

Center for American Progress



INAUGURAL EVENT: CRITICAL INFRASTRUCTURE SECURITY SERIES

“NEW STRATEGIES TO PROTECT AMERICA: SECURING OUR NATION’S CHEMICAL FACILITIES”

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FEATURING:

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NATURAL RESOURCES DEFENSE COUNCIL’S
PUBLIC HEALTH PROGRAM**

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P. J. CROWLEY: Welcome to the Center for American Progress. My name, as you can read right there, is P. J. Crowley. I am a senior fellow and among other things I direct the homeland security program here at the Center. And welcome to what is the first in what will be a yearlong look here at the Center in critical infrastructure security and also the role of the private sector in national security, given this so-called war against terror that we are engaged in.

Certainly the ongoing threat posed by al Qaeda has required us to adapt our concept of warfare and what needs to be done to protect our people, our society, and our economy. As a result, we are looking at everyday risk in a very different way. Warfare is no longer a matter of distant military battlefields. You know, the president has called Iraq – rightfully – the central front in the war on terror, but as that we see by the strain on our military forces, we can't stay of the offensive indefinitely. Just like any field of endeavor, a good offense also requires a very credible and effective defense. And so we come to look at homeland security and a major component of homeland security is critical infrastructure; critical infrastructure protection, critical infrastructure security, however you want to term it.

Certainly there are reasons to be concerned about some of the trend lines in this war on terror. On the one hand we face al Qaeda and its affiliate networks, who are continuing to be very interested in the kind of tragic and spectacular attacks that we saw on September, 11th. At the same time, as the National Intelligence Council – the think tank for the CIA has termed it, we have as new generation of jihadists who are learning a very different trade in Iraq and so you are seeing the emergence of very sophisticated but relatively low-tech tactics involving these improvised explosive devices. So as you can tell if at some point in time you see these trend lines merge for an open society such as ours this has – this poses some very significant potential risk.

And so we turn to the issue of critical infrastructure security and clearly the private sector has to be a full participant in this process for the very fact that 85 percent of our critical infrastructure rests in private hands.

A second dimension of the real requirement for meaningful private sector participation is the economics of homeland security. If you look at national security spending writ large, for example, we will spend this year roughly \$600 billion on national security. Only 6 percent of that money will be dedicated to non-military dimensions of homeland security. That is a relatively limited amount of resource to a very complex, very detailed, very expansive problem.

And so now we – you know the question becomes what are we doing? What can the private sector reasonably do? How do we better define the roles, responsibilities, and commitments of resources going forward to accomplish this task? And if you look at the morning paper, for example, you recognize that we are only beginning to deal effectively with this issue. Where is the necessary partnership among federal state and local governments and the private sector today? Well, one of the places they are is in district court, where today or it may be tomorrow a district court judge will rule on one of the first of the competing interests between security and commercial interests over rail security here in the District of Columbia. And by

way of a commercial we will hold – you know, this is – in one sense is the supply and demand discussion of that equation. On April 21, we will hold a second panel here at the Center to discuss the transportation element of this whole question.

But given the significant risk of catastrophic terrorism, we at the Center for American Progress have encouraged a strategy that places the greatest emphasis not just on reducing our vulnerability to terrorism, but looking at ways in which we can eliminate these risks entirely. And we are pleased this morning to have Dr. Linda Greer here, and she is in your packets. You will see a paper that Linda has done on our behalf, which advances a strategy of inherent risk reduction; first and foremost replacing, where possible, dangerous and toxic material with less hazardous materials and in a sense removes facilities that employ these materials from a terrorist target list.

We recognize that this is not easy, it will not be cheap. And so we have understand – you know, in light of 9/11 how has the private sector responded already to this challenge, what are the reasonable limits of what the private sector operating in competitive marketplaces can do, and what is a constructive role for the government – particularly the federal government – moving ahead?

And we are very, very please to have Jamey Conrad, associate counsel of the American Chemistry Council with us today to discuss this as well.

One word on process: we will bat these issues around as a panel for about twenty minutes and then we will open up the discussion to the floor for questions. To the extent that we might have media representatives here this morning, we will probably call on you first for any questions that you have. Please, when we direct our questions or when we open up the floor for questions, allow the time for the microphone to catch up and please identify yourself and your affiliation before asking your question.

So let's get to the topic in hand. And Linda, since you are the author of this paper and we deeply appreciate that, first of all outline the major features of this inherent risk strategy.

LINDA GREER: Okay, yeah, this is sort of a – this is one of those issues that's interesting to me because there is not too much disagreement that there is a potential risk at chemical plants. I don't think there is any disagreement by that either on our side, the chemical industry side, even in the administration. The debate has been really just what do you do about that, as opposed to whether or not this is something we need to address. So that's sort of a step up on a topic compared to a lot other work that I do where maybe 90 percent of time is about debating whether there is a problem to do something about in the first place.

We differ from many people in the chemical industry, though, in sort of the solution that we would recommend for addressing this risk. There are really two ways go on this and it's not that it's one way or the other, but just to extent to which you rely on one or other. One is to enhance security, which is I think the direction that most of the chemical industry has gone to. This is what I call the “higher fences, meaner dogs” – guard dog approach where you take often very necessary steps to fence a facility, increase surveillance, check the credentials of people working within the plant to make sure you know what's going on in there; actually, many important steps that are security enhancements that have needed to be done for a while and of course the priority for that came up.

But what we are really recommending in this paper instead is to reduce the attractiveness of the target. So rather than security keeping people from getting to the target, what I have recommended is decreasing the target and, in fact, hopefully eliminating the (part?) target wherever possible. And we are recommending a hierarchy of approaches, recognizing that our one size does not fit all that, to coin a popular term. But there is a hierarchy, in our view, in desirability of what you could really do to address this problem.

The first – the top tier of hierarchy would be to substitute the acutely toxic chemicals at a site wherever possible. And there are some cases where these substitutions are actually straightforward and easy. The number one example of that is chlorine gas which is used not just at water treatment plants, but also in industry both in manufacture of you know plastics, pesticides, but also for disinfection and cooling towers, et cetera. So that's my sort of poster-child example of easy substitution, but there are many, many other chemicals that are acutely toxic that are used in manufacturing as seed stocks and that's where the going gets a little more complicated, but it's still the best thing that people can do.

Assuming that that's not possible, we would recommend it drop down to the second tier of – in the hierarchy, and that is some thing called just-in-time manufacturing. This is not, again, a new concept for the chemical industry. Just-in-time manufacturing is used where if you have a very dangerous chemical, you essentially manufacture it the second before it participates in the second reaction. So you take some thing like phosgene, which is a nerve gas, for reasons outside of 9/11 many facilities don't want to have a giant tank of nerve gas sitting within three miles of a major population center. What to do about that is to set your process up such that essentially the moment the phosgene molecule is manufactured it then goes downstream into the next stage of the reaction.

So first try to substitute the chemical that you are using in the first place. Second, try to manufacture it essentially instantaneously right before you use it. The third and fourth ideas in our hierarchy are much less desirable, but still do go the heart of reducing the attractiveness of the plant as a terrorist target.

The first one is inventory reduction and/or inventory fractionation, which means rather than storing hundreds of thousand of pounds on site, you either decrease the amount that you have in storage or you put that in three or four different places so that there is not such a large target for people to aim at to hit and the potential damage that they are able to cause would be that much smaller.

And then the final last step in our hierarchy, least desirable of all, would be hardened storage, hidden storage so that these tanks are not in clear view through aerial photos on such software as MapQuest, where I promise you these things are distressingly very easy to see. And with just a little bit of chemistry background if you know what a factory is manufacturing, you'll know what chemicals are apt to be there. You see their tanks; it doesn't take too much to just attack in the right places.

So in sum what we are recommending is inherent hazard reduction to eliminate or decrease the desirability of the target, as opposed to enhanced security measures that would disable terrorists from easily entering the plant to attack the chemicals that are there.

MR. CROWLEY: Oh, thank you very much. I should mention that in your packets there are detailed biographies of both of our distinguished guests here. You know, Linda does have a day job as a senior scientist that the NRDC.

And I'll now turn to Jamie. In his bio, he – Jamie cautioned me that – he said, “You’ll see in my bio that I was a part of the Bush-Cheney transition team for the EPA, but I just want you to know that I was the Democrat on that council.” (Laughter.) To which I would say, the advantage here is this is a breakfast meeting, so there is no salad dressing, so I think the audience is not as well armed. (Laughter.) Had we have a luncheon meeting, I think you might have greater cause for concern.

Jamie, let’s turn to you. I think probably couple of things – is there a need to define the chemistry – the chemical industry here as to what we are talking about, and how they saw 9/11, and your response to Linda’s proposal, and to what extent is the industry already looking at these things and perhaps already doing some of these things?

JAMES CONRAD, JR.: Sure. Well, I think is the 30-second response to Linda’s report is that there is essentially no disagreement at all between us as to what inherent safety is and how you do it and the importance of it. The disagreements really have to do with the characterization in the report of the industry’s attitudes towards that and of how well we’ve implemented it and the feasibility from an administrative or legal or practical perspective of mandating that sort of thing.

And some of those are disagreements – some of those I think, frankly, are just statements that are wrong and if we had seen it earlier we probably could have pointed some of those out, but in terms to inherent safety –

MR. CROWLEY: That’s why we are here.

MR. CONRAD: We did – I mean, our folks really did write the book on inherent safety. All of the authors listed here of this book were employees of American Chemistry Council companies when they wrote this book, which for those in the back, *Inherently Safer Chemical Processes: A Lifecycle Approach*, published by the American Institute of Chemical Engineers, Center for Chemical Process Safety in 1996.

It’s probably the leading monograph on the topic and it goes through – it’s got a four-part hierarchy. The hierarchy is slightly different. There the first step is minimize, which is to use less. The second step is substitute, which is to replace the problematic chemical with a less problematic one. The third one, which is moderate, which is to use less hazardous operating conditions, lower temperatures, lower pressures, and so on. And the fourth is simplified. If you have a system that doesn’t require an operator to turn it off if something goes wrong, it’s inherently safer.

And our folks – our process safety engineers have been doing this sort of thing since the beginning and they do it all the time and its an inherent part of the job that they have is part of their mission, and it’s one of the reasons that the chemical industry is the safest manufacturing industry in the country by substantial margin.

Inherent safety has been part of our responsible care set of management practices for health, safety, and environmental improvement since they were initiated in 1989. It’s actually an explicit part of it. And inherent safety is part of the responsible care security code that we adopted about going on three years ago. And

the security code talks about facilities implementing security measures commensurate with risks, taking into account things like process substitutes, material substitution, process changes. So it's part of the code that we have been implementing right now in the area of security.

And our folks have implemented inherently safer approaches as part of putting the security code into place. We have got one company that used to make a chemical in two different plants and they decided that the risk picture at one of those plants was significantly more dangerous than at the other and so they stopped making the product at the first plant and they moved all the operations and they are making only in the second plant. We've had companies that have reformulated products and made them out of different chemicals so that they could stop using a chemical that they thought was too hazardous. And we've had chemical companies move tanks to areas where they couldn't be seen as easily from the road.

And you don't only have to take my word for it on Monday the General – the Government Accountability Office – the new name –

MS. GREER: Yes.

MR. CONRAD: – issued a report on protection of chemical and water infrastructure for Congressman Byrd – Senator Byrd and it lists the types of security enhancements that chemical and water treatment plants that they visited implemented. And they went to 10 chemical plants and seven of the 10 are reported by the GAO as having made process or inventory changes. So statements in the report, like “up to this point, however, the chemical industry has overlooked or ignored these techniques” are obviously not correct. And I think as we'll get into it the issue isn't really whether we should do it, it's only a matter of to what extent it's mandated I think.

MR. CROWLEY: Well, let's stay right there because we are in the midst of a war; we have what amounts to right now a voluntary approach. If we accept the premise that industry has taken a look at some of these things, to what extent does industry require clear, federal standards and mandates in order to get from where we are to where we need to go? And maybe – you know, Linda mentioned chlorine as being a great example. You have some instances, such as here in DC with the Blue Plains plant that has made the transition from chlorine gas to industrial bleach so that you go from an inherently hazardous process to now a process that's not likely if there's a rupture of some kind to leave that site.

Can private industry in competitive environments, knowing there are up-front costs, make the necessary changes on their own or do they need help from the federal governments, and if so, what form of help should that be?

MR. CONRAD: Well, (unintelligible). I might say it's sort of a false premise of the paper, which is that the industry and the administration really have adopted a purely voluntary approach at this point. In fact, for the last two and a half years since Whitman and Ridge sent a letter to the *Washington Post* it has been the official position of the administration that it supports chemical security legislation. And I think this is an important opportunity now for folks to call them on those statements and to urge the administration to act on that position because it is the official position of the administration and it's clearly the American Chemistry Council's position.

We have for over two years officially been in support of national chemical security legislation that would set clear standards that all chemical facilities would have to meet with respect to security and would require facilities to conduct vulnerability assessments and to implement security measures and would provide oversight inspection and enforcement authority to the Department of Homeland Security to take action where companies don't do what they are supposed to do.

We have, further, for the last several years been supporting efforts in Congress to get that sort of legislation enacted. We supported the Inhofe bill; and say what you will about it, the Inhofe bill for at least the last year or so has included a requirement that facilities considering inherently safer approaches. And actually, what that is and what consideration means is fairly well spelled out in the law and actually provides a fair amount of oversight and substance for DHS to implement.

So we are actually are in favor of mandatory legislation and we are fine with it having a mandate for inherent safety to be considered as a part of it, to make sure that the other however many thousand chemical plants, depending on how you want to define it, that don't belong to our association take the same of kind of steps that we have.

MR. CROWLEY: I think we're at two junctures here. One, Jamie has said they are leading the way on the private sector front, a lot is been done. How do you respond to that first of all?

MS. GREER: Yeah. I mean, first of all I'm sure that there are places where good things are being done. I'm not questioning that in the least. However, I think what we need do is sort of a take stock of – you know, how do we make sure the right things are being done at the right places as opposed to has anything been done. That's sort of a low standard.

And so I think you immediately sort of fall into the question that P. J. asked, which is should this be mandated, should this be voluntary, and what really is the difference between the two? So let me tell you my view of that. The problem with this voluntary approach, and for that matter the problem that we would still see under Inhofe-type legislative language that has people consider things, which, you know, I have considered many things for this coming weekend, for example, that I am not intending to get done. (Laughter.)

The first thing is that as a matter of sort of national strategy you need to make sure that the right places are going to do something, right? Some places are much more dangerous than others and we all know, and I don't think anyone would disagree, that which companies – which factories are doing something about this right now probably depends in part on the corporate environmental structure, probably the personality and proclivities of the plant manager and other sort of squishy things that is not where you want your national security efforts to fall.

And in some cases – let me tell you a quick little story. I did a project with Dow Chemical on pollution prevention not having to do with security risk, and I will tell you that I sort of would meet with the business mangers of Dow and I would say, "You know, you are the largest emitter of (tiling?) in the state of Michigan." And they would say, "We are not." And I would say, "Well, according to TRI that you report and everybody else reported, you are." The point being that although they knew their operations very well, they really had no clue as to how big they were

compared to others. So the first problem with this voluntary approach, then, is who is volunteering and what are they volunteering to do?

The second problem, then – and just to emphasize, they may not know their relative risk. They may not realize that they are the largest storer of X, Y, or Z in the state or the region. They may not realize that they are close to a higher population than anybody else that stores this chemical. They may not appreciate that they are near a site of historic importance that then might raise terrorist interest. All these things that you would really want them to think about, they may think about this and they may not think about this, and you may not get the right volunteers stepping forward to do the right thing.

Now, once they want to do the right thing – you've got somebody who is motivated – the question then becomes, what decision-making framework are they operating? And under a voluntary decision-making framework I don't think anyone would disagree that the first thing they need to do is they need to weigh the cost of implementing whatever piece of this hierarchy of risk reduction they like against their perceived reduction in risk. So it's sort of a cost/risk/cost-benefit approach. That's what they are going to think about, right? They are not going to want to spend a \$1 billion on something if they don't think it's a big risk. They are going to have to make within their own corporate structure, within their own plant budget, their own decisions about how much is this really worth it.

Again, because I think in cases they are accustomed to their operations they won't necessarily realize whether or not they, as far as an analyst would be concerned, would be the number one place to do a big thing as opposed to a small thing because that's just not in their job description to understand their relative importance in the world.

Now, second, after they are weighing the costs and the benefits under voluntary approach, I think we have to agree that they presumably are going to have a limited security budget – right? – for their plant and so they are going to have to weigh this against other things that they want to do and need to do that are expensive. This, by the way, the fact that this cost money I think is actually a real call for mandating this because it would level the playing field among competitors so that you wouldn't just have to have somebody decide out of you know philanthropic interest to do this; that they would do it and put themselves at a competitive disadvantage. If it was mandated then their competitors would have to do the same.

So, finally, then we would have to hope that this plant and these people happen to have the sort of technical background and motivation to go through the hierarchy starting with inherently safer chemicals, and we just know as a matter of practice – you know, during my day job, where I work on chronic releases of chemicals that cause cancer and other problems as opposed to terrorism, we know as a matter of fact that the chemical industry generally speaking is really not that – doesn't give a high priority to substituting chemicals in all these cases. That's why still today we are relying on very acutely toxic chemicals for manufacturing everyday products that we use.

So to me the problem with the voluntary system, then, is that you are not sure you get the right volunteers and they are not operating under a framework where they can make the best decisions that somebody putting together a sort of comprehensive chemical security plan for the country – the sort of overview that they would have and the expertise that they would bring.

MR. CROWLEY: I think in fairness since Linda brought the concept of a national strategy, one of the pieces that is sorely missing and badly needed, is in fact a comprehensive national infrastructure protection plan, which has been pledged by the Department of Homeland Security and has not yet emerged.

They released an interim curriculum infrastructure plan in February that is more like a description of a process. That's a good start, but three years after 9/11 we really don't have the fundamental and comprehensive assessment of threat and risk and a detail regarding what needs to be done, who gets to do it, and what are the resources that are necessary to the task. So in some sense there is a void here created, I mean, in fairness in part by the tremendous challenge that DHS has to both create itself as a cabinet-level department and in fact then go about determining how to better protect our critical infrastructure around the country. That still is something that remains to be done and I think the latest estimate is we may not have an effective national infrastructure plan for at least another two or three years, which is a really major cause for concern.

Now, both of you have seem to favor mandates of sorts. You mentioned Inhofe. In your paper you mentioned Corzine. Now, you're for federal standards, but you will – you know, the ACC and others opposed Corzine. From your perspective, what is the difference between what was proposed in Corzine, what was proposed in Inhofe, and oh, by the way, even Inhofe didn't get to the floor of the Senate and get debated.

MR. CONRAD: Well, I think it's probably most instructive to look at Corzine and Inhofe in their most recent forms, which were floor amendments to the intel bill in October of last year, and those bills are almost verbatim the same bill. The only significant difference between the two of them is whether the Department of Homeland Security in the final analysis has the power to override – in effect to override process safety decisions at plants and say, "No, we disagree with the way you considered it and we want you to do this instead."

So I think it's probably important to talk a little bit about. That's really the nub of the issue that we are talking about here is when is it appropriate and what are the costs and benefits of having the government being able to say, "No, that's not – you shouldn't make it with this chemical. You should make it with this one over here." And, you know, Blue Plains is the poster child – kind of the orphan poster child for chemical substitution, but it's important to bear in mind Blue Plains is not a chemical plant, Blue Plains is a sewage treatment plant. It uses chlorine to disinfect sewage. It's a pretty simple, basic operation. They all do it the same way.

The paper does recognize that when you start getting into making things it gets a lot more complicated as to whether – you know, if you are making – if you're Eli Lilly and you're making Cipro and you are using methylene chloride or something whether you can just substitute methylene chloride with something else and still have Cipro come out at the other end.

It's probably worth spending a little bit of time on the question of inherent safety because it's in most cases really quite a challenging process because to do it right you've got to take into account – you've got to take a holistic approach and consider all of the possible risks posed to anybody who is possibly involved. In other words, you can reduce inventories of chemicals at a plant and as a result have more frequent shipments of the chemical in and out of the plant and you may reduce risk at

the plant, but you may have increased risks in the mode of transportation, and those rail cars or hundred-ton containers may actually go by more people than are located near the plant.

The smaller the containers of chlorine that you use, the more frequent connections and disconnections. If you replace a 90-ton rail car with one-ton containers, that's 90 times more connections and disconnections, which is where accidents tend to happen and you got employees exposed to hazards.

There are also questions of – that ultimately, I think, are subjective, which is say you have a chemical which is toxic by inhalation. Well, you could replace it with one that's not toxic by inhalation, but it may pose developmental toxicity issues – we haven't really figured that out – or perhaps it's a suspected carcinogen. Well, EPA after 35 years of existence still hasn't figured out the calculus that says how do we balance carcinogens against non-carcinogens and where do the two kind of balance out, so all those issues are particularly challenging.

And the most challenging, I think, is the potential in doing these sorts of decisions to not be aware – basically for unintended consequences; to not realize that you are creating a particular hazard. For example, underground storage tanks and chlorofluorocarbons were all adopted as inherently safer approaches of storing gasoline and refrigerating products because you can't drive a truck into an underground storage tank and make it blow up. It's safely underground and you can't light CFC's on fire. They don't burn, unlike ammonia or other kinds of refrigerants.

It was a long time later that folks began to realize that, well, there's these other problems we haven't quite foreseen. And the folks who would be the recipient of these decisions, and thus responsible for any consequences that turn up later on, are folks – are really ultimately not comfortable with an approach that has the government making these decisions; essentially somebody sitting in office with the stack of applications every day, looking at some and saying, "Well, I think you wouldn't need use chlorine. You could use methylene chloride" and that's it. I think that's really the nub of the issue.

MR. CROWLEY: I mean you're quite – just to press for a second, you are quite right that changing, as you say, may create increased shipments which puts additional stress on the transportation system, but doesn't that point you back to to the extent that you can do material substitution you take the entire risk off the table? So whether you are having a rail car go through the District of Columbia within yards of the capital, you know X number of times versus Y number of times, if you can take that process off the table you have made – you have taken care of a significant dimension of your terrorism risk hazard.

MR. CONRAD: Well, it depends on what you've substituted your initial product with. I mean, if you substitute it with water and you can make things out of water that's great, but I think in most cases what you'll have substituted it with is another chemical that has its own set of hazards. And you are having to sort of balance, well, we have toxic by inhalation hazard is this, whereas the other one is this; the cancer hazard is this, where the other one is this. I mean there is whole host – there aren't very many chemicals – I mean, there are none really, that have no inherent hazard at all.

MS. GREER: So I think it's – several things come to mind. The first is that a lot of these issues are, I think, fine business-as-usual issues that have occupied me in

my day job for a long time, but the fact is – you know, let's take stock of the risk that these facilities are posing, okay? You know, EPA has their list of 123 facilities that pose acute risks to over a million people. There are literally thousands of facilities that pose risks to over 1,000 people. You know, compare that for one minute to just the number of people in the World Trade Center and you can see we have a real problem here.

The next thing that comes to mind is this – there are 75,000 chemicals in commerce, but there are very finite number of chemicals that are actually interesting to terrorists, so we are not talking about a to-do list here which looks that every chemical, including methylene chloride for example, which is used by industry and saying, “We need you to substitute with something else.” There is, I would wager, less than 50, maybe less than 25, chemicals that when you look at their acute toxicity – that is, you will drop dead breathing this in a short period of time – and you look at their volatility – that is, they will create a plume, a toxic cloud that will leave the facility and threaten this large number of people – you are down to a fairly manageable list. Okay? So we are not talking about something that is absolutely important. And, in fact, in our report we create a very simple equation that says, “Look at the toxicity, look at the volatility, look at the amount stored, and you've got yourself a priority list of what to do.”

So I don't think making – this is not an impossible task. We are not here to say that every chemical currently in commerce has a safe substitute, but we are here to say that there are some chemicals in commerce that really need safer substitutes. In fact, we recommend government support for research and other things to develop substitutes for some of the chemicals where no substitutes are available.

The other thing that I think is very important, which was sort of touched on only lightly, is the difference between the Corzine approach and a sort of more voluntary Inhofe approach. That difference that you've pointed out is the crucial difference. You know, it's not just there is only one difference. It is to me the difference that matters because what we are saying is – and in fact, currently under this sort of ACC approach, which I hate to criticize, in fact, because ACC is so far ahead of the rest of the industry, but to me it's just not satisfying to have companies do these vulnerability assessments, decide themselves what they think are the best things to do, and then take those actions; as opposed to having somebody else come in and say, “As a matter of public safety, that is not enough.” It is not just your personal view whether or not you have done enough, it is a matter of public safety. This, to me, is critically important to the public health of the nation, so why would I leave this to someone's own – you know, design of their own sort of security plan?

And then so the argument about whether in the end public health officials or public safety officials should have the final vote or whether the plant should have the final say about what they need to do, what severe vulnerabilities really are and what they need to do about it is the crucial difference between a Corzine type of approach and an Inhofe type of approach. And just telling facilities to consider doing better things is not going to cut it in our view.

So to me it's staggering to sit around and think about the number of places where these risks are sitting, but it's more staggering to think how little of the easy things to be done have been done because that's the frustration. It's always hard to do the hardest things. I used to have this problem and I worked on the Superfund program. What made me nuts was we couldn't get the easy things right, and that's how I feel about some of this; that we can't – you know, there are so many places

where we could do things that let's not just point to where it's going to so difficult under business unusual and sort of develop a more can-do attitude.

MR. CROWLEY: One more question here and then we will open it up to the floor. The other dimensions – let's assume for a second that there are entrenched interests in Congress where nothing is ever going to pass. So, the second dimension –

MS. GREER: I don't know why you'd want to assume that. (Laughter.)

MR. CROWLEY: You know, I mean, it's one thing to –

MS. GREER: It's a hypothetical.

MR. CROWLEY: It's one thing to state that an industry is in favor of mandates and if there is another congressperson up there who says "Over my dead body this is going to happen," then we are where we are. So the other dimension of your paper is that assuming that there is nothing forthcoming in the way of new authorities, your basic premise is that there are already existing authorities in the Clean Air Act that would allow us to move forward with an aggressive program. Why don't you describe that briefly?

MS. GREER: Right, and it was interesting to me that both Whitman and Ridge thought so too, so that this wasn't one of those way-out-there ideas of mine that there were existing authorities. I have actually – the attorney I work with, John Divine (ph) in the audience here, who has really done a lot of the legal work and the policy work and the Hill work on this, so I may have to call upon him if this gets too legal, but the fact of the matter is that there are existing authorities under the Clean Air Act and under the Right to Know Act that could be used.

There is, of course, a crucial difference between having the authority to do something and having the mandate that you have to do something. Okay? And so the authorities, in my humble view, are absolutely there, but it is not a requirement and I think that we have seen now – we have the track record that under existing authorities where there was a will there would be a way, in our view.

MR. CONRAD: Well the paper's called *New Strategies*, but in fact the 112R strategy is really kind of an old strategy. I mean, the Clinton administration in implementing 112R in its first implementation in the mid-'90s proposed requiring inherent safety as part of the RMP program. And ultimately (Administrator Brown?) decided that that wasn't a wise way to go.

There is the additional question of whether that authority can be interpreted to apply to acts of terrorism and there is a letter from Mr. Tauzin and all the other subcommittee chairs of Energy and Commerce, which is the committee of jurisdiction, declaring that in their view it clearly doesn't, and so there is that obstacle to overcome.

Richard Falkenrath, who was the Deputy Homeland Security Advisor to the president until recently, described that scenario and said that there were serious doubts about the applicability of the Clean Air Act and it was seen as an excessively muscular interpretation of a single provision that was certain to be challenged in court and thrown out. It was better approach to get the authority for security regulation put in DHS. And I suppose – if these are sort of concluding remarks before we have questions and answers – we can debate these questions for long time, but it's been

three and a half years now since September 11th and given the current political makeup of the White House for the next four years and Congress for various foreseeable futures, I think we need to consider whether it's better to have nothing rather than something that would be pretty good, which should be chemical security legislation which could get passed in this Congress if we put our minds to it.

MR. CROWLEY: But then what is the role for government? If we are not going to get legislation and if you resist a muscular interpretation of 112R, then – and assuming for the moment that we may well be better than we were on September 11th, but we're a long way from having reduced, if not eliminated, clear vulnerabilities that if terrorists exploit for catastrophic terrorist purposes – you know, threaten our economy, threaten our society, threaten our populations, what – you know, and establishing a premise that in the competitive market environment the private sector can only do so much or an individual plant can only do so much where economically it's not feasible for them to get over the hump.

What does the industry need from government? What does the industry need from DHS to get from here to here?

MR. CONRAD: Well, at first I should respond to a little bit to a point that Linda made a bit earlier. I think even and under an Inhofe approach you would have the kind of synoptic perspective that – of one central agency doing, in fact, what DHS has been doing now, which is to really say which are the facilities, chemical and otherwise, that either need to be protected because they are so crucial or pose risks to the greatest number of people and visa-versa.

I mean they have those kinds of lists in hand now and under that sort of statute their judgment about how much inherent safety is being considered and whether security's been adequate and so on would be informed by that sort of thing, so that they are not – it wouldn't be merely kind of looking at each individual filing in a vacuum.

I think that if you look at the folks that have really studied these questions a lot – I mean, I think of two examples in terms of what the government might do. There was a discussion that the American Chemistry Society held on the Hill – a Hill legislative briefing on security issues and inherent safety in December of '02 with Lynn Goldman, who would be assistant administrator of EPA under Browner, and she basically said that she thought inherent safety was an excellent idea and that the government's role in the use of inherently safer technology should be in education and research. She's paraphrased here as saying that regulatory oversight is unnecessary, and I've heard her talk and she basically said she didn't support a regulatory approach. Sam (unintelligible) with the Mary Kay O'Connor Process Safety Center with the Texas A&M University published a white paper which I think may be in the book.

MR. CROWLEY: It's not.

MR. CONRAD: It's not in the book, so it's going to be – and he essentially says – I'll just read from the conclusion – “Two, the complexity of process plants essentially prevents any prescriptive rules that would be widely applicable. At most 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 of unavoidable technical and economic issues.” And what he goes on to say really is that there is not now at

present a reliable and robust methodology for doing inherent safety analysis, but that there could be; with some limitations about some of those subjective issues I raised before, there could be such limits – such methodologies. And the Mary Kay O'Connor Process Safety Center is currently developing a method to measure inherent safety using fuzzy logic mathematics (he says?).

So the role of government is in supporting research in this area and in improving the quality of scholarship and engineering analysis in the area of inherent safety so that people can make better and more informed decisions, both in private sector and in the government.

MR. CONRAD: But it sounds like if government is doing research to produce potential material substitutions does that necessarily mean that in all cases industry will adopt those substitutions without some sort of either mandate and/or grant program so that whatever up-front costs, you know, to such a change would be more likely to be adopted.

MS. GREER: That's right. I mean, I think the research is important and I think there are uses right now of acutely toxic chemicals where there are no substitutes. And so, in fact, that's why we have the hierarchy as opposed to our one idea of the thing we wish everybody would do right away.

But it's also true right now that different – there are other examples where different companies manufacture the same product with different ways. Okay? And sometimes it's a matter of one company uses "Well, this is not a terrorist," and one company uses methylene chloride to blow polyurethane foams and another company uses carbon dioxide. Okay? Well, that's in my regular day job. That's a huge difference in terms of which chemicals are coming out of that plant. So there is already within industry, for some cases, safer production technologies and less safe fund. That's an area where a simple sort of inspection program where EPA or the state agencies would send people into these plants and say, you know, here is the 10 plants that manufacture X; here is the different ways that they do it. What's wrong with trying to change over – you know, you plant over here that is so close to a population area, et cetera. So in some cases we already have these substitutes, but it is a voluntary matter whether or not companies are using that approach versus another approach.

The other thing is just that if you – again, if you – you know, there are ways to attack this problem. If you start with the 25 or 50 most problematic chemicals, you look at their largest uses – you know 50, 60 percent of that chemical is used to manufacture nylon, then you can direct your inspections, your attention, the government's expertise, et cetera, right to these areas where you feel like you have some room to move; where you know there is alternatives. The alternatives aren't being used in the whole industry, et cetera, et cetera. So it's not to deny that there will be cases where research is necessary, but really we are already in a world where there are different manufacturing approaches for some of the same end products.

MR. CROWLEY: Antoine will now move to the floor for questions.

Yeah, again, wait for Antoine to catch up with you. Please tell us who you are and who you represent, and if there are media here present will give you the first option.

MR. CONRAD: And while Antoine is on his way, if I could get a last word (laughter), the proposal that Linda is adopting – is proposing, while I think superficially kind of attractive really is based on sort of the old view of administrative law as administrative agencies with these technical experts who can understand subjects and make wise decisions and – which is kind of the FDR, New Deal kind of concept of administrative law and how that came along, but –

MS. GREER: I always thought of myself as more useful. (Laughter.)

MR. CONRAD: But I think if you look at the practice of administrative law and what folks do in agencies what it really ends up requiring is a bunch of folks in agencies – it bucks down from Congress who ought to, I suppose, be making these kinds of decisions to agencies folks the job of interpreting statutes about feasible, cost-effective, not unduly feasible, not unreasonably cost ineffective, and applying those to specific circumstances where this plant does this and this plant does that and drawing lines about, well, which is cost-effective and which isn't for which chemical.

And I can assure you it's an administrative nightmare. It's the recipe for lawsuits. Whether ACC files or whether they're filed by somebody else, looking at difficulties over 30 years of just trying to write rules for pollution control equipment, which is pretty basic – when you start moving that into making products, I just – I think it's the triumph of hope over experience.

MR. CROWLEY: You stopped Antoine in his tracks. (Laughter.)

We'll start right here.

Q: David Eisenberg, British American Security Information Council. You said you had spoke to Mr. Conrad and Ms. Greer. On the issue of material substitution, is there any information quantitatively to tell us three and half years after September 11th what progress has actually been made on the part of industry with or without the inducements of government to actually substitute materials even at the most simplest level of, say, chlorine for water disinfectant plants?

And as a follow-up point, has anybody sort of done a crosscheck in terms of doing material substitution against, say, the most high priority area – say, not looking at water treatment plants that serve only 10,000 people out in a rural area, but – or a treatment plant that handles hundreds of thousands or millions of people in a metropolitan area?

MS. GREER: Well, according to the new – I think I'll defer to you to the answer, at least to the ACC members, but according to the new GAO report the answer is clearly no. Not only is there no information about – collected about who is doing safe substitutes, but there isn't even information about who is doing anything else out there in terms of comprehensively kind of knowing the statistics.

And I just want to point out for a second that we have – the ACC are at the table, but the ACC – and I don't know if this number is still right – is estimated to represent about 1,000 facilities of this very large number of 15,000 facilities that are required to file risk management plans, et cetera. So, that is, the membership of this sort of the most proactive trade association on this topic is really not very large compare to the whole petroleum industry, for example, as well as a number of other sectors that use these toxic chemicals.

So that's what I meant at the outside that in some ways we have serious fault with the ACC approach, but don't lose track of the fact that the ACC is really a very small piece of the pie doing probably the most that the industry is doing. As a matter of the public safety we can't lose track of the vast majority of facilities that are not represented in the membership of the ACC.

MR. CROWLEY: I think you should take that as compliment.

MR. CONRAD: Like Churchill's statement about democracy: it's the worst system except for all the others. Is that it? (Laughter.)

See, I'm afraid we –

MR. CROWLEY: He also said that Americans can be counted on to do the right thing after exhausting every other alternative. (Laughter.)

MR. CONRAD: The GAO report – I'm not aware of anybody that has canvassed the relative implementation of material substitution or other kinds of process changes across the board in the area of security. The closest I have seen is this GAO report from Monday, which did look at 10 chemical plants and reported that seven of the 10 made process or inventory changes, so that's 70 percent. Now, that's not as statistically –

MR. CROWLEY: Scientific. (Laughter.)

MR. CONRAD: But they say –

MS. GREER: (Inaudible.) I mean, my god.

MR. CONRAD: But it's not – the answer is not nothing. The answer is not zero out of 10. The answer is seven out of 10, so I think it's worth exploring this.

MR. CROWLEY: Why did you call Blue Plains an orphan?

MR. CONRAD: Because I've never heard any other examples besides Blue Plains. The Blue Plains is – you know, if you sort of set Blue Plains out of the –

MR. CROWLEY: All right. We'll go back there and then we have got – you know.

You were shaking your head saying Blue Plains is not an orphan.

MR. CONRAD: Hopefully that's true.

Q: I'm Rick Hyde (ph) with Greenpeace. Al Franken is not here. I feel obligated maybe to talk about the difference between the truth and a lie, but first, yes, Blue Plains is not the only example. In fact, I'll let Carol Andress (ph) follow up because she is from Environmental Defense and they did a report on many other sewage treatment plants that are either already doing that or have done that. In fact, one – Cleveland – isn't even in your report, so there's many examples.

But I'm more – and I think it's unfortunate, Jamie, that you haven't gone into depth and taken Linda's challenge here in terms of a more high quality discussion because Blue Plains raises a good question. You have sodium hypochloride as a

substitute there, and in fact other alternative would be even better, such as ultraviolet light for example. The people making sodium hypochloride are using chlorine as your people are fast to point out.

On the other hand, probably the biggest reason we are shipping these things through big cities every day – 300 cars through DC in 2003 within a few blocks of the Capitol – is because of sewage treatment use. And so that's maybe 4 percent of chlorine that could be substituted easily, quickly, overnight almost in many cities and we haven't done it. So here's a huge opportunity and a huge amount of negligence that I think your industry is exposed to.

So, again, you should be begging the federal government to jump in and help level the playing field on this. And secondly, we should be then looking at, okay, what about the guys who are making these disinfectant materials? They are really in the business not of chlorine and chlorine byproducts, but of making disinfectants. Why not invest in ultraviolet light as a long term business plan? So that kind of discussion is what you are missing. Instead of trying to imply, as your folks often do, in what I would call a lie or Al Franken would certainly call a lie, that chlorine is necessary to protect us for chemotherapy or for bulletproof vests when you people make the Teflon coated bullets that pierce the bulletproof vests. And in fact, the largest use of chlorine, as Linda points out, is PVC plastic, which – again, the biggest makers of PVC plastic make plastic from vegetable polymers.

MR. CROWLEY: So the question is?

MR. CONRAD: Better for – (inaudible).

Q: So while you're raising the issue that, well, we can't go through the regulatory process because that's just a gridlock, well, it's a gridlock that your industry has created. And you say, well, we can't go through Congress because – well, you embrace the Inhofe bill, which in fact says that the owner-operators of the plant get to decide –

MR. CROWLEY: So the question is? (Laughter.)

Q: So the question is that why are – twofold. Why are we not all supporting mandatory requirements that the Corzine bill had? And what are you guys going to say in the industry when – if Homeland Security is correct and 17,500 people are killed by a chlorine attack on a facility, what is your legal defense post 9/11?

MR. CONRAD: We have – you know, it's fine that Blue Plains switched to bleach. We have no position on whether or not sewage treatment plants use chlorine or bleach or any other sort of process. We don't own them. We don't operate them and it is their decision to make and you should probably talk of AMSA – American Metropolitan Sewers Association – about why 60 percent of them haven't switched. So we don't have a stake in that battle, although it's important to point out – and here is coming back to what I was saying before – the notion that, well – I mean, as you pointed out first of all, yeah, you can go to bleach, but you've still got to make the bleach out of chlorine, so unless you make the chlorine at the bleach plant and as Linda said sort of making it instantaneously, there are still going to be large stores of chlorine.

On the other hand, it's the little facile to say that, well, there's ozonation and there's ultraviolet and so on, which work fine at the point of treatment, but they don't

have any lasting effect downstream and water that – you know, water doesn't come out of your spigot instantaneously from the water treatment plants. There's all sorts of intervening transportation and storage and ozone and ultraviolet have no effect against infectious diseases in those stages.

MR. CROWLEY: But wouldn't these same manufacturer of chlorine gas be the – be in many cases the same manufacturer of industrial bleach so that – wouldn't they shift marketing strategy – shift from one to the other, create some definite liability improvements that might, you'd think in a market environment, be a catalyst for the industry to promote the shift from X to Y, from a inherently dangerous substance to a less dangerous substance. Can liability play a role here – a constructive role in helping industry adapt?

MR. CONRAD: I am sure it does. I mean, one of my usual stock speeches, which Rick has heard before, is – you know, in tort law it's pretty foreseeable that there are terrorists and that there may be terrorist attacks on chemical plants and chemical operations, so I think folks that deal with hazardous chemicals are on notice that they have potentially substantial liability in the area of terrorism, and I assume that they are taking all sorts of things into any consideration. They should be.

MR. CROWLEY: And yet you just said that this not our problem. This is their problem. But why aren't you nudging the system along to make the changes where they appear to be relatively simple, relatively available, and relatively straightforward?

MR. CONRAD: Well, what I'm saying is the sewage treatment plants – you know, they need to make – they need to decide what's right for them and they need to be accountable for what they – for their decision. It's not our job, I don't think, to tell the sewage treatment plants what they should or shouldn't do.

MS. GREER: But there is a sort of a –

MR. CONRAD: And there has been legislation on wastewater treatment, which also has not moved in Congress.

MS. GREER: Yeah, but whenever you say that I have to think, yeah, and you know why? You know. (Laughter.)

MR. CONRAD: Well, let's talk about why then.

MS. GREER: But the thing is that – you know, I think what Rick was asking, and actually P. J. suggesting that, is there is sort of a different way to think about the products of the chemical industry, which is the function of disinfection versus the product of chlorine, and so I think the question really is why don't you guys say, "This is our problem. This is one of our chemicals. It's traveling through, you know, major cities and neighborhoods." For some towns it is their one and only acute terrorist risk is the chlorine gas sitting at their wastewater treatment plant.

Why don't you say, you know what? Post-9/11 this is a problem. We can disinfect with hypochlorite, with bleach. We are going to do this, this is the campaign. We are going to convince people. Because, you know, you will be a hero and then if something happens I don't – I am not a lawyer. I don't know – I don't really have even an imagination about what it is going to look like, but it seems to me that you guys are going to look really bad. It's like, well, we did know that this could

happen and, no, we didn't put any effort into trying to get people over to a different product.

MR. CROWLEY: Rob?

Q: Rob Houseman (ph). (Inaudible.)

ANTOINE MORRIS: Sir, could you please wait for the mike? Sir, could you please wait for a mike?

MR. CROWLEY: Antoine speaks.

Q: Rob Houseman, Fleishman (unintelligible) government relations. It seems to me, though, that you are looking at only a substrate of security. The equation looks at toxicity and essentially looks at the risk of release and just release, if it blows up, it gets released where does the plume go? How many people suffer either burning or inhalation? And I don't think that that actually is the equation because if you actually looked at it from a homeland security perspective, you would worry about, for example, the movement from rail to a truck and the truck gets hijacked and maybe that chemical doesn't have a profile that causes a toxicity, but it could be explosive or could be poisonous if put in water. So I think you are only looking at one narrow side of this. I think the actual equation if you did it would probably cover this room.

And I think that that raises a sort of larger concern I have, which is – I called it the re-branding of environmentalism as homeland security. I mean, some of the best ways of reducing risk at these facilities – and I know ACC has done some on this, but others haven't – are guards, guns, gates, and gadgets. Some of these facilities are located out in the boonies and the five G's will cover most of the risks. And so I think if we really want to talk about security I think we need to focus not just on this notion of substitution, but on a broader perspective about what is security. And I would argue that that would actually lead you to go away from EPA to go towards DHS and you would probably find a greater willingness in some industry parts to focus on DHS as the vehicle than EPA.

MS. GREER: You know, I've never understood this and maybe you can explain to me. I mean, before 9/11 it wouldn't have occurred to me that an airplane could fly into a building, but now that we see that they can just because they haven't flown into a chemical tank yet, what is this five whatever it is – guns, gates blah, blah, blah – if an airplane comes? And what about the guy sitting behind the knoll with a gun at the thing?

I just – maybe you can explain it to me; I have never understood why people think this is going to work?

Q: (Off mike.) (Laughter.) If I can, I agree with you on your point about having to look for the impossible because most people thought it was impossible. It wasn't. There were actually analyses out there that covered this exact risk. There are some risks we are never going to close, and so if you look at a cost-effectiveness and also you look at what's the most likely risk. Right now, given the rise in airport security – and I am not saying it's impossible and I am not saying they couldn't use a charter plane for example, but given a rise in the security through TSA and other agencies, one could argue the only area where we have real security right now out of DHS --- given that shift, the rule of terrorism is water runs down its easiest course. So now you look at a suicide bomber and now you look at, as you said, a guy with a

fifty cal sitting on a roof somewhere, and those are things like spotters, guards, guns, gates, operational awareness. Those sorts of things are very cost-effective and they are not addressed here.

MR. CROWLEY: Give us time Rob. We're working on it. You know, there's a temptation here because we are not taking the whole enchilada to not necessarily do things that at least take a large problem and make it a somewhat smaller problem, and I think in your analysis is one of the reasons why I think we have to start here, which is one of the reasons why we have chlorine gas on rails potentially driving straight through the heart of what is the ground zero for the next attack by al Qaeda is in fact a matter of demand. You know, that to the extent that you reduce demand, you are necessarily going to reduce the pressure on the surface transportation system that requires us to have them. So in fact if you can – in one subset, for example, where there are clearly alternatives – viable alternatives and you can reduce the amount of hazardous material being transported by rail, you have at least taken part of the major problem down to scale.

And I think that's one of – and then the question is how do you overcome inertia and that I think where you need a very aggressive role for DHS and you need real resources behind the process because as a subset that (unintelligible) did, you know, there are up-front costs associated with converting from chlorine gas to industrial bleach and then obviously to ultraviolet light. That is a very definite role for government to step in and say we will help change the cost-benefit analysis here. And unfortunate that's not been done primarily because there is a very limited resource, as you know well, in terms of \$600 million that are available for all kinds of grants associated now with all critical infrastructure protection. It is simply not enough.

Over here.

Q: Jordan Barab with the U.S. Chemical Safety and Hazard Investigation Board. I wanted to, if you don't mind, take the debate a little bit from the national, macro level a little bit to the local level. As we've all recognized, there has been a chemical safety/security problem long before 9/11 and there continues to be and will be for the foreseeable future. And the federal government has addressed these issues. One of the fundamental precepts for addressing these issues has been the participation of those most intimately involved, i.e. the public, through LEPCs, you mentioned 112R, EPCRA (ph),

Now, all these issues seem to be threatened right now: the whole right-to-know issue, the whole community participation issue. Several cases we're investigating we find complaints from the LEPCs; either they aren't getting the resources or they're being forced to focus on other issues that are not involved as much with the chemical safety and the community. They are not getting access to RMPs because of security issues. I mean, all of this affect directly the issue of chemical safety and chemical security.

I'm wondering it's either or any of you have addressed this issue and where we can go from here where we can still have the community participation along with the chemical plant security.

MR. CONRAD: Well, I suggest – I mean, let me just be clear: the LEPCs and (unintelligible) – the things that were created by EPCRA, the SARA (ph) title III – that statute was actually modeled on work that we started doing in setting up

community outreach programs around our plants, and we are supportive of the roles of LEPCs and SIRC's (ph) and have no – are entirely supportive of those organizations having the access that they've always traditionally had to hazard and emergency planning type information. I mean, it's really – it's crucial in preparing for and protecting facilities that the local communities be involved, so we are entirely supportive of those organizations continuing to be involved in emergency planning and understanding what the local hazards are.

MS. GREER: But you are raising an issue that's really near and dear to our hearts, which is there is this tension between keeping information away from people who intend harm; that is, the terrorists, and providing right-to-know types of information including the RMPs to neighbors, to state – both occupational and environmental activists, et cetera. And, you know, I worry deeply that we have erred on the side of hiding this information, which as day-to-day matter is very important for people. You know, going back to Jamie's sort of like, well, every day we have to make these decisions about what to do setting aside the terrorism. You know, we have really seriously undercut the ability of ordinary people who aren't in easy driving distance of the 50 leading libraries. I mean it's just so obsolete to even think that's we were going have information available.

So recognizing that of course you don't want pave the highway of success to these terrorists and give them anything, it's just I think we have erred very much on the side of undercutting our own abilities to address these issues in day-to-day living and in the day-to-day operations of these plants. And the absolute truth of the matter is that – you know, I still remember Rick Hines' (ph) picture from that plastics trade association thing where there is an aerial photo as an advertisement of something that they are manufacturing. This is post-9/11 by some margin.

You know, the sad truth is that if somebody really wants to figure this out, they will be able to figure out, so the inconvenience factor is really not going to hamper a person intent on carrying of one of these acts

MR. CONRAD: But it is important, though, to point out – and the little restructuring box is a little inaccurate in attributing this to Congress, but the question about what worst case scenario information should be made available on the internet versus what should be in reading rooms was made by the Clinton administration before 9/11. I mean, it was Carol Browner who signed the – along with Janet Reno who signed the federal registered notice that said, "While chemical accidents take a significant toll on life, property, and the environment each year, we believe that the property damage, personal injuries, and loss of life resulting from a single successful terrorist attack on a chemical plant could be considerable and would likely cause more damage than would many accidental chemical releases," and it was on that basis that they concluded that they ought not be putting this stuff on the internet.

So here is an example of doing some risk analysis of different kinds of hazards in different ways to save the greatest number of lives and it was the Clinton administration that made that decision, and presumably that calculus will only change post-9/11.

MR. CROWLEY: Well, just one caution. I think if you look at what's happening on the rail security front it is a logical extension of an excess of secrecy. You know, where you have allegedly an industry security plan that is stamped secret and deliberately withheld from city officials who have a need to – for public safety to understand what's happening within their city. And DHS is very close to losing

control of this component of critical infrastructure depending on how this court case comes out.

You know, we do need national solutions to these problems and you do, in fact, inflict significant potential economic harm on yourself if we end up with 30 or 40 local solutions to what has to be a national strategy.

Right here.

Q: I'm Tom Naton with National Environmental Trust.

I'm sure Linda will join me, Mr. Conrad, in expressing gratitude that you are concerned about the safety of potential substitutes and because that's something I haven't seen before. And we hope that means that you will support tasca (ph) reform if it comes up later this year.

But the question that I have is, I spent a lot of time evaluating pollution prevention plans at plants in New Jersey; visited over 100 plants, looked at them. They made wonderful pollution prevention plans. None of those companies that operate in other states extend the same data collection to facilities in their other states or pollution prevention planning. But the main thing that I noticed was the extraordinarily rigid payback periods for implementing pollution prevention projects in New Jersey and also in Massachusetts, where the planning is mandatory but the implementation is voluntary.

So short of a mandatory requirement to plan and some things that are designated as really being in the public good, what do you see as – other than, say, liability or something bad really happening – as a way to incentivize substitution or lengthen the payback period of time for inherent safety within your industry?

MR. CONRAD: So talk more about the lengthening the payback part.

Q: Well, if as a matter of course company policy for any changes to a process requires a two-year payback time, but something that would result in greater inherent safety has the five to eight-year payback time, as a routine matter of course the company would likely say, "No. We are not going to do that." So is there a way to somehow greater prioritize or incentivize inherent safety so that you make either a de facto longer payback time or you will bump it to the head of the class?

MR. CONRAD: Yeah, I don't know. The paper talks about the prospect for financial incentives whether under the tax code or through actually government grants. You know, this is not something where the American Chemistry Council has a formal position and I think probably part of it is we're not historically in the business of going to government and asking for grants or tax incentives. And so I think it's worth exploration. You know, it's the same problem with refrigerators. All refrigerators are sold to builders; builders don't pay the electric bills because they sell house. It's the customers that buy the house that do, so what's the incentive to have electrically efficient, energy-efficient refrigerators? I mean, I think these important questions to look at.

MR. CROWLEY: But I think it raises – you know, one of the crucial questions here is that are we leaving what now amounts to a significant dimension of our homeland security or national security to the lowest common denominator in a competitive marketplace? You know, that if as long as you have in the absence of

clear federal standards and then the absence of some sort of mandate that moves you from where we are to an inherently safer position, aren't we vulnerable to that kind of judgment that says, you know, I understand what I could do, but for my own economic reasons I am not able to do that, that leaves then an inherent vulnerability that we know terrorists are in a position to exploit?

MR. CONRAD: Well, that's interesting and I've had this discussion with Dan Prieto (ph), who some of you may know was on the minority staff of the House Select Committee on Homeland Security, because if you take a kind of microeconomic perspective about – and the Business Roundtable has written a pretty thoughtful paper on this about which industries would have the incentive to take action to secure themselves versus the others. You know, the sort of standard rational actor model would say, well, it's the electric utilities in it's the phone companies because there are all – and the financial system because they are all interconnected and if one of them goes down, they all go down, as we have seen.

And yet, A, you saw what happened with the power failure a few years ago. You know, you can question really whether even in these interconnected businesses they have taken that to heart. On the other hand, you can look at something like chemicals and think, well, you know, most chemicals are made by five or six or 10 different companies and if one blows up that's just more business for all the rest. Under a rational actor theory, no chemical companies would do anything, and yet our industry spends – you know, for the last two years each of those two years has spent \$800 million on enhancing security, which is vastly more than any other industry I am aware of and about three times what the nuclear power industry is spending, and has voluntarily imposed the whole cost of changes on itself.

So I think – I sometimes wonder about the – how informative these economic considerations are because clearly our industry is doing things that on a sort of rational calculus would theoretically not be in its financial interest, but we've done it.

MS. GREER: Right, but I really think – you know, Tom's question is the right question if we are not all just going to get paid for a living to argue with each other, which is, if we are all agree that some things have been done, but not as much as needs to be done, certainly ACC can agree that at least outside of their membership much remains to be done. And I don't think people would honestly say that all the important things have been done because of the reasons that Tom says; you know, competing needs for capital, people's individual ways that they will weigh the risks versus the chance it is going to happen versus how much would it cost, et cetera.

So if we all agree that there is a lot to be done out there and let's say we all agree that we are not going to get a government mandate to do it in the foreseeable few years, then what does the industry think – what is the way that we can make more progress? Is that tax incentives? Is it – what is it that you can offer up to us to help deal with national security on this?

MR. CONRAD: Well, I think what I would start out an offer on the subject of national security is we say over and over again we are only 1,000 of the 15,000 RMP facilities and we would like Congress to pass a law to regulate security at the other 14,000 so that they will do the sorts of things that we've done, which have a dramatic and significant effect in reducing the vulnerability of chemical operations around this country to terrorism.

I mean, I think you are going to take a first step, particularly in light of the political calculus, that's the single most important step and one that we have been arguing about the three years instead of acting on.

MS. GREER: Right, but you've already heard that from our perspective what's going on isn't enough, and I don't think you would disagree. So what we are really looking at it is how can we get safer substitutes? How can we really move along so that we not having to transport these toxic chemicals through neighborhoods so that we don't have these tanks of things sitting around? Recognizing that you are not there yet, what can government – or what is the policy options that you would – I mean, fine. Yes, everybody should be required to put up fences and security guards, but honestly, Jamie, I mean, you don't think all that we need to be doing. So the question really is a deeper question, which is what are the policy options here?

MR. CONRAD: Well, I think where this sort of work happens now are places like this Mary Kay O'Connor Process Safety Center and the AIChE center for process safety. I mean, those are people that have academic degrees in figuring out questions about material substitution and process changes and so on, and they publish papers all the time. This is what they do. Those sorts of folks could certainly be much better funded than they are, could be more involved in the government, there could be much more of – you know, I might say a Marshall Plan, but there could be much more of a focused government effort to support that sort of work and to have active participation between – cooperation between industry and academia and government to advance that sort of thing.

MR. CROWLEY: And I certainly think that in order to make sure that Blue Plains is not an orphan, helping communities make that transition from chlorine gas to other safer technologies would be a good place as well.

We'll take two more. Tell you that we'll do is we'll take both questions simultaneously and then we'll – (laughter).

Q: I'm Ana Unruh Cohen with the Center here, and this is maybe kind of a crazy question, but it comes out of a lot of the work I do on global warming, which is also a bigger problem. And one of the places we – one of the industries we've seen that has moved earliest on addressing this problem is the insurance companies. And so I wonder absent federal standards, is there pressure that insurance companies could put for a national incentives for inherently safer processes?

MR. CROWLEY: And the second question.

Q: Good morning. Paul Orum; Working Group on Community Right to Know.

I'm the author of a report on how power plants can be safer. Megan Purvis, who is here, wrote a report about how refineries can be made safer. Carol Andress on how sewage plant we made safer. There is lot of this but the missing element in this has been, in my view, the public stance of the chemical industry.

I am really glad we are in the right ballpark here with this discussion of inherent safety and where to go, how to reduce the size of vulnerability zones. But we also did two surveys of chemical facilities and found only a handful of plants that were willing to say, "We will reduce our hazards. We will reduce our vulnerability

zones.” Why are there are not more plants and companies willing to come out and say, “This is worthwhile. We would do this”?

MR. CONRAD: Well, I – you know, I think the GAO report shows than a lot of them are doing it. I think the question is whether there – you know, to be honest whether they want to sign a pledge that someone sent to them on a fax or in a letter, but the fact is I think it’s happening.

And to respond to the insurance question, I think there is, and the insurance industry means – you know, they are the ones to drove boiler safety and a lot of other (unintelligible) of things in earlier days and it’s really a matter of them becoming sophisticated enough to understand the issues and the risks to be able to start making fine judgments about how much policy – what to charge for different kinds of policies. I expect that they’ll continue to play more of a role in that area than they have.

MS. GREER: But, you know, there was a moment – you’re right about this, Ana, there was a moment where it looked like the insurance issue could actually work in this way because soon after 9/11 the chemical industry had tremendous insurance problems because the insurance industries were looking at this and looking at how much they are being paid and looking at how much this could cost and sort of had one of those “Holy shit!” moments where, you know, it’s like this is never going to work.

And at that time Homeland Security and the White House had sort of a decision to make. One of the recommendations that we made is, at a bare minimum we should – and the question was, should government back up reinsurance or whatever the thing is, you know I’m not an expert on this, but the basic thing was should the government eventually hold the bag here so that American industry can continue to operate? So that was a big question, but you know at that the –

(Cross talk.)

MR. CONRAD: Although (inaudible) pushed by airlines and – I don’t think we were involved in that.

MS. GREER: Yes. Yes, you were involved in this. Maybe not ACC, but it was – because the issue became – what we suggested is at a bare minimum why don’t you require some sort of hierarchy of inherent hazard reduction activities; you know, a meaningful look at reducing their risks as a precondition for insurance or for at least government backup reinsurance so that that’s kind of as a non-regulatory tool, but as a practical matter it really actually makes sense because then you are lowering the ultimate cost of an explosion, which didn’t end up happening in the end, which was really too bad because that is another policy mechanism to get the sort – to try to force an outcome without a sort of legislative or regulatory thing and its completely logical.

But in the end – and I am not an expert on where this stands now at all and that was couple of years ago – the government basically provided the assurances without any conditions for what you needed to do to deserve to get that sort of government back up. And your insurance – and then the insurance industry said, “Okay. We’ll insure these guys,” and we all lived happily ever after under the status quo.

MR. CROWLEY: Having work for the insurance industry for a couple of years, I think – you know, two points. One is the marketplace has to actually buy the

product and right now only about 25 percent nationally, 50 percent in places like New York, you know, businesses are actually buying so-called terrorism risk insurance, so that you do have a major element of business exposed to risk without necessarily having insurance protection.

And the second thing is insurers always look at something called maximum probable loss – PML – and to the extent that there is a regulatory scheme, clear standards, and now differentiation within the marketplace that shows there are responsible actors who are taking assertive steps to lower risk, the insurers are in a position to reward that kind of behavior and to some extent punish those who choose not to adopt inherently safer processes, but insurers always tell you usually what happens is the reform comes first, then there is an expectation of lower insurance rates, and then the reform never has the actual effects that you want. So insurers will always tell you, we will be part of the back end of the equation; that to the extent that we see a shift in the marketplace and to the extent that we see either cost certainty in terms of what risk represents and then behaviors that clearly differentiate among prospective clients, then you'll see the insurance industry come in and provide some further incentives that could help the cost-benefit analysis in the final result.

We've come up on the end of time, I want to thank my two colleagues for what is they a very vibrant, very difficult, very complex discussion and thank you all for attending. Before we leave I would like to thank Antoine Morris and Anna Soellner and the other events people who helped to organize this for today.

Also Reece Rushing, who is on the staff of the Center of American Progress and helped with some of the editing of the product, and Matt Brown, who helped work with the layout, and anybody else on the CAP staff that I am forgetting, but this was very much a team effort.

Just a little bit of a plug for some of our upcoming events: on April 21st at lunch we'll have the discussion on rail security, the other half of this equation; having a panel which includes Cathy Patterson from the District city council will be here. On May 4th, we'll have a panel on private data bases; you know, part of the information element of homeland security. And on June 15th, we'll have a panel on port security and evaluating how far we've come one year after implementation of the – what's called the MTSA: the Maritime Transportation Safety – Security Act.

Anyway, so we are –this is part of a yearlong effort by the Center to focus on the private sector dimension and critical infrastructure security. We hope you will join us again in the future. Thank you very, very much.

(Applause.)

(END)