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CHEMICAL ATTACK ON AMERICA: HOW VULNERABLE ARE WE?

HEARING

BEFORE THE

COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS UNITED STATES SENATE

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CHEMICAL ATTACK ON AMERICA: HOW VULNERABLE ARE WE?

WEDNESDAY APRIL 27, 2005

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS
Washington, DC.

The Committee met, pursuant to notice, at 10:02 a.m., in room SD–562, Dirksen Senate Office Building, Hon. Susan M. Collins, Chairman of the Committee, presiding.

Present: Senators Collins, Stevens, Voinovich, Warner, Lieberman, Levin, Akaka, Lautenberg, and Pryor.

OPENING STATEMENT OF CHAIRMAN COLLINS

Chairman COLLINS. The Committee will come to order. Good morning.

Today this Committee begins a series of hearings on the security of our chemical industry and its vulnerability to terrorist attack. Our ultimate goal is to determine whether the risk of a terrorist attack on the chemical industry warrants a legislative solution, and if so, what that solution should entail.

One of the most sobering lessons of September 11 was that terrorists will use the productive tools of our society against us as weapons. There were more than 5,000 commercial airliners ready to fly American skies that day. The terrorists only had to commandeer four to use as missiles to murder some 3,000 people.

The threat of a chemical attack takes two basic forms: first, causing a harmful release of chemicals from a facility, and second, the theft of chemicals from a facility for use at another time and place. According to a recent report by the Congressional Research Service, during the 1990's both domestic and international terrorists attempted many times to cause the release of chemicals from manufacturing or storage facilities.

There is evidence that the second approach has been attempted as well. One of the 1993 World Trade Center bombers was employed as a chemical engineer. He used company stationery to order the chemical ingredients to make the bomb. In addition, testimony at the bombers' trial indicated that they had successfully stolen cyanide from a chemical plant and were planning to introduce it into the ventilation systems of office buildings.

According to the EPA there are at least 15,000 facilities across the country that use, manufacture, or store large quantities of extremely hazardous chemicals. To us, those facilities are vital parts of our economy that create jobs and improve our lives. To our en-

emies, they are weapons waiting to be used against an unsuspecting population. And, like the airliners of September 11, it would take only a few, or even one, to cause a horrifying loss of life and enormous economic harm.

The potential of productive chemicals to cause terrible harm was made clear in the early morning hours of December 3, 1984, in Bhopal, India. The improper filling of a water tank at a plant that made pesticides led to the release of a cloud of poisonous gas that drifted across that city of some 850,000 people. Within a few hours, thousands were dead, and hundreds of thousands were sickened.

On another historical note, it was 90 years ago this month, in April 1915, that the first major chemical attacks were launched in World War I. The chemicals that caused so much death and horror on the battlefields of the Western Front were not the bizarre concoctions of diabolical scientists, but rather the useful tools of industry, such as chlorine and phosgene. The compound that formed mustard gas, the most dreaded chemical weapon of all, was being investigated elsewhere as a treatment for cancer.

But we do not have to travel back nearly a century in time to see that terrorists have used chemicals as weapons. We know that Saddam Hussein used chemical weapons against both the Iranian people and his own citizens. It has also been reported that chemical trade publications have been found in al Qaeda hideouts.

The Department of Homeland Security is assessing the potential for worst-case scenarios involving the release of hazardous chemicals in the United States. The findings thus far are alarming. The Department has identified 297 chemical facilities where a toxic release could potentially affect 50,000 or more people. The EPA, which uses a different methodology, has numbers that are even more alarming. Nothing will ever diminish the loss that we experienced on September 11, but the consequences of a chemical attack could be even greater, both in terms of the loss of life and the economic impact.

A study released last month by the Government Accountability Office details the many challenges that remain in protecting our chemical infrastructure. The GAO found that there is no comprehensive Federal approach to chemical facility security. Federal regulations that have been enacted were done to help prevent and mitigate the accidental release of hazardous chemicals, but these were not designed to secure facilities against terrorist attacks. Hazardous chemicals raise important environmental safety issues, but it is time that we recognize our obligation to address the security implications as well.

Today, we begin to lay the foundation for a national strategy addressing chemical security. In addition to describing what should be done to better protect our chemical industry from terrorism, our expert witnesses will provide valuable insight into how it should be done.

Earlier this month, I accompanied Senator Joseph Lieberman as an observer of the TOPOFF 3 terrorism exercise in Connecticut. This test of our counterterrorism and emergency-response capabilities simulated a chemical attack at a waterfront festival in New London, Connecticut, while a simultaneous biological attack was mounted in New Jersey.

It was an enlightening and an alarming experience. The attack itself was decidedly low-tech and low cost. A car bomb detonated at a fairgrounds parking garage, spewed deadly chemicals, likely stolen or fraudulently obtained, over fairgoers. Had it been a real attack, there would have been hundreds dead and thousands sickened. The New London waterfront would have been contaminated, and the economy of the entire region would have been devastated.

The first responders who participated in this exercise rushed to the scene and were tenacious in their efforts to aid the victims. Our efforts in Congress, working with the private sector and with the Administration to prevent such a chemical attack must be the same.

Senator Lieberman.

OPENING STATEMENT OF SENATOR LIEBERMAN

Senator LIEBERMAN. Thank you, Madam Chairman, for that excellent statement, and thank you for your leadership on this issue. You have identified this, I think, quite correctly, as a gap in our homeland security defenses, and I am confident that though this is a complex matter, that under your leadership we are going to get something done to protect the American people from the risk of chemical accidents in this session of Congress.

Your opening statement, not surprisingly because we spend so much time together, so clearly mirrors what I wanted to say that I am just going to draw briefly from my statement and include the rest of it in the record.

The first point is that we live in a society, in a world where we depend on a diverse and remarkable assortment of chemicals in our daily lives, from cleaning compounds to life-saving medicines. Chemical plants, oil refineries, wastewater treatment plants and pharmaceutical companies all manufacture and store chemicals and pesticides in large quantities in thousands of places around our country, often near large population centers.

The fact is, the consequences of an accident or an attack, which is what we are focused on here, are disastrous. I just quote briefly from EPA, Environmental Protection Agency, which says that there are at least 123 chemical facilities in the United States where an attack or an accident could endanger a million people. That is, at each of the 123 locations an attack could endanger a million people because they are so near concentrations of population. There are actually 3,000 chemical facilities in the country where an attack could endanger 10,000 people. These are mega disasters that could occur.

The Army Surgeon General issued a report saying as many as 2.4 million people could be killed or injured in a terrorist attack against a toxic chemical plant in a densely populated area.

I always hesitate to read these numbers because one does not want to create panic. On the other hand, they demonstrate—from very independent dispassionate authorities—the risk here. I am not going to recite, but Senator Collins has told us we are on notice. There is ample evidence that terrorists have attempted to strike at chemical facilities and that they intend in the future to do that as well.

The good news here, slightly encouraging, given the knowledge of the consequences of an attack and the intentions of terrorists to attempt to attack chemical facilities, is that some chemical companies are not waiting for Congress to tell them how to improve their security. That is the good news. I know that the Department of Homeland Security is working with the chemical industry on several security initiatives. In fact, the Maritime Transportation Security Act of 2002 and the Bioterrorism Act of 2002 legislated important measures to improve security at a number of chemical and water treatment facilities, and several States are moving toward better security in this area.

But the fact remains this morning that millions and millions of Americans continue to be at risk from an attack on a chemical plant, and many facilities that use extremely hazardous chemicals are not covered by the patchwork of laws and regulations now in place.

One of the witnesses that we are going to hear from today, Richard Falkenrath, former White House Deputy Homeland Security Adviser, told this Committee earlier this year that since September 11, "We have essentially done nothing" in this particular area, and that is an unacceptable reality.

Our first witness is Senator Jon Corzine of New Jersey. He has been the Senate leader in this matter in attempting to protect the American people from risk of an attack by terrorists on a chemical facility or an accident there. He has worked diligently to move legislation through the Congress and a lot of us have supported him. But thus far to no avail.

The Administration has voiced general support for legislation in the past, but actions speak louder than words, and thus far, it has not provided the leadership necessary to pass the legislation necessary to protect the American people.

I know, Madam Chairman, that at a future hearing on this subject you intend to call representatives from the Administration, particularly the Department of Homeland Security, and I urge the Administration to commit to working with this Committee on a bipartisan basis to help us pass effective legislation during this session of Congress.

I thank you. I thank Senator Corzine. I thank the witnesses who I am confident this morning will help us understand better both the gravity of the current situation with regard to chemical plants and facilities in this country, and how we can urgently work to craft solutions that will protect the American people.

Thank you.

[The prepared statement of Senator Lieberman follows:]

PREPARED STATEMENT OF SENATOR LIEBERMAN

Madam Chairman, thank you for holding this first of what we hope will be a series of hearings on a critical gap in our homeland security. Once again, you have demonstrated your willingness to roll up your sleeves and tackle the hard issues and chemical security is certainly one of the hard ones. But it is an area of such serious vulnerability that we can't be deterred by its complexities. I appreciate your leadership and, as always, I'm pleased to work with you and the other Members of this Committee to try to address this gaping hole in our homeland defense as expeditiously as possible.

No one can doubt that the vast and diverse chemical industry is central to our way of life and to our economy. We rely on a multitude of chemical substances in

our daily lives, from cleaning compounds, to life-saving medicines, to home heating oil. Chemical plants, oil refineries, waste water treatment plants, and pharmaceutical companies all manufacture and store industrial chemicals and pesticides in large quantities in thousands of locations throughout the country, often near larger population centers. If released into the atmosphere, many of these chemicals could kill or maim hundreds of thousands of people—which makes them an all too inviting target for terrorists.

The fact is, a chemical release from at least 123 plants scattered throughout the land could endanger more than a million people, according to the Environmental Protection Agency, and 3,000 facilities around the country could threaten 10,000 people. Furthermore, the Army Surgeon General has determined that as many as 2.4 million people could be killed or injured in a terrorist attack against a toxic chemical plant in a densely populated area. Even where chemical facilities are more remote, there is a danger terrorists could buy or steal lethal materials for use in strategically important or densely populated areas.

Now, we have ample evidence that terrorists are working along these lines. The Congressional Research Service reports that during the 1990's both international and domestic terrorists attempted to use explosives to release chemicals from manufacturing and storage facilities close to population centers. At least two of these incidents occurred in the United States. One of the 1993 World Trade Center bombers was employed as a chemical engineer and used company stationary to order chemicals for a bomb used in that attack. Those same terrorists stole cyanide from a chemical facility and were training to introduce it into the ventilation systems of office buildings. In a 2002 report, the Justice Department described the threat posed by terrorists to chemical facilities as "both real and credible" for the foreseeable future. And, it has been reported that U.S. troops found chemical trade publications in Al Qaeda camps in Afghanistan.

It doesn't take much imagination to picture the pain terrorists could inflict by attacking a chemical facility. Two decades later, the Bhopal horror is still fresh in our minds. At least 4,000 people were killed and an estimated 400,000 injured from the release of a toxic gas cloud from a chemical plant in central India in 1984. More recently, when a train recently derailed in South Carolina and ruptured a chlorine gas tanker car, 10 people were killed by the lethal fumes which, according to EPA, affected an area two miles downwind from the derailment. This was not a worst-case event since the gas release was not instantaneous, but occurred over several days. If that had been an intentional strike on a chlorine gas facility in a dense area, the death toll could have been staggering. Indeed, the experts continually tell us that the casualties of the September 11 attacks could pale by comparison to an attack on a chemical facility in a densely populated area.

Given our knowledge of the terrorists' desire to stage deadly chemical attacks, some of the more responsible companies aren't waiting for Congress to tell them how to improve their security. I know the Department of Homeland Security is working with industry on several security initiatives. The Maritime Transportation Security Act of 2002 and the Bioterrorism Act of 2002 legislated important measures to improve security at a number of chemical and water treatment facilities. And several states are on the road to better chemical security.

But millions more Americans continue to be at risk, and many facilities that use extremely hazardous chemicals are not covered by the patchwork of laws and regulations now in place. When the lives and livelihoods of so many Americans are at stake, relying on voluntary initiatives by the chemical industry to adequately protect us simply is not enough.

So, how much progress has the government made to address this threat? Richard Falkenrath, former White House deputy homeland security adviser, whom we will hear from today, has told this Committee that since September 11 "we have essentially done nothing". That, clearly, is a standard we cannot accept.

Senator Corzine—whose testimony I eagerly await this morning—has worked diligently to move legislation through the Congress, and I supported his efforts last session. Unfortunately, the status quo has proven unmovable so far. The Administration has voiced support for legislation in the past, but actions speak louder than words—and thus far, it has not provided the leadership necessary to achieve it.

I look forward to hearing DHS's views at a future hearing and I hope the Administration will commit to working with us to pass effective legislation.

I'd like to thank the witnesses here today for sharing their expertise with us. You can help us better understand the gravity of the situation that confronts us, and provide guidance as we work to craft solutions.

Thank you again, Madam Chairman, for providing your unique brand of leadership on yet another issue central to the security of millions of Americans.

Chairman COLLINS. Thank you. Senator Stevens.

OPENING STATEMENT OF SENATOR STEVENS

Senator STEVENS. Madam Chairman, I am only going to be here a few minutes. I have another hearing I am going to chair. I stopped by to commend you for undertaking a very difficult and complicated task.

Several years ago I monitored an international meeting in Geneva that took place for several weeks of trying to determine how to control the international movement of chemical and biological substances that could be used for weaponry, and those of us who work primarily here in the Senate on defense matters are quite concerned, as you know, about the possibility that we might face chemical and biological weapons used by terrorists. So I do know from past inquiries into the subject, it would be a very difficult task to get a bill passed that will do what you seek to do, but I intend to work with you, and I again encourage Senator Corzine and all of those concerned with us, to work together on a bipartisan basis and try to do our best to see if we can take the steps that is necessary to get more information about these substances that could be used as weaponry. Thank you.

Chairman COLLINS. Thank you. Senator Akaka.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. Thank you very much, Madam Chairman. I would like to commend you for holding a hearing with distinguished witnesses on a critical topic.

I want to welcome particularly our colleague from New Jersey, Jon Corzine, to this Committee, and also our distinguished witnesses. I appreciate you sharing your expertise with our Committee today.

Securing the Nation's critical infrastructure while fostering the free flow of commerce upon which the United States relies is a considerable challenge. In no sector is the need to attain this balance more pressing than in the chemical industry.

According to the EPA there are 123 chemical plants located throughout the Nation that could each potentially expose more than a million people if a chemical release occurred.

In 2003, the Administration produced the National Strategy for the Physical Protection of Critical Infrastructures and Key Assets, which noted that, "There is currently no clear unambiguous legal or regulatory authority at the Federal level to help ensure comprehensive uniform security standards for chemical facilities."

The strategy directed DHS and the EPA to work with Congress to enact legislation to require certain chemical facilities, particularly those that maintain large quantities of hazardous chemicals in close proximity to population centers, to undertake vulnerability assessments and take reasonable steps to reduce the vulnerabilities identified.

To date no legislation has been enacted because Congress cannot reach a consensus on how strict the regulation should be. Securing chemicals is done mostly by industry on a voluntary basis, and the only statutes regulating the chemical sector are the Maritime Transportation Security Act, which covers facilities near ports, and

the Bioterrorism Act, which covers the water sector. A large portion of the Nation's chemical industry is not subject to security regulations.

As with any industry, there is debate on how to balance commerce and security. Our intent is not to cripple industry, which could hurt the economy or reduce jobs, but to ensure Americans are adequately protected from an accidental or intentional chemical release. We must also ask how increased government regulation will affect industrial competitiveness.

Some chemical facilities that adhere to the industry voluntary security code have argued that they are at a disadvantage compared to those facilities that do not voluntarily increase security because they are spending millions on this added expense.

Madam Chairman, I welcome this opportunity to further explore how we can better secure the chemical industry and minimize risk to the American people. I look forward to the testimony of witnesses and to working on this problem in the future. I ask that my full statement be included in the record.

Chairman COLLINS. Without objection.

[The prepared statement of Senator Akaka follows:]

PREPARED STATEMENT OF SENATOR AKAKA

Thank you Madam Chairman, I would like to commend you on holding a hearing on this critical topic. I welcome our distinguished witnesses and appreciate them sharing their expertise with our Committee today.

Securing the Nation's critical infrastructure while fostering the free flow of commerce upon which the United States relies is a considerable challenge. In no sector is the need to attain this balance more pressing than in the chemical industry.

The accidental release of methyl isocyanate from a chemical plant in India in 1984, and the thousands of lives lost in the process demonstrates the lethality of industrial chemicals. Intelligence reports tell us that this is a lesson terrorist groups have taken to heart. In May 1995, a Japanese cult released Sarin on five subway trains in downtown Tokyo. And according to a February 2004 Government Accountability Office (GAO) report, "experts agree that chemical facilities present an attractive target for terrorists intent on causing massive damage." In fact, 20 of the terrorist attacks attempted over the past decade involved a chemical agent.

Accoridng to the Environmental Protection Agency (EPA), there are 123 chemical plants located throughout the Nation that could each potentially expose more than a million people if a chemical release occurred.

In 2003, the Administration issued "The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets" which noted that "there is currently no clear, unambiguous legal or regulatory authority at the Federal level to help ensure comprehensive, uniform security standards for chemical facilities." The Strategy directed the Department of Homeland Security (DHS) and the EPA to work with Congress to enact legislation to require certain chemical facilities, particularly those that maintain large quantities of hazardous chemicals in close proximity to population centers, to undertake vulnerability assessments and take reasonable steps to reduce the vulnerabilities identified. To date, no legislation has been enacted.

Securing chemicals is done mostly by industry on a voluntary basis. The only statutes regulating the chemical sector are the Maritime Transportation Security Act (P.L. 107–295), which covers facilities near seaports, and the Bioterrorism Act (P.L. 107–188), which covers the water sector. A large portion of the Nation's chemical industry is not subject to security regulations.

One of the issues we will discuss today is whether self-regulation of the chemical sector is sufficient. While the chemical industry has come together to self-regulate since September 11, only a little over half of the 4,000 chemical manufacturing facilities reportedly adhere to the voluntary security standards. According to a March 2005 GAO report, the regulated chemical facilities GAO visited achieved a higher level of security than the unregulated facilities.

As with any industry, there is debate on how to balance commerce and security. Our intent is not to cripple any single industry which could hurt the economy or

reduce jobs, but to ensure Americans are adequately protected from an accidental or intentional chemical release.

A good example of this debate is the legal battle the District of Columbia is currently engaged in with CSX Transportation, a rail transit company, regarding the District's recent decision to ban trains carrying hazardous materials from traveling within 2.2 miles of the Capitol.

We must also ask how increased government regulation will affect industrial competitiveness. Some chemical facilities that adhere to the industry voluntary security code have argued that they are at a disadvantage compared to those facilities that do not voluntarily increase security because they are spending millions on this added expense.

Madam Chairman, I welcome this opportunity to further explore how we can better secure the chemical industry and minimize risk to the American people. I look forward to the testimony of our witnesses.

Chairman COLLINS. Thank you, Senator Akaka. Senator Voinovich.

OPENING STATEMENT OF SENATOR VOINOVICH

Senator VOINOVICH. Thank you, Madam Chairman, for holding this hearing today.

I also want to thank each of the witnesses for joining us and sharing your expertise.

Chemical security is of critical importance to our homeland security. The chemical industry is a major part of our Nation's economic infrastructure and vitality. The chemical industry plays a key role in our high quality of life, whether it be crop production, temperature control, water chlorinization, household cleaners or life-saving medications.

I would like to begin by acknowledging the work that the chemical industry has done to self-regulate in the absence of Federal legislation. I share the same thanks as other Members of this Committee. The American Chemistry Council has been a leader in their voluntary efforts to enhance security at chemical facilities. I applaud the industry's efforts to work toward uniformity and consistency in national standards for security.

But we must be mindful that regulation does not place the industry at a competitive disadvantage. In Ohio the chemical industry directly employs almost 50,000 people. Each one of these jobs creates an additional 6.2 jobs. The chemical industry is already experiencing economic hardships as a result of high natural gas costs. As a nation, we have gone from a net exporter of chemicals to a net importer.

Though it is clear that a Federal role is necessary to meet today's security concerns, any Federal action should adhere to a comprehensive cost benefit analysis.

The issue of chemical manufacturing security has been before us for some time. I have been involved in this debate since early 2002 when it was before the Environment and Public Works Committee.

In December 2003, chemical security regulation was moved from the EPA and given to DHS, and it is now a matter for our Committee. Any legislation to enhance chemical facility security should be sharply focused on prevention and consequence management of a potential terrorist attack. Federal action to address chemical vulnerabilities must not be burdened with extraneous issues.

Additionally, we must be attentive to requirements that would compromise the security of the various facilities that we are work-

ing to protect. For instance, specific chemical facility vulnerabilities must be guarded from unnecessary public disclosure. Only responsible government authorities need to have access to such information. Most people are not aware that the Federal Government already mandates disclosure by chemical facilities of the kinds of chemicals they have on their premises requires that they have developed inspections to ensure that safety measures and a strategy to respond are in place in the event of an accident.

I would suggest, Madam Chairman, that the Committee have a closed session with the chemical industry where they can share candidly what they are now doing in terms of security and how legislation can be enhanced to set standards to which the industry must adhere.

I mention this because we addressed the security of nuclear facilities before the EPW Committee. There were all kinds of accusations being made about the level of security at our nuclear facilities. It was suggested we have a closed session. It was interesting. All but one of the members who had raised concerns had their concerns responded to. So it might be a good idea to consider closed-door hearings at a later date. Thank you.

Chairman COLLINS. Thank you. Senator Lautenberg.

OPENING STATEMENT OF SENATOR LAUTENBERG

Senator LAUTENBERG. Thank you, Madam Chairman, for calling this hearing and having the witnesses who are going to testify talk about the issue with their experiences.

I am particularly pleased to see my colleague, Senator Jon Corzine, here. He needs no introduction, but he does need the thanks of the people in New Jersey for his persistence in trying to keep this subject alive, to try and keep those lives going in New Jersey where we have the most densely populated State in the country, and lots and lots of chemical facilities. People make their living working in these places and it helps our economy substantially.

But when we look at South Kearny, New Jersey, where it is said that more than a million people could be killed if there was either an accident or an attack in that facility, and so it is throughout the State.

To confirm something that took place, Madam Chairman, in an earlier meeting of this Committee when we discussed the risk criteria for homeland security grants—and I note there was an Associated Press report that Governor Kean and Lee Hamilton intend to hold hearings. They no longer have the commission, but they intend to hold hearings in June and July to give a report card to the structure of the intelligence program that we have that would tell us whether or not we are doing the right thing.

And I had a chance meeting with Governor Kean last night when he insisted that the risk factor has to be the determinant about how grants are made.

So, Madam Chairman, I ask that my full statement be included in the record, and I would hope, since I heard Senator Lieberman suggest that we hold hearings in the future, that we would have people from EPA as well as Homeland Security with us to give us

their insight into what the problems are and how we might solve them. Thank you very much, Madam Chairman.

[The prepared statement of Senator Lautenberg follows:]

PREPARED STATEMENT OF SENATOR LAUTENBERG

Mr. Chairman, thank you for convening this hearing on this critical topic.

As you know, I took a brief sabbatical from the Senate several years ago.

One of the last bills I introduced before I left was a measure to increase security at chemical plants in our country.

I was concerned that our chemical plants were vulnerable to an attack by terrorists that could kill thousands of Americans. But few shared my concern at that time, and I wasn't able to pass the bill.

After I left the Senate at the beginning of 2001, my colleague Senator Corzine took up the cause of trying to make chemical plants less vulnerable to terrorists.

Today, in the wake of September 11, we are all aware that chemical facilities present an inviting target for terrorists.

Unfortunately, we still haven't translated that awareness into action.

The 9/11 Commission cautioned that we must not focus so much on the last attack that we miss the next attempt to strike our country.

I'm afraid we have failed to absorb that lesson as well as we should.

And chemical plant security is one of the most glaring examples of that failure.

There are about 15,000 chemical facilities in the country. More than half of them are in locations where an attack could kill more than one thousand people.

The most vulnerable area is around South Kearney, New Jersey. An attack on a chlorine facility there would have the potential to kill or injure as many as 12 million people.

Mr. Chairman, the attacks of September 11 were devastating. My state lost 700 of our friends, neighbors and loved ones that day. We all hope that we never see the like of it again.

But the fact is, a terrorist attack on a chemical facility could be even worse.

And by ignoring the threat, we might be inviting such an attack, because terrorism experts say our enemies like to focus on poorly security "soft" targets.

In other words, we won't win the war on terror by fighting the previous battle.

I thank all the witnesses who are with us today, and I look forward to hearing their views on this crucial issue.

Chairman COLLINS. Thank you, Senator.

I am now pleased to welcome our first witness. Before doing so, I want to note that Senator Inhofe, who has also worked very hard on this issue in the previous Congress, could not be with us today because he is managing the highway bill on the Senate floor. He has, however, submitted a written statement which will be included in the record.[1]

I am now very pleased to welcome our distinguished colleagues, Senator Corzine of New Jersey. As my colleagues have mentioned, he has been a leader on this issue. He came to see me at the very beginning of this Congress to suggest that the Committee delve into this now that we have our new jurisdiction.

I also want to note that his other colleague from New Jersey has long been active in this area as well.

I noticed in doing some, or my staff noticed in doing some research that Senator Lautenberg had introduced legislation back in the 1990's on this issue, so I want to acknowledge his leadership as well.

Senator Corzine, we are very pleased to have you here, and I would ask that you proceed with your statement.

[1] The prepared statement of Senator Inhofe appears in the Appendix on page 38.

TESTIMONY OF HON. JON S. CORZINE,[1] A U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator CORZINE. Thank you, Madam Chairman. I want to thank the Ranking Member and all the Members of the Committee for their interest and concern about an issue that I feel passionately about, and it is a real issue driven by concern to represent the people that live in my State. We are the most densely populated State in the Nation, and chemical plants are located among those large areas of population.

I failed to get a good board presentation, but yesterday's *USA Today* had a picture of the plant that Senator Lautenberg talked about, who has worked on this issue so ably for a number of years. And you see a chlorine plant that is in the midst of what the EPA would say, 12 million people, would be exposed by an explosion, but it also is a plant that sits below a superhighway, where cars traverse over the top of it every single day. It is about a mile and a half from the Holland Tunnel.

This is an example of vulnerability and a threat with large consequences, which I think require that those of us in public life speak out and try to protect the population that surrounds that area. We have 11 of these sites in New Jersey where a million people, according to the EPA statistics, and these are 123 chemical facilities, as others have noted.

The need is real, and as many of the Members of the Committee have pointed out, I think it is something that is self-evident. Experts have talked to you about it. I am extremely pleased at your witness list that will be testifying, which have spoken out on this issue, Mr. Falkenrath and Steve Flynn—and this goes back to Warren Rudman and Tom Ridge who have actually identified these issues as ones that need to be addressed in our homeland security strategy.

I do not think we, as Senators, or as public officials, will be able to justify the reality of any attack on these facilities because we have been warned. This is not something that has not caught the eye of experts and people who have followed the issue through time. So I hope that the cause is recognized by reality.

By the way, I do believe in this balance between industry and protecting our people, whether it is in New Jersey or across the country. We have 60,000 people who work in our pharmaceutical industry in New Jersey, and they do a terrific job of protecting their plants. I think the point that Senator Akaka makes about some people do and some people do not, and we do not know, I think is a dangerous concept to be understood.

The facts are real. Oil refinery plant in Texas in March blew up, killed 14 people. Train derailment in Graniteville, South Carolina, where in a rural area nine people were killed from a chlorine explosion. Multiple deaths in a number of incidents in New Jersey through time, three killed this year in Perth Amboy, and the Chairman spoke about Bhopal.

This is a real and present danger and I think we would be remiss if we did not develop a strategy. And we need to find a bipartisan

[1] The prepared statement of Senator Corzine appears in the Appendix on page 47.

consensus, and I certainly hope to work with the Chairman and Ranking Member and others to try to bring this to conclusion.

I will just mention a few of the variables that I think this legislation should include, which are included in my more lengthy statement, which reflects a lot of the work that we have done over the years, in the 107th, 108th, and now in the 109th Congress. Fortunately, the jurisdiction, well, not fortunately, but the reality of the jurisdiction is the Department of Homeland Security, appropriately in this Committee today. I think that is a major change from history.

I do think we need both site regulation and consideration of alternative production approaches, not mandated, but alternative approaches to be examined, and where possible one could find ways to reduce risk of an attack occurred are sensible. We certainly had this case here in Washington where a sewage treatment plant, Blue Plains, moved from using chlorine and sulfur dioxide to sodium hypochlorite, and it was a very simple shift of how they operated in the facilities that made a big difference in the protection of all of our capital. The Committee can examine the specifics of that, and there are other cases around the country. This just happens to be one where chlorine could have infected the whole of our capital, including the White House and the Capitol. I think we need to look at alternative approaches. They need not be mandated but they need to be observed and made certain that they have been examined.

We need to make sure that we assess whether industry guidelines, substantially equivalent guidelines are adequate and whether they are subject to the kind of review and monitoring that makes them successful, and would give the public certainty that real changes have been made, and they should, in my view, include these alternative approaches to production.

Finally, I think it would be worthwhile, certainly worthwhile, that some provisions with regard to coordination to first responders in a local area be included in plans that are developed with regard to individual plants. Are there procedures put in place to respond to the kind of attack or accident that might occur, and are people prepared? Which does bring into consideration the kinds of things that Senator Voinovich talked about, dealing with information dissemination and making sure that we are not providing a blueprint for folks to attack. I think these are all important issues.

There is another element of prioritization. My efforts on this effort have not been focused on ammonia plants in North Dakota. They have been focused on trying to prioritize those places where you have the greatest consequences if there is an explosion. So I think the tension that comes with that, I hope, will not set up a dynamic that will not allow for moving forward.

This is an issue where I think lives are at stake. We would not tolerate this kind of site security oversight at our nuclear power plants. The public knows that. We have great concern to make sure there is a strong regulatory oversight function with regard to our maritime facilities that potentially pose risks. We should not allow it in these areas where literally hundreds of thousands of people could be exposed.

I once again want to compliment the Chairman and the Committee for taking on this issue. I intend to be as fully bipartisan and cooperative. I think this is a need that the public deserves to have our Congress and the Administration act on, and anything that can make that happen will please me, and I will be happy to work with the Committee going forward.

Thank you very much.

Chairman COLLINS. Thank you very much, Senator. I know that you have a hectic schedule, and so I would suggest, unless any of my colleagues have a burning question to ask Senator Corzine, that we just submit any questions for the record so that he can resume his schedule.

Senator CORZINE. Thank you.

Chairman COLLINS. Thank you. I would now like to call for our next panel of witnesses. The first witness that we will hear from today, after Senator Corzine, obviously, is Carolyn Merritt, the Chairman and CEO of the U.S. Chemical Safety and Hazard Investigation Board. Ms. Merritt brings an analytical chemistry background to her some 30 years of experience in process engineering and environmental and safety management. She has worked with a wide range of chemical processing and manufacturing industries, and we are very pleased to have her here today.

Next we will hear from John Stephenson, the Director of Natural Resources and Environment Issues with the U.S. Government Accountability Office. We are very pleased to have him share his expertise with us today.

The third panelist is Dr. Richard Falkenrath, who is a Visiting Fellow in Foreign Policy Studies at The Brookings Institution here in Washington, DC. Dr. Falkenrath was another individual who brought this issue to the Committee's attention with his testimony earlier this year. He has served as Deputy Assistant to the President for Homeland Security, and as the Senior Director for Policy and Special Assistant to the President in the Office of Homeland Security.

And finally we will hear from Dr. Stephen Flynn, who is the Jeane J. Kirkpatrick Senior Fellow for National Security Studies at the Council on Foreign Relations. Dr. Flynn has testified before this Committee on a wide variety of homeland security issues and it is always a pleasure to welcome him back. I would also note that when he was in the Coast Guard he was stationed in Maine for 2 years, and that alone gives him great credibility with the Chairman at least. [Laughter.]

Chairman Merritt, we are going to start with you, and we thank you for being here today.

TESTIMONY OF HON. CAROLYN W. MERRITT,[1] CHAIRMAN AND CHIEF EXECUTIVE OFFICER, U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD

Ms. MERRITT. Thank you, Madam Chairman, Senator Lieberman and Members of the Committee. Thank you for the opportunity to testify this morning. I commend you for convening this hearing.

[1] The prepared statement of Ms. Merritt appears in the Appendix on page 53.

Protecting the public from chemical emergencies is an important responsibility of the Federal Government.

The U.S. Chemical Safety and Hazard Investigation Board, or the CSB, is an independent, nonregulatory, Federal agency established in 1998. We investigate major chemical accidents at fixed industrial facilities, determine root causes and make safety recommendations. The Board does not investigate transportation related chemical accidents, site security, or criminal acts.

Madam Chairman, since the Chemical Safety Board was founded, we have learned something very troubling. Many incidents that the Chemical Safety Board has investigated reveal serious gaps in how well companies, emergency responders, government authorities and the public are prepared for a major chemical release. These gaps in preparedness leaves Americans vulnerable.

In December of last year I traveled to India for the 20th anniversary of the chemical plant tragedy in Bhopal. In that accident on December 3, 1984, about 43 tons of toxic methyl isocyanate were released into the air from a U.S.-owned pesticide plant. About 3,000 people died within a few hours, and more than 200,000 people sustained permanent injuries.

The death toll of the Bhopal accident was extraordinary, but the accident itself was not. The amount of toxic material released, 43 tons, would fit comfortably into just one rail car. Safety experts have concluded that the Bhopal gas release was caused by a combination of poor operating practice, poor maintenance and the deterioration of installed safety equipment. Overall the residents in the city of Bhopal were caught totally unprepared for this accident, making this incident particularly devastating.

For example, many people who were told to evacuate ran directly into the toxic cloud and died in the streets, while many who stayed in their shanty homes survived. Better preparedness could have saved lives, was what the Bhopal police chief told me himself.

We have had some major chemical releases in the United States, including most recently a release of about 60 tons of chlorine from a rail car in Graniteville, South Carolina, which took 10 lives in a small town.

A similar chlorine release occurred in rural Texas last year where two freight trains collided, four people were killed by chlorine gas, and people 10 miles away reported symptoms of exposure.

Fortunately, these accidents occurred in sparsely populated areas. A large-scale toxic gas release is quite capable of causing thousands of casualties if the conditions are right, the release is rapid and it occurs in a major city. We have seen it overseas. We have seen it projected in computer models, and we could see it in the future here in the United States as a result of a terrorist act or perhaps an accident.

At many fixed industrial sites there are chemical storage tanks that are far larger than any rail car. When I was an industrial safety executive we knew of an ammonia storage tank in a major U.S. port that could have jeopardized nearly a million people in the case of total failure.

In addition to a large storage tank, there is also a large number of stationary rail cars parked in chemical plants, in freight yards and other sites around the country.

Overall we have an excellent record in this country of minimizing off-site fatalities from ordinary chemical releases at fixed industrial sites.

But some of our success is also due to luck. Among the accident cases that we have investigated, a deficiency in emergency response is more often the rule than the exception.

For example, in August 2002, a chemical repackaging facility near St. Louis had a release of chlorine gas from a faulty transfer hose connected to a rail car. The automatic shut-down system failed to work because it had not been properly maintained or tested. Emergency protective equipment was stored too close to the rail car and became immediately inaccessible. The local volunteer hazmat team was not prepared and it took them 3 hours to eventually shut off the leak. By then some 48,000 pounds of chlorine had been released. There were no warning sirens and firefighters had to go door to door in an effort to evacuate residents. Only some fortuitous circumstances, including the time of day and the direction of the wind spared local residents from what could have been a catastrophe.

Probably the most telling incident occurred in Dalton, Georgia just a year ago. During the very first production batch at a local chemical company, a reactor overheated and began spewing toxic and flammable allyl alcohol into the air. There was no safety equipment in place to contain the release. The toxic vapor cloud formed and drifted toward a residential community. The 31,000 pounds of allyl alcohol at the plant was more than double the threshold allowed under EPA's Risk Management Program rules. But company managers did not even know that the rule existed. They did not take required steps to prevent or contain a release, and they did not develop a required emergency response plan.

In addition, the fire department lacked equipment or protective clothing for a large toxic chemical release. The community has no hazmat unit and no warning sirens. Unprotected police personnel went door to door notifying residents to leave. The evacuation exposed responders and residents to the toxic gas. An overwhelmed local hospital had to decontaminate 154 people, including 13 police officers and 3 ambulance personnel.

Fortunately, all the residents and responders survived. A heavy rainstorm helped to scrub the toxic gas from the air that night, probably preventing a more serious consequence.

We also learned that Georgia designated a single local emergency planning committee for the entire State, and jurisdictions like Whitfield county, where Dalton is located, are without functioning LEPCs.

There are numerous other examples cited in my written testimony. But I am disturbed by what the CSB investigations have shown. At a minimum they point to the need for a comprehensive national review of emergency preparedness. Until we have effective safety systems and equipment at all chemical facilities, protected control rooms, mitigation and containment systems, and effective emergency preparedness in every community from coast to coast, our people will continue to be vulnerable and exposed to preventable risks.

We all hope and pray that such a release or act of terrorism never occurs, but if such a disaster should happen we must be prepared to respond quickly and effectively to save every life that we can. The time for planning is now, not after a tragedy. And I commend you, your leadership, and this Committee for convening this hearing today, before a tragedy occurs.

Thank you.

Chairman COLLINS. Thank you for your testimony. Mr. Stephenson.

TESTIMONY OF JOHN B. STEPHENSON,[1] DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. STEPHENSON. Thank you, Madam Chairman and Members of the Committee. Thank you for this opportunity to discuss our work on chemical security preparedness. As the events of September 11 so vividly showed, a terrorist attack on the Nation's critical infrastructure can cause enormous damage to our country and to our citizens. The President identified the Nation's chemical facilities among the infrastructures and key resources that could be exploited to cause catastrophic health effects or mass casualties. Indeed, some have called chemical facilities one of the most attractive targets for terrorists intent on causing massive damage. We all know that the chemical industry is essential to our economy and to our way of life. Chemicals are needed to manufacture thousands of products such as those used in agriculture, pharmaceuticals, food processing, and drinking water and wastewater treatment.

But because many chemicals are inherently hazardous, the release of chemicals at these facilities poses serious threat. In the absence of Federal legislation, the private sector currently bears the primary responsibility for protecting chemical facilities from deliberate acts of terrorism. However, Federal, State, and local governments have for many years worked in partnership with the private sector to protect facilities from accidental chemical releases.

Since 1990, the Environment Protection Agency has regulated about 15,000 facilities that produce, use, or store more than threshold amounts of 140 dangerous chemicals. For this reason, EPA initially had the lead responsibility for protecting the chemical sector, whereas the Department of Homeland Security is now the lead Federal agency.

So why do chemical facilities pose such a serious threat? You have heard a lot of information today already. Many facilities house chemicals that, if released, could become airborne and drift, in some cases for several miles, to surrounding communities or could be stolen and used to create a weapon. The Department of Justice has concluded that the risk of an attempt to cause an industrial chemical release in the foreseeable future is both real and credible. And in the February 2002 testimony, the Director of the CIA warned of the potential of an attack by al Qaeda on chemical facilities.

All of us have referred to Bhopal, and, indeed, that incident 20 years ago has caused legislation to be passed on community-right-

[1] The prepared statement of Mr. Stephenson appears in the Appendix on page 59.

to-know laws, etc. So it is true that Federal regulation and industry safety precautions taken since that time probably would avoid a repeat of such a huge disaster. It, nevertheless, vividly illustrates the potential consequences of a chemical release.

A 2002 Brookings Institution report ranked an attack on toxic chemical plants behind only biological and atomic attacks in terms of possible fatalities. Despite these risks, no one has comprehensively assessed security across the Nation's chemical facilities. Media exposes showing easy access to chemical tanks and computer centers at U.S. chemical plants have raised doubts about security. While DHS and EPA have visited a number of facilities to discuss security, the results of these visits are at this point unclear.

While DHS is still trying to define the specific number and type of facilities that comprise the chemical infrastructure sector, the 15,000 or so facilities currently under EPA's risk management program are a useful starting point, as each of these facilities house large quantities of dangerous chemicals. According to EPA data on worst-case accidental release scenarios—and you have already heard these numbers—123 chemical facilities could each potentially put at risk more than 1 million people to a cloud of toxic gas; about 600 could each potentially threaten from 100,000 to 1 million; and about 2,300 such facilities could each potentially threaten from 10,000 to 100,000.

DHS and EPA believe these estimates are overstated because, depending upon wind direction, safety precautions, rapidness of response, and other factors, the entire population in the vulnerability zone surrounding a plant would likely not be affected. However, because the scenarios estimate the effects of the chemical release involving the greatest amount of toxic chemical in a single vessel, not the entire quantity on site, an attack that breached multiple vessels could increase the consequences. Although the exact number of people at risk may be arguable, it is undoubtedly in the tens of millions.

Of concern to us is that while other high-risk sectors such as drinking water and nuclear facilities are subject to Federal security requirements, no such requirements currently exist for chemical facilities. About 23 of the 15,000 RMP facilities are currently covered by Federal legislation in other sectors, such as the Bioterrorism Act for drinking water facilities or the Maritime Transportation Security Act for port facilities. But unlike these sectors, there are no Federal vulnerability assessment or safety and emergency response requirements for chemical facilities.

Without specific authority to require chemical facilities to improve security, DHS has worked voluntarily with the chemical industry to provide financial assistance, share information about infrastructure protection, provide training and exercises and assess facility vulnerabilities and recommended security improvements at a few facilities. Chemical industry associations also have initiatives underway. Most notably, the American Chemistry Council requires its member facilities, which include about 1,000 of the 15,000 facilities, to assess vulnerabilities develop security plans, implement security measures, and undergo a third-party verification that security measures were implemented. Other industry associations also are imposing a number of security requirements on their members,

but the extent of participation in these initiatives or their results is at this point unclear.

DHS has a number of efforts underway, including the development of a chemical security sector plan, but these programs are still in their infancy, and the plan is not yet final. All of these efforts are commendable, but at the end of the day, we still don't know the overall extent of security preparedness in this critical sector.

To ensure that security vulnerabilities at chemical facilities are addressed, we recommended 2 years ago in our 2003 report that EPA and DHS develop a comprehensive national chemical security strategy that included a legislative proposal to require facilities to assess their vulnerabilities and take any needed corrective actions. DHS and EPA, while they generally agreed with our recommendations at that time, have yet to implement them. We plan to continue to evaluate DHS' and other efforts as part of our ongoing work for this Committee, including an analysis of existing and needed legislation.

Madam Chairman, that concludes my statement, and I will be happy to answer questions as well.

Chairman COLLINS. Thank you. Dr. Falkenrath.

TESTIMONY OF RICHARD A. FALKENRATH, PH.D.,[1] VISITING FELLOW, FOREIGN POLICY STUDIES, THE BROOKINGS INSTITUTION

Mr. FALKENRATH. Thank you, Madam Chairman, for the invitation to be here. Your opening statement and the statements by the other members of the Committee were so good and on point that I am able to shorten my introductory remarks substantially. I want to just make five points and then turn to the proposed legislative solution that I made at length in my written statement.

First, I agree entirely with what Senator Voinovich had to say about the need to protect this information concerning our vulnerabilities. I am very worried about the media exposes that have occurred into these plants and facilities, which are highly dangerous, and I regret that public meetings of this sort are necessary. I think they are at this time, but I am worried about the easy accessibility of what is essentially terrorist targeting information concerning our most serious civilian vulnerability. So that is a caveat.

Second point: On September 11, the basic strategy of al Qaeda was to identify a commonplace system in our midst that we relied upon every day and attack in such a way that they could achieve catastrophic secondary effects. The security in that system—in this case, fully fueled civilian airliners—was quite poor. We were complacent about it. We no longer are complacent about that security, but it stands to reason that al Qaeda is looking for other targets in our midst which, if attacked, could produce catastrophic civilian casualties. If you were to ask me what is the most likely follow-on attack to September 11, it would be an attack in that model, but not against aircraft, against something else that was like aircraft on September 11.

[1] The prepared statement of Mr. Falkenrath appears in the Appendix on page 75.

Our most important responsibility is to prevent attacks before they occur, primarily by identifying the perpetrators and the plotters and making it impossible for them to carry their attack out. That is the subject of a very energetic effort in the Executive Branch—counterterrorism and prevention and intelligence. A huge amount of energy and personnel are dedicated to that responsibility. But there is another part of our strategy that is less well developed, and that is to play in a sense strategic defense against al Qaeda's most likely next tactics, to identify the sorts of targets which, if attacked, could cause us greatest harm and would have greatest likelihood of coming off successfully from the terrorist point of view. That is what we call critical infrastructure protection. It is a unique mission of the Department of Homeland Security. Prior to the creation of the Department of Homeland Security, no Federal department or agency had this responsibility comprehensively. It is one of the few genuinely new missions of DHS.

Now, the essence of playing strategic defense is to start thinking like al Qaeda in reverse and think which targets, if attacked, would cause us the greatest harm and present the most likely probability of success for the terrorists, and that is massive casualties in the first instance.

When you do that analysis, when you look at all of the different targets that could be attacked in the United States—and there are many—and ask yourself which ones present the greatest possibility of mass casualties and are the least well secured at the present time, one target set flies off the page, and that is chemicals—in particular, toxic inhalation hazard chemicals, not necessarily explosive ones; chemicals which, if inhaled, are highly damaging to human health.

This is an absolutely inescapable conclusion from the analysis that you have to do if you are trying to play defense against al Qaeda's next attack, and it is one that was very apparent to me in my official capacity and remains apparent to me now as a private citizen. So this is the appropriate focus for this Committee, and I am glad you are turning your attention to it. The chemicals that we are talking about today are in many cases identical to those used on the battlefields of World War I. They are enormously dangerous. They are produced in truly massive quantities, shipped and stored in many cases next to very dense urban populations, and present in my opinion the single greatest danger of a potential terrorist attack in our country today.

So, fifth point, what have we done about this threat today? I think it is safe to say that the Federal Government has made itself no material reduction in the inherent vulnerability of this target set since September 11. It is important to separate between the vulnerability of chemical facilities and the vulnerability of chemical conveyances in the transportation area.

In the conveyance area, the Executive Branch currently has very strong regulatory authorities and could, if it chose, take action to improve—to require the shippers of hazardous chemicals to improve the security of their conveyances. To date, the Executive Branch has not done so.

On the facilities side, in my opinion the Federal Government does not currently have the authority to take action and require

the owners of chemical facilities to improve the security of their complexes. Some have argued that the general duty clause of the Clean Air Act is sufficient legal authority. I disagree with that. And in any case, an economic intervention of this magnitude is the sort of thing which really deserves unambiguous congressional authorization. So even if legally you could make the claim that the general duty clause was sufficient, politically I think it is imprudent to do so.

So I think the gist of what we have heard today is correct. There is a pressing need for a legislative solution to this problem and, in particular, a new regulatory regime for chemical security. And in my remaining time, I am going to outline what I think that regime should look like.

First, a couple general principles. I believe the regime should be very strict, should impose very strong regulatory powers to the Department of Homeland Security, but that the regime should be risk-based and market-based, and that there is a way to do that.

Second, again, I agree with Senator Voinovich. The regime should be focused tightly on the security of this target set against deliberate terrorist attack and should exclude extraneous issues. It should not be a back door for environmental regulation or safety regulation. Those issues should be addressed in the appropriate legislative process, but I would say keep them separate from the security regime. Keep the regime focused on improving the security and reducing the vulnerability of these plants.

And the third general principle, I will just repeat what I said before. It should provide for the protection of the information related to this vulnerability. We should not, as a result of this legislation, if it is enacted, make terrorist targeting information more available as a result of it. That would be a bad outcome, in my judgment.

I think the regulatory approach should have six basic parts. The first should be a compulsory comprehensive inventory maintained by the Department of Homeland Security of every chemical storage facility and conveyance in the country, and this should be updated regularly, and they should just have it. It should be highly detailed and should contain information about the physical security at every site and every transportation node and system in the country. It is a big task, but I think it is required. Such an inventory does not currently exist. There is no comprehensive picture of the size and nature and security of this complex.

I will give a small anecdote which relates to Chairman Merritt's anecdote. At one point the Federal Government raised the alert level from yellow to orange, and at that time we actually sent out a list of facilities that we were worried about to State and local authorities and encouraged them voluntarily to take protective action at those facilities. It turns out there was a chemical plant on that list in at least one city in the Northeast that the local chief of police did not even know existed. He did not know it was there. And when his squad cars pulled up after they received this, it was the first time he knew that there was a chlorine storage tank right next to an urban population in a major city.

Second major point of the legislation: I think once the inventory is established, the Secretary of Homeland Security should devise standards for the inventory, and these should be tiered. Not all

chemical plants present the exact same risk. Some are far more dangerous than others. And I think he needs to take the inventory he has and break it up into select tiers and for each define very precisely the standards.

Third, the owners of the chemical facilities need to certify that the standards have been met at some appropriate timetable.

Fourth, the Secretary of Homeland Security needs to run a verification process to ensure that the certifications are correct.

Fifth, if they are not correct, or if the company is in violation of the standards, he needs a compliance procedure which I think should include tough civil and criminal penalties for noncompliance, certainly along the lines of Sarbanes-Oxley criminal liability for accounting malfeasance.

And, finally, there should be an appeal procedure so that companies have some recourse to the courts if they believe that they are being treated unfairly or in a capricious way by the Executive Branch. They deserve that. But the appeal procedure should provide for the continued protection of this information even as it enters the judicial process.

This legislative package, I think, should proceed in concert with enhanced regulation of chemical transportation systems, which the Executive Branch could do right now, but ideally the two would be done together in an integrated fashion.

Thank you very much, Madam Chairman.

Chairman COLLINS. Thank you. Dr. Flynn.

TESTIMONY OF STEPHEN E. FLYNN, PH.D.,[1] JEANE J. KIRKPATRICK SENIOR FELLOW FOR NATIONAL SECURITY STUDIES, COUNCIL ON FOREIGN RELATIONS

Mr. FLYNN. Thank you so much, Madam Chairman, for the opportunity to come back before this Committee and your leadership on this critical issue. I have been most associated with the issues of port and container security and supply chain because of the economic disruption consequences associated with that as well as potential loss of life, given the proximity of populations near ports, but this is an issue that I put up there with the bio threat, in the top three. With the chemical issue there is overlap with the port security issue. Most chemical refineries and so forth are in seaports, and this is one of the critical themes as well that I think we need to be mindful of: It is not just the hazardous material but its linkage and proximity to other critical infrastructure.

As Senator Corzine laid out at the outset, facilities right under major highways, spills that happen in ports that shut them down, have consequences that transcend the local loss of life. It can have devastating economic consequences, which speaks to the issue of the threat.

I would like to talk just a minute about the threat. I would like also to say a few words about what I think is the limit of the marketplace as an approach to dealing with that threat, thereby, outlining the rationale for why I think it is so important for this Committee to move forward with a legislative package on this issue,

[1] The prepared statement of Mr. Flynn appears in the Appendix on page 98.

and then speak to some of the suggestions that I have, some which parallel my colleague, Dr. Falkenrath.

In terms of the threat, we are a Nation at war, and if you think through this as a commander-in-chief getting a briefing of where weapons of mass destruction might be, and the briefing said, well, we have 15,000 weapons of mass destruction littered around the United States, we have no idea how well they are guarded or if they are guarded at all, you would think under those circumstances you would say, well, we better get a handle on those weapons of mass destruction. But, of course, we view this industry as a domestic industry, and the threat, we see a weapon of mass destruction as often viewed as an "over there" problem. We have this issue right here within our borders. As Dr. Falkenrath was talking about, the example of September 11 was not the importation of a weapon of mass destruction. It was converting a domestic airline into one.

Why produce a chemical weapon, go through the very difficult task of smuggling it into the United States, when essentially there is a vast menu of prepositioned weapons in our population areas next to critical infrastructure? How this could be still off the list of priorities 3½ years since September 11 is quite simply extraordinary.

I think one of the issues that we are struggling with, though, is, well, if it is so easy and they are so available—and we are facing this increasingly, I think, with the homeland security issue across the board—well, why hasn't it happened? Why haven't we had another attack? And I would like to spend just a moment on that critical issue.

I think one of the things that we have to do is get a real sense of the timeline and the challenges of the adversary of carrying out an attack potentially on the chemical sector. The reality is these more sophisticated attacks require essentially a terrorist organization to put down a footprint of typically a logistics cell, a reconnaissance cell, and ultimately an attack cell. It takes some time to do that. They do not start from a large footprint here in the United States. And though we could all look around and say willy-nilly there are a lot of targets they could attack, when you carry out an attack, you create a real forensics problem for yourself because you are going to leave a trail.

And so if it took you 18 months or 2 years or more to put a cell operation together and you hit basically an easy target, your whole operation is likely to be exposed, as we found with the March 11 attack in Madrid. Within about 96 hours, the whole network was pretty well cleaned up. They were on trial just this last week.

The second critical issue here about the time and why this issue should be very much—thinking this large-scale attack is very much with us still today is that they want to outdo the last attack. Now, that has been very clear that they want to do that, and they are willing to take the time to get it right. And doing it right requires expertise, it requires some rehearsals and good planning, dry runs and so forth. And as the days move by, I am more worried increasingly of that it is the sophisticated big attack that is staring us in the face, not "wipe the brow," maybe we somehow get them at arm's length.

And then, again, as we look at the list of possible inventories, the chemical industry absolutely screams at you as essentially a weapon of mass destruction that is in your adversary's midst and you can have cascading effects.

The problem we face here is that to date we have treated this, like other elements of critical infrastructure, as something that ultimately the private sector should take care of itself, that since it owns and operates this sector, basically it should bear the responsibility of looking at the most intelligent ways to proceed. I think speaking to the limits of the market in this area, particularly the security area, we have to be mindful of two critical things that I hear time and again from company executives.

The first is that any security measure, just like any safety measure, is always about how much is enough. An executive has to make a decision about how much is enough vis-a-vis what I know to be the threat as well as what the consequences would be if the threat is carried out and what investment I should make accordingly.

Now, when we talk about issues like safety, we usually have empirical data openly available upon which we can make those decisions. But when we talk about security, the information about threat is a public good closely held. So to ask an executive in industry to establish a baseline set of security standards when the entry-level information about the threat they are out of the loop on, they have to just guess at it. And that is a problem.

The second critical challenge that the industry has with laying out its own regime is, of course, the concern about the free rider. Good companies work hard to comply but they must worry, will everybody else play by the rules?

The third issue is the liability issue. Given that these decisions are always about how much is enough, if the industry collectively comes together and says, well, we think this is about right even though we don't know much about the threat, but the little bit we have been clued in on, and we think the benchmark is here, and then go about and implement it, and then the attack happens, the immediate response by the public sector would be: You got it wrong. You were more worried about your profits than you were about our safety. Exhibit A, the attack succeeded. And, therefore, if you are a company executive, you have a real liability issue. You acknowledged the threat, but you will be accused of not having taken sufficient action to address it.

Ultimately, on the issue of security, the ultimate public good, we need the close private-public cooperation. The public sector needs to be saying, yes, you have got it about right, industry, based on our knowledge of the threat. We will make sure there are not free riders, that everybody is playing by the rules so that you are not at a competitive disadvantage for doing the right thing. And, finally, we will give you Good Samaritan protection, if you do all that we identify as adequate and it does not work, since we made the public judgment about this, we will take the heat as a public sector about this public good. Then the industry can get on with it.

But the unwillingness of the public sector to address critical infrastructure generally and the chemical industry specifically, the

absence of a back and forth conversation between the private andpublic sectors, and the lack of a regulatory framework, is something that has essentially left us with the exposure that we are experiencing today.

Turning now to the recommendations that I lay out in my written testimony, and I will try to keep this fairly brief so we can get through them. But the very first is we need to provide the necessary resources for the Department of Homeland Security to work with local planning emergency committees created under the Emergency Response and Community Right to Know Act, and also I recommend using the FBI district-based INFRAGARD program to begin to identify minimal standards for this industry to do several things.

First, establish physical security, communications capabilities, and access control at chemical facilities based on this tiered system of the quantity and lethality of the chemicals they produce and store within a facility, as well as its proximity to major population centers, and its proximity to other critical infrastructure. We should not have to do the same thing for everywhere. It has got to be based around the risk.

Second, conduct regular exercises to test the adequacy of security measures to prevent intrusions. There is no substitute for these exercises in getting people to really continue to refine and stay vested in what they are doing.

Third, to conduct community outreach on incidence management with neighbors to the facilities who would be directly affected in the aftermath of a successful attack. There is a real tension here between this issue of openness on the one hand and worries by some officials to not give terrorists blueprints on the other. That really needs to be bored down. I err on the side of openness, and I err on the side of openness because I know our intelligence is so weak right now that we cannot predict these events. I also believe that the threat is so open and the awareness is so high that we really have to make sure that we are protecting our population when these things happen. And I believe that honesty and openness is something we need to push versus "keep it all under the cone of silence" approach.

Next, we need to conduct outreach for incidence management, and then finally test the minimal intervals for emergency response training. We must do red team training to test prevention measures, but you also must have response training.

Another area that I would recommend is that there be a verification regime built upon the creation of bonded, third-party inspectors to audit compliance with these minimal standards at intervals appropriate to the risk posed by a successful attack on the chemical facility. There will never be enough government eyes and ears. It is not desirable to have exclusively government eyes and ears doing this. But we need a bonded process of private folks who go out and make sure everybody is living by the rules. Again, legitimate companies that make this investment do not want a regime that allows free riders who do not make that investment.

Next, we need to create within the Department of Homeland Security a compliance office to essentially audit the auditors.

Then we need to sponsor research and development and provide tax incentives which reward the adoption of less dangerous processes for making, handling, and storing the most lethal chemicals. The tendency is to think about this as gates, guards, and guns, and physical security alone. A lot of what can be done to manage an incident to make sure it does not result in a massive loss of life are good practices. Some of those require some government incentives, since it is security at stake, we have to find ways in which we do that.

Next, we need to sponsor research and development on new technologies to mitigate the risk of chemical releases beyond the chemical facility. There are ways in which we can expect the worse and have ways to deal with that.

We need to sponsor research and development of lower-cost, more user-friendly protective equipment for emergency responders. You, Madam Chairman, were at the TOPOFF drill. You saw how we put people in these moon suits that were designed for the most benign circumstances of working and industrial environment. They do not work for first responders. We must fix that problem.

Two more. Next, to create a task force that recommends a new protocol for resolving the conflict over public outreach on the one hand and the sensitivity to public disclosure of vulnerabilities on the other, which I mentioned earlier. And, finally, to require risk assessments that are reviewed by the senior homeland security official at the State level before new non-industrial development is allowed in the vicinity of an existing chemical facility.

A story that I point to to support this final recommendation is a case in southeastern Los Angeles, where the Los Angeles Community College District has proposed building a new campus that will accommodate up to 12,000 students directly next to one of the largest chemical facilities in the Nation. If the reverse case happened where a chemical facility asked to be located next to a large university, it would be a non-starter. But in this instance we are crowding up against a facility that manufacturers and stores highly hazardous chemicals without thinking of the security implications, is crazy. We need to find a way in which we get people sensitized before they do things which elevate security risks.

Thank you so much for the opportunity to make this prepared statement, and I look forward to answering your questions.

Chairman COLLINS. Thank you. Thank you all for your excellent statements.

Chairman Merritt, I was struck in your testimony about how India and the communities in America that you cited were unprepared to deal with an accidental release of hazardous chemicals. In your experience, do you believe that we are prepared as a country to deal with a deliberate attack on a chemical facility?

Ms. MERRITT. If you look at the events that we have investigated, these are really small in comparison to some of the events that could occur if it were a deliberate planned attack, as has been reported by the other witnesses this morning. An instantaneous release, though, still provides us with an opportunity, if we were prepared, to do some mitigation and some protection of our communities. But without any planning, we really do not have that capability.

We have seen that communities, by the large proportion of those that we have investigated, are not ready even for a small release, and that they have not planned, they have not determined whether they would shelter in place or whether they would evacuate. They haven't got notification systems that consistently work. And even when they do, many times communities have changed, demographics have changed, and people don't know what to do. When they are told to evacuate, often they are not told where to go. And so large numbers of people are actually moving in the direction of the cloud of toxic gas.

This is the kind of thing that needs to be determined, and we need to take action to try to protect our communities.

Chairman COLLINS. I am struck by the fact that people who live in areas of the country that are susceptible to tornadoes know what to do when a tornado is approaching. But I don't think those same people, if they lived near a chemical facility, would have any idea what to do if there were a chemical release, whether it was accidental or deliberate.

Mr. Stephenson, I am trying to get a better sense of the numbers involved in this issue. The EPA, as you have testified, has identified 123 chemical facilities located across the United States where more than 1 million people live in the vulnerable zone in the event of a worst-case chemical release. As you know, DHS uses a different methodology, tries to estimate casualties, and comes up with smaller numbers.

Nevertheless, the EPA data provide an estimate of the number of Americans who are living in areas that are potentially vulnerable to the release of a toxic chemical.

Can you give the Committee a rough estimate of the total number of Americans who live within a worst-case scenario radius of the 15,000 facilities that the EPA has identified?

Mr. STEPHENSON. As I said in my statement, it is very difficult to determine because, depending upon the chemical and the amount of chemical at the facility and the characteristics of that chemical once it goes airborne, the vulnerable zone can be as small as a mile or as large as 20-plus miles.

Too, many chemical facilities, as you know, are collocated near each other, so the zones actually overlap. So you cannot discount those factors. And if an actual incident occurred, wind direction, and other factors would determine exactly what part of that vulnerable zone would be affected.

The best we can do at this point is to say it is in the tens of millions. There are literally millions, but you can't simply add up all of those 15,000-plus facilities and all those concentric circles and say that would be over 100 million people. I do not think that is a fair estimate. It is somewhere more than 10 million but less than 100 million, probably, but it is hard to say exactly.

Chairman COLLINS. Thank you.

As we have heard, the industry should be commended for taking steps to come up with voluntary codes to try to improve security. For example, the American Chemistry Council has developed the Responsible Care Program; the National Association of Chemical Distributors has the Responsible Distribution Process; and these programs are very good, but they are also voluntary.

It seems to me that we could take three different approaches to the problem of chemical security. First, we could work with industry to encourage broader acceptance and compliance with voluntary codes. Second, we could rely on state-to-state regulation. Some States are acting in this regard. And, third, we could provide very clear statutory authority and a framework for DHS to implement a security program and to also include a preparedness component, which many of you have mentioned as essential. So we could rely on voluntary action; we could wait and see if the States do something; or we could pass Federal legislation.

Dr. Falkenrath, starting with you—but I would like to get everyone's views on this—which of the three approaches do you recommend?

Mr. FALKENRATH. Federal legislation, no question. I think the voluntary measures that some chemical corporations have taken are good. I am glad that they are doing it. The state-to-state approach, I think, is unlikely to work, primarily because the States that have the largest risk exposure also have the largest economic dependence on this industry, by and large. And I think you would get a sort of patchwork of protective regimes around the country that would not necessarily correspond to the real risk. Also, the States are not really who the American people think are responsible for protecting them against a catastrophic terrorist attack. People think the Federal Government is responsible. And I think that is right.

So I am left with the need for a sort of nationwide Federal approach. I am also impressed with the arguments that have been made that the chemical industry deserves a level playing field and they need to know they have a common framework for the sort of expectations that our country places upon them and how to handle their inherently dangerous technology.

Chairman COLLINS. Dr. Flynn.

Mr. FLYNN. As my testimony makes clear, I guess I am for option three, for a couple reasons, whichI will flesh out quickly.

One is this industry is probably one of the most fragmented industries as it relates to any of our critical infrastructure. Wide gaps between very big responsible players and lots of very small players in the system. And so the voluntary approach has huge challenges with both industry talking to itself, because it really is not a unified industry of a handful of players, it is really a very much tiered system with small players working on the margins, so it makes a voluntary approach very problematic.

On the State issue, the biggest competitive pressure on the chemical industry which has made it very difficult for them to embrace new security is international competition. And so a state-by-state approach that creates a patchwork quilt of requirements where some States have a lower bar and, therefore, are competing better than other places that are setting the bar too high, clearly is problematic, which speaks to a broad theme with homeland security overall here: Whatever we pursue here, we should be also pursuing overseas as well. We are all vested in this industry, in this case because of the loss of life and so forth, but we want to try to make sure the level playing field extends beyond just our own jurisdiction dealing with that pressure.

Chairman COLLINS. Ms. Merritt.

Ms. MERRITT. Yes, in our investigations, we found a wide spectrum of behaviors, and there are companies, good companies that are out there going above and beyond what they are required to do in managing their chemical responsibilities. Often they are funding local emergency planning committees where there is no funding that is available through the regulations that now exist.

But there are also companies that do just what is required and others who really are not doing what they are supposed to be doing or anything at all. And so I think it is the companies that will not be either safe or secure without stronger Federal oversight and enforcement that we are concerned about as well. I think Federal unity here and oversight is what is going to be required.

Chairman COLLINS. Mr. Stephenson.

Mr. STEPHENSON. As we said 2 years ago, I think the risk of this sector warrants heavy Federal involvement, although we do not think those options are necessarily mutually exclusive. For example, ACC, who has 1,000 of the 15,000 facilities, the Responsible Care Initiative is very good. So I would expect any Federal legislation would give them credit for that and, indeed, recognize that. I still think that while they do third-party verification, some Federal oversight of that verification is probably warranted as well, again, because of the high risk of this particular sector.

Chairman COLLINS. Thank you. Senator Lieberman.

Senator LIEBERMAN. Thanks, Madam Chairman. I apologize to you and the witnesses. I had to go to another event. But I was able to read your testimony as submitted prior to the hearing.

Chairman Merritt, I thought your testimony was very powerful and your description of the alarming instances of poor operation and maintenance of safety equipment or procedures at chemical facilities, leading to dangerous accidents. And I heard you say that some of the problems that caused and exacerbated the Bhopal tragedy are, in fact, replicated in our country today.

I wanted to ask you how you would personally explain the failure of these facilities, chemical facilities, to implement better safety precautions.

Ms. MERRITT. Well, I think what we find in many instances is a lack of third-party oversight. This is one of the reasons, I think Federal oversight for some of these facilities is really necessary. Some of them do not even know what the regulations are. There is poor design, poor maintenance of equipment that they do have, and as a result, these are the ones we are investigating.

There are good companies out there that are doing good things. But, OSHA has lists of companies and lists of industries that they investigate. And then there are others who we have found are never visited by an OSHA inspector. And I know that OSHA has resource restrictions, EPA has resource restrictions, but I think that in this particular matter, this is certainly something that the Committee should look at to see where the authority and resources are for oversight for the implementation of these regulations that are already on the books.

Senator LIEBERMAN. That is a very good point. The next question I was going to ask you I believe you answered in response to Senator Collins, but just to make it clear. I presume from what you

have seen that you would say that though there is clearly a role for voluntary measures by the chemical industry to enhance security, that is not enough, that we also need some clear government involvement here as well.

Ms. MERRITT. Yes. What we have seen is even where there are regulations on the books that are managed by OSHA and other people, we constantly investigate sites where there has been little implementation of regulations on the books and little oversight from third parties, either at the State or the Federal level, that would assure that these facilities are safe.

Unfortunately, those are the ones that we are investigating, so I do think there is a reason for a more unified oversight requirement for the implementation and management of these regulations to protect the public.

Senator LIEBERMAN. You are making a very important point, I think, which is not just to the point that some of us feel strongly—Senator Corzine obviously—that we need additional—we need new legislation to protect people from the risk of terrorist attack and accidents at these chemical facilities, but there is not adequate implementation of existing law and regulation to protect. And I take that seriously.

In your testimony, you say that in some cases you found first responders who lack adequate equipment and training to respond to chemical accidents. What have you found generally with respect to the training and equipment that first responders have to deal with chemical accidents? In other words, you site some problems of real inability, but generally speaking, if you are asked what is the status of preparation of first responders in this country to deal with chemical accidents or terrorist attacks, what would you say?

Ms. MERRITT. Well, I think it is a multifaceted approach like the group that responded in St. Louis, they had appropriate equipment and they had trained to respond to a chlorine release, but they had never trained at this facility. So when the event occurred, the all-volunteer hazmat team arrived at the site, but the equipment was at the other end of the site, and it took them several hours to be able to get together with their equipment because they had never practiced there.

So there are many different things that are part of this—fire departments who have never been to facilities to know what actually exists there. Those are the types of reasons that I think a coordinated approach needs to be enacted.

Senator LIEBERMAN. You may know that Senator Collins and I were successful in amending the budget resolution in the Senate to restore a considerable amount of funding, I guess about $550 million, for the coming year for first responders, and obviously we have to make sure the money is well spent. But you point to a very urgent need which will not be met unless we give the first responders money. Then once we do that, we have to help them use it for that purpose. I thank you.

Mr. Falkenrath, I know that you have said that security legislation should not be a back door for safety regulation, and in this, as in so many areas, it is, I suppose, what is in the eye of the beholder, but also where you draw the line. I agree that we should not use this concern that we have about security, homeland secu-

rity, to be a back door for a lot of environmental, uniquely environmental legislation or regulation; but, on the other hand, it just seems to me it—isn't it common sense to encourage the chemical industry to do the kinds of things that will enable them to essentially reduce the attractiveness of their facilities as a target for terrorism? In other words, if they can do something that they need to do in their business in a way that is less potentially catastrophic if an attack occurs, isn't that worth trying to do?

Mr. FALKENRATH. Yes, Senator, I think it is. But it is a question of regulatory design. And as I lay out in my written statement, I think that there should be a system of tiers of chemical facilities based on the risk they present of a deliberate terrorist attack. And if the facility owners decide on their own that they want to modify their business practices to get into a lower tier which would have a less onerous security requirement, they should have the opportunity to do that and apply for reclassification.

So that is what I mean by a market-based approach to changing business practices and adopting less dangerous, less unsafe business practices.

Senator LIEBERMAN. And the tier you are in would be determined by how serious the consequences of an attack would be.

Mr. FALKENRATH. It would be several different things: How serious the consequences would be, what chemicals are present, what is the toxicity of the chemicals, what is their proximity to population density. Those are the things that you would expect the Department to design and to do so sensibly based on analytically sound criteria.

Senator LIEBERMAN. So I guess my question is—and this is all at a general level, so we have to see the details—whether this is an area where the market is sufficient to encourage people in the industry to take the steps necessary to reduce the risk, without us either creating greater incentives or mandating something of that kind to occur.

Mr. FALKENRATH. At the moment it appears to me, Senator, it is not sufficient, by and large.

Senator LIEBERMAN. Yes.

Mr. FALKENRATH. But I think an appropriately designed regulatory regime could create those incentives so that they would then voluntarily, if it made sense for them, decide to adopt safer business practices. If it is switching from gaseous chlorine to a salt form for water——

Senator LIEBERMAN. That is the perfect example.

Mr. FALKENRATH. But not to give the government the power to order them to do that, but to set up an incentive structure that allowed them, on the basis of their own business model, to make the decisions if it made sense.

Senator LIEBERMAN. Mr. Flynn, do you have an opinion on that one? I should say "Dr. Flynn."

Mr. FLYNN. Thank you, Senator. It is an honor to be with you here.

Senator LIEBERMAN. Nice to be with you.

Mr. FLYNN. On one part, safety versus security, a big message that I try to push on security is the way you keep people vested in it is if it serves another purpose. So if many of the things that

you do for safety will help for security—and so you don't want to get into a splitting hairs problem here.

Senator LIEBERMAN. Right.

Mr. FLYNN. What we are really, I think, dancing around is a notion of a 1960's-style OSHA Federal oversight with its well deserved reputation of nitpicking regulation versus some of the things that Dr. Falkenrath is laying out as a regulatory framework but where we find incentive systems to get people to want to get to the desired behavior. I am an advocate of this latter approach, but it has to be a framework that is required. There has to be a compliance—an audit system, a compliance system with sanctions to level the playing field so folks will start to adopt the requirements.

It is clear, 3½ years out, virtually nothing is happening besides trying to put together best practices and model codes, and so this is something we need to deal with with a lot greater urgency.

Senator LIEBERMAN. I agree with what you have said and also the sense of urgency. The record shows, as all of you have said, that not enough is being done and that there is a clear and present danger, and we have to do whatever we can in this session of Congress to drive much more comprehensive steps to protect people from the consequences of attack or accident.

Thanks, Madam Chairman. My time is up.

Chairman COLLINS. Thank you. Senator Lautenberg.

Senator LAUTENBERG. Thank you, Madam Chairman. I think this was an exceptionally productive hearing, and I commend you for doing that. It was rather a chilling experience to listen to these people with the experience that you bring to the table and just sound the alarm in the way that you have.

I was the principal driver on the right-to-know law in 1986, and I got that inspiration from the State of New Jersey's own right-to-know law. And we found one thing: That despite the fact that there were no penalties really, because what was asked was reporting, and the companies, in their desire to be good citizens, had substantial reductions in toxic emissions, some as much as 90 percent. And that was a real lesson for me to see that given an impetus—and I am not one who believes only in the carrot. Sometimes a stick is necessary. But we are now in a situation without any harmful design by anybody, unintentionally maybe, zoning requirements, but we are where we are. And as has been said, the materials that are used are an integral part of the way we structure our living, not just economically but culturally, etc.

So when we look at something like the threat posed by this South Kearny location, as we say, as many as 12 million people could be harmed, what do we do about that? Has anybody got any suggestions? Should the government come in and put up high walls? You cannot do it. What could be proposed as a way to deal with problems, potential problems of this magnitude? Any volunteers?

[No response.]

OK. Well, going on to the next question. [Laughter.]

Shortly after the September 11 attack the Blue Plains Sewage Treatment Plant in D.C. switched from the use of explosive chlorine gas to harmless bleach. Now, the use of safer substitutes is

also one of the provisions of Senator Corzine's bill. Did the GAO assess this option?

Mr. STEPHENSON. No. There is a lot of popular support for inherently safer chemicals, but we did not specifically assess it. I was actually at Blue Plains and saw the results of a chlorine gas leak. It destroyed a 100-year-old oak tree, so the devastation that it could cause is very real. But there are obviously types of chemical processes and chemicals that do not lend themselves to inherently safer alternatives without extreme investments in production costs, etc.

I think the vulnerability assessment and risk mitigation and rapid response planning approach offer the most promise—I should point out since nobody answered your former question, that the Community Right-to-Know Act actually went a long way toward helping citizens prepare by knowing what chemical facilities and what hazardous facilities were in their area, and what they should do in the event of a chemical release.

Senator LAUTENBERG. That was induced by a fire that took place in the city of Elizabeth, and when the firemen responded the coats that they were wearing, the protective gear they thought, virtually melted under the chemical reaction that was caused by this fire, and said, wow, there is something terrible out there. So we worked with the firemen and fire departments, and we fashioned the bill, and again, it was very productive in reducing the toxic emissions.

Where can we go to remind chemical facilities to switch to safer chemicals when they are available? Again, trying to keep government from intruding too much in the business sense, but what is our obligation to say to companies that you ought to be looking at safer materials, can you accomplish the same objective, same pricing, etc.?

Mr. FLYNN. Senator, I think with the fact that we are dealing with a core element of our security, then there is certainly legitimately a call on some Federal resources to help with this problem. I think there is an element of RMP that the government can sponsor and support so that we can vet what really are productive practices and get that out and about, and then clearly you can look at tax revenue kinds of enhancements, adopting tax credits, migrating towards one sort of technologies versus another, that you are confident will in fact assure greater safety and security for the people.

There is almost a classic case study with a company, like with DuPont making a decision almost 50 years ago that the way they will maintain their competitive advantage will be that they will be the safest chemical company on the planet. What they discovered were enormous savings from reducing the cost of the amount of goods that they stored, the decline in accidents, and employee workmen's compensation, so they ended up adopting incredibly efficient practices by basically making safety their focus.

There is enough overlap here in many instances where security practices work where it is not necessarily that it will put you at a competitive disadvantage. What we have in this industry is a lot of marginal players who are operating on the fringe of modern industrial practices, and you are probably going to have to make some hard political decisions about whether or not they can continue to operate if they are dealing with very dangerous sub-

stances. That is where it will probably get politically very tricky is when you get down to these very small companies who really cannot survive but by breaking the rules, and then you are talking about employment and other kinds of issues here. But they are, again, they are a sitting weapon of mass destruction.

That is really what we have to see in a post-September 11 world. That is the reality and we have to figure out how we muster resources and devise incentives to get that number under control, just as we are trying to run around over in Russia and elsewhere to try to get this under control. We have our own house to get in order.

Senator LAUTENBERG. Yes. You gave us a striking example of how to view these things when you described 15,000—let us call them weapons of major consequence—sitting around the country. It is a shocking revelation. Nevertheless it is true. And we have not seen it—as bad as the battleground results have been, when one attack on September 11 had a far higher casualty rate than anything we have seen, with thousands and the hundreds of thousands of people employed in the war theater. So we have to pay attention to these things.

I hope, Dr. Falkenrath, that we can stimulate some activity with EPA. They had the authority to regulate a lot of these chemicals and it did not happen. The White House did not push it, as you said, and we have to find a way to get these things to a more urgent platform so that things do happen.

Thank you very much, Madam Chairman. Thank you all.

Chairman COLLINS. Thank you. Senator Levin.

OPENING STATEMENT OF SENATOR LEVIN

Senator LEVIN. Thank you, Madam Chairman.

I want to just go into the incentives question a little more. If I missed this, forgive me. One incentive is a positive tax incentive of some kind, which I assume already exists, to put in safety equipment or safety measures. These deductions already exist. Are you suggesting there be tax credits instead of deductions? Is that a tax incentive which would be greater to install the safety equipment?

Mr. FALKENRATH. I guess I am probably not in really a position to drill down too far on that, Senator, but obviously we are trying to create a marketing incentive—recognize security is a public good—to adopt practices that mitigate the consequence if something happens at the plant. So I would say ideally if you want to stimulate it quicker, it is a tax credit for doing A, B, or C. Whether you talk about tax deductions or not, I guess will depend on the facility whether that is an incentive enough for them to move forward.

Senator LEVIN. Dr. Falkenrath, the question of the mandates which need to be there in order for the market to work, that is an unusual balance just to state it that way. You need the mandate, you either have to install security equipment or if you do not install security equipment, then what?

Mr. FALKENRATH. Then you will be subject to civil or criminal penalties, and effectively be put out of business or thrown in jail.

Senator LEVIN. So is that what you call market based? [Laughter.]

Mr. FALKENRATH. Yes. [Laughter.]

Chairman COLLINS. A powerful market incentive, jail.

Mr. FALKENRATH. This is an area where I disagree with Steve. I do not think there should be incentives to do this. What we have here is an industry with a security externality, that they are not internalizing, and the role of the government should be to force them to internalize the external cost of securing their inherently dangerous systems, and that is what we should be doing.

I would prefer to do that in a standard setting way that recognized differentials in risk and also had graduated security requirements as you moved up the ladder of risk, that forced companies to make their own cost benefit calculations of either complying with the standard or modifying their business practices in such a way that got them into a lower tier with less onerous standards. Failure to comply at any level in the schedule, you would have a schedule of civil and criminal penalties.

Senator LEVIN. I think it is different from what we usually call market-based incentives around here.

Mr. FALKENRATH. The reason I call it market-based is the companies have the opportunity to decide. If they wish to comply with the Secretary of Homeland Security's standard for their level or risk, or modify their business practices in such a way that lowered the level of how onerous the security requirements were. That is why I think of it as market-based.

Senator LEVIN. Well, comply or modify is one and the same thing because compliance means modification.

Mr. FALKENRATH. To put it in concrete terms, and make it simple, if it was a choice between spending $10 million installing a new access control system and background checks and fences and the rest, or $8 million changing your business model to a less dangerous form of chlorine, then the board would have the choice to make the decision.

Senator LEVIN. But the government would mandate that you have got two choices.

Mr. FALKENRATH. Right. It would follow from the schedule, the sort of tiers of risk.

Senator LEVIN. Thank you.

The only other question I have has to do with the difference between the situation where you are prioritizing risks based on probability and severity of an incident where you are dealing not with accident, where I think you can more traditionally look at likelihood, probabilities, and where you are dealing with an intentional terrorist act and the difference between assessing probabilities and risk under those circumstances and the kind of models that are appropriate when you are dealing with a coordinated intentional terrorist attack, seems to me very different from the usual models which we look at. I do not know if anyone wants to comment—maybe you already have commented on it, in which case that would be fine. We will just rely on my staff and on the record. But if you have not commented on that difference and would like to, I could just start with anyone here.

Mr. FALKENRATH. Senator, I completely agree that you cannot apply normal cost benefit calculations or risk management calculations to deliberate actions by a strategic thinking adversary. Their

actions and their tactics are not statistically patterned like accidents are or hurricanes are or the rest.

So the assumption you have to make is they are trying to find the ways to hurt us the most, and our job, it seems to me, is to figure that out before they do and take action in those areas.

Mr. FLYNN. If I might add, Senator, I mean this is the biggest concern I have overall with the approach we have right now, which is to say we have a threat-based risk management approach. Fundamentally, threat-based requires the underlying intelligence to tell you where, when and how they are going to act, and then you raise your protective measures. We do not have that intelligence. We are not going to have it for probably 10 to 15 years. We know how badly things are broken on the intelligence side.

So that forces us to have to consider what would be, if we were the terrorists, the most likely targets? And so I add to it not just generating mass casualties but also proximity to critical infrastructure. And typically in ports you get all of the above. But basically we are talking about would we bring down not just loss of life or bring down fundamental systems that run our way of life?

Final point I would make here, I am very concerned that in fact one of the outcomes of what is happening in Iraq is it is becoming a proving ground for learning how to do critical infrastructure sabotage. In Afghanistan these folks learned how to be warriors. Afghanistan was virtually in the stone age so there was not much infrastructure to attack, but now we know the evolution of that tactic is to go after power grids, go after pipelines, go after transportation assets and so forth. That skill set is being honed. Even if things turn out well, these folks return back to their original countries, we will have problems here.

So infrastructure best be looked at. We need requirements that really treat this with much more urgency than we have been dealing with it to date.

Ms. MERRITT. I would just like to add that when all of that fails because you have a thinking, planning opponent, the last resort of protection for your public is preparedness, to be able to know what to do, shelter in place, know how to evacuate, and have emergency responders who are trained and properly equipped. And working together with all the resources of the region in order to address something that would be worst case is the last measure of protection for the public to survive such an event. Just for the public to know what they should do in order to protect themselves like you do in a tornado or a hurricane. What are the steps that are taken?

What we find is people just do not even know that. They do not know and understand what the difference between shelter in place or evacuation is, or what any of that means. That is a basic fundamental need that we have in this country that I think is a last line of defense in protecting our population from the catastrophic impact of a terrorist attack where they intend to kill millions.

Mr. STEPHENSON. Civil preparedness, as she is mentioning, is a big deterrent. You want to reduce the attractiveness of these targets, and one way to do that is by being prepared.

A big incentive to the chemical industry is not to under go Federal regulation, so what Dr. Falkenrath is talking about, incentives to reducing the amount of Federal regulation for plants that are

less risky, therefore you get into inherently safer technologies and chemicals and so forth. I have to tell you that any of these 15,000 RMP facilities celebrate when they reduce the level of chemicals that they need to store on site and, thus get some off the RMP list, and they therefore no longer have to comply with that requirement. That is a huge incentive that is monetary for their business.

Now, chemical manufacturing plants often cannot do that, but lots of other facilities that store and use chemicals can in fact do that.

Senator LEVIN. Thank you. Thank you, Madam Chairman.

Chairman COLLINS. I want to thank all of our witnesses for their excellent testimony today. I think this was a very good hearing to start off our series as we examine what is a very complex issue. I am convinced that chemical security has not received the attention that it deserves, given the vulnerabilities involved, and with your help I am hopeful that this Committee can craft an appropriate response.

I am inclined to believe, based on the testimony today, that we do need strong Federal legislation in this area, but we also need legislation that does not put an unreasonable burden on the chemical industry. So we need to strike the right balance. I am convinced that working together, and with the benefit of your expertise, we can achieve that goal.

I do want to also thank the staff for their work on this issue. I particularly want to thank a fellow that we have had from the University of Maine for the past month. His name is Wayne Honeycutt. He is a scientist with the Agricultural Lab at the University of Maine. He is completing his month this week, and will be returning to Maine, but we thank you very much, Wayne, for your contributions to this effort.

The hearing record will remain open for 15 days for additional materials for the record, and the Committee hearing is now adjourned. I thank my colleagues.

[Whereupon, at 11:57 a.m., the Committee was adjourned.]

APPENDIX

PREPARED STATEMENT OF SENATOR PRYOR

I thank Senators Collins and Lieberman for holding this hearing to address the vulnerabilities of the Nation's chemical industry. All of today's witnesses will testify to the need to better protect the production, transportation, and storage of the chemical products that contribute to our high standard of living. It is a dreadful possibility that the very chemicals that we use to save lives and promote health, could be used by our enemies against us in a potentially catastrophic attack.

Therefore, it is incumbent upon this Committee to work with the Department of Homeland Security and industry, to promote stronger protection against, and greater preparedness for, a potential terrorist attack on our chemical facilities. National standards for security of chemical facilities need to be established. Vulnerability assessments of facilities need to be conducted. Security and response plans need to be implemented and monitored.

I look forward to having the opportunity to hear and question the panels about these steps that must be undertaken to secure our chemical industry.

Testimony by Senator James M. Inhofe

Chairman, US Senate Environment and Public Works Committee

before the

US Senate Homeland Security and Government Affairs Committee

April 26, 2005

Madam Chairman, Senator Lieberman, I appreciate the opportunity to submit testimony regarding the issues surrounding chemical facility security.

The Environment and Public Works committee, the committee that I chair, has spent 4 years working on this issue. We have held a hearing and reported out two pieces of legislation. Last Congress, EPW reported out S. 994, the Chemical Facilities Security Act of 2003, a bipartisan bill that then-Senator Miller and I introduced. Unfortunately, the agendas of some environmental groups have gotten in the way of legislation moving.

There is a great deal of mis-information in the media and elsewhere about the state of the security of our nation's chemical facilities. Most reports would lead you to believe that nothing has been done since 9/11 to assess and address potential vulnerabilities. The facts show a different story and when considering legislation I prefer to rely upon the facts.

Since its formation, the Department of Homeland Security has hit the ground running to secure high priority chemical facilities. DHS has deployed teams of counter terrorism specialists to the high-risk facilities to work *with* facilities, local first responders, states and other federal

agencies to assess and address the security needs. DHS has also created several reports to help *all* chemical facilities, as well as state and local law enforcement, regardless of whether they represent high-risk locations. DHS has provided guidelines for conducting vulnerability assessments and creating site security plans, as well as provided chemical sources with potential indicators of terrorist activity.

Industry has also taken great strides to protect their facilities and they did this voluntarily, in absence of legislation. They don't want an attack on their assets anymore than we do. Nearly all the chemical sectors that would have been addressed by S. 994 have taken steps to protect critical infrastructure. It is my understanding that there will be stakeholder hearings forthcoming in this committee where you will learn all that they have done.

Additionally, Congress has enacted two statutes that address the security of some chemical sector facilities. In the first half of 2002, it passed the Public Health Security and Bioterrorism Preparedness Act, Title IV of which requires larger community drinking water supply systems to conduct vulnerability assessments and prepare emergency response plans. The Maritime Transportation Security Act, passed at the end of the 107th Congress, imposes highly detailed requirements for assessments and plans at facilities adjacent to waters subject to U.S. jurisdiction that might be involved in a transportation security incident.

This activity means we are indeed safer than we were 3 years ago. We took all of this into consideration as we deliberated legislation.

There has been a great deal of press regarding exactly what S. 994, the Inhofe-Miller bill, would have done. The committee worked very hard to create a regulatory framework while recognizing that the focus was on security. The committee believed it was crucial to develop legislation that represented a comprehensive and cooperative approach to security—coordinating and facilitating efforts between the security experts in the federal government, the states, local law enforcement, local first responders and the private sector facilities. We heard that time and time again from the experts that this is the most effective approach and we sought to create legislation to foster this approach.

As passed by the EPW committee, S. 994 would have required DHS to write national regulations that would mandate high-risk chemical facilities to assess their vulnerability to a terrorist attack and develop and implement security plans to address those vulnerabilities. The bill provided for strong accountability by requiring chemical sources to publicly certify to DHS that they are in compliance and submit their plans and assessments to DHS for review. The bill also provided inspection authority so that DHS can verify that high-risk facilities are in fact doing the right thing. It also provided stiff penalties for noncompliance.

There were those who wanted to go farther, to include language that had little, if anything, to do with security. One such provision is known as mandatory inherently safer technology or IST. The suggested provision would have given the federal government the authority to mandate that a private company change their manufacturing process or the chemicals that they use. I believe that such a concept is not good for our nation's security, much less the

economy. We should not allow the federal government to tell a private company how to make their product.

The idea of IST predates 9/11 and has never been about security. It is a concept that dates back more than a decade when the extremist environmental community, Greenpeace and others, were seeking bans on chlorine – the chemical that is used to purify our nation's water. They sought to use the IST concept to eliminate what they dubbed "the root of all evil" and "absolute death." It was only after 9/11 that they decided to play upon the fears of the nation and repackaged IST as a solution to potential security problems. IST is not about security; in fact, it may have the practical effect of reducing the overall security of critical infrastructure because by defining "inherently safer technology" in the context of one facility or one sector, it ignores the interdependency that permeates the nation's critical infrastructure. GAO said as much in its 2003 report, when it stated "reducing the chemicals stored may shift the risk onto the transportation sector as reliance on rail or truck shipments increases." Similarly, a mandate for a water treatment plant to reduce its on-site stockpile of water-purification chemicals may jeopardize the *security* of the nation's water supply, since it seriously hinders the plant's ability to adequately respond to a bio-terror attack on the water reservoir. There are also significant costs associated with such a switch. A small business owner may have less chemical stored on site but it may have to increase its deliveries and pay higher costs as a result of no longer being able to buy in bulk.

Mandatory IST also takes away all certainty from the business owner or operator. By having the government dictate how products are made or what processes are used and how to do

it; we've left businesses open to all sort of attacks. What if a government ordered change in materials or to a process creates other accidental or unintentional harm? If something were to go terribly wrong because of the mandates placed on the facility by the federal government, there would be no one there to help. Most likely, businesses would be stuck with all the blame and legal liability for problems with processes or procedures they had no say in forming. No other security law requires IST and for good reason.

I strongly urge you to not allow a long-standing agenda of environmental groups to dictate what is or should be included in security legislation. I have yet to know of any environmental organization that is staff by security experts. We cannot allow security legislation to be hijacked by those who have no security expertise.

Other issues that we encountered and tried to address in our work on the legislation included trying to promote innovation and provide appropriate flexibility in compliance mechanisms and the protection of sensitive information from terrorists who seek to harm us. For the former, S. 994 would have created an alternative compliance mechanism under which the Secretary can recognize those procedures, protocols, regulations and standards that the Secretary has determined are substantially equivalent to the portions of the Act requiring regulations for vulnerability assessments and site security plans and the contents of the site security plans. This would allow the Department to focus its resources on the highest priority facilities. Additionally, the committee wanted to ensure voluntary efforts currently underway were not derailed or curtailed in anticipation of regulations from DHS.

For the latter, the Committee recognized that information regarding the vulnerability of a source to terrorism, and the countermeasures adopted to reduce that vulnerability, is among the most sensitive that any private facility can generate. The Committee also recognized the need for the public to know whether a local facility has complied with the law. As a result, the provisions of the bill would extend protections only to sensitive information that was not otherwise obtainable under any other law. It also did not apply protections to any certifications of compliance required by the law. This ensured that the public would know that steps were taken by companies but would not inadvertently supply sensitive information to terrorists combing the Internet for clues about potential targets. We also crafted the provision to respect the needs of State and local governments to obtain information that they need to coordinate with the Federal government and facilities, by enabling State and local officials designated by the Secretary to obtain protected information, without concern that they might have to disclose it under their own laws or ordinances.

Finally, I have joined in a GAO information request effort with you, Madame Chairwoman, and Representative Christopher Shays to get more information on the state of chemical security. While GAO has looked at individual snapshots of the chemical security landscape, the last comprehensive review they conducted was released in 2003 -- before the Department of Homeland Security was formed. What I have specifically requested is for GAO to determine, with the help of DHS, what precise statutory authorities or directives are now needed for the Department, with two years of experience under their belt, to fulfill their mission to protect critical infrastructure. This is the very core of what should to be in good security legislation. We should not over-legislate or under-legislate but do instead only what is necessary

to protect our nation's chemical facilities from terrorist attacks. I do not believe it would be prudent for Congress to move forward on legislation until this critical question is answered.

Moving a chemical site security bill is not an easy process; there are fundamental policy differences to resolve. We tried to make sure that every provision we included was designed to enhance site security and not allow the radical environmentalist agenda to dictate our national security policy. The EPW committee has taken this issue very seriously and has built up 4 years of knowledge. We stand ready to assist you in your examination of this important and controversial issue.

Statement of the Honorable Vito Fossella before the
Senate Committee on Homeland Security and Governmental Affairs
April 27, 2005
"Chemical Facility Security: America's Next Step in Securing the Homeland"

Less than two months ago, Americans were once again reminded of enemy plots to strike our homeland with deadly force when a drawing of Grand Central station was found on the computer of a suspect linked to the Madrid train bombings. Since September 11th, our nation has made much progress in the War on Terrorism, from attacking terrorist strongholds across the globe to enhancing cooperation and communication among the nation's intelligence agencies to creating the Department of Homeland Security. As a result, our airlines, ports and borders are more secure than ever.

We have made great headway, but we still have a long way to go. America must face its next great challenge in Homeland Defense: securing chemical facilities. The treat to the chemical sector is severe. The U.S. General Accounting Office (GAO) reports note as far back as the late 1990s, terrorists have plotted to use destructive devices at facilities housing propane. Since September 11th, the Department of Homeland Security (DHS) and the Director of Central Intelligence have also warned of potential terrorist attacks on chemical facilities.

Despite these threats, there is still lack of a uniform set of regulations governing security at chemical facilities. As the President's National Strategy for the Physical Protection of Critical Infrastructures and Key Assets cautioned at the beginning of 2003, "There is currently no clear, unambiguous legal or regulatory authority at the federal level to help ensure comprehensive, uniform security standards for chemical facilities." Faced with this deficiency, the Bush Administration has used existing frameworks to accomplish significant advancement in the protection of this critical infrastructure. Congress must now act to give the Department of Homeland Security (DHS) the clear and comprehensive authority it needs, without placing an undue burden on commerce.

Laws on the books today address safety, rather than security, and were authored years before al-Qaeda became a household name. For instance, Clean Air Act regulations require facilities holding hazardous chemicals in certain quantities to protect the public against accidental releases, but they don't address the terrorist threat. The Maritime Transportation Security Act (MTSA) and Bioterrorism Preparedness and Response Act *do require* certain facilities to conduct vulnerability assessments and prepare security plans, but it only applies to waterfront and drinking water facilities. Many chemical plants also meet voluntary security standards, such as the American Chemistry Council's (ACC) Responsible Care program. Yet many of the facilities handling significant quantities of chemicals are not ACC members and don't have to comply with the organization's standards.

While existing law and industry measures are a good starting block, the GAO has warned "the federal government has not comprehensively assessed the chemical

industry's vulnerability to terrorist attacks." This should serve as a call to arms for Congress to move legislation enhancing security at our nation's chemical facilities.

That is why both last Congress and earlier this year I introduced legislation addressing this important issue. *The Chemical Facility Security Act of 2005* (H.R. 1562) closes security gaps and helps safeguard against terrorist attacks on the chemical industry. The bill:

- Identifies "high-priority" chemical facilities and requires industry to conduct vulnerability assessments and prepare security plans
- Mandates DHS identify and focus its efforts on high priority facilities
- Embraces aspects of current law and voluntary private sector efforts that have proven effective
- Prevents duplicative regulations by exempting facilities covered under current laws like MTSA.
- Allows government to use its discretion in endorsing voluntary industry initiatives substantially equivalent to the bill's requirements.
- Allows for greater information sharing between government and industry, while containing stringent protections against dissemination of security related information.

How can we even consider waiting for another 9-11 to address known vulnerabilities? America has already seen the ugly face of terrorism and we well know the capabilities of its agents. Given the realities of our new world, government must take measured steps to craft a regulatory environment addressing threats without threatening the benefits of history's most free and productive economy. H.R. 1562 represents a bold commitment to such an ideal. It recognizes the severity of terrorist threats to our chemical sector, while embodying the realization that shutting down commerce and hampering our way of life is the very objective terrorists wish to achieve. It is time for Congress to continue working against threats to our homeland and get working on H.R. 1562.

STATEMENT OF SENATOR JON S. CORZINE

Senate Committee on Homeland Security and Governmental Affairs

April 27, 2005

Madam Chairman and Mr. Ranking Member, it is with deep appreciation that I thank you for holding this hearing on chemical plant safety and security in the post-9/11 world. As the 9/11 Commission so appropriately recommended, establishing a Homeland Security Strategy demands that we set priorities. Simply put, we must address those areas where we are most vulnerable and where an attack would have the gravest consequences. With that principle in mind, I emphatically believe that we need to shore up security of the chemical industry. This can only be done by providing oversight with respect to both fixed assets such as chemical production facilities, and the transport of hazardous products.

Madam Chairman and Mr. Ranking Member, I first introduced chemical security legislation in October 2001, and have been pushing for it ever since. But this issue is as urgent as ever. We simply must act if we are to protect our communities from a terrorist attack using vulnerable chemical facilities as a weapon.

September 11 shocked us into the realization that our assets can be turned against us by terrorists. As Senator Lautenberg has noted, New Jersey is home to a high concentration of chemical facilities. According to EPA data, there are eleven plants in my state alone where a worst-case release of toxic chemicals could threaten more than a million people. New Jersey is also the most densely populated state in the nation, thus presenting a combination of vulnerability and consequence that is deeply disturbing. A Senator from New Jersey cannot fail to realize that chemical plants would be high on a terrorist's list.

But this is not a parochial issue. The same EPA data shows that there are 123 plants in 24 states where a release could threaten more than a million

people. And there are 39 states that have at least one facility where such a release could threaten more than 100,000 people.

I know from personal experience the vulnerabilities of many of these facilities. In June of 2003, I joined a crew from 60 Minutes outside a chemical plant in South Kearney in New Jersey. That plant, which holds highly toxic chlorine, is directly underneath a major highway in a densely populated part of my state. A car could drive right up to the plant, or right above it. The gates and the security team were insufficient to stop even a casual interloper, much less a determined terrorist.

The consequences of an attack on these and other chemical facilities and their continued vulnerability have prompted alarming – but entirely accurate – testimony. In January, former Deputy Homeland Security Advisor to the President, Richard Falkenrath, who you will hear from again later today, testified to this Committee that the threat of industrial chemicals is "acutely vulnerable and almost uniquely dangerous" and that "toxic-by-inhalation industrial chemicals present a mass-casualty terrorist potential rivaled only by improvised nuclear devices, certain acts of bioterrorism, and the collapse of large, occupied buildings."

Madam Chairman and Mr. Ranking Member, despite these and many other warnings by public officials and anti-terrorism experts, there is still no federal law requiring chemical facilities to assess vulnerabilities or to safeguard against a terrorist attack. The federal government has made no serious efforts to reduce the vulnerability of chemical facilities, nor does it have the authority to do so. I believe, however, that there is, in fact, real support for new legislation. The chemical security bill that I introduced in the 107th Congress passed the Environmental and Public Works Committee by a vote of 19-0.

This consensus surrounding this issue is indeed broad —the EPA, the Justice Department, the Nuclear Regulatory Commission, GAO, industry groups, and public safety groups all agree that government must act. The White House Strategy for Homeland Security recognizes the chemical and hazardous materials sector as an infrastructure protection priority. As Secretary of Homeland Security Ridge forcefully testified on July 10, 2002:

"The fact is, we have a very diversified economy and our enemies look at some of our economic assets as targets. And clearly, the chemical facilities

are one of them. We know that there have been reports validated about security deficiencies at dozens and dozens of those."

Madam Chairman and Mr. Ranking Member, chemical security legislation is necessary to protect our communities. Let me be clear: it is not an attempt to vilify our nations' chemical companies. Indeed, these companies are a key part of our industrial fabric, providing jobs and producing products essential to our lives. This is certainly true of my home state of New Jersey, as I have already indicated.

Some companies have taken actions and are continuing to work to implement security measures. Others, however, are not. That's one crucial reason why federal regulation is needed. We must be able to assure our constituents that this major vulnerability is being addressed in a comprehensive manner and that certain minimum standards are being met throughout the country.

We have already addressed other infrastructure vulnerabilities. Most notably, we require nuclear power plants to meet extensive security standards as a condition of their operating licenses. I think we ought to tighten those standards, but the fact is that we have no standards at all for our chemical facilities.

Addressing the risk to communities from a terrorist-caused release of hazardous chemicals requires two fundamental components. The first is improving plant perimeter security, so that the likelihood of a successful terrorist attack is lowered. The second is reducing hazards, in the production process, so that the impact of a successful attack is minimized.

Under the legislation I have proposed, the federal government would identify high priority chemical facilities and then require those facilities to assess vulnerabilities and hazards and develop and implement a plan to improve security and use safer technologies. Among the factors used to identify these facilities are the severity of harm that could be caused by a chemical release, proximity to population centers, threats to national security or critical infrastructure, threshold quantities of substances of concern that pose a serious threat, and such other relevant safety or security factors.

Next, I believe that chemical security legislation should require chemical facilities to work with local law enforcement and first responders, in

developing the assessments and plans. September 11 showed us how brave and important our first responders are. Every day, they stand ready to risk their lives to respond to terrorist attacks. They ought to be a part of the process for developing vulnerability assessments and response plans.

Chemical facility employees should also be consulted. They are most at risk in case of a terrorist attack on their plants. They also work in the plants every day and have ideas about how to secure the facilities and reduce hazards.

As to the assessments and plans themselves, requirements in any legislation would be fairly general. I'm not advocating a one-size-fits-all approach. Each facility would be required to prepare prevention, preparedness and response plan that incorporates the results of the assessments. The plan must include actions and procedures, including safer design and maintenance, to eliminate or significantly lessen the potential consequences of a release.

What this means in simple terms, is that each facility has to develop a plan and take steps to reduce both the likelihood of a successful attack and the harm that would occur if an attack were successful. In other words, they have to look at traditional security measures, such as fences, alarms, and guards. But they also have to look at whether they can make the plant safer. In other words, can less hazardous chemicals be used? Can containment technology such as fans or scrubbers be improved or employed to contain chemicals that may be released? Chemical facilities ought to evaluate the full range of options, look at the tradeoffs among them, and go forward with the best mix of security and technology options.

Facilities would then be required to send their assessments and plans to the Department of Homeland Security which must review those assessments and plans, and certify compliance with the regulations.

Madam Chairman, Mr. Ranking Member, in recent years, two contentious issues have arisen that I would like to address. The first is the question of private action and industry standards.

Let me be repeat: there has been important work done both by individual owners and operators and by industry as a whole. This work should be recognized, applauded and encouraged. We must build on what has already been done. But what chemical security legislation should not do is provide a

blanket substitution of industry guidelines in the place of federal standards. The Department of Homeland Security has the expertise and the intelligence necessary to defend us from terrorism. We must allow the Department to do its job. With millions of lives at risk, we simply cannot outsource our security.

The second question involves the "alternative approaches" – ways in which we can mitigate the consequences of an attack by changing the chemicals or the manufacturing process.

Madam Chairman, Mr. Ranking Member, chemical facilities can improve security by reinforcing storage tanks. They can hire more security officers and train them better. They can build higher walls and fences, and improve detection devices. But no security regime will ever be impenetrable. We saw on September 11 what terrorists can do merely by taking over a few airplanes. We cannot assume that "guns, gates and guards" will always provide airtight security. We simply have to prepare for the possibility that a committed terrorist will find a way to release toxic chemicals.

To truly protect the public, therefore, we need to make chemical plants less attractive targets in the first place. We can do that by ensuring that, if a facility is attacked, the threat to human life is minimized. We have seen a great example of how that can work right here in Washington DC, at the Blue Plains Sewage Treatment Plant. Prior to September 11, the plant stored seven tank cars, consisting of about 550 tons of chlorine and sulfur dioxide. Both are very volatile, dangerous chemicals. If these tanks were attacked, a poisonous cloud could have blanketed Washington DC—including the Capitol and the White House. Though the threat had been there for years, September 11 changed the way that plant managers thought about everything.

I'd like to quote Mike Marcotte, the plant's manager, who said:

"After a sleepless night on the 11th I came in on the 12th and convened a number of my engineers and said, 'I think we need to come up with a plan to get the chlorine out of here as quickly as possible.'"

And that's what they did. They replaced the chlorine with sodium hypochlorite—a strong version of the bleach that we all use at home. It is a bit more expensive to use. Blue Plains officials have estimated that it will

cost each household 25-50 cents more per year because of the switch. But that's a small price to pay to eliminate the possibility of a chlorine release across Washington DC.

If the plant manager at Blue Plains can put our nation's security first, so too can Congress. We can ensure that our government has the authority to secure the thousands of still vulnerable chemical facilities around the country. We can and must act. New instances of accidents, including the explosion in Texas City on March 23 that killed 15 workers and injured 100, or the explosion on January 25, in Perth Amboy, NJ that killed three, offer a hint of what would happen if terrorists deliberately attacked a chemical facility.

Madam Chairman, Mr. Ranking Member, if we knew ahead of time of a looming threat to our children, wouldn't we do everything we could to stop it? And, in the end, shouldn't we be asking ourselves this horrible question: "What if this nightmare had already happened? Then how would we respond?"

Thank you, Madam Chairman, Mr. Ranking Member. I deeply appreciate the opportunity to testify before you today and look forward to working with you on this critically important issue.

Carolyn W. Merritt
Chairman
U.S. Chemical Safety and Hazard Investigation Board
Testimony before the
U.S. Senate Homeland Security and Government Affairs Committee

Madam Chairman, Senator Lieberman, and members of the Committee, thank you for the opportunity to testify this morning. I commend you for your leadership in convening this hearing. Protecting the public from chemical emergencies is an important responsibility of the federal government.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) is an independent, non-regulatory, federal agency that investigates major chemical accidents at fixed industrial facilities, determines root causes, and issues safety recommendations. Our recommendations go to the companies that have the accidents, other government agencies, and trade and labor organizations. We currently have three Board members of five authorized; we are appointed by the president and confirmed by the Senate. We have a professional staff of engineers and safety experts.

The Board does not have primary jurisdiction over transportation-related chemical accidents, and we also do not have jurisdiction over industrial site security or criminal acts that cause a chemical release.

Since we opened our doors in 1998, we have launched investigations of approximately 35 major chemical accidents at fixed industrial facilities to determine their root causes, and we have issued almost 300 safety recommendations designed to prevent future accidents.

In the time we have been in existence, we have learned something very troubling. The incidents we have investigated at the U.S. Chemical Safety Board have revealed serious gaps in the preparations for major chemical releases by companies, emergency responders, government authorities, and the public. These gaps in preparedness leave Americans vulnerable.

Madam Chairman, in December of last year, I traveled to Kanpur, India, to a conference marking the twentieth anniversary of the chemical plant tragedy in Bhopal, India. In that accident on December 3, 1984, about 43 tons of toxic methyl isocyanate, which is actually not a large quantity, were released into the air from a U.S.-owned pesticide plant. Several hundred thousand people were exposed to the gas. About three thousand people died within a few weeks, and more than 200,000 sustained permanent injuries.

For me, it was an extremely sobering experience to meet with some of the plant operators, residents, health professionals, and public officials from this ill-fated city. On the eve of the disaster, these were just ordinary people going about their lives, as we all do. Although many showed tremendous courage and heroism when the gas release was impacting a panicked population, overall the residents and the city were caught totally unprepared. It was the lack of preparation that made this accident particularly devastating and added to the casualties in what became the worst industrial accident in history.

Residents and community officials were unaware of the toxic hazard from the nearby facility and had not planned an appropriate emergency response. When the time came, the wrong actions were taken. For example, many who were told to evacuate ran directly into the toxic cloud and died in the street while those who stayed in their shanty homes survived. I do not suggest that the accident was the fault of residents or public officials. However, if they had been able to prepare for such event, the impact of the release could have been mitigated. That is the conclusion reported by local officials in Bhopal today.

The consequences of the Bhopal accident were extraordinary, but the accident itself was not. The amount of toxic material released, forty-three tons, would fit comfortably into just one rail car. Safety experts have concluded that the Bhopal gas release was caused by a combination of poor operating practices, poor maintenance, and the deterioration of safety equipment designed specifically to prevent this kind of release. In our investigations, the Chemical Safety Board regularly finds deficiencies similar to those at Bhopal at major incidents in this country – including the failure to prepare the public for chemical emergencies.

In the U.S. in the past few years, we have had several chemical releases that have similarities to Bhopal. Fortunately, the consequences, though tragic, have been far less severe than Bhopal. One reason is that they occurred in more sparsely populated areas. The most recent was the release of about 60 tons of chlorine from the rail car crash in Graniteville, South Carolina, in January, now under investigation by the NTSB. An area two miles downwind of the derailment was affected, and the accident took ten lives. This was not even a worst-case event since the gas release was not instantaneous but occurred over several days.

A similar-size chlorine release occurred in a sparsely populated, rural area outside San Antonio last year, when two freight trains collided. A conductor and two residents were killed by chlorine gas, and people 10 miles away reported symptoms of exposure. Of course chlorine is but one of a number of high-volume hazardous chemicals, including ammonia, hydrofluoric acid, and others that pose a potential danger to those who live near fixed chemical facilities or along rail or pipeline routes that transport the chemicals.

Clearly, if a major release occurred in a densely settled urban area, it would have the potential to cause large-scale casualties. Following Bhopal, in the 1990s the EPA began requiring that more than 15,000 hazardous chemical sites begin planning for disasters and file worst-case scenario data with local and federal authorities. Some in industry noted that these scenarios – which often indicated that thousands of people within a certain radius would be imperiled by a single release – could be unduly alarming. The predictions were known to be very conservative and were intended to be used for planning purposes by emergency response organizations and government agencies. The scenarios were unlikely or overly simplistic, and they did not take account of real-world factors such as topography and wind conditions, critics said.

In today's climate the potential for a catastrophic event is more real than when these arguments were first made. Today an intentional criminal act is a real possibility.

One method of determining the effects of various scenarios is called "dispersion modeling," and it has been widely used over the past decade. For example, in 1998 the Chlorine Institute, an industry trade group, published a pamphlet entitled "Estimating the Area Affected by a Chlorine Release." The institute used dispersion modeling to calculate the effect of worst-case releases from tank trucks, rail cars, and other common containers under typical atmospheric conditions. According to this publication, the total failure of a chlorine rail car could produce a plume four miles wide by 15 miles long with concentrations exceeding 20 parts per million (ppm) – higher than what the federal government terms "immediately dangerous to life and health." Naturally, closer in than 15 miles, the levels can be much higher, exceeding the 430 ppm concentration that is rapidly fatal. While these dispersion models may prove to be overly cautious, they do indicate the potential magnitude of the problem.

The overall message is clear: a large-scale instantaneous toxic gas release is quite capable of causing thousands of casualties if the conditions are right and the release occurs near a population center. We have seen it overseas; we have seen it projected in computer models; and we could see it in the future here in the United States as the result of a terrorist act or perhaps an accident.

At many fixed industrial sites, there are chemical storage tanks that are far larger than any rail car. In my years as an industrial safety and environment executive, we were certainly aware of some large storage tanks that could cause catastrophic toxic releases affecting thousands of residents. In one case, we knew of an ammonia storage tank in a major port that could have jeopardized nearly a million people in case of a total failure or attack.

In addition to large storage tanks, there are also large numbers of stationary rail tank cars parked at chemical plants, freight yards, and other sites. In fact, the CSB has investigated three chlorine releases that involved stationary rail cars at chemical plants in Missouri, Louisiana, and Arizona. There were injuries in each case but fortunately no fatalities.

Overall, we have an excellent record in this country of minimizing off-site fatalities from chemical releases at fixed industrial sites. A lot of the credit is due to those companies that have diligently implemented the process safety and emergency planning requirements established under the 1986 Emergency Planning and Community Right-to-Know Act and the 1990 Clean Air Act Amendments. Some companies have gone above and beyond the requirements through voluntary programs, including joint planning and cost sharing with local emergency response organizations.

But some of our "success" is also due to luck and good fortune. In our investigations, we continue to observe companies and communities that were caught unprepared for even small-scale chemical releases. From time to time we find companies that have large quantities of toxic materials close to residential neighborhoods, schools, or other businesses and have few if any functional safety procedures or devices in place – and their communities are not prepared for a chemical emergency.

Among the accident cases we investigate, a deficient emergency response is more often the rule than the exception. I will briefly discuss a half dozen cases that illustrate this point. All of these cases were investigated by the Board over the past three years.

In August 2002, a chemical repackaging facility in a St. Louis suburb had a release of chlorine gas from a failed transfer hose connected to a rail car. Four out of five emergency shutoff valves failed to close properly when the automatic shutdown system detected chlorine because they were not properly maintained or tested. Emergency protective equipment was not available to plant personnel as it was stored too close to the rail car and became immediately inaccessible when the release started. In addition, the community's volunteer hazardous materials team had never practiced at the site for such an accident. Volunteer responders took 90 minutes to assemble the team, 45 minutes to get suited and plan entry to the site, and another 45 minutes to reach the rail car and shut off manual valves, stopping the leak. Over that three-hour span, some 48,000 pounds of chlorine gas had been released to the surrounding area.

Although some companies unload chlorine cars indoors and also have scrubber systems for leaks of the gas, there were no such measures in place here. The rail car was outdoors, unprotected, and a short distance away from a 100-unit mobile home park and other businesses. Under the worst case, hundreds of people could have been rapidly exposed to toxic concentrations of gas. There were no warning sirens or telephone call-down systems, and firefighters had to go door-to-door with bullhorns in an effort to evacuate residents.

A series of fortuitous circumstances, however, including the time of the day and the wind direction, spared local residents and prevented a catastrophe. Many residents said they did not even know that the chlorine repackaging facility was nearby. Neither the company nor local authorities had developed effective means of notifying neighbors about the release, produced any plans for shelter-in-place or evacuation, or performed any simulation exercises to prepare for even the most probable of events, let alone the worst-case scenario.

Later that year, in Pascagoula, Mississippi, there was a massive explosion in a chemical plant distillation tower. The upper 35 feet of the tower were blown skyward and heavy pieces of metal debris – some weighing up to six tons – were hurled up to a mile away. The facility was in the center of a massive chemical complex that included a petrochemical refinery and a fertilizer plant, all with large storage tanks of toxic and flammable materials. A 100,000-gallon storage tank, 500 feet away from the tower, was pierced and ignited by debris from the blast.

As in other cases, emergency notification was not effective. A precautionary shelter-in-place was ordered, but not everyone was notified or knew how to respond.

Once again, fortunate circumstances prevented a greater disaster. The tower broke at the top, preventing damage to much of the ground-level equipment. The most hazardous storage vessels, including a 500,000-pound anhydrous ammonia tank, were narrowly spared by the debris and the blast wave from the explosion.

The accident highlighted an interesting problem in emergency planning: few companies if any, in planning for a worst case, consider the effect on their own operations from explosions or chemical releases at neighboring chemical plants.

Less than one year later, another distillation column exploded at a chemical plant in Miamisburg, Ohio, outside of Dayton. Once again heavy debris damaged nearby equipment, including a 52,000-pound storage tank of toxic and flammable carbon monoxide gas. A one-mile radius evacuation was ordered, involving some two thousand residents. Police had to go door-to-door notifying many of the evacuees, and some people were never notified at all. Evacuation instructions were unclear, and some residents were not told where to go to safety. Many were unaware that the plant even existed or had potential explosion hazards.

The same year, a large chemical refrigerant plant in Baton Rouge was caught unprepared when chlorine unloaded from a rail car began leaking through corroded process equipment at the facility. The ventilation system for the control room had not been properly maintained, and chlorine gas quickly entered the room forcing the operators to flee before they could shut down the process. With the controls abandoned, the leak continued for several hours, and nearby residents were forced to take shelter. The chlorine leak also destroyed the electronic control system at the plant and caused a prolonged shutdown of the facility.

Later that year in Glendale, Arizona, a densely populated city adjacent to Phoenix, there was another chlorine release from a chemical plant scrubber system fed by a chlorine rail car. Up to 3,500 pounds of the gas were released, forcing the evacuation of four thousand residents. In addition, students at two elementary schools had to shelter in place. Once again, local authorities were not fully prepared for the release, and some of the emergency notification was done door-to-door by police officers who were not wearing respiratory protection. In the end, ten officers needed to go to the hospital themselves for chlorine-related symptoms. The notification system and emergency response were not completely effective. For example, evacuees were told where to go to shelter safely, but they were not given a route to get there, and the most direct path for some was directly through the plume.

Probably the most significant incident of all occurred in the northwest Georgia community of Dalton just a year ago, in April 2004. A small chemical company there decided to make a new product, a chemical called triallyl cyanurate (TAC). To make TAC, the company needed a toxic and volatile raw material, allyl alcohol. The company ordered the delivery of a 31,000-pound tank truck container of the highly toxic and flammable liquid. But company personnel had not fully researched the chemistry of the reaction process, and during the very first production batch the reactor overheated and began spewing toxic and flammable chemicals into the air. There was no safety equipment in place to contain the release, and a toxic vapor cloud formed and began drifting toward a residential community.

The quantity of allyl alcohol at the plant was well above the threshold of 15,000 pounds under the EPA's Risk Management Program (RMP) rule, but company managers did not even know that the rule existed, did not take required steps to prevent or contain a release, and did not develop a required emergency response plan for the toxic hazard.

Problems with preparedness were not confined to the company, however. Even in this relatively industrialized region, the fire department lacked equipment or protective clothing for a large toxic chemical release. They did not have encapsulating suits or appropriate air monitoring gear. In fact, the community had no hazardous materials unit at all, and in case of a toxic emergency the plan was to bring in contractors from elsewhere in the state, up to 90 miles away.

The community had not planned for sheltering residents in-place, and when the release occurred an evacuation was attempted. There were no warning sirens, either at the plant or in the community, and so unprotected police personnel went door-to-door notifying people to leave. The evacuation exposed responders and residents to the toxic gas. A total of 154 people were decontaminated and evaluated at an overwhelmed local hospital, including 13 police officers and four ambulance personnel. Fortunately, all the residents and responders survived. Fortuitous circumstances, including a heavy rainstorm that helped scrub the toxic gas from the air, may have prevented more serious consequences.

At a public hearing the Board convened in Dalton last fall, we heard how Georgia has not implemented some key provisions of the 1986 Emergency Planning and Community Right-to-Know law. Georgia designated a single Local Emergency Planning Committee (LEPC) for the entire state, and jurisdictions like Whitfield County where Dalton is located are without a functioning LEPC.

The whole purpose of LEPCs, as designed by Congress, is to coordinate emergency planning among companies, police, fire, community groups, local officials, and the news media. Arguably, it was exactly the kind of planning and coordination that was missing in Dalton. But there is no designated federal funding for the LEPC program, little national coordination, and no sanction against states and localities that do not implement these requirements.

I am disturbed by what the CSB's investigations have shown. In the cases we have examined, preparations for chemical emergencies were found to be uneven and inadequate. While we do not know how representative these six cases are, at a minimum they point to the need for a comprehensive national review of chemical preparedness.

The lack of preparation potentially leaves our country vulnerable to the effects of both chemical accidents and possible acts of terrorism. As we learned from the Bhopal tragedy, effective planning can greatly mitigate the effects of a devastating chemical release. Until we have effective safety systems at all chemical facilities, effective mitigation and containment systems, and effective emergency preparedness at every community from coast to coast, our people will continue to be vulnerable, exposed to preventable risks.

We all hope and pray such accidental releases or acts of terrorism never occur. But if such a disaster should happen, we must be prepared to respond quickly and effectively to save every life we can and to limit the damage. The time for planning is now, not after a tragedy. I commend you for your leadership in convening this hearing today before such a tragedy has occurred. Thank you.

United States Government Accountability Office

GAO

Testimony

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HOMELAND SECURITY

Federal and Industry Efforts Are Addressing Security Issues at Chemical Facilities, but Additional Action Is Needed

Statement of John B. Stephenson, Director
Natural Resources and Environment

GAO-05-631T

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Highlights

Highlights of GAO-05-631T, testimony before the Committee on Homeland Security and Governmental Affairs, U. S. Senate

Why GAO Did This Study

Terrorist attacks on chemical facilities could severely damage the U.S. economy and public health. About 15,000 facilities produce, use, or store large amounts of chemicals that pose the greatest risk to human health and the environment. While the Environmental Protection Agency (EPA) formerly had the lead role in federal efforts to ensure chemical facility security, the Department of Homeland Security (DHS) is now the lead federal agency responsible for coordinating government and private efforts to protect these facilities from terrorist attacks.

This testimony is based on GAO's past work on chemical facility security and focuses on (1) the attractiveness of chemical facilities as terrorist targets, (2) their diversity and risks, (3) federal security requirements for these facilities, and (4) federal and industry efforts to improve facility security.

What GAO Recommends

In March 2003, GAO recommended that DHS and EPA develop (1) a comprehensive chemical security strategy and (2) a legislative proposal to require facilities to assess their vulnerability to attacks and require corrective action. At that time, DHS and EPA generally agreed with these recommendations and, while EPA no longer has a key role in ensuring chemical facility security, DHS is taking steps to implement them.

www.gao.gov/cgi-bin/getrpt?GAO-05-631T

To view the full product, including the scope and methodology, click on the link above. For more information, contact John Stephenson at (202) 512-3841 or stephensonj@gao.gov.

April 27, 2005

HOMELAND SECURITY

Federal and Industry Efforts Are Addressing Security Issues at Chemical Facilities, but Additional Action Is Needed

What GAO Found

Experts agree that the nation's chemical facilities are attractive targets for terrorists. The theft or release of certain chemicals could disrupt the local economy, impact other critical infrastructures that rely on chemicals, or impact the health and safety of millions of Americans. For example, a 2002 Brookings Institution report ranks an attack on toxic chemical plants behind only biological and atomic attacks in terms of possible fatalities. While several efforts are underway, no one has yet comprehensively assessed security at the nation's chemical facilities.

The chemical sector includes a variety of facilities and risks. The 15,000 facilities with large amounts of the most dangerous chemicals include chemical manufacturers, water supply facilities, and fertilizer facilities, among others. Some facilities may be at higher risk of a terrorist attack than others because of the specific chemicals on site and their proximity to population centers. According to 2003 EPA data, 123 U.S. chemical facilities had "worst-case" scenarios where more than one million people could be at risk of exposure to a cloud of toxic gas. While EPA and DHS believe that these scenarios overstate the potential consequences of a chemical release, there are situations where an attack could have potentially more severe consequences.

Only about one-sixth of the 15,000 facilities with large amounts of dangerous chemicals are covered by federal security requirements. About 2,000 community water systems and 238 facilities that are located on waterways and handle "bulk liquid chemicals" must conduct vulnerability assessments, among other things, under the Public Health Security and Bioterrorism Response Act of 2002 and the Maritime Transportation Security Act of 2002, respectively. However, the federal government places requirements on chemical facilities to address accidental releases, which may also reduce the likelihood and mitigate the consequences of terrorist attacks.

A number of federal and industry efforts are underway to enhance chemical facility security. DHS is developing a strategy to protect the chemical sector, identify high-risk facilities, and integrate chemical sector protection efforts into a national program. With no authority to require facilities to improve security, DHS has provided the industry with financial assistance, information, and training, assessed facility vulnerability, and recommended security improvements. About 1,100 facilities participate in a voluntary industry effort in which they assess vulnerabilities, develop security plans, and submit to an independent audit of their security programs and processes, but not the adequacy of their security efforts. The extent to which the remaining facilities are addressing security is unclear and the extent of chemical facilities' security preparedness is unknown. In this context, a comprehensive national strategy to identify high-risk facilities and require facilities to assess their vulnerabilities, among other actions, would help to ensure that security vulnerabilities at chemical facilities are addressed.

Madame Chairman and Members of the Committee:

Thank you for this opportunity to discuss our work on chemical facility security.[1] As the events of September 11, 2001, showed, a terrorist attack on infrastructure that is critical to our nation's economy can cause enormous damage to our country and jeopardize public health and safety. The USA PATRIOT Act defined critical infrastructure as those "systems and assets...so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters."[2] We often take these systems for granted because they are so basic in our daily lives that we generally only notice them when their service is interrupted. The President's February 2003 National Strategy for the Physical Protection of Critical Infrastructures and Key Assets sets forth the federal government's goals, objectives, and responsibilities in protecting the nation's critical infrastructure. The strategy, as well as a presidential directive issued in December 2003, identified the chemical industry among the sectors that are critical to the nation's infrastructure.[3] The chemical sector produces, uses, stores, and distributes the chemicals needed to manufacture thousands of products, such as those used in agriculture, pharmaceuticals, and automobiles.

The national strategy states that the private sector bears primary responsibility for protecting their facilities from deliberate acts of terrorism. While federal, state, and local governments work in partnership with the private sector to protect chemical facilities, before September 11, 2001, attention was largely focused on the risks of accidental, rather than intentional, chemical releases. In this regard, the Environmental Protection Agency (EPA) regulates about 15,000 facilities under the Clean Air Act because they produce, use, or store more than certain threshold amounts of specific chemicals that would pose the greatest risk to human health and the environment if accidentally released into the air. These facilities must take a number of steps, including preparing a risk management plan (RMP), to prevent and prepare for an accidental release

[1]GAO, *Homeland Security: Voluntary Initiatives Are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown*, GAO-03-439 (Washington, D.C.: March 2003) and *Protection of Chemical and Water Infrastructure: Federal Requirements, Actions of Selected Facilities, and Remaining Challenges*, GAO-05-327 (Washington, D.C.: March 2005).

[2]Pub. L. No. 107-56, § 1016(e) (2001) (codified at 42 U.S.C. § 5195c(e)).

[3]Homeland Security Presidential Directive Number 7 (Washington, D.C.: December 17, 2003).

and, therefore, are referred to as "RMP" facilities. While EPA initially had the lead responsibility for protecting the chemical infrastructure sector, the Department of Homeland Security (DHS) is now the lead federal agency. DHS is responsible for coordinating the efforts of government and private institutions to protect critical infrastructure, including the chemical sector, from terrorist attacks.

My remarks today are based on our March 2003 and March 2005 reports, and will focus on (1) experts' views on the attractiveness of chemical facilities as terrorist targets, (2) the diversity of these facilities and their risks, (3) federal requirements that address security at these facilities, and (4) an overview of steps the federal government and industry have taken to improve facility security. For this work, we interviewed officials from EPA, DHS, and the Department of Justice; reviewed pertinent federal legislation, EPA data, and available reports; and interviewed industry representatives from the American Chemistry Council, other industry associations, and a number of chemical companies. We conducted our work according to generally accepted government auditing standards. We are currently reviewing ongoing federal and industry efforts to improve chemical facility security, including the need for further regulation. We plan to issue a report on our findings later this year.

Summary

In summary, we found the following:

- Experts agree that the nation's chemical facilities present an attractive target for terrorists intent on causing massive damage. For example, the Department of Justice has concluded that the risk of an attempt in the foreseeable future to cause an industrial chemical release is both real and credible. Terrorist attacks involving the theft or release of certain chemicals could significantly impact the health and safety of millions of Americans, disrupt the local or regional economy, or impact other critical infrastructures that rely on chemicals, such as drinking water and wastewater treatment systems. Despite efforts by DHS to assess facility vulnerabilities and suggest security improvements, no one has comprehensively assessed security at facilities that house chemicals nationwide.

- DHS has not yet determined the number and type of facilities that should be considered as part of the chemical infrastructure sector. The universe of facilities with chemicals is diverse, and they present a variety of risks. About 15,000 RMP facilities produce, use, or store more than threshold amounts of chemicals that EPA

has estimated pose the greatest risk to human health and the environment if they were accidentally released into the air. RMP facilities include chemical manufacturers, water supply and wastewater treatment facilities, agricultural suppliers such as fertilizer facilities, food storage facilities, pulp and paper manufacturers, and iron and steel mills, among others. Some facilities may be at higher risk of a terrorist attack than others because of the chemicals they house and their proximity to population centers. According to 2003 EPA data, the toxic "worst-case" scenarios for 123 chemical facilities stated that more than one million people could be at risk of exposure to a cloud of toxic gas. About 600 facilities could each potentially threaten between 100,000 and a million people and about 2,300 facilities could each potentially threaten anywhere from 10,000 to 100,000 people. According to EPA and DHS, the method for calculating these scenarios overstates the potential consequences of a chemical release. However, because the scenarios estimate the effects of an accidental toxic chemical release involving the greatest amount of the toxic chemical held in a single vessel or pipe, not the entire quantity on site, an attack that breached multiple chemical vessels simultaneously could result in a larger release with potentially more severe consequences than those outlined in worst-case scenarios.

- Currently, no federal requirements comprehensively address security at all U.S. chemical facilities. Only about one-sixth of the 15,000 RMP facilities must comply with federal security requirements related to terrorism. Approximately 2,000 RMP facilities are community water systems subject to the Public Health Security and Bioterrorism Response Act of 2002 and therefore must conduct vulnerability analyses of their facilities, among other things. According to the Coast Guard, 238 chemical facilities that are located on waterways and handle "bulk liquid chemicals" must assess the vulnerabilities of certain facilities and develop and implement security plans under the Maritime Transportation Security Act of 2002 and its implementing regulations. The remaining chemical facilities are not subject to such security requirements. Although the federal government does not require all chemical facilities to adopt security measures against acts of terrorism, it does impose safety and emergency response requirements on chemical facilities to address accidental releases. These requirements may incidentally reduce the likelihood and mitigate the consequences of terrorist attacks.

- The federal government and the chemical industry have taken a number of steps to enhance security at chemical facilities but further action is needed. DHS' Information Analysis and Infrastructure Protection Directorate is developing a strategy for protecting the chemical sector, identifying high-risk facilities, and integrating chemical sector protection efforts into a national program. Without specific authority to require chemical facilities to improve security, DHS has worked with the chemical industry by providing financial assistance, sharing information about critical infrastructure protection, assessing facility vulnerabilities, recommending security improvements, and providing training. In addition, the chemical industry, led by its industry associations, is conducting voluntary initiatives at member facilities. The primary industry security initiative, the American Chemistry Council's Responsible Care Management System®, directs participating facilities to assess vulnerabilities, develop security plans, and undergo a third party verification that the facilities implemented the identified physical security enhancements. These third parties are not required, however, to verify that the vulnerability assessment is appropriately conducted and that the actions taken by the facility adequately address security risks. Nevertheless, ACC's self-initiated requirements incorporate elements of a risk management framework and were designed to strengthen security at its members' facilities. Approximately 1,100 (or 7 percent) of the 15,000 RMP facilities are members of ACC and the Synthetic Organic Chemical Manufacturers Association—which represents manufacturers who produce specialty-chemicals at small- to medium-sized facilities—and, thus, are to comply with the Responsible Care® security requirements. However, the extent to which the remaining 14,000 RMP facilities, or other chemical facilities that are not RMP facilities, may be voluntarily addressing their security is unclear. Consequently, despite government and industry efforts, the extent of security preparedness at chemical facilities is unknown.

To ensure that chemical facilities take action to review and address security vulnerabilities, we recommended in March 2003, that the Secretary of Homeland Security and the Administrator of EPA jointly develop a comprehensive national strategy for chemical security that is both practical and cost effective. The strategy should, among other things, identify high-risk facilities and collect information on industry security preparedness. We also recommended that DHS and EPA develop a legislative proposal, in consultation with industry and other appropriate groups, to require these chemical facilities to expeditiously assess their

vulnerability to terrorist attacks and, where necessary, require these facilities to take corrective action. At that time, DHS and EPA generally agreed with these recommendations.

While EPA no longer has a key role in ensuring chemical facility security, DHS has taken steps to implement our recommendations. In February 2005, DHS released its Interim National Infrastructure Protection Plan. While we have not fully evaluated this plan, it outlines a risk management framework to guide future efforts to identify and protect critical infrastructure and defines the roles of federal, state, local, and tribal agencies and the private sector using elements of this framework. In addition, DHS is developing a strategic plan specifically for securing the chemical sector and has a number of efforts underway to help identify and mitigate chemical facilities' vulnerabilities. We are evaluating DHS' efforts and plans for improving chemical sector security in our ongoing review.

In comments responding to our March 2003 report, DHS stated that voluntary efforts alone will not be sufficient to assure an appropriate level of security across the industry, and that, in the department's view, every one of the approximately 15,000 RMP facilities nationwide should be required to perform comprehensive vulnerability assessments and take actions to reduce vulnerabilities. As part of our ongoing review for this Committee, we plan to obtain DHS' current views on whether legislation is still necessary and, if so, the types of provisions the agency feels would best assist the nation's chemical facilities in addressing their vulnerability to attack.

Background

The Homeland Security Act of 2002 established DHS and set forth its mission to, among other things, prevent terrorist attacks within the United States, reduce the vulnerability of the United States to terrorism, and minimize the damage and assist in the recovery from terrorist attacks that do occur within the United States. Following passage of the act, a December 2003 presidential directive states that DHS is responsible for coordinating the overall national effort to enhance the protection of the critical infrastructure and key resources of the United States. The Secretary of Homeland Security serves as the principal federal official to lead, integrate, and coordinate the implementation of efforts among federal departments and agencies, state and local governments, and the private sector to protect critical infrastructure and key resources. The directive identified the chemical sector as a critical infrastructure sector along with other sectors, including agriculture, banking and finance, chemical, defense industrial base, emergency services, energy, food, government, information and telecommunications, postal and shipping,

public health, transportation, and water. Under this presidential directive, DHS is now the lead agency for the chemical infrastructure sector, a change from national strategies issued in July 2002 and February 2003, which named EPA as the lead federal agency.

The presidential directive emphasized those critical infrastructure and key resources that could be exploited to cause catastrophic health effects or mass casualties. Because many chemicals are inherently hazardous, the release of chemicals or the risk of contamination at chemical facilities poses a potential threat to public health and the economy. Under the Clean Air Act's Risk Management Program (RMP) provisions, EPA identified 140 toxic and flammable chemicals that, when present above certain threshold amounts, would pose the greatest risk to human health and the environment if released accidentally into the air. According to EPA, approximately 15,000 facilities in a variety of industries produce, use, or store one or more of these chemicals beyond threshold amounts in one or more processes (e.g., single or interconnected vessels or tanks).

Before these functions were transferred to DHS by the Homeland Security Act of 2002, Justice was responsible for collecting information from the U.S. intelligence community, the FBI's criminal investigations, other federal agencies, and the private sector about threats, including those involving chemicals. The Chemical Safety Information, Site Security and Fuels Regulatory Relief Act required Justice to review the vulnerability of chemical facilities to terrorist or criminal attack and report this information to the Congress.[4] Justice prepared and submitted an interim report to Congress in May 2002 based on observations made at 11 chemical manufacturing facilities.

Experts Agree that Chemical Facilities Are an Attractive Target for Terrorists

Experts agree that the nation's chemical facilities present an attractive target for terrorists intent on causing massive damage. Many facilities house toxic chemicals that could become airborne and drift to surrounding communities if released or could be stolen and used to create a weapon capable of causing harm. Justice has been warning of the terrorist threat to chemical facilities for a number of years and has concluded that the risk of an attempt in the foreseeable future to cause an industrial chemical release is both real and credible. Based on analysis of trends in international and domestic terrorism and the burgeoning interest in weapons of mass destruction among criminals and terrorists, Justice warned of potential targeting by terrorists of chemical facilities before the events of September 11, 2001. In fact, according to Justice, domestic

[4]Pub. L. No. 106-40, 113 Stat. 207 (1999).

terrorists plotted to use a destructive device against a U.S. facility that housed millions of gallons of propane in the late 1990s. In testimony on February 6, 2002, the Director of the Central Intelligence Agency also warned of the potential for an attack by al Qaeda on chemical facilities.

Terrorist attacks involving the theft or release of certain chemicals could have a significant impact on the health and safety of millions of Americans. The disaster at Bhopal, India in 1984, when methyl isocyanate gas—a highly toxic chemical—leaked from a tank, reportedly killing about 3,800 people and injuring anywhere from 150,000 to 600,000 others, illustrates the potential threat to public health from a chemical release. While U.S. chemical facilities are subject to a number of safety requirements, the Army has estimated high potential damage to the U.S. population from an intentional toxic chemical release. During a 2001 informal meeting with a number of agencies, the Army Office of the Surgeon General proposed, based on generic estimates, that it was conceivable that as many as 2.4 million people could request medical treatment if a terrorist caused the release of a toxic chemical.[5] According to officials from that office, these estimates include anyone who seeks medical attention as a result of the release—including people with minor irritations or concerns. Similarly, a 2002 Brookings Institution report ranks an attack on toxic chemical plants behind only biological and atomic attacks in terms of possible fatalities.[6] In January 2005 testimony before the Senate Committee on Homeland Security and Governmental Affairs on challenges facing DHS, a Brookings Institution Visiting Fellow identified chemical facility security as a priority for DHS, noting that toxic industrial chemicals present the potential for mass casualties from a terrorist attack that is rivaled only by improvised nuclear devices, certain acts of bioterrorism, and the collapse of large, occupied buildings.[7]

In addition to the potential loss of life, a terrorist attack on a chemical facility could also disrupt the local or regional economy or impact other critical infrastructures. The chemical manufacturing industry produces the chemicals used in agriculture, pharmaceuticals, drinking water and wastewater treatment systems, and food processing. DHS' February 2005

[5]U.S. Army, *Draft Medical NBC Hazard Analysis of Chemical-Biological-Radiological-Nuclear-High Explosive Threat, Possible Scenarios & Planning Requirements*, Army Office of the Surgeon General (October 2001).

[6]The Brookings Institution, *Protecting the American Homeland: A Preliminary Analysis*, (Washington, D.C.: 2002).

[7]Statement of Richard A. Falkenrath, Visiting Fellow, The Brookings Institution, before the United States Senate Committee on Homeland Security and Governmental Affairs (January 26, 2005).

Interim National Infrastructure Protection Plan notes that many critical infrastructure assets are dependent on multiple elements and systems to remain functional. In some cases, a failure in one sector will have a significant impact on the ability of another sector to perform necessary functions. For example, rail transportation of many hazardous materials including chlorine was disrupted in some states following the events of September 11, 2001, because of concern about the potential for an intentional chemical release. This disruption to rail service impacted drinking water facilities that relied on chlorine delivered by rail to purify water.

Currently, no one has comprehensively assessed security across the nation at facilities that house chemicals. Both EPA and DHS officials have visited some chemical facilities to discuss security since September 11, 2001, but the results of these visits are not publicly available. EPA visited 30 high-risk chemical facilities to discuss security, and DHS has visited a number of chemical facilities to assist owner/operators in assessing vulnerabilities at their facilities. During a limited review of chemical industry vulnerabilities conducted at 11 facilities primarily before September 11, 2001, Justice found that some chemical facilities may need to implement more effective security systems and develop alternative means to reduce the potential consequences of a successful attack. The effectiveness of security at some facilities may also be in doubt as evidenced by several media accounts of reporters and environmental activists gaining access to chemical tanks and computer centers that control manufacturing processes at facilities in 2001, 2002, and 2003.

Chemical Infrastructure Sector Includes Many Types of Facilities with Different Risks

DHS has not yet determined the number and type of facilities that should be considered as part of the chemical infrastructure sector. The universe of chemical facilities is diverse in that they produce, use or store a host of products, including (1) basic chemicals used to manufacture other products such as fertilizers, plastics, and synthetic fibers; (2) specialty chemicals used for a specific purpose such as a functional ingredient or a processing aid in the manufacture of a range of products such as adhesives and solvents, coatings, industrial gases and cleaners, and water management chemicals; (3) life science chemicals consisting of pharmaceuticals and pesticides; and (4) consumer products such as hair and skin products and cosmetics. In total, about 15,000 RMP facilities produce, use, or store more than threshold amounts of one or more of the 140 toxic and flammable chemicals that EPA has estimated pose the greatest risk to human health and the environment if accidentally released into the air. Approximately 4,000 facilities manufacture these chemicals, and numerous other types of facilities—agricultural suppliers such as

fertilizer facilities, food storage facilities, pulp and paper manufacturers, iron and steel mills, and computer manufacturing facilities—also house large quantities of chemicals. While the universe of chemical facilities is diverse, some of these facilities are part of other critical infrastructure sectors. For example, about 2,000 of these facilities are community water systems that are part of the water infrastructure sector.

Some facilities may be at higher risk of a terrorist attack than others because of the chemicals they house and their proximity to population centers. Toxic chemicals such as chlorine and ammonia could form a toxic cloud and drift over neighboring populations if released, while flammable chemicals such as butane and hydrogen could be used in destructive devices. Assuming that the objective of an attack is a catastrophic release of a toxic chemical, attacks on such facilities could harm a large number of people with health effects ranging from mild irritation to death. No specific data are available on what the actual effects of successful terrorist attacks on chemical facilities would be. However, RMP facilities submit to EPA estimates of the potential consequences to surrounding communities of hypothetical "worst-case" accidental chemical releases from their facilities. These estimates include the residential population located within the range of a toxic gas cloud produced by a "worst-case" chemical release, called the "vulnerable zone." According to 2003 EPA data, 123 chemical facilities located throughout the nation had toxic "worst-case" scenarios where more than one million people would be in the "vulnerable zone" and could be at risk of exposure to a cloud of toxic gas.[8] About 600 facilities could each potentially threaten between 100,000 and a million people, and about 2,300 facilities could each potentially threaten between 10,000 and 100,000 people within these facilities' "vulnerable zones."

According to EPA and DHS, the method for calculating "worst-case" scenario calculations for RMP facilities overstates the potential consequences of a chemical release. The scenarios do not consider the potential causes of a release or how different causes or other

[8]"Vulnerable zones" are determined by drawing a circle around a facility with the radius of the circle equal to the distance a toxic gas cloud would travel before dissipating to relatively harmless levels. Because, in an actual event, the toxic cloud would only cover a fraction of that circle, it is unlikely that the event would actually result in exposure of the entire population estimated in the "worst-case" scenario, according to EPA. The number of persons within a "vulnerable zone" is larger than the number of persons that would be affected by a "worst-case" scenario. In addition, EPA's requirements for "worst-case" release analysis tend to result in consequence estimates that are significantly higher than what is likely to actually occur. For example, "worst-case" release analysis does not take into account active mitigation measures facilities often employ to reduce the consequences of releases.

circumstances, such as safety features, could lessen the consequences of a release. Finally, the scenarios' "vulnerable zones" include the population in the entire area surrounding the facility, while the wind would typically carry the toxic cloud in one direction affecting only a portion of the area. While officials believe these scenarios are overstated, there are situations where an attack could result in larger consequences. EPA regulations require RMP facilities to estimate the effects of a toxic chemical release involving the greatest amount of the toxic chemical held in a single vessel or pipe, rather than the entire quantity on site. Therefore, for some facilities, an attack could breach multiple chemical vessels simultaneously and could result in a larger release with potentially more severe consequences than estimated in the "worst-case" scenario.

Few Federal Requirements Address Security at the Nation's Chemical Facilities

Currently, few federal requirements address security at U.S. chemical facilities. While some chemical facilities must comply with the Public Health Security and Bioterrorism Response Act of 2002 (Bioterrorism Act) and the Maritime Transportation Security Act of 2002 (MTSA), many are not subject to any federal security requirements. The Bioterrorism Act requires community water systems serving more than 3,300 people to perform vulnerability analyses of their facilities, among other things. Many of these facilities may store hazardous chemicals for water treatment and are not required to implement any risk reduction actions based on their vulnerability assessments or report to EPA on measures that have been implemented. EPA estimated in 2003, that approximately 2,000 RMP facilities may be community water systems covered under the Bioterrorism Act. MTSA and its implementing regulations require maritime facility owners and operators to conduct assessments of certain at-risk facilities to identify vulnerabilities, develop security plans to mitigate these vulnerabilities, and implement the measures discussed in the security plans. According to the Coast Guard, 238 chemical facilities are located on waterways and handle "bulk liquid chemicals" are subject to MTSA requirements.

The remaining chemical facilities, including the approximately 13,000 RMP facilities, are subject to no federal requirements specifically related to improving security against terrorist attacks. Although these facilities pose different levels of risk depending on the chemicals they use or store, thousands house quantities of toxic chemicals that could impact neighboring populations if released. The security requirements for the chemical sector stand in contrast to a number of other critical infrastructure sectors that are subject to federal security requirements. In addition to community water systems, all commercial nuclear power plants licensed by the Nuclear Regulatory Commission are subject to a

number of security requirements, including placing physical barriers outside the operating reactor area, limiting access to vital areas, maintaining a trained security force, and conducting simulated terrorist attack exercises.

While the federal government does not require all chemical facilities to take security measures to protect against a terrorist attack, it does impose safety and emergency response requirements on chemical facilities, which may incidentally reduce the likelihood and mitigate the consequences of terrorist attacks. For example, the Emergency Planning and Community Right to Know Act requires owners and operators of facilities that maintain specified quantities of certain extremely hazardous chemicals to annually submit information on their chemical inventory to state and local emergency response officials. This information is used to help prepare community response plans in the event of a chemical incident. Under Section 112(r) of the Clean Air Act, EPA's Risk Management Program requires owners and operators of facilities that handle listed extremely hazardous substances over a threshold amount to prepare and implement a risk management plan to detect and prevent or minimize accidental releases. In addition to evaluating "worst-case" accidental release scenarios, facility owners and operators must implement a program to prevent accidental releases that includes safety precautions and maintenance, monitoring, training measures, and must have an emergency response plan. The Department of Labor's Occupational Safety and Health Administration's process safety management standard also requires facilities to assess and address the hazards of their chemical process. These requirements could potentially mitigate a terrorist attack by (1) providing an incentive to facilities to reduce or eliminate chemicals below regulated threshold levels, (2) requiring facilities to implement measures to improve the safety of areas that are vulnerable to a chemical release, and (3) facilitating emergency response planning that increases preparedness for a chemical release—whether intentional or unintentional.

Federal Government and Industry Have Taken Steps to Improve Facility Security, but Further Action Is Needed

The federal government and the chemical industry have taken a number of steps to enhance security at chemical facilities. DHS' Information Analysis and Infrastructure Protection Directorate has a number of initiatives underway to develop a strategy for protecting the chemical sector, identify high-risk facilities, and integrate chemical sector protection efforts into a national program. In February 2005, DHS released an Interim National Infrastructure Protection Plan. While we have not yet fully evaluated this plan, it outlines a risk management framework to guide future efforts to identify and protect critical infrastructure and defines the roles of federal, state, local, and tribal agencies and the private sector. DHS is also

developing a vulnerability and risk assessment methodology designed to assist facilities with analyzing security, help DHS rank these facilities by risk, and allow DHS to compare assets across sectors.[9]

Without specific authority to require that chemical facilities make security improvements, DHS has worked voluntarily with the chemical industry to provide financial assistance, share information about critical infrastructure protection, provide training and exercises, and assess facility vulnerabilities and recommend security improvements. DHS has provided training programs to first responders and facility security officers and held drills at chemical facilities. DHS has also provided advice and guidance to state and local partners to reduce vulnerabilities in buffer zones (the area extending from the facility to the surrounding community) and conducted site assistance visits.

The chemical sector, led by its industry associations, also has voluntary initiatives underway at member facilities. Industry associations have issued security guidance, identified security best practices, and developed vulnerability assessment methodologies specific to their members. In addition, industry is assisting DHS in developing a methodology for assessing risk in the chemical sector. To provide a mechanism for coordinating with DHS, in June 2004, the chemical industry established the Chemical Sector Council to identify, prioritize, and coordinate the protection of the industry's critical infrastructure and key resources, and to facilitate the sharing of information about physical and cyber threats, vulnerabilities, incidents, potential protective measures, and best practices. The Council is composed of 16 sector associations representing a range of chemical facilities.[10]

The primary security initiative undertaken by the industry directs participating chemical facilities to assess vulnerabilities and develop security plans to address them. In this regard, the American Chemistry

[9]DHS is developing this methodology—called the Risk Analysis and Management for Critical Asset Protection (RAMCAP)—in conjunction with the American Society for Mechanical Engineers.

[10]As of April 2005, Chemical Sector Council members included the American Chemistry Council, the American Forest and Paper Association, the Chemical Producers and Distributors Association, the Chlorine Chemistry Council, the Compressed Gas Association, CropLife America, the Institute of Makers of Explosives, the International Institute of Ammonia Refrigeration, the National Association of Chemical Distributors, the National Paint and Coatings Association, the National Petrochemical and Refiners Association, the Synthetic Organic Chemical Manufacturers Association, the Adhesive and Sealant Council, the Chlorine Institute, the Fertilizer Institute, and the Society of the Plastics Industry, Inc.

Council (ACC)—whose members own or operate approximately 1,000 (or about 7 percent) of the 15,000 RMP facilities—requires its members to perform vulnerability assessments, develop plans to mitigate vulnerabilities, and take actions to implement the plans.[11] Companies are then required to have third parties such as local emergency responders or local law enforcement officials verify that physical security enhancements identified in facility plans were implemented. These third parties are not required, however, to verify that the vulnerability assessment is appropriately conducted and that the actions taken by the facility adequately address security risks.

ACC also has a new requirement that independent auditors certify that member companies have management systems in place. These audits will confirm that companies have security programs and processes. According to ACC, all of its members have conducted vulnerability assessments, and most have completed security enhancements and had them verified. The Synthetic Organic Chemical Manufacturers Association (SOCMA), which represents manufacturers who produce specialty chemicals at small- to medium-sized facilities, also adopted these security requirements for all of their member facilities, which include 77 of the 15,000 RMP facilities.[12] ACC and SOCMA's self-initiated membership requirements incorporate elements of a risk management framework, which can aid in assessing risk by determining which vulnerabilities should be addressed in what ways within available resources, and were designed to strengthen security at facilities that comply with its requirements. The actions required by Responsible Care® may exceed efforts taken by non-participating facilities.

Despite these efforts, the overall extent of security preparedness at chemical facilities is unknown. While DHS has a number of programs underway to identify high risk facilities and assess their vulnerabilities, these programs are in their infancy. As a result, neither DHS nor any other federal entity has yet assessed the overall extent of security preparedness at the nation's chemical facilities. While chemical industry associations have worked closely with member companies to evaluate and improve

[11]ACC adopted a security code to accompany its Responsible Care Management System®, a voluntary program to achieve improvements in environmental, health, and safety performance through management practices addressing a range of business activities. Member companies must comply with Responsible Care® requirements as a condition of membership.

[12]SOCMA has 160 member companies. Thirty-six of these companies are also members of ACC and follow the Responsible Care® requirements.. The remaining 124 SOCMA member companies operate 273 facilities—of which 77 are RMP facilities.

security at facilities, the extent of participation in voluntary initiatives is unclear. EPA officials estimated in 2003, that voluntary initiatives led by industry associations only reach a portion of the 15,000 RMP facilities. Further, EPA and DHS have stated publicly that voluntary efforts alone are not sufficient to assure the public of the industry's preparedness. In this context, a comprehensive national chemical security strategy that would, among other actions, identify high-risk facilities and require facilities to assess their vulnerabilities and take any needed corrective actions would help to ensure that security vulnerabilities at chemical facilities are addressed.

Conclusions

Across the nation, thousands of industrial facilities manufacture, use, or store hazardous chemicals in quantities that could potentially put large numbers of Americans at risk of injury or death in the event of a chemical release. Experts agree that chemical facilities are an attractive target to terrorists because of the potential to harm large numbers of people and disrupt the economy or other critical infrastructures. Yet, despite efforts since September 11, 2001, to protect the nation from terrorism, the extent of security preparedness at U.S. chemical facilities is unknown. While some other critical infrastructures are required to assess their vulnerabilities, no federal requirements are in place to require all chemical facilities to assess their vulnerabilities and take steps to reduce them. Both the federal government and the chemical industry have taken steps to improve security at chemical facilities. However, these efforts have not involved all facilities with significant quantities of hazardous chemicals on site. Further action is needed to ensure that the nation's chemical facilities—which produce, use, and store chemicals vital to the manufacture of a range of everyday products—are assessing security vulnerabilities and taking actions to address them.

Madame Chairman, this concludes our prepared statement. We would be happy to respond to any questions that you or Members of the Committee may have.

Contacts and Acknowledgements
For further information about this testimony, please contact me at (202) 512-3841. Jill Edelson, Joanna Owusu, Debra B. Sebastian, Amy Webbink, Leigh White, and Vincent P. Price made key contributions to this statement.

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STATEMENT OF
RICHARD A FALKENRATH
VISITING FELLOW
THE BROOKINGS INSTITUTION
BEFORE THE
UNITED STATES SENATE
COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS

APRIL 27, 2005

Introduction

Good morning, Madam Chairman, Senator Lieberman, and Members of the Committee. I am grateful for the opportunity to be here today to provide my views on the vulnerability of toxic industrial chemicals to terrorist attack and the steps which could be taken to better protect this target set.

For the record, my name is Richard A. Falkenrath and I am presently a visiting fellow in foreign policy studies at the Brookings Institution. I am also Senior Director of the Civitas Group LLC, a strategic advisory and investment services firm serving the homeland security market; a security analyst for the Cable News Network (CNN); and a member of the Business Advisory Board of Arxan Technologies. Until May 2004, I was Deputy Assistant to the President and Deputy Homeland Security Advisor on the White House staff. Previously, I served as Special Assistant to the President and Senior Director for Policy and Plans within the Office of Homeland Security, and as Director for Proliferation Strategy on the National Security Council staff. Prior to government

service, I was an Assistant Professor of Public Policy at the John F. Kennedy School of Government, Harvard University.

Caveats

Before beginning my analysis of this matter, I would like to offer three general caveats.

First, and most importantly, I am in general against calling attention to America's most serious vulnerabilities. I believe that information relating to these vulnerabilities should be carefully guarded – and should never be sensationalized – because of the possibility that it will be used against us. Knowledgeable private citizens should discuss this information in public only when the government manifestly fails to address a pressing danger – and even then should do so with great care. I regret that I have come to the conclusion that, in my current capacity as a private citizen, a blunt public discussion of my analysis of this issue is a better course of action than silence.

Second, I was among those who were responsible for this policy issue on the White House staff after September 11, 2001, until mid-May 2004, when I left the government. My testimony today will be critical of the results the Administration has achieved in reducing the vulnerability of chemical targets in the United States. I will not, however, offer any testimony that would betray the confidentiality of the privileged internal discussions to which I was privy. I also will not attempt to assign responsibility within

the Executive Branch for this lack of results except to acknowledge, regretfully, that some portion of this responsibility clearly belongs to me.

Third, my only interest in this matter is the security of the U.S. homeland. I have no present or prior association with the environmental movement that has for years sought tighter regulation of the chemical industry, or with the industry that would be affected by such tighter regulation.

A New Mission: Critical Infrastructure Protection, Prioritization, and Protection

The basic strategy employed by Al Qaeda on September 11, 2001, was to strike a common, poorly secured commercial system in a manner that would cause catastrophic secondary effects. The terrorists did a better job identifying the particular vulnerability associated with the suicide hijacking of fully fueled commercial airliners than the government did, and then exploited this vulnerability to terrible effect. In the aftermath of the attack, the Administration and the Congress acted quickly and aggressively to reduce the vulnerability of U.S. commercial aircraft to suicide hijacking. I now think it is safe to say that our commercial aircraft are virtually impossible to hijack; only a very foolish terrorist would even try.

Suicide hijacking of commercial aviation is, of course, only one of many different tactic/target combinations available to a terrorist organization. Because terrorists are adaptive enemies, we must assume that they are continually searching out other

catastrophic vulnerabilities in our society. One central question in homeland security is whether the terrorists will again locate another major vulnerability in American society, exploiting it to catastrophic effect just as they did on September 11, 2001.

Prior to the creation of the Department of Homeland Security, no government department or agency was responsible for the broad-based strategic protection of the United States from high-consequence terrorism. Today, as a result of the Homeland Security Act of 2002 and Homeland Security Presidential Directive 7, the Secretary of Homeland Security is responsible for identifying and prioritizing potentially catastrophic vulnerabilities in the U.S. homeland, analyzing their present security schemes, and effecting appropriate security enhancement wherever the current security arrangement is deficient. Beneath the Secretary, lead responsibility for this mission has been assigned to the Under Secretary for Information Analysis and Infrastructure Protection, though the successful implementation of this mission will require close collaboration with other parts of DHS, other federal departments and agencies, state and local government agencies, and the private sector.

This mission, which is one of the very few genuinely new missions of the Department of Homeland Security, is by presidential directive labeled "critical infrastructure identification, prioritization, and protection."[1] Critical infrastructure protection policy is, in

1. The term "critical infrastructure" became popular in the late-1990s, when it was the subject of Presidential Decision Directive 63, but it is somewhat misleading in the post-9/11 era. "Critical infrastructure" refers most appropriate to a few key technological systems, such as the Internet, electricity grid, or air traffic control system, upon which American society and government are highly dependent and which destroyed or damaged (in by a terrorist, natural disaster, or major technological failure) could cause cascading economic and operational effects. Since 9/11, the government's concern for critical infrastructure *per se* remains valid, but the government has had to expand the range of potential targets it

its essence, strategic defense against a notionally omniscient terrorist enemy. If Al Qaeda knew as much as we know about our own country, how and where would it attack us to achieve the highest expected damage? In its simplest form, the answer to the question will be a combination of potential damage and inherent difficulty of a particular terrorist tactic against a particular target. The highest priorities in our strategic defense against terrorism should be those tactic/target combinations that are least difficult to perpetrate and most likely to cause the highest levels of damage. Once we have answered this question, we will know where we should apply our marginal resources.

Four key criteria will determine the extent to which the Administration succeeds or fails in this new mission.

First, the responsible officials must understand the differences tactical offense and strategic defense – in other words, between preventing a threat and protecting a vulnerability – and must know that both are essential.

- Tactical offense, also known as prevention or counterterrorism, depends on threat assessment, which is the evaluation of indicators, usually derived from

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is concerned about to include those which present the possibility of extraordinarily but essentially localized secondary effects, including mass casualties. Accordingly, in 2003 the President directed the Secretary of Homeland Security to attach "emphasis on critical infrastructure and key resources that could be exploited to cause catastrophic health effects or mass casualties comparable to those from the use of a weapon of mass destruction." Homeland Security Presidential Directive 7 (HSPD-7), Critical Infrastructure Identification, Prioritization, and Protection,, para. 13.

intelligence, about particular terrorist groups, intentions, plans, and operations.

- Strategic defense in homeland security depends on vulnerability assessment, which is the analysis of the full range of potential terrorist tactics and targets – not just those which are the subject of current intelligence – for the purpose of determining which target/tactic combinations, if employed by terrorists, present the highest likelihood of causing the greatest damage.

The Executive Branch has a large and highly energetic system for tactical offense against terrorist threats. Literally thousands of U.S. officials are engaged in this activity around the clock every day of the year. Interagency information sharing and joint action is routine and extensive. Credible intelligence on current threats is immediately briefed to the very highest levels of the government and almost always results in some form of prompt operational response.

The system for identifying, assessing, and acting against vulnerabilities is far less mature and far less effective. The mid-level officials who should be focused on vulnerability assessment and target protection are too often pulled into the daily cycle of tactical offense against current threats. The senior officials who should concern themselves with both sides of the equation often focus only tactical offense.

Second, the officials responsible for target protection must set priorities. The country cannot protect all targets, all the time, against all manner of attack. Fortunately, not all potential tactic/target combinations are equally dangerous, and the differences can be revealed through a rigorous strategic vulnerability assessment of the sort I described above. Later in my testimony I will provide a simple strategic vulnerability assessment that illustrates how priorities could emerge from such an analysis.

Third, the responsible officials must be determined to get results – that is, real reductions in the inherent vulnerability of potential terrorist targets – against the highest priority (i.e., most dangerous) target/tactic combinations. This determination, if it exists, will manifest in hard objectives and deadlines imposed from above; outcome-based measurements of real-world progress that burn through the obfuscation of bureaucratic activity reports; and creativity about the means of achieving these concrete objectives. The U.S. government has an extraordinary range of instruments that can be used to achieve particular target protection objectives: many different legal authorities to regulate industries; the ability to appeal to state and local governments with their own regulatory authorities; the ability to set conditions on grants and participation on federal programs; the ability to offer many different kinds of grants and in-kind assistance; the ability to set standards; the ability to appeal to business and community leaders for cooperation; the ability to generate publicity (good or bad) for a particular company; etc. These instruments of course do not reside exclusively within the Department of Homeland Security, but by presidential directive the Secretary of Homeland Security is expected to coordinate "the overall national effort to enhance the protection of the

critical infrastructure and key resources of the United States,"[2] including those instruments and authorities which reside outside of the Department.

A quality critical infrastructure protection operation at DHS will need to be aware of all of these different instruments – including those which reside on other federal departments and agencies – and skillful at employing them to achieve particular, high-priority target protection objectives. A poor vulnerability assessment and target protection operation at DHS will act as if it can only employ those governmental instruments that reside in the information analysis and infrastructure protection directorate; will mistake activity for accomplishment; and will exhibit none of the determination that is so readily apparent among U.S. counterterrorism officials.

Fourth, if the Executive Branch lacks the legal authority or the financial resources necessary to achieve some particular, high-priority target protection objective, then it must ask the Congress to confer the authority or appropriate the resources. Once the request has been made, it is up to the Congress to consider the issue and take appropriate legislative action. If the Congress declines the Administration's requests for additional authority or resources, then it must share responsibility for the government's failure to achieve results.

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2. Homeland Security Presidential Directive 7 (HSPD-7), Critical Infrastructure Identification, Prioritization, and Protection, para. 12.

The Danger of TIH Chemical Targets in Context

Of the all the various remaining civilian vulnerabilities in America today, one stands alone as uniquely deadly, pervasive, and susceptible to terrorist attack: toxic-inhalation-hazard (TIH) industrial chemicals, such as chlorine, ammonia, phosgene, methyl bromide, hydrochloric and various other acids. The IDLS (immediately dangerous to life standard) for the two most common industrial TIH chemicals, ammonia and chlorine, is 500 and 10 parts per million, respectively.[3] These are extraordinarily dangerous substances: several are identical to those used as weapons on the Western Front during the First World War.

TIH industrial chemicals are essential to our economy and are routinely shipped through and stored near population centers in multi-ton quantities. Storage facilities for these ultra-hazardous chemicals routinely contain thousands of tons. The security that exists at any particular facility is essentially the outcome of voluntary, discretionary decisions made by the owners and operators of the facilities. There is no security whatsoever along TIH transportation routes. There exists no comprehensive, authoritative assessment of the quality of the security of U.S. chemical facilities and the conveyance systems, but anecdotal information of poor or non-existent security in this sector is overwhelming. The contrast to the security at commercial airports and nuclear power plants, both of which are strictly regulated by the federal government, is telling.

3. The IDLS is a regulatory value defined as the maximum exposure concentration in the workplace from which one could escape within 30 minutes without suffering symptoms which would interfere with escaping ans without suffering any irreversible health effects. http://www.cdc.gov/niosh/intridl4.html

A cleverly designed terrorist attack against a TIH chemical target would be no more difficult to perpetrate than was the simultaneous suicide hijacking of four commercial aircraft by 19 terrorists, four of whom had pilot training, on September 11, 2001. Without going into details, it should suffice to say that there are a large number of possible terrorist tactics for triggering a large-scale release of a TIH chemical in proximity to a dense population concentration, none of which are particularly difficult.

Although many variables would determine the lethality of such an attack, the loss of life could easily equal that which occurred on September 11, 2001 – and might even exceed it by an order of magnitude or more. Although there is some debate about just how dangerous are the most dangerous facilities, even the most conservative estimates of the Department of Homeland Security concede that there is at least one TIH chemical facility which, if successfully attacked, could result in more than one million human deaths. Specific scientific estimates of attack scenarios that could result in tens or hundreds of thousands of human deaths are commonplace.

In short, the casualty potential of a terrorist attack against a large TIH chemical container near a population center is comparable to that of a fully successful terrorist employment of an improvised nuclear device or effective biological weapon. The key difference is that TIH chemical containers are substantially easier to attack than improvised nuclear devices or effective biological weapon are to acquire or fabricate.

Figure 1
Illustrative Comparison of Select Terrorist Tactic/Target Combinations

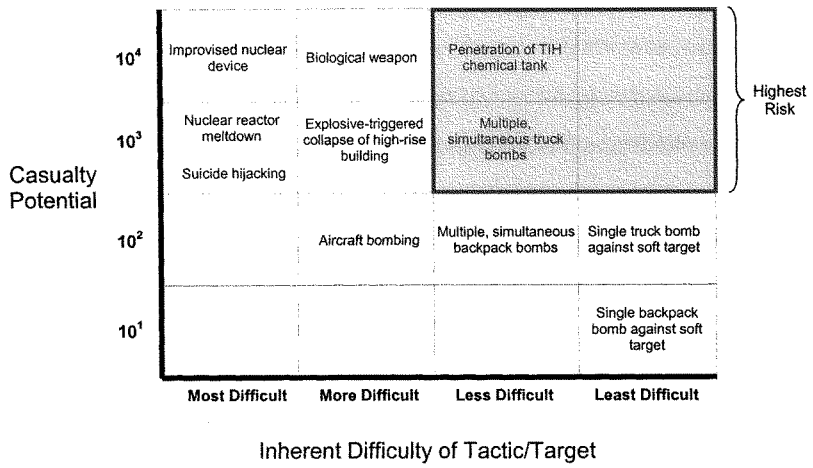

Figure 1 presents a simple but essentially accurate comparison of a few noteworthy terrorist tactic/target combinations. (A similar illustration could be constructed for tactic/target combinations that present major economic risks, but I personally believe that attacks which could result in significant human casualties deserve priority (ceteris paribus) for the simple reason that the country can recover from economic losses but cannot bring back the dead.)

In sum, I am aware of no other category of potential terrorist targets that presents as great a danger as TIH industrial chemicals.

Summary Assessment of Chemical Sector Vulnerability Reduction since September 11

There been no significant reduction in the inherent vulnerability of the most dangerous TIH chemical facilities and conveyances to terrorist attack since September 11, 2001.

What little progress has occurred at the largest chemical facilities owned by the largest, best-known chemical corporations, some of whom have undertaken select security enhancements on a voluntary basis. These facilities tend to be large, with considerable set-back from public roads, and are usually located away from major population concentrations. The voluntary security enhancements implemented by many of the larger chemical firms – in some cases with assistance from the Department of Homeland Security – are a step in the right direction but are insufficient because of their limited scope.

I have noticed two disturbing tendencies among many of the government officials who have been responsible for this issue. The first is that they tend to confuse bureaucratic activity with results. Measurements of progress, if they are offered at all, almost invariably focus on inputs, not outcomes.

The second is that they seem to believe that their only options for improving the security of chemical facilities and conveyance systems in the United States are voluntary

measures conducted in cooperation with the chemical industry. Clearly, where results can be achieved on a voluntary basis, they should be. But it is a fallacy to think that profit-maximizing corporations engaged in a trade as inherently dangerous as the manufacture and shipment of TIH chemicals will ever voluntarily provide a level of security that is appropriate given the larger external risk to society as a whole. Nor is this is an especially radical point of view: the body politic does not trust nuclear power plant or commercial airport operator to provide appropriate levels of security on a voluntary basis, and for good reason.

Proposed Outline for Chemical Site Security Legislation

When I testified before this committee on January 26, 2005, I called upon the Congress to pass comprehensive chemical site security legislation that would confer powerful new regulatory authorities upon the Secretary of Homeland Security. I will now provide my views on how such legislation should be structured.

First of all, I want to make clear that I do not believe the federal government currently has sufficient legal authority to regulate the security measures at chemical plants and storage facilities. Some have argued that sufficient authority has already been conferred to the Executive Branch by the general duty clause of the Clear Air Act.[4] I do not agree: the legal merits of this claim are suspect, but more importantly, as a practical political matter, any new regulatory initiative with enormous economic implications

4. Linda Greer, *New Strategies to Protect America: Securing Our Nation's Chemical Facilities*, Center for American Progress, 2005, pp. 10-11.

requires unambiguous statutory authorization.[5] The Administration also does not agree, which is why President Bush has twice called upon Congress to pass legislation that would unambiguously confer chemical security authority upon the Department of Homeland Security.

I favor a new chemical site security statute that would establish a regulatory approach with six basic parts:

1. A comprehensive, compulsory, and detailed inventory of all chemical facilities in the United States, organized into tiers according to each facility's risk;

2. Mandatory, graduated federal standards for the security of chemical facilities in each tier;

3. A time-phased certification procedure by which the owners or corporate directors of chemical facilities would vouch that they have attained the mandated security standard for their facility;

4. A verification procedure by which the government would confirm that the certifications provided for each chemical facility is complete and accurate;

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5. Similarly, it could be argued that the Maritime Transportation Security Act of 2002 (MTSA) provides the authority to regulate chemical facilities at the waterline. While the legal merits of this argument appear to be stronger than those relating to the Clean Water Act, the legislative history of the MTSA makes clear that the Congress did not contemplate that this legislation would used to address the security risks of the chemical sector in particular.

5. A compliance procedure by which the government could compel the owners or corporate directors of chemical facilities to meet the mandated security standards through escalating civil and criminal penalties; and

6. An appeal procedure by which the owners or corporate directors of chemical facilities could contest and seek relief from governmental findings and penalties related to the security of their facilities.

I believe that this regulatory regime should be administered by the Department of Homeland Security, which should be proscribed by law from using these powerful new authorities for purposes that do not directly relate to the protection of chemical targets from terrorist attack.

1. Inventory

DHS should be required to develop and maintain a comprehensive, highly detailed computerized inventory of all chemical facilities and systems in the United States. Congress should impose a deadline for the establishment of this inventory, certainly no more than one year after enactment of the statute.

To create the inventory, each chemical facility in the country should be required to provide (and, as needed, update) to DHS a comprehensive data declaration concerning the types and volumes of chemicals present, movements of these chemicals, site layout, security systems, and any other information deemed pertinent by the Secretary

of Homeland Security. The data declarations should be compulsory; inaccuracies should be punishable by civil and criminal penalties against the owners or corporate directors of the facility in question. These data declaration should be consistent with, but expand upon, the Risk Management Plans that chemical companies are already required to provide to the Environmental Protection Agency. All information in this inventory should be protected from public release by the authorities already granted to the Secretary of Homeland Security by the Critical Infrastructure Information Act of 2002.

Once the inventory has been established, the Secretary should be required to organize it into a limited number of tiers (no less than four, no more than ten) according to objective, analytically based criteria. For instance, a high-throughput facility next to a dense population center and containing extremely large quantities of the most toxic chemicals would rank in the top tier, while a small, relatively inactive facility in an uninhabited area with only mildly toxic chemicals would rank in the bottom tier. The criteria for each tier should be transparent to the chemical industry so that individual facilities could have the opportunity to be reclassified into a lower tier by modifying their business operations.

2. Tiered Standards

The importance of the tiered structure of the DHS chemical facility inventory lies in the standards the Secretary of Homeland Security would be required to promulgate -- again, according to a statutorily prescribed deadline, in this case of no more than 18

months after enactment. In recognition of the different risk presented by different facilities, the Secretary should be required to establish graduated security standards for each tier of facilities. The standards should be operational, pragmatic, and measurable: for example, strength and height of exterior fencing; set-back distances; number of guards per acre; training standards for security personnel; quality of alarms and lighting; extent of sensor systems; manner of employee background checks; communication systems with local police agencies; nature of access control system; frequency and rigor of security drills; etc. These standards would become progressively more stringent for the more dangerous facilities in the higher tiers of the inventory.

Because compliance with these standards would be costly, and because facilities could apply for reclassification based on modifications in their business operations, a regulatory regime of this kind would create market-based incentives for the chemical industry to reduce the inherent danger of their facilities and practices.

Given the importance of these standards to the overall security scheme for the chemical sector, each new Secretary of Homeland Security should be required to review the standards he or she inherited from the outgoing Secretary, should have the opportunity to amend the standards as needed, and should be required to certify personally to the President and the Congress that the standards are sufficient to hold the risk of a terrorist attack against a U.S. chemical facility to an acceptable level.

3. Certification procedure

Once the Secretary's security standards have gone into effect, the owners of chemical facilities should have a limited, statutorily prescribed period to bring each of their facilities into compliance with the standard. At the end of this period, the owners or corporate directors of each facility should be required to certify that the standard has been attained, to attest that the standard will be maintained indefinitely, and to acknowledge that they bear civil and criminal liability for any failure to maintain the standard.

Although the principle of corporate responsibility should remain inviolate, the chemical industry should be granted substantial flexibility to design efficient processes for complying with the new federal chemical site security regulations. For instance, the owners or corporate directors of chemical facilities should have the opportunity to retain – individually or collectively – external review boards or independent auditors to assist them in determining that their facilities have in fact met the appropriate federal security standard.

4. Verification procedure

Once a certification has been filed for each chemical facility in the country, DHS should then be required to begin a process of verifying that the certification, as well as the underlying data declaration, is correct. Such a process would proceed in phases, starting with an initial baseline phase and then followed by annual maintenance phase, and should be governed by statutorily defined deadlines. Throughout the process,

highest priority should be afforded to verifying the certifications of the highest tier (i.e., most dangerous) facilities.

In order to minimize the Department's need to hire new staff, DHS should have a high degree of flexibility in designing its verification procedures, including the option to employ other federal agencies, state and local agencies, private firms, and industrial associations as its agents in the verification process. DHS or its agents should have the unlimited right to demand additional information from chemical facilities and to conduct on-site inspections, including no-notice on-site inspections; indeed, DHS should be required by statute to conduct regular no-notice, on-site inspections of the most dangerous facilities in its inventory.

5. Compliance procedure

The Secretary of Homeland Security should be required to establish a system of escalating civil and criminal penalties for failure to comply with federal chemical security standards. The Secretary's authority to fine non-compliant facilities should be extremely powerful, comparable to the strongest U.S. regulatory agencies, and sufficient to compel even the largest corporation to comply. The criminal liability associated with non-compliance with the federal chemical security standards should certainly be no less stringent than that imposed by the Sarbanes-Oxley Act of 2002 for fiduciary malfeasance.

6. Appeal procedure

Any grant of regulatory authority as powerful as the one proposed here requires careful thought about how best to ensure that the new authorities are not abused. The regulated community has a right to the fair and even-handed application of federal power, and to contest in court any capricious, unjust, or overly broad federal action. While the Secretary's authority to demand information on chemical facilities, conduct on-site inspections, classify facilities into tiers, and establish security standards should be under his or her exclusive authority, with no opportunity for appeal to the courts, the regulated community should have the right to contest the procedural fairness of civil penalties imposed by the Secretary in federal court. Criminal prosecution for non-compliance with the chemical security standards, of course, would be handled by the Department of Justice according to normal criminal procedures.

A critical element in a chemical security appeal procedure, however, will the statutory provisions for protecting sensitive information relating to the vulnerability of particular chemical facilities or systems. A referral of a chemical security issues to the courts should not result in the publication of information which could assist a terrorist organization in locating and attacking a target which presents the potential for catastrophic civilian casualties. Accordingly, the authorizing statute should establish a regime for protecting this information in judicial processes, for example by extending the procedures of the Classified Information Protection Act (CIPA) to cases involving chemical security vulnerability information.

Chemical Security in Transit

In contrast to chemical facilities, the federal government already has the authority to regulate the security of chemicals as they are being transported on our roads, railways, and waterways. These authorities, which are vested in both the Secretary of Transportation and the Secretary of Homeland Security, have been conferred by the Hazardous Materials Transportation Act, the Federal Railroad Safety Act, the Aviation and Transportation Security Act, and the Homeland Security Act, among others.

The Administration has not exercised its authority to enhance the security of toxic chemicals in transit in any significant way since the terrorist attacks of September 11, 2001. There has, as a result, been no meaningful improvement in the security of toxic-by-inhalation chemicals moving through our population centers.

The Administration can and should act immediately to mandate a systematic, nationwide reduction in the vulnerability toxic chemicals in transit nationwide. Specifically, the Departments of Homeland Security and Transportation should promulgate regulations that over time will, at a minimum:

- require chemical shippers to track the movement of all hazardous chemicals electronically;
- to report this positional data to DHS in real time;
- to deploy fingerprint-based access controls for all chemical conveyances;

- to adopt an inapparent placarding system;
- to perform rigorous background checks on all employees;
- to strengthen the physical resilience of chemical containers;
- to reduce chemical loads;
- to ship empty, decoy containers alongside filled containers;
- to install perimeter security at loading and switching stations; and
- establish significant civil and criminal liability for noncompliance with these regulations.

Although no new legislation is required is required for the Administration to take this regulatory action, a new statutory mandate to move in this direction could certainly not slow the administrative process any further. In addition, if the 109th Congress does in fact act to confer chemical facility regulatory authority, then it would be sensible to require the facility and transport security regulations to be developed and implemented in concert.

Costs

Federal action along these lines that I have proposed here would be costly. Although there would be some implementation cost for the government, most of the cost of these regulations would be borne by the chemical industry. Over time, the costs would be passed on to consumers and the market would adjust to a new, more socially responsible equilibrium. It is right and proper for the government to require industries

to internalize the external security costs of their activities. The real losers would be Al Qaeda and its successors, who would be deprived of the astounding killing potential of toxic-by-inhalation industrial chemicals.

Conclusion

I do not make this recommendation for a new chemical security regulatory regime lightly. I am a believer in small government and private enterprise. But I also understand the economics of externalities and the character of America's vulnerabilities to catastrophic terrorist attack. The chemical sector is unique both in the danger it poses as a terrorist target and in its extraordinary freedom from governmental security oversight. Given the ease with which TIH chemical targets could be attacked and their enormous potential for secondary civilian casualties, I am convinced that the actions I have outlined are warranted. I have no doubt that the government would go at least this far in the aftermath of an attack that kills thousands.

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"Ending the Post 9/11 Security Neglect of America's Chemical Facilities"

Written Testimony before

a hearing of the

Committee on Homeland Security and Governmental Affairs

United States Senate

on

"The Security of America's Chemical Facilities"

by

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Jeane J. Kirkpatrick Senior Fellow in National Security Studies

Room 562
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Washington, D.C.

10:00 a.m.
April 27, 2005

"Ending the Post 9/11 Security Neglect of America's Chemical Facilities"

by
Stephen E. Flynn
Jeane J. Kirkpatrick Senior Fellow
for National Security Studies

Chairman Collins, Senator Lieberman, and distinguished members of the Committee on Homeland Security and Governmental Affairs, I am the Jeane J. Kirkpatrick Senior Fellow in National Security Studies at the Council on Foreign Relations. I am honored to appear before you this morning to discuss the vitally important issue of assessing the security of America's Chemical Facilities and to provide recommendations for moving beyond the tepid federal government effort since 9/11 to reduce the vulnerability of this critical sector to terrorism.

There is no more important work this Committee can undertake than holding hearings such as this one . With the passage of time, it has become tempting for many in Washington to become self-congratulatory about the efforts that have been made to date to deal with the catastrophic terrorist threat. Some would like to believe that our post-9/11 military operations in Iraq and Afghanistan have dissuaded terrorists from doing their worse on U.S. soil or at least distracted them from attacking the U.S. homeland. Others would like to assign a deterrent value to the very modest measures that have been taken to date to bolster security at home.

On the other end of the spectrum, as Americans become aware of just how "target-rich" we are as a nation, many simply become fatalistic. One view holds that a determined terrorist will succeed no matter what measures we put in place so any effort is hardly worth the effort. Some go so far as to argue that the expense of safeguarding what is valuable and vulnerable in our midst is itself a concession to terrorism; i.e., "the terrorists have won" if we have to make post-9/11 adjustments to the way we conduct business or go about our daily lives.

When the optimists who believe America is winning the war on terror by way of its overseas exertions are combined with the pessimists who believe efforts to protect the U.S. homeland are futile, what is left is a very small constituency who support tackling the complex issue of critical infrastructure protection. This is why it so important that this committee continues to exercise leadership on these issues.

It is my conviction that al Qaeda or one of its many radical jihadist imitators will attempt to carry out a major terrorist attack on the United States within the next five year. At the top of the list of likely targets is the chemical industry. I also believe that there are practical steps that can be taken right now at a reasonable cost that can reduce the risk that the next terrorist attack will be catastrophic. We must necessarily begin with a far more active role by the federal government in advancing security within an industry that has long been accustomed to managing its own affairs.

The case for purposeful federal leadership to bolster security in the chemical industry, rests on two legs. First, is the attractiveness of the industry as a potential terrorist target. Second, are the inherent limits of the marketplace—left on its own—to advance security within this sector.

THE THREAT

One of the questions that is asked with growing frequency today, is why there has not been another attack since 9/11? If America is indeed vulnerable, why have the terrorists not struck again? Implicit in this question are both: (1) a critique that perhaps observers like me are overstating the threat and underestimating what the U.S. government has accomplished since 9/11 to reduce the risk, and (2) a concern that new investments in added security may end up being wasteful.

There is a compelling explanation for a lengthy interval between the 9/11 attacks and the next attack that should serve as an antidote for the quickening slide back towards national complacency. Al Qaeda has made clear that they want to carry out a more devastating attack then those on New York and Washington. Launching such an attack requires developing a plan and mobilizing the capacity to carry out that plan. This includes setting up a logistics cell, surveillance cell, and attack cell to scope out the target, conduct dry runs, and ultimately to execute the attack. Establishing this organizational capacity takes time, particularly within the United States where al Qaeda must work from a much smaller organizational footprint than it has in Western Europe or countries like Indonesia. Going after lesser targets puts that organization at risk because any attack exposes terrorist cells to enforcement action. This is because it is impossible to carry out an attack without leaving a forensic trail that can put a carefully built organization at risk. In short, while it is true that there are many easy targets within the United States that terrorists could have struck since 9/11, carrying out a truly catastrophic terrorists attack requires more time.

Of the carefully selected potential targets that al Qaeda or its imitators might seek to attack, the chemical industry should be at the top of the list. There are hundreds of chemical facilities within the United States that represent the military equivalent of a poorly guarded arsenal of weapons of mass destruction. Terrorists do not need to produce or procure chemical weapons and smuggle them into the United States. Just as on 9/11 they converted domestic airliners into missiles that destroyed the twin towers, they can target facilities that manufacture or conveyances that transport such lethal chemicals as chlorine, anhydrous ammonia, boron triflouride, cyanide, and nitrates. These facilities are found around the country in industrial parks, in seaports, and near the major population centers. Dangerous chemicals routinely travel along our highways, inland waterways, and on railcars that pass through the heart of major cities including Washington, D.C. just a short distance from Capitol Hill. Terrorist attacks on the U.S. chemical industry have the potential to kill tens of thousands of Americans and seriously injure many more. In many instances, these attacks hold the potential for having a cascading effect across other infrastructures, particularly in the energy and transportation sectors. This is both because of the damage that can be caused by the attack, and the

enormous expense and effort associated with the clean-up to an affected area in its aftermath. The four metropolitan areas that deserve the most federal attention and support are Newark, New Orleans, Houston, and Los Angeles.

THE LIMITS OF THE MARKET

The White House National Strategy for Homeland Security, released on July 16, 2002, assigns most of the responsibility for funding the protection of potential targets within U.S. borders to the private sector. In Chapter Six, "The Costs of Homeland Security," the strategy lays out "the broad principles that should guide the allocation of funding for homeland security (and) help determine who should bear the financial burdens." It declares:

> *"The government should only address those activities that the market does not adequately provide—for example, national defense or border security. . . . For other aspects of homeland security, sufficient incentives exist in the private market to supply protection. In these cases we should rely on the private sector."*

Unfortunately, this expression of faith in the market has not been borne out by security investments within the private sector. According to a survey commissioned by the Washington-based Council on Competitiveness just one year after September 11, 92 percent of executives did not believe that terrorists would target their companies, and only 53 percent of the respondents indicated that their companies had increased security spending between 2001 and 2002. With the passing of each month without a new attack, the reluctance of companies to invest in security has only grown.

If there were indeed "sufficient incentives in the private market to supply protection," there would be no need for the hearing we are having today. 3 ½ years after the September 11 attacks we should be seeing the chemical industry making substantial investments in addressing longstanding security weaknesses. But, there are two barriers to this kind of investment taking place. First, executives in this increasingly competitive industry worry that such investments will place them at a competitive disadvantage. Second, there are unique liability issues associated with industry-led efforts to define and implement adequate security.

Security is not free. A company incurs costs when it invests in measures to protect the portion of a vital sector it controls. If a company does not believe other companies are willing or able to make a similar investment, then it faces the likelihood of losing market share while simply shifting the sector's vulnerability elsewhere. If terrorists strike, the company will still suffer the disruptive consequences of an attack right alongside those who did nothing to prevent it. Those consequences are likely to include the cost of implementing new government requirements. Therefore, infrastructure security suffers from a dilemma commonly referred to as the "tragedy of the commons."

The "tragedy of the commons" applies to the chemical industry in this way: By and large, chemical manufacturers have had an impressive safety record. They routinely work with and transport some of the most dangerous substances known to man, but accidents that result in serious loss of life and damage to the environment are rare. However, the post 9/11 security imperative poses a special challenge for them. Operating on thin profit margins and faced with growing overseas competition, most companies have been reluctant to incur the additional costs associated with improving their security. Consider the case of a hypothetical manager of a chemical plant who decides to spend a day looking around his facility to access its security and discovers many serious lapses. After a fitful night of sleep, he wakes up and decides to invest in protective measures that raise the cost to his customers by $50 per shipment. A competitor who does not make that investment will be able to attract business away from the security-conscious plant because his handling costs will be lower. Capable terrorists and criminals will target this lower-cost operation since it is an easier target. The result is that the terrorist threat is only displaced, not deterred.

Even if the chemical industry could agree amongst itself to a common set of security measures and felt confident that good faith efforts would be made across the sector to abide by them, it still faces the unique uncertainties associated with liability when it comes to deciding, "how much security is enough." Since all security measures follow the rule of diminishing returns; i.e., higher investments buy incrementally less additional security; at some point a decision about the cost-benefit trade-off must be made. When executives make decisions about safety or other business issues, they can refer to empirical data from reliable open or proprietary sources. But decisions about adequate security require information about the threat. Typically, that information/intelligence is carefully controlled by the public sector and often lacks specificity. So the private sector is left essentially making their best guess about how much security they should invest in. However, a successful attack on their sector in the wake of new investments to protect it, will inevitably lead to a public judgment that the bar was set too low.

The only way to prevent the tragedy of the commons and to address the liability issue is for the public sector: (1) to be intimately involved in the decision about what security measures should be taken, (2) to have a credible enforcement role in assuring industry compliance with these measures, and (3) to provide a reasonable level of indemnification should agreed upon security measures be found wanting following a terrorist attack; i.e., to provide the industry with a measure of "Good Samaritan" protection as long as they abide by agreed upon standards . In short, security of critical infrastructures such as the chemical industry requires an effective performance-based regulatory regime developed at the federal level. To this end, I recommend this committee consider holding hearings and drafting legislation that incorporates the following:

(1) Provides the necessary resources for the Department of Homeland Security to work with (a) the Local Planning Emergency Committees created under the Emergency Response and Community Right to Know Act (EPCRA) and (b) the FBI's district-based "INFRAGARD" program to identify minimal standards for the industry to:

- Establish physical security, communications capabilities, and access control at chemical facilities based on the quantity and lethality of the chemicals produced and stored within a facility, its proximity to major population centers, and its proximity to other critical infrastructure such as energy and transportation.
- Conduct regular exercises to test the adequacy of security measures to prevent intrusions.
- To conduct community outreach on incidence management with neighbors to the facilities who would be directly affected in the aftermath of a successful attack.
- To set minimal intervals for emergency response training involving local firefighters, police, and emergency healthcare based on the likelihood of large-scale casualties in the aftermath of a successful attack.

(2) To authorize the creation of bonded, third-party inspectors to audit compliance with these minimal standards at intervals appropriate to the risk posed by a successful attack on the chemical facility.

(3) To create within the Department of Homeland a chemical security compliance office that conducts periodic inspections of facilities to determine both the adequacy of their compliance and the care at which third-party inspectors have conducted their compliance audits. In carrying out this "auditing-the-auditors" program, DHS must possess the authority to swiftly sanction third-party inspectors who it finds to be providing substandard audits.

(4) To sponsor research and development and to provide tax incentives which reward the adoption of less dangerous processes for making, handling, and storing the most lethal chemicals.

(5) To sponsor research and development of new technologies to mitigate the risk of chemical releases beyond a chemical facility.

(6) To sponsor research and development of lower-cost, more user-friendly protective equipment for emergency responders.

(7) To create a task force that recommends a new protocol for resolving the conflict associated with the pre-9/11 community outreach requirements of EPCRA and the post-9/11 trend towards restricting public access to information deemed to be sensitive by DHS. The need for advanced information to be available for communities to take necessary life-saving measures in the aftermath of an attack should be assigned as much of a priority as DHS's tendency to treat public disclosure of details associated with high-risk/high-consequence facilities as sensitive information. This is especially the case in the near term to medium term, given the low-probability that DHS will have actionable intelligence to prevent a terrorist attack.

(8) To require security risk assessments that are reviewed by the senior homeland security official at the state level before new non-industrial development is allowed in the vicinity of existing chemical facilities. This is designed to provide the means for an

appropriate evaluation of decisions such as the one made this year by the Los Angeles Community College District to build a campus to accommodate up to 12,000 students in the southeast Los Angeles community of South Gate, next to one of southern California's largest chemical plants.

CONCLUSIONS:

While this hearing has focused on the issue of chemical facilities, it is important that the issue of transportation of chemicals receive equal attention by this committee and by the federal government. At the end of the day, precursor chemicals must be shipped to manufacturing facilities to produce their final products, and those products need to reach consumers for them to have commercial value. This means that virtually all of the chemicals that we should be concerned with at industrial facilities are concurrently moving about on railcars, barges, and trucks, often in close proximity to major population centers. There are even some chemicals that are so hazardous that they become unstable if they do not reach their destination within prescribed timeframes; i.e., they will explode.

The limited progress there has been made to date within the chemical industry has primarily involved efforts to improve physical security. While these "gates, guards, and guns" issues warrant the attention they have been receiving, they represent only a small part of the overall security agenda. At the end of the day, determined terrorist organizations will be able to compromise any existing industrial security regime. This does not mean these measures are futile because the harder a target becomes to compromise, the more expertise, money, planning, and dry-runs a terrorist organization requires to compromise it. This translates into improved odds that they will do things that will allow them to be detected by vigilant law enforcement.

However, the best way to protect both the American people and an industry as critical to the U.S. economy and our modern way of life as the chemical sector is to reduce the probability that targeting chemical facilities or the transport of hazardous chemicals is the equivalent of constructing and deploying a weapon of mass destruction. We can accomplish this by adding a new security lens to the safety lens that is already well entrenched within the industry. The safety lens which has evolved from training, professional protocols, regulation, and liability law, requires that the industry automatically anticipate the possibilities and potential consequences of an act of God, human error, or mechanical error and devise means to mitigate those risks. In our post-9/11 age, the new requirement must be that the industry also automatically asks: "What is the possibility and what are the potential consequences that we could be targeted by someone with malicious intent?" Based on the answer to that question, they must incorporate appropriate safeguards to lower the risk.

In the end, given that it will be several years before the recent reforms to our intelligence community will bear fruit, we must accept that while a "threat-based" approach to homeland security may be desirable, it will be elusive for some time to come. The only prudent alternative to dealing with our intelligence shortcomings is to look at the sectors

where the consequences of an attack would be greatest and assume that our adversaries are interested in attacking those targets. This means that we must put in place, as quickly a possible, reasonable safeguards to both protect those targets and to reduce the consequences should our prevention efforts fail.

One of the central conclusions of the 9/11 Commission noted the pervasive lack of imagination across the U.S. government in anticipating that organizations like al Qaeda would use aircraft as instruments of terror. What should be guiding our efforts on homeland security today is not whether there is explicit evidence that demonstrates that our adversaries are thinking how and when to harm us, but whether there are in place credible measures that would prevent an attack from happening. As I look at the chemical industry today, I do not see credible barriers to a determined and resourceful terrorist organization. This is clearly an unsatisfactory state of affairs in our post-9/11 world.

Stephen Flynn is the author of *America the Vulnerable*, published by HarperCollins in July 2004. He is the inaugural occupant of the Jeane J. Kirkpatrick Chair in National Security Studies at the Council on Foreign Relations. Dr. Flynn served as Director and principal author for the task force report "*America: Still Unprepared—Still in Danger*," co-chaired by former Senators Gary Hart and Warren Rudman. He spent twenty years as a commissioned officer in the U.S. Coast Guard including two commands at sea, served in the White House Military Office during the George H.W. Bush administration, and was director for Global Issue on the National Security Council staff during the Clinton administration. He holds a Ph.D. and M.A.L.D. from the Fletcher School of Law and Diplomacy and a B.S. from the U.S. Coast Guard Academy.

Post-Hearing Questions for the Record
Submitted to Stephen E. Flynn, Ph.D.
From Senator Daniel K. Akaka

"Chemical Security: How Vulnerable Are We?"

April 27, 2005

1. You testified that the Department of Homeland Security (DHS) should establish an Office of Chemical Security Compliance that would "audit the auditors." Assuming that DHS takes on the responsibility of regulating the chemical industry, the Department presumably will need to do more than oversee contractors. I am concerned that the level of staffing and expertise necessary to promulgate and enforce regulations in the chemical sector is being overlooked in the proposals presented to the Committee.

Will you please elaborate on how many additional resources you believe DHS will realistically require to regulate the chemical industry and why?

Response:

Given the size and complexity of the chemical industry, it would be a difficult and lengthy process to recruit and train a cadre of federal employees assigned to DHS to serve as the primary security enforcers. This would be true even if the significant issue to funding such an effort could be overcome. Therefore, I believe that the most expeditious and effective way to establish a means of oversight would be to authorize licensed-bonded third party inspectors to carry out these inspections once the regulatory standards have been established. These licensed firms would require some legislative liability protection for them to be commercially feasible. To ensure high standards are maintained, DHS should have a dedicated office of oversight at the headquarter levels and maintain teams of field inspectors at the regional/district level. These field inspectors would conduct periodic inspections of facilities that have been inspected by the third party inspectors. If they find that the inspection was substandard, they would level fines against the inspection firm, drawing on the posted bond. If they discover a pattern of substandard work by a specific private inspection firm, DHS would have the authority to revoke their license to carry out these inspections.

In terms of numbers of dedicated DHS personnel to carry out such a regime, I would anticipate an office of 25-35 personnel at the headquarters level and 12-15 field offices with staffing levels of 15-20 personnel each.

Post-Hearing Question for the Record
Submitted to the Honorable Carolyn W. Merritt
From Senator Daniel K. Akaka

"Chemical Security: How Vulnerable Are We?"

April 27, 2005

1. According to your testimony, much of the lack of preparedness at chemical facilities is due to failure to comply with current regulations. What can be done to increase compliance and will additional regulations help if the regulations already in place are not being followed?

Response:

In my April 27, 2005, testimony, I referred to businesses the U.S. Chemical Safety Board (CSB) has investigated in the past. Many of these businesses were either unaware of regulations they were obligated to follow, had so poorly implemented the provisions of the regulations that they were ineffective in preventing chemical release incidents, or otherwise chose to ignore those regulations altogether. Based on the observations I have gathered from CSB investigations, I believe that new regulations for chemical plant security would not be effective unless an enforcement, funding, implementation, and sustainability strategy is a strong part of the legislation.

I also referred to an incident our agency is investigating in Georgia in which a local chemical manufacturing company was holding and using 35,000 pounds of a toxic and flammable material, allyl alcohol. This amount is more than double the threshold allowed under EPA's Risk Management Program (RMP) rules. Company management states that they did not know about the rules, and the allyl alcohol supplier did not provide adequate information to inform the local company about required RMP compliance. Keeping the reactor's capacity a few hundred pounds under OSHA's Process Safety Management (PSM) threshold allowed the company to operate without complying with the PSM standard. Had they been required to comply with either of these rules, they would have helped prevent this incident, which exposed 156 people to a toxic chemical. EPA did not inspect this facility before it started working with allyl alcohol, and OSHA had never inspected the facility.

Our investigators also discovered that the state of Georgia has a small number of Local Emergency Planning Committees (LEPCs) relative to the type and amount of industry in the state, and no LEPC exists in the county where the toxic release occurred. This county is home to a number of facilities and businesses that handle or manufacture large quantities of hazardous chemicals.

Another investigation our agency completed in New York City highlights the urgent need for frequent and comprehensive independent inspections of chemical facilities. This company, a sign manufacturer, mixed two incompatible hazardous waste chemicals and suffered an explosion that injured 36 people, including 14 members of the public and six firefighters. One

root cause of the incident was the company's failure to comply with important hazardous chemical waste disposal requirements under long-established EPA rules. While their waste disposal contractor offered compliance training to managers, they refused to take this training or allow their employees to receive it, even though it would have informed them of their legal obligations. The New York State Department of Environmental Conservation and the U.S. Occupational Safety and Health Administration (OSHA) both failed to inspect the facility while it was in operation. CSB investigators concluded that routine inspections by local and state authorities would likely have identified gaps in training and compliance and helped to educate the management about good safety practices and applicable fire codes.

CSB investigations such as these highlight the need for stronger enforcement of existing regulations. If new regulations are adopted, I would like to emphasize that they are much more likely to be effective when coupled with adequate funding and a concrete plan for compliance implementation such as the "permit to operate" systems used under the Clean Air and Clean Water Acts. Additionally, a provision for reporting and enforcement if these permits or regulations are not followed as intended would be essential.

Post-Hearing Questions for the Record
Submitted to John B. Stephenson
From Senator Daniel K. Akaka

"Chemical Security: How Vulnerable Are We?"

April 27, 2005

1. In your written testimony, you stated that DHs has not yet determined the number and type of facilities that should be considered part of the chemical infrastructure sector. Yet DHS is supposed to be in the final drafting stages of the Chemical Sector Security Plans as an annex to the National Infrastructure Protection Plan. It is surprising to me that DHS would be close to completing a sector specific plan without having defined what is included in the sector.

Do you have any knowledge of the contents of the Chemical Sector Security Plan, and if so, do you know whether your concerns regarding the parameters of the chemical infrastructure sector have been addressed?

Response:

DHS has not yet completed its Chemical Sector-Specific Plan. Originally scheduled for completion in November 2005, DHS officials tell us that finalizing the plan is taking longer than anticipated because the process of developing the plan is long and involved and includes many government and industry players. DHS has not provided a new date as to when the plan will be completed. Neither GAO, industry, nor other key stakeholders has seen a recent draft of the plan. However, based on discussions with DHS officials and our review of early drafts of the plan, it appears that DHS views the chemical sector very broadly. DHS recognizes that there are a vast number of "facilities" with chemicals in the U.S., from production facilities to hardware stores. According to DHS, there are two ways to describe the sector. First, DHS defines the sector by the end product: (1) basic chemicals; (2) specialty chemicals; (3) life science products; and (4) consumer products. A second way to describe the sector would be through examining the chemical industry's value chain, or the activities and services that support the industry. The chemical industry value chain encompasses company activities associated with the procurement of raw materials, and the design, manufacturing, marketing, distribution, transportation, customer support, use, recycling, and disposal of chemical products. DHS officials have told us that their current focus in defining the sector is on fixed facilities whose primary role is the manufacture, storage, or transfer of chemicals. This universe is broader than facilities with threshold levels of chemicals that must follow EPA's RMP requirements. However, this universe also includes facilities that use chemicals but should not be included in the sector. Some RMP facilities will also likely be excluded from the chemical sector because they fall under other critical infrastructure sectors, such as water treatment facilities that are part of the water sector.

While DHS has not placed specific parameters on the number and type of facilities that comprise the chemical sector, it has made efforts to identify chemical facilities with the highest risk for

causing harmful consequences to the public health and safety. DHS has identified about 3,400 high-risk facilities by analyzing EPA data on the roughly 15,000 RMP facilities. DHS officials report that they reached this number by subtracting facilities that are part of other sectors, such as water and oil facilities, and modifying facilities' RMP worst-case scenarios to more accurately estimate the potential consequences of a terrorist attack at facilities.

2. The District of Columbia recently imposed a ban on trains traveling through the District carrying hazardous materials or carrying containers that once had hazardous material in them.

In your opinion, do containers that have hazmat residue pose a serious security risk, and if so, why?

Response:

In an April 2003 report entitled "Rail Safety and Security: Some Actions Already Taken to Enhance Rail Security, but Risk-based Plan Needed" (GAO-03-435), officials from local jurisdictions GAO visited, as well as other government and private security experts, identified concerns about the safety and security of transporting hazardous materials by rail, including the need for measures to better safeguard hazardous material temporarily stored in rail cars while awaiting delivery to their ultimate destination. During our current review, we also heard anecdotally from industry representatives that the security of hazmat during rail transport is a concern.

GAO's current review of issues surrounding the security of the chemical sector focuses on chemicals at fixed locations and does not address security risks of hazmat residues in transportation containers. Nor does GAO have any other ongoing work addressing this specific issue. It would seem, however, that the risk posed by the containers would depend on a variety of factors, including, among others, the specific chemical and the amount of the residue remaining in the containers. Because the risks chemicals pose are directly related to the type and quantity of hazmat present, containers that are largely empty pose less risk than full hazmat containers.

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