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CHILDHOOD AGRICULTURAL INJURY PREVENTION:

**PROGRESS REPORT AND
UPDATED NATIONAL ACTION
PLAN FROM THE 2001 SUMMIT**



Girl, 7, dies when bale fork tips over

A 7-year-old died when she was pinned beneath a round-bale fork in the yard of her family's home.

The hay fork, which is used to move large round bales of hay, mounts on a front-end loader. It was unattached from the tractor and was sitting in grass next to the driveway with spikes pointing forward. Apparently, the girl was playing on the spikes and the fork tipped over. The weight of the 7-year-old was enough to tip over a 300-pound fork because it was top-heavy and unsupported.

17-year-old injured in farm accident

Wausau (Wis.) Daily Herald (11-8-00)

A 17-year-old Marathon County boy was in critical condition Tuesday night after he was caught in a piece of farm equipment and seriously injured.

He was working by himself, unloading corn from a gravity box wagon to an elevator at the family farm. His clothing became entangled in the rotating power take-off shaft. All his clothing except his underwear was wrapped around the still-turning shaft when his stepfather arrived and switched off the tractor.

Toddler drowns in farm's stock tank

(11-29-99)

SEYMOUR, Mo. (AP) — A 19-month-old boy drowned after falling into a stock tank containing about two feet of water on his family's Webster County farm.

The boy's family was busy with chores Nov. 3 when the boy apparently wandered away and fell into the tank, authorities said.

The county coroner said the boy could have been in the tank for up to 15 minutes. The child's mother was notified at 5:30 p.m.

CHILDHOOD AGRICULTURAL INJURY PREVENTION:

PROGRESS REPORT AND UPDATED NATIONAL ACTION PLAN FROM THE 2001 SUMMIT

**NATIONAL CHILDREN'S CENTER FOR RURAL
AND AGRICULTURAL HEALTH AND SAFETY**

NATIONAL FARM MEDICINE CENTER

MARSHFIELD CLINIC

Marshfield, Wisconsin

MAJOR FUNDING:

Centers for Disease Control Conference Support Grant (#R13/CCR519628)

SUPPORT AND ACKNOWLEDGEMENT:

Many individuals, agencies, businesses and organizations contributed time and resources to ensure the success of the 2001 Summit on Childhood Agricultural Injury Prevention. We express gratitude to the many dedicated people who participated in this initiative from November 2000 through March 2002. We are especially grateful to Senator Herb Kohl (D-WI) who shared our vision for an updated plan of action that would improve living and working conditions for children in rural America.

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This report does not constitute a specific position of the Centers for Disease Control and Prevention or the National Institute for Occupational Safety and Health, rather it reflects the consensus of the participants in the 2001 Summit on Childhood Agricultural Injury Prevention.



FOREWORD

Childhood agricultural injury prevention efforts in the United States have come a long way since the 1989 article, “We Kill Too Many Farm Kids,” was published in *Successful Farming* magazine. For more than a decade, there has been an outpouring of energy, concern, and commitment to protect children from the devastating consequences of agricultural trauma and disease.

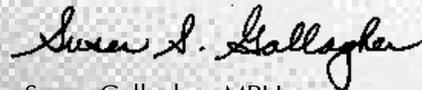
In 1996, the National Action Plan for childhood agricultural injury prevention presented 13 objectives and action steps to serve as a “blueprint” for success. Five years later we were asking ourselves “Are we on the right track? Are these efforts likely to reduce injuries?” To answer those questions, we gathered background information then assembled a multidisciplinary group of individuals from across the United States. Empirical evidence, combined with our collective experiences and insights, provided a broad perspective of our successes and shortcomings. Together, we were able to gain consensus on priority tasks for the future with three areas of focus – bystander children, young workers in agriculture, and leadership/infrastructure.

This report builds upon the 1996 National Action Plan. It presents complex information in a synthesized and understandable manner. We note that some of the 1996 objectives, such as those related to policy, have not been accomplished, but should not necessarily be abandoned. In a spirit of cooperation, with hopes of strong collaboration among farm owners, parents, and safety professionals, this updated plan has a focus on strategies upon which all stakeholders can offer their commitment.

We extend our sincere gratitude to the nearly 100 farmers, growers, researchers, educators, physicians, and others who participated in the 2001 Summit on Childhood Agricultural Injury Prevention and we hope that this Progress Report and Updated National Action Plan inspires you to meet the challenge of protecting the nearly two million children who live, visit, and work on our nation’s farms and ranches.



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EXECUTIVE SUMMARY

The 2001 Summit on Childhood Agricultural Injury Prevention was directed by the National Children's Center for Rural and Agricultural Health and Safety. The goal of the Summit was to propose specific injury prevention strategies based on knowledge gained from research and interventions undertaken since the endorsement of the 1996 National Action Plan, *Children and Agriculture: Opportunities for Safety and Health*.

Nearly 100 farmers, growers, professors, physicians, adolescents, and safety professionals, along with representatives of agricultural organizations and federal agencies, participated in the process of developing this report. They produced plans for a coordinated, comprehensive effort to prevent agricultural-related injuries among children and adolescents who live on, visit, and/or work on farms and ranches.

Key principles guiding this effort included:

- Education alone is an insufficient method for preventing injuries.
- Evaluation strategies should be applied to existing and new programs, and the results should drive program modifications.
- Concentrated efforts should be made to enable farm families, rural schools, farm organizations, and agribusinesses to plan and implement these recommendations.
- Innovative strategies should be developed to match the diversity of people, production methods, and economic conditions affecting United States agriculture.
- Communication of successes and failures regarding research and program activities should be shared to maximize progress toward achieving our goals.

The recommendations in this report are built upon the successes and shortcomings of the 1996 National Action Plan. They are proposed within the framework of: (a) non-working children, (b) working children and adolescents, and (c) infrastructure and leadership.

GOALS AND RECOMMENDATIONS

GOAL I: Adults will ensure that young children and non-working youth can grow, play, learn, and rest in protective environments that are free of agricultural hazards.

1. Affordable and accessible childcare should be readily available for children of farmers and farm laborers.
2. Safe play and recreation areas should be established so that youth who live or visit on farms and ranches are protected from occupational and environmental hazards.

GOAL II: Young workers will receive agricultural safety training, guidance, personal protective equipment and adult supervision based on child development principles.

3. A long-range plan for the North American Guidelines for Children's Agricultural Tasks (NAGCAT) should be developed to ensure continuous refinement based on evaluation research results, issues related to special populations, as well as changes in production agriculture. The plan should consider implications for employers of young workers in agriculture.



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4. Exposure limits should be established to guide agricultural work assignments for children less than 18 years of age.
 5. Model programs for training and supervising young agricultural workers should be identified through evaluation, then widely replicated via the facilitation and resources of well-established organizations.
 6. Unique issues associated with migrant and seasonal adolescent workers should be addressed as proposed by the National Adolescent Farmworker Occupational Health and Safety Advisory Committee.

GOAL III: A strong public/private infrastructure will be maintained to ensure the vision, leadership, and national commitment necessary to prevent childhood agricultural injuries.

7. Federal funding should be maintained for childhood agricultural injury prevention activities including a Federal Agency Task Force and a National Children's Center to provide leadership and coordination between the public and private sectors.
8. Agribusiness, farm organizations, the farm media and other private sector groups should notably expand their involvement in efforts to exert greater influence toward the protection of children from agricultural injuries.
9. A national research agenda for childhood agricultural injury prevention should be updated based upon progress to date.
10. A Childhood Agricultural Safety Network should set a vision and provide leadership and coordination of private sector childhood agricultural injury prevention efforts in a manner that represents the geographic and ethnic diversity of agriculture in the U.S.
11. Information regarding all aspects of this national childhood agricultural injury prevention initiative should be widely communicated.
12. A training plan should be developed and implemented that will enable professionals and community leaders to address childhood agricultural injury prevention issues.



The full 2001 Summit report can be viewed and printed by going to <http://research.marshfieldclinic.org/children/>



INTRODUCTION

Children, agriculture, and safety are the combined issues that have galvanized the commitment and collaboration of numerous stakeholders across our nation. This is no surprise given the profound impact on families and rural communities each time a child or adolescent is killed or traumatically injured on one of the nearly two million farms in the United States. These events occur in an environment associated with a very dangerous occupation. Compared with agriculture, other high-risk occupations such as mining, construction, and transportation, rarely have children involved or present at the worksite.

In 1996, a National Committee for Childhood Agricultural Injury Prevention issued a National Action Plan, *Children and Agriculture: Opportunities for Safety and Health* (National Committee for Childhood Agricultural Injury Prevention, 1996). The plan provided a blueprint for action that involved federal and state agencies, professional health and safety organizations, youth-serving organizations, agribusiness and farm organizations, educators, researchers, and other stakeholders. The United States Congress adopted the plan and allocated funds to the National Institute for Occupational Safety and Health (NIOSH) to serve as the lead agency accountable for its implementation. Since that time, research studies, injury data collection, and demonstration programs have been initiated, in large part due to implementation of that plan under the leadership of NIOSH.

The goal of the 2001 Summit on Childhood Agricultural Injury Prevention was to conduct an extensive five-year review of the 1996 National Action Plan and to use a consensus development process to generate strategies and priorities for the future. Specifically, we wanted to document successes and shortcomings, to identify effective interventions that may or may not have been addressed in the National Action Plan, and to propose recommendations for the future. To conduct a high quality activity, funds to conduct key tasks for this initiative were solicited and approved by way of the CDC Conference Support Grant mechanism (#R13/CCR519628), with support from Senator Herb Kohl (D-WI.).

The following report describes the justification for this endeavor, external factors affecting childhood agricultural injury prevention efforts, the data collection and meeting processes used for gathering information and achieving consensus, and finally, the outcome of this endeavor which includes three broad goals, 12 recommendations, and 36 specific strategies for preventing childhood agricultural injuries. A separate document provides extensive results regarding the numerous activities undertaken to identify the major successes and shortcomings of this national initiative from 1996 to 2001.

As you read this document, please keep in mind our broad definition of an agricultural injury as ***occurring to workers or bystanders on the agricultural work site directly related to agricultural operations, or an injury occurring off agricultural property that is associated with agricultural work; these include harm caused by exposures to hazards such as pesticides, dusts, noise, and repetitive motion.*** Throughout this report we refer to "childhood" in the broad sense, encompassing ages 0 through 17 years. At times, when the reference is clearly directed to older children, the term "adolescent" is used.

This work serves as an update to the 1996 National Action Plan. While some of the 1996 objectives, such as those related to policy, have not been accomplished, they should not necessarily be abandoned. In a spirit of cooperation, with hopes of strong collaboration among farm owners, parents, and safety professionals, this updated plan proposes strategies upon which all stakeholders can offer their commitment.



Childhood agricultural injury prevention activities in the United States are justified by the persistent and often preventable nature of these events. The most current data reveal that:

- There were an estimated 1,264,000 youth who lived on farms in 1998 and more than half of them also worked on the farm during that calendar year. There were about 666,500 youth who do not live on farms but were hired to work on a farm in 1998 (Myers and Hendricks, 2001).
- An estimated 104 children younger than 20 years of age die annually from agricultural injuries on United States farms and ranches (Rivara, 1997) and youth working in agriculture have a three-fold greater risk of fatal injury as compared to youth in the general private sector (Hard, et al., 1999).
- Among youth under age 20, males experienced 85% of fatalities and most common causes of death are machinery (including tractors), drowning, and firearm-related deaths (Adekoya and Pratt, 2001).
- An estimated 32,800 restricted activity injuries occurred to youth less than 20 years who lived, visited, or were hired to work on farms in 1998. Of these, about 14,600 were related to doing work or chores on the farm. Youth living on farms accounted for the most injuries (72%), followed by visitors (21%) and hired young workers (7%) (Myers and Hendricks, 2001).
- A survey of migrant and seasonal farm laborers revealed there were about 254,000 youth who were hired for the 1999 season. Of these, about 3,900 experienced a restricted activity injury, giving a rate of about 1.5 injuries per 100 young workers (Myers, 2001).

National efforts addressing the health and safety of children have increased their momentum in the recent past. As we review those efforts and consider strategies for the future, a number of external factors and forces should be considered. The complex and changing conditions associated with childhood agricultural health and safety are affected by external factors that include children as occupational injury victims; the rapid industrialization and globalization of production agriculture; the science of injury prevention; funding, competition, and collaboration; and public policy.

EXTERNAL FORCES

Injury events involving children have a significant human impact. When a child is mangled in treacherous machinery or crushed under a tractor, the gruesome nature of injuries has a powerful impact on individuals who are personally or peripherally involved. Newspaper clippings or witnesses often report horrific details of the injury event and rescue efforts. They elicit emotional responses that are often more intense than similar injury events in which an adult is seriously injured or killed. In rural communities, the family of an injury victim is typically well known and the sorrow is shared among many people. Besides the pressures of parenting or dealing with young workers, farm owners have to deal with many other complicated and stressful production issues.

The rapid industrialization of agricultural methods combined with a global market for agricultural products has influenced practices involving children on farms. Feeding and clothing the increasing population of

the world demands increased efficiency, leading many “farms” to become “firms.” Within this changing arena of production agriculture we are witnessing sophisticated technologies, changing demography of farms, a changing workforce involving many inexperienced and often non-English speaking workers, a multi-national food industry, and questions regarding international child labor issues. Compounding all this is a new national concern over biosecurity and agroterrorism. These influences, along with the ever-present economic challenges of farming, are affecting the role of children in agriculture.

Safety perspectives from the farming community are augmented with interventions endorsed by public health and safety professionals. Injury prevention efforts are strongly influenced by the theories, principles, and recommended strategies associated with the scientific disciplines of injury prevention, injury epidemiology, occupational safety, and formal evaluation. Since the landmark publication of “Injury in America” in 1985, injury prevention has grown as a unique specialty with its own research techniques and growing body of knowledge (Committee on Trauma Research Commission on Life Sciences, 1985). The three primary prevention strategies are often referred to as the “E’s” of injury prevention. These include Education, Engineering, and Enforcement of policies. Research has shown that no single approach is effective in preventing injuries.

Availability of funds for research and intervention programs greatly affects the volume and quality of childhood agricultural injury prevention efforts. While funding for child safety is



currently available in both the public and private sector, it may be short lived. The process of securing federal or state grant funds through a competitive process or soliciting funds from private businesses and foundations has its negative side. The competition for money often influences researchers or program directors to avoid open and collaborative endeavors. Protecting an idea or one's "turf" can hinder progress because activities occur in isolation or on a small scale, rather than in open, widespread methods that might have greater impact.

Public policy is another external force that influences our work. Currently, agriculture has multiple exemptions that allow children to conduct work deemed hazardous in other industries and for longer periods of time (United States Department of Labor, 1990). These labor law exemptions apply to children working on farms owned and operated by their parents or

surrogates. In addition to children who live on farms, children as young as 12 years can legally be hired for selected work in agriculture. Young agricultural workers employed on farms with 11 or more workers (where Occupational Safety and Health Act (OSHA) standards are enforceable) receive protections equal to adult hired laborers. While public health and child safety advocates support policy approaches for injury prevention (Committee on Health and Safety Implications of Child Labor, 1998), there would likely be an outcry from the farming community if legal interventions were introduced as the method to protect children from agricultural injuries. This contrast between the public health approach and interests of farm owners is based on several factors. Farm owners are known for their opposition to government interference. In addition, farm and non-farm parents believe in their rights to authorize activities in

which their children engage. The attributes of independent farm owners combined with the notion of parents' rights versus children's welfare creates barriers for potential policy. As one Summit participant who is a farm parent noted, "the people who would have the most to gain by policies that protect children from agricultural injuries, are the same people who voice public opposition to such policy."

These are just some of the external forces that influence farming practices and injury prevention efforts. The challenge is great and the complexity of factors highlights the importance of collaboration and cooperation in seeking and implementing effective strategies. ***Children are dependent upon adults to overcome the barriers, traditions, and competing priorities that have hampered progress in preventing injuries to non-working children and young workers on farms.***



PURPOSE

The goal of this initiative was to conduct a five-year review of the 1996 National Action Plan, *Children and Agriculture: Opportunities for Safety and Health*, and to use a consensus development process to generate strategies for the future. Specifically, participants were asked to consider: (a) successes to date, (b) gaps and barriers in achieving objectives, (c) current and potential effective interventions not addressed in the National Action Plan, and (d) strategies for the future.

Specific aims to be addressed included:

1. Assess the status of the 13 objectives and 42 recommended

actions of the 1996 National Action Plan.

- Review preliminary results of childhood agricultural injury research activities currently underway
- Assess key findings of childhood agricultural injury surveillance and fatality data
- Review strengths and weaknesses of major youth farm safety programs
- Assess evaluation results of completed research and education interventions
- Discuss status of relevant public policies

2. Integrate recommendations of the National Adolescent Farmworker Occupational Health and Safety Advisory Committee; proposing crosscutting issues for migrant, seasonal, and residential adolescents.
3. Engage the private sector in proposing new interventions that span beyond education and marketing efforts.
4. Develop an updated National Action Plan for future research and interventions.
5. Publish and disseminate Summit proceedings with recommendations for the future.

METHODS

In order to achieve the desired outcomes from this initiative a variety of methods were employed and numerous stakeholders were involved. A core group of individuals, working out of the National Children's Center for Rural and Agricultural Health and Safety, in Marshfield, WI, directed primary tasks. The core team was comprised of a Summit Chairperson (Susan Gallagher, MPH, of Education Development Center in Newton, MA), the NIOSH Project Officer (David Hard, PhD), the National Children's Center Director (Barbara Lee, PhD), the National Children's Center lead scientist (Barbara Marlenga, PhD), and an external project consultant (Cynthia Phelan, RN, MS, of Mosinee, WI). The core team efforts were augmented by nearly 100 individuals, representing many roles in agriculture and professional disciplines as well as most geographic regions of the country. Participants contributed information to the assessment of progress to date (the "report card") and they participated in teleconference calls, an in-person meeting, and follow-up electronic communications.

During the initial phase, data were collected via formal surveys using regular and electronic mail along with telephone interviews. Literature was searched and reports were solicited from federal agencies and private organizations. Some information, such as testimonies at a public hearing, was acquired via the Freedom of Information Act process. The second phase of this initiative involved teleconference phone calls and a two-day in-person meeting. The next phase involved synthesis of information gleaned from preliminary data collection and the in-person discussions and strategizing that occurred during and following the in-



person meeting. Finally, recommendations and strategies for the future were drafted and shared with all participants and posted on the Internet for public comment, with two subsequent opportunities for review and feedback. Thus, the final version of 3 goals, 12 recommendations, and 36 strategies as noted in this report reflect 16 months of analysis, synthesis, and consensus among participants. A general description of the methods is described below. Full details are available upon request.

GENERATING A "REPORT CARD" ON PROGRESS TO DATE

Assessment of Research Efforts

The primary focus for research activities was on studies funded by NIOSH. With the help of NIOSH staff, information was gathered regarding NIOSH's intramural and extramural research activities associated with their Childhood Agricultural Injury Prevention Initiative within the

Division of Safety Research, plus a few that emanated from other Divisions. Details were collected on: (a) date and elements of different Request for Applications (RFAs); (b) number of applications received; (c) number of applications funded, along with title, principal investigator, and length of project; and (d) approximate total amount of intramural and extramural funds that were allocated.

Upon request, NIOSH staff prepared a report that highlighted the status and key findings of their intramural five-year childhood agricultural injury surveillance effort. Several different approaches were utilized to gather data on fatalities and injuries. Strengths and weaknesses of the data collection methods and the national childhood agricultural morbidity and mortality estimates were noted. NIOSH will be conducting a subsequent phase to this surveillance activity in 2002. Results will be useful for monitoring trends and identifying successes and shortcomings in injury prevention.

At the time this assessment was conducted, 30 extramural research and demonstration projects had been funded by NIOSH to conduct studies that were responsive to the call for research under the 1996 National Action Plan. Information was sought to determine what, if any, insights investigators gained from their research findings. A structured telephone interview, lasting about 30 minutes was used to collect data from 25 of the 28 grantees (89% response rate). Questions were provided in advance of the interview so respondents had time to consider the implications of their work. Grantees were asked questions such as, "Did your study generate results that have



implications for future childhood agricultural injury prevention efforts?" and "To what extent have you been kept informed of activities emanating from the 1996 National Action Plan?"

Assessment of Leadership and Coordination

The Division of Safety Research within NIOSH has borne primary responsibility for this initiative since 1996. They have involved a Federal Agency Task Force and the competitively awarded National Children's Center in Marshfield, Wisconsin, in several leadership and coordination activities. Assessment of NIOSH's performance as the lead agency was conducted through questions posed to research grantees; from members of the Federal Agency Task Force; indirectly from individuals giving testimony at a public hearing in Washington, DC; via questions posed to the Steering Committee of the National Children's Center; and via written evaluation forms of participants in the 2001 Summit meeting.

Strengths and limitations of the Federal Agency Task Force were identified through electronic mail surveys and a telephone interview of the Task Force Chairperson. Eleven of the 31 Task Force representatives provided responses to survey questions. Many of the individuals not responding had been "named" but not involved in the Task Force.

Leadership and coordinating activities of the NIOSH-funded National Children's Center in Marshfield, WI, were assessed by a professional, external evaluator (Sharon Dorfman of SPECTRA) over a two-year period. Data were collected regarding major activities, audiences reached, deliverable products, and achievement of objectives noted in the grant application. Interviews were conducted with Steering Committee members, the NIOSH Project Officer, and internal program staff.



Assessment of Professional Training

Using electronic mail and telephone contacts, inquiries were sent to Schools of Public Health, Cooperative Extension Safety Specialists, NIOSH-funded regional agricultural research centers, NIOSH-funded Education and Research Centers, youth-serving organizations, and professional health and safety organizations. Criteria were set at a minimum of one-hour lecture for inclusion of programs that were credited for addressing childhood agricultural injury prevention. Fifteen responses (40%) were yielded from 37 total inquiries.

GENERATING CONSENSUS ON RECOMMENDATIONS FOR THE FUTURE

Preparing Participants

A synthesis of information gained from a review of the literature along with the various data collection methods described above was documented in a 15-page "National Action Plan of 1996 Progress Report: Assessment Chart." This chart, along with background information, was

then disseminated to 80 individuals who had responded positively to a personal invitation to participate in this 2001 Summit process. A teleconference call was held in early April 2001 to discuss questions, concerns, and additions regarding the findings to date as documented in the assessment chart. In addition, the teleconference call allowed participants

to review expectations for their participation in an in-person meeting.

Sharing Perspectives and Suggestions In-Person

The main 2001 Summit event involved a two-day, in-person meeting held in Brooklyn Park, a suburb of Minneapolis, MN, on April 30-May 1, 2001. Prior to formal sessions, there were orientation meetings for youth advisors, parent panel members, farmers and growers, and the facilitators and note takers who were assigned to groups.



The opening sessions of the Summit meeting included a panel of youth providing their perspectives on agricultural injury prevention, a presentation by a farm owner describing prevailing conditions in United States agriculture and policy, and perspectives on partnerships from a national agricultural organization. There were 88 people attending the in-person meeting, including six youth advisors and four farm parent panel members. Another 14 invitees were unable to attend this meeting but expressed interest in staying involved with the process.

The primary work of the in-person meeting involved seven different working groups on topics of: (1) Leadership, Funding, and Partnerships; (2) Interventions and Evaluations; (3) Policy; (4) Professional Training; (5) Public Education; (6) Research; and (7) Injury Surveillance. Each group included 5 to 10 individuals with interest and/or expertise in the topic under review. Groups were given specific questions to address, based on the 1996 National Action Plan recommendations, along with successes and shortcomings that were identified during the initial assessment phase. Each group had an assigned facilitator, note taker, and spokesperson. Over the two-day period groups worked to generate realistic and effective strategies that address priority areas for childhood agricultural injury prevention. The in-person meeting allowed time for full group reaction to the topic-specific ideas generated with the seven working groups.

Drawing Conclusions and Proposing Recommendations

For the next phase of this initiative, the core project team synthesized information from the preliminary assessment with recommendations



developed during the in-person meeting. Questions were raised regarding the level of specificity desired for the final recommendations. Members of the NIOSH Childhood Agricultural Injury Initiative team indicated that their future programming would be directly related to the details imbedded in a new “blueprint” for action. Others shared that perspective, suggesting that specificity and fine-tuned strategies would be far more helpful than the broad, general suggestions generated during the in-person meeting.

From July 2001 through February 2002 a series of three consecutive versions of draft recommendations were sent to participants and posted on the Internet for public review. About one-half of meeting participants provided written feedback at one, two, or three points in time. Additionally, comments were submitted by a few external people who reviewed drafts on the Internet. Teleconference calls were convened for the core team to review feedback and consider implications for the final recommendations.

Disseminating Results of the 2001 Summit

A variety of methods will be used to share details of the process and final recommendations from this 2001 Summit on Childhood Agricultural Injury Prevention. This published document is being shared with stakeholders in the public and private sectors. The posting of the report on the Internet will facilitate worldwide access. At professional conferences and farm organization events, Summit participants are sharing their perspectives on recommendations. The farm media will be asked to help disseminate information from this effort.



In 1996, the National Committee for Childhood Agricultural Injury Prevention issued a report that contained 13 objectives with a goal of maximizing the safety and health of children and adolescents who may be exposed to agricultural hazards. The interdisciplinary committee based its work on the premise that neither the Occupational Safety and Health Act (OSHA) standards nor farm operators are prepared to provide children the same level of protection from occupational hazards in production agriculture as they receive in other occupations. The Committee crafted its recommendations by utilizing epidemiologic evidence as well as recommendations disseminated in several prior reports. The recommendations became known as the *Children and Agriculture: Opportunities for Safety and Health* National Action Plan and was endorsed by Congress. The National Action Plan led to many significant implementations in recent years, but work remains.

Following is a description of successes and shortcomings regarding the 13 objectives of the National Action Plan. Activities (or lack thereof) reflect the five-year interim of 1996-2001.

1. Establish and maintain a national system for childhood agricultural injury prevention.

In September 1996, Congress designated NIOSH to provide leadership for childhood agricultural injury prevention. NIOSH established a core team within its Division of Safety Research to be responsible for the Childhood Agricultural Injury Prevention Initiative. By 1997, a federal agency task force and a national

children's center were established.

NIOSH organized and led the 31-member Federal Agency Task Force with the purpose of facilitating a coordinated and informed public response to preventing childhood agricultural injuries. Only two formal meetings were convened followed by several informal communications, so the Task Force did not realize its full potential.

In September 1997, the National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS) at Marshfield, WI, was established to coordinate and promote the use of prevention information, organize multi-perspective teams, and use a consensus process to develop child farm safety guidelines.

Independent evaluation indicated that the National Children's Center has been effective in dissemination of information, consensus building, and linking efforts of the public and private sectors. However, lack of research-based information related to childhood agricultural injury prevention has hampered the Center's ability to identify, facilitate, and promote definitive interventions to reduce injuries.

In September 1999, NIOSH convened a public hearing in Washington, DC, to solicit feedback for their mid-course review of the Initiative. For the most part, individuals were pleased with the way NIOSH was leading the Initiative and offered several suggestions for new efforts. The NIOSH core team had demonstrated strong commitment to implementing those activities that fell within the domain of their federal agency, but noted that some recommendations are more appropriate for other agencies.

One recurring concern expressed at the 1999 public hearing was the lack

of a systematic communication plan related to this Initiative. Shortly afterward, NIOSH dedicated a Web site to this initiative (www.cdc.gov/niosh/childagz.html). This Web site, combined with a quarterly newsletter from the National Children's Center and periodic electronic communications from NIOSH, are an attempt to improve communications, however, more work needs to be done.

2. Ensure that childhood agricultural injury prevention programs are supported with sufficient funding and cooperation from the public and private sectors.

Since 1997, Congress allocated \$5 million annually to NIOSH for childhood agricultural injury prevention. The majority of NIOSH funds have been channeled toward internally directed injury surveillance efforts, extramural research, and the National Children's Center.

In November 1997, the "Childhood Agricultural Injury Prevention Strategy Workshop: A Private Sector Perspective" was convened at Purdue University. The purpose of the workshop was to enhance private sector participation in the development of childhood injury prevention strategies and to document private sector injury prevention efforts. The workshop highlighted notable examples of programs conducted or funded by Deere and Company, Pioneer Hi-Bred International, Cargill, Progressive Farmer Publications, and Successful Farming Magazine. In addition to cause-marketing and education programs, contributions such as engineering controls and operator training



were noted (Purdue University, 1999).

Agribusiness has been increasingly responsive to requests for funds. In year 2000 alone, Farm Safety 4 Just Kids (Earlham, IA) received about \$900,000 in private donations while Progressive Farmer Foundation safety day camps (Birmingham, AL) received financial support of \$400,000 for 250 camps. These private donations are commendable, but in tough financial years, the resources available for such programs are typically reduced. Beyond the corporate sector, it would be helpful if private foundations dedicated funds to this initiative.

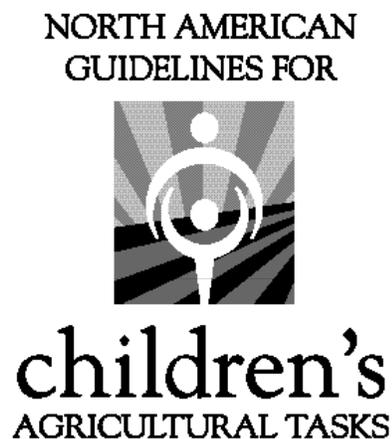
Just as with federally funded efforts, private funds may be allocated for projects that do not always deliver on their promise of injury prevention. Evaluation of some private sector programs, such as insurance-based incentives for safety practices, have had mixed results in terms of their expected outcomes (Jasperson, List, Howard, Morgan, and Von Essen, 2000; DeRoo and Rautiainen, 2000; Lee, Westaby, Berg, and Liu, 2000). In order to ensure maximum benefits from private sector donated funds, more evaluation results would be useful for identifying the best child farm safety interventions.

3. Establish guidelines for children's and adolescents' work in the industry of agriculture.

North American Guidelines for Children's Agricultural Tasks (NAGCAT), Web site: www.nagcat.org, were released in June 1999. These Guidelines address 62 different jobs commonly conducted by children on farms. NAGCAT recommendations are based on child development principles as

well as agricultural safety recommendations, including information on adult responsibilities, common hazards, personal protective equipment, and relevant training and supervision. Information has been widely disseminated via the farm press, safety professionals, a safety supply company, and the Internet. Organizations, such as the Ohio Farm Bureau, have distributed NAGCAT information to farm families via colorful annual calendars.

While the current information is a good start, research is needed to test the ergonomic component of NAGCAT, evaluate the effectiveness of NAGCAT, and examine application of NAGCAT in specialty populations. NIOSH has since funded five studies



to evaluate NAGCAT dissemination and application, and results are pending.

Although NAGCAT was designed for use by parents and not employers, a report commissioned by NIOSH at the request of policymakers, assessed the compatibility of NAGCAT with child labor laws. Results revealed several inconsistencies between NAGCAT parameters and current child labor in agriculture laws. There is still no

industry standard for agricultural employers who are hiring young workers.

4. Ensure that the public is aware of general childhood agricultural safety and health issues.

To date, there is no national public education strategy for childhood agricultural injury prevention directed at influencing knowledge, attitudes, and practices and few coordinated efforts to develop culturally sensitive strategies. For its annual Farm Safety and Health Week campaign, the National Safety Council typically adds some messages related to safety for children on farms (www.nsc.org/farmsafe.htm). In addition, several agricultural publications and Web sites carry periodic stories regarding child safety events or issues. The 1996 recommendation to use "culturally-sensitive" strategies for national education campaigns has not specifically been addressed.

5. Establish and maintain a comprehensive national database of fatal and nonfatal childhood agricultural injuries.

The diversity of special populations in childhood agricultural injuries makes use of one surveillance method inadequate. Nationwide surveillance efforts have been undertaken by NIOSH, while region-specific injury etiology and surveillance projects have been funded at selected sites.

NIOSH is conducting four different injury surveillance projects and one fatality review project. A farm operator survey was conducted in 1999 using USDA systems to identify injuries among youth who reside on



or are hired to work on farms. Results have now been published (Myers and Hendricks, 2001). A similar survey, targeting minority farms, is currently underway. A personal interview survey is being used to assess injuries to young minority farmworkers and children of minority farmworkers. The fourth injury surveillance effort uses a national hospital emergency department surveillance system to collect data on farm injuries to youth. Death certificates of youth who died on farms have been collected for the years 1995 through 1998 and these results have been reported (Adekoya and Pratt, 2001).

No formal action has been taken to achieve consensus on terms, models, and methods. The deficiencies in E-codes persist. Because of inconsistencies in definitions, data collection methods, and reporting, results cannot be compared across studies. Further, there are concerns that data have not sufficiently captured special populations or all geographic regions.

6. Conduct research on costs, risk factors, and consequences associated with children and adolescents who participate in agricultural work.

NIOSH has funded more than 30 research studies under this initiative, many of which are still in process. Very few final results have been published to date. It is hoped that these studies may provide insight into barriers to childhood agricultural injury prevention efforts. Research efforts on cost and consequences of childhood agricultural injuries have been minimal, due to few proposals and difficult procedural issues. Childhood environmental and occupational exposure studies are limited

and generally focus on youth exposures to pesticides. NIOSH had

planned to convene a meeting of research grantees with the goal of identifying key results and their future implications. Due to September 2001 travel constraints, that meeting was cancelled.

7. Use systematic evaluation to ensure that educational materials and methods targeted toward childhood agricultural safety and health have demonstrated positive results.

Guidelines and criteria to evaluate child agricultural safety and health training materials and methods have not been developed.

More rigorous evaluations of farm safety intervention programs are needed to determine their impact on the incidence of farm injuries. Improvements are especially needed in randomization of subjects, use of control groups, and objective measurement of outcomes such as behavior change and injury incidence. Nine education evaluation research studies were funded by NIOSH and final results are pending.

8. Ensure that farm and ranch owners/operators, farm workers, parents, and caregivers understand relevant agricultural safety and health issues that pertain to children and adolescents.

Numerous education and awareness efforts are underway. A major thrust has been the rapid expansion of the farm safety day camp initiative and the growth of local chapters of Farm Safety 4 Just Kids. The impact of programs such as these relates to the previous objective that calls for comprehensive evaluation.



A shortcoming of some efforts for parents and employers (as well as vocational training to adolescents) is the failure to address developmentally- and age- appropriate work tasks. Increased attention to child development principles and role of adult supervision has been recommended (Baker, Esser, and Lee, 2000). Overall better coordination to fill gaps and avoid duplication in education and awareness efforts would be desirable.

9. Ensure that rural safety and health professionals understand the issues relevant to children and adolescents exposed to agricultural hazards.

Networking among injury control/ health promotion professionals has increased notably in recent years. But a survey of grant recipients indicated that stronger effort is needed to communicate, inform, and network with other professionals about childhood agricultural injury prevention efforts.

Professional training is being offered in several venues. Some universities offer relevant curriculum related to childhood agricultural injury prevention, especially through their Cooperative Extension system. NIOSH provided supplemental funding through the Education Resource Center at the University of Minnesota to address childhood agricultural injury prevention. The NIOSH-funded National Children's Center hosts an annual three-day professional training seminar and Farm Safety 4 Just Kids

convenes an annual leadership training conference. To date, however, there is not a coordinated approach to professional training.



10. Influence adult behaviors which affect protection of children and adolescents through the use of incentives and adoption of voluntary safety guidelines.

The 1996 National Action Plan suggested five strategies for modifying behaviors through incentives. Minimal progress has been made in developing incentive programs; however, there are some promising projects underway (DeRoos and Rautiainen, 2000). Minimal action has been taken to encourage manufacturers to provide appropriate personal protective equipment for children and adolescents. Further efforts are needed to increase the likelihood that employers of young agricultural workers will train, supervise and mentor adolescents who are at risk of agricultural disease and injury.

11. Provide a protective and supportive environment for children exposed as bystanders to agricultural hazards.

The 1996 National Action Plan suggested the design, implementation, and evaluation of community-based programs to protect bystander children. NIOSH has recently funded two studies to evaluate farm safety day camp initiatives. Results of these evaluation studies are expected in 2004. Preliminary work is also underway to identify standard guidance for what does, and does not, constitute safe play and recreation areas within a farm site.



VISION AND KEY POINTS

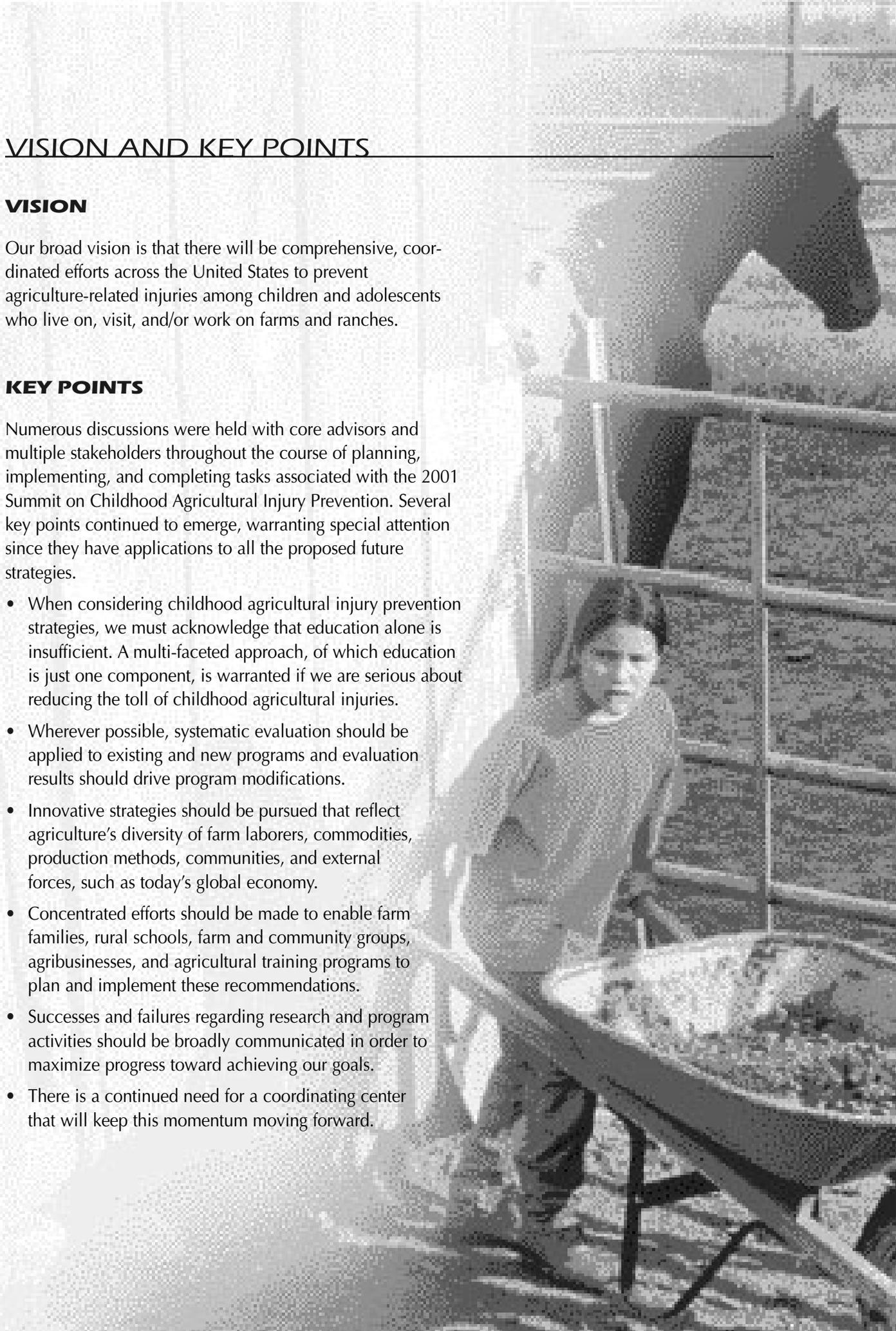
VISION

Our broad vision is that there will be comprehensive, coordinated efforts across the United States to prevent agriculture-related injuries among children and adolescents who live on, visit, and/or work on farms and ranches.

KEY POINTS

Numerous discussions were held with core advisors and multiple stakeholders throughout the course of planning, implementing, and completing tasks associated with the 2001 Summit on Childhood Agricultural Injury Prevention. Several key points continued to emerge, warranting special attention since they have applications to all the proposed future strategies.

- When considering childhood agricultural injury prevention strategies, we must acknowledge that education alone is insufficient. A multi-faceted approach, of which education is just one component, is warranted if we are serious about reducing the toll of childhood agricultural injuries.
- Wherever possible, systematic evaluation should be applied to existing and new programs and evaluation results should drive program modifications.
- Innovative strategies should be pursued that reflect agriculture's diversity of farm laborers, commodities, production methods, communities, and external forces, such as today's global economy.
- Concentrated efforts should be made to enable farm families, rural schools, farm and community groups, agribusinesses, and agricultural training programs to plan and implement these recommendations.
- Successes and failures regarding research and program activities should be broadly communicated in order to maximize progress toward achieving our goals.
- There is a continued need for a coordinating center that will keep this momentum moving forward.



GOAL I: Adults will ensure that young children and non-working youth can grow, play, learn, and rest in protective environments that are free of agricultural hazards.

1. Affordable and accessible childcare should be readily available for children of farmers and farm laborers.

Strategies:

- A) Community organizations, agribusinesses, religious groups, migrant health centers, and parents should work together to provide qualified, local childcare services that are responsive to the needs of farm families and farmworker families.
- B) Information regarding “model” childcare programs serving agricultural communities should be widely communicated via the Internet and other mechanisms to promote best practices in developing and maintaining high quality childcare services for children of farm owners and laborers.

A high proportion of childhood agricultural injuries and fatalities occur to children who are not participating in agricultural work, but are bystanders within an agricultural worksite. Physical separation of children from a worksite is an effective method of avoiding childhood exposures to occupational hazards. For families where both parents work in non-farming occupations, off-site childcare is a common practice and it is a guaranteed means for preventing work-related childhood injuries. While off-site childcare is not always an option in agriculture, it should be given first consideration.

When developing any childcare program, it is important to be responsive to the work hours, cultural values, and economic limitations of parents and guardians who depend upon these local services. Where relevant, a needs assessment should be conducted among parents and guardians to identify desired features of childcare services. Directors of childcare services should be familiar with standards of care and safety as promulgated by the American Academy of Pediatrics and American Public Health Association.

A number of federal agencies are responsible for various aspects of growth and development of children. The issues of rural childcare crosses lines of departments and individuals within Health and Human Services, Maternal and Child Health Bureau, Head Start and other public-funded programs. In addition, professional



groups such as the National Association for the Education of Young Children are closely allied with childcare issues. Ideally, representatives of relevant agencies and organizations would interact to identify, sponsor, and promote childcare options in rural and agricultural settings.

Some model childcare programs for agricultural workers have already been established and these could serve as an example of “best practices” for other settings. For example, the Redlands Christian Migrant Association in Immokalee, FL, is a successful cooperative venture between growers and churches that provides a host of services based on needs of children, parents, agricultural workers, and employers (see <http://www.grass-roots.org/usa/redlands.shtml>).

2. Safe play and recreation areas should be established so that youth who live or visit on farms and ranches are protected from occupational and environmental hazards.

Strategies:

- A) A guidance document should be developed by a Task Force of national representatives, including specialists in playground safety, agricultural safety, environmental health, and pediatric sports medicine. Their report should describe essential components of protective play and recreational areas. In addition, it should clearly describe risk factors that contribute to unsafe play for young children living and visiting on farms. Key points from the safe play areas guidance document should be readily available via the Internet and the full, published report should be available free upon request.
- B) Farm organizations and the agricultural media should encourage and promote the principles of safe play and recreation areas on farms through publications, conferences, and incentives such as awards and contests targeted to farm owners and parents.

Up to two million children live and visit on United States farms annually and farms are popular sites for school visits, petting zoos, and agricultural tourism. Data reveal the highest proportion of fatal and nonfatal agricultural injuries occur to very young children and non-working youth. Young children are sometimes placed in structured areas with playground equipment and sandboxes, while older children may enjoy building hay forts, riding horseback, floating on homemade rafts in a farm pond, hiding in mazes of hay bales, and bicycling along paths. Physical separation of children from the worksite and its occupational hazards is the most effective method of reducing childhood agricultural injuries, but in farm settings, this is not always feasible.

Currently, there are no standards or guidelines that inform farm owners and parents of basic elements of safe play and recreation areas on farms. In addition to safety information, factors related to **unsafe** play areas and practices (e.g., access to heights, drowning hazards, etc.) should also be understood. Recommendations for safe play areas on farms should be based upon guidelines applicable to agricultural and environmental safety, playground standards, and schoolyard safety. Farm owners and parents should have ready access to safety and supervision tips. Model examples for safe play and recreation areas should be identified, including options that match a range of economic limitations and environmental surroundings. This information should be widely disseminated and promoted so that adults/parents might construct new, or modify current, safe and appropriate areas in which young children and non-working youth can play.

Region-specific data regarding high-risk conditions (e.g., drowning in irrigation ditches, suffocation in grain bins) should be noted and, where possible, regional promotion of safe play areas should be encouraged and prioritized based on local data. Strategies to address youth recreational safety such as ATVs, horses, snowmobiles, hunting, and drowning prevention should involve youth-serving organizations such as National FFA and 4-H. State and federal agencies with missions **not** directly related to agriculture are encouraged to be responsive to the agricultural, non-work related sources of injury. Such groups include the federal Maternal and Child Health Bureau, the Consumer Product Safety Commission, the Center for Disease Control’s National Center for Injury Prevention and Control, and the National Highway Traffic and Safety Administration. Professional organizations such as National Institute for Farm Safety, American Society of Agricultural Engineers, and the American Academy of Pediatrics are also encouraged to embrace the promotion of safe and appropriate recreation for children on farms.



GOAL II: Young workers will receive agricultural safety training, guidance, personal protective equipment and adult supervision based on child development principles.

- 3. A long-range plan for the *North American Guidelines for Children's Agricultural Tasks* (NAGCAT) should be developed to ensure continuous refinement based on evaluation research results, issues related to special populations, as well as changes in production agriculture. The plan should consider implications for employers of young workers in agriculture.**

Strategies:

- A) A Task Force comprised of NAGCAT primary advisors and other individuals should be convened by the NIOSH-funded National Children's Center to develop a long-range plan for NAGCAT. The plan should articulate future responsibilities and expanded roles for farm organizations and the farm media and should propose methods to address the needs of employers of young workers in agriculture who are subject to federal and state labor laws. The long-range plan for NAGCAT should ensure that future modifications include culturally and geographically relevant content, format, and distribution mechanisms.
- B) A strategy for periodic assessment of NAGCAT should be implemented by the NIOSH-funded National Children's Center, based upon the suggestions within that long-range plan.



The *North American Guidelines for Children's Agricultural Tasks* (NAGCAT) were developed as a basis for non-regulatory guidelines for children working under the supervision of parents. NAGCAT resources include details on 62 different jobs that children conduct in agriculture, providing information regarding developmental attributes required for jobs, suggested levels of parent supervision, common hazards, personal protective equipment, and type of training needed before starting the job. Since their release in 1999, NAGCAT resources have been disseminated by child safety organizations via a farm safety equipment supplier (www.gemplers.com) and via the Internet (www.nagcat.org). Issues related to NAGCAT have been discussed with state policy advisors of major farm organizations and through numerous farm journals, farm newspapers, and agricultural trade journals. To date, there have been no indications of strong opposition by the farm media or farm organizations. Focus groups of farm parents and preliminary research results indicate general appreciation of NAGCAT, especially among farm mothers who are grateful to have them as a resource for “*helping kids do the job safely*” (personal communications of principal investigators of NAGCAT-related research, F. Henderson, S. Wright and A. Gadomski).

Some limitations of NAGCAT have been noted. For example, the content, language, and format are not conducive for use among certain populations (e.g., Amish or non-English speaking) or for selected, less common agricultural tasks (e.g., handling sheep). There are some indications that current NAGCAT resources can be overwhelming in the amount of information, possibly hindering their application by parents. Dissemination continues to be problematic. Initial printed resources were deemed too expensive to purchase by some individuals and since that time their promotion among farm parents has been fragmented. Further, we are still awaiting empirical evidence that application of NAGCAT recommendations are truly effective in providing safe agricultural working opportunities for youth. Results of current NIOSH-funded research may guide future refinement and improvement of NAGCAT. Future applications of NAGCAT should be established and prioritized for funding, dissemination, and adoption by parents.

Although NAGCAT was never intended for use in formal employment settings, questions have been raised regarding “if” and “when” NAGCAT could be applicable for farm operators who hire young workers. NIOSH reviewed NAGCAT with the Fair Labor Standards Act (FLSA) as well as certain state laws and found there were several differences between them. The FLSA Child Labor Laws were generally more restrictive in terms of specific tasks at

earlier ages. In the future, efforts should be made to clearly distinguish the difference between NAGCAT resources, which are based on principles of child development, and the federal policies related to children's work in agriculture. The long-range NAGCAT plan should be responsive to the needs of farm employers who are striving to provide safe and meaningful work experiences for young people who are working in compliance with labor laws.

4. Exposure limits should be established to guide agricultural work assignments for children less than 18 years of age.

Strategies:

- A) NIOSH, with input from EPA and other agencies, should conduct a scientific review leading to the establishment of "Interim Exposure Limits for Children's Work in Agriculture" based on scientifically sound research and clinical judgments referenced from adult worker standards.
- B) With funding and guidance from NIOSH, research should be conducted to address knowledge gaps that would substantiate the "Interim Exposure Limits for Children's Work in Agriculture."
- C) The Department of Labor, policymakers, farm organizations, and safety professionals should collaborate to ensure that future modifications in labor regulations affecting young workers are based on recommended exposure limits and knowledge regarding adverse effects of agricultural work (including absence from school) that have potential life-long implications for young workers.

Factors that affect disease and injury among adult workers in agriculture are well known. For example, workers are exposed to agrochemicals, organic dusts, gases, nitrates, volatile organic compounds, oils, and solvents. In addition to toxins, there are exposures to noise, vibration, and cumulative body strain. The Occupational Safety and Health Act (OSHA) standards, permissible exposure limits (PELS) as used in industry, as well as Worker Protection Standards (WPS) for agriculture, have been developed with adult workers in mind. Such standards prescribe safety features of equipment, limited exposures to toxic compounds, and methods to increase personal safety (e.g., by using personal protective equipment such as steel-toed shoes and eye goggles). For many agricultural conditions, safety guidelines and permissible exposure limits have been established for adults, based on the average adult male body size.

Children's bodies are undergoing rapid growth and development, which is far different than the maintenance or aging phase of adult bodies. Thus, adult-based worker exposure limits would not necessarily be appropriate for young people. To date, limits for common agricultural exposures have not been established for children or adolescents. In all likelihood, safe exposure limits for children would differ from that of adults. The goal is to provide appropriate work conditions while not compromising a young person's developing physical, cognitive, or psychological growth. The interpretation of what is "appropriate" for young people on farms is currently untested. Sometimes it is a perception that is driven by tradition or economic need rather than



evidence about risk and protection.





There are national data on childhood agricultural injuries and fatalities (per NIOSH) that describe serious injuries associated with machinery, vehicles, and livestock. In addition, new information regarding environmental impacts is emerging. These data could serve as the basis for research that identifies specific physical hazards, environmental exposures, and injury trends among young workers in agriculture. In addition to NIOSH-funded research on childhood agricultural injuries, several new Children's Environmental Health Centers have been established across the U.S. with funding from Environmental Protection Agency (EPA) and the National Institute for Environmental Health and Safety (NIEHS). Through these Centers, research is being conducted on the impact of environmental exposures (e.g., lead, pesticides, volatile organic compounds) on children's developing bodies. Results of these efforts may be applicable to agricultural work.

Where there is empirical evidence of safe exposure limits or protective measures that minimize harmful effects of agricultural work, such facts should serve as the basis for guiding parents' decisions regarding children's work. In addition, these facts should serve as the basis for any new or modified public policy protecting young workers in agriculture. Specifically, there is a call for research that addresses safeguards and exposure limits for children to pesticides, airborne toxicants, noise, vibration, lifting, repetitive tasks, prolonged fatigue, or other factors. Because of ethical and practical issues, it is not always possible to conduct exposure-type research on children; however, in many cases research using animal models and expert opinion could be applied.

There is strong disagreement among various stakeholders regarding recommendations to adopt stricter regulations protecting children from agricultural hazards. Parents believe it is their right to have final authority regarding their children's work and presence on a farm worksite. Farm parents are exempted from many child labor regulations. At the same time, the OSHA standards are not enforceable on farms with fewer than 11 employees. Most farm owners strongly oppose any new government intrusions affecting the involvement of children in their agricultural operations. In contrast, safety advocates endorse a public health approach to injury prevention including education, engineering, and public policies. Their position is supported by research that demonstrates that education and awareness alone are insufficient to prevent childhood injuries. For example, once state laws were passed requiring the use of child passenger safety seats, parents were far more likely to use such seats and the death rate of children in auto crashes decreased. Safety advocates believe that public policies would be the most effective way to influence adult behaviors (through rewards or punishment) so that children's exposures to agricultural hazards would be limited and, thus, childhood agricultural injuries prevented.

Collectively, parents, farm owners, and safety advocates all acknowledge that children and adolescents are dependent upon adults to set and establish protective standards for them. However, parents, farm owners, and work supervisors may not always be informed of occupational hazards, safe exposure limits, child development principles, safety guidelines, or government regulations applicable to child supervision, production agriculture and environmental exposures. While recognizing that parents rarely engage in behaviors to intentionally harm their children, some have argued that failure to adhere to the best safety standards be considered as child neglect or endangerment. At the very least, the recommendations of this group point to the need to establish practices and policies that enable parents to provide a safe environment for their children, ensuring that safety is viewed as a valued component of effective parenting. Ideally, the combination of research-based exposure limits, injury data, and lessons learned from other young worker safety initiatives would provide the basis for upgrading current policies (or proposing new policies) that are understood and accepted by parents and farm owners.

5. Model programs for training and supervising young agricultural workers should be identified through evaluation, then widely replicated via the facilitation and resources of well-established organizations.

Strategies:

- A) NIOSH should establish a Task Force to identify features of effective young worker training programs through a scientific review of existing research. Analysis of findings should form the basis of core competencies and essential components of model training and supervision programs for young workers in agriculture.**
- B) NIOSH, USDA, and others should provide funding for developing innovative young worker safety interventions based upon the best theory and practice models. Funding should require a**

collaborative relationship with farm organizations as well as rigorous scientific evaluation methods that may reveal long-term applications.

- C) **USDA should ensure that the National Tractor Certification Program is effective in reducing tractor-related injuries and is available for young agricultural workers including seasonal workers who do not reside on farms.**
- D) **The NIOSH-funded regional Centers for Agricultural Disease and Injury Research, Education, and Prevention as well as the NIOSH Education and Research Centers should test the efficacy of training programs for agricultural employers, based on regional disease and injury conditions and the critical elements necessary to train and supervise young agricultural workers.**
- E) **Farm organizations and other employer groups should strongly encourage adoption of effective safety and health training programs for young workers. These programs should include basic principles of child development and supervisory strategies for working with adolescents.**
- F) **Public and private sector funds should be allocated to major farm and commodity organizations to support dissemination of established agricultural health and safety training programs for supervisors of young workers.**

There are multiple curricula for teaching agricultural safety for youth, yet, only a few of these curricula have undergone extensive evaluation to determine their effectiveness. Formative evaluation is typically conducted during the



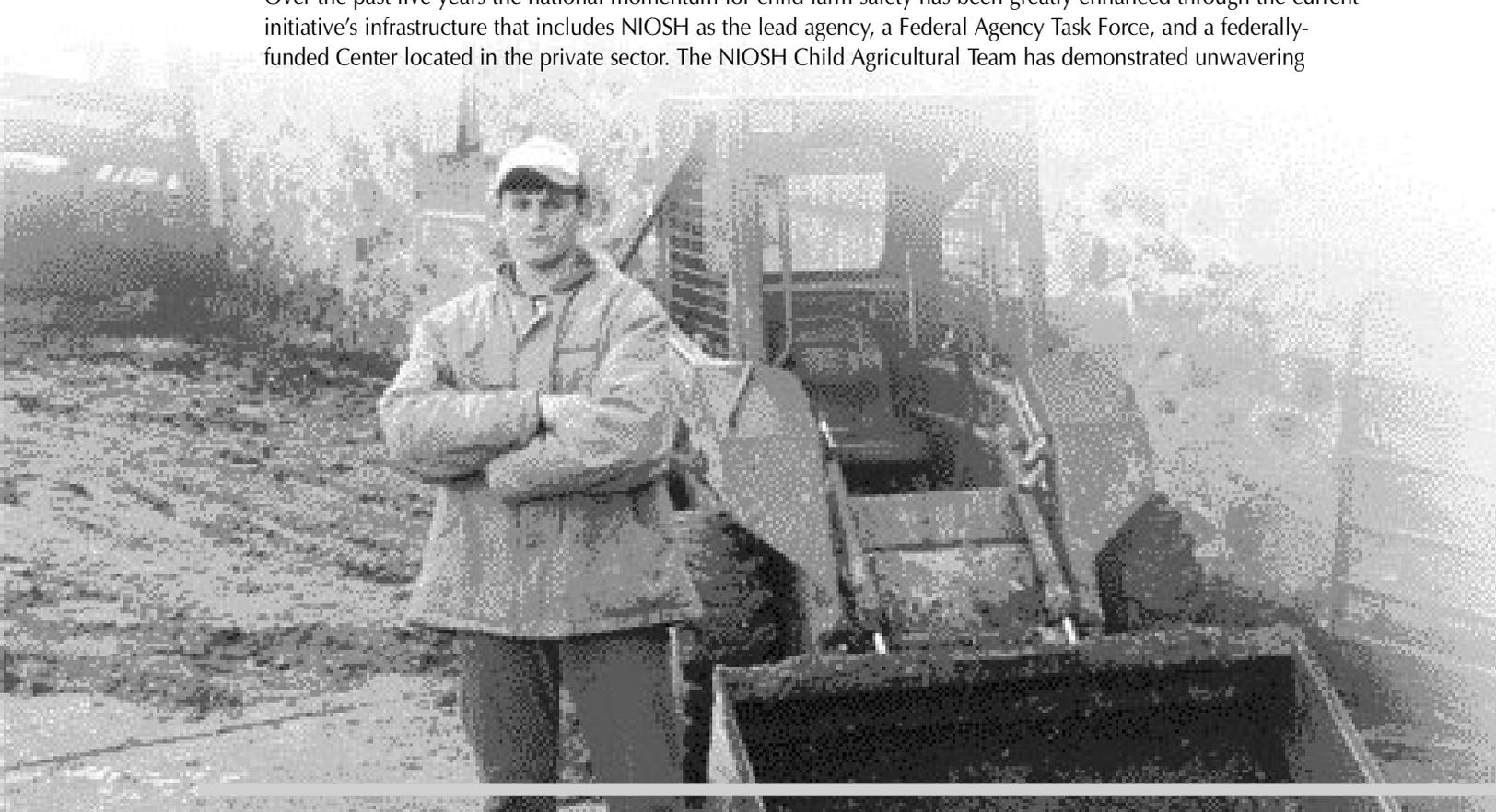
GOAL III: A strong public/private infrastructure will be maintained to ensure the vision, leadership, and national commitment necessary to prevent childhood agricultural injuries.

- 7. Federal funding should be maintained for childhood agricultural injury prevention activities including a Federal Agency Task Force and a National Children’s Center to provide leadership and coordination between the public and private sectors.**

Strategies:

- A) The U.S. Congress should allocate funding to several federal agencies for implementing recommendations within this 2001 Summit report. In addition to NIOSH funds for research, other federal agencies such as USDA and MCHB should be granted funds to address the non-research aspects of this initiative.
- B) NIOSH should revitalize the Childhood Agricultural Injury Prevention Federal Agency Task Force with a focus on leading and maintaining collaborative inter-agency activities including regularly scheduled communications.
- C) The NIOSH-designated National Children’s Center should maintain a leadership role in coordinating and communicating public/private sector programs, with a special emphasis on “translating” surveillance findings and research results so that the scope of the problem and best practices are known and applied in the agricultural community.

Over the past five years the national momentum for child farm safety has been greatly enhanced through the current initiative’s infrastructure that includes NIOSH as the lead agency, a Federal Agency Task Force, and a federally-funded Center located in the private sector. The NIOSH Child Agricultural Team has demonstrated unwavering



commitment to the recommendations of the 1996 National Action Plan. A Federal Agency Task Force has involved representatives from 11 federal agencies. Through a competitive process, a NIOSH-funded National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS), established in Marshfield, WI, has bridged the gap between the public/government sector and the private/farming sector.

Feedback from numerous stakeholders reveals satisfaction with NIOSH leadership as documented in the interview summary of NIOSH research grantees, testimony from NIOSH's mid-course review, and the evaluation summary of Summit meeting participants. In terms of federal agencies beyond NIOSH, feedback from members of the Federal Agency Task Force, first established in 1997, indicated there would be value in revitalizing this group, with a primary purpose of increasing collaboration and coordination of program activities. Given that future efforts should extend beyond research (as guided by NIOSH), there may be an ever-increasing role for other agencies in assuming responsibilities under this initiative.

Appreciation for efforts by NCCRAHS to link private sector initiatives with federal funding and priorities were noted in several evaluations conducted by an external, professional evaluator (S. Dorfman of SPECTRA). NCCRAHS's most important role has been to facilitate consensus development initiatives, such as the *North American Guidelines for Children's Agricultural Tasks* and the National Adolescent Farmworker Occupational Health and Safety Advisory Committee report. In order to sustain a strong infrastructure for this initiative, it is imperative that communications be informative and sustained among the NIOSH Child Agricultural Team, the Federal Agency Task Force, and the NIOSH-designated National Children's Center, which serves as a link to the farming community.

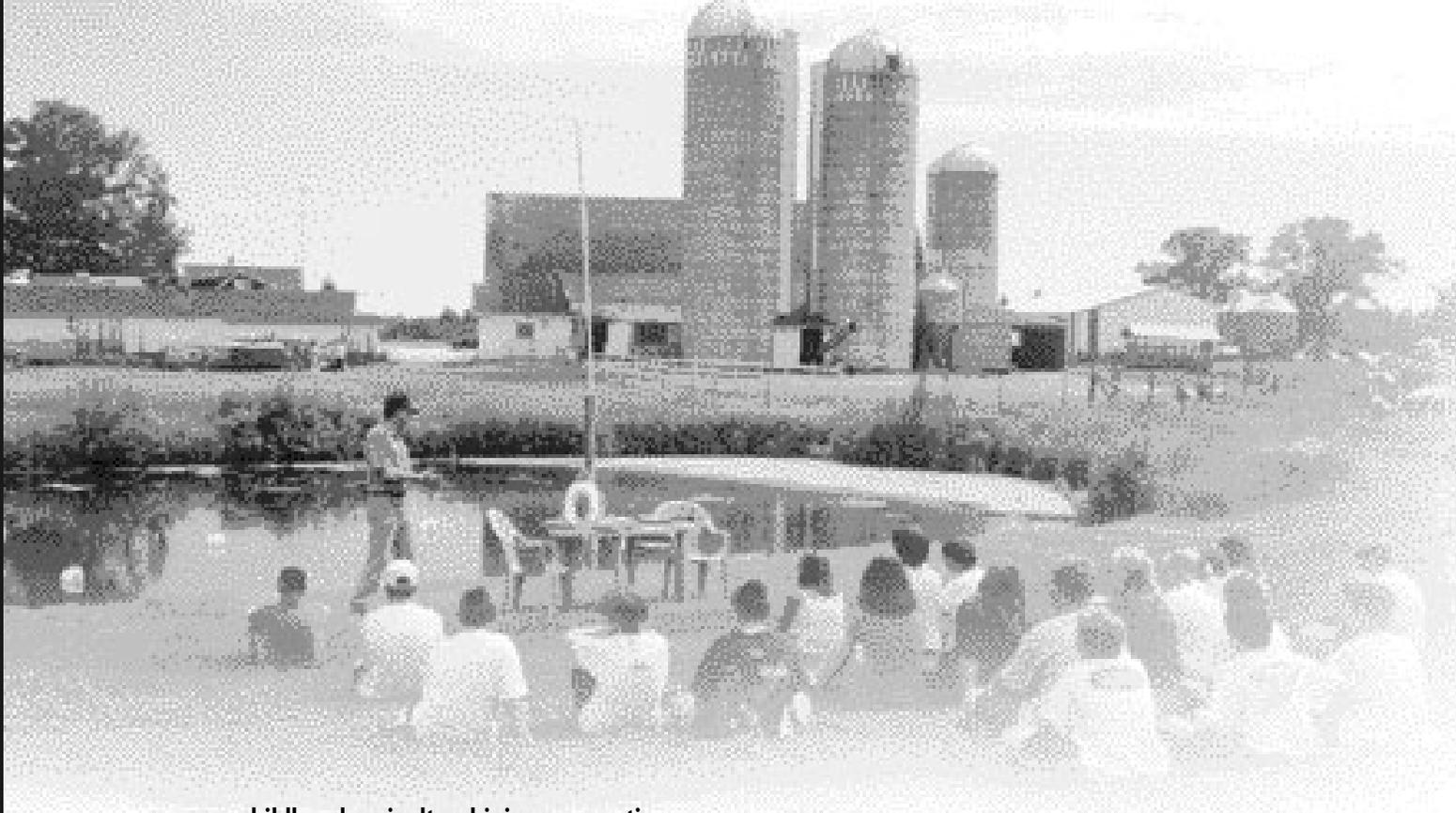
As long as children are at risk of agricultural fatalities and injuries, there is support among stakeholders for the continuation of this national initiative. Presently, most Congressionally-appropriated funds go to NIOSH, where the primary mission is research. NIOSH has done a commendable job as the lead agency for this initiative. However, because NIOSH's primary mission is research, some recommendations, such as non-research activities and coordination with private agencies and agribusiness, have not been fully pursued. There is now a role for other groups to become more intimately involved. For example, the federal Maternal and Child Health Bureau (MCHB) could guide development and testing of interventions for non-working children (e.g., rural childcare and recreation programs), and the U.S. Department of Agriculture's budget could be expanded to develop and disseminate a high quality, effective national tractor certification program for adolescents working in agriculture.



8. Agribusiness, farm organizations, the farm media and other private sector groups should notably expand their involvement in efforts to exert greater influence toward the protection of children from agricultural injuries.

Strategies:

- A) Private foundations and other program sponsors should direct contributions toward innovative, high-impact programs including demonstration projects that test the efficacy of economic incentives for childhood farm safety practices. Such programs should strongly urge collaboration with agricultural organizations or businesses as a condition of funding.**
- B) Farm organizations, farm media, and agribusinesses, such as farm equipment manufacturers, should review internal policies and consider additions or modifications that encourage adoption of safety standards involving children on farms and ranches. These organizations should adopt policies that include a safety-impact analysis in which implications of new products, policies, and practices are assessed in the context of their effects on agricultural workers.**
- C) A follow-up workshop to the 1997 "Childhood Agricultural Injury Prevention Strategy Workshop" should be held to identify optimal methods for matching private sector donations with childhood agricultural injury programs that have demonstrated successful outcomes. This meeting should include strategizing on methods to motivate agricultural businesses to become active partners in such programs. A formal report from the workshop should be published and disseminated to inform and motivate foundation and corporate leaders to undertake meaningful activities related to**



childhood agricultural injury prevention.

One of the lessons learned from assessing progress under this initiative is that farm owners and farm parents are strongly influenced by forces such as the economy and their agricultural business links. The “vertical integration” of agriculture produces powerful relationships between farm owners (or farmworkers) and the business/employment contacts upon which they depend (e.g., cooperative, insurer, labor contractor). In addition to traditional practices and social norms, safety behaviors affecting children can be influenced by factors such as current pricing, production deadlines, the general farm economy, labor pool, and insurance. This means that parents’ decisions that result in children’s exposures to agricultural hazards are influenced by factors that span far beyond their knowledge of child safety guidelines or young worker training and supervision recommendations. The “bottom line” is that, when compared to safety or health professionals, agriculture-related businesses may have equal or greater opportunity to influence behaviors that will result in prevention of childhood agricultural injuries. Indeed, in the absence of widespread expansion of public policies that limit the presence of children in agricultural worksites, there is a major call for increased involvement of organizations that have strong influence on farm owners and parents.

Financial and human resources are needed to ensure serious and long-standing involvement of agribusinesses and farm organizations in interventions designed to alleviate situations that put children at risk of agricultural injuries and fatalities. The “Certified Safe Farm” intervention study was a demonstration model of how insurers of farm families might reap financial benefits when safety practices are adopted (Jaspersen, et al., 1999). Options for merging federal funds with private sector “research and development” funds should be considered. Lessons could be learned from other industries (e.g., construction, automobile manufacturing) where federal funds have been directed to solve problems through joint public/private ventures. Ideally, there would be strong collaboration between researchers, agricultural producers, manufacturers, cooperatives, insurers, and others in developing and testing practical injury prevention programs.

Many agribusinesses and foundations have donated large sums of money and others are willing to donate funds for worthy causes associated with children and injury prevention. In 1997, a NIOSH-funded “Childhood Agricultural Injury Prevention Strategy Workshop” involving representatives of major corporations and the farm media was convened by Purdue University’s Agricultural Safety and Health Program (Purdue University, 1999). Workshop results identified elements for product development, service marketing, distribution, and collaboration that are deemed important to corporate sponsors. As knowledge is gained about effective intervention strategies (as determined through evaluation and injury surveillance), it would be helpful to match the interests and needs of potential agribusiness sponsors with effective programs so that resources can be targeted for maximum benefits.

Along with public/private sector collaboration, international collaboration and assistance to developing nations is strongly encouraged. The global economy has raised many new issues for agriculture. Concerns regarding sale of goods associated with inappropriate child labor are justification for keeping abreast of international developments in



childhood agricultural safety. In addition, international collaboration related to the welfare of children is bound to have positive outcomes for coming generations.



9. A national research agenda for childhood agricultural injury prevention should be updated based upon progress to date.

Strategies:

- A) A national research agenda for childhood agricultural injury prevention should be developed no later than 2005 through a coalition of individuals associated with this national initiative. This process could be facilitated by the NIOSH-designated National Children's Center. Participants should include a variety of individuals including researchers not previously funded by NIOSH.
- B) In cases where there is a lack of competitive proposals, NIOSH should communicate research opportunities through mechanisms that reach relevant disciplines (e.g., physicians, social scientists, economists) and consider contractual and/or noncompetitive mechanisms to secure information on specialized topics.
- C) A Task Force should be convened to generate a guidance document, providing recommendations for consistent use of childhood agricultural injury terminology for data collection and reporting purposes. Members of this Task Force should include individuals experienced in injury coding, classification, and data collection and analyses. The guidance document should be widely available via the Internet and should be encouraged as the basis for federally-funded childhood agricultural injury surveillance research.
- D) NIOSH, USDA, and the Department of Labor should co-sponsor a workshop to address effective methods for studying agricultural disease and injury among children and young workers associated with the migrant, seasonal, and immigrant workforce.

Given the timing of the 2001 Summit, which occurred prior to completion of numerous NIOSH-funded studies on childhood agricultural injuries, it was deemed premature to propose a detailed, updated research agenda. Once the current NIOSH-funded studies have yielded specific implications, there will be a clearer indication of gaps and needs for further research. NIOSH also indicated a concern that for some of their "requests for proposals," the submissions did not merit funding. In the future, for cases where information is needed and there are recognized experts to conduct that research (e.g., economic impact of childhood agricultural injuries), a contract model versus the standard research application model is encouraged.

In terms of injury data, NIOSH has successfully gathered baseline injury data, with options for tracking trends in fatalities and injuries data over time. While NIOSH uses a standardized system, problems persist in the inconsistent use of injury terminology across injury researchers and data collection systems. To assess progress in preventing injuries, it would be helpful to have consistent terminology and application of national and regional data. In addition to maintaining injury surveillance efforts, the current injury data should be used to identify injury prevention options for conditions (e.g., region-specific livestock operations or drowning hazards) known to be associated with high proportions of deaths and injuries.

Scientists involved in this national initiative are conducting a variety of studies. Although many research results are still pending, there are preliminary suggestions for future research. Participants of the 2001 Summit meeting have recommended research on: (a) the beneficial as well as adverse physical and psychological effects for children and adolescents living and working on farms, (b) incentive-based programs for influencing farm parents' practices involving children and adolescents on farms, (c) impact of modifications in regulations affecting young workers in agriculture including ergonomic factors and noise exposure limits, (d) economic impact of childhood agricultural injuries and the cost-benefit relationship of safety training for young workers in agriculture, and (e) methods to improve agricultural injury and fatality surveillance systems to ensure valid tracking of trends and new issues as well as systems that require state public health departments' participation in surveillance efforts.

Comprehensive evaluation is fundamental for identifying interventions that have high likelihood of promoting safe practices (e.g., tractor safety training and certification, farm safety day camps). Evaluation results would enable private donors (e.g., foundations, agribusinesses) to direct their resources for supporting programs deemed to have high impact and for disseminating them to geographically and ethnically diverse sites across the nation. By conducting high-quality evaluation research on childhood agricultural injury prevention programs, we could



increase the likelihood that limited resources are targeted to the most effective programs.

10. A Childhood Agricultural Safety Network should set a vision and provide leadership and coordination of private sector childhood agricultural injury prevention efforts in a manner that represents the geographic and ethnic diversity of agriculture in the U.S.

Strategies:

- A) With facilitation and resources from the NIOSH-designated National Children's Center, a Childhood Agricultural Safety Network should be fostered to develop its goals, strategies, and communication systems based upon recommendations from the 2001 Summit while being responsive to the ever-changing issues affecting children who live and visit on farms and ranches.
- B) This Childhood Agricultural Safety Network ultimately should be comprised of individuals, professional groups (e.g., American Academy of Pediatrics), non-government organizations, and businesses (e.g., insurance companies dealing with farm owners) to collectively guide national strategies under private sector leadership.

The 1996 National Action Plan called for a gradual transitioning of leadership for this initiative away from NIOSH into the private sector. The agricultural community is far more receptive to safety and health programs and non-regulatory approaches that originate outside of government. Private sector individuals and organizations deal with challenges such as limited funding, regional needs, and competitive activities that can hinder cooperation. A mechanism to guide the collective efforts of key organizations is needed to facilitate national-level initiatives that will achieve our vision of comprehensive, coordinated efforts to prevent childhood agricultural injuries. Through the collective efforts of well-established organizations that have a national focus on children, agriculture, safety, and migrant workers, a wider and more diverse audience may be reached.

Primary tasks for the Childhood Agricultural Safety Network should include efforts to: (a) develop a comprehensive, long-term, year-round public education campaign with messages about childhood agricultural injury prevention to be disseminated through a variety of media; (b) identify and acknowledge (e.g., through "awards") the contributions



that individual farmers make to reducing hazards to children and adolescents on farms; (c) encourage adoption of “incentive-based” programs that may influence adult behaviors to protect children; (d) disseminate information regarding relevant research results, professional training, model programs, and collaborative efforts to a broad audience; and (e) interact with international colleagues, especially where global trade affects agricultural working standards for children in other nations.

11. Information regarding all aspects of this national childhood agricultural injury prevention initiative should be widely communicated.

Strategies:

- A) NIOSH childhood agricultural injury data should be updated regularly and communicated in a clear, accessible manner for use by safety professionals, the media, the farming community, policymakers, and program planners.
- B) The NIOSH-designated National Children’s Center should work with NIOSH to issue semi-annual reports of injury surveillance findings, research study results, examples of model intervention programs, and other relevant information.
- C) The NIOSH-designated National Children’s Center should convene an annual in-person meeting, including federal agency representatives, non-government organizations, and youth-serving groups, to facilitate inter-organization/agency communications regarding progress in achieving injury prevention goals, emerging issues affecting children in agriculture, and to review and potentially modify priority areas for future efforts.
- D) Agricultural journals, newspapers, radio and television programs, Internet sites, and other outlets should report childhood agricultural injury events that include prevention strategies, disseminate information regarding safe play and appropriate work for children on farms, and sponsor awards and incentives for individuals and organizations that demonstrate exemplary practices to protect children who live on, visit, and/or work on farms and ranches.

Good communications are key to successful initiatives. For this 2001 Summit assessment of progress to date, discussions were held with multiple stakeholders who provided personal and organizational feedback. One thing became clear through the assessment process – people want more information. They want timely and relevant information regarding NIOSH’s injury surveillance findings, NIOSH-funded internal and extramural research activities, successes and failures in program efforts, funding opportunities for research and demonstration programs, and insights into how farm owners and parents perceive efforts to protect children from agricultural injuries. The need for more informative and timely communications has been expressed as a high priority.

Communications should serve multiple purposes. In addition to enhancing basic awareness, information is used to refine and direct our efforts. NIOSH childhood agricultural injury data could guide local or state intervention programs so they focus specifically on the children at greatest risk. For example, in a given region the injury data would highlight details regarding the demographic characteristics of injured children, their activities when injured, and the type of agriculture in which injuries occurred. Thus, prevention programs could be tailored to the most common injuries. Information regarding successful interventions would help program planners and policymakers use evaluation results to select the interventions that most closely match their needs and have the greatest potential for positive results.

The mass media should use communication strategies to inform the general public, farm community, and parents about issues such as the scope of the problem, common myths and misconceptions about safety, high-impact interventions, and socially acceptable practices. Ultimately, a good social marketing strategy involving effective communications would shape public opinion about children and farm safety. Just as research and interventions changed social norms about child passenger safety seat practices, it is conceivable that unsafe traditions and hazardous exposures to children would gradually be minimized through social norms and public pressure regarding appropriate roles for children in relation to production agriculture.



SUMMARY

The primary goals of the 2001 Summit on Childhood Agricultural Injury Prevention have been achieved. The process of assessing progress to date and engaging stakeholders in developing recommendations for the future yielded valuable results. Model programs were identified; perspectives of farm owners, parents, and youth were noted; limitations and gaps in leadership and research were noted; and the challenge of adopting public policy was acknowledged. The process stimulated renewed commitment to this issue, suggested creative methods for engaging farm organizations, and suggested new roles for federal agencies that span beyond NIOSH's research mission.

We now have three broad goals – addressing non-working children, young workers in agriculture, and national leadership and infrastructure. Twelve recommendations build on these goals, and each recommendation includes several feasible, practical strategies for implementation. Proposed strategies will require cooperation among farm organizations, youth-serving groups, injury prevention researchers and program directors, and federal agencies. There is plenty of work ahead and opportunities for many individuals and organizations to get involved.

It is expected that, at least for the short term, NIOSH will maintain its leadership role in guiding and funding future efforts. NIOSH intends to keep

other federal agencies informed of relevant activities, to maintain support for a National Children's Center, and to continue funding for selected research endeavors. Long term, it is hoped that federal agencies and public monies will be less important as ownership of prevention programs are embraced by private, non-government groups, and the businesses and networks through which farm owners and parents conduct their work. ***The important work of preventing childhood agricultural injuries belongs right at home and on the farm, where children are completely dependent upon adults in their living and working environment to protect them from harm.***



GOALS AND RECOMMENDATIONS OF THE NATIONAL ADOLESCENT FARMWORKER OCCUPATIONAL HEALTH AND SAFETY ADVISORY COMMITTEE

GOAL I: Identify profiles of hired adolescent farmworkers employed in production agriculture across the United States.

Recommended Actions

1. The Department of Labor (DOL) and the National Institute for Occupational Safety and Health (NIOSH), with the cooperation of migrant non-profit organizations, state health departments, and Migrant Clinicians Network (MCN) should be funded to develop and maintain a regional on-going database of occupation-related demographics. Data should include age, gender, race, type of work, housing location, permanent residency address, and access to health care.
2. Wage and Hour Division at state levels, in coordination with migrant agencies, DOL, NIOSH, and the U.S. Department of Agriculture (USDA) should coordinate efforts to assess occupational risks at adolescent farmworkers' worksites and housing locations, which often are separate. Worksites where adolescent farmworkers are employed should provide facilities and resources that address adolescents' needs, including personal hygiene, emergency contact information, telephone communications, and adult supervision.

GOAL II: Identify occupational risks that are potentially unique and specific to hired adolescent farmworkers.

Recommended Actions

3. Congress should allocate funds to the Centers for Disease Control and Prevention (CDC), designating NIOSH to plan, implement, and evaluate intramural and extramural research efforts to promote best work practices and to improve health and safety of hired adolescent farmworkers. NIOSH can convene a group of agricultural safety specialists, agricultural producers, and occupational healthcare providers who work with hired adolescent farmworkers to evaluate progress to improve their working conditions. Information gathered by these experts on ways to minimize risk factors should be disseminated to health professionals, agricultural employers, and others serving adolescent farmworkers to help them understand agricultural risks by commodity groups.
4. Congress should allocate funds to the CDC, designating NIOSH as the leading agency along with the DOL and the USDA, to establish effective data collection methodologies that will identify major sources of occupational risks, disease, and injury among

adolescent farmworkers by crop, region, and type of employer. Comprehensive analysis of exposure to work hazards should integrate environmental conditions, ergonomic hazards, and physiological factors for adolescents. Research efforts need to be targeted to regions where adolescent farmworkers are concentrated.

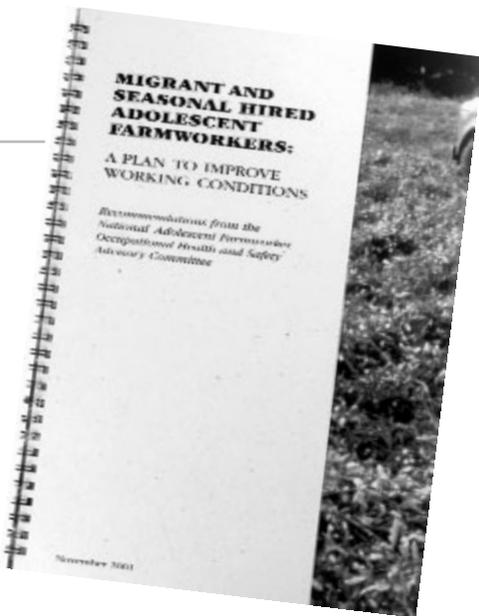
5. The Environmental Protection Agency (EPA), DOL, migrant health professionals, agricultural health and safety professionals, agricultural employers, and others should provide language- and cultural-appropriate access (i.e., via toll-free telephone) for adolescent farmworkers to express their work questions and concerns about occupational hazards

GOAL III: Plan, implement, and evaluate interventions to eliminate or minimize occupational health and safety risks of hired adolescent farmworkers.

Recommended Actions

6. Congress should fund the NIOSH Agricultural Centers and the USDA Cooperative Extension Services, via the Risk Management Education Division (RMED), to support agricultural employers' associations in the establishment of systems to





educate agricultural employers, supervisors of adolescent farmworkers, and farm labor contractors about adolescent farmworkers' occupational risks and prevention strategies.

7. Agricultural employers' organizations and others, such as RMED from USDA, should facilitate discussions among members and researchers to promote best work practices helping agricultural employers to identify practical solutions for occupational hazards among adolescent farmworkers. They can provide time during regional, state, and national meetings for major presentations and group discussions to report innovative and effective interventions.
8. NIOSH should be funded to provide agricultural employer-targeted evaluation studies to determine the cost-effectiveness of intervention programs aimed at preventing occupational disease and injury among adolescent farmworkers.

9. The American Academy of Pediatrics (AAP), North American Agromedicine Consortium, NIOSH, and other relevant organizations should provide advanced training for health professionals on occupational health and safety conditions in agriculture, with a special focus on adolescent farmworkers.
10. NIOSH should evaluate the impact of the agricultural media in enhancing public awareness to effectively promote best work practices involving adolescent farmworkers among agricultural employers.
11. A regional, coordinated approach should be established to address adolescent farmworkers' occupational health and safety needs. Funding should be available to universities, NIOSH Agricultural Centers, and others to provide adolescent farmworker educational health and safety interventions. Those actions will: (1) maximize collaborative efforts with current initiatives; (2) develop language and culturally appropriate materials; (3) assess adolescent farmworkers' safety risk perceptions; (4) account for cultural beliefs about safety practices; and (5) be tailored specifically to adolescent learning needs and not just a part of a general session for all workers.

Congress should create a Farmworker Adolescent Network and designate the DOL, the USDA, NIOSH, and the Environmental Protection Agency (EPA) to lead and coordinate a multi-organization network for addressing adolescent farmworkers' occupational health and safety research and program activities. Organizations representing agricultural employers, migrant health professionals, migrant advocates, adolescent farmworkers, and agricultural safety professionals should be represented in this new Farmworker Adolescent Network (FAN). Joint venture funds from public and private sectors should be encouraged to support FAN to fund regional and national initiatives including data collection, research, training, and innovative prevention programs based on significant research findings from convened groups and FAN.

The full report from the National Adolescent Farmworker Occupational Health and Safety Advisory Committee can be viewed and printed by going to <http://research.marshfieldclinic.org/children/>.



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Eaton boy, 10, driving car to farm chores, dies in crash

Denver Post (7-20-99)
By Kit Miniclier

Riley L. was doing farm chores when he lost control of the small car he was driving on a dirt road and rolled it three times, killing the 10-year-old Eaton boy, a family spokesman said Monday.

The youngster, who was ejected during the series of rollovers, suffered head and internal injuries when the vehicle apparently crushed him, said trooper Ron Watkins of the Colorado State Patrol.

Boy's arm severed in farm accident

(10-21-2000)

WEST BEND, Wis. (AP) – A 9-year-old boy from West Bend was severely injured when his arm was severed in a farming accident in the Town of Trenton.

According to the Washington County Sheriff's Department, the boy's arm became stuck in a farm elevator while he was helping the property owner put corn in a corn crib. The child was freed from the machine by the time rescuers arrived, but his arm had been severed.

Child has arm amputated in farm accident

(9-28-2000)

FRANKLIN, Wis. (AP) – A 4-year-old girl was hospitalized in fair condition Wednesday after an arm became caught in a corn chopper, police said.

Sgt. Joe Spak said the child wandered away from her backyard sandbox and into a cornfield where her father was harvesting corn. The father was looking at what he was chopping and did not see the girl.

Boy, 3, dies in tractor accident

Wisconsin Ag Connection (10-30-01)

A 3-year-old Sylvan boy is dead after he fell off a moving tractor this week. According to the Richland County Sheriff's Department, the boy was riding with his father inside the tractor's cab Monday morning, when the machine hit a bump and jarred the door open that the youngster was leaning on. The accident happened on Highway E. He died about three hours later.

Boy, 5, died after fall from tractor at grandpa's

Memphis (Tenn.) Commercial Appeal (10-5-99)

He loved the Power Rangers, the cartoon show Pokemon and going to school. He was an outgoing little boy who learned to swim when he was 2 and ride a bike when he was 4.

On Sunday, Bruce M., 5, of Memphis, died after a farm accident.

"He was such an angel," said his grandmother, such a sweet