

NIOSH's Role in Agricultural Health and Safety Activities

By Melvin L. Myers, M.P.A.

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MR. GROZA: Our last speaker, Melvin L. Myers is the Special Assistant to the Director for NIOSH. He has served in that capacity since 1988. He, as you know, was instrumental in coordinating the first Surgeon General's Conference on Agriculture Safety and Health in Iowa in 1991.

Mel grew up on a dairy and hay farm in Idaho where he was active in 4-H and FFA. He is a captain in the U.S. Public Health Service with more than 25 years of service.

Previous assignments include Executive Secretary to the Mine Health Research Advisory Committee; member of the OSHA Advisory Committee on Construction Safety and Health; Deputy Assistant Director to NIOSH from 1986 to 1988; he was the director of the Office of Program Planning and Evaluation with NIOSH from 1979 to 1986; Technical Assistant to the Assistant Administrator for Research and Development at EPA from 1975 to 1979; and he has served in various other capacities with the Public Health Service.

He holds an M.P.A. degree from Indiana University in Bloomington, Indiana; and a Bachelor of Science from the University of Idaho in Agricultural Engineering. He holds numerous awards including the Surgeon General's Exemplary Service Medal. Please welcome Mel Myers.

MR. MYERS: Thank you Tim. I would also like to thank Representative Farrow for putting right up front, the urgency of the problem that we are here to discuss, and Dr. Leach for talking about a strategy that we call win-win. I recall he talked about the same strategy at the Surgeon General's Conference. This strategy is becoming a fabric of the federal government and is called "re-inventing government." I will talk more about that later.

INTRODUCTION

A theme of what I am going to be speaking to you about today, is change; that reinvention process, where we are now and where we are headed.

Part of that change is right here at NIOSH. We are going through some transition. Dr. Millar retired the first of this month. Dr. Lemen, our Deputy Director, is the Acting

Director of NIOSH. He will be here to speak to you on Friday.

There are other changes: a CDC directorship has changed. Last Friday the new Director of CDC, Dr. David Satcher was named. I am going to give you a quote from him later on, in terms of some of the changes he sees taking place, particularly in health care reform. Dr. Satcher comes from Meharry Medical College in Nashville, Tennessee, and will be arriving at CDC on January 1, to take command there.

I see a lot of colleagues here who I know and have worked with for a number of years now in the area of agricultural safety and health. I also see some new faces. I know whenever there are new faces, there is always this question about why is the Navy in town! My uniform may need a little explanation. The U.S. Public Health Service is a very old organization in this country. It

was founded in the marine business of this country. The Merchant Marine have been provided health care by the Public Health Service for a number of years. At one time the Public Health Service was even the medical corps for the U.S. Navy, so coming from that background you see the adoption of the uniform that the Navy uses, but with some important differences. That difference is the insignia that you see on the shoulder boards of the Officers who you see here. It is an anchor crossed with a caduceus.

Another change that we hear a lot about, and that is going to get some attention at this meeting, is the flood in the upper Mississippi River area. This is an unprecedented flood, something very different from the past. There are going to be some different ways of building and thinking about flood plains in construction.

One problem that has surfaced out of the flood issue, is some deaths in wells. There is a report out of Iowa of one farmer going down in a well and dying, probably from the lack of oxygen.

There is a report in Nebraska of a family of three people, involved in agricultural services repairing a well. The father of the family went down and collapsed in the well. His wife ran up to a house to call 911. As she did, a son said he just could not stand it, he was going to go down to rescue his father, so he did. He collapsed. Then the mother, waiting for 911, thought she ought to do something. She went down and collapsed. The only survivor out of the three who went into the well was the son. Even now we are not sure that he is going to survive from the brain damage that he has incurred from that

exposure, more than likely to the lack of oxygen.

A story I was told related to this. In fact, I went out and got the book to read the story. It is from "The Little House on the Prairie," by Laura Ingalls Wilder¹. In that story it is about Pa as a pioneer farmer in the Midwest, digging the well. A neighbor, Mr. Scott came over to help out. Pa always took this candle down the well because he knew of a hazard down there, the potential lack of oxygen, and if the candle went out then he should not be down there. Each day they went down in the well and the candle burned okay.

Mr. Scott came over early one morning and wanted to get a head start on helping to dig that well. Ma went out of the house and saw that Mr. Scott's horse and buggy were there. He had collapsed in the bottom of the well. They ended up getting him out.

Mr. Scott thought that this whole business of bringing a candle down in the well did not mean anything. He had been in a lot of wells many different times and never had that problem before.

This is an old story that many of us here know about manure pits as well. People go down in the pits with no problem. But there comes a time when there is a problem. So there is a need for change too! Not only is change taking place, but problems just cannot keep happening.

This problem in terms of wells may or may not be associated with the floods, but we are seeing them in the aftermath of the floods. We are still investigating them. I am sure

this is going to be a discussion topic that will come up in the meeting related to the flood that is ancillary to this meeting.

There are some documents that are part of your packet. One is this draft of the, "Farmer Safe 2000 Summer Edition." In front of this draft is the topic about the flood problem.

Related to this, just last Friday we issued an "Update." It is not out here yet, but will be out here later this week. NIOSH warns the midwest of hazards of flood clean-up work. The well issue is mentioned here as part of the general problem of going into confined spaces. This is an area that is of sincere interest by NIOSH. We have one person already assigned in the State of Missouri to help the state health department there with such problems as these.

In terms of the change, I would like to go through three areas. One is the NIOSH role as it is now and how it is evolved. Two, I want to talk about the Vice President's work on the national performance review, what may be happening in terms of reinventing government, and how that might affect us. Three, I want to go into the whole issue of something, and I will call it here, "reinventing NIOSH." We started a process of total quality management over a year ago at NIOSH. We are now getting down into the grassroots in terms of that training.

As part of that process, some people who are here from Cincinnati just came from a Deming Seminar in Cincinnati.

ROLE OF NIOSH

I started thinking about the title of my talk, "The Role of NIOSH in Agricultural Safety and Health". I did not want to be static, and that is why, because things are changing so much, I wanted to focus on change. It does bear mention to go back and see how we got to where we are.

NIOSH was created by the Occupational Safety and Health Act of 1970. In 1971 NIOSH was created as a result of that Act. Shortly thereafter, OSHA, which was also created as a result of that act, convened an Agricultural Safety Standards Committee, on which NIOSH participated. There is a gentleman, not the one here from New York, but one that was with NIOSH at that time, Dr. John May, served on that committee. John May is a close friend of mine.

That committee recommended several standards, one of which led to the roll-over protection structure (ROPS) standard by OSHA in the mid-1970s, as well as the machine guarding standard. Many things came out of that process, but a lot happened politically that stopped that process at OSHA.

NIOSH, however in 1974, did convene a conference in Iowa City. It was on agricultural health and safety. Several conclusions at that time came out. One of those was agricultural safety and health received much less attention than it should. Another was related research was generally scattered and had low visibility. There might be some research going on, but you could not capture it as part of an agricultural problem. State programs and occupational safety and health had not been applied to agricultural safety

and health. It had been an ignored area.

Many of those things remain true today, although I think there is a lot of movement today, in terms of recognition of the problem, and a lot has happened at both the state and the national level in terms of occupational safety and health.

Over time, we have had different sets of objectives in the Public Health Service. The latest set is called, "The Year 2000 Objectives." Within those objectives in occupational safety and health, some are specifically targeted at agriculture, particularly fatalities and injuries. That is another part of our time line and the things we watch at NIOSH.

Probably the most significant "happening," in terms of agricultural safety and health at NIOSH, was the Appropriations Act of 1990. In that Act there was a statement made to launch an initiative, which NIOSH would lead, when sustained over a period of time, would result in a significant and measurable impact on health affects among rural Americans. That is the guiding principle given to us by the Congress in our program. That still remains our guiding principle. Thus, we are looking for measurable impacts in safety and health.

REINVENTING GOVERNMENT

Some other new things are happening that are affecting us. Some of you were in Morgantown in the early spring at the meeting of the health promotion grantees, as well as some from the centers and nurses programs, where I talked about OSHA reform. OSHA reform, at that time, was pro-

jected to be enacted this fiscal year. A lot of competing items on the President's agenda overwhelmed that particular initiative for this year. Also OSHA and NIOSH have taken more of a systematic interest in how that language might read. This is going to probably continue into and be debated next year. OSHA reform will probably be passed, within two years. That is the best projection we currently have.

Another reform that is taking place is health care reform. Dr. David Satcher, as part of his news release upon his appointment on Friday, said that CDC's injury and disease prevention dimension will be an essential ingredient of health care reform. In other words, prevention is going to be a big part of what happens in terms of health care reform. I think that, since that is first thing he said about his appointment, is very noteworthy.

Speaking about reinventing government, we at NIOSH are following, the Deming philosophy. He follows a logic called a "profound knowledge." It is a system of profound knowledge that includes four elements. One is optimizing systems. Two is understanding variability in data. Three is applying the theory of knowledge, which is a scientific approach. Four is understanding psychology. Psychology is so important in terms of agriculture and the people who work in agriculture.

SYSTEMS

First, looking at optimizing systems, refer to **Figure 1** which illustrates a NIOSH system. It is customer focused. Everything should be leading towards those customers against some common goal. For our purposes to-

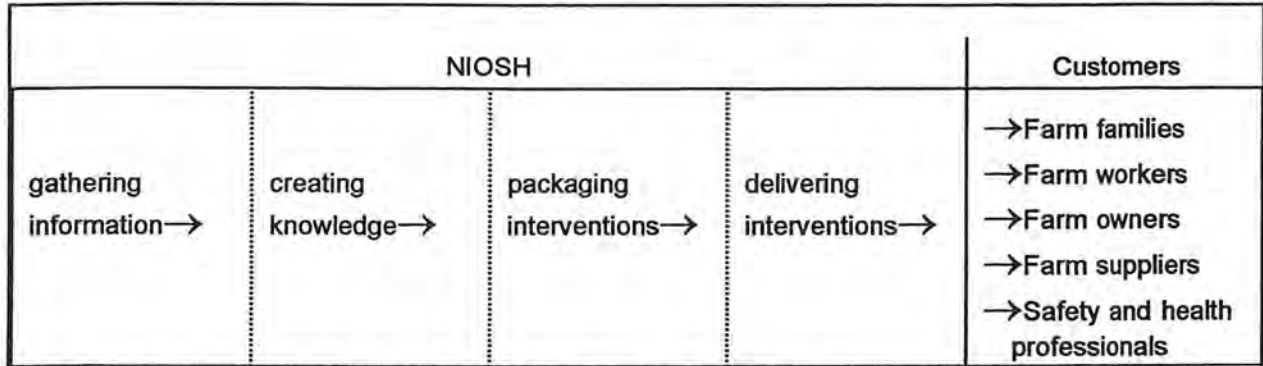


Figure 1. The NIOSH System with a Focus on Customers.

day, I have named several customers here from the NIOSH systems standpoint; farm families, farm workers, farm owners, farm suppliers, and the safety and health professionals wherever they may be, maybe in state health departments, agricultural extension agents, people who work at OSHA. It is broad range of people.

The systems approach is understanding that there are customers out there who need to be served. They are the people who should be driving that whole system.

UNDERSTANDING VARIABILITY

Figure 2 Second is understanding variability. Normally the control chart, which Figure 2 shows, is applied to quality control within internal system. I started thinking that this is a way to look at our programs using a control chart. There may be some errors in my interpretation. A statistician may be able to do a lot better with what I have done, but I want to demonstrate some of the tools of total quality management.

This is taken from our National Occupational Traumatic Fatality (NTOF) database for 1980 through 1985. States that have five or

fewer fatalities in agriculture over that period are not listed here. I have ordered these States in order of industry population, primarily to look at possible patterns by size of population in States.

In Figure 2 you can see the average fatality rate of the whole country. The control limits are three standard deviations above the average and three standard deviations below the average. Anything within those two limits is considered to be a stable system. In other words, there is a common cause for these fatality rates. Anything that is outside those control limits, we are taught under the Deming principles, is unstable. There are unique causes for those.

As to a pattern, in the higher population numbers on the left side of the figure, there is more stability in the system, or more common causes. There may be some data problems On the right side that represents smaller working populations. That is a hypothesis. If you look at the very end on the right side, there is Alaska, and if this chart would go up to 300, that is where it would go to; very, very high. What do you think is the unique cause in Alaska? There is not a lot of farming there. (Comment off mike.)

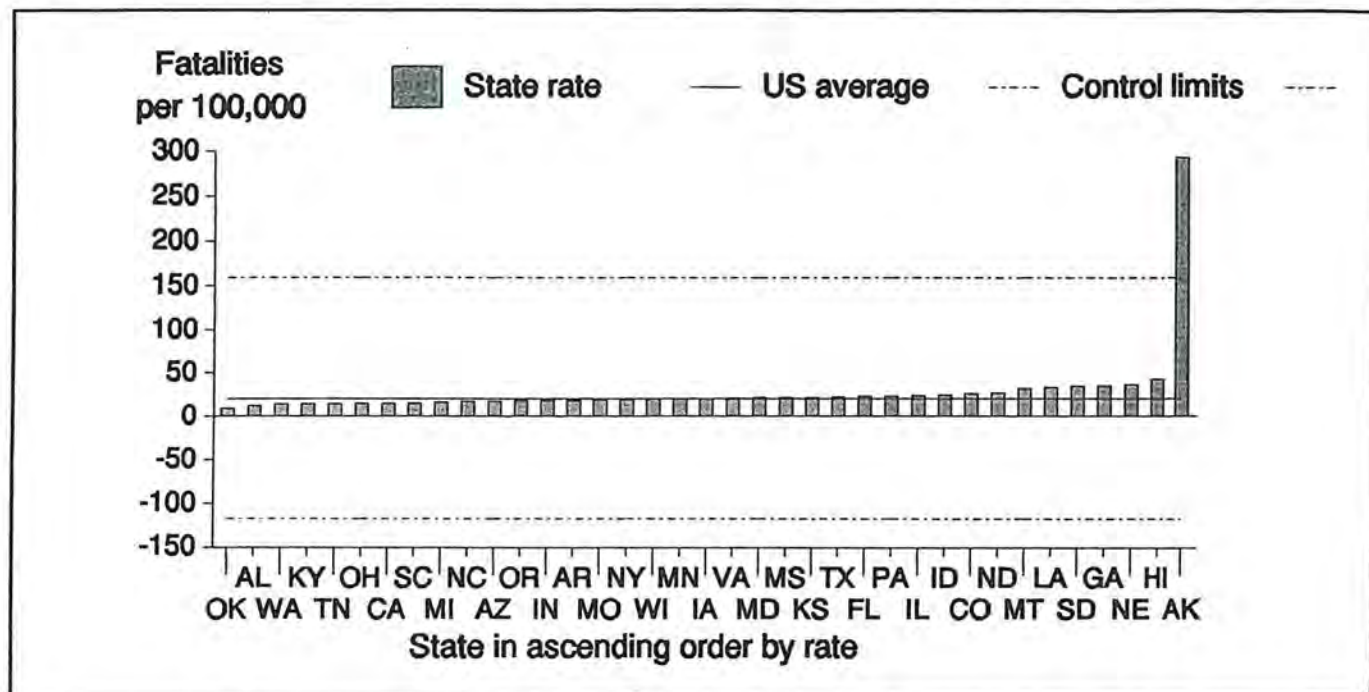


Figure 2. A Control Chart of Occupational Fatality Rates for 37 States.

Bering Sea. Good! It is fishing. When we talk about agricultural safety and health we look at standard industrial classifications. We include farming, forestry, and fishing together in this classification. In Alaska, while I was there three years ago, there were 37 fatalities in fishing and one in farming. So it is the fishing numbers there that are the unique cause. This idea of variability data that Deming talks about seems to have creditability. We have established an office there to look specifically at the problem of the high fatality rates in that State.

Conversely, in terms of where is the best State, well, Oklahoma is down here. One could ask the same question. What is going right in Oklahoma? I do not know. That is the question. It could be a subject for research. I have looked at an analysis by the State health department under an injury con-

trol grant. When looking at the different causes of death, they were measured differently than we do with the NTOF. It included children, it excluded incidents on the road, and it excluded any incidents inside the home.

The highest number of fatalities in terms of frequency were violence (suicides and homicides) either by firearms or by hanging. That is number one in Oklahoma. Number two was drownings. A lot of kids get in the ponds. Finally you get down to the causes that we are typically concerned about, tractors and machinery.

The picture is a little different depending upon how you look at the data. One message here is that there may be different ways of looking at the data. Another is understanding what the problems are. They are

very different in Alaska and Oklahoma.

THEORY OF KNOWLEDGE

Another area is applying the theory of knowledge. This is the scientific method where you set up a hypothesis. You say you are going to try something, then you set out to do it, and you test it to see if you did it or not. Then based upon that result, you take further action. There is something called a Deming cycle that is used in that process. But for us at NIOSH and many of us in this room, it is known as the scientific method. It is basing your actions on facts.

UNDERSTANDING PSYCHOLOGY

Number four is understanding psychology. I mentioned the win-win philosophy. The whole approach under Deming is cooperation, not competition. You try to get all the actors who are affected and create a scenario in terms of prevention where everybody comes out ahead.

As one example of cooperation, there was a childhood agricultural injury symposium a year ago last summer the Marshfield Clinic in Wisconsin². The major funding was provided by B.P. America, CIBA-GEIGY Children's Miracle Network, W.D. Connor Charitable Lead Trust, Deere and Company, Farm Foundation, W.K. Kellogg Foundation, Saint Joseph's Hospital, NIOSH, Pioneer Hybrid International, and *Successful Farming*. Look at all those actors coming together around a common problem. That is cooperation.

So those are the four elements of the Deming system. I think there is already a foundation for NIOSH in reinventing gov-

ernment.

REINVENTING NIOSH

When we come to NIOSH what does this mean? We started with a vision statement. Our vision statement is, "Delivering on the Nation's Promise, Safety and Health at Work for All People Through Prevention". One promise is the statement that I referred to earlier, made by the Congress for this program, three years ago. That is a promise to the nation. Also, the Occupational Safety and Health Act has language that was a promise to the nation. These are the promises that we look at to guide us.

We included, "for All People," because at work we want to make sure that we include people who are self employed and children at the work place. In this way, the vision is very broad, but we wanted focus too. Focus comes with that word "Prevention". That is the "punch" line for the vision statement. This vision statement guides us.

The Congress defined this program on three processes: surveillance, research and intervention. In defining our system, in terms of processes at NIOSH, is a definition of four processes: gathering information; evaluating, integrating, and creating knowledge; packaging our interventions; and delivering our interventions. I am going to give you some examples of each of these.

GATHERING INFORMATION

In the area of gathering information, we are working with the USDA and their national Agricultural Statistical Service in collecting data in selected States to help us define, much more specifically, problems of safety

and health. In addition, we are broadening out, as you will see in a couple of the presentations later on in this meeting, into the area of migrant farm workers and their unique problems in this country. These are examples of needs to gather more information.

CREATING KNOWLEDGE

In terms of creating knowledge, there is a lot of research in progress. In the back of the draft "Farmer Safe 2000 Newsletter," are listed several NIOSH projects. Most are research projects. The value added that we get from the Creating Knowledge process is predictability. If we do good in science then we can predict what causes something, do something about that cause, and predict what the potential impact may be from controlling that cause.

We are moving with some of our grants next year to focus on some demonstrations, using ROPS to control these serious problems that Representative Farrow mentioned earlier. These problems are the fatalities from being crushed under a tractor when it rolls over.

PACKAGING INTERVENTIONS

Historically, we have just hoped that things are going to happen based upon what we do. What we need to do is start refocusing better in terms of making things happen. I will give you some examples of some interesting actions going on now from this program.

In terms of packaging interventions, Pierce Jones at the University of Florida, has put together a CD ROM system; some of you will see him around here with his laptop. Some very innovative things have happened

there. In that particular grant, as a result primarily of the meeting in Morgantown last spring, he has connected with several different people in the health promotion program as well as in the nurse's program. He is drawing information into that CD ROM system so if something is done on, say, chainsaws here or in Tennessee, south of here, then it might be useful in Florida where they had a hurricane. In Florida they thought little about chainsaw safety until they had the hurricane. They can import that information right away and use it a network of agents or public health people.

The types of information that he has collected, include documents in Spanish. There are over 20 different documents from the nurse's program in California, both in English and Spanish. Florida also has documents in English and Spanish. A document from New Jersey which is also in English and Spanish is going into this system. Each of three States have different dialects of Spanish, so it is to be a test of how we may be able to transfer these documents from one part of the country to another. This is part of what we are trying to learn, how can these different dialects communicate? Is there some way to change the translations in a way so that the documents can transfer across the country easily?

There are six fact sheets in the system from Michigan. One of them is on zoonosis. From North Carolina, there are five documents of which one is on protective clothing. There is one that I mentioned from Tennessee, the chainsaw document; from Ohio there is wood dust; from Pennsylvania, one on power takeoff (PTO) safety; and from Kentucky, one about grain bin

suffocations. Of note from New Jersey, is something on marine safety, which may be useful in Alaska.

These are examples of some packaging interventions, some new things going on that just happened this year, and they are going to pull it together. I think there is some future in that.

DELIVERING INTERVENTIONS

In terms of delivering interventions, Bob McLymore from North Carolina is convening a conference next month, called, "Harvesting Safety and Health in the Southeast." There will be a focus on some different populations. Migrant workers are one of these populations. Coming to that conference, will be people from 15 different States in the traditional black land grant colleges. They are going to be part of the network in receiving CD ROM products from the University of Florida.

Delivery will take place there in getting this information out to special populations in areas that we have not targeted before. So there are some exciting things taking place there.

I wanted to review some traditional areas of intervention, which in the early 1980s, Dr. Millar and I collaborated on, in focusing "The 1990 Objectives for the Nation."³ There is an order of coerciveness in interventions, from being very friendly to being police-like. How we classified those, was in five categories.

1. The first category was providing information. An example is the NIOSH Up-

dates. You will see a lot of these at our exhibit at the symposium. One example is a gasoline powered pressure washer that can lead to exposures to carbon monoxide and death. That is becoming a potential problem, in the flood areas, in terms of clean up operations there.

2. Second is offering services. This is things like the NIOSH 800 number. If you do not have that, it is 1-800-35 NIOSH. You call it and ask about information on occupational safety and health. They may send you something or refer you elsewhere. You will see an exhibit at this symposium on an item that is a result of such a service, our health hazard evaluation program. That exhibit is on brucellosis, a problem that was investigated in North Carolina.

3. Third is enunciating policies. An example is NIOSH recommendations. We make recommendations on safety in the area of welding, as an example. In the case of respirators, we endorse through certification, a design of a respirator that we determine to be safe.

4. A fourth category that NIOSH is not involved in, is establishing incentives such as economic incentives. These can be established through tax incentives or through grants through a farm bill. Right now that is not something that NIOSH has within its authority, at least from an appropriations standpoint.

5. The fifth category is "compelling citizens." This type of intervention uses inspection and enforcement, and it would be like the OSHA standards approach.

That is a range of interventions that could be used in some combination depending on the problem. A large problem, in terms of fatalities in farming, is on the roadways. Maybe there are ways through compelling of citizens, to do better in being more safe on the roads.

on agricultural safety (they all do not necessarily focus on agricultural safety), and having accomplished something unique.

By the way, just last week, the National Center for Health Statistics came out with a reranking of its top ten leading causes of death in this country. Injuries fell down from number four to number five. The reason for that drop is improved safety on the roads. Something has been going right, at least in the general population.

CONCLUSION

In conclusion, I want to just talk about youth, because I think they are a principal agent of change. We have been involved with the FFA over the last three years. In the back of this document you will see some abstracts of FFA safety projects. Each year we have honored seven different FFA chapters, now totalling 21. We did not have them here at this meeting, because this is their first week of school, which presented a conflict for some chapters. So rather than not having only a few here, we thought it would be better to treat them all the same. We sent them a plaque to honor them for their safety program.

The background on this FFA program is that companies provide support for FFA's safety program that results in about 50 gold award winners each year. We wanted to make a special point of recognizing those that meet certain criteria, such as conducting a community assessment ahead of time, focusing

The Marshfield Clinic has also used the FFA in their cancer program, to teach young children. In this program, the FFA go beyond high school students. It gets down to the children at the third and fourth grade in teaching about wearing protective clothing. The clothing keeps the sun from getting on the skin, which is the principal cause that we associate with skin cancer in agriculture. FFA and youth are an important focus for us in the future. ■

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**PROCEEDINGS OF THE
NIOSH SYMPOSIUM ON EFFORTS
TO PREVENT INJURY AND DISEASE
AMONG AGRICULTURAL WORKERS**

**August 25-27, 1993
Lexington, Kentucky**

**Convened by
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health**

July 1994

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Springfield, VA 22161
NTIS PB 93-114890/\$77.00 or A/06

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
GPO 017-033-00463-3

DHHS (NIOSH) PUBLICATION NUMBER 92-105

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