

A National Childhood Agricultural Injury Prevention Initiative

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Abstract

The problem of children being injured as a result of living, visiting or working on a farm has been recognized for several decades. Although many individuals and groups have crusaded for the prevention of childhood agricultural injuries over the years, until recently, there has not been a national coordinated effort. In fiscal year (FY) 1997 the U.S. Congress provided targeted funding to the National Institute for Occupational Safety and Health (NIOSH) to implement a National Childhood Agricultural Injury Prevention Initiative. NIOSH goals for the initiative are to fill critical data needs; establish an infrastructure which facilitates the use of data to develop and improve upon prevention efforts; encourage the use of effective prevention strategies by the private and public sectors; and, to increase the involvement of the private sector in both prevention and research efforts. A panel of experts in agricultural injury surveillance was convened to evaluate existing surveillance programs and identify the most promising strategies for surveillance. NIOSH has funded research grants in a number of priority areas, including: etiology; outcomes of youth farm work and injuries; intervention strategies; and, evaluation of commonly used educational or training programs. Through a cooperative agreement, the National Children's Center for Rural and Agricultural Health and Safety was established. The Center will coordinate and promote the use of state-of-the art prevention information and organize multi-perspective teams which will use consensus-building to arrive at recommended guidelines. A government agency task force will work toward facilitating a coordinated and informed public response, and a workshop will be held to begin exploring mechanisms for involving the private sector in research and prevention efforts.

Keywords. Agriculture, Children, Injury.

The problem of children being injured while living, working or visiting agricultural work environments, primarily farms, has been recognized for several decades (Castillo et al., 1994; Cogbill et al., 1985; Field and Tormoehlen, 1982; Hoff, 1972; Hoskin and Miller, 1979; Rivara, 1985; Swanson et

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al., 1987; Tormoehlen, 1986; Waller et al., 1989). The statistics cited for deaths and injuries vary, usually depending on the data source and definitions used for case ascertainment. However, the most recent data suggest about 100 youth under the age of 20 die on farms each year (Rivara, 1997) and greater than 100,000 injuries occur to the same age group [National Committee for Childhood Agricultural Injury Prevention (NCCAIP), 1996]. Many individuals and groups have crusaded for the prevention of agricultural injuries inflicted upon youth (Adams, 1989, 1990; Reynolds, 1995; Sessions, 1997) and there has been media attention generated on the issue (Knudson, 1984; Franzenburg and Tevis, 1997; Pulaski et al., 1992; Tevis, 1989), but until now there has not been a national coordinated effort to address the problem. This article describes the efforts leading up to a new national effort to prevent childhood agricultural injuries that is being spearheaded by the National Institute for Occupational Safety and Health (NIOSH), the goals and components of the Initiative, and progress-to-date.

Background

In 1990, the Congress established a national initiative in agricultural safety and health under Public Law 101-517, with NIOSH designated as the lead federal agency. The Congress directed that this initiative, when sustained over a period of time, would result in a significant and measurable impact on . . . health effects among rural Americans (Proceedings of the Surgeon General's Conference, 1992). A direct outgrowth of NIOSH's overall agricultural initiative was the "Surgeon General's Conference on Agricultural Safety and Health", held in Des Moines, Iowa, during April 1991. The conference had a session devoted to "Intervention: Safe Behaviors Among Adults and Children" which highlighted the risks faced by people, young and adult, involved with production agriculture.

In April 1992, a Childhood Agricultural Injury Prevention symposium was held in Marshfield, Wisconsin, which sought to develop consensus on relevant research, education, policy, and other interventions aimed toward agricultural injury reduction for children. Individuals with expertise in different disciplines, including farming, joined together to review state-of-the-art knowledge regarding the issues and to offer recommendations for action. A multi-faceted approach was utilized, in order to help assure that both scientific and humanistic issues were addressed (Lee and Gunderson, 1992).

From a cadre of 120 participants from the first meeting, a core group of 42 dedicated members formed the National Committee for Childhood Agricultural Injury Prevention (NCCAIP). The Committee had broad stakeholder representation, including researchers, farmers, agricultural groups, safety and health professionals, and government officials. Over a 16-month period, the members of the committee reviewed relevant information from previous reports, developed new recommendations based on current injury data along with other scientific evidence, and refined and prioritized recommendations to be clearly understood and acted upon by relevant individuals and agencies.

In April 1996, NCCAIP published a National Action Plan to promote the health and safety of children exposed to agricultural hazards (NCCAIP, 1996). The National Action Plan calls for leadership, surveillance, research, education, and public policy. The plan specifically calls for NIOSH to serve as the lead federal agency in preventing childhood agricultural injury. Due in large part to the efforts by NCCAIP to raise awareness and concern about the childhood agricultural injury

issue, NIOSH received a congressional appropriation of \$5 million in fiscal year (FY) 1997 for implementing this Initiative.

Procedures

The Initiative builds on previous NIOSH research and objectives, as well as recommended action steps in the NCCAIP National Action Plan. After a draft implementation plan was developed by NIOSH, input was sought from representatives of diverse stakeholder groups. NIOSH convened a meeting during February 1997 in which 23 individuals representing farm families, a farmworker organization, an insurance agency, an equipment manufacturer, safety advocates and educators, researchers, and key federal agencies were invited to provide their opinions on NIOSH's plans for implementing the Initiative. NIOSH benefitted from the diverse perspectives and expertise of individuals who commented on the draft plan. Based on the input received at the meeting, revisions were made to the proposed implementation plan. NIOSH plans to continue to seek valuable stakeholder input as the Initiative proceeds.

This is envisioned as a five-year Initiative, with level funding in each year, at \$5 million per year. NIOSH is currently into the second year of the Initiative. There are several activities which will be conducted throughout the Initiative: surveillance efforts, the National Children's Center for Rural and Agricultural Health and Safety, and the federal task force (described below). Activities in subsequent years will be determined based on an assessment of progress and continuing needs, and input from stakeholders.

Results and Discussion

The NIOSH Childhood Agricultural Injury Prevention Initiative is aimed at better understanding injury circumstances and identifying effective prevention strategies for all children exposed to agriculture production hazards, not just those who are doing what is traditionally considered work, but those who are exposed to agricultural production hazards in their living environments or when they accompany their parents to work. The populations of principal interest are: children of farm families, youth who work on farms, and children of migrant and seasonal farmworkers.

NIOSH goals for the Initiative are: to fill critical data needs; to establish an infrastructure which facilitates the use of data to develop and improve upon prevention efforts; to encourage the use of effective prevention strategies by the private and public sectors; and to increase the involvement of the private sector in both prevention and research efforts.

Filling Critical Data Needs

Critical data needs which will be addressed by this Initiative include: surveillance of fatal and nonfatal childhood agricultural injuries; identification of the characteristics unique to the farm and farm children which may contribute to agricultural injuries; identification of the consequences of youth involvement in agriculture and associated injuries; identification of effective agricultural injury prevention programs and strategies; and, evaluation of the effectiveness of commonly used educational or training programs.

Data on childhood agricultural injuries are needed to better understand the magnitude and scope of the problem, target research and prevention efforts, and assess progress over time. To identify the most promising strategies for surveillance of childhood agricultural injuries, NIOSH held a workshop in October 1997 with experts in agricultural surveillance to rigorously examine options for the surveillance of childhood agricultural injuries. NIOSH is currently considering the input received from this meeting, and will initiate the design and implementation of new surveillance projects in the coming months. Additionally, NIOSH will conduct analyses of existing sources of data, such as the Fatality Assessment and Control Evaluation program and the National Electronic Injury Surveillance System, to determine how these data systems can contribute knowledge about childhood agricultural injuries, coding issues, and strengths and limitations of each system (table 1).

Recognizing that migrant and seasonal workers pose special challenges for injury surveillance, NIOSH is supporting four research projects utilizing different methodologies in different geographic regions to provide information specific to this worker population (tables 1 and 2). The project "Surveillance of Migrant Farm Workers Using Community Health Aides and Surveys" (table 1) was in progress at the time of the Initiative. This project was provided with supplemental funds from the Initiative to ensure the survey population was sufficient for collection and analyses of data specific to youth. The first extramural research grant listed in

Table 1. Intramural NIOSH research and prevention efforts supported by the Childhood Agricultural Injury Prevention Initiative (FY 97)

Research Area	Title	Purpose	Partners
Surveillance	Childhood Agricultural Injury Surveillance	NIOSH will initiate the design and implementation of new surveillance projects in the coming months based on input from several experts in agricultural injury surveillance. NIOSH will also analyze existing sources of injury data.	Likely partners: Department of Labor, United States Dept. of Agriculture, and Consumer Product Safety Commission
Surveillance	Surveillance of Migrant Farm Workers Using Community Health Aides and Surveys	A demonstration project will explore the feasibility/utility of using camp health aides to obtain basic surveillance and risk factor information on migrant workers.	Health Resources and Services Administration
Outcomes	Agricultural Pesticide Exposure and Neurobehavioral Impairment in Farm Children	Farm family children will be included in a study to validate a previously observed relationship between pesticide use and neurobehavioral symptoms reported by adult farmers.	The Ohio State University
Risk Factor	Ergonomic and Workload Hazards to Children and Adolescents in Agricultural Work Settings	Studies will be conducted to estimate the magnitude of ergonomic/workload hazards to children performing agricultural work.	The Ohio State University
Risk Factor/ Intervention Strategies	Pilot Survey of Farms with Children Regarding Attitudes and Behaviors	Survey of farms with children identified through the Colorado Farm Family Health and Hazard Survey will ascertain parental attitudes and behaviors about children and farm work, injury histories of the youth, and information on youth work and tasks.	Colorado State University
Intervention Strategies	Promoting Safety and Health in Vocational, Technical, and Industrial Programs: Guidelines and Curricula	Teaching materials and student learning activities will be developed specifically for agricultural vocational programs: Safety and Health in Agriculture; Safety and Health in Horticulture; and, Pesticides and other Farm Chemicals Safety.	The Ohio State University

Table 2. Extramural research funded by NIOSH Childhood Agricultural Injury Prevention Initiative (FY97)

Injury Surveillance	Risk Factor Research	Outcomes Research	Intervention Strategies	Education Evaluation
<i>Title:</i> Occupational Injury in Hispanic Farm-worker Families <i>Principal Investigator:</i> Stephen A. McCurdy, M.D., M.P.H., University of California, Davis <i>Grant Number:</i> 1 R01 OH03444-01	<i>Title:</i> Childhood Health Outcomes in A Rural Cohort <i>Principal Investigator:</i> James A. Merchant, M.D., University of Iowa <i>Grant Number:</i> 1 R01 CCR714364-01	→ →	<i>Title:</i> Ag Disability Awareness and Risk Education <i>Principal Investigator:</i> Deborah B. Reed, Ph.D., University of Kentucky <i>Grant Number:</i> 1 R01 CCR414307-01	<i>Title:</i> Community-Based Health and Safety Interventions for Adolescents Working in Agriculture: Evaluation of a National Initiative <i>Principal Investigator:</i> Barbara Lee, RN, Ph.D., Marshfield Medical Research and Education Foundation <i>Cooperative Agreement No.:</i> U06/CCU512924-01
<i>Title:</i> Risk Factors for Injury Among Migrant and Seasonal Farm Worker Children <i>Principal Investigator:</i> Harlan E. Amandus, Ph.D., Battelle Memorial Institute <i>Grant Number:</i> 1 R01 CCR014314-01	→ →	<i>Title:</i> Health Outcomes in Adolescent Minority Farmworkers* <i>Principal Investigator:</i> Linda A. McCauley, Ph.D., Oregon Health Sciences University <i>Grant Number:</i> 1 R01 CCR014362-01	<i>Title:</i> Enhancing Agricultural Safety & Health Through Education <i>Principal Investigator:</i> David L. Parker, M.D., Minnesota Department of Health <i>Grant Number:</i> 1 R01 CCR514360-01	<i>Title:</i> Youth Teaching Youth: Are TASK Teens Ready to Teach <i>Principal Investigator:</i> Robert Edward Petrea, Ph.D., University of Illinois <i>Grant Number:</i> 1 R01 CCR514378-01
	<i>Title:</i> Childhood Injuries in Washington State Agriculture <i>Principal Investigator:</i> Bruce Alexander, Ph.D., University of Washington, Department of Environmental Health <i>Grant Number:</i> 1 R01 CCR014332-01	<i>Title:</i> Outcomes of Agricultural Injury to Children in Missouri* <i>Principal Investigator:</i> Garland H. Land, MPH, Missouri Department of Health <i>Grant Number:</i> 1 R01 CCR714363-01	<i>Title:</i> Wisconsin Childhood Agricultural Safety and Health Intervention <i>Principal Investigator:</i> Larry J. Chapman, Ph.D., University of Wisconsin <i>Grant Number:</i> 1 R01 CCR514357-01	<i>Title:</i> Evaluation: Evaluating Ohio's Tractor Certification Program: Traditional and Novel Approaches <i>Principal Investigator:</i> J. R. Wilkins, III, DrPH, Ohio State University, School of Public Health <i>Grant Number:</i> 1 R01 CCR514370-01
<i>Title:</i> Health and Safety Risks to Children of Migrant Farmworkers* <i>Principal Investigator:</i> Doris P. Slesinger, Ph.D., University of Wisconsin, College of Agricultural & Life Sciences <i>Grant Number:</i> 1 R01 CCR514315-01	→ →	<i>Title:</i> Economic and Psychosocial Impacts of Youth Farm Injury* <i>Principal Investigator:</i> John R. Schmelzer, Ph.D., Marshfield Medical Research and Education Foundation <i>Grant Number:</i> 1 R01 CCR514376-01	<i>Title:</i> Tractor Safety Certification: A Multi-Curricula Approach* <i>Principal Investigator:</i> Roger L. Tormoehlen, Ph.D., Purdue University <i>Grant Number:</i> 1 R01 CCR514374-01	<i>Title:</i> School-Based Agricultural Injury and Illness Prevention* <i>Principal Investigator:</i> Frances C. Henderson, EdD, Alcorn State University <i>Grant Number:</i> 1 R01 CCR414389-01
	<i>Title:</i> Etiology and Consequences of Injuries Among Children in Farm Households: A Regional Rural Injury Study* <i>Principal Investigator:</i> Susan Goodwin Gerberich, Ph.D., University of Minnesota, School of Public Health <i>Grant Number:</i> 1 R01 CCR514375-01	→ →		
	<i>Title:</i> The Health of Children Hired to Work on U.S. Farms* <i>Principal Investigator:</i> Don Villarejo, Ph.D., California Institute for Rural Studies <i>Grant Number:</i> 1 R01 CCR914371-01			

* Limited funding for one year was provided to support further development of the research plan.

→ → Indicates additional research area addressed by the project.

table 2, under the heading "Injury Surveillance", had been submitted for consideration for funding prior to this initiative. This project was funded under this initiative because of its relevance and high quality based on peer review. The latter two projects in this column, though focused on risk factor information, will also provide useful information for surveillance. These projects were solicited through Request for Proposals (RFP) described below.

NIOSH announced the availability of funds for research into risk factors, positive and negative outcomes of youth work, intervention strategies, and evaluation of commonly used educational or training program(s) in March 1997. Data on risk factors unique to children are needed for the development of age and developmentally appropriate guidelines for work and protection of non-working children. Research assessing outcomes of children's involvement in agriculture are needed to address health hazards which may have implications for youth's future health, and to understand the magnitude and scope of the injury problem to allow the appropriate prioritization of prevention efforts. Data on positive as well as negative outcomes of youth's involvement in agriculture are needed to develop a balanced response to protecting children. Intervention research is needed to direct prevention efforts to those programs which have been proven to be most effective. Finally, rigorous evaluations of commonly available and used education or training programs are needed. It is critical that intervention efforts which are undertaken on a widespread basis have demonstrated success in reducing risk for injury.

In September 1997, NIOSH provided funding for 16 grants falling within the specified research areas (table 2). A cooperative agreement which had been previously submitted to NIOSH (Community-Based Health and Safety Interventions for Adolescents Working in Agriculture: Evaluation of a National Initiative) was provided funds earlier in the year based on its relevance to the initiative and high quality as assessed by technical and objective reviews. Supplemental funds were also provided to eight NIOSH-supported Agricultural Centers to enhance region-specific childhood safety and health research, education, and prevention efforts.

NIOSH also augmented funding to several intramural projects, taking advantage of existing protocols or research populations for cost- and time-effectiveness (table 1). All of these efforts meet specific goals of the initiative. The current NIOSH effort to develop learning materials for vocational education was augmented to specifically develop and test materials for vocational agriculture programs. Existing research populations established under Farm Family Health and Hazard Survey cooperative agreements were utilized to assess health outcomes of pesticide exposure and ergonomic hazards, and to assess parental attitudes and behaviors which have implications for the development of guidelines on age or developmentally appropriate activities for children, and the development of effective educational messages.

Filling data needs is a critical component of this Initiative, but is just a first step. The accumulation of data and new knowledge will only make a difference if it is used by individuals in the private and public sector who can enact change. It is imperative that there be an infrastructure which encourages the use of state-of-the-art information on childhood agricultural safety and health problems, and effective means of prevention.

Infrastructure

Infrastructure development is based on a two-pronged approach: establishment of the new National Children's Center for Rural and Agricultural Health and Safety; and a new Federal Task Force on Preventing Childhood Agricultural Injury.

NIOSH announced the availability of funds to establish a center in April 1997. A cooperative agreement was awarded in September 1997 to the Marshfield Medical Research and Education Foundation. The mission of the center is to facilitate the use of state-of-the-art information on preventing childhood agricultural injuries by program planners in the public and private sectors, agribusiness, educators, safety and health professionals and advocates, farm media, farmers, and farm families. Additionally, the center will organize multi-perspective teams which will use consensus-building to arrive at recommended guidelines.

Toward facilitating a coordinated and informed public response to preventing childhood agricultural injuries, NIOSH organized and leads a federal agency task force. The task force includes representatives of key federal agencies which can potentially impact research and prevention of childhood agricultural injuries. These agencies include the National Center for Injury Prevention and Control, the Health Services and Resources Administration, and agencies within the Departments of Agriculture, Labor, Education, and Transportation. The task force will consider recommended action steps in the National Action Plan (NCCAIP, 1996) along with forthcoming research findings and consensus-based standards. NIOSH will take the lead in documenting the scientific basis for regulatory and programmatic recommendations through the development and dissemination of NIOSH comments, health communication, policy and criteria documents. The first meeting of the Federal Task Force was held in November 1997.

Private Sector Involvement

The final goal of the initiative is to increase private sector involvement over the life of the Initiative. This is a cooperative responsibility of NIOSH and the center, both playing direct roles in exploring potential strategies for involving the private sector in research and prevention efforts. As an initial effort, NIOSH convened a workshop of agribusiness and private sector representatives in November 1997. A draft report is expected in early 1998.

Assessing Progress

The ultimate evaluation of the initiative will be an assessment of reductions in childhood agricultural injuries. In the meantime, however, there will need to be an ongoing evaluation to ensure that the initiative is on track and progressing towards the intermediate goals of the initiative. Progress will be measured by efforts to: (1) evaluate whether new surveillance efforts provide data which can be used to target prevention efforts and monitor progress over time; (2) determine if the National Children's Center for Rural and Agricultural Health and Safety is being utilized by persons who can make inroads into the prevention of childhood agricultural injuries; (3) determine if forthcoming research findings and consensus-based standards are being used to improve and initiate prevention programs; and (4) determine if NIOSH is successful in facilitating a coordinated and informed response to preventing childhood agricultural injuries within the Federal Government. Progress on these intermediate goals will be assessed throughout the initiative and changes made to the initiative if needed.

Conclusions

The problem of childhood agricultural injuries is complex. The prevention of these injuries will require coordinated efforts which involve both the private and public sectors. Research can help focus prevention efforts towards those areas in greatest need, and those programs and strategies which are proven or show the greatest promise to reduce childhood agricultural injuries.

The NIOSH Childhood Agricultural Injury Prevention Initiative is well underway. The goals are to greatly increase knowledge about the occurrence and prevention of injuries, and to facilitate the use of this knowledge in coordinated efforts to reduce the toll of agricultural injury on our children's lives. It is important this initiative continue in the same spirit in which it was created with all interested parties in the private and public sector working together for the protection of children on the farm. It is also important that the reason for this initiative—children—is always kept at the forefront, and not lost in the process. A verse by Nancy Young, which appeared before the introduction to the NCCAIP National Action Plan (NCCAIP 1996), is reprinted here because it so eloquently brings the discussion of the initiative back to its roots:

What Would the Children Expect from Those of Us with the Power to Make Them Safe?

They would expect that..

We would cherish with them the beauty of the American countryside—the joy they feel on a long walk in the woods or in an open field. But they would expect us to note that the same open spaces that liberate can also isolate—so that sometimes their voices are not heard.

They would expect that...

We would work to eliminate the sadness and fatigue that they feel when they are asked to work too hard, too soon. But they would also want us to rejoice with them as they experience the sense of mastery, accomplishment, and contribution that can come from working alongside an adult whom they respect.

They would expect that..

We would be their voice with policymakers when they don't have one—when their numbers are too small, their homes are too remote, their pockets are too empty, or their protection too controversial.

They would expect that...

We would honor the traditions of rural families and communities, but that we could call them into question when they are incompatible with the safety and well-being of children. Then they would expect that we would work with their families and communities to build better, stronger, safer traditions—traditions that build as the first priority, the preservation of children, not the preservation of history.

References

- Adams, M. 1989. Farm Safety 4 Just Kids. Newsletter 1 (Fall).
- _____. 1990. Workshops and school assemblies for farm safety. The Nat Safe Kids Campaign Winter:15-16.
- Castillo, D. N., D. D. Landen, and L. A. Layne. 1994. Occupational injury deaths of 16-and 17-year-olds in the United States. *Am J Public Health* 84(4):646-649.
- Cogbill, T. H., H. M. Busch, and G. R. Stiers. 1985. Farm accidents in children. *Ped* 76(4): 562-566.
- Field, W. E., and R. L. Tormoehlen. 1982. Analysis of fatal and non-fatal farm accidents involving children. ASAE Paper No. 82-5501. St. Joseph, Mich.: ASAE.
- Franzenburg, A., and C. Tevis. 1997. A new day dawns for farm safety. *Success Farm* (Feb): 49-52.
- Hoff, P. R. 1972. Accidents in agriculture: A survey of their causes and prevention. *Am Soc Safety Engineers J* 17(11):40-41.
- Hoskin, A. F., and T. A. Miller. 1979. Farm accident surveys: A 21-state summary with emphasis on animal-related injuries. *Safety Res* 11(1):2-13.
- Knudson, T. 1984. A harvest of harm: Series Five: Farm accidents kill maim, burn, crush. *Des Moines Register* (Sept):8-9.
- Lee, B. C., and P. D. Gunderson. 1992. Childhood agricultural injury prevention: Issues and interventions from multiple perspectives. Marshfield Clinic, Marshfield, Wis.
- National Committee for Childhood Agricultural Injury Prevention. 1996. Children and agriculture: Opportunities for safety and health: A national action plan. Marshfield, Wis.
- Pulaski, A, P. Podger, and M. Doyle. 1992. Children: The forgotten farmworkers: Series 1-3. *The Fresno Bee* December 13, 14, 15, 1992.
- Reynolds, S. 1995. Introducing Progressive Farmer's farm safety camps. *Progr Farmer* (Jan):18.
- Rivara, F. P. 1985. Fatal and nonfatal farm injuries to children and adolescents in the United States. *Ped* 76(4):567-573.
- _____. 1997. Fatal and non-fatal farm injuries to children and adolescents in the United States, 1990-1993. *Injury Prev* 3(3):190-194.
- Salmi, R. L., H. B. Weiss, P. L. Peterson, R. F. Spengler, R. W. Sattin, and H. A. Anderson. 1989. Fatal farm injuries among young children. *Ped* 83(2):267-271.
- Sessions, J. 1997. FFA Partners for a Safer Community Newsletter. 9(Fall).
- Swanson, J. A., M. I. Sachs, K. A. Dahlgren, and S. J. Tinguely. 1987. Accidental farm injuries in children. *Am J Dis Child* 141:1276-1279.
- Tevis, C. 1989. We kill too many farm kids. *Successful Farming* (Mid-Feb):18a-18n.
- Tormoehlen, R. 1986. Fatal farm accidents occurring to Wisconsin children, 1970-1984. ASAE Paper No. 86-5514. St. Joseph, Mich.: ASAE.
- U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Health. Papers and Proc Surgeon General's Conf Agricultural Safety and Health. 30 April-3 May 1991. Des Moines, Iowa. DHHS (NIOSH) Pub. No. 92-105.
- Waller, A. E., S. P. Baker, and A. Szocka. 1989. Childhood injury deaths: National analysis and geographic patterns. *Am J Public Health* 79(3):310-315.