I would like to express my appreciation to the organizers of the Conference for the honor of including me as a participant in this morning’s Program. I would also like to compliment the organizers for selecting the theme of the presentation for this morning—navigating uncharted territory in occupational safety and health research. These days, we must make our way through some truly uncharted territory, and even through some territory that we thought had been well-charted, but appears not be anymore.

As the great American philosopher—Yogi Berra—once remarked, “the future ain’t what it used to be.”

If Mr. Berra had been referring to the times we currently live in, we would certainly not disagree with him.

And, even though it is difficult to make predictions, especially about the future—as Mr. Berra would say—anticipating future challenges in workplace safety and health is unavoidable if we are to properly prepare for them.

This morning, there are eight challenges I would like to bring to your attention:

**First**, the *evolving organization of work*, and the challenge that it poses to our traditional system oriented as it is around chemical, physical and biologic hazard prevention;

**Second**, the *changing face of the American workforce*, and the challenge to build a transcultural workplace injury and illness prevention system;

**Third**, the important role that workplace *health promotion* will have in an integrated approach to the workplace health protection of the future;

**Fourth**, the *persistence of readily preventable hazards*, and the challenge we face in effectively communicating well-established hazard control solutions;

**Fifth**, the challenge of making control strategies contained with standards, recommendations and guidance documents relevant to the needs of small and medium-sized employers;
Sixth, *genetic research*, and the challenge that it will bring to the 21st century employer-employee relationship;

Seventh, *global terrorism*, and the challenge that it poses to the security of the American workplace; and

Eighth, *HIV, SARS*, and the challenge that communicable diseases pose to our workplaces.

**THE EVOLVING ORGANIZATION OF WORK**

The first challenge concerns the rapid evolution of how work is organized. And that evolution is challenging an injury and illness prevention system whose exclusive focus on physical, chemical and biologic hazards now seem to be incomplete.

Developed economies, such as the United States economy, have transformed how they organize work activities—largely in response to the globalization of trade, deregulatory political, legal and trade policies, and enhanced technological capabilities for instantaneous computerized informational communications. Business restructuring now emphasizes speed, agility, simplicity, customer satisfaction and added value. Restructuring has led to organizational management practices such as downsizing, flexible labor arrangements involving temporary or contingent workers, decentralization, lean production and modular manufacturing. Under the new rubric of "high-performance" work organization systems, the characteristics of many jobs in America have changed and their effect on workers' health and safety is largely uncharted territory.

Many work organization trends, such as reduced job stability, increased workload, narrower decision latitude, longer hours and a heightened sense of "job strain," increasingly appear in job satisfaction surveys and as reasons for stress claims in the workers' compensation insurance system.

In America, prime-age-working couples are now contributing nearly four additional months of annual work time over what they did in 1970. While the number of hours worked per person has been declining in Japan and in European countries, US workers' average weekly work hours are now the longest in the developed world.

There is a growing appreciation that the organization of work can have an impact on stress-related health outcomes such as cardiovascular disease, hypertension, musculoskeletal disorders and psychological conditions.

In addition, workers with multiple jobs, or consecutively extended work shifts, might be at risk of exceeding permissible exposures limits to industrial chemicals.
whose levels were set many years ago using a shorter-shift paradigm and different assumptions about how work was organized. Even for those of us who, on occasion, forget and view the human being as more mechanistic than biologic, we should remember that there exist hard-wired, biological limits to the human circadian sleep-wake cycle. Ignoring these limits may increase the risk of injuries arising from overexertion and from inattention to tasks that require a high degree of concentration or vigilance.

The evolutionary changes in work organization in the past ten years has outpaced our understanding of their implications for work life quality and safety and health on the job. Because these emerging hazards arising from work organization are more “intangible” than the traditional physical, chemical and biological hazards our current injury prevention system is designed to handle, we need an innovative research agenda for the new organization of work “hazards.”

The National Institute for Occupational Safety and Health has recently published the first report to be issued by any national occupational safety and health institute on the topic of Organization of Work.

The Report, entitled “The Changing Organization of Work and the Safety and Health of Working People: Knowledge Gaps and Research Directions,” identifies gaps in what we know about this new area of research and contains a detailed research planning agenda to fill in those knowledge gaps.

First, we need better data collection to understand the prevalence of work organization risk factors and a method to standardize work organization surveillance practices.

Second, we need to better understand the health and safety effects of interventions initiated by management to improve workplace productivity and quality.

Third, we need intervention research to assess practices that may protect worker safety and health during times of significant organizational change.

And, fourth, work organization needs to be promoted as a cohesive field of study both within occupational safety and health, as well as introduced into the curriculum of schools of management.

In summary, the changing organization of work in America—and what we already know about its effects on human well-being—will force us to reprioritize our current workplace injury and illness prevention system goals, if for no other reason than that a worker or manager’s ability to achieve physiologic and psychologic stability in the midst of radical organization change is critical to his or her survival as a human being.
THE CHANGING FACE OF THE AMERICAN WORKFORCE

The second challenge involves the face of the American workforce and the challenge that it poses for us to build a transcultural workplace injury and illness prevention system.

First, substantial numbers of people at the extremes of old and young age now compose the American workforce.

At the upper extreme, the baby-boom cohort will soon all be within the ages of 46 to 64 years old and will account for a substantial share of the American labor force. The challenge for us is helping employers overcome some of the myths that employers have about older workers—that they have poor health, lowered job performance and they are not technology trainable because “they are set in their ways.” Most chronologically gifted workers want to keep their skills up-to-date, but managers and safety trainers need to recognize that older workers learn differently than younger workers, and utilize those approaches that are age-specific.

At the lower extreme, younger workers pose different challenges when it comes to injury prevention training. Among the findings of a National Safety Council study of workplace safety and health training issues involving young workers were that: safety is not seen as a value because many young workers feel that they are invincible; that they can overcome any problem; that injuries that happen to others won’t happen to them; that young workers lack a sense of self-advocacy—they feel that they do not have the authority to call attention to unsafe conditions and are intimidated by authority; and that literacy and language barriers are significant and must be overcome to reach a younger worker audience.

Second, more women now work than ever before. The labor force participation rates of women in nearly all age groups are projected to increase during the upcoming decade. In addition to women having different employment patterns and jobs than men, women experience musculoskeletal injuries such as carpal tunnel syndrome at a rate that exceeds men’s; they are concentrated in industries like healthcare, childcare, teaching and in-flight airline crews, where there is an increased risk of being exposed to communicable diseases; they are at special risk for adverse reproductive outcomes; and they are disproportionately affected by workplace violence.

Third, as a result of changing societal and legal approaches to those with disabilities, more individuals with partial disabilities now receive accommodation and continue working. The population of workers who are working with medical conditions will increase, forcing us to expand our risk assessment strategies to include how occupational risks might affect non-occupational medical conditions.
In doing so, occupational safety and health professionals will enhance safe employment for the worker and his or her co-workers.

**Fourth,** immigration is transforming the American workforce. In general, immigrants tend to have lower educational attainment, greater poverty, and less income than the native-born, non-immigrant population. Over a third of all unskilled jobs are now held by immigrants and about half of the foreign-born population in the United States is from Latin America. The Latino population represented 9% of the American population in 1990, by 2000 the representation of Latinos had grown to 12.5% and by 2050, it is predicted that Latinos will represent one out of every four persons in the United States.

Latino men and women are more likely to be employed than non-Latino workers in riskier blue-collar and service occupations, such as farmworkers, janitors, construction laborers, cooks, groundskeepers and gardeners. Surveillance data show that racial and ethnic minorities suffer disproportionately from both fatal and non-fatal work-related injuries and illnesses.

Latino men and women are more likely to be employed than non-Latino workers in riskier blue-collar and service occupations, such as farmworkers, janitors, construction laborers, cooks, groundskeepers and gardeners. Surveillance data show that racial and ethnic minorities suffer disproportionately from both fatal and non-fatal work-related injuries and illnesses.

Latinos are at particular risk when it comes to workplace fatalities— their workplace fatality rates appear to be increasing even as fatal work injury rates for most other US workers are declining.

According to Bureau of Labor Statistics’ National Census of Fatal Occupational Injuries (CFOI), fatal injuries to Latino workers were up by 9 percent in 2001 to 891 deaths. The rise in Latino worker fatalities in 2001 came from the service and agriculture industries, rather than from the construction industry as in prior years. At the same time, fatalities among white, non-Hispanic, workers decreased for the sixth year in a row and fatalities among black, non-Hispanic, workers fell for the second year in a row.

Latino workforce safety is a national issue. Data from the 2000 Census tells us that the challenges in occupational safety and health are not limited to those states traditionally associated with large Latino populations— such as California, Texas, New York and Florida. Rather, the challenge of developing culturally integrated approaches to workplace safety will impact numerous other states not traditionally known for large Latino populations— such as North Carolina, Arkansas, Georgia, Tennessee, Nevada, South Carolina, Alabama, Kentucky, Minnesota and Nebraska. These ten states showed anywhere from a 150% to a 350% increase in their Latino populations between the 1990 Census and the 2000 Census.

The National Institute for Occupational Safety and Health considers reducing the workplace fatality rate among Latinos to be of paramount importance for the future of the American workplace.
In 2000, NIOSH sponsored a National Academy of Sciences conference on “Communicating Occupational Safety and Health Information to Spanish Speaking Workers and Employers in the United States.” From this starting point, NIOSH is developing a Hispanic Worker Initiative aimed at improving risk communication for Latino workers and Latino supervisors and employers.

Finalmente, debemos estar concientes y tomar encuesta que la seguridad y salud del trabajador latino es algo muy importante para la seguridad y salud de todo obrero americano.

HEALTH PROTECTION AND HEALTH PROMOTION

Protecting workers from hazards arising solely in the workplace—viewed traditionally as under the complete control of management—has been the focus of the governmental workplace safety and health paradigm for over thirty years. Our third challenge is to integrate workplace health promotion together with our traditional health protection strategies.

Promoting worker behaviors that reduce exposure to risk factors causing household, recreational and motor vehicle injuries, as well as exposure to risks for the development of chronic diseases, such as obesity, diabetes mellitus, cancer and tobacco-related respiratory diseases, will become a focus of the 21st century workplace. Health promotion and health protection—the goals of a truly comprehensive workplace injury and illness prevention program of the future—will work in synergy to ensure the “work ability” of the American workforce.

Ensuring total workforce health—and control of individual health risks—has to become as important a goal of occupational safety and health programs as health protection against workplace risks currently is, if we are to maintain an able workforce. Not only does the current epidemic of obesity and diabetes among young Americans necessitate health promotion in the schools and in the workplace, but the overlap in causation between occupational and non-occupational risk factors suggests that a combined health protection and health promotion program is the most cost-effective way to spend scarce occupational health, and public health, prevention dollars. For example, if obesity increases the risk of developing work-related carpal tunnel syndrome by 200%, as has been reported, then the most effective ergonomic injury protection program is one that has a control strategy for obesity along with control of occupational risk factors.

Integrating health protection and health promotion will not be easy—those most skilled in health protection are not usually those most skilled in health promotion and vice versa. Furthermore, excessive medicalization of health promotion activities in the workplace, and fears that an emphasis on health promotion represents in a “blame-the-worker” mentality, has hindered their widespread implementation. However, when health promotion incentives are introduced into
a workplace, which also has a strong health protection program, studies have shown that health promotion can have a positive effect on workforce health. The National Institute for Occupational Safety and Health believes that more needs to be done to improve the synergistic application of health promotion activities within traditional worker health protection programs.

Without health promotion, occupational safety and health programs—even when we think that they are the best that they can be—will only be addressing part of the 21st century workforce health challenge. Injury and illness prevention of the future will require more than just health protection.

**THE PERSISTENCE OF READILY-PREVENTABLE HAZARDS**

Fourth, while challenges from changing work organization, workforce demographics and overall workforce health occupy our safety and health agendas, we must not forget that traditional workplace hazards that give rise to traumatic injuries still persist despite the existence of effective control strategies for their prevention. The persistence of readily preventable workplace hazards challenge us to more effectively communicate these injury prevention solutions.

Even though the general trend in injury and illness rates is downward, injury rates have not declined across every industrial sector. For instance, fatalities from falls in 2001 increased by 10 percent over 2000 levels, which represent the highest number of fatal falls recorded since the Census of Fatal Occupational Injuries began in 1992. Fatal falls in the construction industry increased 13 percent in 2001 over 2000 levels and accounted for over half of all fatal falls.

Furthermore, a closer look at declining injury rates will reveal that while they are trending downward, they are approaching zero at a very slow rate. In fact, if you look at fatal and non-fatal injury incidence rates for many industries across time, you'll see that the downward injury rate curve is tending toward zero, but very slowly—too slowly. Such an asymptotic curve suggests that further injury reduction success will be more difficult to achieve than it was at historical points on the curve with much steeper slopes.

The persistence of injuries arising from readily-preventable hazards means that we have more aggressively apply our analytic research methods to ferreting out all of the factors—mechanistic, behavioral and managerial—that are causally associated with each remaining traumatic fatality or injury in industries with asymptotic injury reduction curves, and design control technologies to intervene in the causal chain of injury production. Gone are the days of hazards that had such high relative risks that it was easy to find the cause and easy to implement control technologies to get the injury incidence rates down. Now, we all work on the plateau portion of the injury reduction curve.

What is needed now is not more etiologic research into already well-described occupational injuries and illnesses, but more interventional research to determine
which control solution is most effective in which workplace setting. Furthermore, we need to research how we can more effectively transfer or communicate our interventional research findings, as practical workplace solutions, to those in the best position to implement them in the workplace.

In order to foster this type of technology transfer, NIOSH will launch on its website a **Workplace Solutions** feature that will crystallize basic and applied research information about a particular safety and health problem—say silica exposure in sandblasters—into readily-utilizable, electronically-available, practical solutions for the workplace.

And, also, in order to foster more effective communication between NIOSH and you—its customers—the National Institute for Occupational Safety and Health launched on May 5th a monthly electronic Newsletter—called the **NIOSH eNews**—which contains news about research findings, new publications and upcoming conferences, as well as featured articles. Once you subscribe, you will receive the **NIOSH eNews** without having to access it from the web—the eNews will come to your electronic mailbox address automatically.

**STANDARDS-SETTING**

The challenge of making control strategies contained with standards, recommendations and guidance documents relevant to the needs of small and medium-sized employers is our fifth challenge.

Setting standards—either mandatory or voluntary, making recommendations, or providing guidance to the entire spectrum of American employers is not an easy task. Doing it for the more intangible hazards that will emerge in the 21st century will add further strain to our 33-year-old substance-by-substance system for chemical, physical and biologic hazard prevention.

The complexity of occupational safety and health standards has always been a challenge for employers of whatever size. But, for small and medium-sized employers who lack access to specialists to recommend appropriate control solutions, the lack of easily implemented control approaches within a standard often frustrates the prevention purpose of standards, recommendations or guidance documents.

For employers in developing countries, transplanted American standards, recommendations or guidance, without easily implemented control strategies, may not be viewed as especially helpful. To increase the relevance of standards to the prevention goal they are designed to serve—through more specific control prescriptions—greater attention will need to be focused in the future on
international control methodologies as the global economy grows more sophisticated.

One tool being developed—control banding—is prompted by the growth in the use of chemicals in small and medium-sized businesses in both developed, and in developing, economies. In developing countries, employer access to specialists with the experience to control exposure to chemicals is limited, or, in most cases, non-existent. The same is true for small to medium sized employers even in developed countries.

Several countries—as well as the International Labor Organization and the World Health Organization—are developing tools based on the control banding technique.

As chair of the World Health Organization’s Collaborating Centres on Occupational Health, the National Institute for Occupational Safety and Health is interested in determining if control banding can be validated as a practical model for control solutions.

GENETIC RESEARCH AND THE WORKPLACE OF THE 21ST CENTURY

An important milestone in the history of medical science is the recent completion of a “working draft” of the human genome sequence. The identification of all human genes and their regulatory structural regions provides the framework to greatly expedite our understanding of the molecular basis of disease and is destined to revolutionize the practice of medicine.

Among the advances in molecular biology and bioinformatics will be genomic profiling which will complement targeted genetic testing in facilitating presymptomatic identification of individuals who are at risk for a specific disease and therefore allow early preventive and therapeutic intervention.

However progressive the use of genomics may be viewed for medical science, it is viewed differently when its use is contemplated in the workplace. One can certainly identify benefits which genetic information may provide to employers. Access to genetic information can provide an employer with a wealth of information about applicants and employees. From the workers perspective, though, concerns exist that an employer’s use of genetic information may be detrimental to employees.

Generally, genomics can be used in the workplace for at least four different purposes.

(1) Genomics can be used to assess a workers’ genetic predisposition to illness in general, and employers’ rising health care costs will provide a powerful economic incentive for such use.
(2) Genomics can be used to assess a workers’ genetic predisposition to occupational illnesses in particular—perhaps to exclude a worker from employment or from a particular assignment where the worker’s genetic make-up may make the worker unusually sensitive to an adverse health effect from a particular exposure—perhaps even at levels below any required or recommended exposure limit.

(3) Genomics can be used to conduct medical surveillance of workers to assess the presence of adverse genetic changes as a result of workplace exposures.

And (4) the most prevalent use of worker genetic testing today is in research on disease susceptibility—where the values of employee privacy, confidentiality, autonomy, and protection from discriminatory use of the research results can be better ensured.

Each of these purposes, represents uncharted scientific, ethical, legal and employment relations territory. Nevertheless, occupational genomics should become a field of interest for every occupational safety and health professional because the science of predictive genetics will only grow in sophistication in the 21st century and its application in the workplace will press upon us.

GLOBAL TERRORISM AND THE SECURITY OF THE WORKPLACE

The challenges for all of us in the health and safety community are significant enough considering changes in work organization, the changing workforce demographic profile, the rise of newer workplace hazards, and the persistence of older ones, but these challenges are magnified many fold by the effect of global terrorism on the security of the American workplace.

We are now faced not only with the need to respond to the challenge of how to eliminate safety and health hazards in our workplaces, but also to respond to the challenge of controlling threats to our workplaces.

The illusion of American continental impregnability was shattered by the events of September 11th. It is important to remember that the World Trade Center and Pentagon attacks were an attack on workplaces. In Washington and New York, a total of 2,886 workers were killed in one day while working in industries such as finance, real estate and insurance—industries not considered to be high hazard industries. That workplaces were involved should not have been a surprise since the pattern of global terrorism indicates that business workplaces are targeted for terrorist workplace violence much more often than military, government or diplomatic facilities.
Before September 11th, the probability of a workplace event occurring as horrific and destructive as that of the World Trade Center seemed quite remote. Now, it has become inescapable that business workplaces are indeed at risk of terrorist workplace violence and that prevention, preparedness and planning are as crucial to ensuring both employee safety as such activities are in ensuring business continuity.

Concern about workplace terrorism also involves the introduction of a weaponized biological agent into the workplace. The agents of most concern are smallpox, anthrax, plague, tularemia and botulism toxin. Each of these agents can produce high fatality rates—ranging from 30% for smallpox to 80% for anthrax—and smallpox and anthrax have the advantage of being able to be grown easily in large quantities and are relatively resistant to destruction. These attributes make these two agents ideally suited to aerosol dissemination throughout an entire workplace.

As we remember, anthrax spores were intentionally distributed through the United States postal system in the fall of 2001. As a result, five deaths occurred and 22 others developed anthrax (11 dermal cases and 11 inhalational cases). Of these 22 cases, twenty (91%) case-patients were either mail handlers or were exposed to worksites where contaminated mail was processed or received.

Concern about introduction of chemical, biological or radiological—CBR—agents into an indoor building environment has prompted the National Institute for Occupational Safety and Health to provide guidance about how to protect fixed worksite buildings from having their air supply contaminated by chemical, biological or radiological agents.

In cooperation with the Interagency Workgroup on Building Air Protection, including the Department of Homeland Security, NIOSH published in May of 2002 an important document entitled: “Guidance for Protecting Building Environments from Airborne Chemical, Biological, or Radiological Attacks.”

Last week, NIOSH published a companion publication entitled “Guidance for Filtration and Air-Cleaning Systems to Protect Building Environments from Airborne Chemical, Biological or Radiological Attacks.” This publication discusses air-filtration and air-cleaning issues associated with protecting building environments from airborne CBR attacks. It provides information about issues that should be considered when assessing, installing and upgrading filtration systems—along with the types of threats that can be addressed by air filtration and air-cleaning systems.

Along with protection of building environments, NIOSH initiated an expedited program to develop respirator certification standards for use against CBRN agents. As you know, NIOSH has a long history of developing certification standards for the use of respirators to protect workers against traditional
industrial agents. In 2001, NIOSH initiated a CBRN certification standards development project with an initial goal to first address the highest priority need—certification of classes of respirators most commonly used by firefighters and other first responders.

In December of 2002, certification criteria for self-contained breathing apparatus (SCBA) respirators for use against CBRN agents were completed. Nine models have been approved thus far.

In March of 2001, NIOSH announced new criteria for testing and certifying full facepiece, air-purifying respirators for use by emergency responders against CBRN agents. The CBRN standard for APRs was completed in mid-March and NIOSH began accepting applications from manufacturers on March 24th. Four CBRN APR applications have been received and two have passed at least one of the live agent tests.

On April 15th, NIOSH announced concepts for testing and certification of escape respirators for use by the general working population against CBRN agents.

The rapid development of these CBRN standards could not have been accomplished with the cooperation and assistance of the respirator user community, the employer community and the manufacturing community.

While NIOSH’s certification standards development work continues, potential purchasers of respirators for use in the general workplace have many questions.

To aid in advising employers and other potential purchasers about the important features of respirators, NIOSH developed a Fact Sheet entitled “What You Should Know in Deciding whether to Buy Escape Hoods, Gas Masks, or Other Respirators for Preparedness at Home and Work.”

During the process of developing certification standards for the use of traditional respirators against CBRN agents, NIOSH is also tacking longstanding utilization issues like equipment interoperability—an important issue that the firefighter community brought to NIOSH’s attention following the September 11th event.

Global terrorism may be the impetus that will propel new technologies from the laboratory to the workplace. For instance, the development of sensor technology that can alert to the presence of CBR agents is being developed to address building vulnerabilities. But, the same CBR detector technology for buildings may be able to be appropriately sized for placement outside and inside a respirator facepiece to alert the wearer to the presence of such agents in his or her immediate external or internal facepiece environment. These and other innovations will bring a new integrative technology dimension to traditional respiratory protection.
Furthermore, one vision of the respirator of future involves facepieces that are so customized to individual facial fit, thanks to anthropometric scanning, that the need for fit testing is obviated; respirators that eliminate will the dead space problem; and respirator filters that offer no resistance to breathing and have a 100% filtration efficiency.

Aside from all the technical and scientific lessons that we continue to learn from the terrorist events of last fall, one lesson must take precedence over all others.

That lesson is that emergency preparedness planning and emergency response practice are the most critical steps in ensuring that every workplace can mount an effective emergency response to any urgent workplace threat. Planning and practice, and practice and practice and practice and practice; these are the guiding emergency preparedness principles that saved so many workers’ lives on September 11th.

**AIDS, SARS AND THE ROLE OF COMMUNICABLE DISEASES IN THE WORKPLACE**

Louis Pasteur once said, “Science knows no country because it is light that illuminates the world.”

Like science, emerging viruses know no country either. There are no security barriers to prevent their migration across international borders or around the world’s time zones. Nor do viruses stop at the door of the workplace.

As occupational safety and health professionals, we need to better understand how communicable diseases can be transmitted in the workplace—whether it is the human immunodeficiency virus, which causes AIDS, or the new human coronavirus, which causes SARS, or the far more common influenza virus or cold viruses. For far too long, we in the workplace safety and health community have paid scant attention to the threat that communicable diseases pose to workers and workplace productivity.

**AIDS**

AIDS was once an emerging viral disease. Now, in some sub-Saharan countries of Africa—the continent with 70% of the world’s total of 42 million AIDS sufferers—up to 38% of the entire adult working population is infected with HIV. In these countries, employers have had to purchase and make available anti-viral medications to their HIV-infected workers to maintain minimum workforce ability. Without this undertaking, even a minimum level of economic activity cannot be sustained by businesses operating in sub-Saharan Africa for too much longer. Already, the life expectancy in South Africa, Uganda and Botswana has fallen from 60 years to below 40 years. And the AIDS epidemic threatens to grow far worse on continents other than Africa. Analysts at the National Intelligence
Council project 50 million new cases by 2010 in five countries alone—China, Ethiopia, India, Nigeria and Russia.

SARS

Navigating our way through the current SARS outbreak is indeed setting out on uncharted territory.

Like AIDS, SARS is challenging political systems, the global economy, national health care systems, the airline, hotel and international finance industries, the World Health Organization, and many occupational safety and health professionals who are responsible for protecting healthcare workers, hotel and hospitality industry workers, maritime and cruise ship workers, and international airport workers. And, because SARS is a communicable disease that appears to spread primarily by close person-to-person contact, it should be a concern of occupational safety and health professionals who are responsible for protecting workers in the general workplace environment.

Almost 70% of US workers—approximately 90 million persons—are employed in a general indoor work setting. Studies have associated indoor environmental conditions with increased risk of communicable respiratory conditions. And, available data suggest that improving building environments may result in health benefits for more than 15 of the 90 million US indoor workers, with estimated economic benefits of anywhere from $5 to $75 billion annually.

SARS should give added impetus to research and interventions aimed at preventing the risk of transmitting communicable diseases in the general workplace. These efforts offer enormous potential health and economic benefits to all of us.

CONCLUSION

In conclusion, there is no doubt that much uncharted territory remains in front of us as the future of workplace safety and health unfolds. To chart our course, though, it is crucial that we break down the barriers that separate our individual efforts, and develop partnerships and collaborations to promote transfer of research findings into practical, evidence-based interventions for each of the many challenges we face.

As the current epidemic of SARS teaches us, our world is interconnected and our future is also.

I would like to thank you again for asking me to participate in the Conference and I wish each of you a safe, healthful and secure workplace.