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EPA Perspective on Advances in Process Safety

Jim Makris

Director, Chemical Emergency Preparedness and Prevention

Office Environmental Protection Agency

401 "M" Street, S.W.

Washington, D.C. 20460

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ABSTRACT

EPA is supportive of the concept of "Making Safety Second Nature." Companies should strive to practice safety as a culture, not as something that is done because regulations require it. Elements in the Risk Management Program have broad application to the assessment of, and decisions about, chemical and process hazards, worker and public safety, and environmental protection even before companies prepare Risk Management Plans. Consequently, integration of the RMP elements into company safety, health, and environmental programs can help companies adopt and implement risk-based decisions. Chemical accident prevention is the major goal of process safety management and risk management programs. EPA's accident investigation program goes a long way toward achieving this goal. EPA has a statutory responsibility to investigate major chemical accidents. However, the true potential of accident investigation reports is realized only when the data gleaned from these investigations are used beyond the company fence line or the process where the incident occurred. Offshoots of

accident investigation reports, Chemical Safety Alerts, are issued when EPA becomes aware of a significant hazard and are effective tools industry can use to evaluate potential hazards and to take steps to reduce those hazards.

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Jim Makris
Director, Chemical Emergency Preparedness and Prevention Office, USEPA

Let me say, thank you Sam for first, inviting me to be at the symposium at all and second, for the very generous offer of time you have given us this morning. Third, I cannot think of anything that is a greater honor than to be keynote two with Trevor Kletz, keynote one. It is just a personal thrill to even be considered in the same conference as he, as a keynote speaker. I met Trevor a bunch of years ago in Washington DC. We were speaking to about 200 participants at an International Chemical Safety conference. It may have been really the first international safety conference held in this area for a good many years. It was a result mostly of the terrible event in Bhopal. But, in the process of that conference and where I first learned how terrific Trevor was and how many great experts there were through out the world on this subject. One person observed that we could have held the conference in 1983 in a telephone booth, but in 1986, it filled the Sheraton Blueroom. So, it was quite an interesting kind of phenomena that in a relatively quick and short time, this interest in chemical safety from the shared point of the general population grew to a point where you could organize in 90 days and have more than 200 people show up at the Sheraton Motel, including Dr. Kletz. Yesterday, Trevor talked about the world. You know he talked about all the things he has seen and observed going back to the 1960s and even before that. I am going to talk about America and what we have been doing and I must say the history is not as long as the history in the UK. The history is relatively new. Frankly, it is all post-Bhopal. So, what I will do is pick up on some of the points he made yesterday and then go forward from there with a perspective of the United States of America. You know we were really pleased and happy to join into this worldwide effort that took place after Bhopal and after the event of the pollution of the Rhine from the incident in Basil. We were pleased to finally cause America to recognize that merely having a competent ability to respond to accidents wasn't good enough. That there was indeed an obligation for us all to be better prepared, to understand risks, that the community had a right to know. A concept which from this perspective of 1999, 1998 seems kind of obvious when you think back to the early part of the late 70's, early 80's. In America the debate was still whether workers had a right to know and if workers had a right to know, how much did they have a right to know. What they could do with what they had been told and who was privileged

to know about it and could they tell their spouse and were their doctors allowed to know it. If you were a big company, did you have to tell more than if you were a little company. If you were a little company, did you have to tell the workers anything at all. How far we have come from the decisions that were made in the courtrooms in New Jersey in the early 80's about small businesses obligation to provide information to their workers. How far we have come from the beginning of this process. It was about 1985 when Bill Ruckelshaus was in his second term as administrator of the Environmental Protection Agency that the way of conducting environmental business in America through a process of claim and counter claim, charge and countercharge, suit and countersuit; was wasteful, expensive, and exhausting. He posed the notion that maybe there is a better way to deal with environmental protection and we were fortunate enough to have the opportunity to work in a different way when it came to dealing with chemical safety.

Let us spend a few minutes on some background information. Right after Bhopal, Congress said, "Gee, could this happen here and the answer was a resounding sure. What can we do to prevent it or cause it not to happen and can we get ready for it." There was a meeting with the five CEOs of five major chemical manufacturing facilities in the US. They appeared before Henry Waxman and Jim Florio and others and Henry Waxman simply asked them. "Can you guarantee that you will not have a accident like Bhopal in America?" And they all didn't answer because obviously they couldn't give such a guarantee. They talked about things they have done to make sure it wouldn't happen but could they guarantee that it wouldn't happen and not one could stand up and make that guarantee. But they stepped forward with a program called the community awareness and emergency response, in short known as CAER. You all know about CAER. It is a CMA program that started about the same time as an initiative within EPA called the Chemical Emergency Preparedness and Prevention Office, my office. That program was dealing with trying to get information out to populations with the industry at the local level, local action, local risks, local activity, local economics and cause a dialogue to take place between the public and the private sector that would be in the interest to all of the folks at the local level. After all, the company enjoyed the benefits of the infrastructure, the company took advantage of the school system, the company took advantage of the highway system, the company took advantage of the education system, the police system, the utility system, the water system and the company gave jobs and so therefore there was already an economic interest and that was being exchanged between the company and the community. And so why don't we talk about what the company is doing to protect that infrastructure, to protect that community to protect that school the hospitals against risks. And frankly, the Environmental Protection Agency's initiative and the CMA initiatives almost said the same things with somewhat different prospective they all agreed that it would be better to meet in a meeting room than in a court room or in a hospital emergency room and they started to open a dialogue with each other at the local level on what kind of risks were being created by the company and what they were doing to mitigate those risks and what kind of caution should be taken by the community in order to best be able to respond in the very unlikely event of a severe chemical accident that transcended the boundaries of the facility itself. EPA decided to have a list of chemicals, you know in the government you always have to have a list, in fact we have a book

called lists of lists within EPA. But one of the lists of chemicals we created had 406, at least 40 or 50 of them were wrong, but we use lists drawn from our experience in chemical accidents and list toxins and other things that were existing in the agency and there was one day when administrator Lee Thomas and I were in the room together and we were getting all kinds of warnings. Political warnings of dire consequences if we ever published this list of 406 chemicals that we were asking people to be concerned with and encouraging industry to dialog about with their communities. They said if you put this list out, all hell will break loose. People would barge into the companies, they would knock down the company walls, they would throw their bodies in front of trucks delivering chemicals to them. It would be almost the end of the world of the chemical industry as we now know it. Well, we published the 406 chemicals as chemicals of concern and urged a voluntary program between industry and government to try to increase understanding and awareness of risks at the local level. The New York Times had a five-day series in the front page where they showed what facilities had those 406 chemicals. They printed diagrams calling them vulnerable death zones. They printed vulnerable death zones around the 406 chemicals showing communities which were at risk, showing interconnections of the communities and showing terrible things that could happen if the chemical was indeed released from those facilities and went to its maximum ERPG and maximum exposure and put folks under the greater risk. That was in 1986 and I want to remind you that information was published in the New York Times almost 12 years ago. Most of the major facilities in New York state having these chemicals was published in the New York Times 12 years ago including the vulnerability zones. Congress liked the idea of these 406 chemicals and while we had it as an informal example list, they legislated it as a legal list and they then designed a program that came to be known as SARA Title III. Now, lets get down to reality here, what we were talking about in this whole period of time is change in how industry deals with the community. How do you communicate risks and how do you understand risk, change in how to accept some residual risk in exchange for having good jobs. Change is very tough, I think that Trevor said yesterday people are very happy to listen but we don't want to change. And part of the reason that we do not want to change is because change is so very, very hard.

When I want to communicate how hard it is to change I often use this story, which I think came from around this area in Texas. A gentleman just moving in decided he wanted to buy a horse, and so traversing the highways and byways of West Texas he came into one of these corner stores that had things on the wall that said For Sale. In there was as sign that said a horse was for sale and he asked the store owner how he could get in touch with that person to buy that horse. "After all I'm going to be a Texan I ought to have my own horse."

The owner of the store said, "I don't really think you want to buy that horse. You see it is in a monastery down the street and they don't really cotton too much to outsiders." Bu the newcomer insisted and said, "Yeah, if there is a horse for sale why don't I go buy it." So he went over and he pulled the chain and the door opened and out came a man in monk's clothing.

And, so the newcomer said, "Do you have a horse for sale?"

And the monk said, "Yes, I sure do."

"Well, I would like to buy it."

"I would like to sell it to you but this is a horse that has been raised on monastery grounds. It has different ethics and different vocabularies and different ways of dealing with issues than ordinary horses."

"It is a horse, isn't it, why don't we just buy it."

"Well let me just make sure that you can handle it."

So the monk brought the horse out and the gentleman got on it. The monk said, "Let me explain, with this horse, when you mean to say 'Giddy-Up' to make it go, instead you say 'Holy Cow', because it has been brought up in a monastery. And instead of saying 'Whoa' to stop it, you say 'Amen'."

The gentleman said, "I think I can handle that." So he got up on the horse and he went around the grounds in front of the monastery. He said "Holy Cow" and the horse trotted off and he said "Amen" and the horse stopped. They did this four or five times and he said, "I think I can handle this change. I have been riding horses all my life and I think I can adapt to this changed vocabulary."

So they sold him the horse. The next day he was out in the woods riding his horse and suddenly the horse was spooked by a jackrabbit. The horse started off galloping lickety split. And what did the rider say? "Whoa." The horse didn't pay any attention. "Whoa," the horse kept moving. Finally he saw he was approaching a precipice and he thought, "This is it, I can't stop the horse now, no matter what I say." He said his prayers to his maker and said "Amen!" The horse stopped dead in his tracks, inches from the edge of the precipice. The man wiped his brow and said, "Holy Cow."

Change is tough, it doesn't happen easily and I think what we have been trying to do in the last few years is trust people with information that we had never given them before. The industry trusting government to do the right things with data, industry trusting citizens to do the right things with the information. So what does SARA Title III do, well it started change, it started to say by law you are going to create a local emergency planning committee that has all kinds of people on it that are worried about emergencies, that don't know a whole lot about the chemical industry. The chemical industry people should be a part of it and you are going to provide information on what kinds of extremely hazardous substances you have in your facilities. You are going to provide information on accident events. You are going to report on

what you have inventory of chemicals that have been determined to be dangerous in the workplace. And finally you are going to deal with routine emission that eventually will be the toxic release inventory program that you all know about. This regulation created some stupid kinds of problems that we are just now correcting. It said things like rock salt was technically a hazardous chemical because if you work with it, it has a MSDS, it could be dangerous. And so too with respect to gravel and sand and a lot of things and we actually caused people to have to report on those items because they had a MSDS. The issue in Congress was that they couldn't decide if a chemical was dangerous in the workplace, it might not be dangerous to a fireman or the general population. And so rather than debating it very long, they said that any substance for which there is a MSDS and which has been determined to be dangerous in the workplace will be covered under SARA Title III. That caused a lot of laughter about why do we have to tell people that the gas stations have gas, don't they know, most gas stations do indeed have gas. Well, not to get diverted here, but we put on a rule that corrects some of those silly things, but as much as people laughed at why we had to have gravel and sand and steel and other things in our reporting obligations, we laughed more at the paper itself. You might all remember the early SARA Title III jokes which is that the papers submitted by the industries to the local emergency planning committees, the state emergency response commissions and the fire departments created a major hazard. They could burn or they were blocking fire trucks from getting out of the stations and that the greatest utility of the SARA Title III paper was to shred it and use it to sop up spills.

In the meantime, we had a meeting in Washington sponsored by the national governors association where most state and local governments said no, we are not going to deal with this program, no we are not going to do it. It is an unfunded federal mandate and we won't play. Well, a while later every state played in the SARA Title III state emergency response commission and local emergency planning committee sand box. In fact, 26 states found ways of raising substantial amounts of money through fees, modest fees, not expensive to the industry, very helpful to the government. Some of them got up to 3 or 4 million dollars, for example Florida and Pennsylvania. Some of them were only \$275,000 like the state of Maine with the low industry base, but they say not one voice was raised in objection to the imposition of these modest fees for filing SARA Title III reports. A lot of objections was raised to what was in the format itself but not to the notion of providing information about risk and helping to provide finances to cause that information to get out.

As many of you may know, we had George Washington University do a couple of studies on LEPCs and while people largely trashed these reports, the studies which used very highly acceptable sampling statistics, found that the program was very successful indeed. More than half of the LEPCs are alive and well, virtually every area where there is a heavy chemical industry, there is a strong LEPC. And virtually everywhere there is a strong LEPC, the chemical industry has been a supporter of the LEPCs.

We have made a terrific amount of progress toward providing information to folks. At the same time as we were doing this, other things were happening on the other side of the world. The

OECD created an expert group dealing with nations of the OECD. I think it is about 20 or 21 nations including the US, Mexico and Canada. They passed a resolution requiring countries to notify adjacent countries of installations on their border that could cause a trans-boundary effect. For example, Germany must tell France that they threatening them with a facility on their border, France must tell Germany and then they must engage in a dialogue about safe practices. But the underlying principle is that they must disclose the notion that they are building a chlorine plant which weather conditions could cause to transmit across the border. This was and is a very important consideration and all the other OECD nations signed on. The United Nations Economic Commission for Europe decided that they needed to get Eastern Europe into this process and they did accomplish that through a trans-boundary convention which requires pretty much the same thing. That is, if Yugoslavia is building a chemical plant along the border of another nation, they also must notify reciprocally. If Sweden is building a plant, they must tell Norway.

The entire European community, some 53 nations after the breakup of the Soviet Union, are all deeply involved with communicating information back and forth about risk that are capable of having a trans-boundary effect. And that is very strong throughout Europe right now. While this was going on with the UNEC and that other work was going on with the OECD, the United Nations Environmental Program created a program called APELL which basically took SARA Title III throughout the world. We just did a SARA Title III kind of program under an APELL in Chile a few weeks ago. It is wonderful to see those democracies down there start to better deal with the issues of chemical risk. The common factor for the US and Canada and the other Western countries to the East to the developing nations is the chemical industries and its multinational presence which are looking for some consistency among all these places.

This brings us to the 1990s when they passed the Clean Air Act Amendments which included section 112®. This required that in addition to providing the information regarding chemicals that are in the facilities, it is now essential that we have risk management plans created. A risk management program which must be disclosed to the public. And that is what ultimately authorized OSHA to go forward with the Process Safety Management Program. They had authority anyway and they clarified it with the Clean Air Act Amendments. What we decided at the EPA was let's let the PSM program or OSHA stand tall and be the fundamental issue within the facility and we will add the additional elements of risk management planning on to that. We will write a rule, we will make another list, we will communicate this to the public. This will result in a program of chemical safety which we now call RMP. We all know what RMP is all about, because we have been talking about it off and on for two days. When we began our rule we did like everybody in EPA. We said here is the rule, here is the legal requirement, here is the list of chemicals, here are the obligations, and here are the reporting dates. It is the enforcement mechanism, do it! And we said wait a minute, we have forgotten something, we forgot that this is largely a situation of local risk, local action, local benefit. It is largely an issue of communication between industry and government at the local level. It is not EPA writing a prescriptive rule that causes everyone to fit into one shoebox. One size does not fit everyone. So taking a hit for being late, we went back and did it over again. I must say some folks like

Craig weren't real happy that we had to start over, but we did. Lyse Helsing and others went back and began the rule from another whole different perspective, a perspective that recognized the incredible importance of communication regarding risks, information regarding the presence of risks in the facilities, information regarding accident history, information regarding the worst case scenarios at the local level to get that information out and have it be usable. So we decided that one size didn't fit all and we rewrote our rule that is largely performance-based. In addition, the rule has a real important local emphasis but still provides enough information for national trends to be detected, and allows people to conduct specialized studies such as epidemiology of accidents. We had to do this in the context of downsizing at most corporate levels, we talked about that a little yesterday. Because of downsizing there was no longer a central advocate within the major corporations for truly pushing forward on issues of safety because they were sharing it with each of the operating divisions. We posted the rule, received 10,000 pages of comments. Lyse Helsing had to read every one, and I must say we did this rule in a very awkward way, we had hearings all over the country, I think 4 major hearings, we went on TV with CMA and had ½ dozen hearings. CCPS had an interactive television program out in Virginia Beach a couple of years ago and we all tried to be as open as we could about both the purpose and intent of this rule. Why it was going to be of benefit to everybody and was establishing some ground rules that all of us would be able to live with and establishing a foundation upon which communities would consistently be receiving good information on risks. Frankly, we believe that as we learned in SARA Title III, the mere action of putting together a risk management plan that is going to have to be talked about with the public, caused changes in safety.

Yesterday Trevor was talking about the extra large pipe that had a lot of stuff circulating through the systems, people asked why, why do you have a billion pounds of this stuff in storage you only use a hundred pounds a day. Obviously exaggerated, but the point being that just-in-time buying became more fashionable, smaller inventories became fashionable, less toxic chemicals became fashionable. I am sure people today, this minute as they are writing their risk management plans are looking at chemicals that they maybe don't need that are on the list. They are looking at quantities that they don't need and are finding out they are operating more safely. I'm not talking about the guy that says 10,000, hm let have 9,999 and skate the rule, because that's nonsense. I'm talking about the guy that says I really don't want that chemical anymore or I don't need 10,000 lbs., all I need is 1000 pounds and changes significantly the risk profile. And that's happening, that is happening today, right now in your companies. How do I know it is happening, because you keep telling us what you are doing. And from time to time, even here I have sat at tables, and I heard yesterday somebody say I have already done my risk management planning discussion with the public. I heard Dennis Rockman from Dupont who runs a plant down here in Texas saying, boy it sure changed my job as a plant manager, I used to just have to do bottom lines and run a technical operation. Now I have to go in and talk to people, and now when I have a meeting with people and I describe to them what our risk management planning program is you are amazed how the important communication and trust really comes. And he went on and said what I thought was very interesting, "If you look out at your public meeting when you are talking about risk from

your facility to the community and if the group in the room looks like the chamber of commerce, you have got a big problem. He said, you want to see kids and you want to see workers and you want to see union officials and you want to see emergency managers and cops. You don't want to see white shirts and ties. Well again, that's how the risk management planning operation evolved.

I want to make to make one more comment on accident investigations. You might remember that 112® also contained the obligation to create the Chemical Safety Board that you heard about yesterday. The EPA immediately set out with OSHA to help get that ready because there was obviously nothing there. There were no people hired, no people appointed and there were a lot of legal challenges about whether there should or shouldn't have been a board. President Bush thought it was a constitutional invasion of his executive authority. Others though it was an unnecessary imposition of an independent agency. Some people thought it was going to be part of EPA, others thought it was going to be part of OSHA. But, in any event, we felt that we had the expertise with OSHA in chemical accident investigation, knowledge and understanding, and we also understood the bureaucracy. So we immediately undertook with OSHA to put together the outlines of what that Chemical Safety Board might be and made it available to folks as they were testifying before congress for their appointment some five years ago. When the White House and Congress later got into a political fight over funding and as the President decided to try to downsize. He asked OSHA and EPA to conduct the accident investigation since we had this as a foundation for our work. Now that the President has decided the other way, we are working very closely with the Chemical Safety Board and we hope to give the benefit of all our experience and what we have done in the past and I think you heard some of that conversation being raised yesterday. There are a lot of folks that say this is contentious issue, it isn't yet, it may be some day, but at the moment we believe that the friendly relationships with the Board are a good thing which leads me to where are we right now.

We are probably in an unbelievably, good, optimistic, forward looking place in terms of chemical safety in America right now. Mary Kay O'Connor Process Safety Center is an example. Somebody is willing to come forward and put an organization together. Somebody like Sam is willing to take a risk on a new venture and say, "I am going to run it." Folks in the room that have been working with the Center for the last few years including Dr. Darby who got it started are all willing to throw their energies into trying to make this thing a very successful enterprise. That is a good story and so too is it a good story that the Chemical Safety Board is going to be investigating accidents and get rid of the idea in the public's mind that EPA and OSHA would cover up if they investigated it themselves. Yes, we used expert group and we did all kinds of things to be sure that we would not be blamed with that, and we were still blamed with it. So, it is probably best that we are not charged with trying to cover up our own regulatory in-actions. Among the things that we tried to do to overcome the possible issue of regulatory coverup was use people like Paul Hill, who has been nominated and is now the chairman of the Board and Irv Rosenthal who was nominated to the board, as part of peer group to make sure that what we did was right. But the beat went on and they said it was

wrong and so where we are right now is we welcome the Chemical Safety Board as a new player just as we welcome the Mary Kay O'Connor Process Safety Center as important new players to help us move forward. Think of the high attendance at this meeting, certainly not going to happen in a telephone booth. We have certainly come a long way from telephone booth days.

I think the alerts that Craig talked about yesterday were we immediately tried to figure out what might have been wrong and we put out information, whether it is lightning or whether it is the ethylene oxide. Where the agency could indeed look at its records and say, "Gee, we might be doing something in one part of the EPA that is being harmful in another part of the EPA. " That is a welcome addition to our knowledge and to our interest and to our moving forward and it is an optimistic sign of where we are going in the future.

Third party inspections, we have an arrangement with the state of Delaware where we are going to do some experimentation on what third party inspection really might lead to, how we can better be efficient in the review of facilities and their safety. And, that ties right into what you all know about ISO 14001 Program which I think has some significant lapses, but it nevertheless has some useful and fruitful benefits to us all. And, that ties in immediately with the Responsible Care program with CMA which is a terribly important additional ingredient. So, when you have ISO 14001 and Responsible Care, third party inspections, you have got to be on the right way.

You have the Mary Kay O'Connor Process Safety Center with 300 people sitting in the room worrying about these issues. We put on model plans, as you know we have model plans in order to help both medium and small enterprises. We have model plans for propane distributors, ammonia refrigeration facilities, warehouses, chemical distributors and POTWs. And each of these has been done in conjunction with the industries and it is to make it easier for industry to comply with the risk management planning obligations and requirements. We had a safety street exercise in the Kanahwa Valley several years ago and some may or may not know that information was spread pretty broadly around the country. And you also may or may not know that a similar safety street simulation was done in Georgia this last year. In both of those cases, what was done included a clear demonstration to the local community, of worst-case scenarios that would impact on populations. These were published and they were shown to folks in those local areas and people were made to understand that while there were risks of chemical incidents there was such an opportunity for prevention of those events. Industry was standing so tall trying to mitigate those possibilities and the public was comfortable that they were not living in a dangerous place.

Electronic submission, we told jokes about paper a while ago, so we decided that we would never in my office tolerate that kind of criticism that we had to sustain with the paper submissions under SARA Title III. So, for the first time EPA has an electronic submission rule which requires the information be submitted at the beginning electronically. That means we will be able to provide information real quickly. It won't be two years or three years before we can

start providing information on what risk management plans have said. It won't be 2 or 3 years before people will start to be able to use this data to see if America is getting better or worse. It won't be 2 or 3 years before we will be able to update submissions but indeed we will be able to update them just as fast as the technology will allow us. We had a lot of advice on how to do that and we are still getting a fair amount of it as some of you may know because some folks perceive the issue of electronic submission as providing information to terrorists. One of the good things about that is we have been able to work very closely with the CIA and FBI and learn a lot and we have a lot of their information and intelligence available to us. We have begun to think about speed bumps and alternatives and how once we get the information electronically it can most effectively be managed as to discourage an event of terrorism. Let me just say that one thing that is not going to happen. Nobody is going to be sitting in Baghdad like Wizard of Oz turning dials and saying where is the best target in America. That simply is not going to be available information in this process. And in the FBI and others who have advised us for the most part that environmental terrorism is likely to be in this country from a local thug who already knows the chemicals are there or from a disgruntled employee who knows everything about it. So, I just want to remind you that we are giving very serious thought to this despite the fact that some are alleging that we are not. But we are being a lot smarter as a result of some of the interest expressed by industry and others on the possibility of this being an encouraging event to terrorists and indeed we have learned a great deal more on how to deal with the protection of this information. Also, we are not going to be putting it out for another year, so we have several months yet to learn additional ways to preserve it.

The LEPC is very relevant in this process. If the LEPC doesn't know that you have a risk management plan, that has this kind of worst-case scenario and they first hear about it in the paper, all hell is going to break loose. You don't want a camera in the mayor's face saying, "Did you know that you have a community at risk?" You want him to be able to say, "Oh yes, we have been working on this for a long time and we have talked to the industry and we think that we are really quite safe."

The worst-case scenario is an extremely improbable event and we are quite aware of that. It is important that the LEPC and the local government understand the information. Industry must open the dialog with the community well in advance and must proceed on quickly as they can to be sure the community doesn't get this information in a bad way. I was excited yesterday to hear someone say that they had already had their public meetings and they are already disclosing the information. They can't even submit it to EPA yet because we haven't identified our form and method of submission except to say that it is going to be in a central location and it is going to be electronic. But other than that we haven't told you what to do but you guys are doing it already and that is wonderful. And we think that is terrific, that is new, that is whoa and giddy-up, that is back to figuring out how to deal with change and implementing it on your own, by yourself in advance of deadlines. Who ever heard of industry complying with an EPA regulation 18 months in advance. I don't think anyone has ever done it before. State laws, a lot of the states are going to pick up the management of the program. They would rather have states run it than the federal government and I don't blame them. If I were in a state, I would

rather have the state do it, or the local government have the principal role of reviewing local RMPs and dealing with state practices rather than having Washington DC or me.

We talked a lot yesterday about risk projects and some of the work that is being done in Michigan and some of the work being done by the associated organizations here at Texas A&M and we find that very exciting. We think that as research programs get diminished because of downsizing it is even a greater obligation for entities like this to rise up and start to pick responsibility for research. There are a tremendous number of things that we don't know. We still don't know very much about whether dense gas models are very good. Here you are obligated to do a worst case scenario and talk about toxic end points and you don't know for sure if the models you are using are even right. You don't know if they go far or not as far. All you know is once in a while they seem to surprise us. Some of the ones we rely on are less accurate than others. So I think we need some good research into dense gas dispersion scenarios. I think we need an awful lot of information on what was mentioned yesterday, which is the long-term chronic effect of an acute exposure. I have been saying this for 10 years and there has been very little work being done on it because it is not a high priority to the scientific community. But we need to work on the chronic effect of acute exposure. I think, as I said a minute ago, we need to do a lot more about advanced computer systems, both better access, better protection and I think the opportunities that have been presented to us by working closing with the national security agencies in the next year will help.

Terrorism, lets talk about terrorism for one minute, because while we normally discuss it in this context as a bad thing. There is no doubt that terrorism is an awful thing and it puts us all at risk, one must say that what we are doing with the risk management program does not tell the terrorist where to go, what to do and how to do it. It doesn't get him by company security and it doesn't get him by the right valves and the right fixtures all he gets is the notion that there could be an outside consequence of a certain size. But he doesn't get the details on what would work and what would not work. And lets face it, there have been chemical companies around a long time that haven't been hit by any terrorism even though their chlorine tank is sitting right there and well marked. As a matter of fact, sometimes when they are not well marked it is a lot worse. You all remember the Kansas City disaster where seven fireman died because under a DOT rule, they didn't put on the side of a storage building at a construction site that it contained TNT (i.e., explosives). They thought that would bring terrorists, so they didn't mark it. Well instead it brought firemen and they died. So now DOT doesn't have that restriction anymore. Staying on the issue of terrorism, one of the good things that's happening in America because of this concern of terrorism is finally a lot of money is being spent by the federal government at the state and local level to improve the capacity of local governments to respond. We spent 1.4 billion dollars last year in the United States in federal government on unclassified terrorism programs. A heck of a lot of that went to airport security but a lot of it went to training local and state fire and emergency officials. That is an input of skill and advice and assistance that has never been made available to enable us before.

Near misses, yesterday someone said, why don't you just let us investigate our own accidents,

give you a report and you can look at it. Well, I think we answered that yesterday, but I have a different answer today. Why don't you investigate your own near misses and submit a report? That is something that the lawyers can't say you can't do. We didn't have anything happen, did it? There is no liability that happened from a near miss. The event didn't occur. There were no offsite consequences. The event didn't occur. There probably wasn't even a worker injury. The event didn't occur. Some wonderful fifth protection layer held, four others went bad and there wasn't an event, a near miss. I learned from a company a few weeks ago, when there is a near miss in one of their facilities, their headquarters is activated as if there were an event. Management of the company is aware that they can be called on Saturday and have a golf date ruined to go to a facility in the field where there was a near miss as if it were a real accident and to handle the situation accordingly. Internally to do a full investigation, to review what went wrong, to review what went right, to review how the emergency procedures held, all of the stuff except for the bad things because nobody got hurt, nobody got injured and then an immediate correction is put into their operating process. They handle a near miss like a real event. Nobody is telling the private sector that they can't investigate and report on that and make it known to populations because maybe somewhere out there is a plant with a similar set of processes and their fifth protection layer didn't hold when the first four went bad. And the accident therefore, did occur. So, I urge you to show us that industry is capable of monitoring itself and handling these issues themselves.

We are not saying I have 9000 pounds do I have to report or I don't quite have that chemical. There is a general attitude, it seems to me, throughout industry, although we still get a lot of these calls unfortunately and Matthiessen probably spends a lot more time answering these than he wants to, but they are diminishing. There is more recognition of the obligation to talk about this issue rather than to argue about whether or not you are included in the risk management planning rule. There is just no point in it. You know if you have a list of 100 chemicals, the 101 is probably not very good and if you put a threshold of 10,000 then 9,000 might be bad also, depending on where you are. There is no point in arguing about that. We should just use the opportunity to say besides that I've got these things and also I have a general duty to operate safely and we certainly haven't fully exercised the prerogatives of the general duty clause yet. But it would be very helpful if we could stop, and it seems to me that we are stopping arguing on the very edges of the issue. I'm going to finish. Let me say there are a couple of great opportunities there in front of us. One is in building on all of these things we just talked about. The other is that we are going to have a five-year accident history as part of the RMP submission in 99. Yesterday Trevor was dealing with five-year bites as he was showing that moving average. I think that we will have a five-year bite sometime next year and maybe we will have another five-year bite, five years later. My guess is that the second five-year bite is going to show significant improvement. My guess is that the second five years is going to show that we have come a long ways. There is a high level of awareness, a high level of understanding, a desire to reduce, an avoidance of criticism, frankly a desire to be good citizens, recognition of the economical advantages of safety, and my guess is that the second 5 years is going to show a significant improvement.

One of the difficulties is going to be how do we know that we have made gains and I have talked to some at this place about helping us get engaged in an intense evaluation project that allows us to allow everybody to be part of the process. I think that too many of us are trying to claim credit and too few of us are trying to give credit. I don't believe that the risk management planning rule itself is going to make chemical safety improve. Nor do I believe the action of a single enlightened CEO is going to make chemical safety statistics overall improve. I don't believe the responsible care program, dense or transparent, without debating that, is going to make things improve on its own. And I don't believe the wonderful work of CCPS by itself is going to improve chemical safety. And I don't think the myriad of state laws, and there are a lot of state laws, some states have simply taken the risk management planning program regulations and adopted them. I don't think those state's actions themselves are going to make a significant or at least unique improvement. It is going to be all of us. It is going to be a worker who works better. A plant manager who makes sure instructions are current, not like that pile of paper that Trevor showed us yesterday and people couldn't find what the rules were. I also believe that it is important that all of us share in trying to get to the goal. I believe that a place like this center, and I am going to talk to Mike and Sam some more about it. I think if several of us, government agencies as well as industry could agree to help provide support and help provide information. We could provide some resources and provide some guidance and look for the development of an acceptable model that would demonstrate that all of us together are making an improvement in chemical safety. We might indeed be stronger and make more rapid progress and certainly all be able to take some element of credit. So my plan is to try to work with Sam and others to create a model under which we may all join and under which all of us together can say gee, each of us in this room and all of the constituencies that each one of us represent are all doing their best and are taking steps forward for the general improvement of chemical safety in the United States and through our leadership throughout the world. Thank you very much.

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