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# EXECUTIVE SUMMARY

Children are powerless against many dangers in school and out, and they look to adults for protection. However, decisions that adults make on a daily basis frequently imperil our nation's children. New schools are being built on or near chemically contaminated land or near industrial facilities with toxic emissions that contaminate children's air, water, land, and food supply.

There is growing evidence that these chemical exposures—these invisible threats—diminish the health and intellect of our children. Research has revealed increasing numbers of children afflicted with asthma, cancers, lower IQs, and learning disabilities that impede their ability to develop their full potential. From birth, children are exposed to toxic chemicals in many ways that contribute to this increased incidence of disease. Public schools built on or near contaminated land is one potential source of chemical exposure.

This report is the third in a series released by the Center for Health, Environment and Justice (CHEJ) its Child Proofing Our Communities Campaign (CPOC) on the subject of school siting. In March 2001, Child Proofing Our Communities released *Poisoned Schools: Invisible Threats, Visible Actions*, which looked at the problems of public schools that were built on contaminated land years ago, the trend of proposing new schools on contaminated land, and the threat of toxic pesticide use in schools.

Our second report, released in January 2002 and titled *Creating Safe Learning Zones*, identified schools built near hazardous waste sites in five states – California, Massachusetts, Michigan, New Jersey, and New York. The findings were very alarming. We found that over 1,100 public schools were constructed within a half-mile radius of a known contaminated site, totaling an estimated six hundred thousand children attending classes in schools near contaminated land. These findings are summarized in Table 1.

This, the third report, details the lack of protective state siting regulations and provides model school legislation that would protect school communities from working and learning in contaminated environments. The detailed state-by-state survey of the current school siting laws, regulations and policies, and extensive Model School Siting Guidelines in this report will help local and state groups understand the state of school siting in their community, craft a strategy to pass protective local policy where there is none, enforce policy where it exists, and take actions to protect the health and well being of their children.

This report highlights the significant policy gap with respect to siting schools on or near contaminated land or sources of pollution. Despite the health hazards that on-site and off-site environmental contaminants pose to children, our state-by-state survey found:

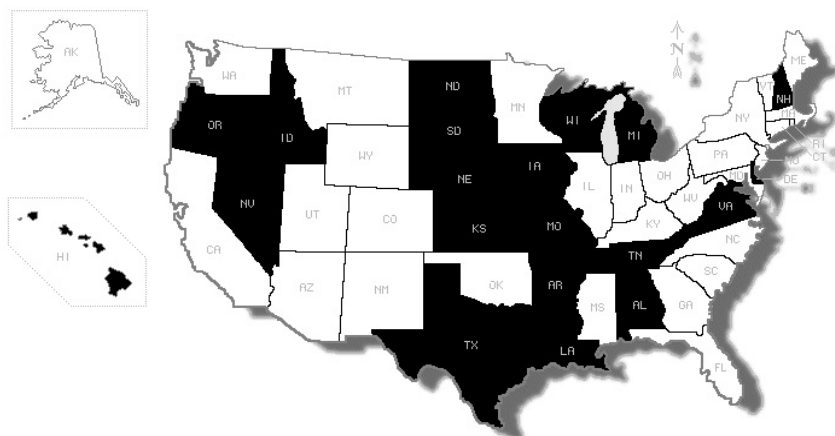
- Twenty (20) states have no policies of any kind affecting the siting of schools in relation to environmental hazards, the investigation or assessment of potential school sites for environmental hazards, the clean up of contaminated sites, making

information available to the public about potential school sites or providing some role for members of the public in the school siting process.

- Only fourteen (14) states have policies that prohibit outright the siting of schools on or near sources of pollution or other hazards that pose a risk to children’s safety; only five (5) of these fourteen (14) prohibit or severely restrict siting schools on or near hazardous or toxic waste sites.
- Twenty (20) states have no policies of any kind that fall within these eight categories.<sup>1</sup> A map showing these 20 states is found in Figure 1.

States with No School Siting Laws

● - No School Siting Laws



For detailed breakdown of the laws, regulations and policies of each state, see Table 2.

**Table 1: Number of Public Schools and Students Attending Classes Within a Half-Mile of a Superfund or State-Identified Contaminated Site; *Creating Safe Learning Zones (CPOC/CHEJ* January 2002.)**

State	Number of Schools	Number of Counties	Estimated Number of Students	Lists Used to Identify Toxic Sites
California	43	11	32,865	Superfund only
Massachusetts	818	13	407,229	Superfund & State
Michigan	63	26	20,899	Superfund & State
New Jersey	36	11	18,200	Superfund only
New York	235	39	142,738	Superfund & State
<b>Total</b>	<b>1,195</b>	<b>100</b>	<b>621,931</b>	

<sup>1</sup> The twenty states are Alabama, Arkansas, Delaware, Hawaii, Idaho, Iowa, Kansas, Louisiana, Michigan, Missouri, Nebraska, Nevada, New Hampshire, North Dakota, Oregon, South Dakota, Tennessee, Texas, Virginia and Wisconsin.

Our methodology for research of the state-by-state survey and state map generation are described in the Appendix B section of this report. The schools located within a half-mile of a federal Superfund or state-identified contaminated site are shown in a series of geographic statewide maps, which are included as attachments to the report.

For each report, the campaign researched the distance of schools from contaminated sites. We did *not* investigate individual schools to evaluate the health risk, if any, to school children and personnel at specific locations. The campaign takes a precautionary approach to protecting children's health. Because children are especially vulnerable to health damage from toxic chemicals, they may be at risk of serious harm when they attend schools built on or near contaminated sites.

Based on the findings of this series of reports, we believe there is a critical need for state laws that ensure that the locations for new schools are safe and that contaminated property is properly cleaned up. The model school siting legislation provided in this report is intended to help local activists promote laws and policies (covering both public and private primary and secondary schools) that protect children's health. This model can be given to interested legislators for use in drafting legislation on the state level and to school boards for use in drafting local school policies. This report also outlines action steps that parents can take to ensure that their children are not placed in harm's way—in schools that pose unnecessary health risks.

We truly are at a critical juncture. Public elementary and secondary enrollment is rapidly growing and is expected to reach an all-time high of 44.4 million by the year 2006. At least 2,400 more schools are needed in the next few years to accommodate this increase. If action isn't taken immediately, these new schools will continue to be built without guidelines to protect children against chemical exposures. Failure to act would place tens of thousands of children at risk of being exposed to toxic chemicals at their place of learning. Society can no longer allow innocent children to be placed in harm's way due to inexcusably bad decisions by local school district decision makers.

## INTRODUCTION AND FINDINGS

The Child Proofing Our Communities Campaign is a nationwide coalition of grassroots groups working on school-based environmental health issues. The campaign aims to connect local efforts across the country, raise awareness of toxic threats to children's health, and promote precautionary approaches most protective of children.

We released our first publication in March 2001: *Poisoned Schools: Invisible Threats, Visible Actions*. This report called for state and local policy action on the use of toxic pesticides in and around schools and for laws that prohibit building schools on or near known toxic sites or releases.

In our *Poisoned Schools* report, the campaign identified many schools that were built on or near a toxic site. These findings raised two important questions:

1. How many schools are located on or near hazardous chemical sites or other contaminated sites today?
2. Is there a need for national or statewide legislation that would prohibit building a school on contaminated property or set cleanup guidelines when there is no alternative but to use contaminated property?

Setting out to answer these questions, the campaign asked the federal Environmental Protection Agency's (EPA) Office of Children's Health to research the relationship between federal Superfund sites and public school buildings. The EPA explained that it did not have this information and refused to do the necessary research.

The campaign did not have the resources to investigate how close every public school in the country might be to a contaminated site. Consequently, we selected five states for investigation – California, Massachusetts, Michigan, New Jersey, and New York. For California, Massachusetts, Michigan, and New Jersey, public schools were identified using data from the US Department of Education (USDE, 2001). For New York, data from the New York State Education Department was used (NYED, 2001). Private schools are not addressed in this report because of the lack of a central database for these schools.

To locate contaminated sites, the campaign used the list of federal Superfund sites (National Priorities List). For Massachusetts, Michigan, and New York the campaign also used state hazardous waste site lists (MADEP, 2001; MIDNR, 2001; MIDEQ, 2001; NYDEC 2001). The Massachusetts list is based on broader criteria for determining contaminated sites, which accounts for the higher number of contaminated sites identified by the campaign for that state. For the remaining two states, California and New Jersey, only sites on the federal Superfund list have been included. (A more detailed description of the methods used to locate schools within a half-mile of Superfund and state-identified contaminated sites can be found in Appendix B.)

Superfund sites were chosen because they represent the nation's worst contaminated sites. These are the sites that the EPA has determined pose the greatest long-term risk to public health and the environment. Sites considered for Superfund designation are investigated by the EPA and ranked according to such factors as the toxicity of the substances found there and the likelihood that contaminants have been released into the environment.

The campaign chose to use a half-mile radius as the cut-off in defining whether a school was "on or near" a federal Superfund site or state-identified contaminated site. This distance was chosen because in most school districts, children living less than a mile from the school generally walk to and from their school every day. The findings were very alarming. In the five states that we looked at, there are over 1,100 public schools within a half-mile radius of a known contaminated site. Within these states, over six hundred thousand children attend classes in schools near contaminated land. For a county breakdown of schools within ½ mile of a federal Superfund site or state-identified contaminated site, see Addendum A.

In *Creating Safe Learning Zones*, we proposed Model School Siting Legislation, which are guidelines designed by engineers, public health experts, risk-assessors and community groups, and to be used as a tool for local groups to promote local and state protective school siting legislation.

In this report, we set out to fill in one missing piece of that model legislation: what to do when all sites have been explored and eliminated from consideration, and the only option is to construct a school on a contaminated site. Many urban school districts face this issue on a yearly basis, where to house a growing student population in a dense urban area with little available space. Our Last Case Siting Guidelines are detailed in this report, and are to be used only as an absolute last resort when there is no other viable option for school construction. Additionally, we have included data from a 2005 report detailing the existing school siting laws in each state.

## BACKGROUND

The average US public school is 42 years of age. Forty percent of America's schools reported needing \$36 billion to repair or replace building features such as a roof or plumbing. Two-thirds of America's schools reportedly require \$11 billion for repairs and renovations dealing with health and safety problems such as the removal of asbestos, lead in water or paint, materials in underground storage tanks, and radon. (USDE, 2000a.) At the same time, schools show record enrollments (USDE, 2000-2005). To address this problem federal and state funding is being sought to provide billions of dollars for construction and renovation of public schools (USDE, 2000b).

As we reported in *Poisoned Schools*, because many school buildings are so old, some may be “unsafe or even harmful to children’s health” (GAO, 2005). Over sixty percent of schools (many in otherwise adequate condition) reported at least one major building feature, such as plumbing, in disrepair, and about half told of at least one unsatisfactory environmental condition, such as poor ventilation or poor heating or a problem with lighting (GAO, 2005.)

Forty years ago, when the typical public school was built, school boards did not understand the seriousness of the threat that chemical exposures posed to human health. Nor was there any understanding of the special vulnerabilities that children have to chemical exposures. After the Love Canal dumpsite crisis in Niagara Falls, New York, the clusters of childhood leukemia in Woburn, Massachusetts, in Toms River, New Jersey, and other similar cases across the nation, we know better. Yet, school boards continue to ignore the scientific evidence and children’s special vulnerabilities to chemical exposures, often propose building public schools on or near contaminated land.

Parents in communities across the US are shocked to find construction crews descending on or next to abandoned landfills, brownfields (abandoned industrial and commercial contaminated property), or heavily polluting industries to build schools (see sidebar.) School districts, pressed to save money, are often enticed by donations of unknowingly contaminated property, seek out the cheapest land, or hire uncertified or poor-quality contractors to evaluate environmental risks, all posing a great risk to children. In poor, and often communities of color, children already suffer disproportionately from asthma, lead poisoning, and developmental disabilities. Constructing schools on contaminated land exacerbates the disproportionate injustice these communities face.

There is no question about the need to build new schools and renovate existing buildings. Smaller class sizes and access to modern technology are critical to improving children's opportunity to learn. Communities should not be forced to choose between an adequate education and a safe school site for their children. Minimizing health risks posed by unsafe school renovation, construction, and siting in contaminated areas should be a fundamental principal of our nations work towards an excellent education system. A child’s right to a good education includes the freedom to learn in an environment that does not jeopardize health.

## Children's Special Vulnerabilities

During a critical period of their growth and development, children spend a large part of the day at school. To needlessly place them in settings that heighten risk of disease or hyperactivity or lower IQ is therefore irresponsible, especially in light of recent health statistics that document increased incidences of childhood cancer and disease. Groups such as the US Environmental Protection Agency (USEPA, 1998), the American Academy of Pediatrics (AAP, 1999), the National Academy of Sciences (NAS, 1993), Physicians for Social Responsibility (GBPSR, 2000), and the National Parent Teacher Association (PTA, 2004) have echoed these health concerns about the environmental chemical exposures that children face. Although opinions vary about the causes of increases in childhood illnesses, all agree these increases are real and that society should take steps to prevent childhood exposure to unnecessary health risks.

### Rising Rates of Disease in Children

In recent years, researchers have gained far better understanding of children's special vulnerabilities to chemical exposures (Bearer, 1995; GBPSR, 2000; Landrigan, 1998, Ross, 2005.) Scientists have found that, relative to adults, children require greater protection and that more research on children's responses to chemical exposure is critical. Researchers do not understand all of the interactions between chemical exposure and growing children, but the data clearly justify school and government action to protect children. The rising rate of childhood disease is indisputable.

- Asthma, afflicting nearly 8.6 million US children under 18 years of age (ALA, 2001,) is the primary cause of school absenteeism and hospital admission among chronic conditions (ALA, 2001a.) It is the number one childhood illness in this country (EHA, 2001.)
- Based on the 2003 NHIS sample, it was estimated that 29.8 million Americans, or 104.1 per 1,000 persons, had been diagnosed with asthma by a health professional within their lifetime. Between 1997 and 2003, children 5-17 years of age have had the highest prevalence rates. In 2003, 142.7 per 1,000 children ages 5-17 had been diagnosed with asthma in their lifetime (National Center for Health Statistics, 1997 – 2003.)
- Asthma carries an annual economic cost to our nation in direct health care of \$11.5 billion; indirect costs (lost productivity) add another \$4.6 billion for a total of \$16.1 billion. Prescription drugs represent the largest single direct medical expenditure, at \$5 billion per year. The value of lost productivity due to death from asthma represented the largest single indirect cost at \$1.7 billion (NHLBI, 2004.)
- Cancer is the number one disease-related cause of death in children (NCI, 1998; ACS 2002.) Approximately 8,600 US children—newborns to age 14—are diagnosed with



cancer annually. The American Cancer Society estimated that 1,500 children under 15 would die from cancer in 2001 (ACS, 2001.)

- Childhood learning disabilities, hyperactive behavior, and inability to maintain attention have also soared nationwide. The number of children in special education programs increased 191% from 1977 to 1994 (GBPSR, 2000). The US has been spending more money each year from 2000-2004 on Special Education grants (USDE, 2004.)
- Conservative estimates of children suffering from attention deficit hyperactivity disorder (ADHD) range from 3–6% of school-age children. Some researchers suggest a much higher rate, near 17% (Goldman, 1998.)
- Autism appears to be skyrocketing. In California, childhood autism is thought to have risen over 200% between 1987 and 1998 (CHHS, 1999).
- Children are exposed to more chemicals now than in the past. A recent British study found that 9 year old children in the study sample had average of 25% more manufactured chemicals in their blood than their living grandparents, and that the concentration of some of these chemicals was also higher (WWF 2004.)
- Scientists believe many of these diseases and learning problems may be related to children's exposure to environmental chemicals in the womb or their everyday environment, including their school (GBPSR, 2000; Needleman, 1994.)

These increases in disease and disability critically impact the present and future of our nation. Making our children sick or unable to develop their full intellectual potential could devastate future generations, the economy, and our quality of life.

The US mandates its schools to educate our children so that they can become vital contributors to society. Most definitely they are not commissioned to hamper children's intellectual development and health. Moreover, education not only is the foundation of a stable, just society but critical to national economic competitiveness. Continued rises in rates of learning disabilities, lower IQ scores, hyperactive behaviors, and more could imperil our nation's future economic base.

We live in a global world economy in which information increasingly figures as the currency of national wealth. Our nation's ultimate competitive resource is the intellect, training, and creative capacity of our citizens. Lacking these, we will be left behind.

Timothy Wirth (2000) of the United Nations Foundation analyzed IQ trends and found, "In a society of 260 million people with an average IQ of 100, 2.3% of the population would have an IQ of less than 70. That translates to 6 million people with IQ scores that define mental retardation. On the other end of the curve, 2.3% of the population would have IQ scores above 130. In other words, 6 million people would be categorized as 'gifted'" (Wirth, 2000).

A lowered average IQ of just 5 points—from 100 to 95—would shift the number of persons with low IQs dramatically. As the Figure 1 shows, the number of people with IQ scores in the range of mental retardation would increase 57%—from 6 to 9.4 million. Conversely, the number deemed “gifted” would drop 60%, from 6 to only 2.4 million (GBPSR, 2000).

The economics of this data is clear. The social costs of caring for a larger fraction of the population classified as mentally retarded far exceed those of environmental protection. Using this same analysis, society loses the creativity and intellectual leadership of 60% of potentially “gifted” individuals such as Bill Gates, Steven Spielberg, or Tiger Woods.

The elimination of lead from products such as gasoline and paint was perhaps the most significant education advance of the twentieth century. Current research shows a 10-point drop in blood lead level means an average 2.8-point IQ gain. Blood lead level plunged 15 points after lead was removed from gasoline in the US (Weiss, 1997). This gives every baby born today a “gift” of four to five IQ points. Conservative calculations suggest each IQ point is worth about \$8,300 in additional lifetime income. With about 4 million babies born annually, the elimination of lead has added an economic value of over \$100 billion per year to the nation's economy for the lifetime income of those children (Wirth, 2000).

Schools are crucial for our children to succeed and our nation to compete. Clearly, to provide the education and training our children require, learning must occur in an environmentally safe place—one that supports, and most certainly does not impede, intellectual growth.

### **What Makes Children Especially Vulnerable to Environmental Chemicals?**

The special vulnerability of children to environmental chemicals demands that schools act to protect them.

#### **Children are not little adults.**

Children are more often exposed to environmental threats than adults and more susceptible to environmental disease. This makes them highly vulnerable to chemical exposure. Of small size and still developing, they take in more food, drink, and air per pound of body weight. Also, children behave like children. (Holsapple, 2004).

#### **Children are still developing and remain vulnerable through adolescence.**

During prenatal development, infancy, and adolescence, children are growing and adding new tissue more rapidly than at any other period of their lives. Because their tissues and

organ systems are still developing and mature at different rates, they are susceptible to environmental chemical influences over an extended time.

Children move through several stages of rapid growth and development. From conception to age seven, growth is most rapid. Crucial systems continue through to develop from birth through adolescence, such as that of the reproductive system. Insulation of brain nerve fibers is not complete until adolescence. Similarly, air sacs in the lung, where oxygen enters the blood stream, increase in number until adolescence (Needleman, 1994).

During these critical years, as structures and vital connections develop, body systems are not suited to repair damage caused by toxins. Thus, if neurotoxins assault cells in the brain, immune system, or reproductive organs or if endocrine disruption diverts development, resulting dysfunction will likely be permanent and irreversible. Depending on the organ damaged, consequences can include lowered intelligence, immune dysfunction, or reproductive impairment (Landrigan, 1998).

### **Children's immature systems are less able to handle toxins.**

Because organ systems are still developing, children absorb, metabolize, detoxify, and excrete poisons differently from adults. In some instances, children are actually better able to deal with environmental toxins. More commonly, they are less able and thus much more vulnerable (Landrigan, 1998). For example, children absorb about 50 % of the lead to which they are exposed, while adults absorb only 10–15 %. Their less developed immune system is also more susceptible to bacteria such as strep, to ear infections, to viruses such as flu, and to chemical toxins (Needleman, 1994).

### **Children eat more, drink more, and breathe more.**

Children consume more calories, drink more water, and breathe more air per pound of body weight than adults. Their body tissues more readily absorb many harmful substances and outside play heightens their exposure to environmental threats relative to adults.

US children ages one to five eat three to four times more per pound of body weight than the average adult. Infants and children drink more water on a body-weight basis and they take in more air. Differences in body proportions between children and adults means children have proportionately more skin exposure (NRC, 1993).

### **Children behave like children.**

Normal activities heighten children's vulnerability to environmental threats. Their natural curiosity, tendency to explore, and inclination to place their hands in their mouths often opens them to health risks adults readily avoid.

Young children crawl and play on the ground or floor and play outside. These natural proclivities expose them to contaminated dust and soil, pesticide residue, chemicals used

to disinfect or clean, garden weed-killers, fertilizers, and other potentially hazardous substances.

Air pollution impacts children more because they are frequently outdoors and physically active. They thus breathe pollutants more directly and deeply into their lungs. Children's natural curiosity leads them to explore situations that could expose them to environmental hazards. For example, they may enter fenced-off areas or polluted creeks and streams (Bearer, 1995).

**Children have more time to develop disease.**

Children's longer remaining life span provides more time for environmentally induced diseases to develop. Exposure to carcinogens during childhood, as opposed to adulthood, is of particular concern since cancer can take decades to develop (Landrigan, 1998).

## **The School Siting Process**

### **Factors that Influence Where New Schools are Located**

School districts chronically lack resources required to meet renovation and construction needs. Often pressure to reduce expenses and expedite the process encourages shortcuts. As a result, far too many schools are located on cheap land near or on contaminated property. This is not only a problem of the past, but one of our present and future.

The push to build new schools is complicated by the dearth of appropriate sites. In urban school districts, the need for schools is often greatest in densely populated neighborhoods that lack vacant land. Building new schools in these communities can mean condemning and clearing existing homes and businesses or siting schools on previously industrial property. In other instances, schools are built on cheap land far from the community served, in industrial or agricultural areas. Wealthy residential communities often deny sites for schools that would serve students of color or low income.

School siting is complex, involving many factors:

- Communities of color and low-income eagerly await new, technologically advanced schools with resources needed by their children since most of their schools are old and rundown, often with asbestos, lead, and mold problems. These schools lack resources for providing learning skills essential to compete in current and future job markets. Parents in these communities often face an unfair decision: accept siting on inexpensive contaminated land so that funds remain to procure needed technology, or build on expensive environmentally safer property, depleting funds for teaching resources.
- Teachers and administrators also prefer new schools, especially with fewer students per classroom, new computers, and more resources for children and staff. They face the same dilemma: either cheap contaminated land with more resources or safer property with fewer resources.
- Urban areas face choices still more complex. Fairly clean areas are often green space for public parks or recreation. Citizens must ask whether using these areas for safely housing school children is more important.
- Often no investigation of past land use precedes construction, leaving discovery of chemical contamination until after resources are committed.
- Neighborhoods near industrial complexes and contaminated sites are hard pressed to site a “neighborhood” school out of harm’s way. How can school grounds be “cleaner” than neighborhood homes subject to continuing contamination?

- Finally, no protective standards exist to guide school officials assessing “risk” to children when considering a site once used for industrial purposes or near an industrial complex.

## **Failure of the Regulatory System and Science**

Most of the public believe that government agencies and regulations adequately protect children’s health at school or that some “authority” surely oversees school safety and takes great care to guard children from exposure to toxic chemicals. This assumption is often incorrect. Only a few very specific and limited laws and regulations are specifically designed to protect children—for example, regulation of asbestos in schools and lead in wall paint. Regulations alone are not the problem. In the case of school siting, there is little scientific evidence that can definitively link a child’s exposure to chemicals from industrial contamination of school property to a specific health outcome. That does not mean no link exists but that the scientific tools that assess impact are too crude to provide certainty.

For example, in a small New York rural community, 24 students, 5 teachers, and 3 custodial workers have been diagnosed with cancer. All have attended or work at a public school sited on an old industrial site contaminated with cancer causing chemicals. However, because the population is small and information on how the chemicals affect growing children is lacking, an absolute cause and effect link cannot be proven.

The impact of chemicals on children is difficult to assess because of the lack of information and scientific research. Of an estimated 87,000 chemicals in use today, the majority lack basic toxicity testing (USEPA, 1998a). For those tested, important health effects are overlooked. An EPA review of 2,863 of the most commonly used chemicals found no toxicity information available for 43% and a complete set of toxicity data for only 7% (USEPA, 1998b). Toxicity refers to whether a chemical can cause harm. Currently, much attention is given to whether a chemical can cause cancer. Other important health effects, such as impairment of the immune, hormone, reproductive, or nervous systems, generally receive much less research. Finally, almost no research addresses health effects for either children or adults from exposure to low dose chemicals in combination.

## **School Board Accountability**

Local school board members live, work, and play in or near the community. Whether elected or appointed by local government officials, they should be accountable to the local community. In some cases, school boards have been very responsive to public concern. Some have taken proactive steps to protect students, staff, and the public at schools by limiting pesticide use or choosing not to build on contaminated land. However, many take a “politics as usual” position that blames bureaucracy to avoid accountability when things go wrong.

There are many documented cases of local school board silence about chemical

contamination beneath or next to, their school. School administrators fear lawsuits from parents, teachers, and others for placing children and personnel in harm's way. School boards also dread the cost of cleaning up contamination or replacing a school.

## **Brownfields and Schools**

Lack of protective guidelines is of significant concern when decisions are made about whether to locate a school on, what have come to be called, "brownfields." The Environmental Protection Agency (EPA) describes brownfields as "abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination" (USEPA, 1995). Anyone who purchases property officially designated a brownfield is essentially free of liability for any contamination that may be found. In some cases, no environmental testing is required to so designate a site. The Los Angeles Belmont High School disaster (see Examples of Schools Built On or Near Contaminated Land) tragically depicts what can go wrong without protective guidelines and standards to direct the process.

More importantly, when these sites are redeveloped, they need only be cleaned up to standards set for commercial or industrial property. Such standards vary among states, counties, and cities but all provide less protection of human health than those required for residential property. Designation as a brownfield is essentially a promotional real estate tool to encourage businesses to purchase and redevelop areas in order to stop sprawl and bring jobs and revitalization to urban areas. Such property is not intended for siting schools, parks, or playgrounds. Brownfields typically are in densely populated urban areas, but some are also in rural locations (e.g., agricultural land, abandoned mine areas, burn dumps, abandoned lumber mills.)

Brownfields are often selected as sites for new schools in urban areas because of the lack of available unused property and the need for new schools due to growing student enrollment. In many urban areas, brownfields are the only option for keeping schools in close proximity to the community served.

## **Parents Are Often Kept in the Dark**

Parents, teachers, and concerned citizens have a right to know about health and safety risks to children in school. Despite current right-to-know laws, parents remain in the dark concerning hazards in the school environment. Nor does the state department of environmental protection provide notice when a nearby industrial facility has been permitted to release chemicals into the environment. When parents do request information through right-to-know or freedom-of-information laws, school districts often are unable or unwilling to produce basic information about contaminants and hazards on or near school grounds.

*Few parents realize they have a right to this type of information from school districts, and few districts apprise them of it or provide information without a formal written request.*

Schools should offer all safety information including fire safety inspection reports, emergency management plans, asbestos reports, indoor air quality tests and evaluations, records of pesticide applications, and copies of Material Safety Data Sheets, which comprise toxicity, health, and safety information about products used in schools.

### **Examples of Schools Built On or Near Contaminated Land**

Hundreds of schools nationwide have been built on or near contaminated land. Taxpayers provide billions of dollars for cleanup, construction of replacement schools, and medical treatment of disease in exposed children. Either we will learn from the tragedies of past mistakes or repeat them. (Additional examples can be found in *Poisoned Schools* (CHEJ, 2001 and *Creating Safe Learning Zones* (CHEJ, 2002)).

#### **Love Canal, Niagara Falls, NY—Toxic Waste Dump**

Most know of the Love Canal dumpsite in Niagara Falls, New York. Twenty thousand tons of chemicals were buried in the neighborhood's center and eventually leaked out into the surrounding community. The 99th Street Elementary School was on the perimeter of the dump, and the 93rd Street School just two blocks away. Both closed in 1978 after extensive testing revealed high levels of chemical contamination on and around them. Love Canal was the first community to close schools due to potential health risks to children.

#### **New Orleans, LA—Garbage Dump**

Residents of Gordon Plaza—1,000 low- and middle-income African Americans—discovered only after they moved in that they were living on the former Agriculture Street Landfill—the city's municipal waste dump for more than 50 years. The landfill was never properly capped, and residents began almost immediately to dig up trash and building debris in their back yards.

Construction of Moton Elementary School—intended to serve 850 students from Gordon Plaza and a nearby housing project—was completed in 1987 despite residents' concerns about high levels of lead and other toxins at the school site. During the three years the school was open, children and staff were sick with rashes, vomiting, respiratory problems, and headaches, and plumbing problems made it impossible to use the school cafeteria and toilets. In 1990, the superintendent overruled the school board and shut the school down.

The U.S. EPA added Agriculture Street to Superfund in 1994 and began a \$20 million cleanup of the site in 1998, replacing two feet of soil while residents remained in their homes, exposed to contaminated dust throughout months of cleanup work.

Moton Elementary School reopened in September of 2001. In some areas on the school grounds, only six inches of soil were replaced. Despite its history, 900 students currently attend the school.



## **Beard Elementary School, Detroit, MI**

Michigan is one of the 19 states in the nation with no laws that regulate the criteria a potential school site must meet.

Constructed in 1886, the former Beard Elementary School facility in heavily populated, southwest Detroit was bursting at the seams. The century-old schoolhouse enrollment was well over capacity, so when the new Beard Elementary School construction began in 2000, parents, teachers and students were relieved. However, Detroit Public Schools chose to site the new school on land contaminated with lead, arsenic, polychlorinated biphenyls (PCB's), and other toxic chemicals.

The land was used as a brass foundry 1909, followed by automotive, steel, and aluminum companies followed through 1950. From 1950 to 1964, the U.S. Army owned and operated a tank ordinance center at the site, and then donated the property to the City Board of Education. After 16 years of City use as a vocational skills center and auto-repair garage, all of the site's buildings were demolished in 1981, where the land remained vacant for next 17 years.

Compounding the site's poor environmental past, the proposed site for the new Beard Elementary School is positioned in a matrix of industry. There are 58 polluting facilities within a two-mile radius of the school, the majority of which handle hazardous waste. Aware of the proposed site's industrial history, and recognizing the potential invisible threats posed by industrial leftovers, parents formed the grassroots group, Southwest Detroit Environmental Vision (SDEV). In 1999, SDEV hired an environmental consultant to do an initial review of the site's history, which prompted Detroit Public Schools (DPS) to conduct their own testing at the site. Testing revealed high levels of lead, PCB's, arsenic, and other contaminants at the site, triggering involvement of the Michigan Department of Environmental Quality (MDEQ) in the cleanup process.

MDEQ monitored DPS throughout the process and SDEV kept the community involved by educating parents and community members on the dangers of environmental hazards and the importance of proper cleanup measures. Under pressure from both MDEQ and the community, DPS conducted cleanup measures at the new site under careful scrutiny. The looming threat of the site's toxic legacy galvanized the public to continue to push DPS to find an alternate and safe school site.

Minorities and low-income families are over represented in the Beard Elementary School neighborhood. Of the 5,480 people living in the school's southwest Detroit zip code, 3,056, or 56 percent, are minorities. Approximately 42 percent of the neighborhood's families live below the poverty level.

As DPS attempted to remediate the site, parents realized that no amount of clean up would satisfactorily prevent their children from possibly being exposed to life threatening chemicals. Additionally, they felt that the community's voice was not invited to the table to define clean up measures, reinforcing doubt that the plan was in their best interest.

Therefore, SDEV filed an environmental justice lawsuit in an attempt to stop the school from opening. The judge ruled that the school could be opened, which it was in September of 2001, but required DPS to comply with most of SDEV's demands. These included: increased monitoring of environmental contaminants (through air, soil and water sampling,) hiring an independent consultant to advise on additional testing and cleanup actions, providing bilingual reports on monitoring and maintenance at the site, and creating a Citizen Advisory Committee.

Extensive remediation efforts were taken at the new Beard School. Contaminated soil was removed from the site to a depth of 7 to 26 inches depending on the intended use for that particular area. All paved areas, to include the parking lots, curbs, sidewalks and the basketball court, were underlain with four inches of aggregate and topped with either four inches of paved concrete or three inches of asphalt. A triple-layered protective barrier of varying thickness was installed on all unpaved areas on the property. On landscaped areas, the barrier consists of a geotextile cap, placed on top of the contaminated soil to be left on-site, followed by 4 inches of compacted crushed concrete, and 8 inches of clean topsoil. Grass and other landscaping were planted in the clean topsoil. On areas with a higher level of activity, such as sports fields, a more protective 8 inches of compacted crushed concrete were used, followed by the same 8 inches of topsoil. For the baselines of the baseball field, eleven inches of crushed concrete were placed on top of the geotextile layer, followed by five inches of stone dust. Because children are more sensitive to chemical exposures, an even more conservative barrier was installed beneath the kindergarten and preschool play areas. The barrier for these areas consists of 6 inches of sand, a 4-inch thick poured concrete slab with reinforcement rod, followed by 4 inches of pea gravel, covered by 12 inches of wood fiber as a cushioned barrier. An 8-inch concrete wall tied into the 4-inch concrete slab surrounds each play area to keep the surrounding soil out and retain cover materials. A maintenance and monitoring plan was prepared to ensure the integrity of the preventative measures taken at the site. The plan includes monthly inspections of the site cap, paved areas, concrete building floor, and other exposure barriers.

Because parents and community activists got involved early in the process and held authorities accountable for proper cleanup of the new Beard Elementary School, remediation did happen. However, without a law to require DPS to conduct site assessments, testing, alternate site evaluations, remediation, and encourage public involvement, the community was forced to carry most of the water.

Additionally, the extensive remediation efforts at the new school site are now being called into question. Various breaches in the multi-layered barrier have not been promptly repaired, school officials have been accused of not taking the monitoring plan seriously, and the community is experiencing difficulty in gathering the latest information about site safety in Spanish or English.

The New Beard School case and community need prompted the Center for Health, Environment and Justice to develop the Worst Case Scenario School Siting Guidelines, enclosed in this report.

### **Brown-Barge Middle School: Pensacola, FL**

*The state of Florida has some of the most expansive school siting laws in the country. Florida is one of only eight states in the nation with a school siting law that requires districts to test for hazardous contamination, and prohibits schools from being constructed near major highways. The school in the following case study breaks seven Florida statutes for school siting.*

Just around the corner from the Escambia Wood Treating Company Superfund site, known to many as “Mount Dioxin”, and literally a stone’s throw away from the Agrico Chemical Company Superfund site, sits Brown-Barge Middle School. Brown-Barge first opened its doors in 1955 as an African-American Elementary School, in the 1980’s it was a middle school, and in 1990 it became a magnet school, attracting Pensacola’s best and brightest.

The school was erected on a site adjacent to two factories that operated for over half a century, but have since closed. Escambia Wood Treating Company preserved utility poles using the toxic compound creosote and Agrico Chemical Company manufactured sulfuric acid and fertilizer. Emissions from the factories included lead, fluoride, sulfuric acid, arsenic, uranium-235 and -238 and other hazardous chemicals. Those early pupils who attended Brown-Barge while the plants were still in operation (now in their fifties and sixties) can recount having to brush yellow powder off of their chairs and desks before being seated for class each morning, the settling of sulfuric acid from their neighborhood factories.

Both Escambia and Agrico were abandoned by 1982 but the toxic chemicals wreak havoc on the health of the communities. Residents in a neighborhood immediately adjacent to the sites, and across the street from Brown Barge, fought for 12 years, and finally won relocation for 358 families in 1998.

The middle school, however, remains in operation. The most recent soil sampling showed levels of Polycyclic Aromatic Hydrocarbons (PAHs) in twice as high as areas on the factory site itself. PAH’s are known carcinogens, and can move through surface water runoff, wind-carried soil, and through the groundwater. Students experience severe skin rashes when playing on Brown-Barge’s sports fields, and former students are currently suffering infertility, reproductive problems, and other health problems in their 20s.

Compounding the problem, in 2004, a portion of the school’s property was purchased for a major highway project to add new on and off ramps and widen the existing I-110 spur. Tests conducted by the Florida Department of Transportation (FDOT) revealed high levels of arsenic and PAHs in the “right-of-way”, just in front of the school. Highway construction clouds the school grounds with chemical laden dust.

A community group of concerned parents and former students, Panther Parents Against Pollution (PPAP) are organizing for school relocation. When the Florida Department of Environmental Protection (FDEP) and local school district officials held a public meeting to share initial soil testing results, they publicly blamed dioxin found in the 19 samples on “contaminated potting soil brought in by a parent” and “roof tar.” No official at the meeting attempted to make any connection of the soil contamination to the Superfund sites. In its official report the Florida Department of Health (FDOH) stated that the site presented a low cancer risk to children if they did not eat the soil.

Scientists have suggested closing the school while contamination is cleaned up, citing that students, teachers, administrators and others have been, and continue to be exposed to unacceptable levels of PAH compounds and other substances that may be present, but have not yet been analyzed for. Officials in Pensacola have said that contamination at the school is a problem, but not an emergency warranting school closure. Contamination from the two toxic plumes from the Agrico and Escambia Superfund sites have reached Pensacola’s water supply, a sand and gravel aquifer that is the sole source of their drinking water. The groundwater plume has also reached one of Pensacola’s recreational waterways, and has contaminated several drinking water wells and hundreds of private irrigation wells.

PPAP, former students and Citizen’s Against Toxic Exposure (CATE,) the community group responsible for winning relocation, continue to struggle to win justice and relocation.

## **Cesar E. Chavez High School, Houston TX**

*Texas is one of the 19 states in the nation with no school siting criteria.*

Flare burns from the Texas Petrochemical factory provide onlookers with an ominous backdrop at a Cesar E. Chavez High School football practice. The facility’s flames, in plain site from the school’s practice field, serve as a constant reminder to nearby residents of the hazardous chemicals they are exposed to on a daily basis. Cesar E. Chavez High School is in Houston’s Harris County: The national leader in benzene and butadiene releases. Some Harris County neighborhoods have registered concentrations of the known carcinogen 1,3-butadiene at levels up to 20 times higher than federal safety guidelines used for toxic waste dumps. Pollution is nothing new in Houston. Over the years, the steady skyward stream of industrial chemicals accompanied by the growing population of Houstonites has earned the city a new title: Smog capitol of the U.S.

Cesar E. Chavez High School sits a ¼ mile from three industrial facilities, with a fourth just over a mile away. Preliminary environmental assessments conducted by the school district prior to construction revealed that the school site had been used in recent years as an auto repair facility, auto salvage yard, dry cleaners, service station, and chemical toilet factory. Underground industry pipelines still traverse the school property. These imminent environmental dangers, and suspicion of residual contamination brought the community together to fight for justice.

The community group Unidos Contra Environmental Racism (UCER), and many other concerned citizens, believe that their primarily Hispanic community (83% of the students at Cesar E. Chavez High School are of Hispanic origin) is suffering an environmental injustice with the siting of Cesar E. Chavez High School. Community members argue that the school district took advantage of the fact that the predominantly low-income community lacked the resources and political clout to stop the project. UCER maintains that school construction in such close proximity to environmental hazards would never have been permitted in a more affluent neighborhood. However, the new high school was to be a state of the art facility with the latest technological advances. Many community members viewed the school as a dream come true, despite the risk posed by environmental hazards.

In their initial efforts to halt construction in 1998, UCER sought the help of local officials and elected representatives, citing the surrounding plants and site history as obvious, categorical deterrents, and pointing to other available sites that would not pose health risks to current and future students and staff. They voiced their concern about long-term exposures of students to high levels of toxins, as well as the imposing risk of an industrial accident at one of the surrounding plants. When City Council and School Board members did nothing to assist the group, UCER gathered 650 signatures petitioning the EPA to intercede on their complaint of environmental justice. In time, the EPA did take some action, but their involvement fizzled for reasons unknown to the community. According to UCER, the local school board and city officials did a good job of convincing the general public that the school was in a safe zone, free from the dangers of soil contamination or air pollution. UCER continues to fight for environmental justice and has sought the assistance of organizations such as the Center for Health, Environment and Justice, National Resource Defense Council, and the Cesar E. Chavez Foundation for help in educating the community about health hazards and environmental toxins.

Industry pollution in Houston has received increasing attention over the past couple years, after separate tests conducted by the state and the Houston Chronicle revealed levels of contaminants that increase cancer risk in communities in close proximity to factories. In 2005, the Houston Chronicle raised many of the same concerns UCER had raised seven years prior. In a five-part report entitled, "In Harm's Way", reporter Dina Cappiello detailed the results of tests performed by the newspaper in neighborhoods surrounding Houston's industrial facilities. The results revealed chemicals in the air at levels that increase a person's risk of developing cancer: Confirming what many Houstonians had known for decades.

But there is reason for optimism in Houston with regard to industry pollution. Industry is slowly taking notice of community outrage and potential legal backlash. Fearing lowered state-mandated emissions standards; some companies have begun to voluntarily reduce their release levels of certain harmful chemicals. Texas Petrochemical, mentioned above, negotiated a voluntary 50% reduction of 1.3 butadiene emissions by 2007, as part of an agreement brokered with the Texas Commission on Environmental Quality. Students at Cesar E. Chavez High School are starting to voice their own concerns over the school's

air quality issues. Recently, at a summer youth program sponsored by the National Wildlife Federation, students worked on a project they titled "The Right to Breathe". The project documented the struggles students face as at the hands of industry pollution.

## **Providence, Rhode Island**

In nearly every year since 1998 Providence has constructed one new school building or renovated an existing building for use as a school. In 1999, an elementary school and middle school were constructed on top of the former Providence City Dump. Concerned parents, neighbors, and the tenant association of a nearby public housing development sued the City and state Department of Environmental Management (DEM) challenging the school siting decision and the clean up plan for the site. A twenty five day trial took place in 2003, and a ruling from the trial judge is still forthcoming. Before trial, the judge ruled that the City violated state hazardous waste laws by implementing a clean up plan before obtaining approval from DEM, and by failing to notify abutters of the site about site investigation activities. The Court chose not to grant any relief for the City's violation of law until it heard and ruled upon the entire case.

Following the dump school, the City continued to site schools on contaminated sites. In 2000, an elementary school was sited on the site of a former factory that contained high levels of lead and beryllium. In 2004 and 2005, respectively, two high schools were proposed on separate contaminated sites, both formerly used for industrial purposes. The city abandoned one site after an incinerator ash dump was discovered on the site and DEM required the City to perform additional environmental tests. Instead, the City renovated a nearby commercial building for the high school so it could be opened on schedule (Fall 2004). The second site formerly housed one of the nation's largest silver manufacturing facilities and is contaminated with unsafe levels of Trichloroethylene (TCE) and polycyclic aromatic hydrocarbons (PAHs). The City stopped work on the second site in the spring of 2005 when DEM filed suit against the City to halt work until a clean up plan was reviewed and approved by the agency. The Court forbade the City from undertaking even limited work on the site until a plan for that limited work was reviewed and approved by DEM. In addition to these three sites, sites for an annex to an elementary school and another high school required DEM approved environmental clean ups for they, too, were contaminated by high levels of lead and PAHs.

While the litigation challenging the dump school has not yet affected the City's choice of sites for schools, the litigation has forced DEM to more closely scrutinize clean up plans for contaminated school sites. DEM has also required the City to hold more community meetings where results of environmental testing and proposed clean up plans are discussed.

These schools are only a sampling of far too many built on or near contaminated property, placing students, staff, and the public at serious health risk.

# State by State Look at Existing School Siting Laws, Policies and Regulations

To better inform policy discussions surrounding the siting of schools, a survey of the laws, regulations and policies (referred to collectively hereafter as “policies”) related to the siting of schools on or near sources of environmental pollution in all fifty states was conducted in 2004-05. This research grew out of a lawsuit filed by Rhode Island Legal Services in 1999 challenging the siting of an elementary and middle school on top of the former Providence City Dump. The research was funded by the United States Environmental Protection Agency under the agency’s Environmental Justice Small Grants Program. The results of the survey show a pressing need for the adoption of policies to prevent the siting of public schools on sites where children may be exposed to unhealthy levels of hazardous substances or pollution. See Appendix B for the methodology of this project.

There is currently a significant policy gap with respect to siting schools on or near contaminated land or sources of pollution. Despite the health hazards that on-site and off-site environmental contaminants pose to children:

- Twenty (20) states have no policies of any kind affecting the siting of schools in relation to environmental hazards, the investigation or assessment of potential school sites for environmental hazards, the clean up of contaminated sites, making information available to the public about potential school sites or providing some role for members of the public in the school siting process.
- Only fourteen (14) states have policies that prohibit outright the siting of schools on or near sources of pollution or other hazards that pose a risk to children’s safety; only five (5) of these fourteen (14) prohibit or severely restrict siting schools on or near hazardous or toxic waste sites.
- Twenty-one (21) states have school siting policies that direct or suggest school siting officials “avoid” siting schools on or near specified man-made or natural environmental hazards, or direct the school district to “consider” those hazards when selecting school sites. Fifteen (15) of these states have adopted siting factors that directs school districts to either consider the proximity of sources of pollution when selecting sites or to avoid siting schools near those sources; while eight (8) of these states have a vaguely worded factor relating to environmental factors or safety of a proposed site.
- Twenty-three (23) states have no policies that require sponsors of new school projects to investigate or assess environmental hazards at potential school sites.
- Only twelve (12) states require the sponsors of school projects to solicit public input on school sites through the use of public notices, public meetings or hearings.
- Only eight (8) states either require or authorize the creation of school-siting advisory committees.
- Of the thirty (30) states that have some policy regulating the siting of schools in relation to sources of man-made or natural environmental hazards, in twenty (20) states the policy is administered solely by the state education agency; in eight (8) the policy is administered by the state education agency and another agency, usually the state environmental agency or health department; in one (1) state by the state health department and in one (1) state by local officials.

**Table 2****Quick Glance:  
State by State School Siting Policies**

State	Prohibited Sites	Siting Factors	Environmental Evaluation	Remediation	Funding Provisions	Public Participation	Information Available	Form Available
Alabama								
Alaska		X	X					X
Arizona		X	X					
Arkansas								
California	X	X	X	X	X	X	X	X
Colorado			X			X		
Connecticut	X		X		X			X
Delaware								
Florida	X	X	X	X				
Georgia	X	X	X			X		X
Hawaii								
Idaho								
Illinois		X	X	X		X	X	
Indiana	X	X				X	X	
Iowa								
Kansas								
Kentucky	X		X		X			
Louisiana								
Maine		X	X			X		X
Maryland			X			X		X
Massachusetts		X	X	X		X	X	
Michigan								
Minnesota		X	X			X	X	X
Mississippi	X	X	X					X
Missouri								
Montana	X							
Nebraska								
Nevada								
New Hampshire								
New Jersey	X		X	X	X	X	X	
New Mexico	X		X					X
New York		X	X			X		X
North Carolina		X	X			X		X
North Dakota								
Ohio		X	X		X			X
Oklahoma	X							
Oregon								
Pennsylvania			X			X	X	X
Rhode Island		X						
South Carolina	X	X	X			X		
South Dakota								
Tennessee								
Texas								
Utah	X	X	X			X		X
Vermont		X	X		X	X		X
Virginia								
Washington		X	X		X		X	X
West Virginia	X	X	X		X			
Wisconsin								
Wyoming		X	X			X		



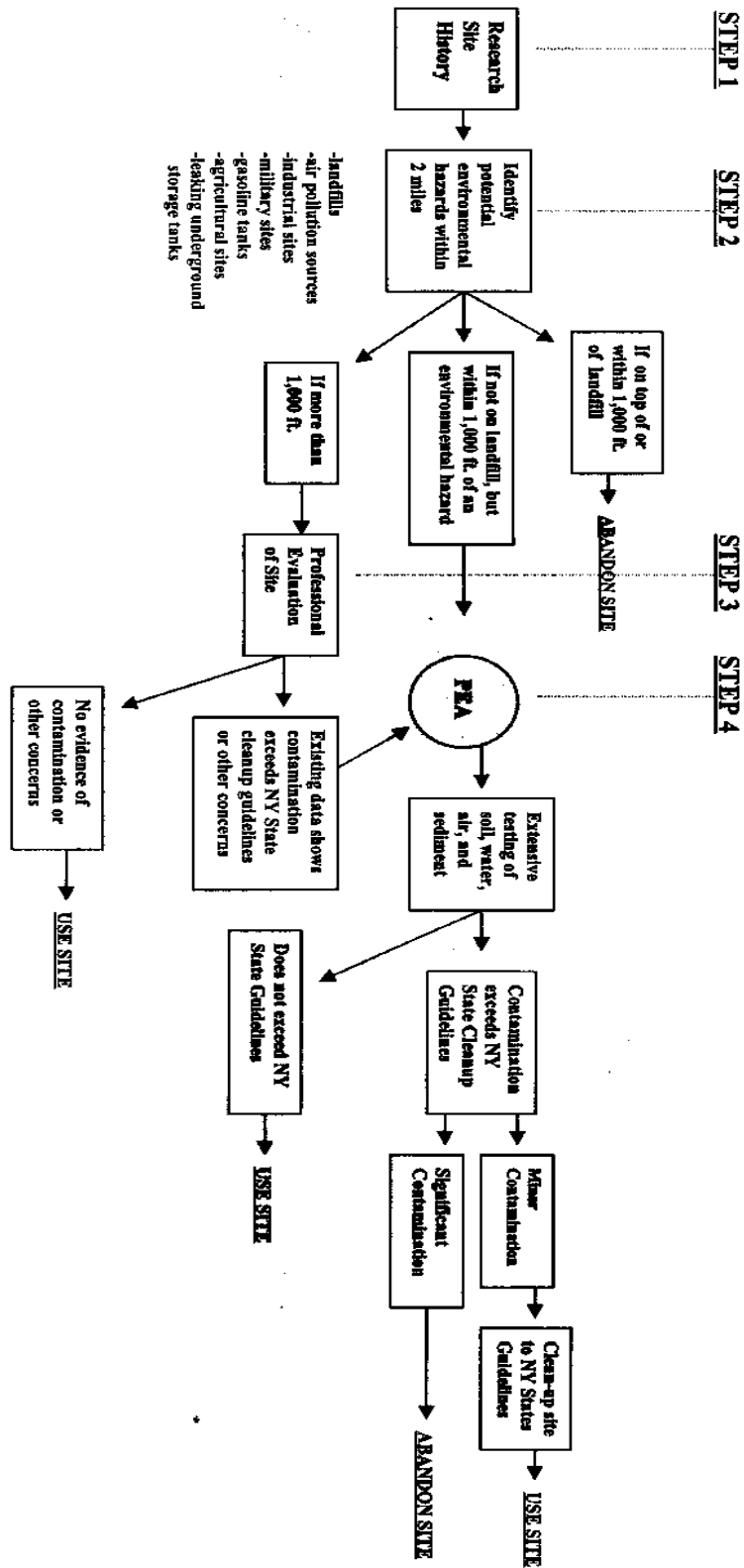
# MODEL SCHOOL SITING LEGISLATION GUIDANCE FOR ACQUIRING SCHOOL PROPERTY AND EVALUATING EXISTING SITES

The siting of schools on clean, uncontaminated property is critical to providing a safe learning environment for children and a safe working environment for teachers and employees. However, no guidelines or criteria exist for where to locate schools or how to avoid environmental health risks to children and staff. Across the nation, schools located on or near contaminated land seek to define cleanup goals that protect children from harmful exposures to chemical contaminants. Schools also struggle to understand whether nearby operating industrial sites and other sources of chemical releases into the air, soil, and water pose health risks to students and staff. School boards, local government agencies, parents, and school staff need guidance to define how close a contaminated source can be to a school without being a serious health threat.

Laws related to the siting of schools differ from state to state. In some states, local school districts have no limits on their power to select school sites. In other states, local districts must obtain approval from state education officials before proceeding with construction. A handful of states have created special school construction corporations that have the power to select school sites. Similarly, laws governing the environmental assessment and cleanup of sites where hazardous and/or solid waste was disposed varies considerably between states. These differences make it difficult to draft a single piece of model legislation that could be adopted in every state. For information on your states laws regarding school siting, see: *A State-by-State Look at Existing School Siting Laws* at the front of this report.)

CPOC developed this model to help local activists in developing school siting legislation (covering both public and private primary and secondary schools) that protects children's health. This model can be given to interested legislators and attorneys for use in drafting legislation on the state level. The drafters of legislation in your state will need to check their own laws to determine how the authority for selecting school sites has been delegated to local or state officials and to develop timetables for completing the environmental review process that is described below. The accompanying flow chart (Figure 1) details the proposed process of evaluating a potential school site.

FIGURE 1 – OVERVIEW OF PROCESS FOR EVALUATING CANDIDATE SCHOOL SITES



## **1. Insuring Meaningful Participation in School Siting Decisions**

The public body responsible for siting new schools is usually the local school board or a school committee. State law must require the “public body” (used throughout this section to mean the local school board or school district committee) to establish a school siting committee, whose job it is to recommend to the public body sites for building new schools, leasing space for new schools, and/or expanding existing schools. The committee shall include representatives of the public body as well as representatives from the following stakeholders: parents (particularly those from the feeder schools that will comprise the new school’s population), teachers, school health nurse or director, officials from local health departments, community members, local public health professionals, environmental advocacy groups, and age-appropriate students. Many states already require school districts to form school facility planning committees, which could also serve as a school siting committee. Only public bodies who have appointed school siting committees representing such stakeholders should be eligible to receive federal or state money for the assessment, and cleanup of school sites, or the construction of new school.

State law must also require the public body to timely notify parents, school staff, members of the local community, and “feeder” school parents of the new school’s students of plans to build, or lease space for, a new school and to solicit their participation in writing and at public meetings. This outreach effort should include prominent placement of public notices about the proposed plan in commonly read newspapers or local magazines. A notice shall be posted in a conspicuous place in every school within the public body’s jurisdiction (in multiple languages if there’s a significant number of non-English speaking parents). A copy shall also be delivered to each parent-teacher organization within the jurisdiction, each labor union covered by a collective bargaining agreement signed by the public body, and each landowner within 1,000 feet of the proposed site.

## **2. Categorical Exclusion for Potential School Sites**

State law must prohibit the siting of new school facilities (whether by new construction or leasing) on certain sites that pose unacceptable risks to future users of the school. Under no circumstances should a school be built on top of or within 1,000 feet of a site where hazardous or garbage waste was landfilled, or where disposal of construction and demolition materials occurred. To determine whether a candidate school site has been used for these purposes, an Initial Environmental Assessment should be undertaken, and, if necessary, a more extensive Preliminary Endangerment Assessment (see discussion below). If either evaluation reveals that the site has been used for these purposes, or if the site is within 1,000 feet of any property used for these purposes, the site must be abandoned. For other sites impacted by on-site or off site sources of environmental pollution, extreme care must be taken before such sites can be used for schools (see next section).

### 3. Process for Evaluating Candidate Sites

The public body shall not proceed to acquire a site, by purchase or leasing, or to prepare a site for construction of a school, including the expansion of an existing school, until the public body completes the required environmental evaluations and the state environmental regulatory agency has approved each evaluation. The process for evaluating candidate sites where a school might be built involves multiple steps, as shown in Figure 1.

The first step is an Initial Environmental Assessment (IEA), often referred to as a “Phase I Assessment.” Based on the information found during this initial assessment, a more extensive investigation, a Preliminary Endangerment Assessment (PEA), may be required. This step is often referred to as a “Phase II Assessment.” These model guidelines propose completing IEAs and PEAs that are more comprehensive than those performed for typical Phase I and Phase I assessments, thus the use of different terminology.

Specific cleanup measures as defined by a Site Remediation Plan may be necessary depending on the results of the PEA. Some sites that would be abandoned due to the presence of significant contamination identified by the PEA may be reconsidered as a Last Resort Site if a school board/district has no other choice of sites. This situation might occur in an urban setting where the number of undeveloped sites is limited because of existing development. These sites should **only** be considered as a last resort, after all other potential sites have been evaluated and eliminated (at least two other sites must be considered) and if specific remediation guidelines to clean up the site are followed. Each of the steps in this process is described in more detail below.

#### A. Initial Environmental Assessment

Once a candidate site is identified, the public body must hire a licensed environmental professional (typically a Professional Engineer or Professional Geologist) to conduct a three part Initial Environmental Assessment (IEA). The professional conducting the IEA shall collect information on current and past site uses, evaluate past and/or existing site contamination, and identify potential sources of pollution located nearby and evaluate whether they might impact the candidate site. The purpose of the initial assessment is to determine whether a proposed site falls under the categorical exclusion for former landfill sites and to determine whether the site was likely contaminated by hazardous substances and, thus, requires a more thorough investigation, referred to as a Preliminary Endangerment Assessment or PEA.

**Part I: Research and Review the site’s history** - Review public and private records of current and past land uses, historical aerial photographs, environmental databases, and federal, state and local regulatory agencies’ files; conduct a site visit and interviews with people familiar with the site’s history, including past and present owners.

**Part II: Identify potential environmental hazards** within two miles of the site including all of the following potential sources of contamination:

- Any known or suspected hazardous, industrial, or municipal waste disposal site
- Any private, commercial, industrial, military, or government facility where toxic chemicals were used, stored or disposed of
- Refineries, mines, scrap yards, factories, dry cleaning facilities, sites where there have been chemical spills or other significant contamination
- USEPA or state designated Brownfield site (unless remediated)
- Facilities found on EPA's Toxic Release Inventory (TRI)
- Agricultural land where pesticides and herbicides have been applied
- Dust generators such as fertilizer or cement plants, or saw mills
- Leaked gasoline or other products from underground storage tanks
- Concentrated electrical magnetic fields from high intensity power lines and cellular communication towers
- Areas of high concentrations of vehicular traffic such as freeways or highways
- Railroad yards and beds
- Waste water treatment plants

If the IEA finds that a candidate site was previously used for hazardous or garbage waste disposal, or for disposal of construction and demolition materials, or if it is within 1,000 feet of any property used for these purposes, the site must be abandoned as described in Section 3 above.

If the IEA finds that a candidate site is within 1,000 feet of any potential source of contamination including those listed above, a more extensive site assessment, the PEA, must be conducted. A PEA would also be required if any data or information collected in the Initial Environmental Assessment reveal that the site is subject to serious hazardous chemical exposures as a result of the past or current presence of any of the above sources.

### **Part III: Render Professional Judgment About Whether to Conduct a PEA.**

Data and information identified and collected during Parts I and II of this assessment would be considered at this stage. Such existing information might include data on samples collected from soil, soil gases (if any), surface water, groundwater, sediment, and ambient air. The direction of surface or groundwater flow, wind direction and patterns, and contaminant transport processes identified in soil or sediment at the site would also be evaluated here. This evaluation would be conducted by a licensed environmental professional (typically a Professional Engineer or Professional Geologist) who would use professional judgment to decide if a PEA was warranted for a candidate site. For example, a candidate site that is located downwind from stationary or mobile sources of air pollution that could impact children attending school at the candidate site might warrant a PEA in the judgment of an environmental professional.

If existing contamination is discovered as part of this evaluation, the levels found should be compared to a list of cleanup guidelines developed by the New York State Department of Environmental Conservation (see Table 1 and discussion in Section 4C below). If contaminant levels exceed any of these values, a more extensive site assessment, a PEA, must be conducted.

If no environmental hazards were identified on the property, if no identified sources of pollution located nearby were considered likely to impact the candidate site, and if no concerns were raised during the data and information evaluation step, then the property would be considered suitable for school site development.

The state environmental regulatory agency must review the final draft of the Initial Environmental Assessment. Depending on the thoroughness of the assessment, the state agency would either give preliminary approval to the assessment, disapprove the assessment, or request more information.

When the final draft of this assessment is complete and has received preliminary approval by the state environmental regulatory agency, the public body shall publish a notice in newspapers of general circulation (including foreign language newspapers if the school district has a sizable number of non-English speaking parents) that includes the following information:

A statement that an Initial Environmental Assessment has been completed; prior uses of the site that were identified that might raise health and safety issues; proximity of the site to environmental hazards (waste disposal sites, point sources of air pollution, etc.); a brief statement describing the results of the assessment such as a list of contaminants found in excess of regulatory standards; a brief summary of the conclusions of the assessment; the location where people can review a copy of the assessment or an executive summary written in the appropriate foreign language (if applicable); and an announcement of a sixty-day public comment period including an address where public comments should be sent.

A copy of this notice shall be posted in a conspicuous place in every school within the public body's jurisdiction (in multiple languages if there is a significant number of non-English speaking parents). A copy shall also be delivered to each parent-teacher organization within the jurisdiction, each labor union covered by a collective bargaining agreement signed by the public body, and each landowner within 1,000 feet of the proposed site.

The state environmental regulatory agency will review all comments received on the Initial Environmental Assessment. This agency will then accept or reject the conclusion of the assessment, determine whether the site can be used without further remediation or study, whether the site is categorically excluded for use as a school, or whether further

study (i.e., a Preliminary Endangerment Assessment) is required. The state environmental agency shall explain in detail the reasons for accepting or rejecting the assessment.

After the state environmental agency has approved the Initial Environmental Assessment, the local School Siting Committee must also review the assessment and public comments received. The purpose of this review is for the School Siting Committee to make a recommendation to either abandon the site or continue evaluating the potential environmental hazards at the site with a Preliminary Endangerment Assessment. If a PEA is required, the School Siting Committee should recommend to the public body whether to abandon the site or proceed with a PEA. Alternative sites and options should be considered at this point. A IEA should be completed for any alternative site being considered. Then, the public body must vote whether to abandon the site, conduct an IEA for the alternative sites, or proceed with a PEA for the candidate site.

## **B. Preliminary Endangerment Assessment**

A Preliminary Endangerment Assessment (PEA) is an in-depth assessment of the environmental contamination present at a site. A licensed environmental professional must do this assessment. The state environmental regulatory agency shall oversee the PEA process and issue regulations that prescribe the precise contents of the PEA. A model for such regulations can be found in California, where the assessment must meet the California Department of Toxic Substances Control Preliminary Environmental Assessment Guidance Manual requirements. The PEA must also be approved by the state environmental regulatory agency before the public body may acquire or lease a proposed site for school purposes or start construction of a school.

The public body must perform a Preliminary Endangerment Assessment if the results of the Initial Environmental Assessment indicate one or more of the following:

- The proposed site is likely to have been contaminated by hazardous substances as a result of the past or current use of the site or adjoining properties;
- The proposed school site was found to be within 1,000 feet of any of the potential sources of contamination listed above;
- The proposed school site was likely to be impacted by potential sources of contamination that are more than 1,000 feet away, based on the professional judgment of a licensed environmental professional.

Before any work is done on the PEA, the public body must develop a public participation plan that ensures public and community involvement in the PEA process. The plan shall indicate what mechanisms the public body will use to establish open lines of communication with the public about the potential construction of a school on a candidate site. Activities such as public meetings, workshops or fact-sheets are appropriate ways to notify the public about the proposed PEA investigation activities (such as taking soil, groundwater or air samples) and schedules. The state environmental

regulatory agency must approve the public participation plan before the public body can begin PEA-related activities.

The primary objective of the PEA is to determine if there has been a release or if there is a potential for a release of a hazardous substance that could pose a health threat to children, staff, or community members. The PEA would include full-scale grid sampling and analysis of soil, soil gases (if any), surface water, groundwater, sediment, and air in order to accurately define the type and extent of hazardous material contamination present on the site.

Before any sampling is conducted as part of the PEA, a work plan would be prepared that defines the goals of the sampling; the rationale for the sampling strategy including the number and location of sampling sites and what substances to test for; the sampling methods and procedures that will be use and the analytical methods and procedures. The public would be involved in the development of the work plan and be given the opportunity to review the final draft and prepare comments. The work plan would be approved by the state environmental regulatory agency.

The PEA will also include an evaluation of the risks posed to children's health, public health, or the environment based on the contamination found. This evaluation shall include:

- A description of all possible pathways of exposure to those substances by children as well as adults using a school on the candidate site;
- The identification of which pathways would more likely result in children being exposed to those substances; and
- A description of health consequences of long-term exposure to any hazardous substances found on the site.

The results of soil samples collected as part of the PEA should be specifically compared to the New York State Department of Environmental Conservation (NYDEC) soil cleanup guidelines. If these or other results from the PEA sampling effort indicate that some contamination of the candidate site exists, and that some cleanup will be needed, then the PEA will provide recommendations on cleanup levels that are at least as stringent as the cleanup guidelines developed by the NYDEC and shown in Table 1. When a state has a standard for an individual substance that is more protective than the New York State cleanup guideline values, the more protective standard should be used. A Site Remediation Plan (see Section 4D below) would need to be developed that would reduce contaminant levels to the applicable safety standard for each contaminant before the site could be used.

If the PEA indicates that the site has a significant hazardous contamination problem, the public body must abandon the site and consider other alternative sites. If, however, no other alternative sites exist, the public body could reconsider this site by agreeing to adopt the Last Resort remediation measures outlined in Section 4E below. These



engineering measures are intended to reduce risk to the maximum extent by cutting off all potential routes of exposure. Adopting these measures at a candidate site should **only** be considered as a last resort, after all other potential sites have been evaluated and eliminated. The public body has no choice but to abandon the candidate site if the PEA uncovers that the site was previously used for hazardous or garbage waste disposal, for disposal of construction and demolition materials, or is within 1,000 feet of any property used for these purposes.

The state environmental regulatory agency must review the final draft of the PEA. Depending on the thoroughness of the assessment, the state agency must give preliminary approval to the assessment, disapprove the assessment, or request more information.

When the final draft of the PEA is completed and has received preliminary approval by the state environmental regulatory agency, the public body shall publish a notice in newspapers of general circulation (including foreign language newspapers if the school district has a sizable number of non-English speaking parents) that includes the same information released for the Initial Environmental Assessment:

- A statement that a PEA of the site has been completed;
- A brief statement describing the results of the PEA, such as a list of contaminants found in excess of regulatory standards, prior uses of site that might raise health and safety issues, proximity of site to environmental hazards (waste disposal sites, point sources of air pollution, etc.);
- A brief summary of the conclusions of the PEA;
- The location where people can review a copy of the PEA or an executive summary written in the appropriate local language(s); and
- An announcement of a sixty-day public comment period, including an address where public comments should be sent.

As described for the Initial Environmental Assessment, a copy of this notice shall be posted in a conspicuous place in every school within the public body's jurisdiction (in multiple languages if there is a significant number of non-English speaking parents). A copy shall also be delivered to each parent-teacher organization within the jurisdiction, each labor union covered by a collective bargaining agreement signed by the public body, and each landowner within 1,000 feet of the proposed site.

The state environmental regulatory agency will review all comments received on the PEA. The state environmental agency shall then either accept or reject the conclusion of the PEA, determine whether the candidate site can be used without further remediation or study, whether the site is categorically excluded for use as a school, or whether a Site Remediation Plan is required. The state environmental agency shall explain in detail the reasons for accepting or rejecting the PEA.

After the state environmental agency has approved the PEA, the local School Siting Committee must also review the assessment and public comments received. The purpose of this review is for the School Siting Committee to make a recommendation to either

abandon the site or consider remediation. Alternative sites and options should be considered at this point. Then, the public body must vote whether to abandon the site, consider an alternative site or option, or proceed with a remediation plan.

Some sites that would be abandoned due to the presence of significant contamination identified by the PEA may be reconsidered as a Last Resort site if the School Siting Committee has no other choice of sites. This situation might occur in an urban setting where the number of undeveloped sites is limited because of existing development. These sites should **only** be considered as a last resort, after all other potential sites have been evaluated and eliminated (at least two other sites must be considered) and if the specific remediation guidelines outlined in Section 4E below are followed.

### **C. Child Protective Health Based Standards**

The Child Proofing Our Communities campaign found that no health-based child-sensitive standards exist at the federal, state, or local level for determining “safe” levels of contamination in soil that will protect children. Lacking such standards, parents, school districts, regulating agencies, and others are lost as to how to evaluate contamination at new or existing sites. Until such standards are developed, the campaign recommends the use of the New York State Recommended Soil Cleanup Objectives. These values were developed to provide a “basis and procedure to determine soil cleanup levels” at state and federal Superfund and other contaminated sites in the state. Thirty-five representative values of New York’s soil cleanup guidelines are shown in Table 1. A complete listing of all 126 values can be found on the Internet at: [www.dec.state.ny.us/website/der/tagms/prtg4046.html](http://www.dec.state.ny.us/website/der/tagms/prtg4046.html).

The Child Proofing Our Communities campaign, in conjunction with several environmental engineers convened a Children’s Environmental Health Symposium in 2002. This group reviewed the cleanup standards or guidelines for several states and found the New York state values to be generally lower than others considered. A committee of professional engineers and health scientists who participated in the Symposium concluded that the NYDEC list is a good, reasonably sound, and conservative list to use as an initial screen to provide school boards/ districts with a way to evaluate sites early on in the site selection process.

**Table 1 - New York State Recommended Soil Cleanup Objectives For Chemicals Commonly Found at Contaminated Sites**

Solvents		Pesticides/other		Metals	
Acetone	0.2	Aldrin/Dieldrin	0.041	Arsenic	7.5
Benzene	0.06	Chlordane	0.54	Barium	300.0
2-Butanone	0.3	DDT/DDE	2.1	Beryllium	0.16
Carbon Tetrachloride	0.6	Lindane	0.06	Cadmium	1.0
Chloroform	0.3	Benzo(a)pyrene	0.061	Chromium	10.0
1,1-Dichloroethane	0.2	Butylbenzylphthalate	50.0	Cobalt	30.0
1,2-Dichloroethane	0.1	Chrysene	0.4	Copper	25.0
Methylene Chloride	0.1	Hexachlorobenzene	0.41	Iron	2000.0
Tetrachlorethene	1.4	Naphthalene	13.0	Mercury	0.1
Trichloroethene	0.7	Pentachlorophenol	1.0	Nickel	13.0
Toluene	1.5	PCBs	1.0	Selenium	2.0
Vinyl Chloride	0.2	Note: All values are in parts per million (ppm)			
Xylene	1.2				

**D. Site Remediation Plan**

If the public body decides to proceed with a cleanup of a candidate site, a Site Remediation Plan must be developed. This plan must:

- Identify methods for cleaning up the site to contaminant levels that meet the applicable safety standards;
- Contain a financial analysis that compares estimated costs for the identified cleanup methods that will bring the site into compliance with applicable safety standards;
- Recommend a cleanup plan from the alternatives identified;
- Explain how the recommended cleanup option will prevent children from being exposed to the hazardous substances found at the site; and

- Evaluate the suitability of the site in light of available alternative sites and alternative cleanup plans.

For any site where the PEA requires remediation, cleanup levels will be at least as stringent as the New York State Recommended Soil Cleanup guidelines shown in Table 1.

As part of the cleanup, the Site Remediation Plan must include provisions for covering any residual contamination in soils and sediments by a minimum of 2 feet of clean topsoil. A minimum of 2 feet of contaminated soil must be removed or treated prior to being covered by the 2 feet of clean topsoil. The cover soil shall be underlain by a continuous layer of an orange-colored geotextile material designed to provide a long-term future warning to others who might disturb or excavate to below this level. If excavation is required below this level, such as to install a utility line, then the appropriate Occupational Safety and Health Administration (OSHA) safety requirements must be used and any soil removed must be taken off site for proper disposal and replaced with clean fill.

Exceptions to this 2-foot cover provision will only be allowed if the situation is specifically brought to the attention of the state environmental agency and approved by that agency. Before any final decision is made to grant an exception, the public will need to be notified and given the opportunity to comment on such a proposal.

The Site Remediation Plan should also provide recommendations for the final site sampling to be done after the cleanup has been completed to ensure that all residual contamination is less than the cleanup goals defined for the site. Such sampling recommendations shall be designed to discover the highest possible concentrations of contamination on the candidate site.

The public body shall submit the Site Remediation Plan to the state environmental regulatory agency for approval. Before submitting this plan, a draft remediation plan shall be given to the School Siting Committee for review and comment. Once the remediation plan is submitted to the state agency for approval the public body shall proceed with a public notification and outreach plan similar to that conducted for the Initial Environmental Assessment and the Preliminary Endangerment Assessment. This would include publishing a notice in newspapers of general circulation (including foreign language newspapers if the school district has a sizable number of non-English speaking parents) that includes the following information:

- A statement that a Site Remediation Plan has been submitted to the state environmental agency for approval;

- A brief statement describing the Site Remediation Plan, including a list of contaminants found in excess of regulatory standards and a description of how the plan will reduce the level of contamination to meet those regulatory standards;
- The location where people can review a copy of the remediation plan or an executive summary written in the appropriate local language(s); and
- An announcement of a sixty-day public comment period and the address of the state environmental agency where public comments should be sent.

A copy of this notice shall be posted in a conspicuous place in every school within the public body's jurisdiction (in multiple languages if there is a significant number of non-English speaking parents). A copy shall also be delivered to each parent-teacher organization within the jurisdiction, to each labor union covered by a collective bargaining agreement signed by the public body, and each landowner within 1,000 feet of the proposed site.

At least thirty days after the conclusion of the public comment period the state environmental regulatory agency shall conduct a public hearing on the remediation plan in the neighborhood or jurisdiction where the proposed site is located.

The state environmental agency shall publish a notice of the hearing in newspapers of general circulation (including foreign language newspapers if the school district has a sizable number of non-English speaking parents) stating the date, time and location of the hearing. The state environmental regulatory agency shall provide translators at the public hearing if the school district has a sizable number of non-English speaking parents.

After the public hearing and after reviewing any comments received during the public comment period the state environmental regulatory agency shall either approve the Site Remediation Plan, disapprove the Site Remediation Plan, or request additional information from the public body. If the state agency requires additional information, a copy of the letter requesting additional information shall be sent to the School Siting Committee. Any additional information submitted by the public body to the state environmental regulatory agency shall also be given to the School Siting Committee. After reviewing any additional information, the state environmental regulatory agency must approve or reject the Site Remediation Plan. The state environmental agency shall explain in detail the reasons for accepting or rejecting the Site Remediation Plan.

After the state environmental regulatory agency approves the Site Remediation Plan, the local School Siting Committee must also review the plan and recommend to the public body whether to abandon the candidate site or proceed with acquiring the site and implementing the remediation plan. Alternative sites or options should be considered at this point. The public body must then vote whether to abandon the site or to acquire the site and implement the remediation plan. Only upon voting to acquire the site and implement the remediation plan may the public body take any action to acquire the site and prepare the site for remediation and eventually construction of a school.

Prior to the onset of any school construction on the candidate site, the remediation effort must be completed, including demonstration that the cleanup goals have been achieved. This would be verified by final sampling in accordance with the guidelines established in the PEA, though perhaps modified by the Remediation Plan. Documentation regarding the implementation of the plan and all final sampling results will be subject to review by the state environmental agency who may require additional sampling and/or remediation efforts as they deem appropriate. Any modifications to the Remediation Plan would also have to go through the appropriate public review processes. Only after the state has agreed that remediation is complete may any school construction begin.

### **E. The Last Resort – Building on a Highly Contaminated Site**

There are times when the public body may be forced to reconsider a site that was abandoned during the Preliminary Environmental Assessment (PEA) process because of the presence of significant contamination (see Section 4B). This situation might occur in an urban setting where the number of undeveloped sites is limited because of existing development. There may be other times when a school board/district will be left with no other choice of sites. These sites should **only** be considered as a last resort; after all other potential sites have been evaluated and eliminated. A minimum of two other sites must be considered before a Last Resort site would be considered.

In these situations, extra precautions need to be taken to ensure to the maximum extent possible that students, teachers, parents, administrative staff or workers will not be at risk from exposure to toxic chemicals. These precautions include a number of redundant cleanup measures and engineering controls that go beyond meeting minimum requirements. This redundancy is needed to provide the necessary level of safety and public confidence to permit the construction and operation of a school on a contaminated site.

In this section, we propose steps that must be taken to identify potential exposure pathways and to eliminate to the maximum extent possible exposure of any users of the site to toxic chemicals. These steps would be taken at a site that was abandoned during the PEA site evaluation and was not categorically excluded from consideration, such a site located on top of, or within 1,000 feet of land where hazardous or household garbage waste was landfilled, or where disposal of construction and demolition materials occurred (see Section 3).

#### **Remediation Goals and Objectives**

- The primary goal of the cleanup plan is to fully cut off and eliminate all exposure pathways. This will prevent people from coming into contact with contaminated soil and with contaminants present in the soil, water, or air. If there's no exposure, there's no risk of injury.

- A secondary cleanup goal is to prevent mixing of clean and contaminated soil. A multi-layered engineered barrier must be part of any effort to achieve this goal (see Required Remediation Steps below, bullet #2).
- Build as much redundancy as possible into the remedial Workplan for the site in order to eliminate or cut off the exposure pathways. This approach compensates for uncertainties in information about the site and will minimize risks associated with building on a contaminated site. Moreover, this approach will direct the selection of the safest remedial options, which will build public confidence in the safety of the site.

### **Properly Characterize the Site and Identify Exposure Hazards**

- **The site must be completely characterized.** There must be sufficient testing of all media – soil, groundwater, surface water, and air – across the site to be reasonably confident that you have an accurate assessment of the extent and severity of the contamination existing at the site. This testing must be done using a grid or similarly consistent pattern for determining sample locations. An evaluation consistent with a Preliminary Endangerment Assessment (PEA) would be appropriate (see Section 4B).
- **Identify all existing and potential exposure pathways.** Exposure pathways describe the ways that people who use a site might come into contact with toxic substances at the site. They also show how those substances move through a medium such as groundwater, and from one medium to another, such as occurs, for example, when volatile organic compounds (VOCs) evaporate from soil into the air. Unless the site is completely characterized, it will not be possible to identify all the exposure pathways.
- **Identify all areas that exceed the New York State Recommended Soil Cleanup guidelines.** The testing done at the site should identify all contaminants present in soil and other media. Soil with contaminant levels that exceed the New York State soil cleanup guidelines, as described in Table 1 in Section 4C, must be completely removed to a depth below which there is no anticipated excavation so as to reduce overall risk.
- **Determine the highest seasonal level of the groundwater table.** If the groundwater at a candidate site rises at any time during the year to a level that is above any proposed barrier or other underground remedial measure that would be installed at the site. If this occurs, then this factor must be taken into consideration as part of the Site Remediation Plan.

## **Required Remediation Steps**

- **Remove all contaminated soil on the proposed site that exceeds the New York State Recommended Soil Cleanup guidelines up to the “excavation depth.”** Soil containing levels of contaminants in excess of these standards must be removed to at least a depth below which there is no anticipated excavation, such as might result from the installation of utility lines and connections, or construction of footers to support a building. This is referred to as the “excavation depth” and might reasonably range from 8 to 15 feet, depending on local site geology.
- **Install a multi-layered barrier over any contaminated soil left in place at the site.** This multi-layered barrier will separate clean topsoil from any residual contamination left in place. Starting at the surface and moving downward, this barrier would consist of the following layers. First, a minimum of 2 feet of certifiably clean topsoil; then, clean fill to replace contaminated soil removed to the excavation depth (this depth would vary depending on how much contaminated soil was removed); next would be 12 to 24 inches of sharp, angular crushed rock (quarry rock, not crushed cement or some other stone that will disintegrate with high acidity) surrounded on both sides by a brightly colored orange Geotextile fabric (see Figure 2). This colored fabric serves as a “marker layer” to warn anyone who might dig into the soil that below this marker is contaminated soil.

The crushed stone layer provides a “capillary break” that limits the upward and downward movement of water or leachate. This layer will also prevent burrowing animals and worms from transporting contaminated soil into the clean fill and potentially to the surface. If volatile gases are present in the soil, most of the gas will preferentially move through the crushed stone and be transported laterally. These gases will need to be vented and captured. Care must be taken to ensure that these gases do not reach buildings on or near the school property.

- **Install a “chimney” system** to capture and vent volatile gases before they enter the school building if VOCs are detected in the soil or groundwater in excess of the New York State guidelines. In much the same way that venting systems are used to intercept radon gas before it enters a home, a similar venting system installed under and around a school building could be installed to intercept any VOCs that might be present in residual contaminated soil. This system would use perforated pipes placed under or around a building that would intercept VOCs off-gassing from the soil. Solid pipes would then transport the gases up and out of the school building. A filter may have to be installed as well to capture these gases rather than release them directly into the ambient air. This system may not always be necessary and could be considered in addition to a multi-layer barrier.



- **Construct a two-foot concrete slab** built on top of a polyethylene vapor barrier if a new foundation is needed for a school building built on contaminated soil. The plastic vapor barrier would provide another means to reduce vapor infiltration from soil under the building.

### **Institutional Controls and Monitoring Options**

Institutional controls should be implemented to provide notice and information for future users of the school, or in the event future users of the site ever tear down the building. Institutional controls are legal or administrative mechanisms for managing risks. They should include notice of where the residual contamination is located, what contaminants are present, and how to monitor the integrity of barriers or other steps taken to prevent exposures at a site. These procedures are needed because contaminated soil remains at the site below an engineered multi-layered barrier.

- Install a metal or stone plaque in the school lobby or other prominent place that includes a warning in English and Spanish (or other language appropriate for the school community) that describes the contamination beneath the school and/or school property and directs the readers to the “Due Care Plan.” Ideally, the lettering should be raised or cut into the metal.
- Prepare a “Due Care” Plan that includes a history of the uses at the site, a summary of the environmental evaluation, a summary of the remedial work done at the site, and a list of the steps needed to maintain monitoring of the site in perpetuity. This Plan would also list activities that are prohibited at the site in order to maintain the integrity of the remedial work completed at the site. The Due Care Plan is to be permanently kept at the school in a location that is accessible to parents.
- Create a position within the school facilities department for a technically knowledgeable worker who will be trained and responsible for environmental oversight of the school and the grounds. This person should provide a report at least annually to the school staff, the School Board, parent groups, central district, and other applicable parties that summarizes the Due Care Plan and includes the results of any environmental monitoring completed in the past year.
- Require training of school personnel responsible for managing the school building and grounds. Such training should cover techniques for monitoring cracks in the foundation and breaches of the topsoil, procedures on how to handle equipment malfunctions or other problems with remedial systems that might occur, and how to serve as a contact for complaints or suggestions about environmental conditions at the school.
- Each year, the school facilities department will hire an environmental professional to conduct tests to assess the presence of contaminants in the soil, soil gas, indoor air, and groundwater on the school grounds. Surface soil would only need to be

tested if it were disrupted for some reason. The results of the testing must be included in a report prepared by an environmental professional that describes the purpose of the testing, the sample location and collection procedures, and the analytical methods used. This report, should be made available to school staff, the School Board, parent groups, the central district, and other interested parties. A brief summary of the report must be translated into Spanish or other foreign language as appropriate.

- Each year, monitor the health complaints among the students and teachers/staff. Illnesses such as headaches, lethargy, recurring upper respiratory illness, and asthma should be routinely monitored and if the rate that these illnesses are reported exceeds seasonal averages by 25%, then a more thorough investigation of these illnesses should be conducted.
- If VOCs were identified in the soil or groundwater, install soil gas and groundwater monitoring wells around the proposed school building and develop a long term monitoring plan designed to detect VOCs or other gases that move through the soil and subsurface. The gas wells should be installed under the building or as close to the building as is feasible if the structure already exists. Samples should be taken from the wells and analyzed for a full range of VOCs every 6 months following completion of the remedial work and construction of the school building. Testing could continue annually if no VOCs are found in the first year following construction.
- Consider using radon as a natural tracer as part of the soil gas monitoring plan to evaluate the integrity of a foundation or a cap/barrier installed between clean fill and contaminated soil. Radon gas is found naturally in soil in many areas and can be used as a surrogate for VOCs in evaluating whether VOCs are entering the school building. Radon concentrations would be measured simultaneously in the building and in the soil gas. The ratio of the soil gas concentration to the indoor air concentration represents an attenuation factor between soil gas and indoor air that directly measures the rate at which soil gas enters the building. To determine if VOCs are entering the building, the soil gas concentrations of VOCs measured in the soil monitoring wells are divided by the attenuation factor. Soil gas monitoring wells need to be installed under the school or as close to the building as is feasible. Radon detectors should be installed in the soil gas wells and monitored at least every 6 months following completion of the remedial work and construction of the school building. Testing could continue annually if no VOCs are found in the first year following construction.
- No plants or trees that have extensive root systems should be planted on top of the multi-layered barrier. Shrubs that don't go more than a couple of feet down are acceptable so long as they aren't taproot type plants that penetrate downward. Frequent mowing of school grounds will reduce the likelihood that burrowing animals will penetrate the top layer of the engineered barrier.

- If cement is used in the crushed stone layer of the multi-layered barrier, lime the soil above the geotextile layer as often as possible to maintain neutral to basic conditions in the topsoil. This will help to neutralize acid rain before it reaches the crushed stone layer of the multi-layered barrier. Acid rain will hasten the degradation and dissolution of the cement in this layer. This is not necessary if hard quarry rock is used.
- If it is absolutely necessary to dig through an installed multi-layered barrier, such as to install utility lines or connections or to construct footers to support a new building, then the appropriate Occupational Safety and Health Administration (OSHA) safety requirements must be used and any soil removed must be taken off site for proper disposal and be replaced with clean fill. Upon completion of the work, the multi-layered barrier must be put back in place. Footers should be installed so that they do not penetrate the barrier.

### **New School Construction**

It makes little sense to build an environmentally dangerous school on a newly cleaned site. We recommend the availability of funds to build healthy "green" schools.

There are no federal laws governing the environmental health conditions in schools. The EPA has been the most responsive agency, producing tools that individual schools can use to diagnose and correct indoor air quality problems. Much more needs to be done, however, to eliminate the many avoidable environmental health impacts present in the school environment. A promising federal bill—the Healthy High Performance Schools Act (2001)—and health and safety grants for emergency school renovations (2000) have had support or funding withdrawn. Thus we are left with the odd result that the federal government tolerates unhealthy construction practices and materials usage in schools even as it spends funds to diagnose and correct the resulting problems after the fact.

We advocate the availability of funding for both the aforementioned programs in order to promote "green building" practices in school construction and renovation. Presently there are no national standards that use green building materials and techniques. Some federal agencies such as the Department of Transportation and the Department of Interior are attempting to utilize the LEED (Leadership in Energy & Environmental Design) program developed by the U.S. Green Building Council. Unfortunately LEED does not effectively address children's environmental health concerns. As a first step, we recommend that a study of applicable green building standards and policies be undertaken to identify those best serving the goal of protecting children's health.

## Action Steps for Parents And Community Representatives

Currently, very little exists in the way of school siting guidelines. Table 2 lists state-by-state school siting laws, regulations, policies and guidelines.

Federal policy which adequately addresses school siting as it relates to hazardous sites may take years to implement, and may fall short of adequately addressing state or local specific issues, such as the types of contamination, types of soil, weather patterns, urban density and lack of available space, and other local issues. It is up to local communities to educate school and elected officials to make changes in their own backyards. A state by state passage of protective school siting policies will drive the message at a federal level that this is an issue people care about, and that they should take action on.

With this report, you have enough guidance and ideas to take action now to proactively protect the children of your state from unwittingly attending school in a contaminated area. There are several key steps to begin the work of safeguarding kids, all of which can be done by any motivated individual.

### **For New School Construction:**

1. Talk with your neighbors. Share the information you have, and see if they would like to help pass a local policy to protect community schools from being built on a contaminated site.
2. Host a meeting with others who may want to learn more about this issue, and help you pass a local policy. At your first meeting, you need to make your plan. As a group, brainstorm:
  - a. What are your goals? Is it to pass a protective policy to prevent schools from being sited on or near toxic sites? Is it to deal with a school already sited on or near a toxic site?
  - b. Who are your allies? Who, locally, can help you work on this project? Educators, school boards, facilities departments, elected officials, environmental or health organizations, parents, etc?
  - c. Who has the power to pass a policy around school siting? This will take a little research. Currently, when a school is built in your community, who is involved in that decision? The local school board, the central school district, the state Department of Education? What policies currently exist around school siting (see the preceding State-by-State Survey section)? Is there a five, or a ten-year plan for schools planned on being constructed?

- d. What resources do you currently have to help you with this project? Name all, money, interested people, friends in high places, etc...
  - e. Make a Plan of Action, complete with the short and long-term goals, and determine who will do what task.
  - f. Set your next meeting date and continue to meet with your group. This group will build a cohesive voice of local people who are committed to this protective policy, give you visibility through numbers, spread the workload out over many people, and help you spread your message to get others involved.
5. Set up a meeting with key players to introduce the issue, and your willingness to help them develop a policy that would inhibit schools from being built on contaminated sites. Majorities of people have simply never thought about this issue, or have not known how to develop guidelines protecting schools from hazardous waste. Education and a positive, achievable plan of action can go a long way to achieve success.
  6. Frame your message as positive, proactive, and trend setting. It is!
  7. The guidelines in this report are not “one size fits all”. Your community may have to adapt them to address your local situation. For instance, the depth of the ground water table, soil composition, wind and weather patterns, types of industry, and available school siting space need to be considered in detail, and will affect your guidelines.
  8. Be prepared to compromise with your elected officials, if necessary. Cash flows, current policies, and other limitations will affect their perspectives on this issue. However, a knowledgeable and committed group of community members can help develop a policy that meets everyone’s needs. At the outset of your work, determine as a group, which guidelines are not for negotiation.
  9. Continue planning, meeting, setting and achieving your organizational goals as you move through this process, and of course, for additional assistance in organizing to pass local ordinances, contact the Child Proofing Our Communities Campaign at The Center for Health, Environment and Justice.

### **Schools Located on or within a Half-mile of a Known Toxic Waste Site**

- The fact that your school is within a half-mile of a known toxic site doesn’t mean that your child is endangered. What it does mean is that you should check to see if a danger is present.
- Drive around the contaminated site and see where it actually is, if you don’t already know. How close is the site to where your child walks to and from school each day?
- Contact the city or county department of environment and ask them where you can find information on the site. Check to see what was beneath the land that your local school is built on. Often this information is located at a local library. You can also contact CHEJ or a local environmental group to help you decipher the information and its potential threats, if any.
- Contact CHEJ for assistance, resources and technical support.

Please share any local initiative you are working on, so that we can help spread the message to other communities, and continue to build the base of local parents and schools taking actions to protect the health and well being of our children.

## Addendum A

### January 2002 County Breakdowns

Public schools within ½ mile of a federal Superfund Site or a state-identified contaminated site.

State	County	Type of Sites	Number of Schools within ½ mile	Number of Students
<b>California</b>				
	Fresno	Superfund only	1	628
	Los Angeles	"	15	14,349
	Merced	"	1	560
	Orange	"	2	1,130
	Riverside	"	1	1,259
	Sacramento	"	2	1,005
	San Bernardino	"	2	4,091
	San Diego	"	2	1,386
	San Francisco	"	3	1,153
	Santa Clara	"	11	6,609
	Siskiyou	"	3	695
<b>Total</b>			<b>43</b>	<b>32,865</b>

**Table 2: Number of Public Schools and Students Attending Classes Within a Half-Mile of a Superfund or State-Identified Contaminated Site, By County—California**

State	County	Type of Sites	Number of Schools within ½ mile	Number of Students
<b>Massachusetts</b>				
	Barnstable	Superfund and State	12	6,313
	Berkshire	"	18	8,091
	Northern Bristol	"	27	13,277
	Southern Bristol	"	41	14,886
	Dukes	"	1	460
	Essex – Section 1	"	26	12,905
	Essex – Section 2	"	24	12,958
	Essex – Section 3	"	30	12,087
	Essex – Section 4	"	26	13,392
	Franklin	"	7	2,354
	Eastern Hampden	"	48	24,978

	Western Hampden	"	19	8,030
	Hampshire	"	5	1,867
	Middlesex – Section 1	"	41	21,011
	Middlesex – Section 2	"	22	12,680
	Middlesex – Section 3	"	20	10,033
	Middlesex – Section 4	"	25	12,298
	Middlesex - -Section 5	"	30	14,531
	Middlesex – Section 6	"	36	20,141
	Northern Norfolk	"	18	10,343
	Southern Norfolk	"	23	11,506
	Southwestern Norfolk	"	33	16,634
	Most of Plymouth	"	33	17,814
	Northwestern Corner of Plymouth	"	29	16,548
	Suffolk – Map 1	"	43	19,884
	Suffolk – Map 2	"	29	14,312
	Suffolk – Map 3	"	33	16,548
	Suffolk – Map 4	"	29	17,321
	Northern Worcester County	"	23	9,371
	Town of Worcester	"	33	17,038
	Southern Worcester County	"	34	17,618
<b>Total</b>			<b>818</b>	<b>407,229</b>

**Table 3: Number of Public Schools and Students Attending Classes Within a Half-Mile of a Superfund or State-Identified Contaminated Site, By County—Massachusetts**

State	County	Type of Sites	Number of Schools within ½ mile	Number of Students
<b>Michigan</b>				
	Allegan	Superfund and State	2	663
	Alpena	"	1	244
	Bay	"	2	139
	Berrien	"	6	828
	Cass	"	1	220
	Charlevoix	"	3	833
	Chippewa	"	1	229
	Clinton	"	1	64
	Emmet	"	1	252
	Ingham	"	5	1,344
	Ionia	"	3	1,233
	Kalamazoo	"	3	1,217
	Kent	"	4	2,995



	Leelanau	"	1	327
	Lenawee	"	1	122
	Monroe	"	1	745
	Montcalm	"	2	745
	Montmorency	"	2	639
	Muskegon	"	3	1,074
	Newaygo	"	2	1,061
	Oakland	"	1	336
	Schoolcraft	"	4	1,001
	St. Joseph	"	3	624
	Van Buren	"	3	1,165
	Washtenaw	"	2	453
	Wayne	"	5	2,119
	Wexford	"	1	291
<b>Total</b>			<b>63</b>	<b>20,899</b>

**Table 4: Number of Public Schools and Students Attending Classes Within a Half-Mile of a Superfund or State-Identified Contaminated Site, By County—Michigan**

State	County	Type of Sites	Number of Schools within ½ mile	Number of Students
<b>New Jersey</b>				
	Atlantic	Superfund only	1	540
	Bergen	"	9	3,723
	Burlington	"	2	808
	Camden	"	1	1,647
	Cumberland	"	2	203
	Essex	"	8	5,248
	Hudson	"	1	624
	Middlesex	"	2	799
	Morris	"	5	1,393
	Ocean	"	2	2,298
	Somerset	"	3	917
<b>Total</b>			<b>36</b>	<b>18,200</b>

**Table 5: Number of Public Schools and Students Attending Classes Within a Half-Mile of a Superfund or State-Identified Contaminated Site, By County—New Jersey**

State	County	Type of Sites	Number of Schools within ½ mile	Number of Students
<b>New York</b>				
	Albany	Superfund and State	4	1,990
	Bronx	"	4	2,101
	Broome	"	11	8,387
	Cattaraugus	"	2	748

	Chautauqua	"	5	2,928
	Chemung	"	6	3,836
	Chenango	"	3	1,853
	Cortland	"	5	2,702
	Delaware	"	3	1,248
	Dutchess	"	3	1,382
	Erie	"	13	8,334
	Fulton	"	2	530
	Herkimer	"	3	960
	Jefferson	"	1	190
	Kings	"	12	9,604
	Monroe	"	7	6,406
	Nassau	"	31	21,985
	New York	"	5	3,428
	Niagara	"	7	3,547
	Oneida	"	10	5,513
	Onondaga	"	6	2,823
	Orange	"	5	1,874
	Orleans	"	7	2,768
	Queens	"	14	8,587
	Rensselaer	"	1	151
	Richmond	"	4	3,933
	Rockland	"	4	3,012
	Saratoga	"	9	5,213
	Schenectady	"	4	1,421
	Seneca	"	1	121
	Steuben	"	1	213
	Suffolk	"	19	14,932
	Sullivan	"	1	306
	Tioga	"	2	1,181
	Tompkins	"	2	484
	Ulster	"	1	571
	Washington	"	2	889
	Wayne	"	1	442
	Westchester	"	14	6,145
<b>Total</b>			<b>235</b>	<b>142,738</b>

**Table 6: Number of Public Schools and Students Attending Classes Within a Half-Mile of a Superfund or State-Identified Contaminated Site, By County—New York**

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## Appendix A

**Table A-1: New York State recommended Soil Cleanup Objectives for Chemicals Commonly Found at Contaminated Sites**

Solvents		Pesticides/other		Metals	
acetone	0.2	aldrin/dieldrin	0.041	arsenic	7.5
benzene	0.06	chlordane	0.54	barium	300
2-butanone	0.3	chrysene	0.4	cadmium	1
carbon tetrachloride	0.6	DDT/DDE	2.1	chromium	10
chloroform	0.3	naphthalene	13.0	lead	400
1,1-dichloroethane	0.2	pentachlorophenol	1.0	mercury	0.1
1,2-dichloroethane	0.1	PCBs	1.0	nickel	13
methylene chloride	0.1				
tetrachlorethene	1.4				
trichloroethene	0.7				
toluene	1.5				
vinyl chloride	0.2	<b>Note:</b> All values are in parts per million (ppm)			
xylene	1.2				

Source: New York State Department of Environmental Conservation



**Table A-2: Adverse Health Effects Associated With Chemicals Commonly Found at Contaminated Sites**

<b>Substance</b>	<b>Adverse Health Effects</b>
<b>Solvents</b>	
Acetone	Liver, kidney, nervous system damage; reproductive effects
Benzene	Nervous system, immune and blood damage; reproductive effects; leukemia
2-Butanone	Nervous system damage
Carbon Tetrachloride	Liver, kidney, nervous system damage; liver cancer
Chloroform	Liver, kidney; nervous system damage; reproductive effects, kidney cancer
1,1-Dichloroethane	Kidney, heart damage; liver cancer
1,2-Dichloroethane	Kidney, liver, lung, heart, and nervous system damage;
	cancer of the colon and rectum
Methylene Chloride	Nervous system damage; skin rashes; liver cancer
Tetrachloroethene	Nervous system, reproductive, liver, kidney damage; liver and kidney cancer
Trichloroethene	Nervous system, liver, kidney, immune, heart damage; skin rashes, reproductive effects*; liver, lung cancer and possibly leukemia <sup>TP</sup>
Toluene	Nervous system, kidney damage; reproductive effects*
Vinyl Chloride	Nervous system, liver, immune damage; reproductive effects; liver cancer
Xylene	Liver, lung, nervous system damage; reproductive effects *
<b>Pesticides/other</b>	
Pentachlorophenol	Liver, kidney, immune, lung, blood, nervous system damage; liver and adrenal cancer
Aldrin/Dieldrin	Kidney and nervous system damage; liver cancer <sup>TP</sup>
Chlordane	Nervous system, digestive, liver damage; liver cancer
Chrysene	Skin cancer <sup>TP</sup>
DDT/DDE	Liver, nervous system damage; reproductive effects*; liver cancer
Naphthalene	Red blood cell, lung damage
PCBs	Skin disorders; liver damage; developmental and behavioral effects; reproductive effects; liver, biliary tract cancer

**Metals**

Arsenic	Skin disorders; lung, heart, blood damage; birth defects and other reproductive effects*; skin, bladder, lung, kidney, liver, prostate cancer
Barium	Circulatory system effects; heart, liver, kidney damage
Cadmium	Kidney, lung damage; birth defects and other reproductive effects*; lung cancer
Chromium	Kidney, liver damage; skin disorders; lung cancer
Lead	Kidney, immune damage; neurological damage leading to developmental effects – learning disabilities and reduced growth; cancer
Mercury	Permanent kidney and brain damage; birth defects and other reproductive effects*; neurological damage leading to developmental effects
Nickel cancer	Kidney, liver, lung damage; allergic reactions; lung cancer

**Sources:**

The primary source used to prepare this table is the Agency for Toxic Substances and Disease Registry (ATSDR) Division of Toxicology ToxFAQs. These fact sheets are available on the web at <http://www.atsdr.cdc.gov/toxfaq.html>. Some information was obtained from the full Toxicity Profile (TP) for a substance. Reproductive effects (\*) are supplemented from *Generations at Risk, Reproductive Health and the Environment*, Schettler, T., Solomon, G., Valenti, M., and Huddler, A., MIT Press, Cambridge, MA, 1999.

### METHODOLOGY

#### How the Maps Were Generated

The maps showing the location and number of public schools within one half mile of a federal Superfund or a state-identified contaminated site were prepared by the Citizens' Environmental Coalition in Albany, NY. The process used to generate the maps is briefly summarized below.

#### Public Schools in the US

Public schools were identified from the Common Core of Data (CCD) database maintained by the US Department of Education. CCD is the US Department of Education's primary database on elementary and secondary education in the US. This database provides an official listing of public elementary and secondary schools and school districts in the nation and includes basic information and descriptive statistics on all public schools. Data are collected annually from approximately 90,000 public elementary and secondary schools and from approximately 16,000 school districts from the 50 states, the District of Columbia, and outlying areas (USDE, 2001), including Department of Defense schools. Information on public schools in California, Massachusetts, Michigan, and New Jersey were obtained from this database. For New York, information on public schools was obtained from a database maintained by the New York State Education Department (NYED, 2001).

#### Federal Superfund and State-Identified Contaminated Sites

Several different sources were considered for identifying contaminated sites that could possibly pose a threat to school-aged children. The federal Superfund or National Priorities List (NPL) sites and state-identified contaminated sites were chosen.

- 1) The federal NPL sites were obtained for four states – California, Massachusetts, Michigan, and New Jersey—from the USEPA Superfund website at [map3.epa.gov/enviromapper/index.html](http://map3.epa.gov/enviromapper/index.html).
- 2) Research was conducted to determine if these states maintain lists of contaminated sites other than the federal Superfund sites. Other lists were obtained for the states of MA, MI, and NY.

The state of Massachusetts Department of Environmental Protection (DEP) maintains a list of Tier Classified Oil or Hazardous Material Sites. These sites are kept in a statewide database that contains the “approximate location of oil or hazardous material disposal sites that have been (1) reported and (2) Tier Classified under M.G.L. Chapter 21 E and Massachusetts Contingency Plans (MCP)” (MADEP, 2001). This database includes state-identified contaminated sites and leaking underground storage tanks. A total of

2,167 sites were identified from this list. This database is available at the MADEP website at [www.state.ma.us/mgis/c21e.htm](http://www.state.ma.us/mgis/c21e.htm).

The state of New York Department of Environmental Conservation (NYDEC) maintains a list of Inactive Hazardous Waste Sites. This list includes the federal Superfund sites as well as other contaminated sites. These sites are divided into six classes based on their threat to public health. Class 1, 2, and 3 sites were included in this assessment. Class 1 sites pose an “imminent danger to the environment or public health;” Class 2 sites pose a “significant threat to the public health or the environment;” and Class 3 sites are known to contain hazardous waste, though they are not considered to pose “significant threats to the environment or public health” (NYDEC, 2001). A total of 612 sites were identified from this list. This database is available at the NYDEC website at <http://www.nysgis.state.ny.us/gis3/data/nysdec.hazwaste.html>.

The state of Michigan Department of Natural Resources (DNR) maintains a list of contaminated sites identified as “Part 201” sites. This list includes the federal Superfund sites as well as other contaminated sites where there has been a “release of a hazardous substance, or the potential release of a discarded hazardous substance, in a quantity that is or may become injurious to the environment or to the public health, safety, or welfare” (MIDEQ, 2001). The Michigan DNR classifies each site using a Site Assessment Model to generate a numerical risk assessment score. A score of 40 or greater (out of a possible score of 48) indicates contamination of the highest rank (MIDNR, 2001). Sites with a score of 40 were used in this assessment. This process identified a total of 112 sites. The databases used to generate this list can be found at [www.midnr.com/spatialdatalibrary/sdl/Contamination\\_Site\\_Map\\_Layers\\_Final.htm](http://www.midnr.com/spatialdatalibrary/sdl/Contamination_Site_Map_Layers_Final.htm) and [www.deq.state.mi.us/erd1/sites/index.jsp](http://www.deq.state.mi.us/erd1/sites/index.jsp).

For the states of California and New Jersey, only the NPL sites were used. In California, 110 sites were identified and in New Jersey, 119 sites were identified. This data is available from the USEPA Superfund website at [map3.epa.gov/enviromapper/index.html](http://map3.epa.gov/enviromapper/index.html).

### **Research Methodology for Fifty-State Survey**

Presented here are the results of research on state policies governing the siting of new public schools (as opposed to private or charter schools or specialized schools for the blind or deaf). This research does not examine policies adopted by local governments or school districts unless those laws were codified in state statutes or regulations. Nor does this research examine rules on locating portable classrooms, renovating existing school buildings, or locating other facilities in relation to existing school buildings.

The bulk of the research for the fifty-state survey was conducted using Internet based resources during the winter of 2004-05. For each state, the web sites containing state laws and state agency regulations were searched using either the site’s search engine or by scrolling through laws and regulations relating to education, environment and public health. Next, the web sites of each state education, environmental and public health agency were searched, either using the site’s search engine or by scrolling through the

site. Finally, a LEXIS® search of each state’s laws and agency regulations (with the exception of California)<sup>2</sup> was undertaken, using both the search engine and the “Table of Contents” feature. Telephone interviews were also conducted with state environmental officials in California and New Jersey, the two states with the most developed policies regarding the siting of schools on or near sources of environmental pollution.

The policies obtained through the research were compiled into a Summary Document, where the policies were grouped into 7 subheadings, and a summary of each state’s policies for that particular category was produced. A separate subheading on the availability of forms used in the school siting process was also created. These eight (8) subheadings were developed after an initial review of the results of the research, and were further refined into broader (thus, less numerous) categories. The Summary Document contains a list of each state’s policies, including links to web sites where the actual policies and forms can be located. The Summary Document is posted on the Childproofing Our Communities’ web site, [www.childproofing.org](http://www.childproofing.org).

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<sup>2</sup> California’s school siting policies were readily available on the websites of the states’ education and toxic substance control agencies. Regulations promulgated to implement some of those policies go into details that go beyond the scope of this research and were not included in the Summary Document.

