

**H.R. 5695, CHEMICAL FACILITY ANTI-TERRORISM
ACT OF 2006**

HEARING
BEFORE THE
**SUBCOMMITTEE ON ECONOMIC
SECURITY, INFRASTRUCTURE
PROTECTION AND CYBERSECURITY**
OF THE
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H.R. 5695, CHEMICAL FACILITY ANTI-TERRORISM ACT OF 2006

Thursday, June 29, 2006

**U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON HOMELAND SECURITY,
SUBCOMMITTEE ON ECONOMIC SECURITY,
INFRASTRUCTURE PROTECTION, AND CYBERSECURITY,
*Washington, D.C.***

The subcommittee met, pursuant to call, at 10:09 a.m., in Room 311, Cannon House Office Building, Hon. Dan Lungren [chairman of the subcommittee] presiding.

Present: Representatives Lungren, Rogers, Pearce, King, ex officio; Sanchez, Jackson Lee, Langevin, Thompson, ex officio.

Mr. LUNGREN. Welcome to this hearing of the Subcommittee on Economic Security, Infrastructure Protection, and Cybersecurity of the Committee on Homeland Security. Today, we are going to be considering H.R. 5695, the Chemical Facility Anti-Terrorism Act, which was introduced yesterday.

By some accounts, chemical facilities across the Nation number close to 15,000. This industry employs some 5 million Americans. It is the largest exporting sector in the economy and the largest private investor in research and development.

By one account, 96 percent of all manufactured goods directly involve the use of chemicals. Chemical facilities produce our medicine, they give us clean water, fertilize our farms, manufacture goods essential to our national defense and our modern way of life. As a result the chemical industry is critically important to our safety, our national defense and our economic vitality.

It is our chemical dependence and the potential harm that a certain number of these chemicals pose to human life that makes these substances attractive as terrorist targets. In order to protect our citizens and ensure national and economic security, we need to secure America's chemical facilities against potential terrorist attacks. Any regulation of this industry must take into account the varying types of facilities such as agriculture, timber, paper products, food, mining, paints, pharmaceuticals and petrochemicals just to name a few.

We must take into account the need for these types of chemicals and their importance to our daily lives. We must be able to secure the facilities without sacrificing their continued economic benefits. H.R. 5695, I believe, does that.

This bill stresses the importance of security regulations based on risk, based on performance and based on flexibility. What do I mean by that? It means that the Secretary will be required to tier

or rank each chemical facility based on the risk of the facility to a terrorist attack. Each tier then will be subject to performance-based security requirements. These requirements would set the bar of security expected to be met by the facility.

The facility will then have the flexibility to choose the security measures necessary to meet their requirements. That may mean physical security, such as fences or barriers, guards or cameras. That may mean controlling access to the facility and screening employees. It would include cybersecurity measures such as securing computer networks, automated or communication systems, or hardening equipment. In most cases, it will likely mean a combination of these. This bill gives that flexibility to the owner-operator of the chemical facility, but in the end they must meet those performance security requirements and their plan must be approved by the Secretary.

This is obviously a big change from the voluntary requirements now in place. All facilities will be evaluated for risk and be required to take appropriate steps to address their vulnerabilities. And while some chemical facilities have already done this, for the first time, the Secretary will have the authority to review and verify the vulnerability assessments and the facilities' security plans, require their implementation and enforce their compliance through administrative, civil or even criminal penalties. Facilities will be required to periodically review these plans, ensuring that they are up to date and protecting against the latest threats.

Just a few weeks ago Secretary Chertoff stated the time has come to have a chemical security bill that gives the Department the tools to have intelligent regulation of the chemical industry, particularly with respect to these high hazard chemicals. I agree with the Secretary. We need to have intelligent regulation of the industry.

This bill is a huge step towards securing our chemical facilities in an intelligent manner. With an industry as large and diverse and as essential as the chemical industry, we cannot afford inflexible or unreasonable requirements for all of our 15,000-plus chemical facilities.

I also agree with the Secretary, the time has come for Congress to take action. While we have seen that some in the Appropriations Committees have thought that that was their job, we have not been silent. We have not been standing by. We recognize that much has been done to date to secure our chemical facilities, but that the patchwork implementation and the lack of authority to ensure compliance requires action by Congress.

This will be the first time the Department has been given new regulatory authority over an industry, and we understand while that is essential, it is also essential that we do it correctly. However, after a year of oversight by this subcommittee, the urgency of securing our chemical facilities with a Federal standard is clear. I hope that this hearing will stimulate discussion on the importance of this issue and will help to inform and improve the bill now being considered.

I would like to thank all of our witnesses for joining us today. We have a wide range of expertise on the panel. I look forward to hearing your testimony on the bill.

Lastly, I would like to thank the ranking member of the subcommittee, Ms. Sanchez, and the ranking member of the full committee, Mr. Thompson, for all of their work on the bill. I would like to thank the staffs, both majority and minority, for their work on the bill.

I am pleased to say, the bill is the product of months of bipartisan negotiations between members and staffs, and while we have had some disagreements during the course of those negotiations, by and large, we have found agreement, and by and large it has been done with a spirit of true bipartisanship.

I would now like to recognize the ranking member, Ms. Sanchez, for any opening statements she may wish to make.

Ms. SANCHEZ. Thank you, Mr. Chairman, and thank you to the witnesses for joining us today.

I think it is an important issue to discuss the security of chemical facilities and specifically as it relates to this Chemical Facility Anti-Terrorism Act of 2006 that we are considering. Frankly, I think this legislation is long overdue. I think we need a baseline for chemical facilities, and I am pleased that Chairman Lungren, Ranking Member Thompson and I were able to work on this, quite frankly, in a very bipartisan way that I believe is the first critical step in ensuring the security of our Nation's chemical plants.

The legislation creates a process for the Department of Homeland Security to identify which chemicals, at what quantities, are substances of concern. Facilities that possess substances of concern over the threshold quantity will be identified as significant chemical facilities, assigned to a risk-based tier and required to submit vulnerability assessments and security plans to the Department for review and approval. While the vulnerability assessments and security plans will be reviewed against security performance standards for all facilities, we provide sufficient flexibility so that each facility may use different methods for strengthening security or reducing the consequences of an attack according to its unique situation.

For example, facilities could elect to use inherently safer technology to reduce the consequence of an attack, and the facility would be in a lower-risk tier; or the facility may choose to use existing technology and operate in a higher-risk tier. Sort of the same way you decide what type of premium you are going to pay on your insurance liability plans, for example.

I am particularly pleased that the legislation contains whistleblower protection to ensure that chemical facility employees that report security violations to the Department do not face retaliation from their employers; and I am also pleased that the bill establishes a security baseline for chemical plants in all States that must be met, but it doesn't limit States' ability to meet and surpass the Federal regulations. And as you know, both the chairman and I come from California, and I think we have much deeper concern for regulation in that State.

So I look forward to hearing the feedback from our witnesses and to discussing this issue.

Mr. Chairman, with your indulgence, I would also like to submit three documents into the record this morning: a letter from Representative Frank Pallone, who, as you know, is on the Energy and

Commerce Committee, commending the committee for holding this hearing; secondly, testimony from Greenpeace on the security benefits of using inherently safer technologies; and spreadsheets showing examples of committee members' districts, where companies changed to inherently safer technologies, and the benefit to the surrounding population because of those changes at those chemical plants.

So if you will

Mr. LUNGREN. Sure. Without objection, they should be entered into the record.

Ms. SANCHEZ. Thank you, Mr. Chairman. I yield back.

[The information follows:]

FOR THE RECORD

HOUSE OF REPRESENTATIVES,
Washington, DC, June 29, 2006

Chairman DAN LUNGREN

Ranking Member LORETTA SANCHEZ

*Subcommittee On Economic Security, Infrastructure Protection, and Cybersecurity,
Committee on Homeland Security,
House of Representatives, Washington, DC*

DEAR CHAIRMAN LUNGREN AND RANKING MEMBER SANCHEZ,

I would like to commend you on your decision to hold a hearing on the important issue of chemical security. Nearly five years after the terrorist attacks of September 11th, 2001, Congress still has yet to comprehensively address the vulnerabilities of chemical facilities, a significant oversight in our efforts to protect the homeland. We have waited far too long to take action.

This is a particularly important issue for my home state of New Jersey. Our state's combination of being the most densely populated in the country as well as being home to a large number of chemical facilities and refineries means that our citizens face particular risks from a terrorist attack or other incident.

That's why I believe it is critical to ensure that any federal legislation concerning chemical security does not preempt or otherwise interfere with the ability of New Jersey and other states to go beyond federal law. I am concerned that the draft legislation in front of the Subcommittee includes a provision stating that states shall not issue laws or regulations that would "frustrate" the federal law. It is not clear what "frustrate" even means, but I fear it could be used by industry to delay or block state efforts.

I am also concerned that the legislation does not include any provisions addressing the use of inherently safer technology (IST). IST is a critical tool necessary to lower the overall risk posed by specific facilities. Under my proposed legislation, the Chemical Security Act (H.R. 2237) facilities would have to examine as part of their vulnerability assessments whether using IST would reduce the risk. My legislation does not include statutory requirements for specific changes, and it does acknowledge that certain technologies are economically unfeasible. It is instead a common-sense measure to make sure that facilities and the federal government examine whether reducing the amount or type of certain substances at a given facility would reduce the inherent risk.

I hope that the Subcommittee closely examines both of these critical issues as it moves forward with its proposed legislation. Again, let me thank you for taking long-overdue action on a very serious part of our homeland security. I look forward to working with you in the future.

Sincerely,

FRANK PALLONE, JR.
Member of Congress

Mr. LUNGREN. Two interested parties requested the opportunity to submit testimony for the hearing record in addition to those noted by the gentlelady from California. That is the National Petrochemical & Refiners Association and Mr. David Moore, of AcuTech Consulting Group, Chemetica, Inc. I would ask unanimous consent that these two testimonies be entered into the record.

Without objection, they shall be.

[The statement of National Petrochemical & Refiners Association follows:]

PREPARED STATEMENT OF THE NATIONAL PETROCHEMICAL & REFINERS ASSOCIATION

Introduction

NPRA, the National Petrochemical and Refiners Association, submits this statement for the record for the June 29, 2006, hearing on the Chemical Facility Anti-Terrorism Act of 2006. NPRA has more than 450 member companies, including virtually all U.S. refiners and petrochemical manufacturers, their suppliers and vendors. Petrochemical companies use manufacturing processes similar to those in a refinery. Both industries' facilities would be covered by the facility security legislation being considered by the Committee. NPRA companies supply consumers with a wide variety of products used daily in their homes and businesses. These products include gasoline, diesel fuel, home heating oil, jet fuel, lubricants, and the chemicals that serve as building blocks for everything from plastics to clothing, medicine and computers.

In this statement, NPRA outlines how the refining and petrochemical industries are performing the critical task of maintaining and strengthening the security of our national energy and petrochemical infrastructure. Although we do not advocate legislation on this subject, NPRA reviews our principles for new chemical security authority in federal legislation. It is our hope that the Subcommittee will look favorably upon these principles as it moves forward to consider chemical security legislation.

Refining and Petrochemical Facilities Continue to Implement Strong and Effective Security Measures

Maintaining the security of our facilities has always been a priority at refineries and petrochemical plants. Refiners and petrochemical manufacturers are heavily engaged in maintaining and enhancing security - and were so before September 11. These industries have long operated globally, often in unstable regions overseas where security is an integral part of providing for the world's energy and petrochemical needs. When the tragic events of September 11, 2001, occurred, the nation realized immediately that additional steps had to be taken in order to protect our homeland. The refining and petrochemical industries did not wait for new government regulations before implementing additional and far-reaching facility security measures to address these new threats.

What are some of the steps our industry has taken to strengthen security? Industry has developed and utilized a sophisticated, peer-reviewed security vulnerability assessment (SVA) methodology to guide facilities as they identify security hazard threats and vulnerabilities and to identify appropriate security measures. The Department of Homeland Security (DHS) has endorsed this methodology and has used it to train its employees. With the information developed in the SVAs, industry has adopted facility security plans and implemented strong and effective security measures. (See the Attachment for a partial list of the types of security measures that have been implemented.)

In addition to moving forward with enhanced security measures, industry has developed close working relationships with key federal agencies and state and local law enforcement offices to obtain and exchange information critical to maintaining infrastructure security. Industry works with about a dozen federal agencies including the FBI, the Department of Transportation, the Department of Energy, the Department of Defense, the CIA, the Government Accountability Office, and, of course, the Department of Homeland Security and its various components, including the U.S. Secret Service, the Transportation Security Agency, and the U.S. Coast Guard.

Industry has held joint training exercises simulating terrorist attacks and developed educational programs involving federal and state government officials with security expertise. Industry has partnered with the DHS on many important security initiatives and programs, including development of the National Infrastructure Protection Plan (NIPP), sector specific plans (SSP), the Risk Assessment Methodology for Critical Asset Protection, or RAMCAP, the Homeland Security Information Network (HSIN), and Buffer Zone Protection Plans. Industry personnel from the largest companies to the smallest have shared best industry practices at NPRA meetings and conferences.

In addition to these voluntary activities, a majority of the almost 150 refineries and 200 petrochemical manufacturing facilities in the United States are subject to the jurisdiction of the U.S. Coast Guard, and are therefore regulated pursuant to the security requirements of the Maritime Transportation Security Act (MTSA). The

Act requires that these facilities conduct security vulnerability assessments and submit facility security plans to the U.S. Coast Guard. These security plans were submitted by facilities in December 2003 and approved by the Coast Guard. NPRA members continue to work with the Coast Guard to meet the goals of the Act.

With this strong evidence of our commitment to facility security as background, NPRA urges the Subcommittee to consider our principles for chemical security as it considers the Chemical Facility Anti-Terrorism Act of 2006.

NPRA's Principles for Chemical Security

NPRA does not oppose reasonable chemical security regulation; however, the existing system is working well and care must be taken to "do no harm" to current efforts as new chemical security authority is fashioned for DHS. We have adopted the following principles that should be reflected in any chemical security bill.

1. Security legislation should give credit for voluntary industry activities. Refiners and petrochemical manufacturers have conducted security vulnerability assessments and adopted facility security plans. Any new legislation should recognize and give credit to these companies for the security programs they have already implemented.

2. Security legislation should require that DHS develop a risk-based approach to regulating both chemicals and facilities. DHS should develop a list of chemicals of interest based on security risk as the qualifier for a chemical site to be regulated. The RAMCAP project will be one tool for DHS to use to assess security risk. DHS should also be given flexibility to set the appropriate chemical thresholds based on risk.

3. Security legislation should provide for federal preemption of state and local chemical security laws and regulations. Many of the challenges that arose after the recent Gulf Coast hurricanes stemmed from the conflicting and often confusing expectations of different political jurisdictions. Refiners and petrochemical manufacturers cannot reasonably be expected to change their plans and operations to meet state or local requirements that are inconsistent with those of the federal regulatory scheme.

4. Security legislation should reject any provisions that indirectly or directly involve "Inherently Safer Technologies" (IST). IST is not a security tool; it is a back-door approach to unnecessary environmental controls. In some instances, IST requirements could actually increase security risks. For example, reducing the volume of a hazardous chemical stored at a facility could reduce on-site risk, but it would increase truck, rail, or barge traffic to maintain supplies of needed raw materials. Overall risk would therefore increase.

5. Security legislation should fully recognize existing U.S. Coast Guard jurisdiction over facility security under the MTSA. Any chemical facility legislation should explicitly state that facilities in compliance with MTSA are also deemed to be in compliance with any new DHS program. It should be incumbent upon DHS to coordinate with the U.S. Coast Guard and identify any new facility security requirements that may be deemed to apply to MTSA-regulated facilities. In addition, some facilities are only partially covered by MTSA. In these cases, we would suggest that those facilities be given the option of submitting security plans to the Coast Guard where logically appropriate. Legislation or subsequent regulation should allow this type of "opt in" activity to occur.

6. Security legislation should give sufficient protection to the security-related sensitive information required to be submitted to DHS. Government officials should not release sensitive security-related information to other government agencies whose mission has little to do with security. Even more problematic is the chance that this information would be released to outside interest groups. Access to sensitive information should be strictly limited to the owner or operator of a facility and to DHS.

7. Security legislation should impose penalties fairly and recognize good-faith efforts to comply. In general, NPRA does not favor criminal penalties for parties required to comply with a sweeping new regulatory mandate in a short period of time. If Congress decides to include criminal penalties in chemical security legislation, those penalties should be assessed only for violations that occur both "willfully" and "knowingly." The word "knowingly" may mean simply acting with an awareness of one's actions, while the word "willfully" usually means acting with the knowledge that the action, or the inaction, is illegal.

8. Security legislation should include reasonable restrictions on the filing of third party lawsuits. Permission for third party lawsuits, patterned after existing environmental statutes, could impede implementation of security measures due to lengthy and contentious litigation. These suits may well result in federal judges, rather than DHS, setting security standards.

9. Security legislation should direct DHS to define criteria for background checks. An important part of any facility security plan is making sure that the workforce is trained, qualified, and dependable. If background checks of employees and con-

tract employees are required, any new chemical security legislation should direct DHS to define specific criteria for denying workers access to a facility. Companies conducting background checks should also be authorized to access and utilize government resources and databases, as is done now for the financial sector.

Conclusion

To conclude, refiners and petrochemical manufacturers take very seriously their responsibilities to maintain and strengthen security at their facilities. Our industry has complied with modernized, post 9-11 federal security requirements. We have utilized expert engineers who understand our facilities better than anyone else to conduct vulnerability assessments and implement new measures to protect against new threats. We have called upon experts throughout all of industry, government agencies, and the security industry to share the best practices to protect our facilities. And perhaps most importantly, the industry has forged an outstanding working relationship with government security agencies to receive rapidly the critical information needed to fight terrorism. This working partnership has been very effective in encouraging the exchange of information to allow the industry to focus on the security threats that are both clear and relevant. This important work needs to continue. Any new chemical security authority should enhance and foster these critical activities, rather than discourage them.

NPRA and its members look forward to working with the Subcommittee and the full Committee as they consider the Chemical Facility Anti-Terrorism Act of 2006. We are always available to discuss our principles or answer any questions regarding the refining and petrochemical industries.

ATTACHMENT 1

FACILITY SECURITY MEASURES TAKEN BY PETROLEUM REFINERS & PETROCHEMICAL MANUFACTURERS

NPRA, the National Petrochemical & Refiners Association, has more than 450 members, including virtually all U.S. refiners and petrochemical manufacturers. Our members supply consumers with a wide variety of products and services that are used daily in homes and businesses and contribute to the nation's quality of life and security. NPRA is proud of the accomplishments refiners and petrochemical manufacturers have achieved in maintaining and strengthening facility security.

NPRA members report they have conducted comprehensive facility security vulnerability assessments and have identified and evaluated critical assets and infrastructure, such as dock facilities, high value production units, power stations, and other equipment which, if attacked by terrorists, could result in significant off-site consequences. Each individual facility is expected to determine what is most important for that particular facility. With this information, facilities have taken the following kinds of specific measures to enhance security:

Formalized information sharing networks with area businesses and local, state, and federal law enforcement and homeland security (such as membership in the Energy Information Sharing and Analysis Center, or ISAC, the Oil & Natural Gas Sector Coordinating Council (ONG SCC), and the Homeland Security Information Network, or HSIN).

Shared security response plans with local law enforcement and appropriate federal agencies.

Conducted drills & exercises to test response plans.

Hired security personnel, some of which are used around the clock, seven days per week.

Conducted contractor background checks.

Installed perimeter fencing, ditches, berms, and jersey barriers.

Reconfigured roadways and installed speed devices to delay vehicular movement. Installed a variety of fence-line intrusion detection devices, to include security lighting and area cameras.

Reconfigured sites, allowing critical assets to be set back from perimeters.

Acquired enhanced security communication systems.

Instituted perimeter patrols and surveillance, conducted by both company personnel and local law enforcement.

Installed electronic intrusion detection on buildings (e.g., infrared, motion detectors, door and window sensors).

Implemented card-access controls, with new technology access readers (e.g., biometrics, retina scan).

Required remote parking for employees or contractors, and contractor/visitor vehicles marked with identification (signs/cones).

Required ID badges to be displayed at all times, and instituted procedures for lost ID card and requiring parking decals.

Adopted shipments/deliveries verification process (e.g., close examination of shipping papers, driver's identity).

Identified restricted areas within facilities.

Monitored railroad traffic to and through facility.

Restricted visitors from driving within the facility.

Prohibited any unannounced visitors.

Rotated access gates on random basis.

Conducted security officer training.

Installed secure mail handling procedures.

Reported suspicious activities (e.g., photo taking, vehicles parked unusually, aircraft over facility).

Conducted vehicle searches (interior & exterior).

Instituted sophisticated processes for collecting and evaluating intelligence/threat information.

Protected computer infrastructure.

[The statement of Mr. Moore follows:

PREPARED STATEMENT OF MR. DAVID MOORE, ACUTECH CONSULTING GROUP,
CHEMETICA, INC.

Introduction

Good morning, Mr. Chairman. My name is David Moore and I am the President and CEO of the AcuTech Consulting Group, a security and safety consulting firm based in Alexandria, Virginia. I have an extensive background in chemical safety and security with a specialty in the application and regulation of inherent safety for chemical plant security.

I was the lead author of the American Institute of Chemical Engineers (AIChE) Center for Chemical Process Safety (CCPSr) "Guidelines for Managing and Analyzing the Security Vulnerabilities of Fixed Chemical Sites"¹ and the American Petroleum Institute (API)/National Petrochemical and Refiners Association (NPRA) Security Vulnerability Assessment Methodology². These are the most highly used security vulnerability analysis guidelines in these industries.

I completed a project in January, 2006, as the Sector Coordinator for the petroleum refining, chemical manufacturing, and liquefied natural gas sub sectors for the Department of Homeland Security (DHS) initiative to develop a common strategic vulnerability analysis process called 'Risk Analysis and Management for Critical Asset Protection (RAMCAP). We currently have other efforts ongoing in support of industry and government to reduce homeland security risks in the chemical sector including ongoing consultation to DHS for the chemical comprehensive review program.

My firm is actively involved in chemical process security consulting and training and in conducting Inherently Safer Technology (IST) studies for safety and security, some of which are done to address current regulations in effect in Contra Costa County, California, and the State of New Jersey. I have been consulting in chemical process safety since 1981 and formally in inherent safety regulation since 1999. Prior to that time there wasn't a regulation that required IST, but I was practicing the principles of inherent safety routinely. I was formerly a Senior Engineer with Mobil Corporation, who condoned the principles of inherent safety in every decision we made, and before that I was a Research Engineer with the National Fire Protection Association.

In particular, I have assisted companies in understanding the concepts of inherent safety through our consulting and training assignments, and have conducted dedicated and integral inherent safety analyses on chemical facilities and other industrial facilities handling hazardous materials. I have published twelve papers on inherent safety, the regulation of inherent safety³, and inherent safety consideration in chemical security. I have made numerous presentations on the topic at professional conferences, training forums, and government venues.

Because of our experience we were selected by the AIChE CCPSr to update their classic book on inherent safety⁴, which we are in process of at this time. For that I am working with the leading inherent safety specialists in the United States and internationally from industry and academia who serve as advisors to our team. I am a strong proponent of inherent safety, the ultimate goal being to see all companies applying inherently safer principles throughout the design and operating lifecycle of projects.

Inherent Safety Technology Background

Inherent Safety is a well recognized process safety concept; a collection of basic strategies focused on process safety improvement through the reduction of hazards. "Hazard" is defined as a physical or chemical characteristic that has the potential for causing harm to people, the environment, or property.⁵ The IS concept is based on the belief that if one can eliminate or moderate the hazard, not only is the risk reduced, it may be possible to remove the risk altogether from consideration. Alternatively, an inherently safer system would make the hazard less likely to be realized and less intense if there is an accident.

It is not necessarily a change in 'technology' that the term IS is referring to - it may involve less dramatic ideas than a change in technology such as a simplification of operating controls. I therefore refer to it as Inherent Safety (IS) to be inclusive of the full range of inherently safer strategies that were originally in mind. Technology may be mistaken to mean only process chemistry or the material used, rather than other aspects of IS. IS includes four basic strategies for safety engineers to apply for process safety and risk management of chemical manufacturing plants, namely:

- substitution,
- minimization,
- moderation, and,
- simplification.

These four strategies could be independent ideas or they may relate to one another, depending on the case by case situation. There is no defined and agreed upon way to consider them in a formal analysis methodology. Engineers are encouraged to consider them to the extent possible, but given the innumerable situations where they may be applied there cannot be a rule on what is an adequate consideration of IS. In 1996 the AIChE CCPS published the book "Inherently Safer Chemical Processes - A Concept Book", to clarify the concept and to help provide examples. Today it remains one of the leading practitioner's guides to understanding and applying inherent safety concepts. It is the leading reference mentioned in various regulatory actions and proposed actions.

Issues with Inherent Safety

Inherent safety is a challenge for all parties—the owner, chemist, operator, design engineer, regulator, and the public. There are limitations of inherent safety and technical and business constraints to its usage. There are examples of where inherent safety has been very useful and where opportunities may exist, but since it is a concept the blanket requirement of inherent safety poses issues.

Barriers Identified For Implementing IS

A workshop was held on the challenge of IS at the 17th Annual CCPS International Conference & Workshop on Risk, Reliability and Security in Jacksonville, Florida, on October 11, 2002, to address the concerns of implementing IS. Speakers from the USEPA, AIChE, Contra Costa County, and industry presented their experiences on the issue. In summary of that discussion, the audience agreed that there were barriers for effectively implementing IS, and issues and challenges for any regulation of IS. Some of the constraints were reported to be as follows:

Adoption and implementation of IS by industry:

1. Existing facilities vs. new facilities

One dilemma is that the majority of the applications for IS are with the existing industrial installed base whereas the feasibility of applying IS to the fullest diminishes as the facility is actually built. This leaves many companies where new processes (and particularly new technologies) are rarely implemented resulting in few occasions to practice the methods.

"Although a process or plant can be modified to increase IS at any time in its life cycle, the potential for major improvements is greatest at the earliest stages of process development. At these early stages, the process engineer has maximum degrees of freedom in the plant and process specification. The engineer is free to consider basic process alternatives such as fundamental technology and chemistry and the location of the plant. Imperial Chemical Industries (ICI) describes six stages of hazard studies, including three during the process design phase and three during construction, startup and routine plant operation. The identification of inherently safer process alternatives is most effectively accomplished between the first and second process design hazard studies (Preston and Turney 1991). At this stage the conceptual plant design meets the general rule for an optimization process - that a true optimum can be found only if all of the parameters are allowed to vary simultaneously (Gygax 1988)." (CCPS, "Guidelines for Engineering Design for Process Safety, 1993)."

2. Unproven Value

Companies may be unclear on the value of IS or may be unable to easily prove that IS is cost-effective and worthwhile to employ, particularly for security. Methods to prove the value of IS and to quantitatively measure whether a given process is 'as inherently safe as is practicable' are generally unavailable or unproven. Agreed upon and practical tools for systematically conducting IS reviews under repeatable methodologies are not available with the exception of checklists or adaptation of safety analysis methodologies. Case studies showing the economic benefit are not available for a wide array of industrial situations.

3. Unclear vision of scope of IS

One can take a broad or a narrow view of IS. The narrow viewpoint only credits major changes in the degree of hazard whereas the broad viewpoint of inherent safety finds any change by the application of IS principles to be an advantage. All of the proposed regulations are very vague in their definition of inherent safety and industry experts themselves have mixed opinions on this point. Is reducing some inventory IS or is it only IS if the material hazards was substituted, which is the IS strategy seems to be of most interest for the regulatory proposals reviewed?

4. Requires judgment and is potentially subjective

It is precisely because IS is vague and involves considerable judgment that it is very difficult to define and implement to any degree of uniformity and objectivity. This is particularly true in the chemical sector where the diversity of chemical uses and processes and site specific situations prevents clear characterization of the industry and a one-sized-fits-all solution.

IS can also be very subjective - how 'safe or secure' is 'safe or secure enough' is a decision of the analyst conducting the study. There are no clear and objective guidelines on how to make these decisions as it is considered both a concept to apply as one sees fit and as opportunities arise.

The CCPSr book itself is indeed a concept book and it does not provide a clear delineation of what is inherently safer or how to judge whether an inherent safety analysis is comprehensive and complete enough. The reason for this is that the topic is so diverse that it is, in some cases, even ambiguous. There is an entire section of the book explaining the numerous conflicts and risk:risk tradeoff problems of IS. Also the state of the practice is not perfectly clear on how it should be defined, conducted, analyzed, assessed, or judged as adequately performed. The book doesn't solve the classical problems with IS of trying to objectively decide 'what is inherently safer' and how to measure whether a process is safe enough. This sums the state of the practice with IS and is an underlying basis of the problems of attempting to regulate it and to apply it to security issues.

In actual practice this has proven to be problematic because IS, at this stage in its development, is more of a conceptual methodology rather than a codified procedure with a well established and understood framework for evaluation and implementation. This is somewhat a function of the state of the art of our understanding of IS.

5. Value and Perspective

What is inherently safer to one person is not necessarily inherently safer to another—it is a matter of perspective. If one takes an insular view of what is inherently safer, it may not be the most inherently safe decision for society as a whole. For example, if a plant decides to lower its risk at a given fixed chemical plant site by reducing inventory or making an alternative product, this could simply either transfer the risk to more of the public through increased shipments of hazardous materials in the community or move the same operation to another location which may be more problematic.

Companies may be unclear on the value of IS or may be unable to easily prove that IS is beneficial to employ. Methods to prove the value of IS and to quantitatively measure whether a given process is 'as inherently safe as is practicable' are generally unavailable or unproven. Case studies showing the economic and other benefits are not available for a wide array of industrial situations.

Depending on the goals, the perspective may be that it is safe or secure enough as it is. For example, the plant is designed to operate at a given capacity and has been optimized through careful engineering design to produce the product safely, efficiently, and cost-effectively. Many IS-type considerations have already gone into the design or operating philosophy of the plant. When confronted with the need to conduct an IS study, they often find that there are few opportunities to improve on that design, short of a complete change of 'technology', even if another technology exists that is inherently safer. If it does exist they find it troubling to consider changing the technology when the gains may be questionable for safety or security. As such the net change may be limited.

6. Safety and Security Conflicts

The need to introduce inherent safety as a strategy at all facilities subject to such a security regulation is questionable. In fact, what is inherently safer is not necessarily what is inherently more secure. This would result in a great deal of analysis to consider a single strategy has been applied, thereby causing a very large documentation problem and undoubtedly many technical and legal dilemmas. This is contrasted with a preferred approach of allowing industry to set security objectives to determine the relevant issues and vulnerabilities and make appropriate risk management decisions. It should be considered as a potential strategy rather than the first priority and allow the most effective homeland security strategies to be applied rather than force a particular one or a change in every technology.

Regulation of IS

The constraints to the regulation of IS include many of the concerns above plus:

Holistic security v. singular issues—The problem is not IS, but the expectation of the value of regulation of IS. It forces industry to focus on a few safety strategies to the possible detriment of the complete approach to risk management. There seems to be an overemphasis of inherent safety as a singular strategy for security assurances in many of the proposed regulations.

Inherent safety has to be considered in light of other security risk management approaches where one is not necessarily preferable over another. That decision should be made on a case by case basis rather than blanket regulatory requirements. Most security experts would agree that it is about providing sufficient layers of security, combined with an understanding of the threat and risk-based approaches to limiting access to possible assets of interest to adversaries that is the desired homeland security approach.

Both chemical process security and inherent safety are complex topics that are not easily mandated. To isolate inherent safety as a particularly necessary one is good practice but not necessarily good government regulation. IST is not the panacea. It is not a "thing" that can be measured. It is a process towards safe manufacturing. It is a system of interdependent values and not something that can be distilled into a legislative definition and then regulated. Security management itself isn't a singular strategy. Furthermore, IS cannot be regarded as the sole design or operating criteria as it must be integrated with other considerations. The real issue is risk, whether safety or security risks, that IS can be applied to.

Criteria for making compliance decisions—An obstacle to clear cut regulation is the lack of consensus on appropriate IS metrics. Assuming that the regulation is performance-based, there must be metrics for consistent regulation. These criteria are very hard to define with a broad conceptual topic such as IS for the wide variety of chemical processes to be regulated. This dilemma was recently described by the Mary Kay O'Connor Process Safety Center - "Regulation to improve inherent safety faces several difficulties. There is not presently a way to measure inherent safety. Process plant complexity essentially prevents any prescriptive rules that would be widely applicable. It would seem that legislation could explicitly require facilities to evaluate inherently safer design options as part of their process hazard analysis. But inherent safety would be almost impossible to enforce beyond evaluation because there are unavoidable technical and economic issues." (Mannan, et.al, 2003)

Need to consider risk rather than only hazard—There is little sense to the idea of imposing a requirement for 'change for the sake of change', i.e., requiring that every hazardous situation be made inherently safer. Industry is interested in referencing a measure of acceptable risk which limits the need for additional risk reduction since beyond that level resources may be better spent on other matters.

Unclear how to measure performance or compliance—Will regulations require only fundamental strategies to be employed, such as a site reports it reduced some materials onsite, or will it be based on vulnerability to the chemicals that remain? The factors and process to measure the effectiveness of IS regulations is not defined so it becomes very subjective. - Inherent safety regulations would have to show measurable benefit. If there was a reduction or increase in the number of incidents it could be incorrect to infer whether IS was the leading factor or whether other measures were involved. It is, therefore, difficult to measure the effectiveness of IS regulations.

The USEPA representatives at the workshop reported that the EPA intends to include IS in their analysis of the effectiveness of the Risk Management Plan (RMP) regulation (USEPA, 1996)⁸ when they review the next submittals of registrations and hazard assessments. This is likely to be challenging given the state of implementation of IS and EPA's own admission on their expectation for inherent safety in the Risk Management Planning regulation. When EPA promulgated the RMP rule, some commenters asked EPA to require facilities to conduct "technology op-

tions analyses" to identify inherently safer approaches. EPA declined to do so, stating that "PHA teams regularly suggest viable, effective (and inherently safer) alternatives for risk reduction, which may include features such as inventory reduction, material substitution, and process control changes. These changes are made as opportunities arise, without regulation or adoption of completely new and unproven process technologies. EPA does not believe that a requirement that sources conduct searches or analyses of alternative processing technologies for new or existing processes will produce additional benefits beyond those accruing to the rule already. (FR, 19969)

IS means different things to different audiences—One person's opinion of IS is not another person's necessarily, and as a result risks could be simply transferred to others.

Macro v. Micro benefit—If IS regulations encourage individual plants to take the most inherently safe position to them, that is not necessarily the most inherently safe (or secure) position for the community they operate in thereby potentially increasing the societal risks. A common example is that of transportation risk, where the increased number of transits caused by lowering the onsite volume of a required feedstock increases the number of transits through the communities in the distribution chain. In addition, though, is the prospect that the total societal risk from a wide collection of inherently safer individual decisions leads to a redistribution of risk across the country - the analog of squeezing a balloon.

Economic Security—Another example of this concern is the possible lack of appreciation of the economic security of the chemical infrastructure in legislative discussions on inherent safety. At a national, state or local level, the economic impacts of an attack or disruption of the chemical infrastructure should be a key concern. If the plant is disabled for any reason, such as a distribution chain disruption, the lack of inventory may make the plant inoperative for a longer period of time than if it had accumulated and secured supplies necessary to function. It is more likely that plants will face supply issues due to natural or manmade disasters than be attacked and so the macro view of homeland security is compromised at the expense of a local viewpoint. These goals need to be balanced from a risk perspective with other hazard reduction goals.

IS Regulatory Proposals and Complications

Inherent Safety is a common phrase from the chemical industry and is being considered and debated as a chemical process security concept for inclusion in proposed chemical security regulations¹⁰. IS is being considered by legislators as the first security strategy industry should use for reducing terrorist risk in the chemical sector. The newly appreciated concerns for terrorism have naturally highlighted the issue of the potential for attack on facilities handling hazardous materials. The proposed series of Chemical Security Act bills generally state that there are significant opportunities to prevent theft from, and criminal attack on, chemical sources and reduce the harm that such acts would produce by reducing usage and storage of chemicals by changing production methods and processes; and employing inherently safer technologies in the manufacture, transport, and use of chemicals; These proposed regulations would have sweeping applicability and significant implications for design and operation of facilities handling hazardous materials. Many of the facilities mentioned to be included are from the USEPA Risk Management Planning regulated sources (40 CFR Part 68), which may not be either highly consequential or attractive to terrorists. Any new initiatives such as this have to be rational, measured, cost-effective, and fully justified.

The anticipated regulatory benefit seems to be that IS can remove the hazard entirely or reduce hazards to de minimis levels to where there is no interest in causing the attack. It is often expressed to be a possible strategy for security risk management, and sometimes is mistaken as a relatively obvious and simple approach to execute or regulate. Other proven security measures are often seemingly weighed as less effective or reliable.

These existing and proposed regulations typically end in a goal of IS consideration 'to the extent practicable' and sometimes allow cost or feasibility as a basis for justifying a change as 'practicable'. There is no standard measurement of what this means. While companies may believe they are moving toward inherently safer processes, they often find obstacles to the theoretically possible complete application of the four IS strategies.

Experience with IS Regulations

In actual practice IS implementation has proven to be problematic. The reason is that IS, at this time, is more of a theoretic concept rather than a codified procedure with a well established and understood framework for evaluation and implementation. Furthermore, it cannot be regarded as the sole design criteria as it must be

integrated with other considerations. IndustryToday there is only one example of an implemented IS regulatory requirement for process safety and that is part of the Contra Costa County, California, local Industrial Safety Ordinance (ISO) enacted in 1998 which effects only eight chemical sites. As for security, the only one that exists is in New Jersey where the Governor enacted a Prescriptive Order in November of 2005 which includes the need to consider IS for chemical security for certain sites in the state. Neither regulation goes so far as to require a change in technology due to the enormous challenges and liabilities associated with that move.

Contra Costa County, California, Industrial Safety Ordinance

The Contra Costa County, California, Industrial Safety Ordinance (ISO) became effective January 15, 1999. The ordinance applies to eight oil refineries and chemical plants that were required to submit a Risk Management Plan to the U.S. EPA11 and are a program level 3 regulated stationary sources as defined by the California Accidental Release Prevention (CalARP) Program.

Part of the ISO requirements is the need for the regulated stationary sources to consider inherently safer systems when evaluating the recommendations from process hazard analyses for existing processes and to consider inherently safer systems in the development and analysis of mitigation items resulting from a review of new processes and facilities. Contra Costa Health Services completed and issued a Contra Costa County Safety Program Guidance Document on January 15, 20004. This document included a definition of inherent safety and some rules for implementation of the ordinance.

Lessons Learned from the Contra Costa County, California, implementation of inherent safety requirements for their Industrial Safety Ordinance were presented in 2002 (Moore, 2002).

Companies found IS to be difficult if not infeasible to accomplish, particularly for existing processes;

There are different perspectives on what is reasonable and what is feasible when it comes to decisions on the need for implementing IS;

The guidance provided to ensure that IS was being considered consistently and fully was not informative enough, so there was some confusion and an education gap;

The public and regulators often mistrust industry if anything less than a total technology change is implemented despite that IS includes a wide variety of ideas to meet the four strategies of minimization, substitution, simplification and moderation;

Application of IS at only the most purely inherent level (first principles) is often at odds with practical and cost effective risk reduction, especially for existing construction; Guidance/training is needed for a team to know how to apply IS effectively.

New Jersey Prescriptive Order

On November 21st, 2005, the State of New Jersey became the first State to require chemical plant security measures to protect against terrorist attacks. Acting Governor Richard J. Codey set new requirements for the 140 facilities that must comply with the Prescriptive Order, 43 of which are subject to the state's Toxic Catastrophe Prevention Act (TCPA) program. As part of the new requirements, these 43 facilities must review the potential for adopting inherently safer technology (IST) as part of their assessment.

This is very significant for three reasons - it sets precedent for State mandate of security of the chemical industry, it incorporates the need to evaluate IST more widely than any other regulation in the United States, and it forces industry to prove compliance to security 'best practices' they developed. In 2003, the New Jersey Domestic Security Preparedness Task Force approved best security practices that were built upon the security code of the American Chemistry Council's responsible care program and the American Petroleum Institute's security guidelines, respectively. The best practices were developed by the Task Force and its Infrastructure Advisory Committee, which includes representatives of the state's chemical and petroleum industry. Many New Jersey-based facilities have voluntarily begun to implement these practices. The Prescriptive Order action clarifies that the best practices for chemical facilities are now mandatory.

The 43 chemical facilities in the TCPA program must analyze and report the feasibility of:

- reducing the amount of material that potentially may be released;
- substituting less hazardous materials;
- using materials in the least hazardous process conditions or form; and,
- designing equipment and processes to minimize the potential for equipment failure and human error.

Best practices included provisions for the facilities to prepare an emergency incident prevention, preparedness and response plan and outline the status of implementing other security practices. The State standards also now require worker participation in the development of the security assessments and prevention and response plans at each facility.

Under the new requirements, chemical facilities had 120 days to develop an assessment of facility vulnerabilities and hazards that might be exploited by potential terrorists. The assessments must include a critical review of:

- security systems and access to the facility grounds (including the regular testing and maintenance of security systems);
- existing or needed security measures outside the perimeter of the facility that would reduce vulnerabilities to an attack on the facility;
- storage and processing of potentially hazardous materials;
- employee and contractor background checks and other personnel security measures; and,
- information and cyber security;

The Prescriptive Order timing is critical as the nation struggles with how to more completely manage terrorism risks and to sort out the need for regulations for industries that are otherwise unregulated today. At this point the effectiveness of this rule is still in question. What is clear is the degree of change that most complex, existing plants will incur due to the identification of IS opportunities will be very limited based on personal experience.

Research on the Evaluation of Inherent Safety

Some methods have been proposed to provide a benchmark for inherent safety. Most of these involve indices or fuzzy logic. While these are excellent developments in the right direction, they are not fully validated or comprehensive enough to assure that the aforementioned issues are satisfied. There is a need for metrics and rules for how to evaluate inherent safety before regulations can be effective. Without a fair and legitimate way to measure the total risk balance created by changes in the name of inherent safety it will be subjective and possibly unfair.

Complex process systems, particularly with a long history of safe performance, cannot suddenly be dictated that a system is inherently safer without a great deal of individualized risk-risk tradeoff evaluation. Inherent safety is not fully understood, so regulating it and forcing change against typical engineering practices (with a strong empirical basis of success) is not recommended.

There have been many experts recognize that this may be creating many other problems by overly relying on one strategy vs. a holistic approach. Facilities should be given that flexibility all the while bounded by appropriate layers of safety to reduce risk to an acceptable level.

Recommendations

Rather than attempt to regulate a vague and creative safety concept for chemical security, it should be left to industry and government to work together to consider the full spectrum of available security risk management strategies and to meet performance standards for security based on site specific needs. Inherent safety should not be seen as the most important strategy to implement. Risk should be the measure of security preparedness given consequence, vulnerability, and threat considerations.

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Mr. LUNGREN. Now I would like to recognize the chairman of the full committee, the gentleman from New York, Mr. King.

Mr. KING. Thank you, Chairman Lungren. At the outset let me commend you and Ranking Member Sanchez, and of course, the Ranking Member of the full committee, Mr. Thompson, for the truly bipartisan effort that has gone forth on this issue.

The whole issue of chemical plant security is vital to our Nation. It is essential to our homeland security. I think it should be addressed.

But it is also essential that the legitimate concerns of industry and the economic concerns that any legislation would have be fully taken into account until your legislation is done.

I believe it is really a very well-balanced piece of legislation. I know, just from some consultations I have had with you, about the extent of talks and negotiations that have gone on; and I want to thank you for the tremendous intensity you have shown on this issue and, again, to reach across the aisle and to thank you Ms. Sanchez and Mr. Thompson for putting aside partisan differences on an issue that is absolutely essential to the security of our country.

I look forward to the testimony today. I want to thank all of the witnesses for being here, and I understand from the chairman that I will have the privilege of introducing Senator Balboni from New York, who is here today, whom I have worked with for many years on many levels of government in New York, and who has really been a leader on the whole issue of chemical plant security.

Thank you for the hearing; thank you and the ranking member for the legislation. And I yield back the balance of my time.

Mr. LUNGREN. I thank the gentleman, the chairman; and I would now recognize the ranking minority member of the full committee, the gentleman from Mississippi, Mr. Thompson, for any statement he may have.

Mr. THOMPSON. Thank you very much Mr. Chairman, Ranking Member, Chairman King. This is an excellent opportunity for us to start the process of standardizing chemical plant security in this country. It is long overdue, but as most of you have indicated, it has been an arduous task. But it has been a bipartisan effort to bring all the interested parties to the table to find a common solution. We have done that. It has been a wonderful process. I look forward to it.

Mr. LUNGREN. Thank you very much, Mr. Thompson.

Mr. LUNGREN. We are pleased to have a panel of distinguished witnesses before us today on this important topic; and let me remind the witnesses that their entire written statements will appear in the record.

And now, for purposes of introducing our first panelist to testify, I would recognize the chairman of the full committee, Mr. King, and I just want to make mention of the fact that I hope you recognize that we are making sure that this is not a California-centric subcommittee, Ms. Sanchez and I, and we reach across the continent to have witnesses from all over.

So, with that, the chairman is recognized.

Mr. KING. I thank the chairman. And for those of you who are not fully familiar with the context of the chairman's opening remarks, I believe he may have been referring to the appearance last week of Mayor Bloomberg and Commissioner Kelly and no witnesses at that hearing from the West Coast. But I know that Mr. Lungren and Ms. Sanchez are well equipped to represent California. And, of course, Ranking Member Thompson, he sort of fits into all camps, so he will support all of us; that is the uniqueness of our ranking member.

Mr. THOMPSON. Thank you very much.

Mr. KING. I am really appreciative, Mr. Chairman, for giving me the opportunity to introduce Senator Michael Balboni. I have known Senator Balboni for more than 2 decades. He served 8 years in the New York State Assembly. He is now serving his 10th year in the New York State Senate and is chairman of the New York State Senate's Committee on Homeland Security. He, more than anyone in the State of New York, has been leading the effort on many, many issues involved in homeland security, including chemical plant security where he was able to pass landmark legislation in the New York State legislature which was signed by the governor and is really, in many ways, a model for the rest of the country.

Senator Balboni is absolutely committed to this issue. Just recently he was appointed to the Homeland Security Advisory Council by Secretary Chertoff and acts as the Secretary's primary counsel and provides service and recommendations. He is down in Washington almost as much as he is in Albany or in Nassau County.

This is an issue which compels him. He lost many constituents on September 11. Mike and I lost several close friends of ours, mutual close friends, so I know of his dedication to this issue.

I look forward to his testimony. I thank him for taking the time from his busy efforts in Nassau County, where he wears many hats and serves in many capacities.

With that, I am pleased to introduce the gentleman from New York, State Senator Michael Balboni.

Mr. LUNGREN. The senator is recognized for 5 minutes for his statement.

STATEMENT OF MICHAEL A.L. BALBONI, NEW YORK STATE SENATOR AND CHAIRMAN, NYS SENATE STANDING COMMITTEE ON VETERANS, HOMELAND SECURITY AND MILITARY AFFAIRS

Mr. BALBONI. Thank you very much Chairman King, Chairman Lungren and Chairman Thompson. Thank you very much for having me today.

This was an issue that, of course, the country grappled with in the days following 9/11. And in New York, what we watched as the towers burned were people scrambling to see what other kind of vulnerabilities we had. And so whether it was rural airports that could possibly be the launch site for an attack against New York City or whether it was the chemical industry and the specter of a Bhopal-like incident, we scrambled to find what type of things we could do to protect the infrastructure.

In 2003, I became chairman of the Committee, for the first time in New York State, of Homeland Security. I dropped a bill that really, quite frankly, resembles your bill. It had penalties in it. It did a tiered approach. The bill went nowhere.

I met with the chemical industry, and we sat down, we had a number of discussions, and the chemical industry said to me, You know what, we are working very hard because we don't want to have this happen at our facilities either, but if you come and regulate us on a State-by-State approach, it is going to be problematic for us.

We had a great number of discussions and, eventually, we came to an agreement; and the agreement was that we would have a bill that would do a bunch of things: one, recognize that there needed to be some type of standard applied to the chemical industry, and the best way to do that would be to have a government regulatory body, like the State Homeland Security Office, come in and do on-site reviews after using a program similar to the RAMCAP program that you now have the Department now uses.

It is a web-based instrument survey, and based upon the responses, then there would be a site review, and then the material that was developed as a result of a vulnerability study would then be responded to by the Department and the actual facility whether it was permanent security enhancements, whether it was background checks, whether it was a program for better communication with the local law enforcement and then these plans would be implemented.

But the plans would be kept onsite, and that was one of the key sticking points of this whole discussion. The chemical industry said to us in New York, if you take these plans, we are very concerned that if you put them on the Web or if you put them in into a government facility, they will be open to freedom of information requests and, therefore, be put out into the mainstream; and if that happens, we are nervous about loss of market share, trade secrets and exploitation of our vulnerabilities by anyone who would do something wrong.

And lastly they said, Don't put penalties in.

So essentially what we have is a voluntary compliance measure. That is the bad news.

But the good news is, the chemical industry really responded in New York State. We identified about 144 facilities that we felt, based upon a consequence-driven analysis, would, in fact, be the highest priority, similar to your approach in this legislation. And we have done actual ground surveys of 60 of those, and we have had responses based upon our Web survey in, of that, almost 99 percent.

What we have found is that many of the facilities have already taken steps to increase their security in recognition of the fact that if they have an event there, it not only will be of great consequence to the community, but frankly it would be a great consequence to them, themselves, and they know that they have a very good safety record.

Your legislation has significant improvements, though, over what we have done. First off, you know here I am New York State; if it was my druthers, I would have you adopt my bill. I would have you do my law, and this would be the model for the Nation. But I also recognize that you can't have a patchwork of laws, and you need to have the consistency and the continuity. So that is the first benefit.

The second benefit is that by taking kind of a step-back approach where you actually don't do the mandated safety enhancements and you let the industry decide what is best for themselves, you are going to promote the development of best practices; because the one thing I know from having worked with the Office of Homeland Security in our State, and looking at vulnerability studies is that every single facility is a different situation, and there is no one-size-fits-all. If you don't allow the industry to adopt their own best practices, then you will stifle innovation, and that will be a loss of balance.

And you take a look at the fact that we did not, that is, the threat stream analysis, that is one of the key failings of our bill. In other words, you will take a look at what intelligence is out there, and you will see whether or not it specifically applies to a specter either to a State or to a specific facility, and then you will relate it to them. That is very, very crucial.

Another thing that you do is that you have whistleblower protections, and though we have not found a lot of that information coming from the actual facilities, this is a recognition that sometimes your best eyes and ears are within the facility itself.

And lastly, of course, is you put in the penalty provisions; and quite frankly, we could not get that accomplished. We would not have a bill a law in the State of New York if we had put in penalties like you have done. I had them in my original bill. We do not have them now.

But let me share with you just very quickly that there are lessons learned, and one of the main failings right now of the system in New York is that there needs to be better coordination between the facility and local law enforcement. Dialing 911 in and of itself is not enough.

With that, I thank you very much, Mr. Chairman, for the opportunity to speak before the committee.

Mr. LUNGREN. Thank you very much, Senator Balboni. We appreciate your testimony and we look forward to asking questions of you.

[The statement of Mr. Balboni follows:]

PREPARED STATEMENT OF MICHAEL A.L. BALBONI

Good morning Chairman Lungren and members of the House Committee on Homeland Security's Subcommittee on Economic Security, Infrastructure Protection and Cybersecurity. I am honored to testify before this body and I am grateful and

appreciative of the work that is being performed by the committee to strengthen security of chemical plants.

Identifying the Need for the Legislation:

I came to this issue as a result of the events of September 11, 2001 and the days that followed. I began contemplating what other events could possibly befall us in New York. I started to think of the events in Bhopal, India.

In 1984, the accidental release of 40 tons of the pesticide methyl isocyanate from a Union Carbide plant located in the center of Bhopal had killed thousands of people outright, and injured hundreds of thousands, many of whom later died.

A few years before the events of 9/11, I had sponsored New York's Anti-Weapons of Mass Destruction Act and shortly after 9/11 my bill outlawing chemical and biological weapons in New York State was signed into law.

While researching, authoring and helping to enact these new laws, I became more and more aware of the numerous chemical plants in the state and began to worry about their vulnerabilities. I called a meeting with the major representatives of the chemical industry. They told me security regulations weren't necessary because their industry was already the most highly regulated in the nation.

Battle for the Bill:

I realized, however, that although that industry was heavily regulated from an environmental perspective it was not from a security perspective. And the issue of security has many different aspects that could only be addressed from a vulnerability perspective.

As I began to draft a bill to address this oversight, I realized that the first thing I needed to find out was where all the chemical plants were located. A part of the problem was that although lists of chemical plants had already been developed from the environmental perspective, these plants had not been analyzed from the security and threat perspective. An inventory of the chemicals and the amounts that were stored in the state was also needed. I recognized that our state needed better information regarding the condition of its critical infrastructure.

I also came to the realization that I had to respond to certain constituencies, namely, chemical industry officials, who were worried about having their vulnerabilities and trade secrets revealed and being subjected to micromanagement and possible loss of market share should vulnerabilities be exposed. So I came to the conclusion that in order for chemical plant security to be enhanced, New York needed to develop a partnership with the industry because so much of security is vigilance and motivation. The chemical industry is an essential component of our economy and we had to develop protections without destroying the industry.

I also realized that in order to avoid micromanagement and suspicion, the Legislature needed to be briefed on the state of the industry's security. I drafted a confidential briefing mechanism based on a similar system set up under my Electrical Plant Security Act of 2003. I then went back to the plant owners to address their concerns and incorporated them into the new bill.

Under my legislation, the New York State Office of Homeland Security (OHS) would establish a vulnerability survey and create suggestions for remediation where necessary. Chemical plant owners would report to OHS about their operations. None of the information would be stored with the government, but would rather be kept on-site at the plants, ensuring the information was not subject to the Freedom of Information Law.

Needless to say, the bill met with great opposition, especially from the New York State Assembly, but eventually gained approval. The New York State Chemical Security Act of 2004, a first-of-its kind in the nation, was signed into law by Governor George Pataki on July 23, 2004.

How the Law Was Implemented:

Once the law was on the books, New York State OHS set out to achieve several goals in order to implement the law. Their objectives were to compile a list of hazardous and toxic substances and to assemble a list of chemical storage facilities that must comply with provisions of the law. In addition, the state OHS was to present a preliminary report to New York State Governor George E. Pataki and then a final report detailing the office's findings and recommendations.

The list of hazardous and toxic substances was completed in January 2005 and comprised of four groups of chemicals:

- Environmental Protection Agency's (EPA) Risk Management Plan listed chemicals,
- The Bureau of Alcohol, Tobacco, Firearms and Explosives' (ATF) published list of explosives,
- Acutely Toxic Chemicals listed in GNYCRR Part 597 (New York State's hazardous substance list), and

- Chemical Weapons and precursors.

Over 2,500 chemical storage facilities were identified in New York State.

In completing their analysis, the New York State Office of Homeland Security recognized that not all chemical storage facilities present the same level of risk for the population and developed a "consequence driven analysis" to identify a facility as "high risk" utilizing several factors, including: population, economic value, strategic value and iconic value, with population being weighed the heaviest.

New York initially identified 144 Risk Management Plan facilities using factors established under the Clean Air Act. Four risk-based tiers, separated by the size of the population that could be affected, were identified using those factors. New York OHS determined that placing chemical storage facilities into distinct tiers provides a reliable basis for analyzing security across a diverse industry. Similar standards set up in the proposed federal legislation should be equally beneficial.

The 144 facilities were asked to participate in the web-based security survey, Risk Analysis and Management for Critical Assets Protection (RAMCAP), and a Site Security Review (SSR).

Lessons Learned:

Here's what we learned when this new law was implemented in New York.

State OHS found that the facilities that are required to comply with provisions of the Maritime Transportation Safety Act of 2002 had already developed site security plans based upon threat and vulnerability assessments.

OHS also determined that security awareness training for workers helped to enhance the overall security posture of a facility.

Analysis also revealed that there is a critical need to develop better communication between law enforcement and chemical plants. Dialing 911 is not enough. An active, on-going dialogue with local law enforcement was found to provide the mechanism for critical and timely information flow in both directions.

Lastly, OHS found that security based exercises that involve on-site and off-site parties improve deterrence and detection capabilities.

On the downside, additional legislation is needed to put teeth into the New York law. One major shortcoming is our current inability to impose penalties for non-compliance.

To date, 60 of the 144 originally identified high-risk facilities have completed the web-based security survey and OHS has completed on-site visits to all 22 Tier 1 sites, the tier with the largest at-risk populations (over 50,000 people). Visits have also been completed to half of the Tier 2 sites and OHS is on track to realize a high level of participation to this voluntary compliance.

All of this work was completed under the insightful leadership of the New York State Office of Homeland Security Director James McMahon and his staff. Without his diligence and professionalism, these goals could not have been realized in such a timely fashion. It is important to note that Director McMahon's ability to work in partnership with the chemical plant industry on these issues was paramount to his success.

The Federal Legislation:

As I turn my attention now to the legislation proposed by Congress today, I'd like to focus on the many strengths of the bill. Among them is compliance.

The bill provides uniformity and full compliance across the country. As with any form of security, chemical plant security among the fifty states is only as strong as its weakest link. Although New York has led the way in this regard, our state's progress is rendered meaningless if our neighboring states do nothing to assess and strengthen their own chemical facilities. The legislation proposed by Congress will ensure a critical baseline of standards and compliance nationwide.

Another asset of the bill is a penalty structure that delivers a strong bite and should go a long way towards forcing compliance. As noted earlier, this is an area where the federal legislation reaches beyond the law in place in New York.

The fact that the proposed federal legislation strictly prohibits public disclosure of protected information, including vulnerability assessments, security performance and other data is crucial to public safety and another asset of the bill. While the concept of information protection has its detractors, the harsh reality is that some information, if revealed, could be dangerous to the life and safety of the public.

Additional strengths of the federal bill include sound vulnerability assessment and facility security plan standards, protocols, and procedures; third party auditor provisions; and exemptions for facilities that are already federally regulated, e.g. ports under the Maritime Transportation Safety Act of 2002, to avoid the confusion of duplicative regulations.

Members of this committee should be commended for the work done so far to get this bill introduced. I believe, based upon my New York experience, that there are a few areas for where the bill can be strengthened.

An area of great concern in the current bill is the exemption of transportation and incidental storage from review and analysis. A truly comprehensive strategy must include ways to best ensure safety of the supply chain from chemical storage facilities to their destinations.

Even if the chemical plant facilities are secure, the railways that run in and out of them may not be. Data indicates that in New York State alone, more than 1.7 million shipments of hazardous materials were transported last year.

Last Tuesday, I introduced legislation that would allow state OHS to conduct a review and analysis of security measures being utilized by the owners and operators of rail yards, similar to those put in place by New York's Chemical Security Act. The legislation, which gives the Director of OHS the authority to enforce compliance of security recommendations, had already been approved by the State Senate.

To be honest with you, if I had my wish, you would adopt New York's approach or allow New York to continue its good work with our state's industry. But I recognize when it comes to security, the normal issues as they apply to preemption and states' rights don't necessarily apply. It is essential that we develop a national strategy for the securing of these crucial assets. Once again, we are only as strong as our weakest link and your bill strengthens the chain.

In conclusion, New York State was the first to recognize and act on this vulnerability. We are happy to partner with the federal government to make this a priority nationwide.

I look forward to continue working with the distinguished members of this committee. Thank you. I would be pleased to respond to any of your questions.

Mr. LUNGREN. The Chair would now recognize Mr. P.J. Crowley, Senior Fellow and Director of National Defense and Homeland Security from the Center for American Progress to testify.

STATEMENT OF PHILLIP J. CROWLEY, SENIOR FELLOW AND DIRECTOR OF NATIONAL DEFENSE AND HOMELAND SECURITY, CENTER FOR AMERICAN PROGRESS

Mr. CROWLEY. Mr. Chairman, thank you very much. I am P.J. Crowley. I direct the homeland security program for the Center for American Progress.

I am grateful for the opportunity to discuss the Chemical Security Anti-Terrorism Act. It establishes a needed regulatory framework for DHS to set national security standards for chemical facilities. However, it is unclear whether DHS must evaluate the transportation of substances of concern. The bill appears to exempt drinking water facilities even though a recent study we conducted suggests that these facilities offer the best opportunity to reduce terrorism risk to millions of Americans.

Mr. Chairman, I have a copy of the survey report with me. I would ask that it be submitted into the record.

Mr. LUNGREN. Without objection.

[The information follows:]

Copy retained in the committee file

Mr. CROWLEY. Thank you, sir, very much.

As attacks in London and Madrid and recent plots in Toronto and Miami demonstrate, we face an ongoing threat. Unless we take a comprehensive approach to chemical security, we will continue to provide terrorists with too many targets of opportunity.

We cannot protect everything; we must set priorities, and chemical security is certainly one. This legislation can help, but to have the intended effect, risk assessments and security plans must take into account the entire system, not just its individual components.

Many high-risk chemical facilities and freight rail lines that support them are in major urban centers. One line is adjacent to the Capitol, an intended target on 9/11. Why should we give al Qaeda another opportunity using a 90-ton HAZMAT railcar as a weapon?

This is not an arbitrary judgment. But specific to the threat we face, the terrorists will attack where they can kill as many innocent civilians as possible and generate significant economic and political impact on our country. There is an urgent need for action because we are going to be attacked again.

A risk-based strategy should include physical security and risk mitigation, but also risk elimination. Secretary Chertoff is wrong to suggest, as he did in March, that secure alternatives have little to do with security. In fact, the Association of American Railroads endorses this as a necessary option where secure alternative technologies processes or other steps are readily available. We have an obligation to remove these facilities and communities from the terrorism target list.

The Center surveyed 1,800 facilities deregistered from the risk management planning program, a congressionally mandated initiative which began in 1990 to improve disaster assessments and mitigation. Among our key findings, 284 facilities in 47 States switched to less hazardous practices, including the Photocircuits Corporation of Glen Cove, New York, Mr. Chairman. However, only 10 percent represented the highest-risk facilities in our country.

Change can be accomplished economically; 87 percent spent less than \$1 million, and roughly half reported spending less than \$100,000 to convert. And alternatives readily exist in a range of applications including drinking water and waste water disinfection. However, approximately 3,000 of these plants still use chlorine gas. This bill should not exempt them from better security planning.

There is a fairness issue. While many communities have eliminated threats to their people, they remain at risk because hazardous materials are still transported through these cities to other locations that have taken no action. We cannot afford a strategic double standard.

The military, which I served in for 26 years, is constantly exploring how to invest in new technologies that make us stronger. Why would we not take the same approach and employ secure alternatives to improve homeland security? We need a comprehensive national strategy, not a series of disconnected local or regional actions.

What should be done? DHS should be granted authority to promulgate security standards regarding the manufacture, use, physical security, storage, and transportation of acutely hazardous materials. Chemical facilities should do annual security risk assessments, including an evaluation of safer alternatives. Publicly traded companies should tell their shareholders how they are managing this security risk. DHS should embrace the concept of risk elimination and establish a center for excellence to promote solutions that reduce this vulnerability.

The Federal Government should not preempt States from establishing stronger standards. The Federal Government, for example, established minimum education standards under No Child Left Behind. However, our States can still offer advanced placement

courses. Federal action should strengthen security floors, not create ceilings.

The Federal Government should offer incentives to promote change that includes targeted grants, loans, tax credits, and caps on liability for facilities that go beyond physical security and adopt secure alternatives. We must place greater emphasis on homeland security and narrow the potential for terrorists to successfully attack us here. Only through a comprehensive approach will we achieve the objectives of this legislation.

Mr. Chairman, thank you very much.

Mr. LUNGREN. Thank you very much for your testimony. And we do look forward to the question-answer period with you.

[The statement of Mr. Crowley follows:]

PREPARED STATEMENT OF PHILLIP J. CROWLEY

The Chemical Security Anti-Terrorism Act of 2006 establishes a needed, though limited regulatory framework for the Department of Homeland Security (DHS) to set strong national security standards for chemical facilities.

However, while it covers the manufacture and use of acutely hazardous chemicals and processes, it is unclear whether DHS must evaluate the transportation of these materials as well. It appears to exempt drinking water facilities that, based on a recent survey the Center for American Progress conducted of chemical facilities nationwide, offer the clearest opportunity to reduce existing terrorism risk to millions of Americans.

Unless we take a comprehensive approach to chemical security planning, we will continue to provide terrorists with too many targets of opportunity across the country. We are approaching the fifth anniversary of September 11. As attacks in London and Madrid and recent terror plots in Toronto and Miami dramatically demonstrate, we face an on-going threat of terrorism to our society and economy, specifically to critical infrastructure in major metropolitan areas where most of our citizens live, work and congregate. This also happens to be where many of our highest risk chemical facilities are located.

Likewise, much of the transportation of hazardous material to and from chemical facilities occurs on freight rail lines that pass through urban centers. One such line is adjacent to the U.S. Capitol, a target that the 9/11 perpetrators intended to strike. Why should we give al Qaeda another opportunity using a 90-ton HAZMAT rail car as a weapon?

Clearly, we cannot protect everything. We cannot reduce the terrorism risk to zero. The United States is a target-rich environment. But we have to set priorities, something the Department of Homeland Security has yet to effectively do. This legislation can help. Chemical security should be a critical infrastructure priority. But for the legislation to have its intended impact, risk assessments and security plans must take into account the manufacture, use, physical security, storage and transportation of substances that, if released due to a deliberate attack, can kill tens of thousands of Americans.

This is not an arbitrary judgment. It is specific to the threat we face - that terrorists are most likely to attack where they can kill as many innocent civilians as possible and have the most significant economic and political impact on our country.

There is a belief that markets can effectively handle terrorism risk, but the experience of the past five years challenges that assumption. We are not adapting fast enough. This is an urgent need for action because we are going to be attacked again. It is not a question of if, but only when and where.

Too many facility operators do not believe that their plant is going to be attacked. The instinct is not to invest in greater security - markets frown on overhead - and perhaps gain a short-term competitive advantage. They also do not control what occurs beyond their fences. We need to take a system-wide approach and ensure that everyone is on a level playing field. A risk-based chemical security strategy should be integrated and multi-dimensional. It requires better physical security and risk mitigation. But they are not sufficient. We must also pursue risk elimination. Where more secure alternatives - whether technologies, processes or other steps - already exist, we have an obligation to remove as many chemical facilities and communities as possible from the terrorism target list.

Some critics say that the promotion of secure alternatives is just redressing the environmental concept of inherently safer technology (IST) in homeland security clothing. The Secretary of Homeland Security, in remarks to the American Chemistry Council in March, said that IST has little to do with security. He is wrong. This is about security. Who says so? The Association of American Railroads has endorsed this as a necessary option. It cannot be done in every case, but should be part of a viable strategy.

The Center for American Progress survey shows the potential of this approach. The survey involved a review of 1,800 facilities deregistered from the Risk Management Planning (RMP) program, a Congressionally-mandated and EPA-managed initiative which began in 1990 to improve disaster assessments, mitigation and response. Among the key findings from our survey:

- 284 facilities in 47 states have dramatically reduced the danger of a chemical release into nearby communities by switching to less acutely hazardous processes or chemicals or moving to safer locations. This action reduces or eliminates a clear terrorism threat to at least 38 million people. For example, the Mill Creek Wastewater Treatment Plant in Cincinnati, Ohio eliminated the danger of an off-site chlorine gas release to an area encompassing 860,000 residents by switching to liquid bleach for disinfection. Likewise, the Water Pollution Control Facility in Wilmington, Delaware made a similar change, eliminating the danger to 560,000 nearby residents. The Photocircuits Corporation of Glen Cove, N.Y. switched from chlorine gas to sodium chlorate in its manufacturing process, eliminating a danger zone that encompassed 21,000 people.
- Change can be accomplished economically. Of respondents that provided cost estimates, 87 percent spent less than \$1 million and roughly half reported spending less than \$100,000 to convert.
- Our survey revealed that alternatives already exist in a range of applications, particularly drinking water and wastewater facilities. Change involved the adoption of common technologies, not new innovation, such as liquid bleach or ultraviolet radiation. Other examples include the use of aqueous rather than anhydrous ammonia or solid rather than anhydrous sulfur dioxide.
- The most common reasons cited for making changes included the security and safety of employees and nearby communities, as well as regulatory incentives and business opportunities. These facilities also saw opportunities to cut a variety of costs, requiring fewer physical security measures and hazardous material safety devices, making these operations more efficient and productive. This also took a significant burden off surrounding communities in terms of disaster planning and response.

While the survey demonstrated that effective change can take place, it also revealed the limitations in a purely market-driven response. For example, of the 284 facilities that adopted some form of inherently safer practices, only 10 percent represented the highest risk facilities - those that put 100,000 or more people at potential risk. At this pace, it would take another 45 years to eliminate this vulnerability. We do not have that much time to act.

There is also a fairness issue by relying on ad hoc local action rather than a national approach. Many communities where change is taking place are also vital transportation hubs - Wilmington, Delaware; Jacksonville, Florida; Indianapolis, Indiana; Baltimore, Maryland; Omaha, Nebraska; Cleveland and Cincinnati, Ohio; and Philadelphia, Pennsylvania. They have taken the initiative to eliminate threats to their people, but potentially remain at risk because hazardous materials are still transported through these cities to neighboring states and communities that have not taken similar action.

With this in mind, what then is the proper role of government to help promote change within communities and the private sector? As a security analyst, what is most important is to accelerate the pace of change and measurably reduce the risk of catastrophic terrorism to our society and economy. We cannot afford a strategic double-standard. When it comes to our extraordinary military, we are constantly exploring how to invest in and employ new technologies that make us stronger. Why is it that we would not take the same approach to invest in and employ secure alternatives to make us safer here at home? I think our citizens and our first responders deserve the same consideration that we rightly give our men and women in the military.

Voluntary actions should be encouraged, but we need a comprehensive national approach, not a series of disconnected local or regional actions. Government has the responsibility to set strong safety and security standards, identify better alternatives, require needed security assessments and reporting, and create incentives for the private sector and cities and states to take action.

To give one example of how this might work, consider the approximately 3,000 drinking water and wastewater treatment plants across the country that still use chlorine gas. DHS should identify the manufacture, transportation and use of chlorine gas for disinfection at high priority facilities in populated areas as posing an unacceptable risk to our society. But local officials and facility operators should determine how to best eliminate this risk, whether to convert to the use of liquid bleach, ultraviolet radiation or other process. Water treatment facilities represent an excellent starting point to implement a genuine risk-based approach to chemical security.

This bill should not exempt these operations from better security planning.

What needs to be done?

- The Department of Homeland Security should be granted authority to regulate chemical security and promulgate strong national standards to improve chemical security, including the manufacture, use, physical security, storage and transportation of acutely hazardous materials. Particular emphasis should be given to the proximity of these acutely hazardous materials to major population centers across the United States that present the highest risk if successfully attacked by terrorists.
- Chemical facilities should be required to do comprehensive annual security risk assessments and report those findings to DHS and EPA. These risk assessments should include a thorough evaluation of less acutely hazardous alternatives. In the case of publicly traded companies, an assessment of risk and summary of actions taken should also be reported to shareholders.
- DHS should embrace risk elimination as an essential tool to reduce the number of Americans who are at risk from a chemical release due to a terrorist attack. DHS should establish a Center of Excellence to promote technological solutions that reduce our vulnerability to catastrophic terrorism.
- The federal government should not preempt states that want to establish stronger security standards. The federal government established learning standards under No Child Left Behind. It did not tell any state not to offer advanced placement courses. Federal action should promote security floors, not ceilings.
- The federal government should create a variety of incentives to promote change. This might include a mix of targeted grants, loans and tax credits. Rewards for facilities that meet or exceed stronger national standards should also be explored, including caps on liability for facilities that go beyond physical security and adopt secure alternatives as well.

The course that we have followed in the first five years of the war on terror cannot be sustained indefinitely. Over time, our national security strategy must place greater emphasis on homeland security. As good as our intelligence and police forces may be, they cannot be expected to anticipate and intercept every attack. We must narrow the potential for terrorists to successfully attack us here. The security of the United States should not be subject to the lowest common denominator. Business as usual is no longer an option. Only through a comprehensive approach to chemical security will we achieve the objectives of this legislation.

Mr. LUNGREN. The Chair would now recognize Mr. Scott Berger, the Director of the Center for Chemical Process Safety from the American Institute of Chemical Engineers, to testify.

STATEMENT OF SCOTT BERGER, DIRECTOR, CENTER FOR CHEMICAL PROCESS SAFETY, AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

Mr. BERGER. Chairmen King and Lungren, Ranking Members Sanchez and Thompson, and members of the subcommittee, thank you for the opportunity to discuss this important legislation. My name is Scott Berger. I am the Director of CCPS, the Center for Chemical Process Safety.

CCPS was formed in 1985 by the American Institute of Chemical Engineers in response to the toxic gas release tragedy at Bhopal, India. CCPS advances process safety through research, collaboration, education and industry executive leadership.

I was a member of the committee of CCPS to develop the 2002 book, guidelines for analyzing and managing the security

vulnerabilities at fixed chemical sites. I have a copy here if somebody would like to browse through it.

This important guideline has been used by thousands of chemical manufacturing facilities. It serves as the basis for the New Jersey State Prescriptive Security Order. It is the foundation of the RAMCAP security method and also the foundation of voluntary security efforts of numerous trade associations.

So we believe that safety and security are good business. Any kind of incident would interfere with efficient manufacturing, while good performance reduces loss and injury, increases productivity and improves a company's image. So while there may be some minor points of contention that we could find with this legislation, in general, we support the draft as written.

Now, we have heard the testimony, and I think we will it has also been entered into the record that the draft bill is flawed because it does not require chemical sites to formally consider inherently safer technology options; and we respectfully disagree with this. In 1996, CCPS literally wrote the book on inherently safer chemical processes; and again I have a copy for those of you who would like to browse to do so.

It is highly relevant that this particular book was published in our concept series of books, as opposed to the security book, which is a guideline. This is highly relevant.

Inherently safer design is a philosophy for the design of any technology, including chemicals, but it is not a technology itself. Tools and techniques remain relatively primitive, and unless there have been important advances since 1996, and we are writing an updated edition to this book. This will also be a concept book; some future edition may attain guideline status, but we are not there yet.

Inherently safer design is only one of many tools for safety and security. The objectives of chemical safety and security vulnerability management are safety and security, but not necessarily inherent safety and inherent security. It is possible to have a safe and secure facility with inherent hazards, and in fact, this is necessary in many cases.

Looking outside the chemical industry, it is clear that air travel is neither inherently safe nor inherently secure and cannot be made so. But the benefits justify extensive safety and security activities to manage these known hazards. The activities are effective, and flying is the safest way to travel despite all of these inherent hazards. Similarly, chemical hazards can be managed in a highly effective way.

Inherent safety only partially addresses security issues and will not reduce the need for traditional security measures. Proponents of including inherently safer technologies in legislation apparently think that security only pertains to toxic releases. However, a chemical facility must consider other security vulnerabilities: off-site fires and explosions, for example, theft and diversion, contamination, and damages to the company and national infrastructure. The facility will need all the traditional security measures at its disposal for its concerns, and use of inherently safer options will not address these additional issues nor will it offset the need for traditional security measures.

The chemical industry is a very complex ecosystem. As any ecosystem, changes have cascading effects. We often see a change in technology that appears to be inherently safer locally will increase hazards elsewhere. Often these effects are not initially apparent.

For example, CFC refrigerants were thought to be, initially, safer; and later we found that they had damaged the ozone layer, and we are now phasing them out. Similarly, inherently safer technologies may improve security locally and lessen security elsewhere. A site-focused inherently safer regulation cannot address this issue.

Significant natural resources will be needed to implement inherently safer technologies. There are thousands of chemical technologies which are operated safely and securely using a blend of inherent engineered and management strategies. Is it appropriate to use our natural resources to replace these technologies with inherently safer ones if ones can be found, if the risk of existing technology can be managed? Similarly, why divert technical talent, creativity and financial resources from the creation of new products and technology which, in many cases, will render existing technologies obsolete?

In summary, inherently safer technologies are one tool for safety and security, but they are not the only tool. The chemical industry is very complex; it involves thousands of unique technologies. Changes will take significant time and resources, and negative impacts may exist.

Future invention and implementation of inherently safer technologies is best promoted by enhancing understanding of concepts. Inherently safer design should be a way of thinking and not a one-time activity to comply with the regulation, done once and then forgotten.

Thank you for the opportunity to share our views with the committee.

Mr. LUNGREN. Thank you very much, Mr. Berger. Again, we will look forward to the question-and-answer period with you as well.

[The statement of Mr. Berger follows:]

PREPARED STATEMENT OF SCOTT BERGER

The Center for Chemical Process Safety (CCPS) is sponsored by the American Institute of Chemical Engineers (AIChE), which represents Chemical Engineering Professionals in technical matters in the United States. CCPS is dedicated to eliminating major incidents in chemical, petroleum, and related facilities by:

- Advancing state of the art process safety technology and management practices
- Serving as the premier resource for information on process safety
- Fostering process safety in engineering and science education
- Promoting process safety as a key industry value

CCPS was formed by AIChE in 1985 as the chemical engineering profession's response to the Bhopal, India chemical release tragedy. In the past 21 years, CCPS has defined the basic practices of process safety and supplemented this with a wide range of technologies, tools, guidelines, and informational texts and conferences. CCPS' output includes more than 70 Guideline books, more than 90 university lectures, and a monthly e-mail process safety lesson delivered to more than 600,000 plant personnel around the world in 17 languages. The CCPS book "Guidelines for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites" (2002) has been used by thousands of plants around the world to evaluate chemical facility security, and is the basis for New Jersey State security regulation and the voluntary security programs of numerous chemical and petroleum trade associations. Today, CCPS has more than 85 member companies in the US and around the

world, and maintains an active program to continue advancing the practice of process safety.

CCPS supports national legislation addressing the security of facilities that manufacture and use chemicals. The House Bill as it exists today addresses all the important points that CCPS believes are critical to chemical security. It has been suggested that the Bill should also address the use of Inherently Safer Technologies. As the organization that developed the most widely-used reference addressing Inherently Safer Design ("Inherently Safer Processes: A Lifecycle Approach", AIChE Press, New York, 1996), we wanted to take this opportunity to explain the fundamentals of Inherently Safer Design, the challenges and trade-offs, and the limitations relative to security.

What is inherently safer design?

Inherently safer design is a concept related to the design and operation of chemical plants, and the philosophy is generally applicable to any technology. Inherently safer design is not a specific technology or set of tools and activities at this point in its development. It continues to evolve, and specific tools and techniques for application of inherently safer design are in early stages of development. The CCPS book, and other literature on inherently safer design (for example, by CCPS, Trevor Kletz, and others) describe a design philosophy and give examples of implementation, but do not describe a methodology. CCPS has begun a project to update its 1996 book on inherently safer design, and one of the objectives for this second edition is to propose one or more specific methods for implementation. These methods will hopefully be confirmed and expanded upon with use, so that at some time in the future more robust methods will exist. Such methods do not exist now.

What do we mean by inherently safer design? One dictionary definition of "inherent" which fits the concept very well is "existing in something as a permanent and inseparable element." This means that safety features are built into the process, not added on. Hazards are eliminated or significantly reduced rather than controlled and managed. The means by which the hazards are eliminated or reduced are so fundamental to the design of the process that they cannot be changed or defeated without changing the process. In many cases this will result in simpler and cheaper plants, because the extensive safety systems which may be required to control major hazards will introduce cost and complexity to a plant. The cost includes both the initial investment for safety equipment, as well as the ongoing operating cost for maintenance and operation of safety systems throughout the life of the plant.

Chemical process safety strategies can be grouped in four categories:

- Inherent - as described in the previous paragraphs (for example, replacement of an oil based paint in a combustible solvent with a latex paint in a water carrier)
- Passive - safety features which do not require action by any device, they perform their intended function simply because they exist (for example, a blast resistant concrete bunker for an explosives plant)
- Active - safety shutdown systems to prevent accidents (for example, a high pressure switch which shuts down a reactor) or to mitigate the effects of accidents (for example, a sprinkler system to extinguish a fire in a building). Active systems require detection of a hazardous condition and some kind of action to prevent or mitigate the accident.
- Procedural - Operating procedures, operator response to alarms, emergency response procedures.

In general, inherent and passive strategies are the most robust and reliable, but elements of all strategies will be required for a comprehensive process safety management program when all hazards of a process and plant are considered.

Approaches to inherently safer design fall into these categories:

- Minimize—replace a hazardous material with a less hazardous substance, or a hazardous chemistry with a less hazardous chemistry
- Moderate—reduce the hazards of a process by handling materials in a less hazardous form, or under less hazardous conditions, for example at lower temperatures and pressures
- Simplify—eliminate unnecessary complexity to make plants more "user friendly" and less prone to human error and incorrect operation

One important issue in the development of inherently safer chemical technologies is that the property of a material which makes it hazardous may be the same as the property which makes it useful. For example, gasoline is flammable, a well known hazard, but that flammability is also why gasoline is useful as a transportation fuel. Gasoline is a way to store a large amount of energy in a small quantity of material, so it is an efficient way of storing energy to operate a vehicle. As long

as we use large amounts of gasoline for fuel, there will have to be large inventories of gasoline somewhere.

Inherently safer design and the chemical industry

While some people have criticized the chemical industry for resisting inherently safer design, we believe that history shows quite the opposite. The concept of inherently safer design was first proposed by an industrial chemist (Trevor Kletz, of ICI in the UK), and it has been publicized and promoted by many technologists from petrochemical and chemical companies - ICI, Dow, Rohm and Haas, ExxonMobil, and many others. The companies that these people work for have strongly supported efforts to promote the concept of inherently safer chemical technologies.

The members of CCPS enthusiastically supported the publication of the Inherently Safer Processes book in 1996. Several companies ordered large numbers of copies of the book for distribution to their chemists and chemical engineers. CCPS members have recognized a need to update this book after 10 years, and there is a current project to write a second edition of the book, with active participation by CCPS member companies.

There has been some isolated academic activity on how to measure the inherent safety of a technology (and no consensus on how to do this), but we have seen little or no academic research on how to actually go about inventing inherently safer technology. All of the papers and publications that we have seen describing inherently safer technologies have either been written by people working for industry, or describe designs and technologies developed by industrial companies. And, we suspect that there are many more examples which have not been described. We believe that industry has strongly advocated inherently safer design, supporting the writing of CCPS books on the subject, teaching the concept to engineers (who most likely never heard of it during their college education), and incorporating it into internal process safety management programs. Nobody wants to spend time, money, and scarce technical resources managing hazards if there are viable alternatives that make this unnecessary.

Inherently safer design and security

Safety and security are good business. Safety and security incidents threaten a community's willingness to allow a plant to operate in their neighborhood, while good performance in these areas results in an improved community image for the company and plant, reduced risk and actual losses, and increased productivity, as discussed in the CCPS publication, "Business Case for Process Safety," which has been recently revised and updated.

A terrorist attack on a chemical plant that causes a toxic release can have the same kinds of potential consequences as accidental events resulting in loss of containment of a hazardous material or large amounts of energy from a plant. Clearly anything which reduces the amount of material, the hazard of the material, or the energy contained in the plant will also reduce the magnitude of this kind of potential security related event. The chemical industry recognizes this, and current security vulnerability analysis protocols require evaluation of the magnitude of consequences from a possible security related loss of containment, and encourage searching for feasible means of reducing these consequences. But inherently safer design is not a solution which will resolve all issues related to chemical plant security. It is one of the tools available to address concerns, and needs to be used in conjunction with other approaches, particularly when considering all potential security hazards.

In fact, inherently safer design will rarely avoid the need for implementing conventional security measures. To understand this, one must consider the four main elements of concern for security vulnerability in the chemical industry:

- Off-site consequences from toxic release, a fire, or an explosion
- Theft of material or diversion to other purposes, for example the ammonium nitrate used in the first attempt to destroy the World Trade Center in New York, or for the Oklahoma City bombing
- Contamination of products, particularly those destined for human consumption such as pharmaceuticals, food products, or drinking water
- Degradation of infrastructure such as the loss of communication ability from the second World Trade Center attacks

Inherently safer design of a process addresses the first bullet, but does not have any impact whatsoever on conventional security needs for the others. A company will still need to protect the site the same way, whether it uses inherently safer processes or not. Therefore, inherently safer design will not significantly reduce security requirements for a plant.

The objectives of process safety management and security vulnerability management in a chemical plant are safety and security, not necessarily inherent safety

and inherent security. It is possible to have a safe and secure facility for a facility with inherent hazards. In fact this is essential for a facility for which there is no technologically feasible alternative - for example, we cannot envision any way of eliminating large inventories of flammable transportation fuels in the foreseeable future.

An example from another technology - one which many of us frequently use - may illustrate how the true objective of safety and security management is safety and security, not inherent safety and security. Airplanes have many major hazards associated with their operation, and we have seen airplanes used for terrorism. In fact, essentially the entire population of the United States, or even the world, is potentially vulnerable to this hazard.

Airlines are in the business of transporting people and things from one place to another. They are not really in the business of flying airplanes - that is just the technology they have selected to accomplish their real business purpose. Inherently safer technologies which completely eliminate this hazard are available - high speed rail transport is well developed in Europe and Japan.

But we do not require airline companies to adopt this technology, or even to consider it and justify why they do not adopt it. We recognize that the true objective is "safety" and "security" not "inherent safety" or "inherent security." The passive, active, and procedural risk management features of the air transport system have resulted in an enviable, if not perfect, safety record, and nearly all of us are willing to travel in an airplane or allow them to fly over our homes.

Some issues and challenges in implementation of inherently safer design

- The chemical industry is a vast interconnected ecology of great complexity. There are dependencies throughout the system, and any change will have cascading effects throughout the chemical ecosystem. It is possible that making a change in technology that appears to be inherently safer locally at some point within this complex enterprise will actually increase hazards elsewhere once the entire system reaches a new equilibrium state. Such changes need to be carefully and thoughtfully evaluated to fully understand all of their implications.
- In many cases it will not be clear which of several potential technologies is really inherently safer, and there may be strong disagreements about this. Chemical processes and plants have multiple hazards, and different technologies will have different inherent safety characteristics with respect to each of those multiple hazards. Some examples of chemical substitutions which were thought to be safer when initially made, but were later found to introduce new hazards include:
 - Chlorofluorcarbon (CFC) refrigerants - low acute toxicity, non-flammable, but later found to have long term environmental impacts
 - PCB transformer fluids - non-flammable, but later determined to have serious toxicity and long term environmental impacts
 - Who is to determine which alternative is inherently safer, and how to make this determination? This decision requires consideration of the relative importance of different hazards, and there may not be agreement on this relative importance. This is particularly a problem with requiring the implementation of inherently safer technology - who determines what that technology is? There are tens of thousands of chemical products manufactured, most of them by unique and specialized processes.

The real experts on these technologies, and on the hazards associated with the technology, are the people who invent the processes and run the plants. In many cases they have spent entire careers understanding the chemistry, hazards, and processes. They are in the best position to understand the best choices, rather than a regulator or bureaucrat with, at best, a passing knowledge of the technology. But, these chemists and engineers must understand the concept of inherently safer design, and its potential benefits—we need to educate those who are in the best position to invent and promote inherently safer alternatives.

- Development of new chemical technology is not easy, particularly if you want to fully understand all of the potential implications of large scale implementation of that technology. History is full of examples of changes that were made with good intentions that gave rise to serious issues which were not anticipated at the time of the change, such as the use of CFCs and PCBs mentioned above. Co-author Hendershot personally has published brief descriptions of an inherently safer design for a reactor in which a large batch reactor was replaced with a much smaller continuous reactor. This is easy to describe in a few paragraphs, but actually this change represents the results of several years of process research by a team of several chemists and engineers, followed by another year and millions of dollars to build the new plant, and get it to operate reliably. And, the design only applies to that particular product. Some of the knowledge

might transfer to similar products, but an extensive research effort would still be required. Furthermore, Dennis Hendershot has also co-authored a paper which shows that the small reactor can be considered to be less inherently safe from the viewpoint of process dynamics - how the plant responds to changes in external conditions - for example, loss of power to a material feed pump. The point - these are not easy decisions and they require an intimate knowledge of the process.

- Extrapolate the example in the preceding paragraph to thousands of chemical technologies, which can be operated safely and securely using an appropriate blend of inherent, passive, active, and procedural strategies, and ask if this is an appropriate use of our national resources. Perhaps money for investment is a lesser concern - do we have enough engineers and chemists to be able to do this in any reasonable time frame? Do the inherently safer technologies for which they will be searching even exist?

- The answer to the question "which technology is inherently safer?" may not always be the same—there is most likely not a single "best technology" for all situations. Consider this non-chemical example. Falling down the steps is a serious hazard in a house and causes many injuries. These injuries could be avoided by mandating inherently safer houses - we could require that all new houses be built with only one floor, and we could even mandate replacement of all existing multi-story houses. But would this be the best thing for everybody, even if we determined that it was worth the cost? Many people in New Orleans survived the flooding in the wake of Hurricane Katrina by fleeing to the upper floors or attics of their houses. Some were reportedly trapped there, but many were able to escape the flood waters in this way.

So, single story houses are inherently safer with respect to falling down the steps, but multi story houses may be inherently safer for flood prone regions. We need to recognize that decision makers must be able to account for local conditions and concerns in their decision process.

- Some technology choices which are inherently safer locally may actually result in an increased hazard when considered more globally. A plant can enhance the inherent safety of its operation by replacing a large storage tank with a smaller one, but the result might be that shipments of the material need to be received by a large number of truck shipments instead of a smaller number of rail car shipments. Has safety really been enhanced, or has the risk been transferred from the plant site to the transportation system, where it might even be larger?

- We have a fear that regulations requiring implementation of inherently safer technology will make this a "one time and done" decision. You get through the technology selection and pick the inherently safer option, meet the regulation, and then you don't have to think about it any more. We want engineers to be thinking about opportunities for implementation of inherently safer designs at all times in everything they do—it should be a way of life for those designing and operating chemical, and other, technologies. For example:

- Research chemists and engineers—inherently safer fundamental chemistries
- Process development engineers—inherently safer processes based on those chemistries
- Design engineers—inherently safer plant design using the selected technology and process
- Detailed design engineers—inherently safer equipment details—minimize the length and size of pipes, vessels, and other equipment, make the plant design "user friendly"
- Plant operation engineers and operators—develop inherently safer operating procedures, look for opportunities for enhancing inherent safety in existing facilities
- Operators—look for inherently safer ways to do all of the tasks involved in the day to day operation of a plant. Inherently safer design and operation needs to be the way everybody involved in chemical technology thinks, not just a one time exercise to comply with a regulation.
- Inherently safer processes require innovation and creativity. How do you legislate a requirement to be creative? Inherently safer alternatives can not be invented by legislation.

What should we be doing to encourage inherently safer technology?

Inherently safer design is primarily an environmental and process safety measure, and its potential benefits and concerns are better discussed in context of future environmental legislation, with full consideration of the concerns and issues discussed above. While consideration of inherently safer processes does have value in some areas of chemical plant security vulnerability - the concern about off site im-

pact of releases of toxic materials - there are other approaches which can also effectively address these concerns, and industry needs to be able to utilize all of the tools in determining the appropriate security vulnerability strategy for a specific plant site. Some of the current proposals regarding inherently safer design in security regulations seem to drive plants to create significant paperwork to justify not using inherently safer approaches, and this does not improve security.

We believe that future invention and implementation of inherently safer technologies, to address both safety and security concerns, is best promoted by enhancing awareness and understanding of the concepts by everybody associated with the chemical enterprise. They should be applying this design philosophy in everything they do, from basic research through process development, plant design, and plant operation. Also, business management and corporate executives need to be aware of the philosophy, and its potential benefits to their operations, so they will encourage their organization to look for opportunities where implementing inherently safer technology makes sense.

We believe that the approach that the Environmental Protection Agency has taken to promote Green Chemistry provides a good example of how the Federal government can promote the adoption of inherently safer technology in industry. EPA has been active in promoting the principals of green chemistry, promoting incorporation of green chemistry into the education of chemists, and in sponsoring conferences and technical meetings on the subject. Each year a number of awards are given to researchers and to companies for outstanding examples of implementation of green chemistry. An effort like this for inherently safer design will increase its visibility for all chemical industry technologists, promote sharing of ideas and information, recognize important contributions, and encourage others to apply the principles of inherently safer design.

Mr. LUNGRAN. The Chair would now recognize Mr. Marty Durbin, the Director of Federal Affairs of the American Chemical Council, to testify.

**STATEMENT OF MARTIN J. DURBIN, MANAGING DIRECTOR,
FEDERAL AFFAIRS, AMERICAN CHEMISTRY COUNCIL**

Mr. DURBIN. Thank you, Mr. Chairman. I am pleased to appear before this panel again on this important topic. I want to thank you for your leadership, along with the ranking members and other co-sponsors of your bill, in introducing H.R. 5695.

As you noted in your opening statement, the business of chemistry is an essential part of our economy and our daily lives. The ACC has consistently led the call for meaningful chemical security legislation, and we believe the Congress has an obligation to help protect this critical part of the Nation's crucial infrastructure. But time is running out for this Congress to act.

Fortunately, your bill could represent a whole new ball game. This bipartisan bill is like getting a runner into scoring position in the bottom of the ninth in a tied game. The outcome is still uncertain. Now we all have a chance to win.

Now, we have had only 24 hours to review the bill, and frankly, we are still reviewing it with our members, and they are clearly taking a look at it as well. But it clearly represents and presents a great opportunity to realize our goal of meaningful chemical security legislation this year.

As I testified last year, there has been a paradigm shift since 9/11 in the way our members approach facility security. Without waiting for government direction, ACC quickly adopted the responsible security code which requires each member to complete a four-step process where they prioritize each facility by risk, assess the vulnerabilities, implement security enhancements and then verify the implementation of physical security measures by using third parties that are credible in the local community.

Now, since implementing the code, I am proud to report that our member companies have invested nearly \$3 billion in additional security enhancements, and the code has been widely praised and recognized. As an example, the Coast Guard approved the code as an alternative form of compliance with the Maritime Transportation Security Act, or MTSA.

While ACC members account for nearly 85 percent of the Nation's chemical manufacturing, we do not represent the entire chemical sector. While I am confident others in the sector are indeed taking steps to increase security, the critical role of our products throughout the economy points out the need for us to have Federal legislation in order to ensure that the entire sector is protected.

ACC has long argued that chemical security legislation must create risk-based, performance-oriented standards with DHS oversight. Establish uniform national standards for the entire sector, protect sensitive information, avoid redundancy and inconsistency; that is, the legislation should recognize and be consistent with successful efforts of MTSA that was passed 3 years ago.

And finally, to recognize responsible voluntary efforts, we believe Federal legislation should enable DHS to give ACC members credit for their substantial voluntary at-risk expenditures implementing the responsible care security code.

As panel members know, there has been a great deal of discussion surrounding inherently safer technology and you have the panel members here to discuss that. Let me be clear: The business of chemistry has long embraced inherently safer approaches, but during the hearing last week on this same topic, again, the experts on the panel here that literally wrote the book on inherent safety at chemical facilities warned against mandating ISC. They called instead for performance-oriented legislation that allows facilities flexibility to choose from an array of security measures. We would agree with that assessment.

Now, again, we will need to fully review H.R. 5695 with our members, but we are pleased to say this committee's action in introducing the bill, in convening this hearing today, are very positive steps that will take us a long way toward enacting meaningful legislation still this year.

Based on our initial review, we see three primary strengths in the bill: solidly focuses on promoting the security of the chemical sector and allows facilities the flexibility to select appropriate measures that will achieve clearly defined standards; provides an appropriate mechanism for recognizing significant investments that our members and others have made under the responsible care security code; and we believe it adopts a very workable and sensible approach for dealing with MTSA facilities that are regulated by the Coast Guard, avoiding duplicative regulation but allowing the Secretary to require additional security measures if needed.

However, in our view, there are still some areas we would like that would require further discussion, including the need for a clearer statement on Federal preemption. In our view, chemical security, like nuclear or aviation security, is a national concern and our preference has been for legislation to emulate the strong Fed-

eral preemption language Congress introduced previously in the Hazardous Materials Transportation Act.

Also, the new bill contains important information protection provisions. It doesn't appear to penalize those that would knowingly violate information security protocols. So we believe this should be addressed and look forward to security discussion.

Of course, our biggest concern is the congressional calendar. We know time is tight, and it will take a concerted team effort from all of us to bring this bill to pass this year, and we look forward to working with you to make that a reality.

Mr. LUNGRON. Thank you very much Mr. Durbin. I appreciate that.

[The statement of Mr. Durbin follows:]

PREPARED STATEMENT OF MARTIN J. DURBIN

Mr. Chairman, I am Marty Durbin, Managing Director of Federal Legislative Affairs with the American Chemistry Council ("ACC"). The American Chemistry Council represents the leading companies engaged in the business of chemistry. We thank you for calling today's hearing on a subject of great importance both to the chemistry sector I represent and the nation at large.

In addition I want to thank you for your leadership in introducing the Chemical Facility Anti-Terrorism Act of 2006, along with the efforts for Ranking Subcommittee Member Loretta Sanchez, Committee Chairman Peter King and Ranking Member Bennie G. Thompson and other co-sponsors.

When it comes to chemical facilities and their communities, Congress - like law enforcement officers and emergency responders - has an obligation to "serve and protect" this crucial part of the nation's critical infrastructure. Today, nearly five full years after 9/11, this bill has the potential to achieve this goal.

Today, I would like to address several points:

The chemistry sector and the products we produce are essential for the physical, economic and competitive well-being of our nation.

- ACC member companies—without waiting for federal legislation have already made an unprecedented commitment to security and implemented the nation's most widely-recognized industry security program: the Responsible Care Security Code.
- Despite such efforts by our members, the chemistry sector needs broader protection, which can only be provided by the federal government.
- The legislation that promotes our sector's security must meet key criteria.

Finally, I would like to offer our initial views on your new chemical security bill.

Chemistry—Essential2 America

Products supplied by the chemistry sector are essential to manufacturing, agriculture, energy, transportation, technology, communications, health, education, defense, and virtually every aspect of our lives. Basic industrial chemicals are the raw materials for thousands of other products including plastics, water treatment chemicals, detergents, pharmaceuticals and agricultural chemicals. Their applications include medicines and medical technologies that save our lives, computers that expand our horizons, foods we eat, water we drink, cars we drive, homes in which we live, and clothes we wear.

Our \$550 billion dollar industry employs almost 900,000 people across the country, and accounts for 10 percent of all US merchandise exports. In fact, more than 96% of all manufactured goods are directly touched by chemistry.

Chemicals are essential for the life of the nation. Last year, we invested \$14.3 billion in environmental health and safety programs. We generate nearly 1 out of every eight U.S. patents and invest more than \$22 billion in R&D annually, more than any other industry.

The Chemistry Sector and ACC's Responsible Care Security Code

Since 9/11, there has been a paradigm shift in the way we approach chemical facility security. Security has always been a top priority for America's leading chemical producers, and soon after the terrorist attacks of September 11, 2001, members of the American Chemistry Council took the lead in securing their facilities. Without waiting for government direction, the ACC Board of Directors quickly adopted the Responsible Care Security Code, an aggressive plan to further enhance security of our facilities, our communities and our products.

In my testimony before this committee last year, I spoke in some detail about ACC's Responsible Care Security Code. In summary, the Responsible Care Security Code is a mandatory program for all of our members. The Code requires each company to complete a four-step process:

- Prioritize every facility by risk;
- Assess vulnerabilities
- Implement security enhancements; and
- Verify the implementation of physical security measures, using third parties that are credible with the local community, such as first responders or law enforcement officials.

Since implementing the Code, I'm glad to report that our member companies have invested nearly \$3 billion in security enhancements. Additional statistics are available online at www.ResponsibleCare-US.com.

The Code has been widely praised and accepted. Under the Maritime Transportation Security Act, the US Coast Guard has approved the Code as an alternative form of MTSA compliance. And the Code has earned praise from government officials and security experts.

In addition, ACC stepped up our outreach to and cooperation with the public sector in Washington and at the local and state levels, developing new ways to share information and work together. We helped created the Chemical Sector Coordinating Council, which facilitates effective coordination between DHS and chemistry businesses to protect this critical sector of the nation's infrastructure. This partnership proved very valuable to the nation during last year's Gulf hurricanes. It should also serve as a constructive basis on which to build a regulatory program.

The benefits of this partnership continue. For example, over the last three years, ACC has co-hosted an annual Chemical Security Summit at which DHS and other government officials from Washington, the states and localities have shared best practice information with industry experts. This year's summit is underway right now in Baltimore, an example of how we can - and must - work together.

Why America Needs A National Chemical Security Law

As I have stated in prior testimony, the chemical industry is part of the nation's critical infrastructure, an essential asset that needs to be protected. Because of our role in the nation's economy, defense and health, for instance, the chemical sector must be adequately protected.

ACC members account for nearly 85 percent of the nation's chemical production, but we do not encompass the entire sector. In fact, most facilities within the sector do not produce chemicals, but rather use or store them. Though ACC's members have undertaken significant security enhancements under the Responsible Care Security Code, there are many nonmember facilities that neither ascribe to the Code nor are covered by federal or other security regulations. To protect them and the entire chemical sector, a uniform federal law is needed to set and enforce standards.

National Chemical Security Legislation and the Crucial Public-Private Partnership

Speaking in Washington in March, DHS Secretary Michael Chertoff outlined how government and the private sector must work together to promote chemical security. Rather than dictate how security is to be achieved, the federal role should take advantage of the "strength of the industry - its adaptability, its initiative and its ingenuity - by laying out a series of performance standards," Secretary Chertoff said.

Government should set and enforce clear performance standards across the entire chemical sector. Companies must meet those standards, and their compliance should be independently verified. The result will be enhanced security.

ACC has consistently argued that national chemical security legislation must:

- Create risk-based/performance orientated standards with DHS oversight
- Risk-based—The only sensible way to address the risks posed by terrorist attacks on our homeland is to adopt a risk-based system of prevention and preparedness. Different chemical facilities pose different risks, based on their differing vulnerabilities and consequences, and any regulatory system must reflect those differences and require security measures commensurate with those risks.
- Performance-oriented—Facilities need flexibility to select among appropriate security measures that will effectively address risks. Under Secretary Stephan noted that an overly prescriptive system could, by its predictability, actually assist terrorists in targeting their attacks.
- And, DHS must have the legal authority to police compliance with its standards and to take enforcement action if necessary.
- Establish uniform national standards for the entire industry. Only through the establishment of a set of uniform standards will we be able to protect the entire chemical sector. Chemical security, like nuclear or aviation security, is

a national concern. Congress should support federal preemption and prohibit a patchwork of inconsistent state requirements that may actually hamper security by misdirecting resources.

- Protect sensitive information. Information about the vulnerabilities of facilities, and the measures they have taken to reduce them, is literally a roadmap for terrorists. A law that required such information to be created, but then permitted it to be released publicly, would be a step in the wrong direction to improve security.
- Avoid redundancy and inconsistency. Legislation should recognize and be consistent with the highly successful efforts of the Maritime Transportation Security Act (MTSA) passed three years ago. Facilities already secured under MTSA should not be subject to a separate layer of security regulation and inevitably conflicting direction from two different regulatory overseers.
- Recognize responsible voluntary efforts. Based upon their substantial and verifiable efforts to date, ACC members strongly believe that federal legislation should enable DHS to give them credit for their substantial voluntary, at-risk expenditures implementing the Responsible Care Security Code. We are not asking for anything less stringent than everybody else, only that DHS be allowed to recognize our members' significant actions, just as the Coast Guard has done.

There has been a great deal of discussion surrounding inherently safer technology (IST) in regards to chemical security. The business of chemistry has long embraced inherently safer approaches.

Last week the Senate Environment and Public Works Committee held a hearing regarding IST. During that hearing, leading experts who literally wrote the book on utilizing IST at chemical facilities warned Congress against mandating IST.

Their testimony supports what I stated a few moments ago, we believe chemical security legislation should be performance oriented allowing facilities the flexibility to choose from an array of security measures. Legislation should not mandate specific security measures.

ACC Views on The Chemical Facility Anti-Terrorism Act of 2006

Given the bill's introduction only yesterday, we have only been able to read it quickly and will, naturally, need time to carefully consider its provisions and discuss them with our membership. I am pleased to say, though, that the Committee's action in introducing the bill, and convening this hearing, are extremely positive steps that take us a long way toward the goal of a comprehensive, risk-based, performance-oriented, national chemical security program, and we commend you

The bill seems solidly focused on promoting the security of the chemical infrastructure. The bill appears to allow chemical facilities the flexibility to select appropriate measures to achieve a clearly defined standard. There is also a very helpful statement that prevents vulnerability assessments or plans from being rejected for not including a specific security measure.

The bill provides an appropriate mechanism for recognizing the massive investments that our members have made under the Responsible Care Security Code. It also adopts a very workable and sensible approach for dealing with MTSA facilities, avoiding duplicative regulation but allowing the Secretary to require additional security measures if needed, we presume, to meet applicable performance standards.

The bill generally provides very solid information protections, clearly providing that sensitive security documents and information cannot be released. We note, however, that the bill does appear to contain any penalties even for government employees who knowingly violate protocols for protecting information. Such penalties have been a hallmark of other chemical security bills over the years and are needed to give the protections teeth.

We also believe the bill could go further to address the important question of federal preemption. We think a much clearer and more appropriate standard would be the one established by Congress in the Hazardous Materials Transportation Act - where state requirements are preempted unless they are "substantively the same as" the federal program.

Again, I expect that we will have further thoughts on this bill as we are able to review it more carefully. But overall, we commend you and your colleagues for crafting a good bill that can be the vehicle that gets us all to a Rose Garden ceremony this year.

Looking Ahead

ACC is fully committed to winning passage of an effective chemical security bill this year. Our member companies have worked hard to obtain this goal, and we promise to continue working closely with this subcommittee, the full committee, the Congress and the administration to make this a reality.

As our CEO, Jack N. Gerard said recently, "The 900,000 people who work in the chemical industry, the communities where they live and work, and the millions of Americans who rely on our products, deserve no less."

Thank you and I will be pleased to answer questions.

Mr. LUNGREN. I thank all the witnesses for your testimony, and at this time I would like to ask some questions and limit myself to 5 minutes before recognizing other members.

We have this bipartisan approach, which has sustained us through the entire effort to come up with this bill; and I hope that we continue with that. There has been an area of controversy for those who look at this from all sides, and at least three of you mentioned that, and that is the issue of inherently safer technology, or inherently safer design or inherently safer processes, and whether we should somehow mandate that or give that regulatory mandate to DHS.

And I would specifically like to ask this question, Mr. Crowley, Mr. Berger; I think we all want to get to the same place, but the two of you appear to have slightly different views on this. And let me try and put it in the manner of an example, and hopefully, it is a good example. If not, maybe the two of you could give me a better example.

But if a water plant, for instance, changes from chlorine to bleach, this doesn't mean that the facility would no longer need security measures. I think we would all agree on that. What true benefit would be generated by the mandate, let's say, of a water plant moving from chlorine to bleach when wouldn't it still remain an attractive terrorist target, and wouldn't we still have other things that we would have to deal with? And could we make the judgment that by making that change, we necessarily increase the security profile just as a result of that?

And I would ask that to Mr. Crowley and Mr. Berger.

Mr. CROWLEY. I will start off and I will defer to Mr. Berger. I am an English major, not a chemical engineer.

Mr. LUNGREN. That is okay. I am an English major, too, but I am also handicapped by being an attorney. So go right ahead.

Mr. CROWLEY. I think what would be mandated here is that there is a process, and the process would require the chemical sector to acknowledge whatever alternative processes may exist. It would not necessarily mandate that the facility operator you know, choose between you know, the facility operator could choose between liquid bleach as one alternative or ultraviolet radiation as another, or if there is another disinfectant that comes along, do that. But it puts on the table, you know, the issue of safer alternatives where they clearly exist and are obviously being adopted by a wide range of facilities across the country.

I think the key here is moving away from, you know, the gaseous compound, whether it is sulfur dioxide or ammonia or chlorine, to another form of the substance, if not another technology that eliminates the terrorism risk, you know because my understanding is that liquid bleach still poses, you know, challenges, but it is far more localized.

And I think that while you are right, Mr. Chairman, there would still be security responsibilities, a facility may find when you put together a number of things that it is very cost effective because

it probably would require fewer guards, it probably would require fewer a less arduous evacuation plan, the local community may require less in the way of protective equipment and gear.

So when you put the whole ball of wax together, I think there -- it is an attractive opportunity. I think the last point again is again going back to the issue of the chlorine car, you know, unless you put safer alternatives on the table, you don't break up the lethal combination that exists right here at the Capitol, which is a HAZMAT car sitting next to the United States Capitol. That combination is inherently insecure; and the only way that you break that up, you know, is by requiring a process where people have to evaluate safer alternatives where they are practical.

Mr. LUNGREN. Mr. Berger?

Mr. BERGER. Mr. Crowley makes some very good points.

I think the thing that is certainly important to understand is that when it comes to the attractiveness of a particular target, there are a number of factors that make things attractive, and any one of those will make an attractive target. You can take away one of those attractiveness factors and the target remains equally attractive.

So removing the let's say removing chlorine from a water treatment plant probably is a good thing for safety, but it is not going to impact the security, because a terrorist may still be interested in contaminating the drinking supply, cutting the power to eliminate water, for example, or just disabling the plant altogether. So I think in terms of attractiveness, that will not have the effect.

I think the other thing to consider is that this is a system, and bleach has to be made someplace in a chemical plant. It is made from chlorine. So what you are doing is you are transferring the risk from one place to another place. And I think Mr. Crowley did make a very good point that this is a system evaluation that should be evaluated by the really by the Secretary of Homeland Security, basically looking at the whole system so that we are not transferring risk from one place to another, as opposed to actually reducing risk overall for the Nation.

Mr. LUNGREN. A lot of questions I could ask, follow-up, but I am limited to 5 minutes, so I would like to recognize Ms. Sanchez for 5 minutes.

Ms. SANCHEZ. Mr. Chairman, we have three votes on the floor. They just started. Two amendments and then two amendments and then the passage of the bill. So how do you want to work that?

Mr. LUNGREN. Fifteen and

Ms. SANCHEZ. Fifteen and 5. I would assume 5 and 5.

Mr. LUNGREN. Why don't you go ahead with your questions? We will let Ms. Sanchez to have her 5 minutes of questions, and then we will break and come back.

Ms. SANCHEZ. As soon as the votes are over?

Mr. LUNGREN. Yes.

Ms. SANCHEZ. Okay.

Thank you again, gentlemen, for being before us to testify. I have a couple of questions well, maybe two or three. Hopefully, I will get through them.

Senator first of all, what does your community expect from the Federal Government when it comes to securing chemical sites?

Mr. BALBONI. They expect that there will be regulations that will have a uniform standard. They expect I know this comes as a big surprise money. You know, that really is one of the major things that we are focused on right now in New York for a whole host of other issues. And they expect consistency and uniformity.

You know, the unique thing about New York City is that as we look across the river and we see New Jersey, we realize that we can do everything we want to make everything safer, but yet you have got you know, no disparagement to New Jersey; it is a great place, but they have two miles of very, very vulnerable facilities. And so if they are not consistent, also, if they are not engaged, well then, our residents are not as safe as they could be.

Ms. SANCHEZ. Do you also expect that the Federal Government will put teeth in and have some penalties or some form by which to enforce those standards that we put in?

Mr. BALBONI. Yes. You know, the issue of penalties, my original initial approach was for penalties. We could not get that through the legislature.

I think, frankly, that is the job of the Federal Government to come in and work with the industry to see what is the best way to enforce the standards that are developed.

Ms. SANCHEZ. Thank you.

Mr Dubin, to what degree are you comfortable giving the Department of Homeland Security regulatory authority over the security of chemical facilities?

Mr. DURBIN. Ms. Sanchez, we have actually stated all along that we believe DHS should be given authority to you know, oversight, inspection and enforcement authority over chemical security. Again, we believe this is part of our national critical infrastructure, and that it we need to ensure that it is adequately protected. And while our member companies have taken great steps and made great actions in investments, we need to only by having uniform national standards that are, you know, enforced by the Department of Homeland Security can we ensure that the entire sector is adequately protected.

Ms. SANCHEZ. In other words, some of your companies have stepped up to the plate, and others haven't; and they find that it is a cost consideration; they would prefer that we put in some sort of standard across the ways so they are not at a cost disadvantage.

Would you say that is reasonable?

Mr. DURBIN. First of all, I would say all of our companies have stepped up to the plate and made the investments here. But I think that the reason now we have to have national uniform standards is, number one, we are part of critical part of the infrastructure. We need to make sure that we don't have a patchwork of standards out at the State level. And certainly we want to make sure that you know, that we believe we have actually we have got a road map here for how to do security at chemical facilities.

I think we have actually got a model, and that we should have the entire sector taking the same kinds of aggressive actions that our members have taken.

Ms. SANCHEZ. Aside from cost considerations, what reasons do you think would discourage companies from using inherently safer technologies?

Mr. DURBIN. Again, I wouldn't say cost has anything from our standpoint, again, as I said, the chemistry sector, certainly ACC members, have embraced inherently safer approaches.

As Mr. Berger mentioned in his testimony, it is good sense. It makes sense for our facilities to be operating as safely and securely as possible. No one has a greater interest in making sure that our communities, our products and our facilities are neither harmed nor misused.

And again, the concept of inherently safer approaches is actually a requirement within for our member companies as part of the responsible care program and the security code.

Ms. SANCHEZ. Mr. Berger, some businesses say that we are putting too many mandates, that we shouldn't be putting more regulations, that we are putting too much cost onto people.

What is the sense of the engineers that sit inside of these companies? What would your membership say about having standards and really having enforcement of those standards?

Mr. BERGER. Generally, our organization does not take position on issues like that. But what we would say is, if there is going to be a regulation, it should be one that is technically sound and implementable and is cost effective. So I think that is that is the angle that we would take.

Ms. SANCHEZ. Thank you, Mr. Chairman.

Thank you, gentlemen.

Mr. LUNGMREN. Thank you. With your indulgence, we will just have to recess until we finish these votes. I think we have a 15 minute vote followed by two probably 5 minute votes, and then we will return and resume questioning.

Thank you very much.

[Recess.]

Mr. LUNGMREN. Mr. Pearce is recognized for 5 minutes.

Mr. PEARCE. Thank you, Mr. Chairman. Mr. Crowley, now you have my curiosity up. What materials are carried in that HAZMAT car, in the rail car that sits a block over here?

Mr. CROWLEY. At the present time, there is a court injunction based on a case between D.C. and CSX, so at the present time, under a voluntary rerouting plan by CSX, there is no HAZMAT car. But CSX, on the one hand, has gone to court to assert its right at some point in the future.

Mr. PEARCE. When they let's say they assert their right favorably, what do they carry?

Mr. CROWLEY. I believe they carry, among other things, ammonia, chlorine and sulfur dioxide.

Mr. PEARCE. Mr. Balboni, Senator, what how did you take care of overzealous regulators in your bill? In other words, that is constantly a problem that you give people just a little bit of access into an industry, and suddenly they are beginning to control it from outside.

How did you manage that problem?

Mr. BALBONI. Well, what we did was, we basically said to the Office of Homeland Security in the State, you will work with the different sectors and facilities, use the Web-based instrument as the initial point of contact, review the returns; and then do a site review and develop the plan based upon what the unique facility re-

quirements are and, frankly, develop a practical application of the security analysis.

Let me share with you, Congressman, one situation in Brooklyn, New York. We had a food manufacturer that had a 500-gallon tank of anhydrous ammonia, and that has a toxic chemistry if released. It was right near a school, an elevated

Mr. PEARCE. With all due respect Mr., Balboni, I am talking about the overzealous regulator that is worried about the box car that runs through his district, who decides he is going to reroute that. Is

Mr. BALBONI. I put a rail transport bill in.

Mr. PEARCE. I am talking about the overzealous regulator.

Let's use your example of a drum of clear water then. Okay, something is not hazardous. We all remember OSHA from the 1970s. They had the horses sitting out here, the OSHA-approved horse; and it has bumpers on both ends. It has kiddie legs, got these little legs jacked down to keep it from leaning over and other things to catch the emissions from the back and stuff like that.

I mean, regulators go nuts sometimes, and I just asked, what did you do to stop the overzealous regulators.

Mr. BALBONI. We worked with the Department and we gave them pretty clear regulations as to what they were trying to do in terms of security enhancements.

Mr. PEARCE. Fair enough.

Mr. Crowley, you have seen Mr. Berger's testimony that he says a lot of times the problem is transference; and in fact, I think if you look at the example used on page 2, you talk about the conversion from chlorine gas into bleach, to liquid bleach; and yet somewhere somebody has to use that chlorine gas, so you transfer the risk somewhere else, which is part of Mr. Berger's testimony. What about that?

Mr. CROWLEY. Well, you will have chlorine gas sitting on a manufacturing site, but I believe that if you switch from chlorine bleach to liquid bleach, you go from having a potentially catastrophic terrorism event to a much more localized event and a situation where you can manage.

So I don't think anyone at this point is saying that we are going to get out of the chlorine gas business.

Mr. PEARCE. You are saying there is no transference, the fact that the bleach is made somewhere else, you transfer the risk out to where the bleach is made?

Mr. CROWLEY. The key is going from a very significant catastrophic terrorism risk to a lower level of risk that is more manageable. You don't eliminate the risk entirely; that is true.

Mr. PEARCE. What would you say about Mr. Berger's testimony where he describes that due to this, the IST process, inherently safer technology, some nuclear power plant was required to down-grade, put a smaller unit in; and it made it safer with respect to the one process, but with respect to the other process it became inherently less safe.

Who would make those decisions? Who would actually at the end of the day make the decisions, what is inherently safe and what is not? And where is the transference occurring? Who would be on the point to make that decision?

Mr. CROWLEY. I think one of the values that is in the bill in terms of the tiering scheme is that, on the one hand, DHS would say would assign, you know, this particular facility at a very high level of risk or a relatively lower level of risk. And at that point, working with the facility operator and, in my judgment, also taking into account the transportation aspect of operating that facility then it would be ultimately the facility operator that works to use whatever tools are available, including inherently safer processes, to be able to move from a high level of risk, which one would assume is very expensive, to a relatively low level of risk or off the charts entirely.

Mr. PEARCE. You would mandate or not mandate inherently safer technology?

Mr. CROWLEY. I think you mandate a process that puts inherently safer technology on the table, as Mr. Berger said, as one tool in the arsenal.

Mr. PEARCE. And, Mr. Crowley, you won't then object to the flexibility? I am not sure if Mr. Berger or Mr. Durbin talked about the flexibility to choose between the processes. You wouldn't object to that?

Mr. CROWLEY. Not at all. But a facility operator has to be, and I think one of the values of the New Jersey bill, for example, is that it does require the facility operator to consider whatever safer alternatives do exist.

Mr. PEARCE. Thank you very much, Mr. Chairman.

Mr. LUNGMREN. Gentleman's time has expired.

Gentlelady from Texas, Ms. Jackson Lee, is recognized for 5 minutes.

Ms. JACKSON LEE. I thank the distinguished Chair and the distinguished ranking woman.

This is a hearing that hopefully will help us craft the best initiative when you have the clashes of an industry attempting to provide services such as an industry in my region, Texas, where I think a commonsense approach is necessary to ensure that transport and possession of these particular chemicals do not create a catastrophic event.

I think after I noticed, Senator Balboni, you started out your testimony, as I would expect, by your recognition of some of these issues after 9/11, and your testimony is very instructive.

But be reminded that in the Oklahoma incident, as well, chemicals for the first time were introduced to America for use other than fertilizing their yards. So I think this is a extremely important concept and one that needs great attention.

I am going to ask and forgive me for being detained on the floor, but I want to hear your comments on this concept that is in between the Senate bill and the House bill; and if I could hear for myself it might have been in your testimony. But that is, of course, the issue of the Federal law preempting all versus their setting a minimum standard, which is the Federal standard, but if States wish to accelerate to a higher level of standards, based upon their own needs, that would be a responsible approach to take.

Senator And if I could get an answer from all of the panelists, thank you very much.

Mr. BALBONI. Thank you, Congresswoman.

The perspective from New York State was that the chemistry had already recognized many of the vulnerabilities and threats and had done a lot of work, in and of themselves on a voluntary basis. And what we are doing is, we are not reinventing the wheel, but rather building upon what they had done.

Having said that, the Federal preemption aspect of this legislation, I believe is necessary as it relates to the penalty component. What I found, politically in New York State, we were not able to get the penalty provision in our law; and I think that that is really what you need to do for compliance. In addition to which, there are some strengths here in the bill that we are lacking, and that is very crucial as it relates to the whistle-blower protections, as it relates to letting the industries develop their innovation and best practices, and so you don't micromanage.

Now, having said that, there is a provision in the bill that allows for waivers, if you have some different types of standards, I would like to see that the Department of Homeland Security take have a sensitivity that one size does not fit all, and there may be a certain situation which you need to have a different regulatory view of it. And we hope that the Department will work with us on that.

Ms. JACKSON LEE. You are saying then that you fall more towards the flexibility of a standard that is set under the House bill, and then try to

Mr. BALBONI. Exactly.

Ms. JACKSON LEE.—make it for more palatable for States and other entities?

Mr. BALBONI. Yes.

Ms. JACKSON LEE. Thank you.

Mr. Crowley?

Mr. CROWLEY. Again, Congresswoman, if you look at the New Jersey example and here in the Congress between the House and the Senate, there is obviously the concept of inherently safe technology and whether it should be a part of the process and something that DHS has the authority to put on the table as one solution, you know, among a range of options for securing our chemistry sector.

If, in fact, Congress were to pass a bill that does not include that explicit, you know, feature, it would be hard for me to see why the State of New Jersey, for example, in its current approach would not be able to use as it currently does a voluntary effort, but it requires their industry within the State of New Jersey to at least consider IST as among the options in terms of securing their facilities.

So I certainly think, as I said in my testimony, we should be talking about establishing strong security floors, but not necessarily creating ceilings.

Ms. JACKSON LEE. And so you also want requirement language, because I just noted that you said the State of New Jersey has voluntary collaboration, but you are saying—

Mr. CROWLEY. The State of New Jersey, as I understand it, does not require a facility to act on the particular technology available, but must consider safer alternatives in its security planning.

Ms. JACKSON LEE. And you want at least the minimal floor with procedures in place?

Mr. CROWLEY. I believe that for a chemical security strategy to be viable, IST, or whatever you call it, has to be something put on the table for all stakeholders to try to resolve.

Ms. JACKSON LEE. Thank you.

Mr. Berger?

Mr. BERGER. We haven't evaluated this issue, so I don't have any comments. But I am sure Mr. Durbin does.

Mr. DURBIN. Congresswoman, I would say, first, that the conversation with the Senator before the hearing I am happy to say that, you know, ACC and our Members have a good working relationship with the State of New Jersey. We were able to support both of the existing State laws that are out there in New York and Maryland; I think they were responsible approaches.

But having said that, ACC's clear preference is to have a national program, uniform national standards, and we think it is important and does provide a more comprehensive national security, homeland security, to have a clear Federal preemption in this area. I think that just as we regulate nuclear security and airline security at the Federal level, I believe that same type of approach should be taken with chemical security, given our presence in the economy, throughout the economy.

Ms. JACKSON LEE. But you want standards. You want standards, national standards, where you know where the parameters are

Mr. DURBIN. Yes, ma'am. Yes, ma'am.

Ms. JACKSON LEE.—in law?

Mr. DURBIN. Absolutely.

Ms. JACKSON LEE. Let me conclude, Mr. Chairman, by asking Mr. Berger if he would ultimately analyze the question and make sure that he comments.

Because obviously we would be interested in your best guess on this, or if you have any other comments about any standards, set standards.

Mr. BERGER. From the perspective of a company that was trying to implement activities on a national level, it would seem to be easier to have one set of rules to live by.

Ms. JACKSON LEE. Thank you very much. Thank you.

Mr. LUNGREN. Thank you. The gentlelady's time has expired.

We will do a second round here, and I will start off with my 5 minutes.

I would address it to I guess, Mr. Crowley, Mr. Berger, Mr. Durbin and that is this: We are talking about inherently safer technologies or processes or designs. Does anybody have any idea across the spectrum of the chemical industry how many of the chemicals listed on EPA's risk management plan list have scientifically proved alternatives that increase safety, reduce risk, and operate at least as effectively in terms of both cost and end product as the chemistry compound that is being replaced?

Do we know?

Mr. BERGER. I don't have those figures offhand. I am sorry.

Mr. LUNGREN. Is that available?

Mr. BERGER. I don't think it is.

Mr. LUNGREN. I am trying to figure out what the universe is we are talking about, to the extent known now, because there is a presumption that at least I would think that when you talk about an

inherently safer product or design or process that it would increase safety, reduce risk, and operate at least in a commercial setting, presumably it operates as effectively both in terms of cost and product as the chemical compound being replaced. Or at least we could make an analysis to show where they would differ.

And I am just trying to figure out, is it going to be serendipitous? Is it going to be on a piece-by-piece basis, or has there been any attempt to try and analyze it that way.

Mr. BERGER. I think Mr. Crowley has done analysis on this and probably would like to comment, but I think maybe the way to look at this is not the list of chemicals, but the usage of them, and probably the top three are chlorine, ammonia and sulfur dioxide.

And so it is I would say from an engineering perspective, it is possible that if we took a national strategic look at those materials, we might be able to come up with a sort of a comprehensive solution.

I don't know if we can do that on a site-by-site basis, though.

Mr. LUNGEN. Mr. Crowley?

Mr. CROWLEY. I think if you reflect back to the example I used in my testimony regarding the HAZMAT car outside the Capitol here and the challenge that poses for the rail industry, for example, half of the toxic-by-inhalation substances that are on the rail are just as Mr. Berger said, ammonia, chlorine and sulfur dioxide.

If you add to that hydrogen fluoride, you are up to 55 percent; so just by getting industry to adopt the liquid version, or less hazardous version, but getting away from the gaseous version would go a long way towards taking your terrorism risk from catastrophic level down to something that is more manageable.

Mr. LUNGEN. Mr. Durbin?

Mr. DURBIN. My concern would be that we are discussing this in a fairly simplistic way. As Mr. Berger, in his testimony, said, the whole idea of looking at inherently safer approaches, designs, technologies, it is a concept, it is a process.

It is an ongoing process, and so while you may be able to find, as you are going through and, frankly, again from a company's perspective, they are always trying to find safer ways of making their products, moving their products, what have you. There isn't a book to go to or a database to go to to say, well, if I am using this, I can switch this out instead.

The application is just as important, obviously.

Mr. LUNGEN. That is what I am trying to get at in terms of writing legislation.

It sounds like a wonderful concept. We would all like to move in that direction. It makes sense. But I don't want us to be writing legislation that seems to mandate the goal, but by the very means of the language we use and the way we articulate it and the restrictive nature in which we put it out there, we actually diminish the opportunity for the kind of ingenuity or creativity that might otherwise be there that would allow us to get to the performance that we want.

And that is what I want to try and ferret out here. It is not an excuse to get away from those things that would get us to the goal in a reasonable fashion, but as quickly as possible in a reasonable fashion.

It is not making the mistake of overregulating in such a way that it seems to be driving us there, but it actually inhibits it from doing that, if that makes some sense to you.

Let me ask this very, very quickly. Mr. Crowley, you expressed and I know some other witnesses have expressed concerns about the exemption in the bill of the transportation of hazardous materials, so let me clarify at the very beginning any access points into and out of a chemical facility, whether they are by road or by rail, would be need to be secured under this bill.

The issue you raise of vulnerabilities of chemicals traveling on our rails and highways is a complex and larger one outside the scope of the bill.

So if that is a given that this bill is dealing specifically with the vulnerabilities of chemical facilities, is there agreement that in addressing the chemical facilities' security, this bill at least accomplishes that to some significant extent?

Mr. Crowley.

Mr. CROWLEY. I think potentially, yes, but the dilemma is if the vulnerability assessment ends at the fence line of the particular facility; and the vulnerability to society exists when a hazardous substance is being transported through an urban area. How do you get to a process where the entire system is considered?

So the dilemma is that if you just have you know, the manufacturer and the user have separate security plans that don't intersect, you leave the rail industry, for example, in the middle, and they cannot fundamentally you know, as I said, the HAZMAT car next to the United States Capitol is inherently insecure. So it seems to me, as long as you have a process where all of the stakeholders are brought to the table and have to address the system-wide challenges of how they manufacture and operate, at that point, you are able to have a process where, you know, safer alternatives are a part of the mix.

Mr. LUNGEN. I take your point.

And I have got other things, but Ms. Sanchez has the time.

Ms. SANCHEZ. I think that was very interesting. And if you have any follow-up, because I am very interested in the transportation, your comment on the transportation issue.

Mr. LUNGEN. Just one thing, and this is what it brings to mind: If we so focus on a static analysis that we say, we are going to make this site so secure and this site so secure, but we know we have inherently hazardous materials involved in the process, we may just be transferring the concern from a static environment to a moving environment.

And so I take your point that, therefore, we have to be sharp about this and somehow integrate all of this. But you have to understand that as we deal with bills in certain ways, we have to take certain segments, and we have to try to do the best job there; and then, hopefully, integration takes place on top, number one.

Number two, I would just say, again it goes to the point that and everybody agrees we can't get rid of all risk and we can't promise our constituents we are going to get rid of all risk; we are going to try to manage risk to the best of our ability.

And when you have chemicals, in some cases there are going to be some inherent hazards involved; and we have to recognize, ac-

knowledge that and deal with it in a way that makes scientific sense, but also in a way that makes practical sense since, as I said at the opening of this, we are a chemically dependent society, meaning that chemicals are an essential part of the way we live, do business, live in our homes and so forth.

Mr. CROWLEY. I positively agree, Mr. Chairman, and I think, from a DHS standpoint, if they are able to make a judgment that a HAZMAT car in the middle of a major city is an unacceptable terrorism risk, they have to be able to both ask a question of the other stakeholders, "Have you looked at another alternative to doing this?" So we get the HAZMAT car out of the center of the city.

I also think that since DHS has successfully established and is using centers of excellence at universities around the country, getting them invested in that research and development effort, so that they can perhaps bring to the equation along with private sector, you know, solutions as we go along, so they are able to say, "Have you looked at this chemical sector; have you looked at that?"

But it is just a matter of DHS has to be empowered to have this kind of conversation as part of a chemical security strategy.

Mr. LUNGREN. You have to realize we are also dealing with DHS, which is set up to deal with terrorism and the threat. We have EPA that deals with safety. And they intersect, but they are separate and we have to understand that.

Ms. SANCHEZ. But I think, Mr. Chairman, that is one of the ideal pieces of our bill is the fact that there is incentive and flexibility, because each plant in each city, where that is located and what kind of chemicals are coming and leaving, makes the need for flexibility so important.

And while we need regulation and we need and I think we do need to have some system of actual punishment for those who aren't really looking at this in a serious manner you know best practices I mean, I would hope that chemical people who are running chemical plants would be thinking about themselves and their own employees, first and foremost. Because, you know, most of them will be at ground zero if something might happen there, versus, you know, the surrounding population where you have to take into account where the wind is blowing and all these other factors.

What do you all think is the greatest terrorist threat facing chemical plants today? And what should we, what should we do about it? How do we address it? And where would such a threat most likely take place?

I mean, if you had to say that you were a terrorist, what would you be looking for? And then, wearing the other hat, what would you put in place today to try to stop or at least stop the significance of an attack?

Mr. DURBIN. I will be happy to take a first stab at that.

Frankly, there is no real clean, easy way of saying what is the threat. We learned we learned almost 5 years ago that there are people out there that are willing to take things we use every day, and take them and use them against us.

Ms. SANCHEZ. But the greatest

Mr. DURBIN. For the chemical sector, I think you are dealing with a sector that has a history and a culture of looking at itself, knowing that we are not only are we critical throughout the economy, but we know we deal with dangerous things, which is why we have a culture of safety. And, in fact, we are the safest manufacturing industry in the United States.

Getting the information on what the threats are, that is something we have built in in our building a good relationship with the Department of Homeland Security and the other intelligence agencies, so that they are giving us the kinds of threat information we need, so that going back to look at our own vulnerability assessments has some meaning to it.

And we can put the best security around a facility that we want, but if it isn't addressing what the threats are. It doesn't help us much.

As far as what you could be doing, you are doing it. This bill, this approach, is what is now going to ensure that we have the entire chemistry chemical sector taking the same kinds of aggressive steps that, again, our members and others have taken to make sure that not only at our facilities, but the products themselves, the interdependency with the other critical infrastructures, are all taken into account; and we make sure that this sector is adequately protected.

Ms. SANCHEZ. Anybody else?

Mr. BERGER. Your question reminds me of a story in World War II, how one of the ways that the U.S. and the allies disabled the German war effort was to target the factories that made ball bearings. And by doing that, they ground the industrial machinery of the country and the war machines to a halt.

And so the thing that would keep me awake at night would be the facility, or group of facilities, that if taken out of service, even without any loss of life, would cripple the economy. And that could include, you know, a group of refineries or some other more esoteric look at the supply chain.

You know, that type of thing could affect the entire country and the entire economy; and so I think that would be my main worry. And I guess if I were a terrorist, that is where I would be, that is where I would be looking.

Mr. BALBONI. The RAMCAP program has postulated threats that they consider and then they do their analysis, and out of those, the two that are the most threatening are the attack on a facility next to a large population area with a vehicle-borne improvised explosive device.

But just as threatening is the theft of material from a site to be used in another situation, say, in a subway system.

And those are two totally different threats, two totally different responses; and that is the reason why the flexibility contained in this bill is so important. It is not just about creating a fortress around a chemical facility. It is making sure that people don't get in there, and either from within or from a cyber attack are able to take material out of a facility and use it somewhere else.

Mr. CROWLEY. Let me echo what the Senator just said, and if Mr. King were here, he probably would be pleased to hear this.

From one standpoint, if you are looking at a catastrophic event involving a chemical release, in my judgment, terrorists are going to New Jersey with the intention of harming Manhattan.

Picking up Mr. Berger's point, if you are looking at a way in which you can say, oh, use our dependence on oil to handicap the economy of the United States, you probably would go where Ms. Jackson Lee's district is, or you would go to California and try to harm the Ports of Long Beach and Los Angeles.

Now, back to the question of inherently safer approaches, does that mean that as a society we are going to stop driving cars? No. So there you have to look at physical improvements, and this does a fairly good job of doing that.

But back to the New Jersey point, if there is a way in which you can take as many of the New Jersey facilities off the terrorism target list by making them relatively more benign regarding a release that would cross the Hudson to New York, that should be either in a Federal statute or should be available to the States of New Jersey and New York to pursue as they choose.

I think one last point would be, either way, I think the government has to make sure that it is providing incentives where the market goes only so far, so society's interest goes farther, so I wouldn't lose sight of the fact that this is controversial, that we need to make sure that a range of areas, including chemical security, that that is a grant program that incentivizes of the private sector; and municipalities that might operate waste water and water treatment facilities, to protect them, to get them over the hump, to nurture the changes necessary to make us safer.

Ms. SANCHEZ. Mr. Chairman, just a last question if you will allow me; and I think I want to direct this to Mr. Durbin.

Has the industry, since 9/11, changed the way it institutes security measures with respect to maybe an insider job, of taking something from a facility that can be used? Or do you think that you always had tight security with respect to employees, that it hasn't changed much since 9/11?

Mr. DURBIN. Well, I would say, obviously security concerns didn't start on 9/11, and certainly that is certainly an area where our member companies were very focused with regard to theft of material by employees or others.

I think, again as I noted in my testimony, we just recently saw a paradigm shift in the way we look at security after 9/11. Was that heightened? Absolutely. Do we have guidance together? We have put together with our members as far as even trying to hire contractors and the steps that you need to go through to make sure that the people are going to be on your facility, whether they are your direct employers or your contractors, are you looking at them much more closely?

So, yes, it was clearly a concern beforehand, but as with everything, you know, since 9/11, there is a heightened alertness; and we have been putting together tools and resources to help our members do even more in that area.

Ms. SANCHEZ. Great. Thank you.

And I might just add something to the record, Mr. Chairman. You know, this whole issue and we have been looking at it trucking at the ports, and I mentioned that our truckers are probably some

of the worst paid people, you know, a lot of independent contractors, et cetera. And I know that we have got HAZMAT requirements if people want to transport that type of thing, but it is also another very vulnerable area, the trucking of these substances and the fact that at least the truckers in California aren't making a lot of money, and there is a maybe a very huge incentive for some of this to go badly for us.

Mr. LUNGREN. I thank the gentlelady. We will continue our discussion of that.

I want to thank the witnesses for their valuable testimony and all the members for their questions. This panel has been very, very helpful. I apologize for the delay we had, but we had a series of votes on the House floor and I thank you for your indulgence.

Members of the committee may have some additional questions for you in writing. If they do, we would ask you to respond to them in writing. And the hearing record will be held open for 10 days.

Mr. LUNGREN. Without objection, the committee stands adjourned.

[Whereupon, at 12:25 p.m., the subcommittee was adjourned.]

