



DC Family Policy Seminar

A community service project of Georgetown University

“Keeping our Kids Safe: Preventing Injury in DC Schools”



BACKGROUND BRIEFING REPORT

The DC Family Policy Seminar provides accurate, relevant, non-partisan, timely information and policy options concerning issues affecting children and families to District policymakers.

The DC Family Policy Seminar is part of the National Network of State Family Policy Seminars, a project of the Family Impact Seminars, a nonpartisan public policy institute in Washington, D.C.

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By

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Abstract

Injuries occurring to young people (ages 0–19) are an important, and often overlooked, problem. Injuries claim the lives of over 20,000 children each year and send countless more to the emergency room for treatment. Many injuries occur in the school setting, where faulty playground equipment, deteriorating structures, and unsafe surroundings are “accidents waiting to happen.”

Childhood injuries are of particular importance since they are easily preventable by setting in place various measures to guard against hazards. While the District of Columbia faces a number of unique challenges with respect to funding and management issues, a number of opportunities exist for creating awareness and collaborations to prevent unnecessary injuries in our schools.

This report provides a brief introduction to the issues addressed by the DC Family Policy Seminar on September 26, 1996. The authors thank the numerous individuals in the District of Columbia government and in local and national organizations for contributing their time and efforts to this seminar. Special thanks are given to Shelley Stark, Vince Hutchins, Diane Doherty, and the staff of the National Center for Education in Maternal and Child Health for their invaluable assistance in hosting this seminar, and to Richard Murphy and the staff of the Academy for Educational Development for providing space and technical assistance.

“Keeping our Kids Safe: Preventing Injury in DC Schools”

This seminar is the 13th in a series designed to bring a family focus to policymaking. The panel features the following speakers:

- **Jesse Barber**, M.D., Chair, Injury Subcommittee on Public Health
- **Marilyn Jones**, Nurse/Educator, DC Childhood Lead Poisoning and Prevention Program
- **Gene Kilby**, Environment and Public Safety Officer, DC Public Schools
- **Mary Levy**, Attorney, Washington Lawyers Committee for Civil Rights

This seminar focuses on injury prevention in the District of Columbia’s public schools and aims to provide research and program information to help communities, schools, and families decrease the frequency of childhood injury on school property. The organizers of this seminar hope to encourage increased collaboration among community and school members to ensure safe learning environments for District school children. This background report summarizes the essentials on several topics. It provides an introduction to some of the key components of childhood injury prevention, discusses four major injury areas prevailing in DC schools, presents policy options, and lists local and national organizations working in the injury prevention field. The contents of this briefing report are as follows:

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I. Introduction

PROBLEM

Injuries are the leading cause of death for children and young adults (age 1-44) in the United States (Baker, O'Neill, Ginsburg, & Li, 1992). Though advances in medical science and research, the number of deaths due to illness have abated, injuries have taken on greater relative importance over the years. For example, Baker et al. (1992) illustrate that in 1910, death due to injuries claimed the lives of approximately 105 persons per 100,000 population, while tuberculosis and influenza/pneumonia caused approximately 155 deaths per 100,000 population. In 1980, the death rates for tuberculosis and influenza declined by 99 percent and 85 percent, respectively, while the injury death rate declined by only 30 percent.

Mortality due to injuries, however, is only the "tip of the iceberg" of the injury problem in the United States. Nonfatal injuries are much more widespread and represent a huge public health concern for people of all ages.

INJURIES TO SCHOOL-AGE YOUTH

Injuries occurring to young people (ages 0-19) are an important and often overlooked problem. In 1992, injuries claimed the lives of 20,000 children ages 0-19 (Baker, Fingerhut, Higgins, Chen & Braver, 1996). Many of these injuries occurred while children were in school. Data collected at the National Pediatric Trauma Registry (NPTR) show that, of the 22 million children injured in the U.S. each year, an estimated 10 to 20 percent of these injuries occur in and around schools. NPTR also estimates that over a two-year period, 80 percent of all elementary school children will see a school nurse for an injury-related problem (Children's Safety Network/Education Development Center [CSN/EDC], 1994).

The fact that so many children see a school nurse for injuries is of particular importance for parents and school officials. Children spend a large portion of their day on schools grounds and parents expect schools to provide for their safety. For many kids, the school is a "safe haven" during the day, and play or participation in school activities should not be hazardous. Schools have a responsibility for the children on their grounds during the school day and preventing injuries must be a priority for school officials, nurses, and administrators.

Injuries in the school setting have various causes. The injuries that are most common on school grounds are related to playground equipment (e.g., falls, strangulation), sport injuries (e.g., spinal cord trauma, broken bones), building/environment problems (e.g., lead poisoning, fire), homicide/suicide (e.g., firearms, cutting/piercing), and pedestrian and transportation injuries (Baker et al., 1996). Following is a table showing rates of injury deaths per 100,000 population in the U.S., by cause and sex (for youth ages 0-19 years, 1992):

Injury Cause	Male	Female	Rate per 100,000
Unintentional	23.2	11.8	17.7
Suicide	4.8	1.0	3.0
Homicide	9.8	0.2	6.4
Total	37.8	15.6	26.9

Source: Injury to Children and Teenagers, Johns Hopkins Center for Injury Research and Policy, 1996.

SCHOOL-RELATED INJURY DATA

While mortality rates and cause of death are available for most injury cases, consistent data on nonfatal injuries are more difficult to obtain, due to varied state and local reporting habits.¹ However, data have been collected on a small scale to follow certain trends in injury to young children. Estimates using samples by the National Pediatric Trauma Registry (NPTR) have shown that injuries sustained because of school sports, playgrounds, and school buses account for 90 percent of all childhood injuries at school, while 10 percent of all school injuries are caused by fights, firearms, or other intentional means. NPTR compiled the following statistics on injuries in the school environment from a study of 907 cases of injury in children ages 0–19, based on reports from 60 participating hospitals across the United States (National Pediatric Trauma Registry, October 1988–April 1993).

- Males were injured at school more than twice as often as females (71 percent vs. 29 percent)
- 47 percent of these incidents occurred among 10- to 14-year-olds
- 41 percent of the injuries occurred in recreational areas
- Falls were the most frequent cause of injury (46 percent), followed by sports activities (30 percent)
- Other major causes of injury included pedestrian, bicycle, and bus collisions

The same study looked at the severity of the injuries sustained by these children and found the following:

- 12 percent were in the intensive care unit for one day or longer
- 17 children sustained a spinal cord injury
- 41 percent had a head injury

- 45 percent had one or more fractures
- 36 percent required one or more surgical intervention
- Four children died from unintentional head injuries
- 41 percent were discharged with short-term impairments (recovery expected in seven months or less); 1 percent were discharged with long-term impairment (recovery expected in 24 months or more)

INJURY AND DEVELOPMENT

Children are at greater risk for certain injuries at different ages, depending on where they are in their physical and emotional development. For instance, a child's height plays a big role in pedestrian injuries, since the child may not be tall enough to be seen by an oncoming car or may be hidden from view by a parked car. Thus, any prevention measures related to children must be implemented with developmental considerations.

William Haddon, M.D., developed a matrix (aptly known as the "Haddon Matrix") showing how to factor in the developmental stage of the child when determining which prevention efforts are appropriate. For instance, when analyzing a child pedestrian injury, the Haddon Matrix can be adapted to examine what happens before, during, and after the injury event to determine what caused the injury and to find methods for prevention. The Haddon Matrix also looks at the crash factors: human, vehicle, and physical/social environment. For example, during the preinjury phase, prevention measures can be developed to lessen the impact of the physical and social environment around children in crosswalks: slower speed limits can be posted around the schools, "no parking" signs can be set up around the crosswalks, or the number of pedestrians can be monitored by crossing guards.

Following is an adaptation of the Haddon Matrix to child pedestrian injuries around schools:

PHASES	FACTORS		
	Human	Vehicle	Physical/Social Environment
Pre-injury	<ul style="list-style-type: none"> • age • height • experience crossing the street 	<ul style="list-style-type: none"> • brakes • experience of driver • ease of control • speed 	<ul style="list-style-type: none"> • visibility around crosswalk • laws around schools • signals and signs • parked cars • number of pedestrians
Injury	<ul style="list-style-type: none"> • age • gender 	<ul style="list-style-type: none"> • speed on impact • vehicle size • load containment 	<ul style="list-style-type: none"> • speed limits • characteristics of fixed objects
Post-injury	<ul style="list-style-type: none"> • age • physical condition 	<ul style="list-style-type: none"> • fuel system integrity 	<ul style="list-style-type: none"> • emergency communication and transport system • distance and quality of medical support • rehabilitation programs

Source: *The Injury Fact Book* (p. 213) by S. Baker, B. O'Neill, M. Ginsburg, & G. Li.

Haddon argues that human factors and the phases of the injury need to be addressed when developing prevention efforts that yield the most impact. This matrix is intended to provide a more balanced and developmental approach to various types of injury prevention measures (Baker et al., 1992).

INJURIES ARE PREVENTABLE

Professionals in the injury prevention field maintain that the correct categorization should be “injuries,” not “accidents.” While the popular press uses the term “accident” to denote an unintentional fatal or nonfatal “event” (e.g., a traffic *accident*), injury prevention professionals claim that since these “events” are preventable (nothing happens by “accident”), they should be categorized instead as “injuries.” Professionals are concerned about injuries not only because they are preventable, but also because of their huge cost to society.

Ease of prevention

Some prevention measures can be rather simple and inexpensive for communities to implement. Most prevention measures focus on four goals (CSN/EDC, 1994):

1. Changing the environment to improve physical surroundings (e.g., lowering swings on playground equipment, adding crossing guards to busy streets near schools).
2. Educating children to change behavior (e.g., wearing a helmet when bicycling).
3. Enforcing regulations (or standards) and policies (e.g., safety guidelines for sports and physical education requirements).
4. Designing and engineering safe equipment and surfaces before installation.

Unfortunately, while much is known scientifically and technologically about how to prevent injuries and prevent deaths, “there is a wide gap between what is known...and what is taught to those in a position to apply that knowledge” (Wilson, Baker, Teret, Schock, & Garbarino, 1991, p. vii).

Societal cost

Society bears the brunt of the costs from injuries, both indirectly and directly. Direct costs are financial costs associated with treatment and rehabilitation of the injury—28 percent of these costs are usually born by federal, state, and local authorities (Baker et al., 1992; Roberts & Brooks, 1987). Indirect costs include loss of productivity associated with premature death (any death before the age of 70). Miller (1996) estimated that the total lifetime costs of all injures (all ages) that occurred during 1991 was \$165 billion.

Clearly, injuries in the school environment are an important public health problem for school administrators, teachers, families, police, fire, mental health officials, and public health officials. Unintentional injury,² however, is often unrecognized as a major problem in the schools; consequently, simple efforts to prevent injury are often not implemented. Many schools respond to

injury on an ad hoc basis, and long-term strategies are not in place to address recurring problems (CSN/EDC, 1994). There is also a lack of attention to the issue of school injuries at the federal level in both the National Health Promotion and Disease Prevention Objectives in the Healthy People 2000 background papers and the Department of Education's Goals 2000 (CSN/EDC, 1994). This lack of attention points to a lack of recognition that injuries to young people at school are—and should be—a public concern.

The rest of this briefing report will discuss issues and strategies for the school setting in relation to four prominent hazards in schools: lead poisoning, transportation/pedestrian safety, fire safety, and playground safety. This report will provide background research on each of these four areas, pinpoint developmental issues for children, and suggest prevention strategies. Given the District's unique situation, this report will provide programmatic information and case studies that might fit well into ongoing prevention efforts. The report concludes with a discussion on policy implications for both schools and communities.

II. Lead Poisoning

PROBLEM

High levels of lead in the body can cause a variety of symptoms and health problems including headaches, clumsiness, vomiting, constipation, and even death. Recent research has confirmed that even low levels of lead ingested by children will have a devastating and lasting effect on development. Needleman (1992) reports that “seven percent of children may have lead levels in the range associated with neurobehavioral deficits. When one considers children living in poverty, estimates of the proportion of children with unhealthy levels of lead run as high as 25 percent for white children and 55 percent for African American children” (p. v-vi). Research results also show that socioeconomic factors (e.g., younger age, male gender, low income level) are associated with higher blood levels of lead. In addition, children in urbanized areas had higher

blood lead levels than in rural areas. Moreover, residence in Northeast cities was highly correlated with increased blood levels of lead (Brody et al., 1994).

Lead poisoning poses a severe health and developmental risk to children that is often not detected. Long-term effects of lead poisoning in children causes disruption to both family and school life and can eventually lead to severe health problems and even death. Effects of lead poisoning are manifest in three stages. During the first stage, while symptoms of poisoning are vague and non-specific, low levels of exposure can cause damage to a child's brain and impair learning. In the second stage, lead poisoning may cause symptoms such as vomiting, drowsiness, appetite loss, and inability to coordinate voluntary muscle movements. Children become restless, have reduced attention span, withdraw, become hyperactive, and have a decreased capacity to learn. In the third stage of lead poisoning, permanent effects develop—including mental retardation, behavior disorders, and blindness. Severe convulsions, coma, and even death can occur within one day of the third stage being reached (Dowd, 1990).

The acceptable amount of blood lead levels for the population is researched by the Center for Disease Control and Prevention (CDC). In 1991, CDC placed the threshold of lead allowable in the body at 10 micrograms per deciliter of whole blood ($\mu\text{g}/\text{dl}$). Once the blood lead level gets to this point, or “trigger level”, intervention is needed by medical and/or public health officials. This number has decreased significantly over time. In 1960, the trigger level was at 60 $\mu\text{g}/\text{dl}$; as recently as 1985, the threshold stood at 25 $\mu\text{g}/\text{dl}$. Research by Pirkle et al. (1994) showed a 77 percent decrease in mean blood lead levels in children ages one to five between 1976 and 1991—from 13.7 $\mu\text{g}/\text{dl}$ to 3.2 $\mu\text{g}/\text{dl}$. This decrease is attributed to lead abatement policies enacted to remove 99.8 percent of lead from gasoline, and the removal of lead from soldered cans. Unfortunately, removing lead from other sources (e.g., paint, dust, and soil)

is equally important in decreasing children's lead exposure but will be more difficult than removing lead from gasoline and soldered cans (Pirkle, 1994).

The Office of Technology Assessment estimates that 1.3 million children are deprived of superior intellectual functioning due to low-level lead exposure (Needleman, 1992). Long-term studies by Needleman (1990) also show the effects and/or consequences of early exposure to lead. His study followed subjects for 11 years after their original testing and found that elevated tooth lead was associated with numerous problems in adulthood. Needleman's subjects with high levels of lead contamination had a variety of learning problems: reading disorders, school failure, lower class standings, increased absenteeism, lower vocabulary scores, and impaired fine motor function.

Most literature related to lead poisoning points to the home as the primary environment where lead enters the child's system. Paint, mini blinds, drinking water, soil, and food all contain varying amounts of lead that flake off, and, when ingested, could be harmful to children (National Lead Information Center; Dowd, 1990). However, children in contact with older homes and public buildings such as schools are also at risk for lead poisoning, since many facilities were built with and around lead contaminants before the full risk of lead poisoning was understood. The most prominent sources of lead poisoning in schools are interior or exterior wall paint, soil, and water. Unfortunately, a detailed examination of lead risks in schools is hard to undertake due to the lack of data collection on both the federal and state level.

A report issued by the U.S. General Accounting Office (GAO) in 1993 found that only some local school districts routinely check for lead levels in and around the school (Report No. 93-197) The GAO report also found that while some federal agencies (e.g., Centers for Disease Control and Prevention, Environmental Protection Agency) provided lead testing and abatement support to

schools and child care centers, these programs were only available to a small number of child care facilities or schools that qualified.

PREVENTION

Basic prevention against lead poisoning in children revolves around three measures:

1. Screening for blood lead levels.
2. Removing sources of lead from the environment (e.g. paint, soil, water).
3. Educating parents, teachers, and educational leaders on the hazards and symptoms of lead poisoning, and providing common safety tips.

Childhood screening for lead poisoning has expanded considerably since the passage of the Maternal and Child Health Services Block Grant. The Alliance to End Childhood Lead Poisoning (AECLP) reports that only three states have yet to develop childhood lead poisoning prevention programs (1991). Many states have free screening programs and the District operates a free walk-in screening clinic³.

Removing lead from the environment around schools is a painstaking and expensive proposition, particularly in the District where the school system is under pressure to provide basic facility improvement and maintenance. Awareness and education measures are thus an equally important facet of prevention that will lead to earlier detection (and subsequently earlier treatment) of lead poisoning in children.

PROGRAMS

Several programs in the District not only screen children but educate parents, teachers, and health officials on the importance of lead abatement and prevention. The DC Childhood Lead Poisoning Prevention Program (CLPPP) in the Department of Human Services was established in 1973 to provide screening and prevention activities for children ages 0-6 years. CLPPP provides comprehensive services to their targeted group, including walk-in screening, site visits and investigations of homes/

sites frequented by lead-poisoned children, medical follow-up for lead-poisoned children, records for all children tested for lead poisoning, and laboratory support via the Bureau of Laboratories.

The District of Columbia Coalition to End Lead Poisoning was formed in the early 1990s by the Association of Community Organizations Reform Now (ACORN), the Council of Latino Agencies, and the Alice Hamilton Occupational Health Center (AHOHC). The purpose of the coalition is to reach as many citizens within the diverse, multiethnic metropolitan area of the District, educate them concerning the hazards of lead poisoning, and provide lead abatement assistance in Southeast DC. For more information about the coalition and for a report on their survey of DC child care centers and their compliance with legislation requiring lead screening, call Linda Lewis at AHOHC (301-731-853).

III. Transportation and Pedestrian Safety

PROBLEM

Pedestrian and traffic safety are important concerns for school-age children. Baker et al. (1996) indicate that 37 percent of all childhood deaths from injury (ages 1–19) are due to motor vehicle traffic. These include figures for all deaths to occupants, motorcyclists, pedestrians, and pedal cyclists. In the District, many children rely on public transportation, or walk or ride their bikes to school, and thus are vulnerable to certain injuries sustained through pedestrian incidents or bicycle crashes.

Motor vehicle occupants

Motor vehicle occupant deaths represent a large portion of deaths to children under 15 years of age in the United States. According to Wilson et al. (1991), 1,600 children are killed in motor vehicles each year and another 200,000 are treated in emergency rooms. Head injuries are the main cause of death, and brain and spinal cord injury are serious effects of nonfatal crashes. While all

states have laws mandating use of child restraint systems, over 50 percent of the injuries and deaths could have been prevented with proper use of seat restraint systems (Baker et al., 1992; Wilson et al., 1991). Special restraining mechanisms have also been designed for children with special health care needs (Wilson et al., 1991).

Numerous strategies can increase passenger safety in motor vehicles, including the following strategies cited by Wilson et al. (1991):

- Design and provide three-point restraint systems (seat belts) in vehicles to adequately protect children
- Design and promote cars with good crash-protection features, such as side impact protection
- Provide safety seats that are easy to use and difficult to misuse, that are comfortable and hard to open for children
- Enforce safety seat and seat belt laws
- Encourage organizations to adopt internal regulations requiring safety measures for transporting children
- Change the driving environment in and around schools to increase safety by monitoring traffic flow
- Educate drivers and children on the importance of proper and safe seat belt usage

School buses

School buses transport approximately 25 million children yearly and travel nearly 4 billion miles. On average, 9,500 children are injured each year as passengers in school buses or in vehicles operated as school buses (National Research Council, 1989). Fatal crashes involving children on school buses are rare, yet current debate continues over whether laws for mandatory seat belts on buses should be instituted for the protection of children. Those supporting mandatory laws point to increased safety and positively influencing children to always wear seat belts while traveling in moving vehicles. Others have argued that construction of the seats and floor boards will inadequately support seat belts and assert

that more resources should be directed to assuring better protection of children as pedestrians around the bus (Wilson et al., 1991).

Efforts to minimize school bus injuries involve a variety of measures (National Research Council, 1989):

- Federal laws have been implemented to regulate performance standards for school buses (P.L. 93-492, 101, Federal Motor Vehicle Safety Standards 105, 111, 217, 301), and to enhance safety standards for occupants (Federal Motor Vehicle Safety Standards, 220–222).
- Devices and programs to enhance the safety of children in school bus loading zones, include driver training, public education, school bus monitors or driver escorts, cross-view mirrors, stop-signal arms, and electronic and mechanical sensors and barriers.
- Community efforts to increase pedestrian safety around school buses (see next section for more detail).

Pedestrians

According to Wilson et al. (1991), pedestrian injuries are the leading cause of death for children between the ages of four and eight. While overall pedestrian fatalities for young people ages 0–15 declined 4 percent between 1991 and 1992, non-fatal injuries sustained from crashes involving pedestrians (ages 0–15) continue to be significant (Wilson et al., 1991). Occurrence of injuries to children is concentrated in the after-school hours between 3 p.m. and 7 p.m., and these injuries are caused by numerous factors including parked cars obscuring the view of drivers, children crossing the street in front of school buses, or children walking near cars in yards and driveways. Many schools have crossing guards and educational campaigns to teach children when and how to cross a busy street. However, some people argue that education must be developmentally appropriate and that children at a certain young age (up to age 4 or 5) can be too easily distracted to allow them to go

into the street alone (Wilson et al., 1991).

Prevention measures to support protection efforts are numerous, varied, and multidisciplinary. Implementing prevention strategies involves child skills training, community education, environmental modification, legislative changes and improved enforcement (Rivera, Bergman & Drake, 1989). Some strategies (Rivera et al., 1989; U.S. Department of Transportation [n.d.]; Wilson et al., 1991) include:

- Teaching preschoolers not to cross the street alone
- Encouraging parents to find safe play areas for their children and deciding where it's safe to let their children walk
- Encouraging parents and teachers to set a good example by being careful walkers and drivers
- Ensuring that children under 10 should never cross busy streets without help
- Increasing visibility of cars by prohibiting parking where children are most likely to cross streets
- Changing the pedestrian environment by providing safer and easier crosswalks near schools
- Passing and/or enforcing laws that require traffic to stop during school bus loading or unloading

PROGRAM

One organization has been hard at work with the DC Council to increase motor vehicle safety. The DC Buckle Up Coalition—an organization dedicated to saving children, youth, and others from death and injury—proposed an amendment to the DC City Council in May 1996 to move seat belt enforcement from its current status of “secondary enforcement” to “primary enforcement.” Currently, DC police officers may write a seat belt citation only if they stop the vehicle for another moving violation first. The DC Buckle Up Coalition is made up of a variety of community, children’s safety, and general public safety organiza-

tions, including Brightwood Park United Methodist Church, DC Department of Public Works, DC SAFE KIDS Coalition, National Highway Traffic Safety Administration-Region III, the Washington Regional Alcohol Program, The George Washington University Medical Center, and the Consumer Federation of America. The amendment is currently being reviewed by the DC City Council.

IV. Fire Safety

PROBLEM

Fires and burns caused the deaths of 9,374 children ages 0–19 in the six-year period between 1986 and 1992 (Baker, Fingerhut, Higgins, Chen, & Braver, 1996). While approximately 90 percent of these deaths occurred in the home, care must be taken to ensure that fires, burns, and scalds are not prevalent in all parts of a community. For example, the Children’s Safety Network at Educational Development Center (CSN/EDC) reported that the fire marshal in one state recorded 173 fires in school buildings, and 104 of these fires occurred during the school day when children were present. Smoke detectors were operating in only 34 percent of the schools where fires broke out (CSN, September 1994).

Locally, the District of Columbia Public Schools has had severe problems in keeping schools in compliance with fire code regulations. During this past summer, DC Superior Court Judge Kaye K. Christian found that many schools (at least 70) had fire code violations ranging from hazardous (e.g., broken or missing doors, malfunctioning lights), to life threatening (e.g., broken fire alarms) (Brown & Parker, 1996). While many schools were repaired before the start of the 1996–97 school year, six schools remained closed on the first day of classes due to unsafe conditions.

Schools are the environment where children spend a large portion of their day, and are thus an important place for fire prevention programs and safety measures. While many schools develop educational fire safety materials for their students

(e.g., the National Fire Protection Association’s “Learn Not to Burn” program), research and fire safety programs have not been aimed at school administrators who are responsible for school building fire safety. In particular, Wilson et al., (1991) contend that fire, burn, and explosion prevention measures should be a major consideration in planning or evaluating safe school classrooms (e.g., science laboratories, home economics kitchens, industrial arts workshops, art classrooms, theater stages).

PREVENTION

Prevention measures range from changing behaviors of adults and children around school grounds to changing the physical environment to make it fire-safe. Prevention measures should also be developmentally appropriate. When children are very young, for instance, child care providers need to be keenly aware of objects and liquids (e.g., coffee/tea pots, hot foods, heaters) that may cause burns to toddlers; these may not pose the same hazards for school-age children. A third grade teacher, for example, may need to be more concerned about the possibility of students scalding themselves with very hot water in the bathroom. Wilson et al. (1991) cites the following prevention strategies suggested by injury prevention specialists:

- Provide manuals outlining safe practices in school science laboratories
- Offer teacher training in first aid and cardiopulmonary resuscitation (CPR)
- Teach and use fire/burn prevention curricula
- Install smoke detectors that are wired into the electrical system
- Require automatic sprinkler systems in all areas and fire extinguishers in all high-risk classrooms (e.g., science labs)
- Develop and practice detailed fire escape plans and routes (including those for students with disabilities)
- Improve emergency care (e.g., educate the public in how to “cool a burn,” teach personnel to recognize and report inflicted burn patterns).

-
- Develop relationships and collaborations with local fire departments.

PROGRAM

The DC Fire Department offers fire safety and education classes for students at schools that request the training. Trainings provided by the Fire Prevention and Education Division cover topics such as: 911 and other emergency procedures, “stop, drop, and roll” procedures during a fire, safe cooking instructions for children home alone in the afternoon, and other fire prevention strategies for children.

Ensuring building safety from fire is an equally important component of fire prevention strategies. While DC schools have had a challenging summer getting schools ready to open due to numerous fire code violations, many organizations and individuals also are acting to ensure that safe schools opened in time for the new school year. Parent groups, school officials, and even President Clinton (by releasing federal funds for school building renovations and maintenance) are working hard to find solutions to the District’s most recent crises in the schools. However, more collaborations, cooperative efforts, and long-term planning are needed to fully address this important issue in the District.

V. Playground Safety

PROBLEM

In the school environment, playgrounds can be a grave source of danger to many children. Statistics show that injuries to elementary school children occur most frequently on the school playground (Sheps & Evans, 1987). The Consumer Product Safety Commission estimates that as many as 119,000 injuries treated in emergency rooms across the United States stem from use and misuse of playground equipment at schools. While deaths are not frequent, 3,600 children were hospitalized from severe injuries due to falls from high equipment, strangulation, or entrapment on the playground (Wilson et al., 1991).

Schools need to be particularly concerned with the safety of their playground equipment because of daily usage rates. Making school playgrounds safe includes both developmental and engineering considerations. Developmentally, play is an important process of childhood. Children learn and grow through the activity, spontaneity, fun, and purposelessness of play (Frost & Klein, 1983). Play changes as the child develops, and developmentally- or age-appropriate playgrounds at schools are ideal. For instance, after age six, children begin to play games “with rules” and strive to be the best, first, or fastest. Playground equipment must thus be developed with the acknowledgment that, at this age, the “thrill” and “challenge” of play are children’s number one concern, so safety/protection must be built into the equipment and surrounding area (Wilson et al., 1991).

With respect to playgrounds, safety is equally important as developmental appropriateness. The surface below the equipment is one of the most important environmental factors to consider when designing, installing, or updating playground equipment. More than half of all playground injuries recorded occur from falls or jumps from the equipment to the surface below, and the type of surface directly correlates with the likelihood of injury occurring. The best playground surfaces are those that are nontoxic and specially made to lower the impact of a fall (e.g., energy-absorbing materials such as wood chips or fine sand). The Consumer Product Safety Commission warns that asphalt, concrete, grass, and turf are unacceptable as surfaces below playground equipment since they have little or no shock-absorbing properties. Other safety considerations for playgrounds include spacing of the equipment, sharpness of edges, materials used for swing seats, velocity of rotating equipment, location, and traffic patterns in the surrounding areas (Wilson et al., 1991).

PREVENTION

Strategies for preventing playground injuries are abundant and many organizations provide information on safe materials and installation

practices (e.g., Safe Kids Campaigns, Consumer Product Safety Commission [CPSC], The National Program for Playground Safety). The Consumer Product Safety Commission's *Handbook for Public Playground Safety* (1994) outlines guidelines for safety. However, the CPSC's design guidelines are not mandatory and have no force in law (Wilson et al., 1991). Following are suggestions for building and designing safe playground equipment (Wilson et al., 1991; CPSC, 1994):

- Prevent falls by (1) installing hand rails or guide rails and (2) ensure that surfaces are slip-resistant during wet weather
- Reduce the force of a fall by (1) replacing concrete and asphalt under play equipment with energy-absorbing materials (e.g., wood chips, sand) and (2) limit the height of playground equipment
- Remove sharp edges, corners, or protrusions that could injure a falling child or snag clothing and lead to strangulation
- Design equipment with spaces and angles to preclude entrapment
- Avoid and remove unsafe play equipment (e.g., merry-go-rounds, trampolines)
- Separate playgrounds from motor vehicle and bicycle traffic
- Provide safe pedestrian and bicycle routes to the playground
- Educate students and parents concerning safe practices on playground sites

PROGRAM

In 1987, the Utah Child Injury Prevention Programs (ChIP) and Utah Department of Health (Family Health Services Division) joined forces to reduce playground injuries among Utah's elementary school children. The collaboration worked on the following program components: change state safety standards for schools; increase awareness among school district personnel; help local health departments work with school districts in their area on playground safety; train teachers to educate children about playground safety; and train

school personnel in the use of first aid, CPR, and injury reporting forms. This ongoing program has currently reached all 450 elementary schools in Utah's 40 school districts. The program has three "lessons learned" to share with others:

1. Changing teachers' attitudes about the preventability of injuries is difficult, yet absolutely necessary.
2. School insurers make powerful allies. While all superintendents were sympathetic to the pain and suffering of injured students, many gave their full attention to the ChIP team only when staff discussed the money that could be saved by avoiding future litigation
3. The art of compromise—or, partial solutions are better than none. While the ChIP realized that the most effective way of making playgrounds safer was to replace the playground, fiscal constraint often prohibited that option. ChIP worked with administrators to increase their awareness of safety issues, to encourage them to make sure new equipment was safe, and to modify old equipment.

For more information on this program, please contact the Injury Prevention Coordinator at the Child Injury Prevention Program at the Utah Department of Health, (801) 538-6864.

VI. Policy Implications and Conclusion

From the above discussion, it is clear that many possibilities exist for children to sustain injuries on school property. The bottom line for schools is that they are responsible for the health and safety of children while children are on campus. If and when injuries occur, schools must have processes and policies in place to handle the incident expediently and effectively. Ideally, reducing the number and incidence of injuries is the primary goal. Reducing environmental hazards through various policies (e.g., lead abatement, playground safety measures) is also an important measure to prevent children's injuries while on school property.

STANDARDS AND REGULATIONS

While regulations and legal guidelines are in effect to prevent injury in certain areas of schools (e.g., fire codes enforceable by law, OSHA regulations for school employees), other potential childhood injury hazards are mentioned only in non-binding “standards” promoted by professional or federal agencies (e.g., playground safety standards developed by CPSC). Obviously, parents, school administrators, school boards, legal professionals, and children all have an interest in ensuring that schools are physically safe. The question remains: Who should monitor the safety of DC Public Schools? In its report, *Risks to Students in School* (OTA-78A), The Office of Technology Assessment suggests that since “government requires school attendance, it ultimately bears responsibility for children’s health and safety while they are there” (p. 1).

CONGRUENT POLICES

Some policies and safety standards, while providing safety measures against one type of injury, may actually increase the risk of another form of injury. For instance, a policy to lock all entrances, exits, and windows in schools keeps local gang members and violent offenders off school property during school hours, but this response poses a tremendous fire hazard within the school if children cannot exit the school safely and quickly. Some policies may also be difficult to implement due to fiscal constraints and safety considerations within the school system. For instance, lead abatement procedures require removal of the children from the property while the lead is being removed from the grounds. Depending on the time of year, removing children and finding adequate teaching space at another facility may prove challenging.

However, some policies have multiple and positive advantages across systems. For instance, better lighting in the school has positive effects on learning and reducing unintentional injuries, while at the same time helping to deter some intentional injuries by lighting areas where crim-

inal offenders “hang out.” To ensure the effectiveness of policies and programs in the schools, interested parties must review potential policies with care to avoid dangerous repercussions and search for more positive consequences instead.

COLLABORATION

Within this policy framework, there is considerable room for collaborations between the schools, parents, teachers, community organizations, law enforcement agencies, fire departments, and the business community to work together in the best interest of our young people. Children’s safety in the schools is paramount for providing children every opportunity to focus on academics and learning. Coalitions already exist in the District around certain issues (e.g., lead poisoning) and more can always be done to ensure the health and safety of our children in the school setting.

With limited funding for public expenditure, the District can benefit from feasible coalitions. For instance, though the fire prevention program is small and has a small budget, its staff has contacted various nonprofit groups (e.g., American Red Cross, National SAFE KIDS Campaign), federal agencies (Federal Emergency Management Agency, U.S. Fire Administration, U.S. Consumer Product Safety Commission), and businesses (e.g., Aetna) and asked for safety fliers and pamphlets. This informational “packet”—containing home fire safety tips, poison control measures, and basic safety tips—is distributed to schools in a small litter bag emblazoned with a message from DC’s Fire Department and Emergency Medical Services, “Prevent Fire: Litter Can Cause Fire.”

Another value of coalitions is their ability to help distribute effective knowledge and “best practices” concerning what works—and what doesn’t—in the injury prevention field. Working alone, organizations may not effect great change, but if best practices are disseminated and implemented to a large population, perhaps positive and widespread results will occur.

CONCLUSION

Injuries in the school setting are an important concern to parents, children, teachers, and public health officials, and they are preventable. While injuries to children occur for a variety of reasons, injuries can be prevented by thoughtful planning on the part of adults. Unsafe playgrounds, lead poisoning, fire entrapment, and pedestrian/traffic injuries on school grounds are the result of insufficient planning or poor policies that don't take into account the developmental and physical capabilities and concerns of children. School boards, parents, teachers, and the community all have a vested interest in providing a safe, hazard-free learning environment for District school-age children. Injury prevention is really everybody's business and can be accomplished in a variety of ways. From fixing fire code violations to providing an extra set of eyes and hands as a child crosses the street, opportunities abound to provide safer schools for all children in the District. All injuries are preventable and prevention measures are a cost-efficient way to save the lives of children and at the same time keep communities safe and healthy for everyone. ■

¹Data are collected on injuries in two forms standardized by the World Health Organization: external cause of injury codes (E codes) and nature of injury codes (N codes). N codes describe "the nature of an injury and the part of the body injured" and the purpose of E codes is to explain how injury occurred and to serve as a "critical link between the cause and nature of an injury." (NCIPC, 1989, p. 45). While E codes are mandatory on all injury-related death records, good E code tracking on non-fatal injuries would provide a wealth of information on the injury problem for prevention and control. Currently, only New York, Virginia, Wisconsin, California, and Washington State have mandated the use of E codes for all hospital discharge data.

²The literature refers to unintentional injury as any injury that occurred "without intent" (e.g., falls from playground equipment, lead poisoning from ingesting paint chips, injuries sustained during sports). "Intentional" injury, on the other hand, encompasses all injuries sustained "with intent" from the host or the agent (e.g., homicides and suicides).

³See Appendix A for a listing of the District of Columbia Childhood Lead Poisoning and Prevention Program.

Appendix A

District Resources

Organization List

The following section presents a brief description of resources available within the District of Columbia for children and families. This list is based on information obtained through informal surveys with local organizations and advocates. It does not represent a comprehensive analysis of local resources. Descriptions are included for purposes of reference rather than recommendation.

DC Fire Department

Fire Prevention and Education Division

Phone: (202) 673-3331

Contact: Pat Everett

The Fire Prevention and Education Division provides information and training to District school children on the following: 911 and other emergency procedures, “stop, drop, and roll” procedures during a fire; safe cooking instructions for children home alone in the afternoon after school; and other fire prevention strategies.

DC Childhood Lead Poisoning and Prevention Program

Department of Human Services

717 14th Street, NW Suite 850

Washington, DC 20005

Phone: (202) 727-9850

Fax: (202) 727-1971

Contact: Marilyn Jones

The District of Columbia Childhood Lead Poisoning and Prevention Program (CLPPP) was established in 1973 to provide lead poisoning services to children ages 0–6 in the District. Outreach activities include: free community and walk-in lead screenings; investigation and education on behalf of DC residents and health care providers;

medical management and surveillance of lead-poisoned children; maintenance of records for children tested for lead poisoning and environmental records for lead hazards and remediation; and laboratory support via the Bureau of Laboratories to analyze biological and environmental specimens for lead content for children tested District-wide.

DC Coalition to End Lead Poisoning

See Alliance to End Childhood Lead Poisoning in Appendix B.

DC SAFE KIDS Coalition

111 Michigan Avenue, N.W.

Washington, DC 20010-2970

(202) 884-4993

Contact: Kate Schaffer

The DC SAFE KIDS Coalition is part of a national movement to prevent unintentional injury to children ages 0–14. The DC coalition comprises public, private, and voluntary organizations united to reduce preventable childhood injuries in the District of Columbia in the following risk areas: traffic crashes, burns, falls, choking, poisoning, and drowning. The campaign applies community-based solutions to the problem of childhood injuries. The DC Coalition’s action plan includes collecting and analyzing data on the number of children ages 0–14 in DC injured through the above risk areas; determining the cause of injury in each risk area; and establishing interaction with community organizations/resources with complementary concerns, and identifying interventions to reduce the incidence of childhood injuries, including community awareness measures, educational strategies, and public policy issues.

KaBOOM!

1841 Columbia Road, NW

Suite #701

Washington, DC 20009

Phone: (202) 986-4500

Fax: (202) 234-0391

Contact: Darell Hammond

KaBOOM! is a national nonprofit organization building partnerships between individuals, organizations, and businesses. They promote neighborhood investment and development through community-built projects in low-income neighborhoods. KaBOOM! provides challenge grants and technical assistance for the development of community-built playgrounds and renovation of existing playgrounds.

Parents United for the DC Public Schools

1300 19th Street, NW Suite 330

Washington, DC 20036

Phone: (202) 833-4766

Fax: (202) 835-0309

Contact: Delabian Rice-Thurston

The mission of Parents United is to empower parents and the community with information and advocacy skills to transform DC Public Schools to ensure educational success for all our children.

Appendix B

National Resources

Advocates for Highway and Auto Safety

750 First Street, N.E., #901

Washington, DC 20002

(202) 408-1711

Contact: Katherine Hutt

Advocates for Highway and Auto Safety is a broad-based alliance of consumer, safety, and law enforcement groups, insurance companies, and insurance agent organizations. These groups work together to promote adoption of effective highway safety legislation, standards, policies, and programs at national and state levels to reduce deaths, injuries, and economic costs associated with crashes, fraud, and theft involving motor vehicles. A newsletter, *The Safety Advocate*, is available free of charge by written request.

Alliance to End Childhood Lead Poisoning

227 Massachusetts Avenue, N.E.

Suite 200.

Washington, DC 20002

Phone: (202) 543-1147

Fax: (202) 543-4466

The Alliance to End Childhood Lead Poisoning is a broad-based nonprofit coalition of environmental, public health, education, low-income housing, minority rights, and children's organizations. The alliance alerts the public to the problem of childhood lead poisoning, informs health professionals and political leaders of its health risks and available remedies, and facilitates federal, state, and local programs and policies to address the problem. Areas of emphasis include primary prevention—removing sources of lead in the environment before children are exposed—and expansion of blood screening programs to identify at-risk children. The Alliance works with District community members to

support the development of the DC coalition.

American School Health Association

7263 Slate Route 43/P.O. Box 708

Kent, OH 44240

Phone: (330) 678-1601

Fax: (330) 678-4526

The Association's mission is to protect and improve the well-being of children and youth by supporting comprehensive school health programs. These programs significantly affect the health of all students (preschool through grade 12) and the health of the school personnel who serve them. School health programs prevent, detect, address, and resolve health problems, increase educational achievement, and enhance the quality of life. The association works to improve school health education, school health services, and school health environments. The Association also works to support and integrate school counseling, psychological and social services, food services, physical education programs, and the combined efforts of schools, other agencies, and families to improve the health of school-age youth and school personnel.

Bicycle Federation of America

1506 21st Street, N.W.

Suite 200

Washington, DC 20036

(202) 463-6622

Contact: William C. Wilkinson III

The Bicycle Federation of America (BFA) is a nonprofit corporation established in 1977 to promote the safe use of bicycles. The federation serves as a clearinghouse for information on all aspects of bicycling, organizes training programs and conferences, and provides information and technical assistance to federal, state, and local government

agencies, community organizations, and professional associations involved in bicycling. Publications include a monthly newsletter, *Pro Bike News*.

Brain Injury Association

1776 Massachusetts Avenue, N.W.
Suite 100
Washington, DC 20036
(202) 296-6443, (800) 444-6443 (Family Help Line)
Contact: George Zitnay

Founded in 1980, the Brain Injury Association (BIA) works to prevent head injury and to improve quality of life for people with brain injury and their families. Services include a family help-line, a network of state associations, advocacy on state and national levels, educational and research activities, and various national support groups. Publications include the *National Directory of Brain Injury Rehabilitation Services*, *An Educator's Manual: What Educators Need to Know About Students with Head Injury*, and various brochures.

Children's Safety Network/Economics and Insurance Resource Center

National Public Services Research Institute
8201 Corporate Drive
Suite 220
Landover, MD 20785
Phone: (301) 731-9891 ex 103/121/100
Fax: (301) 731-6649
Contact: Rebecca Spicer

The Children's Safety Network (CSN) Economics and Insurance Resource Center works to increase the role of third-party payers (such as private health insurers, Medicaid, and auto and home insurers) in injury prevention. The center provides insurers and injury prevention activists with resources to develop partnerships promoting child seats, bicycle helmets, and other proven safety interventions. These resources include strategies for working with insurers, activist education, analyses of the cost-effectiveness of offering proven safety interventions to policy holders at a reduced rate, and information on liability and insurance issues for programs that loan or give away child seats, bicycle helmets, and other safety devices.

Children's Safety Network/Educational Development Center

55 Chapel Street
Newton, MA 02158-1060
Phone: (617) 969-7100
Fax: (617) 244-3436
Contact: Christine Miara

The Children's Safety Network/Educational Development Center (CSN/EDC) is an injury and violence resource center that works to enhance the capacity of Maternal and Child Health agencies to address the *Healthy People 2000* objectives related to injury and to assess progress toward implementation of key activities in state-level comprehensive injury prevention programs. The network strives to expand the knowledge base of unintentional injury and violence prevention in maternal and child health (MCH) academic and practice settings. It also seeks to increase linkages between state MCH agencies and other agencies and organizations that address child and adolescent health to help articulate the role that each can play in injury prevention.

Children's Safety Network/National Injury and Violent Prevention Resource Center

National Center for Education in Maternal and Child Health
2000 15th Street, North
Suite 700
Phone: (703) 524-7802
Fax: (703) 524-9335
Contact: Diane Doherty

The Children's Safety Network (CSN) National Injury and Violence Prevention Resource Center links state and local maternal and child health agencies to other local, state, and national injury and violence prevention programs. The center helps these agencies to develop and implement injury and violence prevention initiatives and integrate them into existing activities and programs. Its resource collection offers state injury reports, program materials and evaluations, multicultural injury prevention materials and videos, and other hard-to-find items. The center provides technical assistance (by telephone,

mail, or site visit) and makes presentations at conferences, training sessions, and other forums. A publications list is available.

Civil Justice Foundation

1050 31st Street, N.W.
Washington, DC 20007
(202) 965-3500

Contact: Christopher Canavan

The Civil Justice Foundation works to prevent personal injury by supporting injured citizens' organizations as well as injury prevention research efforts. Among past grant recipients are the Association of Birth Defect Children, the Educational Fund to End Handgun Violence, Agent Orange Community Support, and the Iowa Head Injury Association. Grant decisions are made by a 19-person board of judges, consumer activists, and trial lawyers or by the Executive Committee.

Consumer Federation of America

1424 16th Street, N.W.
Suite 604
Washington, DC 20036
(202) 387-6121

Contact: Stephen Brobeck

The Consumer Federation of America (CFA) was established in 1968 as a nonprofit organization of national, state, and local groups committed to consumer advocacy and education. The federation lobbies for the passage of legislation to protect consumers in such areas as energy, food, health and safety, communications, disabilities, insurance, transportation, and the environment. Publications include the *Childwise Catalog* and periodic reports on pertinent legislative issues.

**EMSC National Resource Center
Children's National Medical Center**

111 Michigan Avenue, N.W.
Washington, DC 20010-2970
(202) 884-4927

Contact: Ken Williams

The EMSC National Resource Center (EMSCNRC), funded by the U.S. Maternal and Child Health Bureau, provides technical assistance

to new Emergency Medical Services for Children (EMSC) projects. Areas of assistance include communication strategies, cooperation with advisory boards and task forces, conversion of grant proposal objectives into action plans, identification of potential collaborators among relevant national organizations, and networking to promote awareness and advocacy of EMSC issues injury prevention strategies, programs for children with special health care needs, public awareness strategies, and issues associated with various health insurance models. The center monitors and researches relevant federal and state legislation and disseminates information on its status through two newsletters, *On Call with Public Policy* and *EMSC Newsletter*.

National Highway Traffic Safety Administration

Office of Occupant Protection, NTS-011

U.S. Department of Transportation
400 Seventh Street, S.W.

Washington, DC 20590

(202) 366-9294, (800) 424-9393 (Auto-safety hotline)

Contact: Cheryl Neverman

The National Highway Traffic Safety Administration (NHTSA) publishes brochures and conducts public education programs that promote the use of safety belts and child safety seats. It operates a toll-free telephone service that handles consumer complaints on child safety seats and other automotive safety technologies and provides information on product recalls. Some publications are available in Spanish.

**National Injury Information Clearinghouse
U.S. Consumer Products Safety Commission**

Washington, DC 20207-0001

(301) 504-0424

Contact: Joel I. Friedman

The National Injury Information Clearinghouse, part of the federal Consumer Product Safety Commission, collects and disseminates information on the causes and prevention of injury, illness, and death associated with consumer products. The clearinghouse responds to inquiries from consumers and professionals.

**National SAFE KIDS Campaign
(National Coalition to Prevent Childhood Injury)**

111 Michigan Avenue, N.W.
Washington, DC 20010-2970
(202) 884-4993

Contact: Heather Paul

The National SAFE KIDS Campaign is a national movement to prevent unintentional injury to children ages 0–14. Local and state SAFE KIDS coalitions bring together organizations and individuals who share a common mission—to create safer homes and communities for children. The campaign applies community-based solutions to the problem of childhood injuries. A publications list is available. Some publications are available in Spanish.

**Occupational Safety and Health Administration
Office of Information and Consumer Affairs**

200 Constitution Avenue, N.W.
Room N-3647
Washington, DC 20210
(202) 219-8148

Contact: Joseph A. Dear

The Occupational Safety and Health Administration responds to inquires from consumers and professionals and prepares and distributes publications on a range of health and safety topics, including environmental exposures.

Pedestrian Federation of America

1506 21st Street, N.W.
Suite 200
Washington, DC 20036
(202) 463-6622

Contact: William C. Wilkinson III

The Pedestrian Federation of America (PFA) was established in 1989 by the Bicycle Federation of America to provide advocacy and support for pedestrian safety and access/mobility issues. The federation gives technical assistance in the emerging area of non motorized transportation. Publications include *The Pedestrian Agenda* (a report on the 1991 International Pedestrian Conference) and the *Willy Whistle Package* (pedestrian safety education materials for grades K–7).

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About the DC Family Policy Seminars

The DC Family Policy Seminar is coordinated by Shelley Stark, Project Director, National Center for Education in Maternal and Child Health, 2000 15th Street North, Suite 701, Arlington, VA 22201. (703) 524-7802.

To receive additional information about the DC Family Policy Seminar, or to request copies of the following briefing reports or highlights, please contact Helena Wallin or Antoinette Laudencia at (703) 524-7802.

- *Fundraising for Family-Centered Organizations in the District. July 1996.*
- *Strengthening Families: Parenting Programs and Policies in the District. April 1996.*
- *Transitioning from Welfare-to-Work in the District: A Family-Centered Perspective. February 1996.*
- *Helping Families and Schools Get it Done: Mentoring Interventions in the District. November 1995.*
- *Caring for our Children: Meeting the Needs of Low-Income, Working Families in the District. September 1995.*
- *Families that Play Together: Recreation and Leisure in the District. July 1995.*
- *HIV/AIDS: Helping Families Cope. April 1995.*
- *Substance Abuse Prevention and Treatment Programs: A Family Approach. February 1995.*
- *Family-Friendly Welfare Reform: Using Welfare Policies to Strengthen the Family. November 1994.*
- *Preventing Family Violence. September 1994.*
- *Preventing Adolescent Violence. May 1994.*
- *Preventing Teen Pregnancies. December 1993.*

