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Child Labor

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Child labor is defined as the paid employment of children younger than 18 years of age. It is common in American society.¹ According to the US Department of Labor, more than 4 million children were legally employed in 1988, a substantial increase from a decade earlier.² Illegal child labor is widespread, and at least one million children are employed under unlawful conditions. Despite the common belief that the problem of illegal child labor was remedied long ago, the practice has persisted in the United States and appears to be on the rise.^{2,3}

Child labor is also a major problem internationally.⁴⁻⁷ According to the International Labour Office (ILO), at least 200 million children under the age of 14 are employed worldwide. In some countries, chil-

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dren constitute 15% to 25% of the total work force. Children are employed as rug weavers in the Middle East, as underground tin miners in South America, and as metal workers, fireworks makers, textile weavers, and glass blowers in other countries.

In virtually all countries, child labor is associated with poverty, inadequate educational opportunities, and failure to enforce relevant laws and standards. Particularly severe abuses have been documented in so-called free enterprise zones, special industrial areas such as along the Mexico-United States border, where relaxation has been permitted in the enforcement of labor and environmental laws.⁴

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HISTORICAL AND LEGAL BACKGROUND

Modern-day child labor began in Europe and America during the 1700s as a consequence of the need created by the Industrial Revolution for large numbers of workers. In that era, "Most mill owners preferred to hire children rather than adults. Above all, children were cheaper. . . but also more tractable, and as labor unions developed, less likely to strike."⁸ Young children, especially girls, were sent by their families to work in the mines and mills because wages they could earn far exceeded the income of their parents at home on farms.⁹ Six-year-old girls in the mines (of Scotland) did work that later, in times of relative enlightenment, was turned over to ponies.¹⁰ In the mines of Pennsylvania and the mills of Massachusetts and South Carolina, conditions were no different.¹¹

The hazards and horrors of child labor in the 18th and 19th centuries were chronicled by Charles Dickens in *Hard Times*¹² and Frances Trollope in *The Life and Adventures of Michael Armstrong, the Factory Boy*.¹³ Drawings of children being beaten in the cotton mills, lowered on ropes into the coal mines, and carrying 50-lb rocks on their backs up mine ladders sparked great popular revulsion against the worst abuses of child labor.¹⁴ This sentiment led in the United Kingdom to passage in 1821 of the first child labor law, *The Health and Morals of Apprentices Act*.

In the United States, despite various early efforts at federal and state legislation,^{15,16} child labor continued to be a major problem through the 19th and into the first third of the 20th century. Inadequate enforcement of existing laws contributed to this persistence. The need for enforcement was tragically demonstrated late in the afternoon of Saturday March 25, 1911, only 8 years after passage of landmark child labor and fire protection laws in New York when a fire broke out on the eighth floor of the loft building that housed the Triangle Shirtwaist Company in lower Manhattan. Having recently lost their strike for a 40-hour work week, 500 women and children on the seventh, eighth, and ninth floors were still laboring as part of their 59-hour week. Since "the factory doors were locked each day to keep the workers in and the union organizers out," and since the interior doors opened inward, fire escapes seemed the only recourse. But the fire escapes broke under the weight of the workers. The fire-engine ladders reached only to the sixth floor. Ultimately, 146 young women, many under 18 years of age, lost their lives that day. Many of those killed were the sole providers for widowed mothers and siblings.¹⁶

In 1938, after several unsuccessful attempts to pass federal legislation regulating child labor, the Fair Labor Standards Act (FLSA) was enacted.¹⁵ This law established uniform standards for minimum wage, overtime pay, and maintenance of records on wages and hours for employees of all ages. It remains the major federal legislation governing child labor in the United States today.

Under the Fair Labor Standards Act, no child under the age of 16 years may work during school hours, and a ceiling is set on the number of hours of employment permissible for each school day and school week. Employment in any hazardous nonagricultural occupation is prohibited for any child younger than 18 years. No child under the age of 18 may work in mining, logging, brick and tile manufacturing, roofing, or excavating, as a helper on a vehicle or on power-driven machinery. Meat-processing machinery, delicatessen slicers, and supermarket box crushers are specifically prohibited. It is, however, important to note that the FLSA is an archaic and intricate law, and over that the years many exceptions and loopholes have developed in it.

In agriculture, the restrictions imposed by the FLSA are much less stringent. Hazardous work is prohibited only until age 16, and all work on family farms is totally exempted from legal protection: 16 year olds are allowed to work with even the most toxic pesticides to operate all forms of power-driven equipment.¹⁷ This gap in legal protection is a mayor factor responsible for the high rate of occupational injury seen among children working in agriculture.¹⁸

THE RESURGENCE OF CHILD LABOR IN THE UNITED STATES

A reconvergence of economic and social factors similar to those that produced the major increases in child labor at the beginning of the Industrial Revolution has produced the current resurgence of child labor.¹²

- *Increased poverty.* More American children live in poverty today than 20 years ago, and the number below the poverty line increased especially rapidly during the 1980s. For the 20% of American children who live in poverty, financial need constitutes a compelling reason to seek employment. These children are found in every geographic sector, and in cities, suburbs, small towns, and farms.

- *Unstable world conditions.* Unstable world conditions, particularly war and poverty in Central America, the Caribbean, and Southeast Asia, have led increasing numbers of immigrants, legal and undocumented, to enter the United States. These immigrants, particularly children without parents, are highly vulnerable to exploitation in the workplace because of their overwhelming need for income and their fear of discovery by immigration officials. Their vulnerability is compounded by lack of access to health care.

● *Relaxation since 1981 in enforcement of federal child labor law.* This relaxation of provisions limiting maximum permissible hours of work and prohibiting use of dangerous machinery. Repeal of the ban on industrial homework, which was created 40 years ago to protect women and children from industrial exploitation in piecework industries, has further undermined the Fair Labor Standards Act. The spread of industrial homework has resulted in children being exposed in their homes to solvents (in electronic assembly), to lead and cadmium (in costume jewelry manufacture), to repetitive motion injury, and to power-driven equipment (in the garment trades).

Illegal employment of children occurs in all industrial sectors and often under sweatshop conditions (*New York Newsday*, January 8, 1995, and *New York Observer*, January 9, 1995.) A sweatshop is defined as an establishment that violates wage, hour, and child labor laws as well as the laws protecting occupational safety and health.¹⁹ Traditionally, these shops have been considered fringe establishments, and have been concentrated in the garment and meat-packing industries. Increasingly, however, restaurants, fast food outlets, retail shops, and grocery stores are violating child labor and occupational health laws and fulfilling the definition of sweatshops.²⁰

Health and safety conditions in sweatshops are often dangerous. Fire hazards may be created by blocked exit doors, accumulations of combustible materials, and inadequate lighting and ventilation; electrocution hazards result from overloaded electrical connections, work stations located close to exposed wire, and bare fuse boxes. The large number of fire code violations discovered by the inspectors of the Garment Industry Task Force of the New York State Department of Labor suggest that sweatshop workers, including children, are at high risk of dying by fire if these conditions are not corrected.²¹

RISKS OF CHILD LABOR

The hazards of child labor fall into two categories: 1) risks of injury, illness, and death, and 2) threats to education and development.

Health Risks

Work is a major but insufficiently recognized, contributor to the continuing epidemic of childhood injury in the US.²²⁻²⁶ The number of American adolescents killed each year in work-related injuries (110) is comparable to the number killed from falls (103), fires (126), from bicycles (129), poisoning (191), and unintentional firearms injuries (266).²⁷

Data from state reporting systems confirm that the health hazards associated with child labor are severe. In New York each year, more than 1000 children and adolescents receive workers compensation for on-the-job injury, more than 400 are permanently disabled and 4 to 6 are killed.¹⁸ In Connecticut, a study of

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work-related injury claims found an injury rate of 150 per 10 000 working 16 and 17 year olds.²⁸ The National Institute for Occupational Safety and Health found work-related injury rates of 12.6 per 100 full-time male adolescent workers and 6.6 per 100 full-time female adolescent workers.²⁴

Further evidence of the contribution of occupational injury to the epidemic of adolescent injury is provided by a review of adolescent visits to emergency rooms in Massachusetts for trauma.²⁹ This study found that 24% of those injuries in adolescents that had occurred in an identified location occurred at work. Occupational injuries resulted in a longer average length of hospital stay than other injuries.²⁹ By contrast, the proportion of adolescent injuries treated in a Massachusetts emergency room that was related to sports trauma was 17%.²⁷

Illegal employment is particularly dangerous for children, as is illustrated by the following calculation:³⁰

At least 70% of work-related injuries are concentrated in the approximately 1 million children (20% of the child workforce) who are employed illegally;

Therefore, the risk of injury is almost 10 times greater among children employed under illegal conditions than among those working in compliance with the law.

Specific Traumatic Hazards.

Delicatessen and bakery slicers, although children under 18 are legally prohibited under federal law from operating them, are sources of serious injury to working children. A teenage boy in New York City was brought to an emergency room with an amputated arm; he said he had been "helping" to operate a hand saw in a butcher shop. A few months later, another teenage boy was brought to the same emergency room with his arm amputated in the same butcher shop. He, too, stated that he had just been "helping out."³² A 17-year-old girl in New York City amputated several fingers when a bakery dough slicer came down on her hand (*New York Newsday*, September 29, 1988).

The fast food industry is one of the most rapidly growing industrial sectors and is one of the largest employers of youth in the United States today. Lacerations and burns are common hazards. There is also a risk of electrocution, although this may have been reduced by changes mandated in federal regulation subsequent to the electrocution death in 1987 of a teenage worker in a hamburger restaurant. The source was a power outlet on a wet floor in an improperly grounded building (*FACE Program*, January 22, 1988.)

Interference with school performance is another serious consequence of child labor.

The delivery of pizzas and other hot food items can be hazardous to working children. Policies requiring pizza to be delivered within 30 minutes of customers' placing an order have been linked to reckless driving by young, inexperienced motor vehicle operators. In 1989, a total of 20 fatalities among children working in pizza delivery had been reported to be associated with the policies of one firm (*Boston Globe*, July 1989).

Retail stores also have been dangerous for child workers. Deaths have been reported among children working with box-crushers and trash-compactors, and lacerations are common in children using razors to open boxes.

Toxic Hazards

Little information is available on the incidence or severity of work-related illness caused by poisons. Children, however, experience a variety of toxic exposures at work. These include formaldehyde and dyes in the garment industry, solvents in paint shops, pesticides in agriculture plant nursery work and lawn care, asbestos in building abatement, and benzene in pumping unleaded gasoline.

Health Risks of Agricultural Child Labor

Agriculture is the least regulated and consequently most dangerous industry for American children. Rural children are employed extensively on family farms and commercial farms. Hazards to health include lacerations, amputations, and crush injuries from farm machinery; blunt trauma from large animals; motor vehicle accidents involving farm vehicles on public roads; suffocation in grain elevators and silos; and exposures to pesticides, fertilizers, and solvents. Small physical size and inexperience may superimpose additional risk for young workers.

Although the numbers of children working in agriculture are not so large as those employed in other sectors, the potential hazards (especially those involving machinery and large animals) coupled with the historical lack of regulation of agriculture combine to create an important problem, particularly in rural states. Agriculture has come to surpass mining as the most dangerous occupation, accounting in 1981 for 61 fatalities per 100,000 workers.³² Perhaps for this reason, much of the scanty literature available on work-related injury and illness in children focuses on agriculture.³³⁻³⁵

Data on injury in adolescent workers are provided in a 1985 paper by Rivara.³⁶

Nearly 300 children and adolescents die each year from farm injuries, and 23,500 suffer nonfatal trauma. The fatality rate increases with the age of the child; the rate for 15- to 19-year old boys is double that of young children and 26-fold higher than for girls. More than half (52.5%) die without ever reaching a physician, an additional 19.1% die in transit to a hospital, and only 7.4% live long enough to receive inpatient care. The most common cause of fatal and nonfatal injury is farm machinery. Tractors accounted for one-half of these machinery-related deaths, followed by farm wagons, combines, and forklifts.

Risks to Education and Development

Interference with school performance is a serious consequence of child labor. Working children risk having too little time for their school homework and being overtired on school days. Teachers in areas where employment of children is common or industrial homework is escalating have reported declines in the academic performance of previously successful students. These children are described as falling asleep at their desks, and they are unable to learn.¹⁹ Even if they maintain their academic standing, working children are able to participate less than their peers in after-school activities and sports. Child labor also interferes with play, which is important for normal development; relaxation and freedom from fatigue are necessary for children to grow and learn.^{37,38}

Finally, perhaps the most important long-term developmental consequence of excessive child labor is that by interfering with learning, it keeps children from receiving and valuing a good education and thus from moving into well-paid, upwardly mobile jobs. These children are at high risk of being trapped in a lifetime of low skills and low wages. They will be less productive and less creative than they could have been.³⁹

DIAGNOSIS OF WORK-RELATED INJURY

Occupational injuries among adolescents are seriously underdiagnosed and substantially underreported.^{18,28} Reasons for this include failure to seek medical attention (especially for less serious injuries), failure to report to the physician that the injury occurred at work, fear of losing a job (especially if the child is working illegally) and failure by the physician to obtain a history of occupational exposure.

Proper diagnosis of occupational injury in adolescents as job-related is important for several reasons.

First and foremost, proper recognition will lead to prevention of other similar cases. Second, proper diagnosis will lead to improved statistics on adolescent occupational injury. This will enable more effective targeting of public health resources. Third, proper diagnosis provides a basis for education and counseling.

A brief occupational history is the most effective means of diagnosing an injury in an adolescent as work related. Each child who presents to an office, clinic, or emergency room with traumatic injury should be

asked whether the injury is work-related. Likewise, an occupational history should be obtained in all motor vehicle injuries involving adolescents; fast food deliveries and other work-related uses of vehicles are an important source of work-related trauma.

PREVENTION

Prevention of injury and illness among working children will require coordinated series of actions in several areas.

Better Methods of Diagnosis

Increased diagnostic sensitivity of pediatricians, other primary care providers, emergency room staff, and prehospital responders (EMS teams) is required to discover child and adolescent injuries caused by work. An occupational history should be routine in the evaluation of acute trauma, should be assessing children with potential work-related conditions such as repetitive motion injury and organophosphate poisoning.

Development of Better Data to Define the Extent and Patterns of Child Labor

Better systems are needed to monitor the working patterns of adolescents: their numbers, age, employment patterns by industry and occupation, and number of hours and days worked.

The work permit system needs to be computerized and the data monitored. If the data on work permits are computerized, and if an updated permit is required for each new job that a child or adolescent worker holds, then it becomes feasible to track trends in legal childhood employment and to focus enforcement efforts. The information also would serve as a base for research.

Development of Better Data on Work-Related Injuries in Children and Adolescents

At present, there is no centralized system for collection of data on work-related injuries in children and adolescents. Such information could be routinely collected by including a check-off box on every pediatric emergency room and hospital admitting form in the United States. Thus, information could be reported to state and federal agencies and then tracked by the Centers for Disease Control and Prevention (CDC) and NIOSH.

Employers should be a legally mandated to report all injuries to working children and adolescents to state departments of labor and health, whatever the degree of severity, and whether there is lost work time. Strict fines should be levied for failure to report.

Expansion of Research Programs on Work-Related Injury in Children and Adolescents are Required.

State and federal agencies concerned with injury research have until now directed few funds to work-related injury in children and adolescents. Focus has been directed instead to automotive injury, bicycle-

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related injury, and sports trauma. Monies must be made available at the federal and state level to support research to examine in the problem of work-related injury in children and adolescents.

Studies are needed to identify work situations associated with illness and injuries in children and adolescents. Publication of case reports and epidemiologic studies in such documents as the CDC's *Morbidity and Mortality Weekly Report* would enhance prevention.

Better Education of Children, Parents, Teachers, Physicians, and the Business Community about the Hazards of Child Labor

The Child Labor Coalition and the National Safe Workplace Institute (NSWI) have taken the lead in educating many sectors of American society about the hazards of child labor.⁴⁰ The NSWI has proposed an employer/student worker agreement—a binding contract signed by employers and students and witnessed by parents—that has the objectives of encouraging students to stay in school and sustain academic performance.

Strengthening of Current Child Labor Law

At the federal level, the US Congress has been considering legislation to extend the protections afforded by the Fair Labor Standards Act of 1938. Industry lobbyists recently were successful in preventing passage of this legislation, and the legislation was opposed by the previous administration.

The federal administration must be encouraged to enact a new national child labor law and change regulations that implement the law to be more protective of children's health and development.

The Child Labor Coalition and the National Safe Workplace Institute have developed a model state child labor law.⁴⁰

Stronger Enforcement of Child Labor Law

According to data assembled by the National Safe Workplace Institute, there are only 841 federal inspectors to enforce labor law,⁴⁰ and they spend only 11% of time enforcing child labor regulations. Thus, the equivalent of only 93 federal child labor inspectors regulate about 2 million businesses across the United States. An establishment that employs children and adolescents can anticipate a federal inspection only once every 50 years. More field enforcement staff are needed.

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REFERENCES

1. Pollack SH, Landrigan FJ, Mallino DL. Child labor in 1990: prevalence and health hazards. *Annual Review of Public Health*. 1990;11:359-375.
2. Corbin T. *Current Trends in Youth Employment*. NY State Dept of Labor, Division of Research Statistics; 1988.
3. Corbin T. *Child Labor Law Survey of Teenagers*. Albany, NY: NY State Dept of Labor, Division of Research Statistics; 1988; working paper no. 5.
4. Altrights J, Kimmel M, McKay R. *Sudan Childhood: A Global Report on the Exploitation of Children*. Atlanta, Ga: Cox Newspaper Enterprises; 1987.
5. *Anti-Slavery Society: Child Labour Series*. Birmingham, UK: Third World Publ; 1978: 1981.
6. Waldron HA. Danger: children at work. *British Journal of Industrial Medicine*. 1988;45:73-74.
7. World Health Organisation Study Group. Children at work: special health risks. *World Health Organ Tech Rep Ser*. 1987;756:1-138.
8. Trattner WL. *Crusade for the Children: A History of the National Child Labor Committee and Child Labor Reform in America*. Chicago, Ill: Quadrangle; 1970.
9. *Romer J. Emancipation*. New York, NY: Fockler Books; 1982.
10. McPhee J. *The Craftsman and the Land*. New York, NY: Farrar, Straus + Giroux; 1970.
11. Zinn H. *A People's History of the United States*. New York, NY: Harper; 1980.
12. Dickens C. *Hard Times*. New York, NY: Norton; 1854/1966.
13. Trollope A. *The Life and Adventures of Michael Armstrong, the Factory Boy*. London, England: Colburn; 1840.
14. Hantzer D. *The Diseases of Occupations*. 5th ed. London, England: English University Press; 1974.
15. Postol T. Public health and working children in 20th century America: a historical overview. *J Public Health Policy*. In press.
16. Wertheimer BM. *We Were There—The Story of Working Women in America*. New York, NY: Pantheon; 1977.
17. National Child Labor Committee. *Child Labor and Related Law Compendium*. New York, NY: National Child Labor Committee; 1986.
18. Belleville R, Pollack SH, Godbold JH, Landrigan FJ. Occupational injuries among working adolescents in New York State. *JAMA*. 1993;269:2754-2759.
19. US General Accounting Office. *Sweatshops and Child Labor Violations: A Growing Problem in the United States*. Washington, DC: Government Printing Office; 1989.
20. US General Accounting Office. *Sweatshops in the US—Opinions on their Extent and Possible Enforcement Action*. Washington, DC; 1988.
21. NY State Dept of Labor. *Hearings on Child Labor Law* (Albany, Buffalo, Manhattan, Hempstead, and Syracuse); 1988.
22. Waller AE, Baker SP, Soucka A. Childhood injury deaths: national analysis and geographical variations. *Am J Public Health*. 1989;79:310-315.
23. Centers for Disease Control. *Years of potential life lost before age 65—United States*. MMWR. 1989;38:27-29.
24. Schober SE, Handle JL, Halperin, UE, Mill HB, Than MJ. Work-related injuries in minors. *Am J Ind Med*. 1988;14:585-595.
25. Baker SP. Childhood injuries: the community approach to prevention. *J Public Health Policy*. 1981;2:235-246.
26. Giesz RR. Accidental injury in childhood: a literature review on pediatric trauma. *J Trauma*. 1979;19:551-555.
27. Children's Safety Network. *A Data Book of Child and Adolescent Injury*. Washington, DC: National Center for Education in Maternal and Child Health; 1991.
28. Ranco L, Lapidus G, Bendlock M. Work-related injury among Connecticut minors. *Pediatrics*. 1992;89:957-960.
29. Anderka M, Gallagher SS, Azana CA. Adolescent work-related injuries. Presented at the Annual Meeting of the American Public Health Association; 1985; Washington, DC.
30. Landrigan FJ. The dangers of illegal child labor. *Am J Dis Child*. In press.
31. Drucker E. *Comments on Proposed Revision of Legislation on Child Labor*. Testimony before the Subcommittee on Labor Standards, Committee on Education and Labor, US House of Representatives; 1982.
32. Swanson JA, Sachs MI, Dahlgren KA, Tingey SJ. Accidental farm injuries in children. *Am J Dis Child*. 1987;141:1276-1279.
33. Coghill TH, Busch HM, Stiers GR. Farm accidents in children. *Pediatrics*. 1988;76:562-566.
34. Broste SK, Hansen DA, Strand RL, Scurland DT. Hearing loss among high school farm students. *Am J Public Health*. 1989;69:619-622.
35. Karlson T, Noren J. Farm tractor fatalities: the failure of voluntary safety standards. *Am J Public Health*. 1979;69:146-149.
36. Rivara FP. Fatal and nonfatal farm injuries to children and adolescents in the United States. *Pediatrics*. 1985;76:567-571.
37. Cohen S. *Social and Personality Development in Childhood*. New York, NY: Macmillan; 1976.
38. Campbell SE, ed. *Pager Sampler: An Introduction to Jean Piaget Through His Own Words*. New York, NY: Jason Aronson Inc; 1977.
39. Postol T. Child labor in the United States: its growth and abolition. *Am Educator*. 1989;13:30-31.
40. National Safe Workplace Institute. *Sacrificing America's Youth—The Problem of Child Labor and the Response of Government*. Chicago, Ill: National Safe Workplace Institute; 1992.