

NATIONAL OCCUPATIONAL RESEARCH AGENDA

UPDATE *July, 1998*

21 Priorities for the 21st Century



National Institute for Occupational Safety and Health

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

NIOARA

National Occupational Research Agenda

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Bold type indicates team leader(s)

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Message from NIOSH

NIOSH Vision

Delivering on the Nation's promise: safety and health at work for all people...through research and prevention.

NORA Vision

No single organization has the resources necessary to conduct occupational safety and health research to adequately serve the needs of workers in the United States. These constraints mandate that the entire occupational safety and health community engage in collaboration and coordination of its resources. The National Institute for Occupational Safety and Health (NIOSH) and its public and private partners developed the National Occupational Research Agenda (NORA) to provide a framework to guide occupational safety and health research into the next decade—for NIOSH and the entire occupational safety and health community.

This has been an exciting year for the National Occupational Research Agenda (NORA). In addition to the hard work of the Partnership Teams, which essentially drives the implementation of the Agenda, we have many successes to capture in this document. For example, Congress provided NIOSH with \$5 million in our 1998 budget to support research in NORA priority areas. This and other NIOSH investments—together with matching resources from three institutes in the National Institutes of Health (the National Institute of Arthritis and Musculoskeletal and Skin Diseases, the National Institute of Environmental Health Sciences, and the National Heart, Lung, and Blood Institute)—resulted in a \$24 million three year commitment, the largest ever single infusion of extramural funding targeted for investigator-initiated occupational safety and health research.

Earlier this year, we began distributing *NORA News*, a newsletter designed to improve communication about NORA issues. We have also mounted a NORA site on the NIOSH homepage (<http://www.cdc.gov/niosh>). In addition to providing all available information about NORA, the site will be used to gauge interest in the Agenda as we track "hits" on the website. These activities are the first steps in our plans to increase communication and awareness about NORA.

I am excited to report that NORA was selected out of 1,420 applicants as one of 100 semifinalists (one of 19 Federal semifinalists) for the Ford Foundation and Harvard University's 1998 Innovations in American Government Awards Program. Although those involved with NORA are aware of its innovative and forward-thinking approach to addressing occupational safety and health problems, it is always encouraging to have external validation. Yet another confirmation of the success of NORA is the number of other organizations using NORA as a model for their agenda setting and planning activities.

An unexpected success of NORA, generated by the partnerships formed in the development of NORA and fostered in its implementation, is the collaborative work between NIOSH and other partners from the public and private sector outside the scope of the research agenda. The benefits of the NORA network of broad-based partnerships are indeed being felt in many aspects of occupational safety and health.

Although some critics feared that the creation of NORA was merely an exercise, I'm happy to report that two years after its release, NORA is thriving.



Linda Rosenstock, M.D., M.P.H.

Liaison Committee

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American Federation of State, County and
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Thomas F. Bresnahan
American Society of Safety Engineers

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Association of Occupational and
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American Industrial Hygiene Association

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American Association of Occupational
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Margaret M. Seminario
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Frank White
Organization Resources Counselors, Inc.

Liaison Committee Perspective

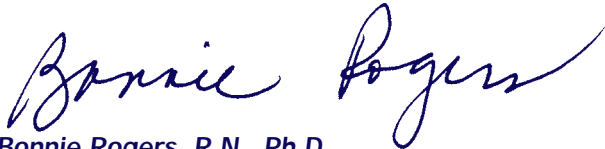
As NORA enters its third year of implementation, the 20 NORA Teams continue to demonstrate the power of collaboration in the occupational safety and health community. Partnerships are also a key theme for the NORA Liaison Committee, which consists of members from industry, labor, academia, professional organizations, and government, as we look for ways to encourage and expand research partnerships in the NORA process.

NORA is clearly making a substantial difference in targeting specific research to improve the health and safety of America's workforce. The Liaison Committee is committed to tracking this impact on occupational safety and health research across the country. This aerial view is necessary to gauge how NORA is progressing towards its ultimate goal of prevention. NIOSH is already tracking some measures of NORA success such as funding allocations, scientific publications, projects funded, and scientific and lay literature appearances of NORA. The Liaison Committee is interested in building on these measures to determine the success of NORA in the future, such as through a survey of stakeholders, citations of NORA funded studies, regulations or consensus standards from NORA research, international new initiatives, and the impact of NORA on safety and illness.

As we look ahead to the long-term goal of prevention, NORA is successfully meeting its interim goal of catalyzing interest and research activity. Several health and safety organizations and agencies here and abroad are finding that NORA is a useful model for their programs. For example, the American Association of Occupational Health Nurses (AAOHN) and the American College of Occupational and Environmental Medicine (ACOEM) have established a joint research award with a selection criteria based on NORA priority areas. The purpose of the award, which will be presented annually at the joint AAOHN and ACOEM conferences, is to recognize research projects conducted by collaborative research teams of nurses and physicians for the purpose of improving the knowledge base of occupational and environmental health.

NORA has also been successful in pooling additional funds for occupational safety and health research, as evidenced in the joint NIOSH-National Institutes of Health request for grant applications. To capitalize on NORA's unique ability to leverage funds, the Liaison Committee is exploring additional ways to stretch limited research dollars and to encourage research partnerships, particularly between the private sector and Federal agencies.

The Liaison Committee has enjoyed our interactions with the NORA partnership network thus far and looks forward to increased interaction as NORA implementation proceeds.



Bonnie Rogers, R.N., Ph.D.

Chairperson, NORA Liaison Committee

American Association of Occupational Health Nurses

An Agenda for the 21st Century

In April 1996, NIOSH and its partners unveiled the National Occupational Research Agenda (NORA), a framework to guide occupational safety and health research into the next decade—not only for NIOSH but for the entire occupational safety and health community. Approximately 500 organizations and individuals outside NIOSH provided input into the development of the Agenda. Before NORA no national research agenda existed in the field of occupational safety and health, and no research agenda in any field had captured such broad input and consensus. The NORA process resulted in a remarkable consensus about the top 21 research priorities (see table below).

NORA arose out of a need to address changes in the U.S. workplace as well as the increasingly diversified U.S. workforce. The distribution of jobs in our economy continues to shift from manufacturing to services. Longer hours, compressed workweeks, shiftwork, reduced job security, and part-time and temporary work are realities of the modern workplace. By the year 2005, the U.S. workforce will grow to an estimated 147 million, minorities will represent 28% of the workforce, and women approximately 48%.

NORA also addressed the broadly recognized need to target research in the areas with the highest likelihood of reducing the still significant toll of workplace illness and injury. Each day, an average of 9,000 workers sustain disabling injuries on the job, 16 workers die from an injury sustained at work, and 137 workers die from work-related diseases.

NORA Priority Research Areas

CATEGORY	PRIORITY RESEARCH AREAS
Disease and Injury	<ul style="list-style-type: none"> Allergic and Irritant Dermatitis Asthma and Chronic Obstructive Pulmonary Disease Fertility and Pregnancy Abnormalities Hearing Loss Infectious Diseases Low Back Disorders Musculoskeletal Disorders of the Upper Extremities Traumatic Injuries
Work Environment and Workforce	<ul style="list-style-type: none"> Emerging Technologies Indoor Environment Mixed Exposures Organization of Work Special Populations at Risk
Research Tools and Approaches	<ul style="list-style-type: none"> Cancer Research Methods Control Technology and Personal Protective Equipment Exposure Assessment Methods Health Services Research Intervention Effectiveness Research Risk Assessment Methods Social and Economic Consequences of Workplace Illness and Injury Surveillance Research Methods

Each day, an average of 9,000 workers sustain disabling injuries on the job.

Each day 16 workers die from an injury sustained at work and 137 workers die from work-related diseases.

In 1992 the total indirect and direct costs, including administration costs, of occupational injuries and illnesses was \$171 billion.

“Although great strides have been made in improving worker protection since the Occupational Safety and Health Act was passed in 1970, workplace hazards continue to inflict a tremendous human and economic toll. With this agenda, we’re teaming up with private industry, labor and others who know that safe workplaces are good for the bottom line of people and profits.”

**– Donna E. Shalala
Secretary HHS**

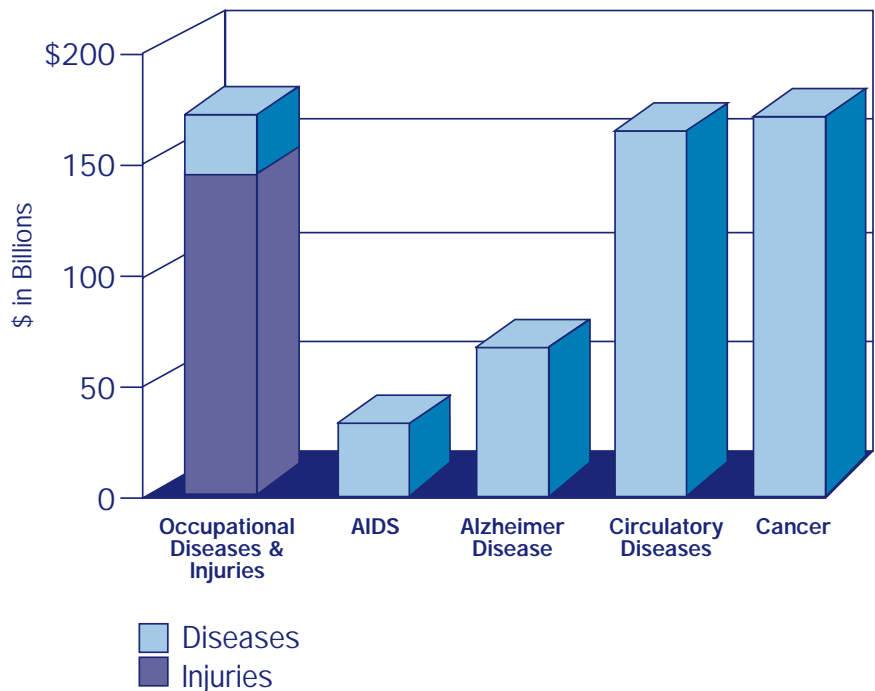
The economic burden of this continuing toll is also an issue, especially since occupational safety and health research in both the public and private sector faces increasing fiscal constraints. Data from a NIOSH-funded study published in 1997 showed that in 1992, indirect and direct costs (including administration costs) of occupational injuries and illnesses totaled \$171 billion (\$145 billion for injuries and \$26 billion for diseases). These costs compare to \$33 billion for AIDS, \$67.3 billion for Alzheimer Disease, \$164.3 billion for circulatory diseases, and \$170.7 billion for cancer (see graphic below).

Developing NORA was only the first step in the collaborative effort between NIOSH and its many partners to guide and promote occupational safety and health research. Even at the time the Agenda was announced, there was a common commitment to work to implement the Agenda, namely, to increase activities and resources in the 21 priority areas.

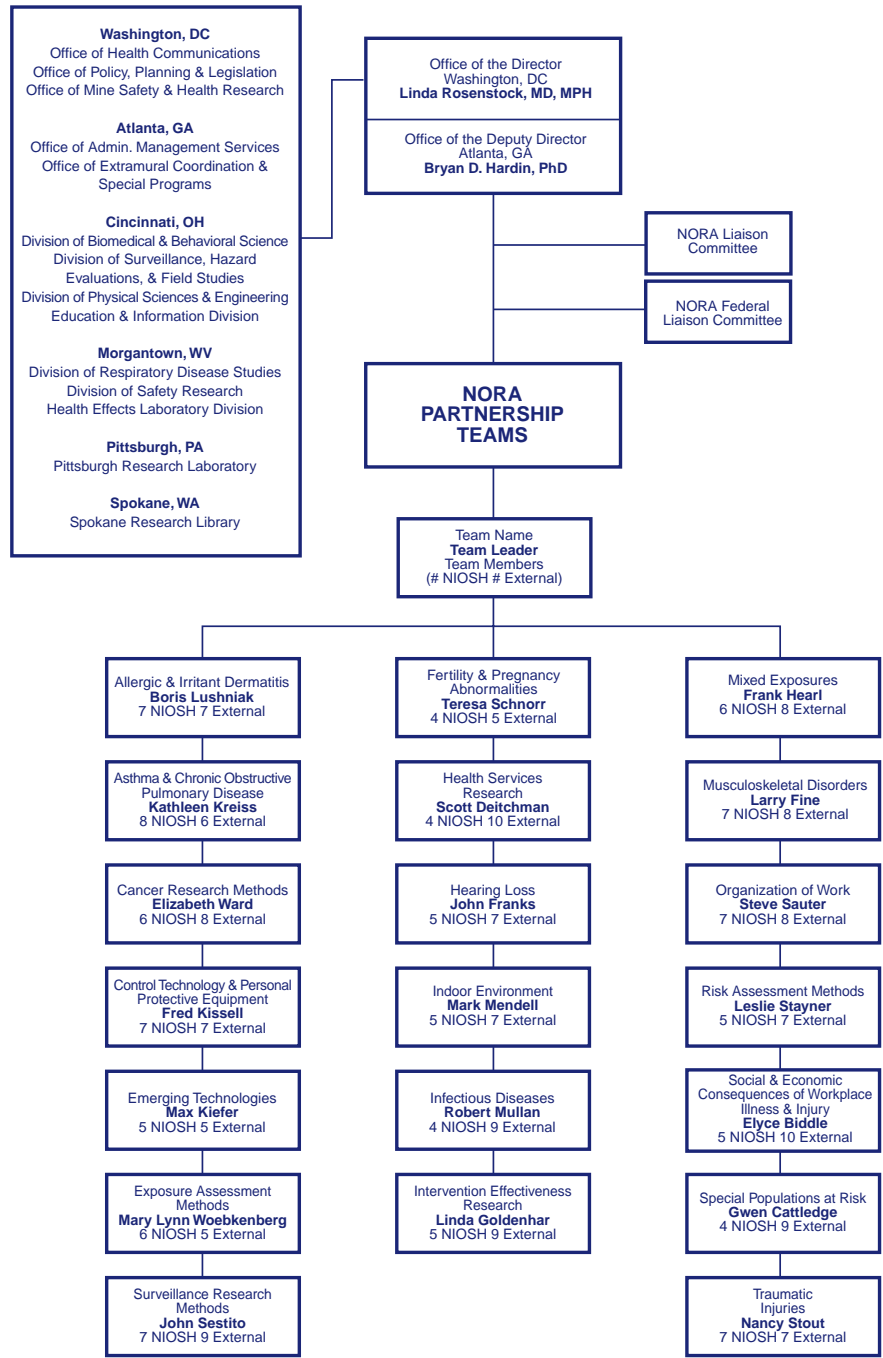
In the first two years of the implementation of NORA, NIOSH and its partners have demonstrated that NORA is generating funding and research activities in the 21 priority areas. The 20 partnership teams (the two musculoskeletal priority research areas are being addressed by one team) have been instrumental in this success.

Prior to NORA, research in occupational safety and health was fragmented, suffering from a “shotgun” approach to tackling major problems. Through NORA, we hope to better position the Nation to address the toll of workplace injury and death.

Economic Burden of Disease and Injury (Direct and Indirect Costs)



NIOSH/NORA Partnership Structure



IMPLEMENTATION

“NORA is an innovative and integrated program, pooling the scientific and managerial talents of all stakeholders for the sole purpose of improving workers’ health and safety.”

– Tai Chan, Ph.D., CIH
GM Global Research and Development

“. . . the process was impressive for its thoroughness and engagement of so many individuals and groups.”

– NIOSH Board of Scientific Counselors

NORA Implementation: Liaison Committee

The NORA Liaison Committee, chaired by Dr. Bonnie Rogers (President, American Association of Occupational Health Nurses) consists of 22 members representing industry, labor, academia, professional organizations, and government. The Liaison Committee's role is to provide outreach and commentary on the development, progress, and direction of NORA implementation.

The Liaison Committee has formed two subcommittees to provide insight into the development of measures and goals for NORA and explore new ways to leverage resources. The Measures and Goals Subcommittee, chaired by William Bunn of Navistar, has provided valuable input into the formulation of a tracking system for NORA research. The Subcommittee is also creating a survey of the occupational safety and health community that will attempt to gauge the effectiveness of the Agenda.

Clifford Mitchell from the American College of Occupational and Environmental Medicine heads the subcommittee addressing the often complex issue of resource leveraging. The Subcommittee is trying to help reduce the private sector's hesitation towards partnering financially with Federal agencies in addition to addressing the all too common challenge of stretching limited research dollars. The support and vision of the entire Liaison Committee continues to advance the implementation of the Agenda.

Partnership Teams

Fundamental to the contributions of NORA is the success of the Partnership Teams. The Teams' ability to partner with key stakeholders in the priority areas, define research needs, and leverage resources for research are critical to the implementation of the Agenda.

Each team consists of a team leader, NIOSH researchers, and external partners. The 20 partnership teams have brought together 120 NIOSH researchers and 150 external members (see inside front and back covers for team membership). External membership includes faculty from public and private colleges and universities, representatives of professional organizations, major manufacturing industries, leaders in the insurance industry, health and safety professionals from organized labor, and representatives from other government agencies.

The teams have been very active. As expected, each team is proceeding somewhat differently. Many teams are writing white papers—documents that summarize the research in a priority area, define gaps, and lay out opportunities for collaboration. In some areas, a well-defined research agenda currently exists (for example in asthma research) so a white paper is not necessary. The following 10 NORA teams have completed or are currently writing white papers:

- Control Technology and Personal Protective Equipment
- Emerging Technologies
- Health Services Research
- Hearing Loss
- Indoor Environment
- Intervention Effectiveness Research
- Mixed Exposures
- Organization of Work
- Surveillance Research Methods
- Traumatic Injuries

Conferences and workshops are also popular and effective ways for NORA teams to crystalize research needs and communicate with their partners. NIOSH and its partners have sponsored the following major meetings related to NORA as a whole or to specific priority areas:

NORA Meetings	
Workplace-Related Skin Diseases and Exposure Assessment Workshop	September 25-26, 1996
Pneumonitis in the Machining Environment Workshop	January 28-29, 1997
Latex Allergy Conference	March 1997
National Occupational Research Agenda Symposium	July 1, 1997
National Occupational Injury Research Symposium	October 15-17, 1997
1998 Applied Workshop on Occupational and Environmental Exposure Assessment	February 23-25, 1998
Control of Workplace Hazards for the 21st Century	March 10-12, 1998
Three Musculoskeletal Meetings to Set Research Agenda	March 25, 1998 - Chicago, IL April 20, 1998 - Seattle, WA April 27, 1998 - Washington, DC
Round Table Discussion on the Organization of Work at the Society for Industrial and Organizational Psychology Conference	April 24-26, 1998
Occupational Asthma: In and Out of the Work Place Conference	April 30-May 2, 1998
Latex Allergy Satellite Downlink Teleconference	May 5, 1998
Hazardous Substances and Male Reproductive Health	May 14-15, 1998

In addition to white papers, conferences, and workshops, teams are also developing surveys, establishing graduate-level training programs, participating in continuing medical education workshops, and developing documents. The following summaries describe the work of three teams (Musculoskeletal Disorders, Work Organization, and Asthma and COPD) and provide a flavor of the work being conducted by the Partnership Teams.

Musculoskeletal Disorders Team

Musculoskeletal disorders are the largest single problem facing American workers today, costing between \$13 and \$20 billion annually. In order to develop a detailed research agenda for addressing these conditions, the NORA Musculoskeletal Disorders Team held three regional meetings (Chicago, IL, Seattle, WA and Washington, DC) to solicit information from an array of partners regarding research needs. Eleven sectors were represented (heavy manufacturing, light manufacturing, health care, agriculture, food processing, office ergonomics, transportation, warehousing, forest products, construction, and maritime) and over 100 companies, unions, universities, associations, societies, hospitals and Federal and State organizations.

Following a general session, the participants divided into smaller focus groups. NORA Musculoskeletal Disorders Team members facilitated the group discussions about intervention effectiveness research needs, fundamental research issues, unique ergonomic issues not addressed by traditional models, and surveillance needs.

Despite the differences between the targeted industry sectors, uniform issues emerged based on the group discussions. These common elements include: the need to measure cost and effectiveness of ergonomics programs and training, the need for objective exposure and diagnostic tools, increased knowledge about medical intervention and management of musculoskeletal disorders, better understanding of work organization and psychosocial issues, and the need for user-friendly communication products.

The meetings confirmed the general support for NORA and the Team's approach to tackling musculoskeletal research. Based on the input from these meetings, the team will continue developing a draft agenda. The next two major steps in the process are to identify the specific themes from the three meetings and to seek greater input from the community of researchers.

Organization of Work

The Organization of Work Team has focused its efforts on the following three areas: developing a draft white paper defining the area of work organization and setting out research needs and gaps; signing a cooperative agreement with the American Psychological Association (APA) to establish new graduate-level training programs in work organization and health; and focusing a joint APA-NIOSH scientific conference around the topic of organization of work.

The draft white paper, entitled *Organization of Work and Occupational Safety and Health Research-Gaps Analysis*, attempts to bring focus to a subject that the Team states "is not yet a defined field of study or systematic body of literature." The paper presents a conceptual framework that covers the impact of issues at the National, industry, and shop floor levels and identifies significant knowledge gaps regarding the organization of work and health.

In September 1997, the American Psychological Association (APA) and NIOSH signed a cooperative agreement to fund the development and implementation of graduate-level training programs in the area of work organization, stress, and health in university settings. Seventeen universities competed for funding, and awards have been made to three universities for training to begin this Fall. Although this joint training activity pre-dated NORA, Organization of Work Team members played an instrumental role in developing the agreement and recommending guidelines for evaluating the applicants.

The Team is also responsible for explicitly focusing the APA/NIOSH Conference on Stress and Health around work organization. The Fourth Annual Conference on Occupational Stress & Health: Organization of Work in a Global Economy will be held on March 11-13, 1999. The Conference is also being sponsored by 18 other U. S. and international organizations, including the Japan Society of Occupational Mental Health, the National Centre for Occupational Health, Republic of South Africa, the National Safety Council, and the Communications Workers of America. The conference topic list includes areas of emphasis that relate to the research gaps identified by the NORA Team such as organizational policies and work design, new work contracts such as contingent and temporary work, and advances in research methodologies.

The Team will also hold a two-day workshop in Washington D.C. in 1998 to bring in partners and interest groups from labor, industry, academia, and government to work with the team to refine organization of work research objectives and strategies.

Asthma & Chronic Obstructive Pulmonary Disease

“The Association of Occupational and Environmental Clinics frequently becomes involved in regional issues. In the Northwest, an important occupational health question—development of a respiratory disease in crab/seafood processors—was brought up by clinics serving this population. The NORA emphasis on asthma was extremely helpful in directing a preliminary research effort addressing this question through a Health Hazard mechanism. The process has resulted in important industry contacts, that will likely lead to important research studies of occupational asthma in the crab-processing industry in the future.”

***– Drew Brodtkin, M.D.
Occupational and
Environmental
Medical Program
University of Washington***

The Asthma and Chronic Obstructive Pulmonary Disease Partnership Team is engaged in many diverse activities, including addressing the emerging problem of latex allergy. Through the efforts of the Team, the 4th National Health and Nutrition Examination Survey (NHANES), organized by the National Center for Health Statistics, will include blood samples for natural rubber latex antibody to be analyzed at NIOSH. Natural rubber latex is a major concern in the health care industry because it causes asthma, dermatitis, and sometimes anaphylactic shock in workers who develop latex allergy. The NHANES IV survey will allow NIOSH to estimate prevalence of allergic sensitization of individuals employed in various occupations.

In addition, other substantial NIOSH activity in the area of latex allergy is integrally related to the NORA process, including the publication of the Alert on occupational latex allergy, participation with the FDA and others in a recent nationwide Continuing Medical Education program that highlighted the problem of occupational latex allergy, and collaborative research with the Medical College of Wisconsin to evaluate interventions for preventing latex allergy among health care workers.

In other areas, the Team is partnering with the American Thoracic Society (ATS) by participating in a working group to revise the 1978 ATS/DLD (Division of Lung Diseases of the National Heart Lung and Blood Institute) standardized respiratory questionnaire. The questionnaire has been widely used for 20 years to study the epidemiology of chronic lung disease and bronchitis. Currently, it has limited utility for the often work-related problems of asthma and hypersensitivity pneumonitis. NIOSH is supporting the development of occupational and environmental components of the revised questionnaire through a consensus approach of invited experts.

Spurred by NORA

NORA has helped demonstrate that there is a new way of doing business at NIOSH. Although the transformation to the “new NIOSH” was in process prior to NORA, the development and implementation of the Agenda has proven to many in the private sector that collaboration with the government is not only possible, but successful. For example, NORA has opened many doors with corporate America.

Research related to the Traumatic Injury Team has proven particularly fruitful. The Traumatic Injury Team has produced a document that will help pave the way for future partnerships. The document will provide a foundation for discussion with external partners to explore common research areas.

In the following three examples, industry approached NIOSH to collaborate on topics related to the traumatic injury priority research area. These success stories demonstrate the benefits for both industry and government with NIOSH providing its scientific expertise and creative problem-solving skills and industry providing the “laboratories” for evaluating interventions in real work settings.

Wal-Mart

The effectiveness of back belts has been questioned in recent years. In 1994, NIOSH released a report stating that there is inadequate scientific evidence that back belts actually reduce the risk of back injury. The statement reflected concerns that many employers were using (and often requiring) back belts as the only method to prevent back injury.

In what promises to be the most definitive research study to date, NIOSH teamed with Wal-Mart to determine the efficacy of back supporting belts in preventing first and recurrent low back injuries. Approximately 8,000 retail merchandise employees at 160 stores are being followed for two years to determine if low back injury rates in individuals wearing belts are different from rates in individuals not wearing belts. Results of the study are expected in the Summer of 1999.

“NIOSH has had direct positive impact on the United States through its proactive work in crafting a National Occupational Research Agenda (NORA). NORA is an excellent example of the private/public sector partnership encouraged by this country’s congressional leaders.”

***– Jerry P. Ray, CSP
President, American Society
of Safety Engineers***

“NORA presents an outstanding mechanism for collaboration between government and industry.”

– William B. Bunn, M.D., J.D.
Navistar International Transportation Corp.

Browning-Ferris Industries (BFI)

NIOSH has identified various hazards associated with moving refuse collection vehicles in addition to documenting fatalities that occurred when workers were struck by trucks during backing procedures. BFI, the second largest waste management company in the world, recently commissioned a laboratory study to examine the effects of truck camera vision systems on back-up collisions. BFI and NIOSH are now collaborating to field test these research results in addition to examining ergonomic issues associated with manual handling of medical waste. The results of the joint NIOSH-BFI research will not only be useful for BFI but may have applications in other companies and industries.

Barnes Jewish Christian (BJC) Hospital Health System

Back injuries are a major concern for workers at nursing homes. The BJC Hospital Health System asked NIOSH to evaluate whether a “best practices program” that implements mechanical patient lifts and recommended manual patient transferring methods will be effective in reducing the incidence of back injury, injury-related costs, and subsequent disability. The research also includes an evaluation of medical management programs and worker training.

Other Research Partnerships

Navistar, UAW, Aetna US Healthcare

NIOSH is working with Navistar International Transportation, the United Auto Workers, and Aetna US Healthcare to evaluate the results of expanding workplace-based occupational safety and health programs to include general health care. This study will assess the impact of this intervention on health care status, utilization and costs, and worker productivity.

Asphalt Partnership

In order to reduce worker exposure to asphalt fumes during paving operations, NIOSH formed a collaborative partnership with government, industry, and labor. The partnership developed a comprehensive engineering control strategy to reduce exposures to asphalt fumes during paving operations. The engineering control is a ventilation system attached to the paver that reduces fume and heat before they can reach the worker. As a result, as of July 1, 1997 all highway paving machines now have this effective control technology. This very successful program is a semifinalist in the prestigious Innovations in American Government Awards Program. The broad-based network of partnerships created by NORA has helped foster these continuing and evolving efforts.

Federal Partnership Team – Expanding Research Support

The Federal Liaison Committee is an active interagency working group guiding the implementation of NORA. Last year, the Committee undertook the large task of assessing the Federal investment in NORA and occupational safety and health research overall. A survey administered to all Federal partners (see listing on next page) revealed that NIOSH Federal partners spent \$15 million on NORA-related research in FY 96 (out of a total of \$39 million for all work-related research). The survey will be conducted every two years to track changes in investments from the FY 96 baseline.

Members of the Federal Liaison Committee have also been active in leveraging additional resources for NORA. In March 1998, NIOSH, in partnership with three other Federal agencies, announced an \$8 million investment—the largest single infusion of funding ever—in investigator-initiated occupational safety and health research. The investment will support grants for studies in select NORA high priority areas and represents a three-year commitment of \$24 million.

Joining with NIOSH as co-sponsors for the NORA grants initiative are three institutes in the National Institutes of Health: the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), the National Institute of Environmental Health Sciences (NIEHS), and the National Heart, Lung, and Blood Institute (NHLBI). In addition, the portion of the initiative dealing with older workers is of interest to the National Institute on Aging (NIA) in NIH.

NIOSH and its co-sponsors invited proposals for research grants in the following areas (NORA priority areas are bolded):

- Occupational **irritant dermatitis, musculoskeletal disorders, traumatic injuries, indoor environment, and asthma and chronic obstructive pulmonary disease**;
- Nature and magnitude of special risk factors for older and/or minority workers (**special populations at risk**);
- **Social and economic consequences of workplace injury and illness, and health services research**;
- **Intervention effectiveness research in: musculoskeletal disorders, traumatic injuries, asthma and chronic obstructive pulmonary disease, work organization, and control technology and personal protective equipment.**

Three types of grants will be funded: (1) research project grants for projects designed to establish, discover, develop, elucidate, or confirm information relating to occupational safety and health; (2) demonstration project grants for projects designed to address the technical or economic feasibility of implementing a new or improved procedure, method, technique, or system for preventing occupational safety and health problems; and (3) pilot study grants for preliminary evaluation in developing the foundations for future, more comprehensive studies. Awards are expected to be as high as \$250,000 per year for traditional research and development projects, and \$50,000 per year in direct costs for pilot studies.

“The NORA concept was a brilliant idea that will . . . (advance) the science of occupational health.”

*– Zack Mansdorf
Immediate Past President,
American Industrial Hygiene
Association (1997-98)*

Federal Liaison Committee

FEDERAL AGENCY

Consumer Product Safety Commission

Department of Agriculture

Department of Defense

Department of Energy

Department of Health and Human Services

Department of Labor

Department of Transportation

Department of Treasury

Environmental Protection Agency

Executive Office of the President

OFFICE/INSTITUTE/DIVISION

Cooperative State Research, Education and Extension Service

Office of the Environment, Safety and Health

Agency for Health Care Policy and Research

Agency for Toxic Substances and Disease Registry

Centers for Disease Control and Prevention

- Epidemiology Program Office
- National Center for Chronic Disease Prevention and Health Promotion
- National Center for Environmental Health
- National Center for Health Statistics
- National Center for HIV, Sexually Transmitted Disease, and TB Prevention
- National Center for Infectious Diseases
- National Center for Injury Prevention and Control
- National Immunization Program
- Office of Minority Health
- Office of Women's Health
- Public Health Practice Program Office

Food and Drug Administration

Health Resources and Services Administration

Intergovernmental Affairs

National Institutes of Health

- Fogarty International Center
- National Cancer Institute
- National Heart, Lung, and Blood Institute
- National Institute of Allergy and Infectious Diseases
- National Institute of Arthritis and Musculoskeletal and Skin Diseases
- National Institute of Environmental Health Sciences
- National Institute of Mental Health
- National Institute of Neurological Disorders and Stroke
- National Institute of Nursing Research

Substance Abuse and Mental Health Services Administration

Bureau of Labor Statistics

Mine Safety and Health Administration

Occupational Safety and Health Administration

Wage and Hour Division

Federal Aviation Administration

National Highway Traffic Safety Administration

Internal Revenue Service

National Exposure Research Laboratory

Office of Prevention, Pesticides, and Toxic Substances

Office of Science and Technology Policy

Measuring the Success of NORA

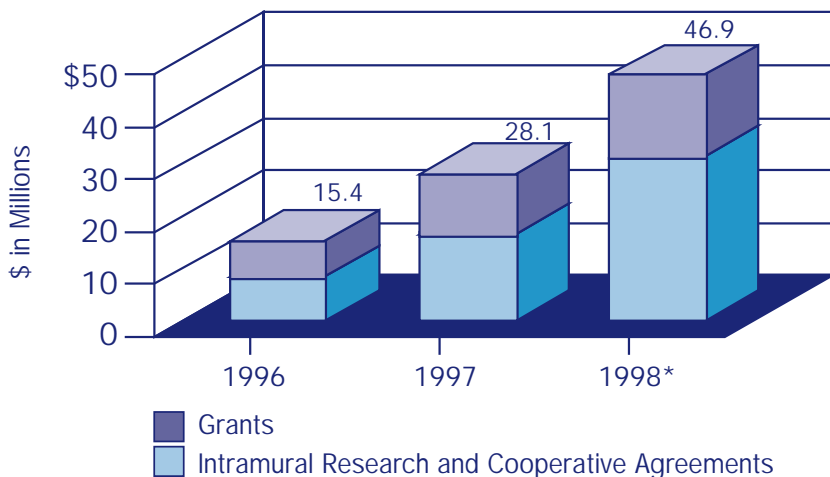
Tracking Research Funding in NORA Priority Areas

NIOSH funding

As the only Federal agency with a mandate to conduct and fund occupational safety and health research, NIOSH made a commitment to redirect some of its resources to the 21 NORA priority areas. Data are available to track both the number of projects and total economic resources in each priority area.

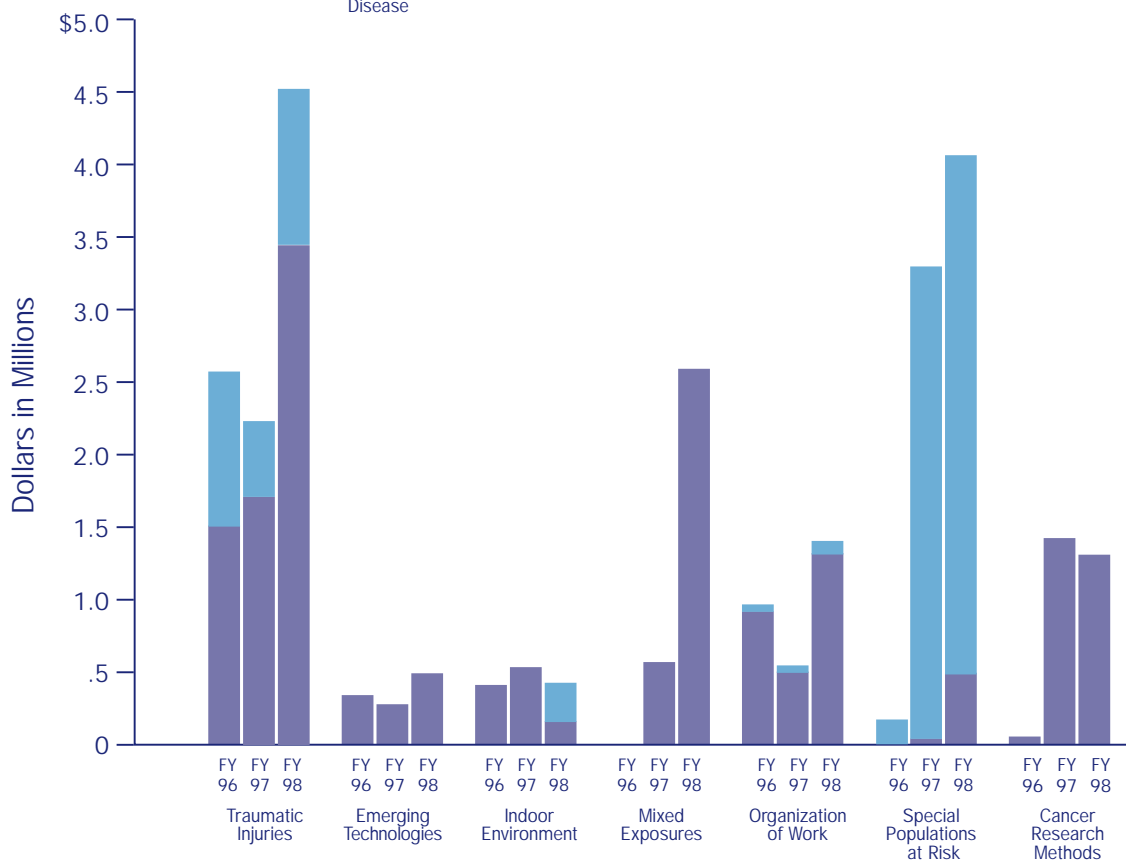
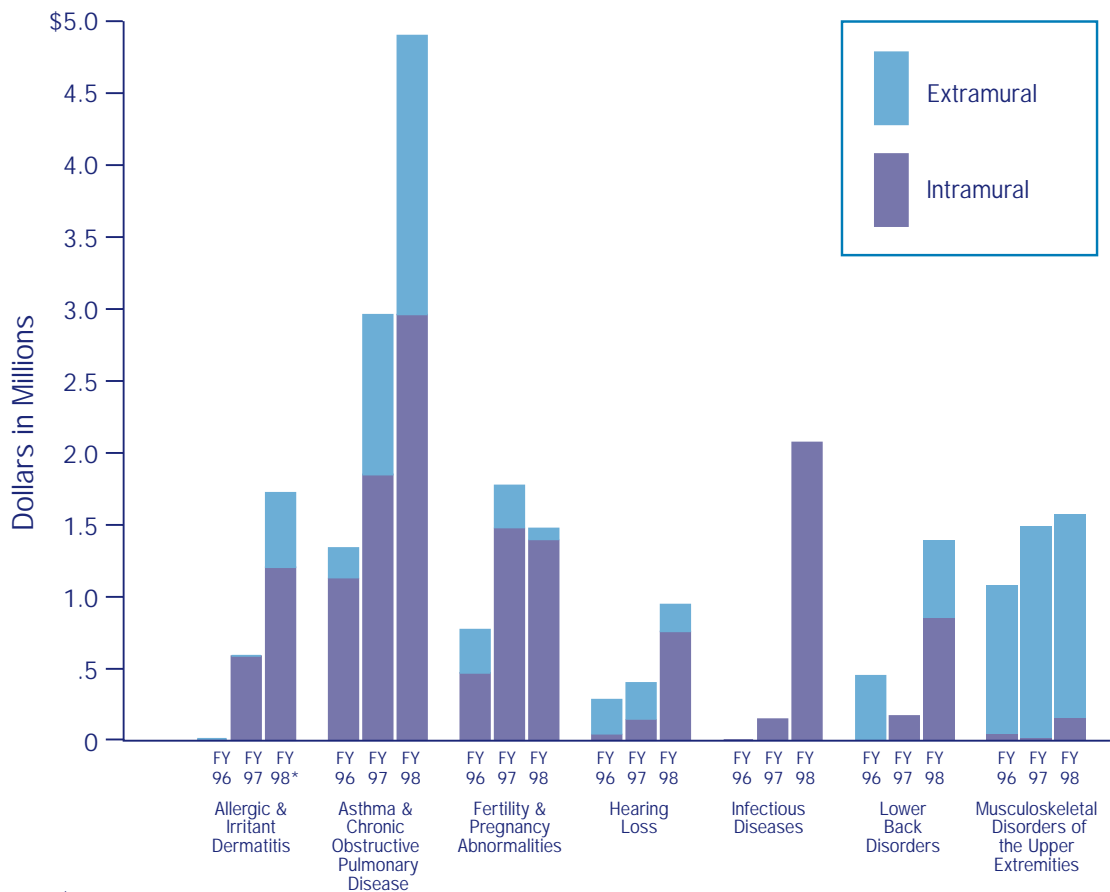
Out of an overall operating budget in FY 96 of \$165.3 million, the NIOSH baseline investment was \$15.4 million (approximately 9% of the budget) in the NORA priority areas. Of this, \$8.7 million was devoted to intramural research (NIOSH-conducted) and cooperative agreements (NIOSH-funded extramural research that NIOSH initiates and participates in) and \$6.7 million for research grants (extramural investigator initiated projects). A redirection of resources in FY 97 nearly doubled this investment to \$28.1 million. A new \$5 million special Congressional appropriation to NIOSH in FY 98 for NORA, coupled with additional reinvestment of baseline monies into NORA priority areas, resulted in an estimated \$46.9 million of research (about 25% of the budget) in NORA priority areas for FY 98. Such an increase is tangible evidence of NIOSH's commitment to NORA. This shift is particularly notable given existing Congressional mandates and obligations that limit how much of the budget can be redirected. An ongoing effort has been in place since the start to assure that these shifts are "real" rather than merely a reporting artifact with consistent definitions used and an independent evaluation team assessing projects for NORA relatedness.

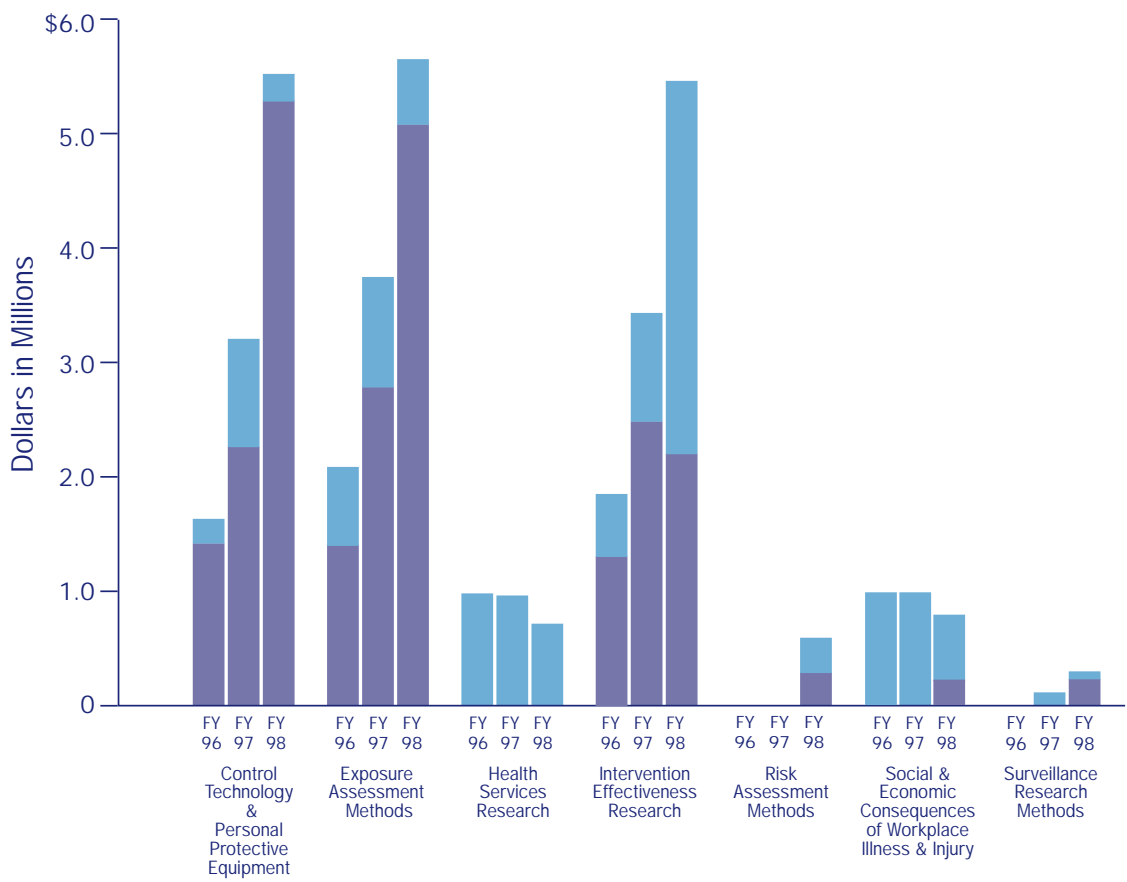
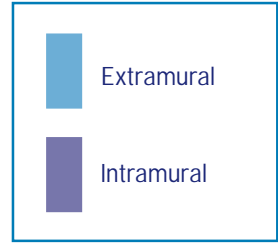
NIOSH NORA Investment



* FY 98 numbers are estimates.

NIOSH NORA Investment by Priority Research Area, FY96-98





*FY 98 numbers are estimates.

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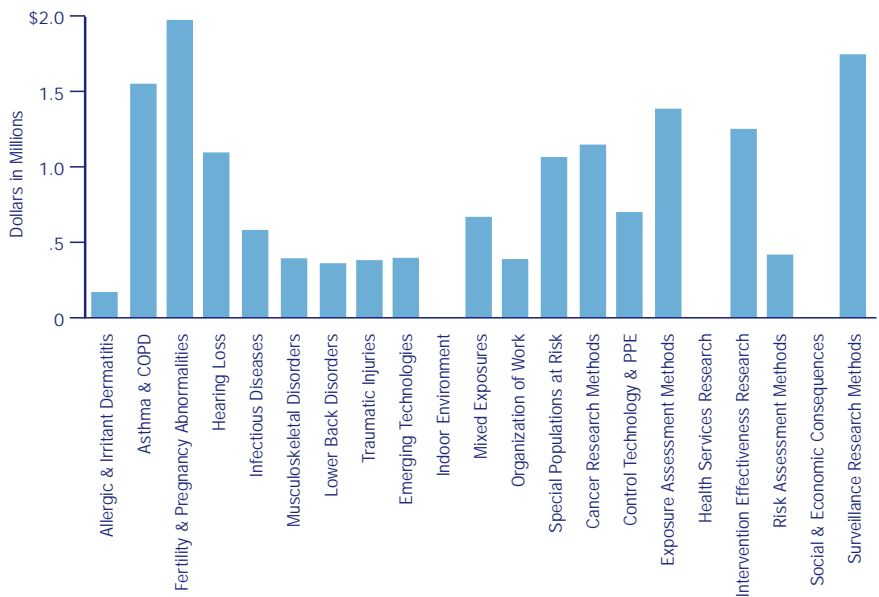
“NORA is critically important to focusing available resources to the most important occupational illnesses of our time.”

– James C. Rock, Ph.D.
President-Elect, American Industrial Hygiene Association

Other (non-NIOSH) federal funding

As part of NORA, a first-ever Federal survey of occupational safety and health research was undertaken that identified a total of only \$204 million for all occupational safety and health research from all Federal sources. The FY 96 baseline for NORA from non-NIOSH Federal sources was about \$15 million. Federal partners have agreed to perform the survey biannually so that the next survey will assess FY 98 expenditures.

FY96 NORA-Related Budget Allocations Reported by Federal Partners



Tracking Partnership Products

Requests for Applications (RFAs)

In FY 98, NIOSH and three institutes of the National Institutes of Health (NIH) joined together to target research applications from the extramural research community in 11 of the 21 priority areas (total available funds = \$24 million over 3 years).

Team Products

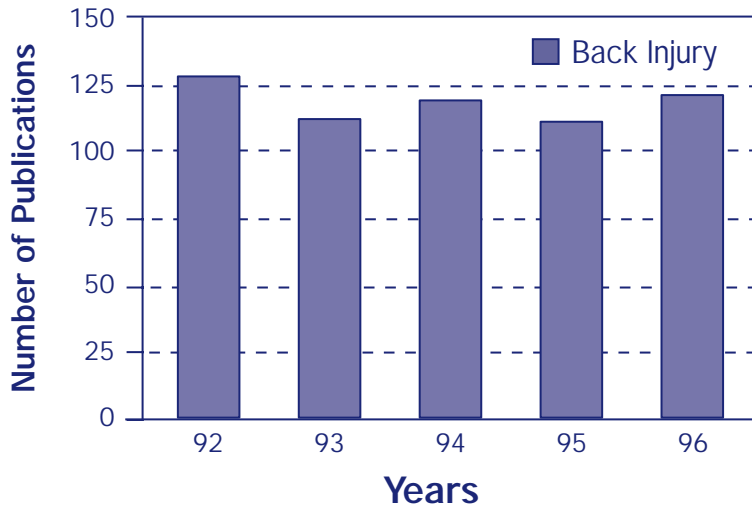
In addition to the collaborative research efforts highlighted earlier, team products are being tracked. Ten of the 20 NORA teams are developing white papers to describe research issues and gaps in the specific priority areas. Partnership Team activity can also be measured through conferences and workshops. In FY 97, NIOSH and its partners sponsored four major meetings related to NORA as a whole or to specific priority areas; ten such meetings have been held (or are scheduled) in FY 98.

Tracking the Literature and Recognition of NORA

Bibliometrics

Tracking scientific literature over time is being used as a measure of whether NORA is having the intended effect of stimulating increased research in the priority areas. Baseline data are being assembled for all priority areas (for example, for occupational low back disorders, publications have been steady at about 114 per year during 1992-96).

Occupational Low Back Injury Publications



In addition to scientific publications, NIOSH will track popular literature citations, trade journal and media references and "hits" on the NORA homepage to assess the diffusion of NORA.

This tracking should show the effects of an enhanced NORA communication strategy to increase knowledge about NORA among current and potential NORA partners. In the past year, NIOSH has developed a NORA logo, a quarterly NORA newsletter entitled *NORA News*, and a NORA exhibit program. An interactive NORA website has also been created (<http://www.cdc.gov/niosh/norhmpg.html>). The site, when completely operational, will contain all NORA documents, white papers, research summaries, calendar of upcoming events, and partnership team information. Future communications efforts include a compendium of NIOSH conducted or-funded NORA research, outreach for partnership teams, and articles for the popular press.

NORA – A Model for Partnership

One of the most encouraging testaments to the success of NORA is the number of other organizations using NORA as a model for creating research agendas or other types of partnership and planning. NORA has generated tremendous interest—especially at the Federal level—because of its innovative approach to strategic planning. NIOSH has shared its experience with many who have sought to undertake a similar effort. Examples of such ongoing planning efforts include the following:

- The Director of the **Italian National Institute for Occupational Safety and Health** is planning a priority-setting effort in Italy, using NORA as the model.
- The **Norwegian National Institute of Occupational Health** is also conducting a priority setting process based, in part, on NORA.
- The **Environmental Protection Agency** is considering using NORA for their Human Health Indoors Project as they explore how the EPA should protect human health indoors in the 21st century.
- **Washington State** is undertaking a state-wide needs and priorities planning process for health and safety much influenced by the NORA process.
- The **Pacific Northwest Agricultural Safety and Health Center** organized a farm summit modeled after NORA to develop areas of consensus about key agricultural safety and health problems that can be addressed by research and intervention programs. The results of the summit will be used to help shape the Center's priorities.
- The **Chemical Safety and Hazard Investigation Board**, after learning about NORA in the *American Journal of Public Health*, has requested more information on NORA and will use it as a model as they form their own research agenda.
- The **American Association of Occupational Health Nurses (AAOHN)** and the **American College of Occupational and Environmental Medicine (ACOEM)** have recently partnered to establish a joint research award. As stated by the AAOHN Executive Director, "In support of the work of NIOSH and to promote the National Occupational Research Agenda (NORA), emphasis has been give to NORA in the selection criteria."
- The **Chemical Industry Institute of Toxicology, Chemical Manufacturers Association**, and other organizations have recently undertaken a prioritization activity using some strategies of NORA development. Eight of the topics identified in their process closely relate to NORA priority areas.

The research and products created under the Agenda are also replicable and applicable to many jurisdictions and organizations. For example, the landmark NIOSH position on occupational latex allergy, developed through the NORA process, has also been adopted by many States and has influenced other Federal agencies and professional organizations. NIOSH itself is relying on lessons from the NORA process in other Institute efforts, including development of a national strategy for occupational safety and health surveillance.

To facilitate the replication of NORA by other organizations, NIOSH has published an article on the process of developing the Agenda in the *American Journal of Public Health*, "The National Occupational Research Agenda: A Model of Broad Stakeholder Input into Priority Setting" (*Am J Public Health*. 1998; 88:353-356).

In an editorial in the same issue, "NORA—More than a Name," Dr. David Wegman of the Department of Work Environment at the University of Massachusetts, Lowell, states that: "NORA provides a sound template for future cooperative work across the full range of public and private partners. The work that went into this consensus effort was both collaborative and creative; now the task is to implement the agenda and realize its potential. A report on the progress in the year since NORA was announced is encouraging. At the same time, there is much more to be done." (*Am J Public Health*. 1998; 88:349-350).

NORA Milestones July 1995 – July 1998

“... congratulations on a fine piece of work. [NORA] is engaging to read, tightly and cleverly organized, and makes a very convincing case for pursuing research in the priority areas it identifies. This document should serve us well in the coming years. It deserves wide circulation. Kudos to all who worked on it.”

– Kathleen M. Rest,
Ph.D., MPA
NACOSH Chair, University of
Massachusetts Medical
Center, Occupational Health
Program

July 1995	NIOSH commits to lead creation of an Agenda
September 1995	Agenda framework developed and 50 potential topics identified by initial working group of internal and external scientists
November 1995	First National public meeting to provide input into Agenda and discuss criteria for priorities
January 1996	Four additional working groups (NIOSH, external researchers, health professionals, other stakeholders) expand and prioritize priority areas
February 1996	Three town meetings (Boston, Chicago, and Seattle) convened
March 1996	Second National public meeting to review Agenda and draft report
April 1996	Final Agenda—National Occupational Research Agenda—identifies 21 priority research areas to guide occupational safety and health research (released on NIOSH 25th Anniversary)
November 1996	Partnership teams formed to implement the NORA priorities
January 1997	First Best Practices Conference for Musculoskeletal Disorders, Chicago, IL
February 1997	First ever survey of Federal (non-NIOSH) resources committed to occupational safety and health research
July 1997	First NORA Implementation Symposium held at the National Academy of Sciences, Washington, DC

- July 1997 NORA Update 1997 Document Released
- October 1997 The Traumatic Injury NORA Team convened the first ever National Occupational Injury Research Symposium, Morgantown, WV
- November 1997 Congress appropriates \$5 million for the implementation of NORA
- Jan-Feb 1998 Three NIH Institutes each contribute \$1 million to NORA research priorities
- March 1998 Largest ever funding for targeted occupational safety and health research (approximately \$8 million RFA) announced by NIOSH and NIH partners
- March 1998 American Association of Occupational Health Nurses and the American College of Occupational and Environmental Medicine partner to establish a joint research award, with emphasis given to NORA in the selection criteria
- May 1998 NORA selected as one of 100 semifinalists (one of 19 Federal semifinalist) for the Ford Foundation and Harvard University's 1998 Innovations in American Government Awards Program from an initial pool of 1420 applicants.
- May 1998 First issue of the NORA newsletter, *NORA News*, distributed
- May 1998 NORA Website posted
- July 1998 NORA 1998 Update Document released

Summary

The first two years of NORA have proven successful. The hard work and commitment of those involved has produced:

- An enthusiastic and productive, broad-based NORA Liaison Committee.
- Successful efforts of 20 NORA teams, including outreach, conferences and symposia, and production of white papers.
- The participation of a large number of Federal agencies in NORA activities including the largest ever funding for targeted occupational safety and health research.
- The first survey of Federal occupational safety and health (including NORA) research investment.
- The evidence that a national Research Agenda was, and continues to be, needed and that NORA research priority areas have been well chosen.
- The recognition that NORA is a model for public-private partnerships and is being widely used by other organizations in similar planning efforts.
- For the first time, a broad-based network of public and private partnerships in occupational safety and health.

(continued from front cover)

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