (CSISSFRRA), which the President signed on August 5, 1999.

CSISSFRRA temporarily exempts OCA information from public disclosure under the CAA and FOIA. It requires the President to assess the increased risk of terrorist and other criminal activity associated with the posting of OCA information on the Internet, and the incentives created by public disclosure of OCA information to reduce the risk of accidental chemical releases. Based on the assessments, the President is to issue regulations governing the distribution of OCA information in a manner that, in the opinion of the President, minimizes the likelihood of accidental releases and any increased risk of terrorist activity associated with Internet posting of OCA information and the likelihood of harm to public health and welfare.

The President delegated to the Department of Justice (DOJ) and the EPA authority to perform the required assessments and to promulgate the required regulations. The President has delegated authority to perform the assessment of the increased risk to DOJ, and has delegated authority to perform the assessment of the incentives to reduce risk to EPA. The President also jointly delegated to DOJ and EPA his duty to promulgate the regulations, subject to review and approval by the Office of Management and Budget. (For a detailed description of CSISSFRRA and the kinds of data and information available to the public and other stakeholders under CSISSFRRA or by other means, see **Appendix B**.) This document reports the results of EPA's assessment.

ORGANIZATION OF THIS REPORT

Because RMPs were submitted only in mid-1999 and because the vast majority of OCA information is not currently available, it is not possible to analyze the impact of either complete RMPs or OCA information directly at this time. EPA, therefore, has examined other programs that provide the public with similar information related to risk. The assessment uses data from these other programs as well as from the RMP program to answer a series of questions:

Chapter 2: Are Chemical Accidents a Serious Problem?

Before considering the risk reduction potential of public information, Chapter 2 addresses the fundamental question of whether chemical accidents present a serious risk to the public, employees of facilities, and the environment, and whether current regulatory programs are in place to reduce the risk sufficiently. If chemical accidents pose little threat because existing programs have already reduced risks, then there is less need or benefit to be gained by making information available to the public for further risk

reduction.

Chapter 3: Does Public Information Lead to Risk Reduction?

Chapter 3 examines the evidence that public information leads to risk reduction. This question has two parts. Does the public use the data; and does that use lead to risk reduction? In some cases, merely publicizing the data stimulates industry to take action. Chapter 3 examines data from the Toxics Release Inventory (TRI) program, accidental releases, and non-environmental programs.

Chapter 4: Does the Type of Information and Access Make a Difference?

Chapter 4 examines whether interpreted data, such as OCA data, are more likely to be used by the public than raw data. Interpreted data are data that are easily understood by the user without the need for further manipulation or supplemental information. Chapter 4 then examines whether ease of access to the data increases the likelihood that data will be used by the public.

Chapter 5: Are There Other Sources of the Same Data?

This chapter examines whether OCA data can be obtained from other sources and whether the availability is sufficient to lead to risk reduction.

Chapter 6: How Much Information is Necessary to Spark Risk Reduction Efforts?

This chapter examines ways OCA information could be made available and ways facilities could be categorized or grouped by the hazards or risks of accidental release they present in order to disseminate OCA information.

Chapter 7: What is the Public's Access to OCA Information under CSISSFRRA?

Chapter 7 describes OCA information in more detail, and examines the options for data access under CSISSFRRA.

Chapter 8: Findings

Chapter 8 summarizes the findings and presents EPA's conclusions with respect to this assessment.

In addition to the main body of the assessment, the report includes a number of appendices for readers interested in additional details:

Appendix A	Provides a detailed description of the RMP data, including the OCA data and discusses what is included in OCA data and what is not. A sample RMP is included.
Appendix B	Provides a detailed description of CSISSFRRA and its provisions that relate to this assessment.
Appendix C	Presents summaries of actions taken as the result of public environmental data.
Appendix D	Presents details of a study of the effects of negative press on TRI emissions.
Appendix E	Presents details of the accident data discussed in this report.
Appendix F	Discusses the individuals and groups that are likely to use OCA information, and how various uses can create or affect incentives for risk reduction.

CHAPTER 2

ARE CHEMICAL ACCIDENTS A SIGNIFICANT PROBLEM?

Congress enacted section 112(r) of the CAA to reduce the number and severity of accidental releases of chemicals that could cause serious harm. Although most localities are well prepared for chemical emergencies, sudden accidental releases to the air that rapidly migrate off-site (or, in the case of a flammable material, quickly reach an ignition source) potentially expose the public or environment to harmful effects in a short time. As evidence of this, sheltering-in-place has become a preferred emergency response strategy because air releases move too fast to make evacuation a feasible option. Consequently, protection of public health depends on preventing the releases.

Chemical accidents continue to be a serious problem in the U.S., causing deaths, injuries, serious property damage, and disrupting business and the lives of individuals in the vicinity of facilities. The facilities subject to the RMP rule submitted information on all of their serious accidents that occurred in the five years prior to the date of submission of the RMP (approximately June 1999).[3] Serious accidents are defined in the rule as those that cause deaths or injuries on- or off-site; significant property damage on-site; or known property damage, evacuations or sheltering-in-place, or environmental damage off-site. Overall, 1,086 facilities reported 1,913 accidents in their RMPs.

The impacts of the releases reported in the RMPs are shown in **Table 1**. It should be noted that not all of the 1,913 accidents had one or more of the impacts that require reporting; a few facilities chose to report all their releases of regulated substances rather than limit the reports to those that were subject to reporting under the rule. No off-site deaths were reported in the RMPs.

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[3] These data cover the five-year period prior to the submission of the RMP, but because each RMP has a unique submission date, they may not cover exactly the same five years. However, most submitters probably included accidents that occurred between mid-1994 and mid-1999. Therefore, the 1994 plus the 1999 numbers are equivalent to one year's releases.

Table 1 – Five-Year Accident History Data from RMP Submissions

Year	Deaths On-site	Injuries On-site	Hospitalized	Other Medical Treatment	Evacuated	Sheltered in Place	Damage ($ millions)
1994 (partial)	**6**	239	46	135	3623	4,396	356
1995	**2**	433	103	4,823	8,677	21,978	67
1996	**4**	369	28	334	2,616	41,799	129
1997	**5**	416	11	583	7,267	65,041	218
1998	**3**	394	17	136	5,723	52,717	94
1999 (partial)	**13**	124	12	27	1,937	5,549	153
Total:	**33**	1,975	217	6,038	29,843	191,480	1,018

However, two recent accidents, one at a small chemical plant (4) and one at an ice-making plant, have caused or contributed to off-site deaths. The ammonia release at the ice plant is the first release of a toxic chemical in the U.S. known to have contributed to a fatality off-site as a result of exposure to the chemical, rather than impact from an explosion (**see box**).

Davie Ice Plant Leaks Ammonia – and a Grandfather Dies
Reprinted with permission from the Sun-Sentinel, Fort Lauderdale, Florida

By Tanya Weinberg
January 5, 2000

DAVIE — On the second to the last day of his life, Julio Lopez, 70, woke up and told his grandson how good he was feeling. Early Wednesday, the last day of his life, he awakened to see his family panicking, while his lungs burned and a cloud of deadly ammonia hung low outside his home.

Something had gone wrong across the street at Reddy Ice, the ice-making plant on the 5000 block of 51st Street. The pressure of a gas leak forced the top of a rooftop safety valve to pop off, and more than 100 pounds of ammonia was released, according to Reddy Ice. Because it was a humid, still night, the gas absorbed moisture, sank, and invaded the lungs of workers and neighbors just after midnight, fire officials said.

Two of seven employees were treated and released from Memorial Hospital Pembroke. Julio Lopez never returned from Memorial Regional Hospital.

The cause of his death was heart disease and chronic emphysema, but inhaling ammonia is what "set him off," said an investigator in the Broward County Medical Examiner's Office.

As his son led him running from their home, Lopez told him he couldn't breathe, that he couldn't go any farther. He collapsed about a block from the house...
...
The cause of the leak and exactly how much ammonia was released have yet to be determined. Both the Occupational Safety and Health Administration and environmental inspectors are investigating.
...

Table 2 assigns a dollar value to these impacts, based on the values EPA used in the Economic Impact Analysis (EIA) for the final RMP rule in May 1996. Lost production is valued conservatively, as it was in the EIA, at two times the value of property damage; according to Marsh and McLennan[4], the standard insurance industry assumption is that business losses are four times the cost of property damage (5).

[4] Marsh and McLennan represents the J&H Marsh and McLennan Corporation, parent company to M&M Protection Consultants (M&MPC). M&MPC underwrites risk and provides consultation to management on hazard control; they produce reviews of large property losses in the chemical and petrochemical industries.

Table 2 – Dollar Values of Impacts of Releases in the RMP Five-Year Accident History

Impact	RMP Data	Unit Value[5]	Total
Deaths	33	$5,400,000	$178,200,000
Hospitalizations	217	$19,000	$4,123,000
Other medical treatment	6,038	$200	$1,207,600
Evacuation	29,843	$290	$8,654,470
Sheltered	191,480	$30	$5,744,400
Property Damage	$1,018,000,000	--	$1,018,000,000
Lost Production	$2,036,000,000	--	$2,036,000,000
Total			**$3,252,000,000**
5-Year Annual Average			**$650,000,000**

As costly as the accidents reported in the RMPs have been, they do not represent most of the chemical accidents in the country. RMP facilities reported 1,913 accidents for a five-year period. Over that time period, more than 25,000 hazardous substance releases were reported to EPA and the National Response Center. Because releases reported to the National Response Center are generally called in while the release is occurring when impact data are often incomplete, it is not possible to estimate the impacts or the cost of these releases. The U.S. Chemical Safety and Hazard Investigation Board maintains a Chemical Incident Reporting Center database of information about chemical releases gathered from news accounts and other incident reports (on the Internet at www.csb.gov/circ/). An informal review of incidents contained in this database shows that from May 1999 to April 17, 2000, about 350 chemical incidents occurred at fixed industrfacilities and not related to transportation. These incidents generated: 39 fatalities (employees, first responders, and one citizen off-site); more than 1,000 worker and first responder injuries; evacuations of more than 19,000 people (employees and residents); and more than $7.4 million in damages. It is clear that, whatever progress has been made to prevent accidental releases, chemical accidents continue to be a serious problem.

CAN ACCIDENTS BE PREVENTED BY REGULATIONS ALONE?

In 1990, Congress mandated that both EPA and the Occupational Safety and Health Administration (OSHA) issue rules to prevent chemical accidents. As noted in Chapter 1, OSHA promulgated the process safety management (PSM) standard in February 1992; facilities were to be in compliance with all elements except the process hazard analysis (PHA) by 1994.[6] The PSM

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[5] Unit values are taken from EPA's Economic Analysis in Support of Final Rule on Risk Management Program Regulations for Chemical Accident Release Prevention, as Required by Section 112(r) of the Clean Air Act, May 21, 1996.

[6] The process hazard analysis requirement was phased in over five years for facilities with multiple covered processes.

standard is based on the concept that managing chemical accident risk requires an integrated approach that involves identifying and assessing risks, managing risk through the adoption of practices (such as operating procedures, training, preventive maintenance, management of change, and periodic audits), and preparing for emergencies. This integrated system must be implemented on an on-going basis. The RMP rule adopts the PSM standard as the basis for the prevention program and streamlines it for facilities that pose lower levels of risk (based on accident history, complexity of the process, and whether a worst case release could affect public receptors).

Many RMP facilities are also covered by PSM, yet continue to experience accidents. OSHA does not require that facilities provide information outside the facility. Because there is no list of facilities subject to OSHA PSM, it is not possible to determine with certainty whether implementation of the PSM standard has reduced the number or severity of chemical accidents for processes subject to the standard. Of the top seven sectors reporting accidents in the RMP however, five (refineries, chemical wholesalers, chemical manufacturers, pulp and paper mills, and cold storage facilities) are almost always subject to PSM for the same chemicals covered by the RMP rule. The other two sectors (drinking water systems, wastewater treatment systems) are covered by PSM in half the states. These sectors account for almost 80 percent of the accidents reported in the RMP history of accidents since 1994. The largest number of releases reported in the RMPs happened in 1997 and 1998 (1999 reports cover only a few months), and the number of accidents reported in the RMPs for these sectors has remained fairly constant over the five-year period. Even if PSM has reduced the accident rate, the number of accidents in these sectors covered by PSM continues to be high.

CONCLUSION

Chemical accidents, despite previous regulatory efforts, continue to be a serious problem, causing deaths, injuries, and property damage as well as public and business disruption. Additional efforts are needed in order to improve chemical accident prevention practices.

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ON SALE JULY 27

Toxins Abounding

Despite the lessons of Bhopal, chemical accidents are on the rise

In December 1984 the lethal escape of methyl isocyanate in Bhopal, India, unleashed a wave of concern about chemical calamities. Legislation in the U.S. and India strove to lessen the danger to communities, and the United Nations renewed its efforts to warn about toxins. But a decade later industrial chemicals remain poorly understood: when similar accidents occur, doctors are just as likely to be faced with a mysterious poison as they were in Bhopal.

Moreover, the potential for catastrophe is scarcely diminished. In the eight years preceding the disaster, the Organization for Economic Cooperation and Development recorded 74 major accidents; in the eight years following, the number reached 106. And between 1980 and 1990 the number of gas releases that exceeded Bhopal in quantity and toxicity totaled 15 in the U.S. alone.

"Unlike pesticides and drugs," explains Donald J. Lisk of Cornell University, "industrial chemicals were not intended to be ingested." Thus, studying them is not a priority. Adequate toxicology exists for only 2 to 3 percent of the more than 70,000 substances used to create about five million products, observes Joseph LaDou of the University of California at San Francisco. For 75 percent, there is no toxicology at all.

In the U.S. the 1976 Toxic Substances Control Act was designed to fill this gap, but the task proved too enormous. Consequently, more than 60,000 existing chemicals were "grandfathered in," with the Environmental Protection Agency requiring scattered tests on no more than about 100. Of the chemicals introduced since 1979, the EPA restricts the use of 7 percent. But older substances make up 99.9 percent of the six-trillion-pound total.

Although the Occupational Safety and Health Administration mandates Material Safety Data Sheets for at least 600 chemicals to which workers might be exposed, companies are not required to perform tests—they need only list what they do know. So humans may end up serving as guinea pigs. Solvents, resins and glues have been implicated in the testicular cancers and other disorders of 5,000 male employees at Lockheed, according to Daniel T. Teitelbaum of the University of Colorado.

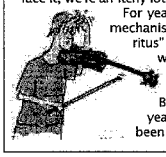
The lack of information about toxics continues to haunt communities, not just workers. In 1986—after the Union Carbide incident in Bhopal and a subsequent release at the company's sister plant in Institute, W. Va., where a chemical leak sent 135 neighbors to the hospital—the Emergency Planning and Community Right-to-Know Act was passed. It required facilities using certain chemicals to report their amounts and locations to Local Emergency Planning Committees (LEPCs), which were to plan responses to accidents. The federal government did not authorize funding for the 4,100 LEPCs, however. In 1990 the EPA concluded that most of these groups were dominated by industry and government representatives and had failed to inform communities of hazards, for fear of causing "counterproductive panic."

According to Fred Millar, an accident prevention expert based in Washington, D.C., some of the LEPCs panicked when they saw the facts. The "plume map" for Houston, for example, showed that more than 50 percent of the city is vulnerable to toxic releases. The New York State Attorney General's Office has calculated that some gas clouds could travel a mile in 17.6 minutes; alerting certain communities, let alone evacuating them, might take up to an hour.

In 1990 environmentalists and labor groups pushed through amendments to the Clean Air Act that required companies to conduct hazard assessments and to make public their worst-case scenarios. But the EPA missed its 1993 deadline to draw up the required rules, and the Chemical Safety and Hazard Investigation Board, which the amendments also established for independently investigating accidents, does not yet exist. Nor is it funded.

Just Scratch It

Itch remains the most mysterious of cutaneous sensations—of all sensations, perhaps," says Jeffrey D. Bernhard, director of dermatology at the University of Massachusetts Medical School at Worcester. No one even seems to know how often a dermatologically healthy person scratches, but, let's face it, we're an itchy lot.



For years the neurological mechanisms of itching ("pruritus" in medical jargon) were thought to be identical to those of skin-based pain. But "over the past 10 years or so, there has been an accumulation of

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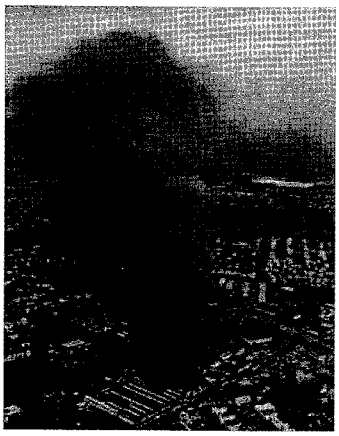
In New Jersey and California, active programs do exist for reducing the likelihood of accidents. Nevertheless, dangers persist. According to Peter Costanza, a New Jersey regulator, the contents of any of up to 20 railroad tank cars of chlorine in the state, some in crowded areas such as Elizabeth and Newark, could kill thousands. "We make sure the valves are tight," Costanza reflects, but that would not prevent a truck from puncturing one of them.

The National Environmental Law Center concludes that 10 billion pounds of "extremely hazardous chemicals," such as chlorine, are currently stored in the U.S. About once a day, an event involving immediate injury, evacuation or death is reported to the Emergency Response Notification System database. (That number is probably optimistic: between 1988 and 1990 the system listed only 13 percent of the accidents recorded by New York State.) Apart from such histories, no measure of the risk from accidents seems to exist in the U.S.

In many places, the situation is even worse. After Bhopal, the United Nations Environment Program strengthened its efforts to make data on toxic materials available to developing nations. Unfortunately, firefighters and hospitals there rarely receive the information. "In terms of accessibility," LaDou states, "the U.N. efforts are 30 years behind the U.S."

Worldwide the rate of chemical catastrophes is on the rise. Bhopal prompted several nations to support an agreement, known as Prior Informed Consent, requiring countries exporting hazardous substances to inform the importing nation. No such system exists for hazardous processes and technologies; even if it did, observers doubt that developing countries would use it. "In the current climate," notes Peter M. Haas of the University of Massachusetts at Amherst, "any investment is fine, regardless of what technology it brings." For its nylon project in Goa, Du Pont has secured an agreement with its Indian partners that the multinational will not beliable for any accidents.

In India, projects based on hazardous technology are mushrooming despite the legislation that Bhopal prompted. The Environmental Protection Act of 1986 directed companies to supply information about toxic inventories, allowed for inspections and also created laboratories. A 1987 amendment to the Factories Act set guidelines for handling dangerous materials. But the acts cause information to flow to the government, not to concerned communities.



CHEMICAL EXPLOSION in New Jersey killed four in April.

Methyl isocyanate, at least, is no more to be found in India. After Bhopal, some U.S. companies started to use the substance in a closed-cycle process, so that the unstable fluid did not have to be stored. But at least 150,000 pounds of it reside at the Institute plant, which now belongs to Rhône-Poulenc. In case of a spill, residents are advised to "Shelter-in-Place": bring in pets, shut windows, stuff wet towels under doors and tune in for instructions. As yet, no plan exists for dealing with the worst-case scenario involving the chemical: death within the first nine miles of a plume stretched, by the usual wind conditions, right over town—which begins a quarter mile from the factory. "No way the community can get out," states Pamela L. Nixon, a medical technician who serves on the LEPC. Shelter-in-Place could well become, in Millar's words, "Gassed-in-Your-Home." —*Madhusree Mukerjee*

This is the second of a two-part article on the legacy of Bhopal.

evidence that itch is a distinct and separate sensation from pain, despite some similarities," Bernhard notes. Like some kinds of pain, itch begins when nerve endings in the skin are stimulated, either chemically or physically, or both. Still, pain and itch differ in other respects, including their relief. It is not entirely clear why scratching an itch makes it go away; apparently it sends a new signal that either breaks up the spinal nerve vibrations or substitutes a new sensation.

Some allergic reactions and various conditions—eczema, psoriasis and hyperthyroidism, among them—are infamously itch inducing. Some itches, on the other hand, defy explanation. Children studying in school or ostensibly practicing their musical instrument seem to itch unnaturally, as do major league baseball players at bat on national television. Bernhard has also come across some more obscure problems. What would you call the case of the woman who itched after amorous contact with her spouse, or that of the woman whose marriage was so stressful she itched until she divorced? ("Till *itch* do us part"?)

Those who have managed to escape these conditions need not feel left out. There is always pruritus idiosyncratica, everybody's own little itch, according to Bernhard: "some spot they find themselves scratching from time to time." He named the condition based on his own "extremely informal" clinical observations. "People come in and say, 'You know, I itch here,' and we don't have any explanation for it. Right now I'm itching my leg, for example." —*Glenn Zorpette*

MICHAEL CRAMFORD

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ENERGY INSIGHT TODAY

A vulnerable system looks for security

First-ever alert issued by NERC on Tuesday

Cascading blackouts, solar flares and a $400 bomb

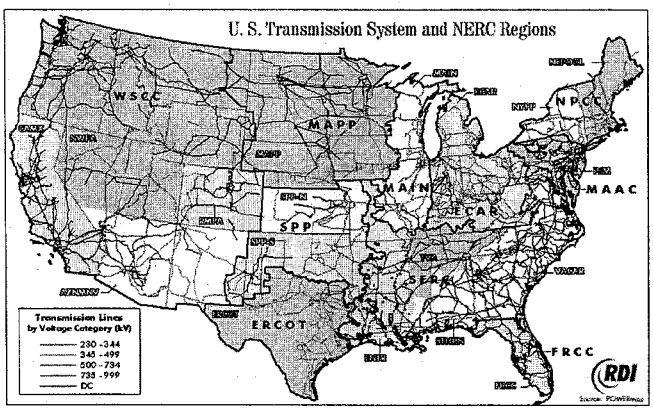
'You can't build a Great Wall of China'

By David Wagman
dwagman@ftenergy.com

Shortly after Tuesday's terrorist attacks began in New York City and Washington, D.C., the North American Electric Reliability Council (NERC) issued an alert instructing grid security coordinators at 21 locations across the U.S. and Canada to assume heightened levels of readiness.

That first-ever warning prompted coordinators to send crews into the field to secure and guard parts of the electric infrastructure seen as critical to achieving a "black-start" of the electric system, should the targets spread to include vulnerable parts of the grid. The alert was in effect throughout the day on Tuesday and into Wednesday morning. As of that time no unusual events were reported anywhere in the nation's grid, said one security analyst reached at his desk at the Michigan Electric Power Coordinating Center.

In the space of only a few hours on Tuesday, that analyst's role may well have changed from fretting about hooligans shooting out insulators on a Friday night to worrying about terrorists threatening the security of the nation's electric infrastructure.



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media relations. "Any technologically complex system is at risk if someone wants to disrupt it."

Some levels of security in place

Prior to Tuesday's events, three principal mechanisms offered some level of protec - tion to the electric grid.

In 1997, NERC recognized that open transmission access and rapidly increasing wholesale sales would strain the system in new ways. At the time, no single entity was charged with looking at regional systems to ensure they were operating within their capacity. Rather than relying on more than 150 utility control areas around North America, NERC told its 10 operating councils to designate a much smaller number of security coordinators to handle oversight. Ultimately, 21 coordinators were designated, among them the Michigan Electric Power Coordinating Center, managed by Jim Cyrulewski.

Cyrulewski's team is responsible for coordinating security in Michigan's lower penin sula. His is the sole entity with information complete enough to tell analysts what is happening with the region's power plants, line loadings and the overall transmission grid.

Up to now, the major function of the security coordinator has been to prevent over loads, Cyrulewski said. If overloading does occur, his team may halt all transactions until the system regains its balance.

The security coordinator is also responsible for alerting the National Infrastructure Protection Center (NIPC), a second level of grid protection, of any "operational and cyber threats or attacks" on the national electric infrastructure.

Established in February 1998, the NIPC is housed within the Federal Bureau of Investigation. The center serves as the U.S. government's focal point for assessing and investigating threats, issuing warnings and ultimately responding to threats or attacks to telecommunication, banking and finance, water, government and emer - gency organizations, and energy infrastructure. In NIPC's view, critical energy infrastructure includes generating stations, transmission and distribution networks and fuel delivery networks. As of Wednesday morning, no electric-related incidents had been posted at the NIPC's public information site.

A third level of awareness emerged during planning for feared disruptions related to Y2K. In the months before January 1, 2000, NERC and its regional councils looked "pretty heavily" at the infrastructure's sensitivity to disruption, said spokesperson Ellen Vancko. But the scrutiny reached no further than reinforcing the computer systems that operate the grid. Following Tuesday's attacks, it still may be too early to say what additional steps need to be taken to secure the transmission grid, she said.

"It won't just be NERC," Vancko said of future planning efforts. "It will be done in

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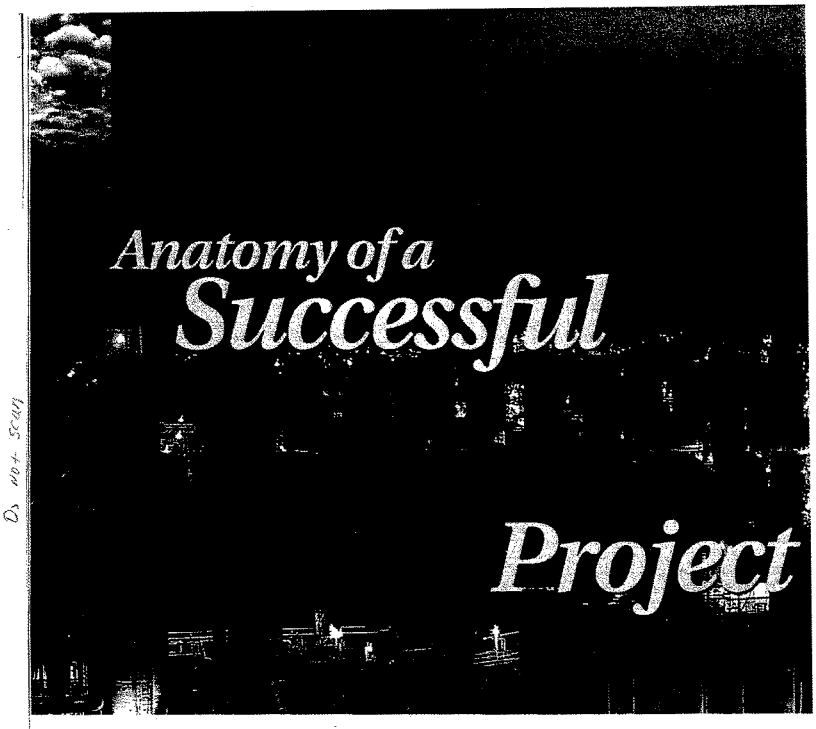

Anatomy of a Successful Project

Large reductions in toxic wastes and emissions are achievable at many if not most company sites.

LINDA E. GREER

Since the pollution prevention concept emerged many years ago, environmental policy makers have expressed widespread interest in using pollution prevention techniques to improve environmental conditions at factories operating across the country. Whereas pollution control technologies are applied at the "end of the pipe", pollution prevention seeks opportunities to minimize reliance on toxic chemicals, increase efficiency, and decrease waste and emissions through process changes. Unlike pollution control, pollution prevention often saves money, making the approach a potential "win–win" for industry and environmentalists. Many environmental experts have believed that because pollution prevention techniques save money, they would be adopted voluntarily by industry without the need for explicit government regulation or intense pressure by environmentalists.

For reasons that remain somewhat elusive, the pollution prevention approach has failed to grab the attention of the business world. Although initially some

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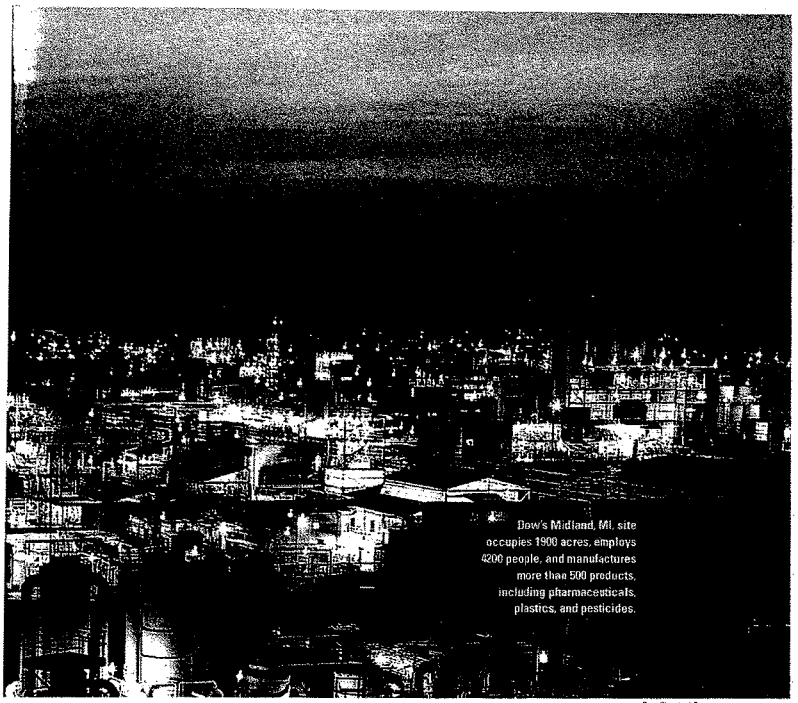


Dow's Midland, MI, site occupies 1900 acres, employs 4200 people, and manufactures more than 500 products, including pharmaceuticals, plastics, and pesticides.

Dow Chemical Company

blamed regulations for impeding pollution prevention (believing regulations might be inadvertently posing barriers to various corporate initiatives), few or no case studies have proved this theory to be correct. Currently, a more widely held theory holds that good opportunities to prevent pollution and save money must be very rare; if such opportunities really existed, they would have already been seized by business.

A second collaborative attempt

In the fall of 1996, the Natural Resources Defense Council (NRDC), the Dow Chemical Company, and a group of community activists initiated a project at Dow's Midland, MI, chemical manufacturing facility to achieve aggressive reductions in toxic wastes and emissions at the plant using only pollution prevention techniques. Only projects that met business criteria for capital investment would be pursued to achieve these reductions. This project followed up on a more limited collaborative pollution prevention project at Dow's LaPorte, TX, plant that had identified some profitable reduction opportunities but had not implemented them (*1*).

Dow's Midland site is home to 8 of Dow's 15 global business lines (see photo above). It occupies 1900 acres, employs 4200 people, and manufactures more than 500 products, including pharmaceuticals, plastics, and pesticides. At the start of the project, Dow's Midland facility was Michigan's eighth-largest emitter of Toxics Release Inventory (TRI) releases and the sixth-largest generator of TRI wastes. Its total TRI emissions had been approximately level for the prior five years, and its TRI wastes (except HCl) had risen slightly. Dow–Midland was a particularly significant source of numerous chemicals of concern to the environmental community, as Michigan's top-ranked emitter of acrylonitrile, formaldehyde, butadiene, dichlorophenol, tetrachloroethylene, vinyl chloride, and other priority toxic compounds. It was a nationally significant source of many pollutants as well, contributing more than 10% of the

Manufacturing of chloroacetylchloride

Process Description and Sources: Chloroacetylchloride (CAC) is used primarily as an intermediate in the manufacture of monochloroacetic acid (MCAA). Most of the MCAA at Dow–Midland is sold. However, some is used as an intermediate to manufacture the pesticide 2,4-dichlorophenoxy acetic acid, more commonly known as 2,4-D.

Vinylidene chloride and oxygen are the primary raw materials used to produce CAC (see Figure 1). The oxidation reaction is highly exothermic, generating significant heat. Currently, the reactor is cooled with water from a cooling tower system.

The source of all wastes in CAC is the formation of byproducts in the reactor. These wastes exit the process at two primary sources: vent gases from the reactors and overhead tars from distillation. Wastes from these two sources account for about 18% of all wastes addressed in this project.

Pollution Prevention Options and Reductions: Several pollution prevention options were explored, including improved cooling, distillation column optimization, and in-process recycling. The pollution prevention option of choice focused on the fundamentals of the chemical reaction to improve the overall efficiency through improved cooling. All the wastes from the process are generated as byproducts through inefficiencies in the reaction. Lower reaction temperature would decrease the formation of these unintended byproducts and increase yield of CAC product.

Dow determined that additional cooling could be provided through refrigeration instead of the existing cooling towers. Improved refrigeration was estimated to reduce the generation of byproduct wastes by approximately 1.8 million lb, 1.3 million of which were priority chemicals for this project (see Table 3).

Financial Savings/Costs: Savings from the avoided cost of lost raw materials and waste treatment from CAC was estimated to be $375,000 per year.

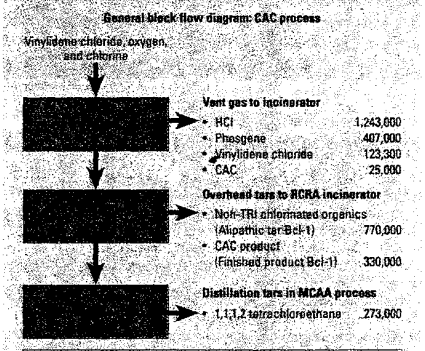
Costs derived largely from the purchase of new refrigeration equipment. New equipment was estimated to cost $500,000. In addition, $20,000 was requested to enable technical staff to conduct more detailed technical analysis for the project.

In an effort to improve the economics of the project, Dow CAC staff contacted brokers of used refrigeration equipment. A suitable refrigeration unit was identified, which greatly improved the economics of the project. CAC staff then contacted the business leaders who make funding decisions to discuss the new information. Funding was approved in less than one week. Equipment will be fully operational by fall 2000.

FIGURE 1

Optimizing CAC production

Opportunities for reducing waste and resulting savings can be realized at all stages of the chloroacetylchloride (CAC) process.



Source	Reaction
Quantity, pounds	$ 1,800,000
Lost raw material savings/year	$ 225,000
Waste treatment savings/year	$ 250,000
Project cost	$ 300,000

Note: All data have pounds per year units.

nation's loading of 2,4-D (see sidebar above), dichlorophenol, trichlorophenol, vinylidene chloride, and tetrachloroethane.

The specific goals of the 30-month collaboration were

- to reduce waste and emissions of 26 priority chemicals generated at Dow–Midland by 35% using only pollution prevention techniques (see Table 1);
- to foster institutional changes throughout Dow that would further shift the corporation's thinking from regulatory compliance to pollution prevention and further integrate health and environmental concerns into core business planning and decision making;
- to develop and rely upon a participatory process that leads to changes in business decision making throughout Dow and that provides an opportunity for the citizen participants to gain an understanding of the company's business decision-making process; and
- to monitor waste reduction and pollution prevention accomplishments and provide accountability of the project results to the general public.

Project design

The project was designed in large part on the basis of successes and limitations of the pilot project done at Dow's LaPorte, TX, facility. TRI data were used at the onset to set priorities for target chemicals. Dow provided process-level data for the wastes and emis-

sions of interest. Those business divisions responsible for the largest portions of the wastes and emissions of concern to the project were then approached by Dow environmental health and safety (EH&S) staff for participation in the work.

The group relied on an expert pollution prevention assessor, Bill Bilkovich, of Environmental Quality Consultants, in Tallahassee, FL, to find reduction opportunities. After signing confidentiality agreements, Bilkovich generated ideas for reduction opportunities by minutely inspecting data on wastes and emissions at the plant and then meeting with Dow experts to brainstorm opportunities. He located, mobilized, and requested from Dow the information needed to support the envisioned process changes. Bilkovich also found the persons who would champion change within the business and gathered the team needed for implementation.

Working with Bilkovich, Steve Anderson, principal with Kerr, Greiner, Anderson, and April, in Bordentown, NJ, developed a detailed framework to track the project, creating templates for each business and keeping overall tallies of progress toward the reduction goals that allowed full transparency and accountability of the project to the general public. Anderson, NRDC, and the activists did not sign confidentiality agreements and relied instead upon Bilkovich and Dow to explain relevant details about how wastes and emissions were generated in a way that did not reveal business-sensitive information about manufacturing processes.

NRDC and the other environmental activists negotiated project priorities, quantitative goals, and deadlines with Dow staff members, who subsequently reviewed and commented on reduction opportunities during the life of the project. The activists created and sustained a dynamic tension for progress, innovative risk taking, and aggressive reductions throughout the project. The group relied on a professional facilitator, John Ehrmann of the Meridian Institute, in Dillon, CO, to create ground rules for participation and to keep both sides working productively together during the ups and downs of the project.

Several key features of the design of the project were based on lessons learned in the first attempt at this project in LaPorte. The design was based on the hypothesis that projects were most likely to be implemented if the business people ultimately responsible for capital investment decisions in the business divisions interacted directly with the project. Although most understanding of the benefits of the project, EH&S staff members were not in a position to ultimately approve business investment decisions. Furthermore, the design was based on the hypothesis that deadlines and quantitative reduction targets, combined with a transparent and accountable tracking system, would constructively serve to keep the group focused on achieving reductions in a timely way. Finally, parties agreed that success lay not only in the technical opportunities for reductions that would be identified but also in effective advocacy for these projects from outsiders, as well as internal Dow advocates for change.

The group met at least quarterly throughout the project. Representatives from each business division came directly before the group, first to introduce themselves and learn about the project, and subsequently to present information on their processes and the ways in which their wastes and emissions were generated. Business divisions then periodically came before the group to describe progress in developing options and to hear group opinions and preferences. Conference calls were held frequently between meetings to keep all participants abreast of specific problems or issues. Tracking sheets were reviewed regularly to ensure progress.

Pollution prevention projects are often viewed by a business as elegant solutions to a problem they do not think they have.

Dramatic reductions achieved

Emissions were reduced by 43%, from 1 million to 593,000 lb, and wastes by 37%, from 17.5 million to 11 million lb. The reductions exceeded the project reduction goals of 35%. Although a few chemicals, such as acrylonitrile and dichlorophenol, were not affected, the vast majority (20 of 26) were reduced. Some chemical wastes and releases, such as formaldehyde, were nearly completely eliminated, and five chemicals—chloroethane, chloromethane, methylene chloride, tetrachloroethylene (waste product), and toluene (air releases)—were reduced by more than half.

A total of 17 projects delivered these reductions (see Table 2). All of them were directly related to increasing production yield, capacity, or quality improvements. For example, one project required only improved cooling to reduce nearly 2 million lb of waste. Another revealed that transferring a chemical twice a day to storage tanks instead of only once a day would eliminate vapors that were being vented to an incinerator. Reducing a residual solvent in a raw material in one process both greatly reduced a waste tar and facilitated recovery of other chemicals in the remaining tar. Reordering production schedules to concentrate impurities in yet another wastestream greatly enhanced recovery of the waste. In all, projects relying on process modifications were responsible for the largest proportion of the reductions achieved, followed by those relying on in-process recycling.

The project achieved these reductions with a total capital investment of $3.1 million (see Table 2). Dow estimates the project will save the company $5.4 million annually, through raw materials costs savings and reduced waste treatment costs alone, for an overall annual rate of return of 180%. The savings figure does not include some other clear financial benefits, such as increased capacity and lower production costs on sales that result from process modifications to reduce waste. All but one of the projects easily met business hurdle rates (the amount of profitability required to be achieved by a project for a business to invest in it), and the exceptional project was undertaken in part for other reasons by the plant.

Insights into pollution prevention

The active nature of this collaboration, its success in finding projects that Dow business divisions implemented, and the details of the 17 projects that were implemented reveal important insights into pollution prevention for policy analysts and corporations interested in further reliance on this approach for the next generation of pollution reductions.

• Pollution prevention techniques proved extremely capable of dramatically reducing toxic wastes and emissions, even at a chemical manufacturing facility. Wastes were reduced by more than one-third and emissions by nearly one-half in only a 30-month time frame and at a factory whose wastes and emissions had been essentially unchanged for nearly five years. The theory that pollution prevention is not widespread because good opportunities are rare is clearly incorrect.

• The vast majority of pollution prevention projects required relatively small amounts of capital and promised very respectable returns on investment. At first glance, the fact that small projects can result in such dramatic reductions would appear to be very good news. Small size certainly did help accelerate the speed with which the projects were approved, as no high-level intervention whatsoever was required to change business capital allocation decisions to move the projects along. However, from a business perspective, these small projects were often not of great interest financially, because even for cases in which these projects promised large rates of return, the actual amount of capital returned to the business would remain insignificant. Further-

TABLE 1

1996 TRI waste generation at Dow

As indicated in public reporting of Dow 1996 TRI wastes and releases, the company's Midland site was a significant source of numerous reportable chemicals.

Chemical	Total waste	Total release	Fugitive air	Stack air	Surface water
Acetonitrile	280,587	1608	1220	383	5
Acrylamide	35,745	1155	411	38	706
Acrylic acid	21,753	3008	1874	1134	0
Acrylonitrile	**242,699**	**28,637**	**21,150**	**7471**	**16**
Allyl alcohol	769	768	768	0	0
Ammonia	595,370	13,595	10,333	3037	0
Antimony compounds	169	164	0	148	0
Benzene	230,225	7681	1557	6117	7
Biphenyl	570,575	599	132	466	1
Bis(chloromethyl) ether	0	0	0	0	0
Bromine	468	468	421	47	0
1,3-Butadiene	**277,223**	**15,419**	**14,357**	**1062**	**0**
1,2-Butylene oxide	536	530	476	54	0
Certain glycol ethers	209,625	1545	1109	29	407
Chlorine	**154,415**	**48,945**	**23,167**	**25,778**	**0**
Chloroacetic acid	598,616	3	1	2	0
Chlorobenzene	320,343	5673	3534	2100	39
Chlorodifluoromethane	9472	8744	8744	0	0
Chloroethane	**208,202**	**204,721**	**14,987**	**189,734**	**0**
Chloroform	83,372	2677	2118	338	221
Chloromethane	**1,529,395**	**9963**	**6169**	**3794**	**0**
Chloromethyl methyl ether	197	197	197	0	0
Chlorophenols	7930	23	6	4	13
Chloropicrin	180	77	68	9	0
Chloroprene	34,958	972	972	0	0
Chromium compounds	**12,294**	**12,294**	**0**	**32**	**0**
Copper compounds	15,990	15,719	0	14	0
Cumene	26,086	52	31	18	0
Cyclohexane	178,168	206	1	205	0
2,4-D	**26,553**	**1613**	**11**	**775**	**827**
2,4-D Sodium salt	3956	0	0	0	0
Decabromodiphenyl oxide	462	376	0	376	0
1,2-Dichloroethane	**7031**	**4092**	**3762**	**330**	**0**
Dichloromethane	**761,740**	**23,390**	**21,736**	**1514**	**140**
2,4-Dichlorophenol	**420,844**	**281**	**70**	**158**	**53**
1,3-Dichloropropylene	884	382	336	46	0
Dimethylamine	207,976	1177	767	410	0
Dinitrobutyl phenol	278,930	3832	32	0	3800

more, although the rates of return were very decent, they were often not the very best investment for Dow capital being considered by the business at that time.

The small amount of capital involved and the rate of return thus worked both for and against most of the pollution prevention projects internally at Dow. The small size helped speed implementation because relatively little review was required to approve the expenditures. The small size hurt because it was harder to interest the businesses in freeing up technical staff to do the initial work to identify potential projects and in pursuing the projects once they were identified strictly on financial grounds. It was at this juncture that the interaction between the activists and Dow helped elevate the importance of these opportunities and influenced business priorities to create success.

• Nearly all the pollution prevention projects were designed and implemented in a relatively short time—less than one year—even those that focused on basic process changes. Much mythology exists concerning the difficult nature of fundamental process changes and what might be necessary to reduce materials inefficiencies. In this project, the process changes that would lead to substantial waste and emission reduction required only a little R&D and analysis and hence were not excessively time consuming for Dow to assess and implement.

• Reduction opportunities were broadly available in the various process lines in the plant; they did not confine themselves to "new" or "old" processes, batch or continuous processes, or a particular type of manufacturing. Again, conventional wisdom had suggested that relatively new processes

Chemical	Total waste	Total release	Fugitive air	Stack air	Surface water
Ethylbenzene	**891,906**	**22,496**	**17,721**	**4,775**	**0**
Ethylene	258,664	258,664	0	258,664	0
Ethylene glycol	279,733	3676	3,665	11	0
Ethylene oxide	5386	4251	3342	909	0
Formaldehyde	**1,370,113**	**47,165**	**44,769**	**0**	**2396**
Formic acid	6766	604	604	0	0
Hydrochloric acid	**1,402,820**	**54,031**	**17,447**	**36,584**	**0**
4,4'-Isopropylidenediphenol	605	1	0	1	0
Methacrylonitrile	1448	945	943	2	0
Methanol	7,496,643	61,781	41,954	15,616	4211
Methoxone	47	2	1	1	0
2-Methoxyethanol	1308	1067	491	576	0
Methyl acrylate	46,222	804	721	24	59
Methyl isobutyl ketone	14,762	22	16	6	0
Methyl methacrylate	8190	1023	949	51	23
Naphthalene	123,925	157	20	87	47
N-Butyl alcohol	15,168	1619	920	699	0
Phenol	411,433	1409	164	1,196	49
2-Phenylphenol	705,115	1586	45	1,540	1
Phosgene	**406,954**	**14**	**0**	**14**	**0**
Phosphoric acid	32,937	0	0	0	0
Picloram	1466	2	1	1	0
Propylene oxide	51,162	11,109	6658	4,451	0
Sec-butyl alcohol	80,688	10	9	1	0
Styrene	**1,492,945**	**186,109**	**33,402**	**139,909**	**0**
1,1,1,2-Tetrachloroethane	**284,804**	**901**	**2**	**899**	**0**
Tetrachloroethylene	**1,453,162**	**39,306**	**35,399**	**3,822**	**85**
Toluene	**2,472,984**	**353,900**	**45,465**	**308,435**	**0**
Trans-1,4-dichloro-2-butene	137	137	137	0	0
2,4,6-Trichlorophenol	**1,021,242**	**319**	**136**	**155**	**28**
Triethylamine	60,931	1288	1128	160	0
1,2,4-Trimethylbenzene	2059	495	275	220	0
Vinyl chloride	**296,018**	**11,350**	**11,288**	**62**	**0**
Vinylidene chloride	**612,907**	**20,654**	**16,165**	**4,339**	**150**
Xylene (mixed isomers)	1,462,809	1985	560	1,395	30
Zinc compounds	13,947	13,947	26	25	0
Total	**30,141,144**	**1,523,415**	**424,940**	**1,030,253**	**13,314**

Note: Chemicals in bold were priorities for reduction.

would already be optimized with regard to efficiencies, that global competition in this industry segment would have already caused all practical improvements to have been implemented. This project largely defied these assumptions.

• There were no regulatory barriers to implementing any of the pollution prevention projects that delivered these results. None of the changes required permit modifications, and no new rules or restrictions were invoked by these actions.

• Finally, confidentiality agreements between the environmental participants and Dow were not necessary; it proved possible to explain both processes and engineering opportunities for reductions with an amount of detail that supported informed conversations about opportunities without disclosing any business-sensitive information. Since confidentiality issues are often considered a barrier to beginning these projects with outsiders of any kind, the experience of this project is quite encouraging.

Reducing pollution in the future

Many in the business community believe that we have gone as far as is practical in our efforts to protect the environment without harming profitability and U.S. commerce. For example, it is commonly stated that we have achieved 90% reductions in industrial emissions to date, and that the last 10% of the reductions will be disproportionately and unnecessarily expensive to achieve (*2*). Yet millions of tons of toxic pollutants are legally discharged into the environment annually, including chemicals that are persistent and/or bioaccumulative and those that can cause toxic effects during a single brief exposure. As populations grow and manufacturing expands, the impact of manufacturing on health and the environment will only worsen unless we fundamentally change what we manufacture and how we manufacture it.

This collaborative initiative suggests that vast additional reductions in toxic wastes and emissions—perhaps as much as one-third or one-half—could be achieved at many if not most of the nation's factories with sufficient motivation and focus. Dow–Midland's conditions are likely typical of much of industry, as the plant has a wide range of old and new processes, batch and continuous processes, and well-known/less-understood chemistries. Thus, across much of industry, it might well be possible to achieve aggressive reductions in a very short time frame and

TABLE 2

The economic benefits of pollution prevention

Reduction of chemical wastes and emissions, some by more than half, achieved by the 17 pollution prevention projects involved a total capital investment of $3.1 million and will provide annual estimated savings of $5.4 million. Units for all numerical waste and release quantities are given in pounds per year.

	Baseline		Funded reductions	
Priority chemical	Waste	Release	Waste	Release
2,4-D	25,167	1054		
Acrylonitrile	231,458	17,392	0	0
Aliphatic process tar, BCI-1	769,776	0	500,000	0
Butadiene	275,389	13,583	43,893	0
Chlorine	32,585	31,116	9842	9842
Chloroethane	210,460	210,460	114,000	114,000
Chloromethane	1,487,657	9253	799,000	798
Chromium	10,948	10,948	1300	1300
Cyclic process tar, BCI-2	1,278,500	0		
Dichloroethane (1,2)	11,604	4166	3000	
Dichlorophenol (2,4)	267,960	281		
Ethylbenzene	1,488,966	36,909	364,800	0
Finished product BCI-1	355,895	1328	10,000	
Finished product BCI-4	739,350	566	319,000	
Formaldehyde	1,387,657	66,653	1,300,000	63,621
HCl-priority	1,392,043	35,862	487,740	7740
Intermediate BCI-4	128,038	0	31,000	
Methylene chloride	489,170	18,608	283,350	339
Phosgene	406,954	14	156,000	
Styrene	2,134,370	110,922	663,554	12,478
Tetrachloroethane (1,1,1,2)	284,807	901	120,000	
Tetrachloroethylene	1,466,099	21,239	984,000	
Toluene	683,020	423,178	243,000	243,000
Trichlorophenol (246)	1,021,222	319		
Vinyl chloride	296,021	11,350	0	
Vinylidene chloride	605,295	20,650	82,000	
Total	**17,480,411**	**1,046,752**	**6,515,479**	**453,118**
Percent reduction			**37%**	**43%**

at a savings to businesses. The initiative vastly raises expectations for what industry could deliver in the short term, without significant harm to its bottom line.

Some policy experts claim that only sources not yet regulated, such as nonpoint sources, pollute enough to be worth additional regulatory attention. Yet, NRDC analysis of TRI data suggests that even if only a very small number of highly polluting facilities undertook aggressive pollution prevention projects such as these, the nationwide loading of toxics could be vastly reduced in a short time frame. NRDC analyzed releases plus transfers to publicly owned treatment works and considered all TRI contaminants except acids and bases, which are high-volume and very readily treated and destroyed. Specifically, the 1997 TRI data (the latest figures publicly available) reveal that only 200 of the 19,000 facilities reporting to the government are responsible for fully 50% of the country's total toxic wastes and releases. A targeted pollution prevention initiative directed at only the top 1% of facilities would reduce loading by nearly one-fifth. TRI reveals a similar pattern of concentrated emitters of specific toxic compounds as well. For example, only 10 facilities are responsible for 67% of the total air emissions of ethylene dichloride and 4 TRI facilities are responsible for 50% of factories' air emissions of mercury. A federal or regional pollution prevention initiative directed only at important facilities, from an overall pollution load perspective, merits serious consideration by EPA and state regulators.

However, the experience of this collaborative project also suggests that business value alone (i.e., the savings inherent in waste reduction) is not a sufficient internal driver of pollution prevention for a business in most instances. To the contrary, pollution prevention projects are often viewed by a business as elegant solutions to a problem they do not think they have. Businesses point to their permits to treat and emit their wastes and the relatively small savings often delivered as reasons for giving these projects low priority in the general scheme of operating their businesses. Strictly from the perspective of business value, why invest staff time and resources on this issue when there are much more pressing problems or profitable opportunities elsewhere within the business? Despite the way they are viewed by environmental professionals, opportunities to reduce waste and save money are not "no-brainers" to businesses; they implement them not if they are a "good" use of their time and money, but only if they are the best use compared to competing proposals. Good pollution prevention projects will not usually be the best use of business time and resources.

Thus, either an aggressive self-directed and voluntary initiative in a trade association or group of companies, or community-based or regulatory pressure is needed to initiate the next generation of pollution reductions possible using pollution prevention techniques. Perhaps an industry sector such as polyurethane foam blowers, which generates very significant methylene chloride emissions from processes across the country that vary little from plant-to-plant, could embark on a pollution prevention initiative in which research supported by the sector would be applied across many plants. Perhaps the Chemical Manufacturers Association, through its Responsible Care Program, could sponsor a showcase pollution prevention project for its members to observe at close range, followed by a sign-up program for members who want to try it themselves to reduce their local environmental impact. Finally, perhaps EPA could contact specific companies at the CEO level with a request to reduce certain emissions to a certain level by a certain date (as it did successfully in its "33/50" program a decade ago), offering technical pollution prevention assistance to facilitate these reductions. These and other sorts of outside initiatives will be necessary to overcome the inertia concerning pollution prevention that we face in most of American industry.

TABLE 3

Reductions achieved via pollution prevention measures

In the monochloroacetic acid (MCAA) production process, wastes associated with vent gas to the incinerator and tars were dramatically reduced through pollution prevention measures such as improved refrigeration. (Data provided are annual figures.)

Source	MSRI chemical	Estimated release reduction (pounds)	Estimated waste reduction (pounds)
Vent gas to incinerator	HCl	0	480,000
	Phosgene	0	156,000
	Vinylidene chloride	0	48,000
Overhead tars	Non-TRI chlorinated Organics (aliphatic tar BCI-1)	0	500,000
	CAC (finished product BCI-1)	0	10,000
MCAA distillation tars	1,1,1,2-tetrachloroethane	0	120,000

Acknowledgment

NRDC gratefully acknowledges financial support provided for this project by the U.S. Department of Energy Office of Industrial Efficiency, EPA, the C.S. Mott Foundation, and the Joyce Foundation. A full description of this project can be found in the NRDC report *Preventing Industrial Pollution at Its Source*, available through Meridian Institute, Dillon, CO, or on the Web at www.nrdc.org.

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ATSDR INDUSTRIAL CHEMICALS AND TERRORISM: HUMAN HEALTH THREAT ANALYSIS, MITIGATION AND PREVENTION

Do not scan

Abstract

Terrorists, warring factions, and saboteurs use chemicals commonly found in communities in industrialized nations to create improvised explosives, incendiaries, and chemical agents. Common chemicals may be used because standard military chemical agents may be difficult or dangerous to manufacture, access, or disperse.

The Agency for Toxic Substances and Disease Registry (ATSDR) developed a 10-step procedure to analyze, mitigate, and prevent public health hazards resulting from terrorism involving industrial chemicals. The procedure includes identifying key information such as potential threats, local sources of chemicals of potential use to terrorists, exposure pathways, impacts on human health and infrastructure, health risk communication needs, and mitigation and prevention methods. The information identified during these steps is then incorporated into emergency response plans and training exercises. Results of applying the 10-step procedure to two communities are discussed.

Introduction

Terrorists sponsored by states, and those with substantial financial resources and technical expertise, may purchase or develop explosives, incendiaries and chemical agents similar to those used by military services. However, several factors limit the use of these weapons by many terrorists, including controlled access to precursor chemicals, difficulty and danger in producing the agents, problems with dispersion of liquid droplets without military munitions, security surrounding government chemical agent stockpiles, and binary chemical agent storage. Industrial chemicals have been used by terrorists as improvised explosives, incendiaries and poisons in several recent

incidents[2,3,4]. While the improvised chemical agents may be less toxic than military agents, many are perceived by the public to be highly dangerous; they have rapid, highly visible impacts on health; they are accessible; and they can be dispersed by smoke, gas clouds, or food and medicine distribution networks.

In response to increasing concerns about chemical terrorism in the United States, the Agency for Toxic Substances and Disease Registry developed a 10-step procedure to assist local public health and safety officials in analyzing, mitigating and preventing such hazards[5,6]. Although the procedure was used to address terrorism in the United States, it may be adapted to conflict zones where industries become targets.

The purposes of this paper are to briefly describe the procedure, and to describe some of the major findings when it was applied to two communities in the United States: a large city in a desert with chemical and entertainment industries, and a county containing several major chemical manufacturing facilities located along a river valley.

Ten-Step Procedure

The procedures consists of the following steps:

1. Identify, assess and prioritize threats
2. Identify local sources of chemicals that may be used in improvised weapons
3. Evaluate potential exposure pathways
4. Identify potential acute and chronic health impacts
5. Estimate potential impacts on infrastructure and the environment
6. Identify health risk communication needs
7. Identify methods to mitigate potential hazards
8. Identify specific steps to prevent the use of industrial chemicals as improvised weapons
9. Incorporate the threat assessment, mitigation, and prevention information into emergency response plans
10. Conduct training exercises to prepare to prevent and mitigate the health threats.

***Step 1**: Identify, Assess and Prioritize Threats*

As a starting point for the first step, national statistics on domestic terrorism were reviewed to identify trends that may have some relevance at the State and local levels[7]. Those statistics indicated that:

- 93% of the incidents involved the use of explosives or incendiaries
- 75% of the incidents occurred in two regions of the country
- 86% of the groups focused on narrowly defined political issues with potential targets that could be identified in advance of an incident, and
- 43% of the targets were businesses or industries, and another 50% involved government staff or property.

The information on national trends dispelled misconceptions about the nature of the threat, and provided strong guidance for identifying and prioritizing threats at the local level. After reviewing the statistics, potential threat groups were assessed based on several characteristics, including potential targets and potential use of industrial chemicals as improvised weapons. In both communities, terrorist groups in the immediate State or region were identified as posing the greatest threats. These groups primarily targeted Federal government infrastructure. However, some of the same groups also espoused a conservative religious agenda, and might

target abortion clinics, gambling casinos, and nightclubs that they find offensive. One of the multi-national corporations located in the river valley community had experienced a chemical disaster at a plant in a foreign nation, resulting in thousands of deaths and injuries. Potential retribution attacks by foreign terrorist groups were considered a significant threat for that industrial facility and the surrounding community.

***Step 2**: Identify Local Sources of Chemicals Used in Improvised Weapons*

"Soft target" sources of chemicals in the two communities mentioned above included:

- chemical manufacturing plants (chlorine, peroxides, other industrial gases, plastics, and pesticides)
- food processing and storage facilities with large ammonia tanks
- chemical transportation assets (rail tank cars, tank trucks, pipelines, and river barges)
- gasoline and jet fuel storage tanks at distribution centers, airports, and barge terminals
- compressed gases in tanks, pipelines, and pumping stations
- gold mines where cyanide and mercury compounds are used
- pesticide manufacturing and supply distributors, and
- educational, medical and research laboratories.

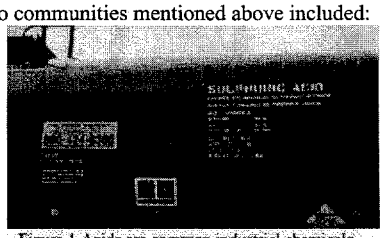

Figure 1 Acids are common industrial chemicals that can be misused as irritants or as ingredients in improvised explosives and incendiaries. Photo by authors.

Some of the more common types of chemicals that could be used in improvised weapons in the communities included:

- eye, skin and respiratory irritants (acids, ammonia, acrylates, aldehydes, and isocyanates)
- choking agents (chlorine, hydrogen sulfide, and phosgene)
- flammable chemical industry gases (acetone, alkenes, alkyl halides, amines)
- aromatic hydrocarbons that could be used as water supply contaminants (benzene, etc.)
- oxidizers for improvised explosives (oxygen, butadiene, and peroxides)
- aniline, nitrile, and cyanide compounds that could be used as chemical asphyxiants
- compressed hydrocarbon fuel gases that could be used as incendiaries or simple asphyxiants (liquified natural gas, propane, isobutane)
- liquid hydrocarbon fuels that could be used as incendiaries or water supply contaminants (gasoline, jet fuel)
- industrial compounds that could be used as blister agents (dimethyl sulfate), and
- organophosphate pesticides that could be used as low-grade nerve agents.

***Step 3**: Evaluate Exposure Pathways*

Five components were evaluated for each potential exposure pathway:

- the source of the chemical (type, duration and magnitude of release)
- delivery methods (transportation routes; fate and transport in air and water; food and drug distribution networks)
- potential targets (businesses and industries, government buildings, animal research

laboratories, abortion clinics, etc.) and adjacent affected areas
- exposure routes (ingestion, inhalation, dermal, and ocular), and
- receptor populations, including sensitive sub-populations such as children, patients in health care facilities, etc.

Figure 2. Chemical transportation assets can be delivered to a wide range of targets. Photo by authors.

Communities with completed exposure pathways (i.e., all five components were potentially present) were identified as high priorities for mitigation and prevention efforts. Three important points were revealed during the pathways analyses. First, unlike military chemical warfare, ingestion is a major exposure route in chemical terrorism, particularly with cyanides, heavy metals, and liquid aromatic hydrocarbons. Second, in both communities, chemical transportation assets posed greater hazards than fixed facilities because substantial quantities of chemicals could be moved closer to potential targets. Finally, it is critically important to identify sensitive sub-populations within each potential receptor population, if possible. For example, in the river valley community, several schools were located adjacent to a facility containing acrylonitrile. Concentrations of acrylonitrile in air that are irritating to adults can be lethal to children.

***Step 4**: Identify Potential Acute and Chronic Health Hazards*

Acute hazards are listed explicitly or can be inferred from the information presented in Step 2. Detailed information can be obtained from a number of government, academic, and commercial sources. References used during the evaluations of the two communities in this paper included :

- the North American Emergency Response Guide Book (http://hazmat.dot.gov/gydebook.htm)
- toxicological profiles, chemical fact sheets, Case Studies in Environmental Medicine, and Medical Management Guidelines published by ATSDR (1-888-422-8737, http://www.atsdr.cdc.gov/)
- fact sheets from the U.S. Environmental Protection Agency (http://www.epa.gov/)
- material safety data sheets from academia http://www.chem.utah.edu/MSDS)
- commercial hazardous substances databases such as TOMES by Micromedix.

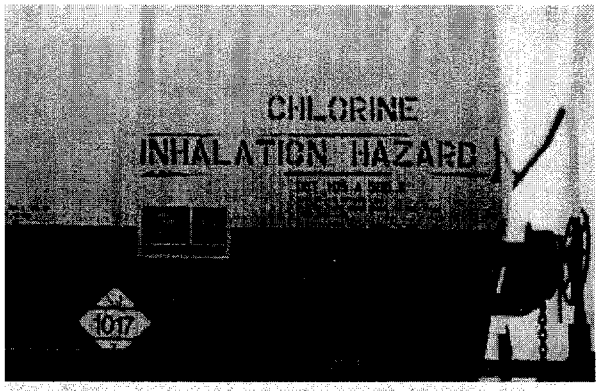

Figure 3: Industrial chemicals can cause acute and chronic health hazards. Photo by authors.

Potential chronic health effects from weapons that could be improvised from sources in the two communities include:

- infections of skin and lung burns, mental depression, and disabilities from incendiaries and explosives
- chronic conjunctivitis and permanent corneal damage from eye irritants
- respiratory diseases (bronchitis, pneumonitis, chronic reduced airway flow) from choking agents
- permanent nerve damage, visual problems, muscle necrosis, psychiatric problems, and memory loss from exposure to organophosphates
- heart, kidney and liver damage from heavy metals, and
- increased risks of birth defects from exposure to nitriles.

Cancer incidence would not be expected to increase in either of the two communities evaluated in response to an acute exposure, although communities are frequently concerned about relationships between chemical exposures and cancers. Long-term medical monitoring would be needed for several of the adverse health effects mentioned above in both communities.

***Step 5**: Identify Potential Infrastructure and Environmental Impacts*

Potential infrastructure impacts identified for the two communities included:

- the need for police, fire and ambulance crews to operate in contaminated environments
- contamination of hospital emergency rooms and staff
- traffic jams and damage to transportation infrastructure (roads, bridges, etc.)
- increased risks of infectious diseases from lack of clean water, disruption of solid waste disposal services, and contact with sewage from broken pipes
- damage to or contamination of government emergency operations centers
- potential need to divert law enforcement personnel to evacuate jail and prison inmates
- disruption of electrical power, telephone, and computer services, and
- destruction, damage, or contamination of houses, schools, and offices.

***Step 6**: Identify Health Risk Communication Needs*

During a major incident, elected officials, the news media, and the public will demand credible information on health risks from exposure to chemical agents, as well as information about casualties, traffic, school children, etc. Health risk communication needs include fact sheets for high-priority chemicals, a formal communications plan, risk communication training, and coordination with law enforcement officials to protect sensitive information.

***Step 7**: Identify Methods to Mitigate Hazards*

Specific steps to mitigate potential hazards and impacts identified during the evaluations of the two communities in this paper included stocking antidotes for cyanide, nitrile, aniline, and organophosphate compounds; specifying alternate emergency operations centers, transportation routes, and medical treatment facilities; preparing paper copies of critical documents in case computer systems fail; and interagency coordination and training exercises. In the river community, emergency response agencies had already distributed "shelter-in-place" instructions to each household in the event of an accidental release. Large electronic billboards in the entertainment section of the desert city could be used for the same purpose. Hazardous materials control infrastructure currently in place at the major chemical plants in the river valley included trained and equipped hazardous materials response crews, a state-of-the-art geographic information system containing detailed industrial chemical information, redundant automated control systems, vapor cloud suppression equipment, expanded highways along evacuation routes in neighborhoods adjacent to the plants, and earth barriers around chemical storage tanks. This infrastructure would be effective in mitigating intentional as well as accidental chemical releases.

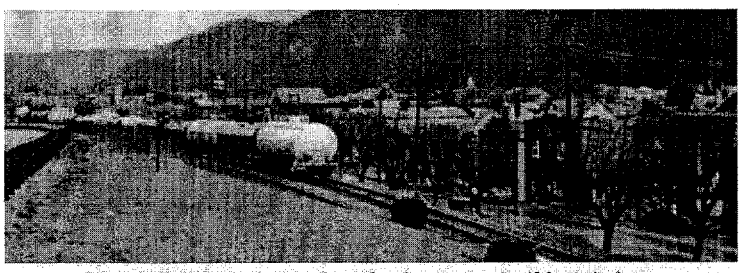

Figure 4. Sheltering in place may be preferred over evacuation if danger is close. Photo by authors.

***Step 8**: Identify Specific Steps to Prevent the Use of Industrial Chemicals as Weapons*

Standard industrial security measures were reviewed with security staff from facilities and potential targets in the river community. These included routine searches for suspect devices, anti-blast curtains or film over windows, high-quality locks and alarms, bomb blankets to cover suspect devices, video surveillance, metal detectors, separate entrance and exit points, bag check-in and searches, security fencing, prohibiting unattended package deliveries, employee identification badges, and decals for vehicles. Although routine security measures at government buildings and abortion

clinics were excellent, security at chemical plants ranged from fair to very poor. Most security gaps were the result of complacency and lack of awareness of the threat (i.e., that almost half of the targets were businesses and industries). Chemical plant security managers were very pessimistic about their ability to deter sabotage by employees, yet none of them had implemented simple background checks for key employees such as chemical process operators. None of the corporate security staff had been trained to identify combinations of common chemicals at their facilities that could be used as improvised explosives and incendiaries, although most were aware of individual chemicals that posed significant fire, explosion or poison hazards. Security around chemical transportation assets ranged from poor to non-existent. Chemical barge terminals were located along the banks of the chemical plants, and were freely accessible along the river side of the facility. Rail and truck assets had no security beyond staging areas. Rail cars containing cyanide compounds, flammable liquid pesticides, liquified petroleum gases, chlorine, acids and butadiene were parked alongside residential areas.

***Step 9**: Incorporate Threat, Mitigation, and Prevention Information into Response Plans*

In the United States, chemical emergency response plans are required by Federal law at the Federal, State and local government levels. Most of the State and local plans currently do not address chemical terrorism, and many of those that do focus on terrorist use of military nerve and blister agents, rather than on the more accessible industrial chemicals. Information obtained during the threat, mitigation, and prevention evaluations is being incorporated into emergency response plans in the two communities.

***Step 10**: Train to Mitigate and Prevent Hazards*

The final step is to train to respond to high-priority, realistic threats. Training should include chemical protective equipment for industrial as well as military chemical agents, victim decontamination and transportation, hospital emergency room operations in a chemical environment, medical management of chemical casualties from admission to discharge, victim registration procedures, industrial security measures related to chemical terrorism, and hazardous materials spill assessment and cleanup procedures in areas that are crime scenes and require preservation of evidence. People generally respond to emergencies in the manner in which they are trained. Failing to train to address the specific aspects of industrial terrorism increases the vulnerabilities of industries and adjacent communities.

Conclusion

Industrial chemicals provide terrorists with effective and readily accessible materials to develop improvised explosives, incendiaries, and poisons. Many public and corporate emergency responders are unaware of the magnitude of the threat of terrorism to businesses and industries. The procedure described in this paper is one way to begin to address that threat. It is also adaptable to industries that may become targets in conflict zones. Vigorous efforts are needed by government personnel and corporate security experts to insure that these threats are identified, and that attacks are mitigated, or better yet, prevented from occurring.

Authors

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II

107TH CONGRESS
1ST SESSION

S. 1602

To help protect the public against the threat of chemical attacks.

IN THE SENATE OF THE UNITED STATES

OCTOBER 31, 2001

Mr. CORZINE (for himself, Mr. JEFFORDS, Mrs. BOXER, and Mrs. CLINTON) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To help protect the public against the threat of chemical attacks.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Chemical Security Act of 2001".

SEC. 2. FINDINGS.

Congress finds that—

(1) the possibility of accidents at, and terrorist and criminal attacks on, chemical sources (such as industrial facilities) poses a serious threat to public

health, safety, and welfare, critical infrastructure, national security, and the environment;

(2) the possibility of theft of dangerous chemicals from chemical sources for use in terrorist attacks poses a further threat to public health, safety, and welfare, critical infrastructure, national security, and the environment; and

(3) there are significant opportunities to prevent theft from, and criminal attack on, chemical sources and reduce the harm that such acts would produce by—

(A)(i) reducing usage and storage of chemicals by changing production methods and processes; and

(ii) employing inherently safer technologies in the manufacture, transport, and use of chemicals;

(B) enhancing secondary containment and other existing mitigation measures; and

(C) improving security.

SEC. 3. DEFINITIONS.

In this Act:

(1) ACCIDENTAL RELEASE.—The term "accidental release" means an unanticipated release of a substance of concern from a chemical source.

1 (2) ADMINISTRATOR.—The term "Adminis-
2 trator" means the Administrator of the Environ-
3 mental Protection Agency.
4 (3) CHEMICAL SOURCE.—The term "chemical
5 source" means—
6 (A) a stationary source (as defined in sec-
7 tion 112(r)(2) of the Clean Air Act (42 U.S.C.
8 7412(r)(2)));
9 (B) a vessel;
10 (C) a motor vehicle;
11 (D) rolling stock; and
12 (E) a container;
13 that contains a substance of concern.
14 (4) COVERED SUBSTANCE OF CONCERN.—The
15 term "covered substance of concern" means a sub-
16 stance of concern that, in combination with a chem-
17 ical source, is designated as a high priority category
18 by the Administrator under section 4(a)(1).
19 (5) CRIMINAL RELEASE.—The term "criminal
20 release" means—
21 (A) a release from a chemical source into
22 the environment of a substance of concern that
23 is caused, in whole or in part, by a criminal act;
24 (B) a release into the environment of a
25 substance of concern that has been removed

1 from a chemical source, in whole or in part, by
2 a criminal act; and
3 (C) the unauthorized removal from a
4 chemical source of a substance of concern.
5 (6) PERSON.—The term "person" has the
6 meaning given the term in section 101 of the Com-
7 prehensive Environmental Response, Compensation,
8 and Liability Act of 1980 (42 U.S.C. 9601).
9 (7) SAFER DESIGN AND MAINTENANCE.—The
10 term "safer design and maintenance" includes, with
11 respect to a chemical source that is within a high
12 priority category designated under section 4(a)(1),
13 implementation, to the extent practicable, of the
14 practices of—
15 (A) preventing or reducing the vulner-
16 ability of the chemical source to a release of a
17 covered substance of concern through use of in-
18 herently safer technology;
19 (B) reducing any vulnerability of the chem-
20 ical source to a release of a covered substance
21 of concern that remains after taking the meas-
22 ures described in subparagraph (A) through use
23 of well-maintained secondary containment, con-
24 trol, or mitigation equipment;

1 (C) reducing any vulnerability of the chem-
2 ical source to a release of a covered substance
3 of concern that remains after taking the meas-
4 ures described in subparagraphs (A) and (B)
5 by—
6 (i) making the chemical source highly
7 resistant to intruders; and
8 (ii) improving security and employee
9 training, including personnel background
10 checks; and
11 (D) reducing the potential consequences of
12 any vulnerability of the chemical source to a re-
13 lease of a covered substance of concern through
14 the use of buffer zones between the chemical
15 source and surrounding populations (including
16 buffer zones between the chemical source and
17 residences, schools, hospitals, senior centers,
18 shopping centers and malls, sports and enter-
19 tainment arenas, public roads and transpor-
20 tation routes, and other population centers).
21 (8) SUBSTANCE OF CONCERN.—The term "sub-
22 stance of concern" means—
23 (A) any hazardous substance (as defined in
24 section 101 of the Comprehensive Environ-

1 mental Response, Compensation, and Liability
2 Act of 1980 (42 U.S.C. 9601));
3 (B) any pollutant or contaminant (as de-
4 fined in section 101 of the Comprehensive Envi-
5 ronmental Response, Compensation, and Liabil-
6 ity Act of 1980 (42 U.S.C. 9601)); and
7 (C) petroleum, including crude oil and any
8 fraction of crude oil.
9 (9) USE OF INHERENTLY SAFER TECH-
10 NOLOGY.—
11 (A) IN GENERAL.—The term "use of in-
12 herently safer technology", with respect to a
13 chemical source, means use of a technology,
14 product, raw material, or practice that, as com-
15 pared with the technologies, products, raw ma-
16 terials, or practices currently in use—
17 (i) reduces or eliminates the possi-
18 bility of a release of a substance of concern
19 from the chemical source prior to sec-
20 ondary containment, control, or mitigation;
21 and
22 (ii) reduces or eliminates the threats
23 to public health and the environment asso-
24 ciated with a release or potential release of

1 a substance of concern from the chemical
2 source.
3 (B) INCLUSIONS.—The term "use of inher-
4 ently safer technology" includes input substi-
5 tution, catalyst or carrier substitution, process
6 redesign (including reuse or recycling of a sub-
7 stance of concern), product reformulation, pro-
8 cedure simplification, and technology modifica-
9 tion so as to—
10 (i) use less hazardous substances or
11 benign substances;
12 (ii) use a smaller quantity of covered
13 substances of concern;
14 (iii) reduce hazardous pressures or
15 temperatures;
16 (iv) reduce the possibility and poten-
17 tial consequences of equipment failure and
18 human error;
19 (v) improve inventory control and
20 chemical use efficiency; and
21 (vi) reduce or eliminate storage,
22 transportation, handling, disposal, and dis-
23 charge of substances of concern.

1 **SEC. 4. PREVENTION OF CRIMINAL RELEASES.**

2 (a) DESIGNATION AND REGULATION OF HIGH PRI-
3 ORITY COMBINATIONS BY THE ADMINISTRATOR.—

4 (1) IN GENERAL.—Not later than 1 year after
5 the date of enactment of this Act, the Administrator,
6 in consultation with the Attorney General and State
7 and local agencies responsible for planning for and
8 responding to accidental releases and criminal re-
9 leases and providing emergency health care, shall
10 promulgate regulations to designate certain com-
11 binations of chemical sources and substances of con-
12 cern as high priority categories based on the severity
13 of the threat posed by an accidental release or crimi-
14 nal release from the chemical sources.

15 (2) FACTORS TO BE CONSIDERED.—In desig-
16 nating high priority categories under paragraph (1),
17 the Administrator, in consultation with the Attorney
18 General, shall consider—

19 (A) the severity of the harm that could be
20 caused by an accidental release or a criminal re-
21 lease;

22 (B) the proximity to population centers;

23 (C) the threats to national security;

24 (D) the threats to critical infrastructure;

25 (E) threshold quantities of substances of
26 concern that pose a serious threat; and

(F) such other safety or security factors as the Administrator, in consultation with the Attorney General, determines to be appropriate.

(3) REQUIREMENTS FOR HIGH PRIORITY CATEGORIES.—Not later than 1 year after the date of promulgation of regulations under paragraph (1), the Administrator, in consultation with the Attorney General and State and local agencies responsible for responding to accidental releases and emergency health care, shall promulgate regulations to require each owner and each operator of a chemical source that is within a high priority category designated under paragraph (1) to take adequate actions, including safer design and maintenance of the chemical source, to prevent, control, and minimize the potential consequences of an accidental release or a criminal release of a covered substance of concern.

(4) REVIEW AND REVISIONS.—Not later than 5 years after the date of promulgation of regulations under each of paragraphs (1) and (3), the Administrator, in consultation with the Attorney General, shall review the regulations and make any necessary revisions.

(b) ESTABLISHMENT OF DUTY TO PREVENT CRIMINAL RELEASES.—Each owner and each operator of a

1 chemical source that is within a high priority category des-
2 ignated under subsection (a) has a general duty with re-
3 spect to covered substances of concern in the same manner
4 and to the same extent as the duty imposed under section
5 5 of the Occupational Safety and Health Act of 1970 (29
6 U.S.C. 654)—

7 (1) to identify hazards that may result from an
8 accidental release or a criminal release using appro-
9 priate hazard assessment techniques;

10 (2) to ensure safer design and maintenance of
11 the chemical source by taking such actions as are
12 necessary to prevent accidental releases and criminal
13 releases; and

14 (3) to minimize the consequences of any acci-
15 dental release or criminal release that does occur.

16 **SEC. 5. ABATEMENT ACTION.**

17 In addition to any other action taken by a State or
18 local government, if the Administrator or the Attorney
19 General determines that there may be an imminent and
20 substantial endangerment to the public health or welfare
21 or the environment because of a potential accidental re-
22 lease or criminal release from a chemical source, or a fail-
23 ure to provide information or access requested under sec-
24 tion 6, the Administrator or the Attorney General may—

(1) secure such relief as is necessary to abate such danger or threat, and the district court of the United States for the district in which the threat occurs shall have jurisdiction to grant such relief as the public interest and the equities of the case may require; or

(2) after notice to the affected State, take other action under this section, including issuing such orders as are necessary to protect public health or welfare or the environment.

SEC. 6. RECORDKEEPING AND ENTRY.

(a) AUTHORITY OF THE ADMINISTRATOR AND ATTORNEY GENERAL.—

(1) RECORDS, REPORTS, AND INFORMATION.—In carrying out this Act, the Administrator or the Attorney General may require any person that the Administrator or the Attorney General believes may have information relating to a potential accidental release or criminal release from a chemical source, or any person that is subject to any requirement of this Act, on a 1-time, periodic, or continuing basis to—

(A) establish and maintain such records;

(B) make such reports; and

(C) provide such other information;

as the Administrator or the Attorney General may reasonably require.

(2) RIGHT OF ENTRY.—In carrying out this Act, the Administrator or the Attorney General (or an authorized representative of the Administrator or the Attorney General), on presentation of credentials—

(A) shall have a right of entry to, on, or through any premises of an owner or operator of a chemical source described in paragraph (1) or any premises in which any records required to be maintained under paragraph (1) are located; and

(B) may at reasonable times have access to, and may copy, any records, reports, or other information required under paragraph (1).

(b) AVAILABILITY OF RECORDS, REPORTS, AND INFORMATION TO PUBLIC; DISCLOSURE OF NATIONAL SECURITY SECRETS OR TRADE SECRETS.—

(1) IN GENERAL.—Except as provided in paragraphs (2) and (3), any record, report, or other information obtained under subsection (a) shall be available to the public.

(2) NATIONAL SECURITY.—The Administrator or the Attorney General may not disclose to the pub-

1 lic any matter or information authorized to be kept
2 secret in the interest of national defense or national
3 security under section 552 of title 5, United States
4 Code.

5 (3) TRADE SECRETS.—

6 (A) IN GENERAL.—On a showing satisfac-
7 tory to the Administrator or the Attorney Gen-
8 eral by any person that the making public of
9 any record, report, or other information, or par-
10 ticular portion thereof, to which the Adminis-
11 trator or the Attorney General has access under
12 subsection (a), would divulge any method or
13 process entitled to protection as a trade secret
14 of the person, the Administrator or the Attor-
15 ney General shall consider the record, report, or
16 other information or particular portion thereof
17 to be confidential in accordance with section
18 1905 of title 18, United States Code.

19 (B) DISCLOSURE FOR PURPOSES OF THIS
20 ACT.—Notwithstanding subparagraph (A), the
21 Administrator or the Attorney General may dis-
22 close any record, report, or other information
23 considered to be confidential under subpara-
24 graph (A) to any other officer, employee, or au-
25 thorized representative of the United States

that is concerned with carrying out this Act or when relevant in any proceeding under this Act.

(c) COMPLIANCE ORDERS.—

(1) IN GENERAL.—If a person does not consent to any request made by the Administrator or the Attorney General (or an authorized representative of the Administrator or the Attorney General) under subsection (a), the Administrator or the Attorney General may issue an order directing compliance with the request.

(2) NOTICE AND OPPORTUNITY FOR HEARING.—An order under paragraph (1) may be issued after such notice and opportunity for hearing as are reasonably appropriate under the circumstances.

SEC. 7. PENALTIES.

(a) CIVIL PENALTIES.—Any owner or operator of a chemical source that violates, or fails to comply with, any order issued or any regulation promulgated under this Act may, in an action brought in United States district court, be subject to a civil penalty of not more than $25,000 for each day in which such violation occurs or such failure to comply continues.

(b) CRIMINAL PENALTIES.—Any owner or operator of a chemical source that knowingly violates, or fails to

1 comply with, any order issued or any regulation promul-
2 gated under this Act shall—
3 (1) in the case of a first violation or failure to
4 comply, be fined not less than $2,500 nor more than
5 $25,000 per day of violation, imprisoned not more
6 than 1 year, or both; and
7 (2) in the case of a subsequent violation or fail-
8 ure to comply, be fined not more than $50,000 per
9 day of violation, imprisoned not more than 2 years,
10 or both.

11 **SEC. 8. NO EFFECT ON REQUIREMENTS UNDER OTHER**
12 **LAW.**

13 Nothing in this Act affects any duty or other require-
14 ment imposed under any other Federal or State law.

15 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

16 There are authorized to be appropriated such sums
17 as are necessary to carry out this Act.

○

RESPONSES OF RENA I. STEINZOR TO ADDITIONAL QUESTIONS FROM SENATOR CORZINE

Question 1. The testimony of Fred Webber points out that there are many existing safety requirements that apply to chemical facilities. In your view, do the authorities and security and hazard reduction measures contained in S. 1602 exist elsewhere in current law?

Response. No, they do not. S. 1602 imposes a deadline for the issuance of comprehensive regulations by EPA that would require chemical facilities to reduce hazards by eliminating the use of acutely toxic chemicals as a remedy of first—not last—resort. There is no other provision in Federal law that requires facilities to eliminate the hazard if at all possible, as opposed to making plans to contain it in the event of a terrorist attack, or, for that matter, a routine accident.

Question 2. The American Chemistry Council and SOCMA testified about the security and transportation guidelines that they have developed and are working to implement. What do you think of the adequacy of the guidelines? Do you think that a voluntary approach to implementing such guidelines would be more effective than the regulatory approach embodied in S. 1602?

Response: I have reviewed the ACC/SOCMA guidelines with great care and was unable to find a single allusion to the possibility that the best way to prevent grave injury in the event of a terrorist attack is to remove the hazardous targets from a facility. It is intuitively obvious that no amount of site security will prove as effective as substituting chemicals that will not prove acutely toxic when released, no matter what the cause. This obvious solution should be the primary focus of any reevaluation of a facility's vulnerability in the wake of the tragedies that began on September 11, 2001. The guidelines' refusal to even mention the possibility of eliminating the hazard as an alternative would be laughable if the underlying subject was not so very serious.

Because the chemical industry exhibits such a blind spot with respect to the absolutely crucial option of hazard reduction, we can have no faith in the effectiveness of voluntary measures. It is extraordinarily unlikely that even a majority of the hundreds of thousands of chemical facilities will strengthen site security voluntarily, especially given the downturn in the economy and the relative expense of such measures. Even if the majority did implement the guidelines, however, the omission of hazard reduction as the remedy of first resort would squander our opportunity to act to avert another disaster.

It is worth noting that most of the terrorist attacks launched on American targets in the last decade or two have involved driving trucks full of explosives up to a facility's gates and detonating these mobile bombs. No amount of barbed wire, security guards, expensive lighting, or warning systems can prevent such attacks. The only way to safeguard public health is to ensure that if they do occur, the substances targeted by the explosion are the least toxic that can be used to carry out the facility's production needs.

STATEMENT OF THE AMERICAN PETROLEUM INSTITUTE

INTRODUCTION

API is pleased to provide a statement for the record on S. 1602, the Chemical Security Act of 2001. The American Petroleum Institute (API) is the leading national association for the domestic U.S. petroleum industry. API's membership includes over 400 companies involved in all aspects of petroleum operations including exploration and production, refining, pipeline, marine and on-road transportation activities.

API opposes S. 1602. It will have an adverse impact on the petroleum industry and on the American economy. It will misdirect critical resources that should be applied to real security-risk reduction activities and it would not improve the safety or the security of our nation's energy supply or the welfare of our citizens.

The bill covers all petroleum facilities in the U.S. Oil and gas production facilities, pipelines, refineries, bulk terminals and storage facilities, service stations and all other installations that produce, refine, process, transport, store or handle crude oil and petroleum products or chemicals will be covered by this bill. In addition to stationary sources, the bill covers containers, vessels, tanks trucks, rail tank cars, and marine vessels. This overly broad bill adds yet another unnecessary and overlapping layer of regulations on the energy infrastructure at a time when our industry is doing all it can to address short and long term adequacy of fuel supplies and other petroleum products for this nation.

BACKGROUND

The petroleum industry is a critical part of our nation's energy infrastructure and continues to make a significant contribution to America's economic growth and national security. In addition to manufacturing consumer fuel products such as natural gas, gasoline and home heating fuel, our industry provides the feedstocks used to make everything from the clothes we wear, to the military equipment that helps protect our American way of life. We do this in a safe and environmentally compatible manner. Over the past 10 years, the demand for energy products has pushed capacity to record levels, while providing the consumer with affordable products at near record low prices. During this same time, the safety record in the industry has improved by over 50 percent. In fact, Bureau of Labor Statistics data show that the petroleum industry is one of the safest industries in America.

The petroleum industry has a long history of developing effective security practices to protect its critical infrastructure. The recent events of September 11th have further increased the industry's awareness of the importance of security. Along with many private initiatives, the industry has developed a trusted partnership with Federal, state and local safety and law enforcement authorities. The industry has recently engaged in an increased level of cooperation with the Federal Government to evaluate and develop effective security practices. However, in this environment of heightened sensitivity, we must all avoid overreacting. Any new laws or regulations should address the right issues, focus resources, and provide real security benefit. This statement discusses the current security initiatives our industry is implementing and the shortcomings of S. 1602.

Since September 11th, API member companies have tightened security practices in the United States. API members include petroleum companies and service and supply companies with international operations. These companies have expertise in operating in high-risk parts of the world. U.S. facilities have benefited from that experience by incorporating these security practices into their own operations. Some examples include: increased perimeter security at fixed-facilities through additional security guards and surveillance equipment; restricted vehicle access to and from facilities; and more extensive background checks.

API is also working with several Federal agencies to establish a security network to streamline communications. Individual companies have established an Energy Information Sharing and Analysis Center (ISAC) that will enable our industry and members of the intelligence community to share information on incidents, security practices and near real-time credible threat information in a secure environment.

SHORTCOMINGS OF S. 1602, THE CHEMICAL SECURITY ACT OF 2001

When addressing security in the petroleum industry, security experts from the Department of Energy, Department of Transportation, Department of Justice and the Office of Homeland Security should be assembled to consult with members of the petroleum industry. Following are some of the specific shortcomings of S. 1602:

• S. 1602 reverses the roles of government and industry by providing the EPA with the authority to dictate appropriate manufacturing practices, while industry is mandated to prevent terrorism. S. 1602 makes it a crime to be a victim of a terrorist attack or criminal act.

• S. 1602 focuses on chemical hazards and not risk scenarios posed by terrorism. September 11th taught us that terrorists select targets based on a number of objectives, not solely on public impact. Principally their targets have included symbols of American economic and military strength.

• S. 1602 focuses on accidental release prevention practices that are already addressed in existing regulations such as the EPA's Risk Management Rule, OSHA's Process Safety Management Rule, and DOT Hazardous Material Regulations.

• S. 1602 relies on the concept of mandated "Inherent Safety." Although "Inherent Safety" sounds good in theory, in practice it is mostly impractical to apply to existing facilities. Changes to part of a petroleum process can have unintended consequences in other parts of the process. Risk shifting has been a common problem of mandated Inherent Safety. For example, by mandating a reduction of product inventory at a fixed-facility, more product deliveries are needed. While you may reduce the risk of a release to the local community around the facility, you may in fact increase the overall risk by increasing the number of on-road transportation activities required to maintain the required product feed needed for production.

• S. 1602 mandates product substitution for petroleum products. Product substitution is not practical in our industry. Petroleum products are capable of heating our homes and powering our vehicles because of their flammable and combustible properties. At this time, there are no substitutes that do not have similar chemical

properties. Mandating Inherent Safety will not change the flammable/combustible properties of these products.

• S. 1602 could mandate the use of buffer zones to protect against terrorist attacks. Establishing buffer zones does not prevent terrorism. Buffer zones are a local government land use practice. In fact, it is not practical in most cases to establish buffer zones around existing facilities.

• S. 1602 could mandate transportation buffer zones that virtually exclude the movement of petroleum products anywhere within the United States. Though the bill uses the words "to extent practicable," it opens the door to local interpretation of where gasoline transportation could take place and result in impacts to the supply of product to gasoline stations that could be near the "buffer zones."

• DOT must maintain jurisdiction over transportation safety and security issues. Hazardous materials are moved with a high degree of safety, which can be attributed to the uniform authority of the Hazardous Material Regulations (HMR) across the country and the expertise of the DOT in writing and enforcing those rules. S. 1602 would create confusion and duplicative roles for EPA and DOT regarding transportation of hazardous materials and would disrupt the national uniformity of current DOT regulations. The negative impact on interstate commerce resulting from variations among state and local regulations would significantly disturb industry operations and complicate compliance obligations while not significantly decreasing the threat of terrorism or criminal acts.

CONCLUSION

S. 1602 is too broad. It identifies all petroleum products as a covered "substance of concern", and all modes of surface transportation (truck and rail) and all containers (drums, pails, plastic bottles, etc.) as "chemical sources." The legislation could extend the definition of a "substance of concern" to a whole new set of petroleum products that are not currently regulated as hazardous materials. The legislation would cover such petroleum products as engine oils and waxes that would not be attractive as a terrorist target. The expansive nature of this proposal unnecessarily imposes Federal law on industry and does not improve security or public safety.

API opposes S. 1602 because it would have a significant negative impact on the energy industry and the American economy; would misdirect resources that should be focused at real security risk reduction; and would not improve the safety or security of our nation's energy supply or the health and well being of our citizens.

STATEMENT OF WILLIAM CANARY, PRESIDENT AND CHIEF EXECUTIVE OFFICER, AMERICAN TRUCKING ASSOCIATIONS, INC. (ATA)

I. INTRODUCTION

Good morning Mr. Chairman and members of this subcommittee. My name is William Canary and I am president and CEO of the American Trucking Associations, Inc. (ATA), with offices located at 2200 Mill Road, Alexandria, Virginia 22314. ATA is the national trade association of the trucking industry. Through its affiliated state trucking associations, affiliated conferences and other organizations, ATA represents more than 30,000 trucking companies throughout these United States. I sincerely appreciate the opportunity to speak to this subcommittee today on behalf of ATA.

Mr. Chairman, in the wake of the September 11 attacks, the U.S. trucking industry has continued to work hard to support America's goals of keeping our country and our economy moving forward. I am very proud of this industry's efforts to keep America moving. In fact, on the morning of September 11, ATA staff were able to view from our headquarters the smoke rising from the attack on the Pentagon, and from the opposite side of the ATA building, they were able to see trucks on the Capital beltway continuing to move America.

As members of this subcommittee know, motor carriers are a critical component of the United States' economic strength, with 9 billion tons of freight transported by intercity and local trucks, representing 68 percent of the total domestic tonnage shipped. The trucking industry generates revenues of $606 billion annually, equaling almost 5 percent of our GDP, and a figure that represents nearly 87 percent of all revenues generated by our nation's freight transportation industry.

As in all other sectors of our country's economy, the horrific attacks have heightened security concerns in the trucking industry, and even more so after it was recently reported by the FBI that some suspected terrorists had obtained commercial driver's licenses (CDLs) to operate large trucks. It appears that motor carriers in-

volved in transporting hazardous materials may have been, or may be, targeted for hijackings or theft for use in potential acts of terrorism. Obviously, this is a major concern to our industry, and I commend you for holding this hearing today to identify ways to address these threats.

In my testimony today, I will communicate ATA's longstanding involvement in trucking security issues, including issues associated with the transportation of hazardous materials and sensitive military freight. I also will recommend several potential legislative improvements to S. 1602, as introduced, to enhance security in the trucking industry without compromising the efficiencies realized through the uniform hazardous materials regulations.

II. ATA'S INVOLVEMENT IN HAZARDOUS MATERIALS TRANSPORTATION SECURITY

ATA and its members are actively involved in providing safe and secure transportation of goods on behalf of customers and their consumers. Since 1982, ATA has maintained a Council of members dedicated to advancing security and loss prevention issues. The name of this organization has undergone numerous changes since its inception, and today is known as the Safety & Loss Prevention Management Council (Safety Council). The Safety Council has two committees, the Security Committee and the Claims and Loss Prevention Committee, that have addressed many trucking security issues, including driver and vehicle security, cargo security, and facility security. The committees consist of security directors, many of whom are former law enforcement personnel, from a broad array of America's leading motor carriers. The committees publish guidelines and educational materials to assist motor carriers to enhance the security of their operations.

Presently, the transportation of hazardous materials must comply with the comprehensive Federal hazardous materials regulations, which are adopted and enforced by the states. Therefore, motor carriers involved with transportation of hazardous materials do work with the states, and their respective permit and registration programs if applicable, to increase transportation safety and prepare for emergency response activities.

Certain classes of hazardous materials are more regulated than others. For instance, high-level nuclear wastes from power plants are closely monitored by several Federal agencies, including the Department of Energy (DOE) and Department of Transportation (DOT). Motor carriers involved in moving this material are prescreened and approved by DOE. In fact, the trucking industry played an integral role in the development of the Commercial Vehicle Safety Alliance's (CVSA) Level VI enhanced radioactive transporter inspection criteria, which is specifically designed to afford a high level of driver, vehicle, and load scrutiny prior to the truck leaving the shipper's facility.

Military shipments are another category of specific concern. Military shipments of Security Risk Category I and II, Arms, Ammunition and Explosives (SRC I & II, AAE), are highly regulated, as are lesser Class I explosive shipments of the Department of Defense (DOD). Prior to transporting these materials, motor carriers must be approved by the DOD, and after approval, they are closely monitored. Drivers are carefully selected and must successfully complete security background checks. Motor carrier terminals must meet certain levels of security as prescribed by the Military Traffic Management Command (MTMC). And, shipments of SRC I & II AAE must be transported directly from point of origin to destination with minimal delay.

Since October 2000, ATA has worked closely with MTMC through ATA's Government Traffic Policy Committee (prior to October 2000, the now-defunct Explosive Carriers Conference of the ATA performed that task) on a number of issues regarding safety and security of DOD shipments. Deliberations continue on MTMC's newest policies and procedures for transportation of SRC I & II AAE, including the recently proposed standards for motor carrier terminals. ATA has provided MTMC with valuable information on possible security concerns and related solutions. The trucking industry views these measures as paramount to the safe and efficient transportation of these materials, and will continue to work with MTMC to see that AAE shipments arrive securely at their proper destination.

ATA also worked with Sandia Laboratories to gather information for its Department of Justice (DOJ) study entitled the "Chemical Plant Vulnerability Assessment Project." This study, which examined the vulnerability of chemical plants that produce chemicals of mass destruction to terrorist attack and included the transportation chain, was presented to the ATA Safety Council's Hazardous Materials Committee in September 2001. ATA's Committee members provided information to Sandia Laboratories earlier in the year concerning transportation security issues of

these types of hazardous materials and will continue to support this important project.

The safe, efficient and secure movement of hazardous materials is of great importance to the trucking industry. Through work with DOT, CVSA, MTMC, Sandia Labs, and a multitude of associations whose members produce chemicals and hazardous materials, ATA and its members have demonstrated that secure transportation of hazardous materials is a primary concern. ATA will continue to work with interested parties to ensure that the transportation of hazardous materials remains one of the safest transportation activities in the world.

III. THE TRUCKING INDUSTRY'S SUPPORT IN THE AFTERMATH OF SEPTEMBER 11TH

Assistance in Relief Efforts

In the aftermath of September 11, the trucking industry worked around the clock to support the relief efforts in New York and Washington by delivering critical cargo to the rescue workers. For example, the Federal Emergency Management Agency worked closely with the New Jersey Motor Transport Association to coordinate truck efforts in and around New York City. Emergency responders and trucking executives coordinating the recovery applauded trucking for its rapid response after the attacks.

As part of their support efforts, trucking companies delivered all types of supplies and equipment to the attack sites including medical supplies, earth moving equipment, communications equipment, emergency generators, mobile lighting trucks for nighttime rescue work, respirators, coveralls, protective gloves, blankets, and thousands of pounds of food and drinks. In addition, many dump truck drivers showed up to volunteer their services and worked 12-hour shifts.

Additional Security Measures Taken by the Trucking Industry

Motor carriers throughout the trucking industry voluntarily took a number of measures to increase the security of their operations immediately following the attacks. Many motor carriers re-evaluated their overall security procedures for pick-up and delivery, for their service locations, terminals and loading-dock facilities, and for dispatch operations to vehicles in cities and on the road. In addition to requesting their personnel to report any suspicious activity to law enforcement personnel, other examples of actions taken include:

- Initiating new background checks through systems currently available to motor carriers;
- Designating specific drivers for specific types of loads and studying the specific routes to be used;
- Instructing drivers not to stop or render assistance except in the case of a clear emergency, and alerting drivers of possible ploys to obtain vehicles for hijacking purposes;
- Emphasizing to all trucking company employees, not only drivers, to stay alert and remain aware of their surroundings at all times, especially when transporting hazardous materials;
- Advising drivers transporting hazardous materials to avoid highly populated areas, whenever possible, and to use alternate routes if feasible;
- Verifying seal integrity at each and every stop. Notifying central dispatch immediately if a seal is compromised; and
- Advising drivers to notify supervisors/managers of any suspicious shipments, and if deemed necessary, to contact local police or law enforcement authorities to request inspection of shipment under safe practices.

These are just a few of the proactive measures that trucking companies around the country took to enhance their operational security for not only on-the-road operations, but also at terminals and other facilities.

ATA Work with DOT and Other Federal Agencies

In addition to the emergency relief efforts of many ATA members, and the additional security measures taken, ATA staff has also worked closely with Federal officials to collect information requested by the Federal Government and to disseminate critical security-related information to trucking companies throughout the country. For example, in the hours and days immediately following the attacks, DOT officials turned to ATA staff to provide information on trucking company security programs. ATA was pleased to share the requested information with DOT officials. Bush Administration officials also requested that ATA provide information on diesel fuel supply and pricing throughout the country. Once again, ATA staff delivered the information. ATA also assisted DOT in communicating information to hazardous materials transporters throughout the country on the agency's upcoming security sensitivity visits. In fact, ATA established an emergency information clearinghouse on its

website, that it continues to update as additional information becomes available. ATA continues to stand ready to assist DOT, the FBI, and any other government agency that needs assistance in these unprecedented times.

IV. THE TRUCKING INDUSTRY'S CONCERNS WITH S. 1602

ATA supports the laudable goal of minimizing the risk of criminal and accidental releases of hazardous materials; however, S. 1602 imposes a new regulatory regime that likely will frustrate the safe and efficient movement of these materials. The proposed legislation does not adequately distinguish the risks presented by stationary chemical storage and production facilities from the risks inherent in the transportation of hazardous materials.

Managing the Risks from Mobile Sources

The proposed legislation does not adequately distinguish the risks from hazardous materials storage and production from the risks of transporting such materials. For example, while the creation of buffer zones around chemical storage and production facilities may be an acceptable way to reduce ancillary damage that flows from the accidental or criminal release of substances of concern, such a requirement is completely unworkable as applied to the transportation of hazardous materials. It is virtually impossible to transport hazardous materials over the road while maintaining a buffer zone around those materials. S. 1602 should be rewritten to make clear that the buffer zone requirement, if implemented, applies only to stationary sources. We also note that buffer zones may be problematic for a large number of trucking terminals that are storing petroleum products. Many of these terminals are located in developed areas, where the additional real estate required to create a buffer zone simply is not available.

RSPA Must be Part of the Regulatory Process

The Research and Special Programs Administration (RSPA) is the agency within the Department of Transportation that has jurisdiction over the transportation of hazardous materials. RSPA's regulations already address the risks of accidental releases from the transportation of hazardous materials, establishing among other things, driver training requirements, container requirements, labeling requirements, and incident reporting procedures. Rather than assigning primary responsibility to RSPA for mandating regulations to address the perceived additional risks from criminal releases of hazardous materials, S. 1602, excludes RSPA from the process and instead vests the Environmental Protection Agency with the responsibility for controlling these risks. The EPA, however, does not have the expertise to address the risks inherent in the transportation of hazardous materials and may promulgate regulations that frustrate the efficient movement of such materials in commerce. On the other hand, RSPA has expertise in the environmental risks associated with accidental releases, and also has the expertise in regulating the transportation of hazardous materials. Accordingly, ATA believes that RSPA should assume the lead role in promulgating regulations applicable to preventing the criminal release of substances of concern while in transportation.

The proposed legislation also requires the lead regulatory agency to consult with local regulators responsible for responding to accidental releases. While this requirement is appropriate for addressing the risks from stationary sources located within the local jurisdiction it is inappropriate for mobile sources and likely will lead to a patchwork quilt of regulations that frustrate the efficient transportation of hazardous materials.

Global Harmonization

Congress has repeatedly recognized that the harmonization of regulations relating to the transportation of hazardous materials is necessary to ensure the safe and efficient transportation of such materials. S. 1602 has the potential to compromise the global harmonization of the hazardous materials transportation requirements, resulting in increased costs, increased transfer of such materials and the increased potential for accidental releases. Each time hazardous materials are transferred, loaded or unloaded, there is an increased potential for an accidental release. Harmonization of the hazardous materials transportation regulations reduces the number of transfers between facilities, resulting in a corresponding reduction in the risk of an accidental release.

Cost-Benefit Analysis

The proposed legislation has the potential to significantly increase the costs of storing and transporting certain hazardous materials. While additional regulatory requirements and the corresponding increase in the costs of transporting hazardous

materials may be an acceptable tradeoff for increased assurance that these materials will not be the subject of a criminal release, the proposed legislation contains no limitation on EPA's authority to require expensive regulatory controls, even in the face of only a marginal decrease in the risk of a release. For this reason, we believe that the legislation should be modified to require the implementing agency to perform a cost-benefit analysis to ensure that the costs of additional regulatory requirements will produce a tangible benefit, namely the elimination or substantial reduction in the likelihood of a release to the environment.

Recordkeeping

S. 1602 authorizes the Administrator to require any person that may have information relating to a potential accidental or criminal release to maintain records and potentially report such information. This requirement as applied to the transportation of hazardous materials is superfluous, as the hazardous materials regulations already require incident reporting. The requirement also is potentially duplicative of EPA's regulations issued under the Emergency Planning and Community Right-to-Know Act. Moreover, there is no guidance provided as to the meaning of a "potential accidental release."

Establishment of a General Duty Clause

One of the most troubling aspects of the proposed legislation is its creation of a general duty clause similar to that contained in the Occupational Safety and Health Act. This provision could make trucking companies liable for an accidental or criminal release, even if they have complied with all of the applicable regulations. This type of provision is unfair as applied to trucking companies. Trucking companies are not security experts. They should be permitted to rely on compliance with the comprehensive set of hazardous materials regulations to reduce the risk of a release of such materials to the environment and not have potential liability in the event of an accidental or criminal release.

V. CONCLUSION

Mr. Chairman, ATA members understand they are entrusted with the secure transportation of goods that keep America moving forward. Law enforcement has frequently been a strong ally in ATA's longstanding efforts to ensure the security of cargo on America's highways and across our international borders. We look forward to continued cooperation with those authorities charged with securing our nation against future terrorist threats. ATA understands the role trucking must play to ensure our national security in this newly changed landscape. The trucking industry asks that Congress ensure that new legislative initiatives distinguish between the risks of accidental or criminal releases from stationary sources and the risks from potential releases from mobile sources. Legislation that is properly tailored to address risks from mobile sources will allow the trucking industry to better fulfill its role to safely and securely transport our nation's freight. Broad legislation that does not distinguish between the inherent risks from mobile and stationary sources likely will complicate the safe and efficient movement of hazardous materials. I am pleased that this subcommittee and the full Commerce Committee have expressed strong interest in advancing our industry's security proposals. As we have in the past, ATA will continue to work to enhance security in the trucking industry.

Thank you for the opportunity to share our views with you.

STATEMENT OF EVERETT ZILLINGER, DIRECTOR, GOVERNMENT RELATIONS, THE FERTILIZER INSTITUTE

On behalf of its membership, The Fertilizer Institute submits this statement and comments of concern regarding S. 1602, the Chemical Security Act of 2001, which is pending before the Senate Environment and Public Works Committee.

ABOUT THE FERTILIZER INSTITUTE

The Fertilizer Institute (TFI) represents by voluntary membership more than 90 percent of the U.S. fertilizer industry. Producers, manufacturers, retailers, trading firms and equipment manufacturers, which comprise its membership, are served by a full time Washington, DC. staff in various legislative, educational and technical areas as well as with information and public relations programs. Together, TFI members produce and distribute approximately 22.0 million tons per year of commercial fertilizers to farmers. The North American fertilizer industry has developed the production facilities and infrastructure necessary to deliver the types and quan-

tities of fertilizer products to farmers within the narrow timeframes of the crop planting and growing seasons.

WHAT IS FERTILIZER?

Fertilizer is simply, food for plants. Just like the human body needs vitamins and minerals, plants need nutrients in order to grow. Also like humans and animals, plants need adequate water, sufficient food, and protection from diseases and pests to be healthy. To grow and reproduce, plants need large amounts of three basic nutrients-nitrogen, phosphorous, and potassium.

Nitrogen, for example, is part of every plant's proteins and is a component of DNA and RNA, the genetic "blueprints" of life itself. Taken up in larger amounts than other nutrients, nitrogen makes plants green and is usually most responsible for increasing yields. Phosphate helps plants use water efficiently, promotes root growth, and improves the quality of grains. Potassium, commonly called potash, is important because it is necessary for photosynthesis, which is the production, transportation and accumulation of sugars in the plant. Potash makes plants hardy and helps them to withstand the stress of drought and helps the plant fight of disease.

Today's commercial fertilizer industry was founded on the revolutionary scientific discovery in the last part of the 18th century that chemical elements play a direct role in plant nutrition. This initial concept opened the way for industrial scale manufacturing of fertilizers of all types in the 19th century. Following World War II, new technologies allowed for the rapid expansion of fertilizer production. Coupled with growing food demand and the development of higher-yielding crop varieties, fertilizer helped fuel the Green Revolution.

FERTILIZERS PROTECT THE ENVIRONMENT

The efficient use of fertilizer also helps to conserve our natural environment. With fertilizers and modern high-yield farming practices, more food is produced per acre each year so land may be conserved. Fertilizers used properly, works to maximize yields on farmland already in production while helping to prevent the widespread loss of forests, rainforests, and environmentally important habitat. Use of marginal land, and habitat for "slash and burn" low-yield farming represents a major global environmental threat.

FERTILIZERS IMPROVE OUR WAY OF LIFE

Fertilizers enhance many consumer products. For example, thanks to fertilizers, fruits and vegetables are available in affordable abundance year around in every state of the nation. Nitrogen is used to make nitric acid, a major component in batteries, tires, lacquers and paints. Many soda drinks contain phosphoric acid, derived from phosphate, and many bath soaps and detergents contain potash.

Fertilizers are also at work in industry. Aside from their benefits to agriculture, fertilizer components are central to such industrial processes as semiconductor chip making, resin manufacture, cattle feed production, metal finishing, the manufacture of detergents, fiberglass insulation and even rocket fuel needed for our space, satellite and communications industries.

FERTILIZERS FEED THE WORLD

Finally, and most importantly, fertilizers are critically necessary in order to feed our world's growing population. As the world's population continues to climb toward an estimated 8.5 billion in the year 2040, experts estimate that food production must increase more than 2 percent annually just to maintain current diets. For example, commercial fertilizer nitrogen (N) accounts for approximately half of all N reaching global croplands today and supplies food needs for at least 40 percent of the population. Due to global population increase and the expansion of global prosperity and diet quality, it is estimated that at least 60 percent of humanity will eventually owe its nutritional survival to N fertilizer. (Smil, V. 2001. Enriching the Earth. MIT Press, Cambridge Mass.)

FERTILIZERS CONTRIBUTE TO THE AMERICAN WAY OF LIFE

The United States and many other developed nations are blessed with safe, abundant and affordable food. Thanks to fertilizers, the productivity of U.S. farmers and livestock producers and an efficient agribusiness processing, storage and transportation system—Americans spend less than 8 percent of their disposable income on food. This leaves 92 percent of American's disposable income for travel, entertainment, spacious homes, multiple cars, college tuition or a vast array of consumer

products and activities that contribute to our way of life. Today, the abundance of food we enjoy is just one way fertilizers help enrich the world around us.

FERTILIZERS ARE REGULATED

Commercial fertilizers are extensively regulated in the United States both at the Federal and state levels. The industry must comply with Federal laws regarding reporting and emission standards for air and water quality. The industry must also comply with many other Federal laws including but not limited to: the Resource Conservation and Recovery Acts (RCRA), the Clean Air Act (CCA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Coastal Zone Management Act (CZMA), the Occupational Safety and Health Act (OSHA) and the Community Right-to-Know Act (EPCRA).

State regulation of fertilizer products is primarily concerned with consumer protection, labeling, the protection of human health and the environment, and the proper handling and applications of fertilizers.

RESPONSE TO TERRORISM

TFI members have greatly increased security procedures since September 11th, and we thank those Federal, state and local agencies that have worked with our individual facilities to improve our security programs. TFI and its member companies have worked closely with Federal agencies such as the Federal Bureau of Investigation (FBI), the Coast Guard, and the Environmental Protection Agency. In addition, we have cooperated with numerous state and local agencies, including emergency response personnel, to heighten security at our industry's manufacturing sites, storage facilities, transportation infrastructure and retail outlets.

Our industry also has worked extensively to protect against misuse of our products, most notably through our voluntary "Be Aware" and "Be Secure" campaigns created in partnership with the U.S. Federal Bureau of Alcohol, Tobacco and Firearms (BATF). These important efforts have proven effective and successful in assisting our industry's retail sector and local law enforcement to be alert and suspicious people trying to purchase beneficial fertilizer products for potentially criminal purposes-and to report any suspicious activity immediately to the proper authorities. Future security efforts should buildupon these existing working relationships.

VIEWS ON S. 1602

In light of the already extensive Federal and state regulations addressing commercial fertilizer products and the industry's proactive voluntary efforts noted above, TFI submits this statement of comments regarding the advisability and purpose of S. 1602.

SUMMARY OF S. 1602, THE CHEMICAL SECURITY ACT OF 2001

On October 31, 2001 Senators Corzine, Jeffords, Boxer and Clinton introduced S. 1602, The Chemical Security Act of 2001. The legislation proposes to safeguard facilities where hazardous chemicals are present by giving EPA and the Justice Department authority to issue administrative orders or seek court orders requiring facilities to take immediate steps to improve security. These steps could include improvements to personnel security, as well as changes in a facility's physical structure or operations.

Specifically the bill:

- Requires each owner or operator of a high priority chemical source to take actions including safer design and maintenance to prevent, control and minimize potential accidental or criminal releases;
- Defines "safer design and maintenance" as the use of inherently safer technology, well-maintained secondary containment, control or mitigation equipment, making a chemical source highly resistant to intruders, improving security and employee training including employee personnel background checks, use of buffer zones between a chemical source and surrounding populations centers.
- Defines "inherently safer technology" to include input substitution, catalyst or carrier substitution, process redesign, product reformulation, procedure simplification and technology modification;
- Establish a "general duty" requiring each owner or operator to identify hazards that may result in an accidental or criminal release. As a result, facilities would have the general duty to prevent criminal activities for which they had no knowledge or participation. If operators fail to prevent criminal releases then the owner or operator is subject to the criminal penalties noted below;

• Requires EPA and DOJ to consider severity of harm caused by a chemical's accidental or criminal release and a chemical's proximity to population centers, potential threat to national security and critical infrastructure;

• Requires EPA and DOJ to designate those chemical manufacturers and transporters most at risk;

• Defines a chemical source as a stationary source, vessel, motor vehicle, rolling stock or container;

• Allows EPA and DOJ to seek relief in district courts to abate danger or threat to the public health and welfare or the environment from an accidental or criminal release and issue such orders as necessary to protect public health or welfare of the environment;

• Requires record keeping, reporting and provides EPA or DOJ the right of entry on any premises of an owner or operator of a chemical source and copying of any records or information necessary;

• Provides for civil penalties of up to $25,000 a day and criminal penalties of no less than $2,500 a day or no more than $25,000 a day, or imprisonment (or both) of an owner or operator of a chemical source that violates, fails to comply with or knowing violates orders issued or regulations promulgated as a result of this Act.

Following is a listing of specific concerns regarding S. 1602, and the effects the legislation could have on the North American fertilizer industry:

1. Prevention of accidental releases is very different than prevention of terrorism acts. These should not be viewed as equivalent activities.

- Accident prevention involves ensuring equipment integrity, managing process parameters and emergency planning and execution. It is a facility-specific process that focuses on maximizing the routine of efficient, safe chemical production.
- Terrorism prevention involves securing infrastructure, scrutinizing all personnel and materials that move onsite, and implementing anti-terrorism infrastructure and programs. It is an extroverted process that focuses on the unusual, unknown or asymmetrical.
- While there are areas of overlap, prevention of accidental releases will not prevent terrorist threats and vice versa.

2. The bill as proposed creates redundant accidental release activities.

- Accidental releases at facilities are already covered under two existing regulatory frameworks—EPA's Risk Management Plan and OSHA's Process Safety Management programs.
- Many of the provisions in this legislation, including definitions, general duty clauses, and activities are taken from these existing regulations, making this legislation redundant to existing laws.
- DOT's HM223 covers loading, transportation and unloading of hazardous materials.
- By definition, a criminal release means that some law was broken. Therefore, a release caused by a criminal act is already unlawful. Existing (pre-September 11th) security measures at most facilities are geared toward minimizing criminal activity onsite.

3. S. 1602 may have unintended consequences for both industry and homeland security.

- The bill is too heavily focused on chemicals rather than overall security issues. An inflexible law (and subsequent regulations) makes it hard for individual industries and facilities to comply because of the narrow definition of compliance.
- Some chemicals, such as ammonia, are both an end-product (i.e., fertilizer) and an intermediate. There are no substitutes for ammonia and no safer production method than that currently used. Further, storage of ammonia in large quantities is necessary because of the unique seasonal demands of the product.
- Publishing a list of "high priority combinations" in the Federal Register is in itself a terrorist tool and increases designated facilities' terrorism vulnerability.
- Many compliance activities would be redundant with existing RMP and PSM provisions, and will take personnel and resources away from true security functions.
- This designation will greatly increase insurance premiums, increase terrorism exclusions in new policies, and price industries out of the terrorism insurance market. Given current state of insurance companies, they may decide to refuse insurance to anyone on the "high priority combinations."
- Many provisions of this bill do not account for possible substitution risks. For example, if domestic ammonia production falls and the demand for im-

ported ammonia rises, then there would be increased risks associated with large barges from the Middle East, FSU, Asia, and Central/South America coming into ports around large metro areas. Likewise, focusing on production, transportation and storage of smaller quantities may lower the catastrophic risk, but greatly increase the overall risk because of the addition of more storage tanks, more individual transportation units on the roads and in navigable waters and increases in the number of small production facilities.

- There is no data base of "inherently safer technologies." Nor could it be easily or quickly assembled. There are no existing criteria for designation of "inherently safer technologies." Some methodology is also needed to balance security considerations vs. energy efficiency, quantity and types of emissions, and other substitution risks. In fact, most of the manufacturing and handling processes now in place were designed with process safety in mind.
- The general duty clause combined with liability provisions creates both ethical questions and substitution risks. Industry has greatly increased its security since September 11th and continues to urge Federal and state agencies to work with our individual facilities to prevent terrorist activities. The Federal Government should adopt a compliance assistance model for future anti-terrorism initiatives.
- Most facilities have greatly increased security and are working with applicable Federal, state and local agencies. Future security efforts should buildupon these existing working relationships.
- Successful anti-terrorist programs must involve joint agency-industry cooperation and coordination. Because security is facility and chemical specific, increased security is best achieved by guidance, protocols and joint programs in which facilities work with applicable and relevant Federal agencies in a cooperative fashion.
- Facilities are most interested in speaking with those Federal agencies that can provide them with specific recommendations for surveillance, security and anti-terrorism measures that can be implemented at their facilities.
- No facility or infrastructure system can be certified as terrorism-proof; that is, there is no zero-risk scenario for industry. We do urge Federal agencies to develop a means of prioritizing of infrastructure based on real risks. Some assessment of costs, benefits and substitution risks should also be considered.
- We are interested in a mechanism for secure exchange of information, data and security suggestions among Federal agencies and industry. Facilities would like to receive detailed information on specific or general threats. We would also like feedback when suspicious activity or potential incidents are reported to the proper authorities. We would prefer to avoid situations in which Federal agencies use either "right of entry" or "abatement actions" without previous consultation. These should be the last action taken in an anti-terrorism effort, not the only tool in the toolbox.
- Some decision will need to be made on balancing right-to-know considerations with security interests. Making all information collected during a "right of entry" or other visit available on the Internet is in itself a potential terrorist tool and is in itself a major vulnerability. We feel that access to facility-specific information should be taken out of the public domain and limits should be placed on FOIA requests for these data.

FOCUSING FUTURE INDUSTRY/GOVERNMENT PARTNERSHIPS

The Federal Government should adopt a compliance assistance model for future anti-terrorism initiatives. Successful anti-terrorist programs must involve joint agency-industry cooperation and coordination. Because security is facility and chemical specific, increased security is best achieved by guidance, protocols and joint programs in which facilities work with applicable and relevant Federal agencies in a cooperative fashion.

TFI members are most interested in speaking with those Federal agencies that can provide them with specific recommendations for surveillance, security and anti-terrorism measures that can be implemented at their facilities. We are interested in a mechanism for secure exchange of information, data and security suggestions among Federal agencies and industry. Facilities would like to receive detailed information on specific or general threats. We would also like feedback when suspicious activity or potential incidents are reported to the proper authorities.

Some decision will need to be made on balancing right-to-know considerations with security interests. Making all information collected during a "right of entry" or other visit available on the Internet is in itself a terrorist tool and increases designated facilities' terrorism vulnerability. We feel that access to facility-specific in-

formation should be taken out of the public domain and limits should be placed on FOIA requests for these data.

CONCLUSION

For the above reasons, TFI and its membership oppose S. 1602 as written in its current form. Our members urge the Senate to build on the existing cooperative relationships between industry and agencies that have formed since the September attacks.

TFI looks forward to working with the authors, cosponsors, members of the committee and U.S. Senate in addressing these and other important chemical security concerns in a more cooperative, realistic and effective approach to keeping our nation's vital chemical products, including fertilizer, secure.

TFI appreciates the opportunity to make this statement.

STATEMENT OF RICK HIND, LEGISLATIVE DIRECTOR, GREENPEACE TOXIC CAMPAIGN

IS THE U.S. CHEMICAL INDUSTRY OUR WEAKEST LINK AGAINST TERROR ATTACKS?

The magnitude of a terrorist attack on just one major U.S. chemical facility could easily exceed the loss of life suffered on September 11 in New York City. We are overdue in addressing the inherent vulnerability of this industry to terrorists and accidents. Recent events underscore the immediacy of this threat including the two nation-wide security alerts by the FBI and a 72-hour moratorium by the railroad industry on carrying chemicals such as chlorine.

Even President Bush was at risk. On September 11, when Air Force One landed in Louisiana, he joined more than a million Louisiana residents who live in a region that is blanketed by chemical kill zones (*www.greenpeaceusa.org*). These kill zones surround more than 100 petro-chemical facilities located along the Mississippi River from Baton Rouge to New Orleans. A regional investigation by the Agency for Toxic Substances and Disease Registry found security against terrorists at selected U.S. chemical facilities to be "fair to poor."

Thankfully, there has never been a terrorist attack on a U.S. chemical facility. But there have been more than 13,000 accidents involving more than 10,000 pounds of hazardous materials since 1987, with smaller incidents occurring daily. A December 2000 study by the Argonne National Laboratory for the Department of Transportation concluded, "the failure to identify and evaluate opportunities to reduce the risks from these types of relatively rare accidents could ultimately lead to thousands of fatalities, injuries and evacuations."

Senator Corzine's bill (S. 1602) would finally begin the urgently needed process of addressing this crisis. It not only requires beefed up security it also puts prevention first, encouraging industry to eliminate catastrophic accidents and attacks by substituting inherently safer technologies. We applaud the Senator and his colleagues (Madame Chairwoman Boxer and Senator Clinton) for introducing and cosponsoring this important legislation.

More than 15,000 facilities across the U.S. are required to report their worst case accident scenarios to the EPA. These reports contain estimates on the distance that a deadly toxic chemical cloud could extend over neighboring populations. Unfortunately, pressure has recently been put on the EPA to deny public access to this basic information. Denying access to these reports will only accomplish one thing: it will leave the public without vital information needed to protect themselves in the event of an attack or an accident. Hiding basic hazards information from the public undermines the credibility of government and industry and will lead to dedicated terrorists being the only non-governmental people outside industry to have this information.

After using terrorism as an argument to hide potential chemical disasters, the U.S. chemical industry has been negligent in preventing accident and terrorist threats posed by chemical facilities, making, using or storing ultra-hazardous chemicals such as chlorine. Earlier this year Greenpeace exposed a significant example of this failure by publishing photographic evidence from inside a Dow Chemical plant in Plaquemine, Louisiana. The photos are also available on our web site (*www.greenpeaceusa.org*) show the internal control panels and operating instructions of an unguarded pump house that releases 550 million gallons of wastewater into the Mississippi River every day.

While investigating Dow's Clean Water Act violations, Greenpeace activists entered this facility undetected. There were no guards at the perimeter, no security cameras and no burglar alarms. In fact, the door to the building was unlocked. All of these are rudimentary security measures that the EPA recommended in their

February 2000 security alert. The EPA also recommended "design" changes in plants that even fewer facilities have implemented.

In Washington, DC this month, Blue Plains, the local sewage treatment plant announced (Nov. 9th) that they were now 1 year ahead of schedule in ending the use of the highly toxic chlorine gas. The reason given for this accelerated action was the possibility of a terrorist attack. The plant is only four miles from the U.S. Capitol. According to the National Transportation Safety Board, the Coast Guard and the chlorine industry, a major chlorine gas leak can travel two miles in only 10 minutes and remain acutely toxic for a distance of approximately 20 miles.

Greenpeace recommends a set of short and long-term steps to truly eliminate these unnecessary and preventable disasters. In the short-term these include the immediate adoption of S. 1602 by Congress. In addition, an emergency program is needed to ensure there is a rapid phaseout of shipping large quantities of these chemicals along with reductions in large quantity storage to levels that eliminate current threats posed to local communities. Other short-term actions should include the decentralized production of these substances to eliminate pressure for large container transport and storage.

In the long-term, virtually all of the ultra-hazardous chemicals used in the U.S. have safer substitutes and conversion to them should begin as soon as possible. To end toxic chemical pollution in the Great Lakes the International Joint Commission (U.S./Canada) recommended in 1992 that industry and government begin a phaseout of the industrial uses of chlorine. Had this recommendation been initiated in 1992, we would have had a model program for eliminating the threats now posed by these inherently dangerous facilities.

America needs many systems to function, such as our besieged airline industry and the postal system. But we do not need to continue producing obsolete and ultra-hazardous chemicals that pose enormous risks to the public-with or without the threat of terrorist attack.

GREENPEACE,
Washington, DC., August 10, 2001.

Secretary NORMAN MINETA,
Department of Transportation,
Washington, DC.

DEAR SECRETARY MINETA: The fire in Baltimore's train tunnel, adjacent to Camden Yards, was a wake up call to the nation. Those who said it could never happen now must resort to claiming it will not happen again. To prevent a more serious chemical accident than the July 18–23 Baltimore tunnel fire aboard the CSX freight train, Greenpeace proposes that the Department of Transportation impose an immediate ban on the shipping of hazardous materials through highly populated communities. As you know, the transport of hazardous materials through either of Baltimore's two highway tunnels is punishable by a year in jail.

The heroic deeds of Baltimore and other emergency response personnel not withstanding, this incident could easily have been catastrophic. According to a recent report done for the Department of Transportation (DOT) by the Argonne National Laboratory, "the potential exists for very serious accidents involving large numbers of injuries and fatalities, especially for TIH [toxic-by-inhalation] materials."

The report further cautions:

"While review of the statistics alone might suggest that accidents associated with the transportation of hazardous materials should not be a major concern, these accidents can have enormous impacts when they occur. As a result, the failure to identify and evaluate opportunities to reduce the risks from these types of relatively rare accidents could ultimately lead to thousands of fatalities, injuries, and evacuations."

As one of the leaders in Congress who led efforts to enact the Federal right-to-know law in 1986, you know that legislation only became an imperative after the worst industrial accident in history occurred at the Union Carbide facility in Bhopal, India in December, 1984. A leak of methyl isocyanate (MIC) killed approximately 4,000 people and injured hundreds of thousands.

The Argonne report estimates that there are 100,000 shipments a year of equally toxic chemicals such as chlorine. In fact, Argonne lists chlorine and hydrochloric acid (HCL) among the top 10 materials responsible for major injuries and evacuations and emphasizes the need to focus on these TIH materials.

Enclosed is a map of a hypothetical release of 17,000 gallons of chlorine from a railroad tank care accident whose toxic fumes could reach 20 miles. According to the National Institute for Occupational Safety and Health, chlorine gas concentrations

of 10 parts per million (PPM) are classified as "immediately dangerous to life or health" (IDHL). And according to modeling by the National Transportation Safety Board and U.S. Coast Guard, a chlorine gas cloud could travel 2 miles in just 10.5 minutes at concentrations of 100 PPM. The chemical industry's Chlorine Institute also estimates that a chlorine cloud could travel 20.5 miles at concentrations above 10 PPM.—Baltimore is 9 miles wide and 10.5 miles long.

Clearly, this kind of catastrophe is unacceptable. It is also completely preventable. By prohibiting the shipment of these materials through populated areas, you dramatically reduce the numbers of exposed people. However, to eliminate these risks for all communities, the Federal Government should also convene a multi-agency task force to address these hazards. A first step would be to implement the recommendations of the International Joint Commission which has repeatedly advised the U.S. and Canada to "sunset the use of chlorine and chlorine-containing compounds [such as HCL] as industrial feedstocks."

Also enclosed is a copy of our letter to the EPA regarding their agreement to conduct dioxin sampling from the Baltimore train tunnel fire site. Because the fire aboard the CSX train involved thousands of gallons of leaking HCL, the conditions may have been ideal for the formation and release of dioxins. Dioxins are by-products of chlorine compounds exposed to fire and are potent carcinogens. It is important to determine if emergency response personnel, the community or biota in the harbor were exposed to dioxin as well.

Thank you for your immediate attention to this matter.

Sincerely,

RICK HIND,
Legislative Director.

GREENPEACE,
Washington, DC., August 17, 2001.

MS. CHRISTINE TODD WHITMAN,
EPA Administrator,
U.S. Environmental Protection Agency,
Washington, DC.

Dear MS. WHITMAN: As you may know, a number of serious incidents involving hazardous materials and toxic chemicals have renewed concerns that a chemical accident on the scale of the 1984 Bhopal, India disaster could occur in a large populated area in the U.S., such as Philadelphia or Baltimore. These and several other U.S. cities are home to high concentrations of chemical facilities and are also heavily traveled by trains, trucks and ships carrying ultra-hazardous cargo, putting densely populated communities and business centers at risk.

According to a recent report done for the Department of Transportation (DOT) by the Argonne National Laboratory, the risks in transporting hazardous materials are potentially catastrophic. The report cautions:

"While review of the statistics alone might suggest that accidents associated with the transportation of hazardous materials should not be a major concern, these accidents can have enormous impacts when they occur. As a result, the failure to identify and evaluate opportunities to reduce the risks from these types of relatively rare accidents could ultimately lead to thousands of fatalities, injuries, and evacuations."

The enclosed map illustrates a worst case scenario submitted to the EPA by Occidental Chemical for a chlorine tank failure of 400,000 pounds at their facility in New Castle, Delaware. They estimate that dangerous chlorine fumes could spread 20 miles from their plant, an area populated by 585,000 people. In addition, the map shows a similar scenario involving a train accident involving a 90 ton chlorine tank car with toxic chlorine also reaching 20 miles. These two scenarios blanket populated areas in Delaware, Pennsylvania, Maryland and New Jersey where millions of people live and work.

The DOT report estimates that there are 100,000 shipments a year of chlorine alone. In fact, they list chlorine and hydrochloric acid (HCL) among the top 10 materials responsible for major injuries and evacuations. They also emphasize the need to focus on these highly toxic-by-inhalation (TIH) substances.

According to the National Institute for Occupational Safety and Health, chlorine gas concentrations of 10 parts per million (PPM) are classified as "immediately dangerous to life or health" (IDHL). According to the National Transportation Safety Board and U.S. Coast Guard, a chlorine gas cloud could travel 2 miles in just 10.5 minutes at concentrations of 100 PPM.

Two recent incidents in the Mid-Atlantic region have served as a sobering wake up call. On July 17 the catastrophic failure of a storage tank containing spent sulfuric acid at Motiva Enterprise's Delaware City, DE refinery resulted in eight injuries and left one person missing. On July 18 a CSX train derailment and tunnel fire paralyzed Baltimore for 5 days while hydrochloric acid and other toxic chemicals burned off and leaked into the Baltimore harbor.

Even without accidents, chemical facilities in this region pose serious hazards to human health and the environment:

Occidental's Delaware chlorine plant uses an obsolete mercury-cell chlor-alkali process to make chlorine that threatens the region with contamination from fugitive emissions. It is one of 11 remaining mercury-cell plants in the U.S., representing approximately 14 percent of chlorine manufacturers. The others use mercury-free processes such as diaphragm and membrane processes. According to the Agency for Toxic Substances and Disease Registry, the largest commercial use of mercury in the U.S. is in mercury-cell chlorine plants which account for 35 percent of all domestic consumption of mercury.

The EPA is currently engaged in a partnership with Occidental and the other chlorine industry users of mercury that will perpetuate their use of 80 tons of mercury a year. One EPA official admitted that this program is a "best of the worst" project. This kind of sweet-heart deal further calls into question the credibility of the Bush Administration's proposal to delegate environmental enforcement to the states.—"Enforcing" unnecessary mercury use and ongoing chlorine risks can hardly be called protecting the environment.

In contrast, European nations who are members of the Paris Convention for the Prevention of Marine Pollution from Land-Based Sources (PARCOM) agreed in 1990 to phaseout all mercury-cell chlor-alkali plants by 2010.

Other chlorine users in this region include Dupont, which recently reported that it's Edge Moor, Delaware plant was responsible for 500,000 tons of dioxin-contaminated waste. Dupont's titanium dioxide plant uses a chlorine process which results in the generation of dioxins and furans as waste by-products. Dioxins and furans are chlorinated by-products of the use of chlorine in manufacturing and disposal, such as waste incineration.

To prevent the most serious chemical accidents Greenpeace proposes a three stage process:

(1) In an August 10 letter to the Department of Transportation we proposed an immediate ban on the shipping of hazardous materials through highly populated communities. For example, the transport of hazardous materials by truck through either of Baltimore's two highway tunnels is punishable by a year in jail but trains routinely carry hazardous materials through the center of Baltimore. As an interim measure, makers of TIH substances should also be urged to make batches of these substances for local-use-only to minimize any shipping of these materials.

(2) To eliminate these risks for all communities, we recommend that a multi-agency task force be convened to prioritize the most hazardous chemicals first. The next step in this process would be to implement the recommendations of the International Joint Commission which has repeatedly advised the United States and Canada to "sunset the use of chlorine and chlorine-containing compounds as industrial feedstocks."

Likewise, the global treaty you signed in Stockholm this May requires the phaseout of the worst persistent organic pollutants (POPs), including the elimination of dioxin. President Bush has pledged to seek Senate ratification of the POPs treaty this summer but the elimination of dioxin will also require a long-term commitment to phaseout chlorine. The major industrial uses of chlorine are PVC plastics, solvents and bleaching paper. All of these uses have widely available safer alternatives such as vegetable-based plastics, water-based solvents and oxygen-based bleaching.

(3) In the meantime, the chlorine industry should at a minimum be required to eliminate the use of all their remaining mercury-cell processes by 2010 as the European PARCOM countries have agreed to do.

The worst industrial accident in history occurred at the Union Carbide facility in Bhopal, India in December, 1984, when a leak of methyl isocyanate (MIC) killed approximately 4,000 people and injured hundreds of thousands. We in the U.S. are fortunate that an accident of this magnitude has not yet occurred here. However, if and when a similar disaster occurs, you will be asked why the continued manufacture and use of ultra-toxic chemicals was allowed, especially when safer alternatives were available.

Thank you for your immediate attention to this matter.

Sincerely,

RICK HIND,
Legislative Director.

STATEMENT OF THE NATIONAL ASSOCIATION OF CHEMICAL DISTRIBUTORS

BACKGROUND ON NACD

The National Association of Chemical Distributors (NACD) is the leading association of chemical distribution companies in the United States. Chemical distributor companies purchase and take title to chemical products from manufacturers. Member companies process, formulate, blend, re-package, warehouse, transport, and market these chemical products. These companies collectively employ more than 20,000 workers and serve a customer base of approximately 750,000. The typical NACD member company, nonetheless, is a small enterprise that maintains lean operations in a highly competitive market. Most facilities operated by NACD member companies employ approximately 15–25 workers each. NACD's approximately 330 member companies have a vital interest in transporting hazardous materials safely.

RESPONSIBLE DISTRIBUTION PROCESSS (RDP)

As a condition of membership in NACD, chemical distribution companies are required to adhere to and be verified on the Codes of Management Practice of the Responsible Distribution Processs (RDP). RDP is a member-driven initiative, developed by NACD members in 1991, which promotes continuous improvement in environmental, health, and safety performance of all member companies. Member companies' implementation of RDP includes a commitment to comply with relevant environmental, health, and safety regulations as they apply to company operations. The senior executive in each NACD member company has formally accepted these principles.

Members of NACD are required, as a condition of membership, to undergo independent third-party verification. RDP requires two stages of third-party verification of a member's written policies and procedures. Continuous improvement in environmental, health, and safety performance is taken very seriously. In fact, NACD has terminated 12 companies for failing to comply with RDP. Many of these companies, following their termination, realized the value of RDP to their business, and came into compliance with RDP, to become eligible for re-admission as an NACD member.

RDP has gained national and international recognition and visibility. Insurance companies, for example, are recognizing the strength of the RDP program. One major, national carrier offers a reduction in its premium for NACD members, based on the member company's compliance with RDP. In addition, this carrier provides a premium credit equal to the full cost of an On-Site MSV because its thoroughness replaces the need for the insurance carrier to send a team onsite.

In addition, one Federal agency has recently recognized RDP as a risk management compliance tool. The U.S. Environmental Protection Agency (EPA), in its Risk Management Program (RMP) Guidance for Chemical Distributors, states that companies that adhere to RDP may have taken the necessary steps to comply with some RMP requirements. RDP Codes similar to EPA's RMP accident prevention requirements include Risk Management, Emergency Response and Public Preparedness, Compliance Review and Training, Job Procedures and Training, Handling and Storage, Corrective and Preventive Actions, and Product Stewardship. A side-by-side comparison between RMP accident prevention and emergency response requirements and similar RDP Codes are published in the EPA guidance. NACD's RDP Code of Management Practice, Adjunct Policies, and Implementation Guide details each RDP Code.

CURRENT REGULATORY REQUIREMENTS OF NACD MEMBERS

In addition to their commitment and responsibilities under RDP, NACD members are subject to a myriad of Federal regulations (EPA, DOT, DOL, DEA, BATF). For example, many members must comply with the U.S. Environmental Protection Agency's (EPA) Risk Management Program (RMP), a mandatory program to implement risk management and accident prevention methodologies. In addition, some members are required to comply with the Occupational Safety and Health Administration's (OSHA) Process Safety Management (PSM) Standard, another comprehensive regulation to prevent workplace accidents. Importantly, there are numerous Department of Transportation requirements under the Hazardous Materials Regulations (HMR) that NACD members must follow because transportation of hazardous materials is a major part of their business—chemical distribution. S. 1602 would unnecessarily duplicate these laws and regulations.

S. 1602, THE CHEMICAL SECURITY ACT

Like Senator Corzine and the other sponsors of S. 1602, we are deeply concerned about the safety and security of our products, employees, friends and neighbors. Clearly, NACD members have a vested interest in ensuring the safe handling and distribution of the thousands of products they sell to hundreds of thousands of customers. Unfortunately, S. 1602 will not help them reach this goal any more effectively then they do today.

NACD companies were concerned about security and safety before the tragic attacks of September 11, 2001; now it is a primary focus. While we cannot at this time disclose the specific steps each member has taken to enhance its security, NACD members have made security a top priority by hardening their facilities and vehicles against potential attacks. In fact, in conjunction with other industry partners, including the American Chemistry Council (ACC), NACD has helped develop industry site and transportation security guidelines. In addition, these same industry partners have met on a weekly basis at the CEO level with representatives from the FBI, DOT, EPA (including directly with Administrator Whitman), Commerce and other Federal departments agencies to facilitate information exchange, transfer best practices and focus on security concerns. NACD has diligently distributed security information from Federal agencies to our members on a weekly and sometimes daily basis. NACD has brought in external security consultants to its regional and annual meetings to help educate members on how to enhance their site and transportation security.

LEGISLATION IS PREMATURE

This legislation is unnecessary and premature at best. S. 1602 attempts to remedy an alleged security problem before it has been determined if and where vulnerabilities may exist. The Department of Justice through Sandia National Laboratories is currently studying chemical site security. Further studies of the security of hazardous materials transportation are being contemplated. It makes more sense to make these studies a top priority and then determine what course of action to take rather than to rush in and regulate with limited information.

There can be a steep price to pay for acting too hastily. As we saw with the Risk Management Program regulations, NACD and many other industry members strenuously argued for years that making that information broadly available would unnecessarily expose chemical companies to possible terrorist attacks. Many members of this committee dismissed these concerns and insisted that worst-case scenarios be posted on the Internet unrestricted. Fortunately, EPA and the DOJ came to the realization that some protection was needed, and post September 11, EPA has since pulled much of this information off the Internet. Unfortunately, the authors of S. 1602 seemed to have not learned this lesson. Section 6 of the legislation provides for broad access to information unless it can be demonstrated that release of the information should not be disclosed for reasons of national security. This type of information is undoubtedly in the interests of national security and the burden of proof should be reversed: those seeking the information should demonstrate an overriding need for it.

TRANSPORTATION ISSUES

The authors of this legislation severely underestimate the impact it could have on the economy of our industry and staggering American economy. For example, in Section 3 the "buffer zones" between chemical sources and surrounding populations defy explanation and are not practical in the real world. NACD members ship over 30 billion pounds of product annually, how are they to continue these necessary deliveries? It is not clear how these deliveries can be buffered from public transportation routes already used without devastating consequences for our members and the broader economy. DOT has studied this issue extensively and controls risk through routing standards, packaging, material segregation and separation and numerous other requirements. It should be noted that there are over one million shipments of hazardous materials per day, yet only an average of 11 deaths per year can be attributed to hazardous materials releases. EPA involvement in the process is redundant and unlikely to produce any security benefits.

Transportation is a primary area where the legislation overreaches and overlaps existing Federal regulation. The Hazardous Materials Transportation Act (HMTA) already heavily regulates chemical distribution, including loading, unloading, storage, intrastate, interstate and international commerce. However, S. 1602 inserts EPA into this process by requiring it to assess the vulnerability of chemical trans-

portation and address those concerns. That is in direct conflict with DOT's pre-existing jurisdiction. How will this relationship work?

Further, S. 1602, designates "substances of concern" that overlap and conflict with the pre-existing definition of "hazardous materials" already in regulation and practice. Confusion over these definitions will place unnecessary hardship on NACD members without enhancing security. In fact, the legislation is overly broad, unnecessarily covering a wide range of chemicals. Many, if not most of them are not security risks. That is another reason why it is better to wait for the studies currently underway to determine those products and facilities that pose legitimate concerns and then act accordingly. This approach avoids the needless and wasteful use of limited Federal and industry resources.

In addition, DOT already shares jurisdiction with DOL over the training of hazardous materials employees. S. 1602 inserts EPA into this area, needlessly complicating employee training with no appreciable security benefit. Further, DOT already has jurisdiction for background checks for certain persons involved in aviation or drivers of hazardous materials. Does S. 1602 supercede these existing laws and regulations, including the recently passed anti-terrorism legislation (USA Patriot Act, Public Law No: 107–56)?

The HMTA already carries civil and criminal penalties for violations that are stronger than those proposed in Section 7 of S. 1602. In its recently submitted reauthorization proposal to Congress, DOT proposes to expand its enforcement authority. S. 1602 moves in the opposite direction on this issue and further reveals the ignorance of pre-existing regulations covering many of these areas of concern.

S. 1602 could also threaten DOT's preemption authority, which is a primary factor in the industry's sterling safety record. Safety and security depend upon uniform standards so that the millions of hazardous materials shipments can be prepared and transported by employees who know what the requirements for these products are. This uniformity is equally important to local emergency response personnel. This approach contrasts starkly with the general statutory authorities administered by EPA which set minimum Federal standards and allow states to exceed them. Under the HMTA, Congress has given DOT unique authority and S. 1602 should not alter it.

OTHER ISSUES

Further, it is not at all clear how the Corzine legislation fits with the authority of the newly formed Office of Homeland Security, headed by Governor Ridge. The last thing the legislation ought to do is to duplicate, or worse yet, conflict with what another agency is doing to increase security.

NACD is particularly troubled by the General Duty Clause in S. 1602. Employers already have a general duty to their employees and contractors under OSHA regulation to maintain safe workplaces and under EPA regulation to identify workplace hazards, design and maintain safe facilities, and minimize the consequences of an accidental release. General Duty clauses are usually vague and leave a regulatory authority and/or the courts much latitude to determine an employer's guilt or innocence. Establishing yet another clause will do little to add more protection for the public or add more effective measures against terrorism.

Finally, and perhaps most notably, NACD is not aware that EPA or DOJ or any other Federal agency has asked for the authority resembling this legislation in any form.

CONCLUSION

NACD shares the noble of goal of the Corzine legislation. However, that goal is more likely to be reached through partnership with industry, not dictation to it. With numerous Federal regulations applicable to the chemical distribution industry, as well as NACD members' adherence to the comprehensive environmental, health, and safety continuous improvement program—RDP—there is sufficient availability of both regulatory and selfadministered programs currently existing and being implemented. This legislation would merely burden our members in an economically difficult environment without increasing security.

STATEMENT OF THE NATIONAL PROPANE GAS ASSOCIATION

The National Propane Gas Association (NPGA) appreciates the opportunity to present our concerns with S. 1602, as well as safety and security issues related to the September 11, 2001 terrorist attacks.

NPGA is the national trade association of the LP-gas (principally propane) industry with a membership of about 3,800 companies, including 39 affiliated state and regional associations representing members in all 50 states. Although the single largest group of NPGA members are retail marketers of propane gas, the membership includes propane producers, transporters and wholesalers, as well as manufacturers and distributors of associated equipment, containers and appliances.

Propane gas is used in over 18 million installations nationwide for home and commercial heating and cooking, in agriculture, in industrial processing, and as a clean air alternative engine fuel for both over-the-road vehicles and industrial lift trucks. Propane is a non-toxic substance designated as a clean air alternative fuel in both the Clean Air Act Amendments of 1990 and the Energy Policy Act of 1992.

It goes without saying that the September 11, 2001 terrorist attacks completely changed America's public policy priorities and agenda. Before that date, the debate over chemical usage by industry centered on reducing or eliminating industrial accidents involving toxic substances. Now the terms of the debate have changed to emphasize the safety of the American people from deliberate attempts to cause harm through willful and wanton destruction. Individual companies have long sought to protect themselves, their employees, and their assets from criminals and vandals, and while these efforts are typically effective, they are not designed to ward off deliberate acts by suicidal killers. NPGA believes that while it may be impossible in every case for private sector businesses to defend themselves against attack from secretive, intelligent, patient, and well-trained terrorists, this does not mean that renewing one's commitment to safety and security will not accrue benefits. Indeed, as Americans move beyond the horror of the attacks, issues of public safety will forever be viewed through the lens of private security.

NPGA believes that policymakers and the media need to avoid debates that only serve to stir up uncertainty and fear in the United States. For example, a study by Argonne National Laboratory was used to buttress a November 12, 2001 *Washington Post* article entitled "Toxic Chemicals' Security Worries Officials." The Argonne data underpins a chart showing relative numbers of deaths and injuries, but it is important for Congress and others to know that the U.S. Department of Transportation—the Argonne report's sponsor—has essentially disavowed it and removed it from its website. The weaknesses of the Argonne study were made even more stark in a study performed by Visual Risk Technologies Inc. which concluded that "the study results [are] extremely suspect."

Likewise, there are many weaknesses in S. 1602. Among other things, this bill would set up a bureaucratic nightmare of duplicative regulations that would overlap existing Federal departmental jurisdictions causing the type of confusion that invariably weakens compliance. For example, S. 1602 requires the EPA Administrator to issue regulations within 1 year of enactment designating certain combinations of chemical sources and substances of concern as high priority categories based on the severity of the threat posed by an accidental release or criminal release from the chemical sources. This would duplicate the scope and purpose of the Risk Management Program regulations required by Section 112(r) of the Clean Air Act Amendments of 1990. Moreover, it would require high-level negotiations with DOT because it specifically covers hazardous material motor vehicles, rolling stock, and containers, all of which are subject to existing DOT regulations.

S. 1602 would also require EPA to subsequently issue additional regulations to require each owner/operator of a chemical source within a high priority category to take adequate action, including safer design and maintenance, to prevent, control, and minimize the potential consequences of an accidental or criminal release. In the case of the propane industry, this would require EPA to duplicate fire safety regulations which already exist in every State based upon National Fire Protection Association safety standard 58 (NFPA 58), Liquefied Petroleum Gas Code, an ANSI consensus standard. NFPA 58 has been the primary source of propane industry safety regulations for 70 years. Congress should not seek to increase regulatory confusion in the propane industry because confusion will only lead to less safe operations.

Finally, S. 1602 would make all information generated in implementing its provisions to be made available to the public except in cases of national security or trade secrets. This field has already been thoroughly plowed in the debate over the Fuels Regulatory Relief Act of 1999 which severely limited EPA's ability to publish detailed industrial worst-case scenario data on the internet for public—and terrorist—consumption.

Propane industry participants are well-versed in the need for product safety and stewardship, and the industry has been consistently proactive in this regard. Industry achievements and objectives are most visible in the debate over the Fuels Regulatory Relief Act of 1999; in a negotiated retrofit program agreed to by industry and

DOT; and a multi-million dollar industry-funded program to inform emergency responders on how to protect themselves.

In 1999, the industry anticipated the potential harmful uses of sensitive data required under EPA's Risk Management Program regulations. At NPGA's urging, Congress passed the Fuels Regulatory Relief Act of 1999 to forbid EPA from publishing worst-case scenarios on the internet and to require EPA to exempt from the RMP rules flammable substances used as fuel. NPGA demonstrated that the RMP rules, if allowed to stand, would have: (1) harmed the human health and the environment by encouraging fuel switching to less environmentally benign fuels; (2) reduced safety by creating incentives to demand more small deliveries; and (3) burdened hundreds of thousands of propane customers with substantial Federal paperwork requirements.

S. 1602 would contradict the Fuels Regulatory Relief Act of 1999 with no justification. Congress unanimously passed this law after multiple hearings and appropriate committee consideration. Congress heeded the concerns expressed by firefighters and other emergency responders, large and small businesses, many sectors of the industrial community, Federal, State, and local regulators, and others. With regard to the propane industry, there simply is no reason to undermine this recent congressional decision.

Also in 1999, NPGA negotiated with DOT an estimated $50 million industry-wide retrofit of delivery vehicles to install the latest electronic delivery control devices and make other important operational changes that will increase safety. This program is making an already safe industry even safer. Propane is typically delivered from terminals to storage facilities in tractor-trailer size trucks. As part of the negotiated rulemaking with DOT, the propane industry agreed to retrofit these delivery vehicles on an aggressive schedule with the most advanced technology. Under regulations implemented by the U.S. Department of Transportation, all new vehicles of this type must have a passive shut-down system installed, i.e. no human intervention is needed to activate it in the event of a leak. All local delivery vehicles (bobtails) are being retrofitted with remote shutdown devices allowing drivers to stop the delivery of propane in the event of an emergency. The entire fleet of trucks must be retrofitted with the appropriate system no later than each truck's first scheduled pressure test after July 1, 2001.

In recognition of their importance to public safety, NPGA members are also closely tied in with emergency responders at the local level. Storage inventory data is provided in a standardized format to local fire departments through Emergency Planning and Community Right-to-Know Act reporting. Moreover, the industry is most proud of its multi-million dollar Propane Emergencies program which is the best source of information for preventing or responding to propane emergencies. This program has been sent free of charge by the industry to every professional and volunteer fire department in the United States. Developed by a team of highly qualified propane product and container specialists from NPGA, this program is a comprehensive educational safety program which includes a textbook, facilitator's guide, and videotape that establishes a new level of readily accessed reference information, along with workshops and interactive scenarios that increase the knowledge of procedures to use in the event of a variety of real-world emergency situations.

This award-winning program was launched as a cooperative effort between the NPGA and the Propane Education & Research Council (PERC). The need for the development of high quality emergency response resources and training materials is a recognized priority within both the propane industry and emergency services community. Funded by industry assessments paid to PERC, the propane industry's financial commitment has permitted the creation of a 240-page textbook covering the physical properties of propane, design and construction features of both bulk and non-bulk propane containers, typical emergency scenarios, and tactical guidelines and considerations.

Safety in the propane industry is also enhanced by the rigorous regulation at the state level through National Fire Protection Association safety standard 58, LP-Gas Code. NFPA 58 is a comprehensive safety consensus standard adopted either by reference or direct incorporation into state regulations in all 50 states without exception. Very few propane industry operations are unaffected by the provisions of this standard.

In addition to industry initiatives to increase the safety and security of our nation's fuel supply, the propane industry has many other aspects that need to be borne in mind by policymakers as decisions are made to allocate resources against potential future terrorist attacks. Among the most obvious are:

• *Odorized* vs. *non-odorized propane.*—Propane destined for use as a fuel is given an odorant called ethyl mercaptan to alert people of its presence in the air as a safety feature. Odorization serves the same purpose as a siren—it's an alert mechanism.

Propane has one of the most distinctive odors that clearly alerts people into taking precautions. To the extent that Congress chooses to address sectors with higher risks, Congress could address those sectors that utilize non-odorized propane.

• *No lumpers.*—The propane industry does not utilize so-called "lumpers" to unload its products at customer facilities. Lumpers are individuals typically paid by a driver to unload his vehicle in the event he is prevented from doing so by union rules. Often, companies do not hire workers to unload the vehicle either, so lumpers do the work. This is often found in the grocery and furniture industries.

• *There is virtually no "walk-by" sale of propane.*—Propane marketers store their supplies at storage facilities from which deliveries are made via truck to tanks at customers' locations. Most tanks at customer locations are owned by and served exclusively by a single propane marketer. These marketers therefore maintain substantial information about their customers, such as amounts delivered, storage capacity, and payment history. The fact that propane supplies are controlled by a single company for much of the delivery chain increases security.

• *Propane delivery vehicles are highly specialized and recognizable.*—Because of the unique nature of this product, propane delivery vehicles are used almost entirely for a single commodity. They are constructed to meet exacting DOT specifications and regulations and are highly durable. It is a common practice for the propane container to be reused for propane delivery multiple times on different chassis. Virtually all of the industry's delivery trucks are owned by the company doing the delivery, and all bear the required DOT placards and labels.

NPGA strongly believes that these features of the propane industry—combined with the aggressive, multi-million dollar safety program established by industry participants—reduce the risk of accidental or purposeful releases of propane in the United States.

Congress and appropriate executive branch agencies have a shared responsibility to ensure the safety and security of the American people. However, Congress and the executive branch also have the responsibility to acknowledge the existing ongoing efforts of the private sector to increase its own safety and security. The propane industry is clearly in the forefront of these positive efforts.

As Congress considers legislation to increase the safety and security of hazardous materials use and transportation in the United States, NPGA urges Members of Congress to review the following recommendations. First, any requirement to perform background checks on drivers seeking to obtain or renew hazardous materials endorsements to commercial drivers' licenses should establish a goal of moving toward instant CDL background checks similar to the program for purchasing firearms. Such a program would greatly reduce waiting time, administrative burdens on the license-issuing agencies in the states, and allow government to access the latest watchlist information.

Second, Congress should seek to set up incentives to develop and deploy high technology to track safety and security of hazardous materials shipments, drivers, and other assets. Providing incentives is far preferable to mandating particular solutions because incentives allow private industry to continually develop better performing technologies that fit their unique needs.

Third, Congress should provide tax incentives to decentralize storage capacity for critical winter heating fuel supplies. In the same way that such fuel storage tax incentives help increase the dependability of America's fuel delivery infrastructure, end users of heating fuels will be less susceptible to disruptions due to terrorism if the industry is given incentives to increase their decentralized storage capacity.

Fourth, NPGA strongly opposes expanding the funding scope of the Hazardous Materials Emergency Preparedness (HMEP) Grants program beyond those areas currently authorized in the Hazardous Materials Transportation Act (HMTA). There is already an insufficient level of congressional oversight of the HMEP program, and authorizing use of funds for terrorism will only make this problem worse. The propane industry has spent tens of millions of dollars voluntarily for worthwhile programs that make a real difference in safety, such as Propane Emergencies, and NPGA believes that expanding the scope of the HMEP program will only serve to justify extraction of additional millions from the hazardous materials transportation industry, the bulk of which comes from small companies.

Finally, if Congress believes that an approach such as that proposed in S. 1602 is warranted, NPGA urges the scope of the bill to be limited to toxic substances. This is clearly the focus of the public debate on terrorism, along with biological and nuclear weapons, and it would maintain consistency with Congress' debate over the Fuels Regulatory Relief Act of 1999.

Thank you for this opportunity to present NPGA's views on S. 1602. Should you have questions or require further information, please do not hesitate to call.

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