

# THE LITTLE GREEN SCHOOLHOUSE



## THINKING BIG

ABOUT ECOLOGICAL SUSTAINABILITY,  
CHILDREN'S ENVIRONMENTAL HEALTH  
AND K-12 EDUCATION IN THE USA

The Green Schools Initiative  
[www.greenschools.net](http://www.greenschools.net)

# THE LITTLE GREEN SCHOOLHOUSE



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### ABOUT THE ORGANIZATION

The Green Schools Initiative is a mostly volunteer effort that aims to provide the tools to help make US schools healthier and more ecologically sustainable places.

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# EXECUTIVE SUMMARY

One in five people who live in this country—55 million children, teachers, administrators, nurses and janitors—spend their days in K–12 schools. Yet, our current school systems are threats to our children’s health, models of unsustainability, and significant contributors to society’s broader environmental and health problems.

Schools *can* provide a healthy environment for students and staff, while promoting ecological sustainability, by using alternatives to toxic chemicals, pursuing green building and maintenance practices, changing their resource consumption patterns, serving nutritious food, and teaching students to be stewards of their communities, the earth and its resources.

In this report we invite you to imagine this “green” reality. We have written it as an encouragement for all of us who interact with schools in our personal and professional lives. It aims to develop a positive vision of individual schools, districts, state wide educational efforts and a nation wide US school system that is healthy and sustainable.



*This report expresses a positive vision for healthy, sustainable schools*

## SPECIFICALLY, WE AIM TO:

- Provide a reality check, zeroing in on just how unhealthy and unsustainable our current educational institutions are.
- Present a basis for hope and optimism, drawn from the fabulous mosaic of possibility represented by the thousands of disparate efforts around the country geared toward creating green and healthy schools.
- Provide a blueprint for parents, educators, students, environmental and health advocates, school board members, and interested community members to collaborate on implementing this vision.



## BUILDING BLOCKS FOR THE LITTLE GREEN SCHOOLHOUSE

To help build the vision and organize the wonderful—yet often disconnected—efforts to create green and healthy schools, we present the metaphorical “Little Green Schoolhouse” as a framework (See Chart on p. 7).

The cornerstone or foundation of the building is the Precautionary Principle—the basis of decision-making. Flowing from this foundation, there are four pillars that we can use to transform our schools to healthy, sustainable, dynamic learning centers:

1. Strive for a toxics-free environment
2. Use resources sustainably
3. Create a green and healthy space
4. Teach, learn, engage!

### THE FOUNDATION: THE PRECAUTIONARY PRINCIPLE

- The Precautionary Principle promotes policies and decision-making based on the concept of “an ounce of prevention is worth a pound of cure.”
- Rather than waiting for crises to occur, a proactive approach to addressing the issues of children’s environmental health and the ecological impacts of schools can be based on the Precautionary Principle. Such an approach would:
  - Take anticipatory action to prevent harm;
  - Place the burden of proof on the proponent of a potentially harmful activity;
  - Examine a full range of alternatives;
  - Provide relevant communities with the right to know about potential harm; and
  - Consider all the reasonably foreseeable costs of an activity.
- A growing number of cities, including San Francisco, have adopted the Precautionary Principle as guidance for a range of decisions to promote environmental health and safety, to reduce costs, and to promote sustainability in government practices, including switching to non-toxic cleaners and environmentally sound purchasing.
- The Los Angeles Unified School District adopted the Precautionary Principle as the foundation for its decision to provide the safest, least toxic approach to pest problems after children exposed to chemical herbicides suffered serious asthma attacks.



## PILLAR 1

### STRIVE TO BE TOXICS FREE

- Children are one of our most vulnerable populations when exposed to toxic chemicals. Yet they are regularly exposed at school through the application of pesticides and powerful cleaning agents, poor building design and maintenance, lead paint contamination, and poor ventilation.
- One-half of our nation's 115,000 schools have problems linked to indoor air quality. This can result in "sick building syndrome," increased absenteeism, and overall negative impacts on a child's ability to develop and learn.
- Of the 48 pesticides most commonly used in schools, the U.S. Environmental Protection Agency classifies 22 as possible or probable carcinogens.
- Many schools—especially in poor districts—are sited on or near toxic waste dumps, environmentally hazardous facilities, and other sources of pollution. In many places school districts have no environmental guidelines for school siting.
- There are a growing number of efforts on the local, state and national levels to address this range of issues and to make our schools healthier places to attend and work in. Several organizations have succeeded in winning new funds and implementing new policies that, for instance, require schools to use "green" cleaning products, or adopt Integrated Pest Management guidelines.



## PILLAR 2

### USE RESOURCES SUSTAINABLY

- Schools spend a lot of money to heat and light buildings and to purchase supplies. They can improve children's health, protect the environment and strengthen their financial situation by implementing alternative energy, construction and procurement policies.
- Schools' energy use makes them significant contributors to air pollution, global warming, and U.S. dependence on foreign oil. Our K–12 schools' electricity consumption alone is equivalent to 42 days of U.S. imports of Saudi Arabian oil.
- Taxpayers spend \$6 billion a year on energy for schools but could reduce that amount by \$1.5 billion through energy efficiency measures alone.
- Many schools could become independent power producers by investing in clean renewable technologies such as solar and wind.
- A growing number of districts are following "Healthy, High Performance School Guidelines" when building or renovating. These criteria recommend environmentally sound building materials, and the efficient use of energy and water. Benefits include a healthier learning and working environment for children and teachers, higher test scores, improved attendance, reduced operating costs, and reduced environmental impacts.
- Schools are far behind many other sectors of society in recycling. Waste from schools—primarily food and paper—represents about 4 percent of the municipal waste stream. Many schools do not recycle and fewer still purchase recycled or "green" products.
- For each ton of non-recycled office paper that a school district replaces with 30 percent post-consumer content, it uses 2,400 pounds less wood (about 7 trees), thereby helping save critical forest ecosystems.
- As more schools purchase clean energy and recycled supplies, they can build demand, making these "green" products more economically competitive.



## PILLAR 3

### CREATE A GREEN AND HEALTHY SPACE

- There is an alarming increase in diet-related disease among school-age children, connected, at least in part, to the quality of meals eaten at school.
- The overwhelming majority of schools allow soft drinks and junk food to be sold on campus. The health costs of allowing junk food, fast food, and soda vending machines at school far outweigh any financial benefits these commercial entities provide.
- Many districts and state governments have moved, or are moving, to ban junk food, fast food and soda from public schools.
- Schools can produce healthy lunches in collaboration with local or regional small farmers via farm-to-school programs, which are expanding across the country. These programs also allow children to learn about nutrition and food systems.
- Thousands of school garden and green schoolyard programs are thriving across the country. Teachers successfully teach to math, science and social studies standards, while inculcating nutrition and environmental stewardship concepts in these gardens.



## PILLAR 4

### TEACH, LEARN, ENGAGE!

- Environmental education should be a central element in any child's education, helping children to understand and appreciate the natural world around them and to foster critical thinking and environmental stewardship.
- Overall, almost two-thirds of all elementary and secondary teachers include environment in their curriculum. Yet the subject often remains isolated, with neither state nor federal government agencies putting sufficient resources into environmental education or teacher training.
- There is a tremendous opportunity—a grand teachable moment—for children to learn about ecological sustainability, environmental health, nutrition, personal responsibility, and leadership through their hands-on participation in making their own schools healthier, more efficient, sustainable, and pleasant centers for learning.
- Schools can implement hands-on, place-based curricula that will teach children how to audit, evaluate, and change their own school environments for the better.

## RECOMMENDATIONS

- This report provides a series of policy recommendations and actions for students, parents, teachers, school administrators, and school board members, as well as for local, state and federal government officials.
- The report illustrates successful examples and points to key organizations that provide detailed recommendations and specific avenues for action at all levels.
- The report calls for stakeholders to organize to convince local school boards to pass Healthy and Sustainable Schools Resolutions. Such resolutions can identify a series of specific goals and objectives for school districts to pursue through the implementation of a concrete action plan. (see p.38)
- Overall, this vision of building green and healthy schools, while teaching engaged children rooted in their communities, may be a far cry from today's reality. But we should not view it as impossible, and we should not let such reality get in the way of making a better world. Rather, building "The Little Green Schoolhouse" is a challenge to be met.



LEARNING ECOSYSTEM

PHYSICAL ECOSYSTEM

COMMUNITY/  
GLOBAL ECOSYSTEM

# THE LITTLE GREEN SCHOOLHOUSE



## THE FOUR PILLARS

### ONE

STRIVE TO BE TOXICS FREE

Children's environmental health

No Pesticides, lead, mold

Green building and cleaning materials

Avoid siting on toxic land

### TWO

USE RESOURCES SUSTAINABLY

Energy efficiency and alternatives

Green building design

Environmentally sound school supplies

Reduce, Reuse, Recycle

### THREE

CREATE A GREEN, HEALTHY SPACE

Green schoolyards and gardens

Rethink school lunch

No junk food, fast-food, or soda

Farm-to-School; organic produce

### FOUR

TEACH, LEARN, ENGAGE

Environmental education

Hands on, place-based, learning

Involve children in greening their schools

## THE PRECAUTIONARY PRINCIPLE

"Better Safe than Sorry"

A foundation for decision making

TAKE ANTICIPATORY ACTION • ASSESS ALTERNATIVES  
EXERCISE DEMOCRACY • CHOOSE THE SAFEST SOLUTION



# INTRODUCTION

## THE ECOLOGY OF SCHOOLS

One in five Americans—55 million people—spend their days in K–12 schools. Besides the students, they are teachers, administrators, nurses, janitors, and parent volunteers. This report—a product of a one year intensive focus on a plethora of issues involving schools, environment and health—is written as an encouragement for all of us who interact with schools in our personal and professional lives. It is not intended as a definitive statement on the questions involved. Rather, it aims to develop a vision of what our individual schools, districts, state and nation wide educational efforts could look like if we truly aimed to build healthy, ecologically sustainable institutions and communities.

At several points in this report you will be asked to imagine such a “green” alternative for a variety of contexts. This exercise is intended to give us all a chance to think outside of the box, to gain a sense of the possible and therefore the opportunity to actually move outside of that box as well. We will begin this exercise now.

Sit back, close your eyes and imagine for a moment a truly healthy and sustainable school or school district. Imagine if all our schools were to strive to be toxics-free—making choices about chemical use that employ a precautionary approach aimed to prevent harm to children’s health. Imagine if US schools were geared to minimize their impacts on the local and global environment; imagine schools that generate their own energy, conserve water, are built with ecologically sound materials, reduce their overall resource consumption, reuse as many resources as possible, recycle the rest, and beyond that, purchase recycled paper, along with classroom and office supplies. Imagine schools that serve organic lunches produced by local farmers, and, in some cases by their own gardens. Imagine schools that engage the students in this transformation, using their healthy buildings, green school grounds and nutritious food as a grand teachable moment—a hands-on, place-based pedagogy that fosters an ecologically literate and engaged generation, and meets (now imagine this) new national and state environmental education standards.

Of course, you may be saying, this is not a very pragmatic vision—even if it were desirable, it is not really possible given the current political and financial reality of education in America (not to mention the laws of entropy,

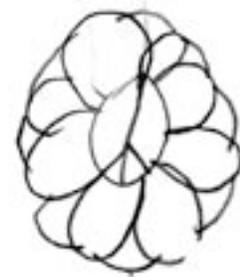
bureaucracy and, for that matter, gravity). And if you’re saying this, in some ways you are right. For a quick reality check reveals a somewhat horrendous picture of American schools. Politics of all stripes whirls around education. There’s barely enough money to pay enough teachers and keep our aging school buildings from falling apart to even begin to think about sustainability. Violence, drugs, overcrowding and unacceptable test scores top the long list of problems plaguing our schools. A stringent standards and test score-based approach to education is the austere cure proposed by the powers that be. And creeping privatization, along with hot button issues such as school vouchers lurk just around the corner. What’s more, you may ask, how can you even dream of green schools when our country’s overall priorities right now seem to be headed in the opposite, anti-environmental, direction?

In addition to asking you to imagine a new relationship between schools and environment, this report also provides a pragmatic reality check. Beyond the big picture problems mentioned above, in section after section this report finds that with precious few exceptions, our current school systems are threats to our children’s health, models of *unsustainability*, and significant contributors to society’s broader environmental and health problems.

The vast majority of US schools regularly expose students to pesticides and other hazardous chemicals. What’s more, according to the US Environmental Protection Agency “one-half of our nation’s 115,000 schools have problems linked to indoor air quality. Students, teachers and staff are at greater risk because of the hours spent in school facilities and because children are especially susceptible to pollutants.”<sup>1</sup> Our schools are inefficient energy hogs whose electricity consumption alone is equivalent to 42 days of US imports of Saudi Arabian oil. While some schools are moving toward greater energy efficiency, many are not. And very few are investing in—or have the necessary incentives to invest in—clean, renewable energy.

What’s more, while residential recycling programs, as well as recycling in private office settings, have become the norm in this country, many school districts, if not the majority, do not recycle paper and office supplies—let alone purchase recycled products. Many more





also contribute to the country's childhood obesity epidemic by serving unhealthy school lunches and increasingly allowing predatory fast food, soft drink and junk food companies to sell and advertise their products on school grounds in exchange for financial resources to support underfunded programs. Meanwhile, environmental education itself is severely underfunded, co-opted by polluting corporations and under attack by right-wing ideologues—contributing to an environmental “literacy gap” in our society.

Why is all of this so? There are, of course, many complex, often contradictory reasons. But one important challenge that we face in changing the situation is that the United States educational “system” is highly decentralized and fragmented. The federal government has a big say, but so do the education departments in each state, as do individual school districts. And of course, every principal wants to do what is best for his or her school. Even within each school, there is often a decentralized decision-making structure. For instance many school secretaries have total discretion as to what kind of paper to order, with budgetary considerations usually overriding all other concerns. So, how does one move the beast?

This has been a challenge for those environmental and children's health advocates who have focused on schools—and for those who have become involved in these issues from their experience inside a school system. Perhaps because of the highly decentralized nature of our educational institutions, efforts to promote green and healthy schools are generally quite isolated from one another. This is especially true within fields such as environmental education, but it is also the case in terms of the relationship, or often lack thereof, between the different fields addressing the pressing issues such as green buildings, green school yards and gardens, children's environmental health, environmental education and more. The absence of a greater coherence and vision among these constituencies weakens our ability to achieve more thoroughgoing change in our schools.

However, it is also extremely important to recognize all of the excellent work going on in these and other fields. Throughout this report you will find dozens of positive examples of organizations, school districts, educators, parents and others working for change and making some of it happen. These illustrations—

along with the policy recommendations suggested under the “Steps Forward” heading in each section, are all drawn from a broad and deep pool of initiatives. It is this panoply of positive work, however fragmented it may be, that provides not only hope, but also the bricks and mortar from which the broad thoroughgoing change that this paper advocates can be built.

Finally, this report attempts to create a framework for such broad change—one that can begin to help pull together the many disparate yet very much related efforts in a common vision of transforming our country's school systems. This vision contemplates green and healthy school systems as a metaphorical building. This edifice, described in the sections below, has a strong foundation of preventing harm (the Precautionary Principle). And it has four pillars supporting it—each of which is composed of a series of issues.



This school building exists within and as a central part of what we might call three ecosystems: First, is the school's own physical ecosystem—the interrelated and interactive physical and natural elements of the school that exist inside the school grounds. Second is the learning ecosystem—the intellectual and hands-on tactile environment in which kids are taught. And third, there is the larger community, local watersheds and airsheds, bioregions and concrete jungles, all connected to the global ecosystem—the actual multi-layered physical environment within which a school exists, and with which it interacts.

It is important to recognize that creating this metaphorical green school building—that achieving this vision—implies not only change within the institutions that are the federal and state education departments, school districts and the schools themselves. Rather it also requires change and transformation in broader society. For instance, the concept, promoted in this paper, of making all of our schools energy independent—producers of their own power—

*Most of our schools are models of unsustainability and threats to our children's health*

can never happen unless our government and our society at large recognize the magnitude of the threat that climate change poses, and begin to act boldly and decisively upon it. Once that moment arrives, schools are a logical and strategic place to begin implementing the necessary changes to combat global warming.

Just as importantly, change within schools can help catalyze change in the broader society. In other words, not only is it important to transform schools and make them healthier places for kids, teachers and staff to be, but schools can also lead by example, and through the potential of their collective action and purchasing power. It is a less than well recognized fact that schools, as major consumers of natural resources, commercial products and as users of land, have a significant influence on the environment around them.

To take but a small example: solar panels on a school's roof can teach not only students but the entire community about the value and viability of clean, renewable energy. And if entire districts or state education systems invested in solar, they could, as this report shows, help contribute to the transformation of the economies of scale in the energy industry. Similarly, the fledgling farm

to school movement discussed below can, as it grows, provide important markets for small farmers practicing more sustainable agriculture. Thus not only does this effort provide children with nutritious meals at school, but it also has the potential to help transform the country's agricultural landscape in a positive way.

It is our hope that this paper helps build on all the good work that has gone before it and that exists around it. It is our aim to move this work in the direction of greater collaboration and synergy between the people and organizations addressing different aspects of the schools and environment issue. We hope to do so by helping establish a common blueprint for, or at least a shared conceptualization of, sustainable and healthy schools that we can all work toward—a mutual context in which we can place our efforts. It is with this objective in mind, that you will find a Sample School Board Resolution at the end of this report. We begin then, with the foundation of the building.

Change within schools can catalyze societal change. As more school buildings go green, a stronger market for environmentally sound building materials emerges.

*Alder Creek Middle School, Truckee, California.*



# THE PRECAUTIONARY PRINCIPLE IS YOUR PAL

*“Precautionary is an action taken in advance to protect people and a principle is a rule. The Precautionary Principle protects everybody against danger or injury. It’s better to be safe than sorry!”*

—Alexandria Gracian, *Los Angeles, Age 12.*<sup>2</sup>

Robina Suwol is a mother of two in Los Angeles, California. Back in March 1998 as she was dropping her sons off at Sherman Oaks Elementary school, she saw a man in a white hazardous materials suit spraying weeds on the school grounds near where her children were passing. That night, her then six year old son Nicolas, who got a good whiff of the herbicide when he accidentally walked through the spray cloud, suffered a serious asthma attack.

Despite what she and other parents witnessed, there was no way that Suwol could absolutely prove that the chemical caused the asthma attack. “There was no medical confirmation, but in the absence of the science it was pretty clear,” she explained. “And I began to wonder: if there were a better, safer way, why weren’t we doing it?”<sup>3</sup>

Suwol’s experience echoes some serious issues when it comes to dealing with potential environmental health hazards in schools and beyond. These include the dilemmas such as how one defines which activities are safe, healthy and sustainable, and which aren’t. And who decides. If we think, or if scientific studies suggest, for instance, that using a certain chemical to clean the classroom, an herbicide to kill weeds on the school grounds, or a type of treated wood to build a play structure, might be hazardous, how do we prove it? What are the alternatives? Or, for that matter, how do we measure, prioritize and address a school or a district’s impact on the larger ecosystem? And what are we teaching our children through our actions, or our inaction? Who is responsible for all this—the principal? the teachers? the superintendent? the school board? the city? the broader community? And what role should parents, and for that matter, children play in making these decisions?

These kinds of questions of scientific veracity and public accountability are inevitably fraught with difficulty and laden with political overtones. What’s more, in these dilemmas, schools are not alone, but rather part of a much broader dynamic and debate.

For instance, the issue of demonstrating conclusive scientific proof around environmental health hazards poses a major paradox for a broad range of people—whether they be policy makers trying to forestall global warming, advocates working on behalf of children’s environmental health, or the victims of a particular hazard themselves. For there is often a lack of conclusive scientific “proof” about the harm a particular product or activity may cause, or even the mere existence of a certain phenomenon such as climate change. Yet, in many cases, obtaining this definitive evidence—the veritable smoking gun—may come well after the damage is done, if ever.

In the laboratory, to prove a hypothesis, the scientist must prove cause and effect, and must be able to replicate results. But in the real world, it is difficult to create the conditions to prove, beyond a scientific doubt, that, for instance, a certain chemical causes a certain ailment. “No proof of harm,” however, is not the same as “no harm.”

## LESSONS LEARNED FROM ACTING TOO LATE

Such a paradox is enshrined in our regulatory system, and embedded in our culture. When discussing, debating, or even legislating, we Americans will find that the burden of proof often falls on those raising concerns about the introduction or use of a certain product—whether it be an untested pesticide or a genetically engineered plant—rather than on those promoting or marketing the product. In other words, in many cases critics are compelled to *prove*, often beyond a scientific doubt, that a certain product or practice will have a harmful effect, rather than the manufacturer having to prove that it won’t. Historically, this mindset and framework has often resulted in a big mess and very expensive efforts to clean up the mess after-the-fact, rather than much more cost-effective initiatives to prevent the mess from happening in the first place.

This was the case for many decades with the role of chlorofluorocarbons (CFCs) in the destruction of the ozone layer. For example, DuPont, which was the top manufacturer of chlorofluorocarbons (CFCs) for most of the

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a green and  
healthy school*

20th century, denied the connection between CFCs and ozone destruction for 14 years after that connection was first discovered. Only after evidence was so overwhelming that dissent evaporated did DuPont finally announce its own decision to phase-out CFCs.<sup>4</sup>

In the case of leaded gasoline additive, too, the industry that made it fought tooth and nail against the phase-out despite evidence of childhood lead poisoning, denying that the additive was the cause.<sup>5</sup> The asbestos and tobacco industries both have a similar history of denying the connection between their products and cancer, challenging the lack of conclusive scientific evidence of cause and effect.<sup>6</sup> And as a former speech writer in the auto industry recalls the policy at General Motors: “If we were accused of contributing to air pollution, we would simply say nothing had been proved.”<sup>7</sup>

In the 1990s, the toy industry kept vinyl toys on the shelves saying there was no proof of connection between toys made of PVC plastic and harm to children’s health. But parents understood that there was a strong possibility of a problem and vigorously raised the issue. Since then, Europe and Japan have both instituted bans on the use of certain chemicals in toys for young children. And after much

public pressure, the companies agreed to phase out dangerous vinyl additives in the US, even though advocates could not name a single child who had been affected by the chemicals.<sup>8</sup>

This approach of avoiding harm even when there is no absolute scientific certainty is known as the Precautionary Principle. Nancy Myers and Carolyn Raffensperger explain:

Scientific uncertainty is a fact of life even in the most obvious environmental problems, such as the disappearance of species, and in the most potentially devastating trends, such as climate change. We seldom know for sure what will happen until it happens, and we seldom have all the answers about causes until well after the fact, if ever. Nevertheless, scientific knowledge, as incomplete as it may be, provides important clues to all of these conditions and what to do about them. When lives and the future of the planet are at stake, we must learn to act on these clues and prevent as much harm as possible, despite our imperfect knowledge and even ignorance. That is the essence of the Precautionary Principle.<sup>9</sup>

The Precautionary Principle, which can best be paraphrased by the medical proscription,

## SAN FRANCISCO’S 5 ESSENTIAL ELEMENTS OF THE PRECAUTIONARY PRINCIPLE

- 1. ANTICIPATORY ACTION:** There is a duty to take anticipatory action to prevent harm. Government, business, and community groups, as well as the general public, share this responsibility.
- 2. RIGHT TO KNOW:** The community has a right to know complete and accurate information on potential human health and environmental impacts associated with the selection of products, services, operations or plans. The burden to supply this information lies with the proponent, not with the general public.
- 3. ALTERNATIVES ASSESSMENT:** An obligation exists to examine a full range of alternatives and select the alternative with the least potential impact on human health and the environment, including the alternative of doing nothing.
- 4. FULL COST ACCOUNTING:** When evaluating potential alternatives, there is a duty to consider all the reasonably foreseeable costs, including raw materials, manufacturing, transportation, use, cleanup, eventual disposal, and health costs even if such costs are not reflected in the initial price. Short and long-term benefits and time thresholds should be considered when making decisions.
- 5. PARTICIPATORY DECISION PROCESS:** Decisions applying the Precautionary Principle must be transparent, participatory, and informed by the best available information.

“first do no harm,” or the colloquialism, “an ounce of prevention is worth a pound of cure,” is now being used in a broad and expanding number of venues. It is enshrined in several international environmental agreements; it is used as a policy tool by a growing number of government officials and corporate executives at the international, national and local levels; and it is a guidepost for more and more people in their day-to-day decision making.

## WHAT'S SCHOOL GOT TO DO WITH IT?

Schools should be no exception. When making choices involving children's (and staff's) environmental health, schools' resource use, and curricula, the Precautionary Principle can serve educators and parents well.

In early 1998 a group of scientists, philosophers, lawyers and environmentalists gathered at the Wingspread Conference Center in Wisconsin to discuss and define the Precautionary Principle. There they emphasized that “the key element of the principle is that it incites us to take anticipatory action in the absence of scientific certainty.” As their final declaration asserted:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

In this context the proponent of an activity, rather than the public, should bear the burden of proof.

The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.<sup>10</sup>

Since that time, the Precautionary Principle has gained momentum. For instance, while many international environmental agreements have made reference to it since the early 1990s, two negotiated in 2000, the Cartagena Protocol on Biosafety and the Stockholm convention on Persistent Organic Pollutants actually incorporated it as an enforceable measure. Various corporations have also adopted it as part of their environmental policy.<sup>11</sup>

Closer to home, San Francisco codified the Precautionary Principle as a city ordinance in 2003, declaring that “the delay between first knowledge of harm and appropriate action to deal with it can be measured in human lives cut short.” The city adopted the Precautionary Principle as “a guiding model for future legislation.”<sup>12</sup> As San Francisco's Department of the Environment explains, “Our precautionary approach asks whether a given product or practice is safe, whether it is really necessary, and whether products or practices with less environmental impact would perform just as well.”<sup>13</sup>

These developments, and the Precautionary Principle itself, are relevant for schools in a multiplicity of ways. For instance, the country is experiencing increased childhood asthma rates, a growing incidence of childhood cancer, and soaring rates of childhood learning disabilities. We have also experienced a veritable explosion in the proliferation of toxic chemicals introduced into the environment—with roughly one thousand new substances introduced (often without adequate testing and review) every year.<sup>14</sup> We know that children are much more vulnerable than adults to chemical exposure. Their small and still developing bodies take in more food, drink and air per pound of body weight, leading to the potential for greater accumulation of toxic substances. Their immature body systems are generally less able to handle toxins and are not as well suited to repair damage caused by them as fully developed adult bodies are.<sup>15</sup> Children, for example, absorb about 50% of the lead to which they are exposed, compared to 10–15% for adults.<sup>16</sup>



There is no conclusive scientific “proof” that the significant increase in a plethora of childhood diseases is directly attributable to any single chemical—let alone the complex mix of compounds which all of us confront on a daily basis. However, when it comes to

*LA Unified School District's precautionary approach avoids children's exposure to pesticides*

Community members invoked the Precautionary Principle to challenge the siting of a school next to two waste dumps in Gwinnett County Georgia.

chemical exposure, applying the Precautionary Principle in schools—the place where children spend most of their waking hours—is a rational response to attempt to prevent such disease. The Precautionary Principle in this context could mean removing some of the most hazardous chemicals from the school environment. For instance, a precautionary approach would avoid children’s exposure to pesticides and herbicides—which are regularly used to prevent or control insect, rodent and weed problems in schools—through the implementation of cost-effective alternatives.



Using the Precautionary Principle can lighten schools’ environmental impacts. Solar paneled skylights capture the sun’s energy at a San Francisco school.

This is precisely what Robina Suwol asked for and got when she helped convince the Los Angeles Unified School District, the second largest district in the nation, to adopt an Integrated Pest Management (IPM) policy in March 1999—one year to the day after her son was poisoned. Undeterred by the size of the district—a million students and 70,000 teachers in 800 schools—she was determined to fix a problem that not only affected her children, but kids from all over LA. Suwol joined a group of environmentalists, parents, doctors, principals, teachers, food services directors, school board members and others to form the California Safe School Coalition.

Working together, these groups convinced the LA school board to adopt the IPM policy. Rather than relying on pesticides and herbicides, as most school districts still do, LA’s IPM policy now demands that schools use the least toxic methods to prevent pests; chemicals are an option of last resort. “It isn’t perfect. And it’s a huge school district,” says coalition member Martha Arguello, of Physicians for Social Responsibility. “Yet it has managed to become a model for the nation.”<sup>17</sup>

Not only is LA’s approach the strongest in the US, it also broke ground by being the first school district to invoke the Precautionary Principle as a guiding framework for its action. The LAUSD’s policy reads in part:

The “Precautionary Principle” is the long-term objective of the District. The principle recognizes that: a) no pesticide product is free from risk or threat to human health, and b) industrial producers should be required to prove that their pesticide products demonstrate an absence of risks...rather than requiring that the government or the public prove that human health is being harmed....

In embracing the Precautionary Principle, the District will use only those pest management methods or products demonstrated to be the safest and lowest risk to children.<sup>18</sup>

The policy also stipulates that parents be notified prior to a pesticide application at any LA school. As a result, says Robina Suwol, “Every parent in the Los Angeles Unified School District has gained the right to know if their children are being exposed to pesticides.”

Even though it recognizes that “full implementation of the Precautionary Principle is not possible at this time and may not be for decades,” the LA school board took a pragmatic yet visionary step. It at once addressed an acute problem in the school district—childhood exposure to potentially hazardous chemicals—while also opening the door in LA and elsewhere for the Precautionary Principle to be applied more broadly in a school context.

For instance, inspired by the LA example, in 2004 the Georgia-based environmental justice organization Eco-Action worked with parents and community members in Gwinnett County to challenge the siting of a new school—

Sycamore Elementary—between a solid waste landfill (750 feet away) and a hazardous waste dump (2000 feet away). As part of their argument to the school board there, they invoked the Precautionary Principle—asserting that toxic air and groundwater pollution from the dumps could affect children’s health at the schools. “We teach our children to obey traffic signals,” says Yomi Noibi of Eco-Action, “As adults we should do the same. When you have a warning sign—a yellow signal—you yield and stop.”<sup>19</sup>

While the LAUSD’s and Eco-Action’s use of the Precautionary Principle are still somewhat isolated incidents in terms of schools, there are myriad opportunities to employ this important tool to help make our educational institutions healthier and more sustainable places.

The Precautionary Principle can serve to address or pre-empt the potential negative consequences of chemical use in schools, and to avoid or rectify poor choices of certain building materials, designs or siting decisions. But it can also do much more. If schools were to apply it broadly and positively, the Precautionary Principle could become the foundation of a more proactive, holistic effort to create sustainable and healthy schools.

Indeed, by adopting the Precautionary Principle—and applying it proactively—school leaders could not only combat unhealthy conditions and practices, but also could advance school “performance” in ways that were safe, ecologically sound and educationally productive. For instance, a precautionary approach to resource use would attempt to lighten a school’s, a district’s or an entire state’s impact on natural resources. In this respect it could focus on making schools’ consumption

of energy, paper, water and building materials more sustainable. Such an application of the Precautionary Principle could also leverage schools’, districts’ and entire state education systems’ purchasing power to play a leading role in shaping markets to help address local and global issues such as deforestation, air pollution and global warming.

We could also teach a precautionary approach to our students, through words, our schools’ actions, and through hands-on learning on the school grounds and in the community. As Tom Lent, Policy Coordinator for the national non-profit group, the Healthy Building Network, remarks, “Having a school model the behavior we need in the rest of the world provides a very powerful message at an important juncture in kids’ development of critical thinking.”<sup>20</sup>

In many respects the Precautionary Principle can serve as the cornerstone for building a green and healthy school. For it is not only a policy tool, but it is also a way of thinking—a culture—a way of doing things—a compass for decision making and a philosophical approach to be learned and taught.

By taking all of this on, by striving to build green schools based on the foundation of the Precautionary Principle, we can not only contribute to solving problems in the here and now, in our schools, in our communities and in the world. But by teaching our kids, through actions at our schools, to be good stewards of the Earth and actively engaged members of their communities—by teaching them to reflect on the relationship between society and nature and to respect the integrity of local, regional and global ecosystems—we can also help transform the basis and nature of decision making in the next generation.

*There are many opportunities to employ the Precautionary Principle in our educational institutions*

## **SPECIFIC STEPS FORWARD**

### **1. Parents, Students and School Staff Should:**

- Adopt the Precautionary Principle as a foundation for teaching and decision making regarding environmental and health issues within a school.
- Pressure school districts, along with local, state and federal governments to do the same.

### **2. School Districts, State Education Departments, Local, State and Federal Governments Should:**

- Follow the lead of Los Angeles, San Francisco and others to adopt the Precautionary Principle as a policy framework for addressing environmental and children’s health issues in educational settings (see sample School Board Resolution on p. 38).

# FOUR PILLARS FOR HEALTHY, SUSTAINABLE SCHOOLS

*A school should be a thought–built good–time place for happy children—with some light overhead, the school building should regard the children as a garden in the sun.*  
—Frank Lloyd Wright

If we were to attempt to envision what the elements of a green and healthy schools system would be, it might help to actually think of it as a building (a living, green building of course, that has used all the most sustainable construction materials and techniques, a Frank Lloyd Wright garden in the sun!).

The cornerstone or foundation of the building is the Precautionary Principle—the basis of decision–making. Grounded in this foundation let us examine four pillars that together could support the concept of a sustainable school.

These pillars are in a sense the proactive corollary or the logical extension of the Precautionary Principle—they flow naturally upward from the foundation. They represent four forward–thinking categories, which we can use as tools to envision transforming our schools. They are:

1. Strive for a toxics–free environment
2. Use resources sustainably
3. Create a green and healthy space
4. Teach, learn, engage!

Within each of these categories there are dozens of subjects that can be addressed (see Chart, p. 7). Of course, the pillars are an artificial construction, and there is much interconnection and overlap among the various subjects assigned to each. And while the idea of taking it all on at once may seem overwhelming at a glance, the good news is that within each category that a pillar represents, there are literally thousands of fabulous ongoing efforts being carried out by teachers, parents, students, janitors, secretaries, principals, school districts, school boards, non–profit organizations and government officials. Each one alone is a wonderful example; together they make up a fabulous mosaic of possibility and synergy. The rest of this paper attempts to define the green school issues in each of these categories, while also capturing the essence of that mosaic.



## PILLAR 1

### STRIVE TO BE TOXICS FREE

*Many school facilities have been poorly maintained and thousands of our nation’s schools remain severely overcrowded. Schools are often sited next to industrial plants or on abandoned landfills... In a recent five–state survey, more than 1,100 public schools were built within a half–mile of a toxic waste site. Polluted indoor air, toxic chemical and pesticide use, growing molds, lead in paint and drinking water, and asbestos are also factors that impact the health of our nation’s students and school staff. These problems contribute to absenteeism, student medication use, learning difficulties, sick building syndrome, staff turnover, and greater liability for school districts.*

—The Coalition for Healthier Schools<sup>21</sup>

Much of the debate around issues and conditions in our schools focuses on drug use, violence, budget cuts and test scores. But in the past decade parents, activist groups, educators and government officials have all paid a growing amount of attention to environmental health issues. And rightly so. Environmental health problems plague many of the nation’s 115,000 schools.

Once again, given the number of factors involved, it is difficult to make any absolute correlation. However, many childhood diseases are on the rise. For instance, asthma afflicts nearly 5 million children in the US, and is the primary cause of school absenteeism. Cancer is the number one disease–related cause of death in children, and the rates of many types of childhood cancer have risen. Childhood learning disabilities have also significantly increased nation wide. Many scientists believe that a great number of these diseases and learning problems can be related to children’s exposure to environmental health hazards in the womb and in their environment—including school.<sup>22</sup>



## POISONED PUPILS

As we've discussed, it is a somewhat stunning fact that schools across the country routinely expose children to pesticides. For instance, in the late 1990s, Connecticut schools reported 87% of 77 school districts surveyed sprayed pesticides indoors, where they could linger on desks, toys and other surfaces for up to two weeks. In Washington 88% of 33 school districts surveyed use one or more pesticides that can cause cancer, or damage the nervous system, hormone system or reproductive system. In California 93% of 46 school districts surveyed use pesticides; with the vast majority using one or more of 27 hazardous pesticides that can cause cancer, affect the reproductive system, mimic the hormone system or act as a nerve toxin.<sup>23</sup> Of the 48 pesticides most commonly used in schools, 22 are classified by the US EPA as possible or probable carcinogens.<sup>24</sup>

The problem extends well beyond pesticides. The placement of a new school, or the location of new economic activity near an existing school can expose children and staff to significant environmental hazards. This is the case for instance, in places like East Liverpool Ohio, where a hazardous waste incinerator was located adjacent to an elementary school; or in Watsonville, California, where many schools are located next to agricultural fields and are exposed to pesticide drift. The exposure of school communities to such toxic hazards often involves questions of environmental justice, as the districts in which these hazards are located are frequently poor communities, and/or communities of color.<sup>25</sup>

Citing fifteen case studies from eleven states, a report by the Virginia-based Center for Health, Environment and Justice (CHEJ), asserts that new schools are routinely built on contaminated land, or near an industrial, commercial or municipal site that releases toxic chemicals into the air and community on a daily basis.

Astoundingly, no guidelines are in place to direct school districts where to locate new schools. Parents and communities across the US are shocked to find construction crews descending on abandoned landfills, brownfields, or next to heavily polluting industries to build schools. 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 for environmental assessment; all at great risk to children. The poor and communities of color where children already suffer disproportionately from asthma, lead poisoning, and developmental disabilities, lose out most frequently.<sup>26</sup>

Poor indoor air quality is yet another issue. Many schools are plagued with mold. Others pack students into portable and permanent classrooms that off-gas volatile or semi-volatile organic compounds. Others have such poor ventilation that children suffer. Symptoms identified include upper respiratory infections, irritated eyes, nose and throat, nausea, dizziness, headaches and fatigue, or sleepiness. Collectively these have been dubbed "sick building syndrome." The American Lung Association found that American children miss more than ten million school days a year because of asthma exacerbated by poor indoor air quality. Schools serving poor communities, and often communities of color suffer disproportionately from poor indoor air quality.<sup>27</sup>

The presence of lead contamination also continues as a major problem in schools. For instance, thirty-two percent of all public elementary schools surveyed by the EPA in California had both lead-based paint and some deterioration of paint. Eighty-nine percent of all California schools studied had detectable levels of lead in soils, with 7 percent of the schools showing lead levels in soil at or exceeding the EPA hazard standard. Approximately 15 percent of schools had lead levels in drinking water that exceeded the EPA's drinking water standard.<sup>28</sup>

*Asthma, exacerbated by polluted indoor air, causes US kids to miss more than 10 million school days a year*



Lead in soil, paint and drinking water continues to be a significant problem in many schools across the country



## DE-TOXIFYING OUR SCHOOLS

“The basic challenge,” says Forrest Gee, president of the school board in Emeryville, California, is “how to minimize a school’s impact on youth health.”<sup>29</sup> In this regard, it is valuable to step back for a moment and envision what should be. So, imagine for a moment a toxics-free school. It shouldn’t be that hard—in fact it should be a fundamental point of departure for any school to ensure the children and staff both a safe and healthy environment, free not only of physical violence, but also free of pesticides, lead, asbestos and other hazardous materials. Imagine a school that uses alternatives to pesticides and herbicides, one that purchases green cleaning products, one that is built with environmentally sound materials, that has eliminated mold and other indoor air quality problems, that serves sustainably grown, organic, pesticide-free food, and that by doing so, sends a clear message to the children and the community.

There are, in fact, a growing number of efforts to move us in this direction—to address these issues and to make our schools healthier places. For instance, the American Public Health Association recently declared that “every child and school employee should have a right to an environmentally safe and healthy school that is clean and in good repair.” For this to happen says APHA, “federal, state, and local entities must work together to use resources effectively and efficiently to address school siting, construction, maintenance, and other practices to ensure the provision of an environmentally safe and healthy school.”<sup>30</sup>

There are two nation-wide initiatives working to these ends—the New York-based Healthy Schools Network and the Center for Health Environment and Justice’s Childproofing Our Communities Campaign.<sup>31</sup>

Both these efforts work in coalition with various organizations from around the country to address everything from classroom air quality (especially toxic conditions in portable classrooms), to lead paint in older classrooms, to toxic chemicals at schools, to promoting green cleaning methods, to addressing mold, waste management and recycling.

The Childproofing Our Communities Campaign works primarily at the grassroots level with community-based organizations and networks. The Healthy Schools Network has developed a host of specific policy recommendations and guidance documents for national, state and school-specific decision-makers.<sup>32</sup> And according to the Network’s coordinator Claire Barnett “the coalition participants have shaped and won new federal funds and policies for schools, and launched state-based coalitions in half a dozen states that are securing new state policies, regulations and funding streams.”<sup>33</sup> For instance, in 2005 the Network, together with various allies won a commitment from the Governor of New York to submit a bill to the state legislature “that will require all public and private schools to use greener cleaning products.”<sup>34</sup>

Other issue-specific organizations and coalitions such as the national group, Beyond Pesticides, and the statewide alliance, Californians for Pesticide Reform, have been instrumental in moving focused agendas forward. For instance, as a result of these coalitions’ organizing efforts, in recent years more and more states have adopted Integrated Pest Management guidelines for their schools. Today thirteen states require IPM, and four more recommend it.<sup>35</sup>

*Communities  
and networks  
are organizing  
to make schools  
healthier*

## PILLAR 1: SPECIFIC STEPS FORWARD

Overall, some key steps in applying a Precautionary Approach to help make our schools toxics free might be the following:<sup>36</sup>

### 1. PARENTS, STUDENTS AND SCHOOL STAFF SHOULD:

- Demand from school administrators and district personnel the right to know about environmental health issues such as pesticides, commercial cleaning products, lead, mold, indoor air quality (especially in portable classrooms), and industrial emissions at and around school.
- Advocate that schools use alternatives to pesticides, herbicides and toxic cleaning materials whenever possible.
- Conduct a school health survey to identify possible problems in your schools.
- Pressure school districts, along with local, state and federal governments, to do the following:

### 2. SCHOOL DISTRICTS AND LOCAL GOVERNMENTS SHOULD:

- Provide parents, students and school staff with the right to know (see above).
- Ensure that schools are not sited near or on environmental health hazards.
- Adopt Integrated Pest Management programs and other policies to minimize or eliminate the use of hazardous pesticides and herbicides.
- Adopt policies that mandate using the least toxic cleaning materials.
- Ensure that new schools are built or refurbished using the least toxic materials, and with designs that minimize mold and maximize good ventilation (see Pillar 2)
- Serve sustainably grown, organic, pesticide-free food (see Pillar 3)
- Act on early warnings: where parents or staff have a credible fear about a particular issue, school districts and elected officials should take them seriously and attempt to address their concerns.
- Avoid the use of portable classrooms (which can off-gas formaldehyde) where possible, and ensure their ventilation when they are used.

### 3. STATE EDUCATION DEPARTMENTS AND GOVERNMENTS SHOULD:

- Adopt state-wide Integrated Pest Management legislation and policies such as the proposed California Assembly Bill AB 1006, which would eliminate the most highly toxic pesticides from schools.
- Adopt and fund standards that mandate the elimination of toxic cleaning and maintenance materials in state schools and/or the adoption of least-toxic alternatives.
- Adopt and fund standards that mandate new schools be built or refurbished using the least toxic materials as part of a set of healthy, high-performance schools standards.(pillar 2)
- Restrict the use of portable classrooms where possible.

### 4. THE FEDERAL GOVERNMENT:

- Congress should pass the School Environmental Protection Act (HR 121), which would require the implementation of Integrated Pest Management programs nation-wide.
- Congress should increase funding for EPA's Indoor Air Quality Tools for Schools program, which provides technical assistance to local efforts to address problems.
- The US Department of Education should submit to Congress the long overdue and required report on the impact of unhealthy school buildings on child health and learning (Section 5414 of the No Child Left Behind Act, 2001).





## PILLAR 2

### SUSTAINABLE RESOURCE USE

*“There is a huge school building program underway. All new schools... should be models for sustainable development: showing every child in the classroom and the playground how smart building and energy use can help tackle global warming.*

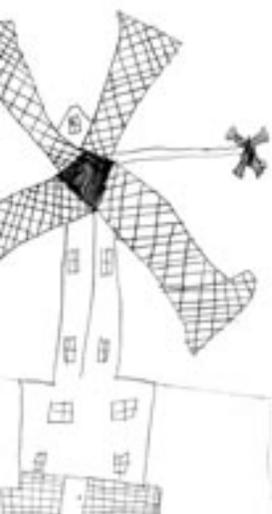
*The government is now developing a school specific method of environmental assessment that will apply to all new school buildings. Sustainable development will not just be a subject in the classroom: it will be in its bricks and mortar and the way the school uses and even generates its own power.”*

—Tony Blair, September 2004 <sup>37</sup>

The British Prime Minister made this announcement as part of a major policy address on climate change, which he called “a challenge so far-reaching in its impact and irreversible in its destructive power, that it alters radically human existence.” Schools were not the only topic Blair spoke of. Rather they were part of a list that included the role that big industrial energy users, housing developers, retailers, consumers and others must play to, in his words, take “timely action” to “avert disaster.” But importantly for our purposes, schools were one of the sectors at the center of the Prime Minister’s agenda, and rightly so.

After all, schools are, when taken collectively, major consumers of energy and therefore make a significant contribution to greenhouse gas emissions and global warming. They are public entities, subject to direct government influence. They also have the potential to become producers of their own power and, more generally, sustainable users of resources. This, together with their ability to teach communities of families, as well as the next generation, by example, makes schools strategic points of action for transforming the world’s energy and resource consumption from a destructive model toward more sustainable patterns of development.

Another key point Blair made in his speech was that “no one nation can resolve” the problem of climate change alone. Yet we here in the US carry a particularly heavy responsibility in this respect. The US is the world’s top consumer of fossil fuels. And with



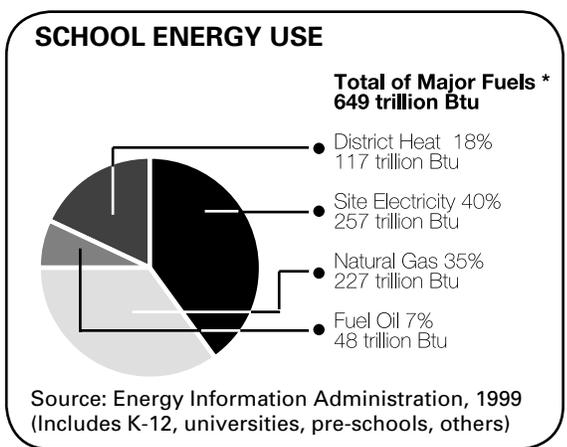
about four percent of the planet’s population, we are responsible for a whopping 25 percent of its global warming gasses. Unfortunately, despite the mounting scientific evidence, and despite the urging of many of our closest allies, the US government has done precious little in the last four years to address the most momentous human-made environmental problem in history.<sup>38</sup>

If the US is ever to get serious about addressing climate change, we must act on many fronts, including in our schools. So, imagine for a moment what it would mean if every school, school district and education department in the US became sustainable resource users. Imagine if all our schools produced their own power — if they were lit up, heated and cooled by wind and solar energy. Imagine if our schools were built with sustainable materials and designed to be ultra resource efficient—conserving energy and water—providing healthy spaces for children to learn and teachers to teach. Imagine all the photocopiers, printers and classroom projects using recycled paper and toner. And imagine all our school buses running on biodiesel or non-polluting hydrogen fuel.

### INSTITUTIONAL ENERGY HOGS

While achievable over time, this fantastic vision is a far cry from today’s reality. As mentioned in the introduction, the unfortunate truth is that most US school systems today are models of *unsustainable* development and resource use. This means schools are not only taking a negative toll on the local and global environment, but also that they’re often spending an inordinate amount of money on resources like energy—funds that could be used to pay teachers and buy books.

Nationally, K–12 schools use 425 trillion BTU of energy every year, or 7 percent of all



energy used by commercial buildings—the category in which the US Department of Energy places them.<sup>39</sup> According to the DOE:

Our nation's K–12 schools are challenged to serve growing student populations and rising community expectations with aging buildings, constrained operating budgets, and ever-increasing energy bills. Each year, taxpayers spend \$6 billion on energy for these schools—about 25 percent more than necessary. That \$1.5 billion could be redirected to hire 30,000 new teachers or purchase 40 million new textbooks annually.<sup>40</sup>

With these daunting numbers comes a tremendous opportunity to green our schools.

The Federal, state and local governments are spending about \$20 billion a year to build new schools and renovate old ones. And it is estimated that over time, close to \$300 billion are necessary for major rehabilitation and new construction.<sup>41</sup> The California Department of Education projects that state alone will need more than 35,000 new classrooms to accommodate new students between 2003 and 2008. More than 41,000 more classrooms will need to be modernized during the same period. Total cost: \$32.5 billion.<sup>42</sup> The Los Angeles School district alone is on track to build 150 new schools by 2010.<sup>43</sup> If these resources are dedicated to green building programs the opportunity could be met.

## HEALTHY, HIGH PERFORMANCE SCHOOLS

Various organizations are moving to promote greater energy efficiency in schools across the country. For instance, mirroring the Department of Energy's assertion that one-quarter of school energy expenditures are unnecessary, the Collaborative for High Performance Schools (CHPS), a quasi-governmental organization in California, asserts that school districts in the state can save 20–30 percent on annual utility costs when applying “high performance design concepts” to schools undergoing renovation. According to CHPS, districts can save even more when building new schools—in the range of 20–40 percent.<sup>44</sup> These figures are based on using conventional energy technology—in other words, they don't take into account the

possibility of schools using solar panels or wind turbines to generate their own energy.

With such greater energy efficiency in mind, CHPS, other organizations in various states, from New Jersey, to Illinois, to Oregon, and the Energy Smart Schools program, run by DOE have all developed design methodologies and guidelines for building and renovating what are now being called “High Performance Schools.”<sup>45</sup> CHPS defines high performance schools simply as “learning environments that are energy efficient, healthy, comfortable, well lit, and contain the amenities needed for a quality education.”

The benefits, according to those involved, include higher test scores stemming from better lighting and air quality; increased average daily attendance as a result of the reduction or elimination of health problems related to “sick building syndrome;” reduced operating costs especially for energy; increased teacher satisfaction and retention; reduced liability exposure; and reduced environmental impacts. Again, CHPS:

High performance school buildings are consciously designed to have low environmental impact. They are energy and water efficient. They use durable, non-toxic materials that are high in recycled content, and the buildings themselves can be recycled. They preserve pristine natural areas on their sites and restore damaged ones. And they use non-polluting renewable energy to the greatest extent possible. As a consequence, high performance school buildings are good environmental citizens [sic], and they are designed to stay that way for the entire life of the building.<sup>46</sup>

This is not just a theory, but it's something being put into practice (if on a relatively small scale). For instance more than eleven schools that adhere to the CHPS guidelines have been built, or are in the process of completion in California. Similar projects are underway across the country. A good example of a high performance school is the brand new Clearview Elementary School in Hanover, Pennsylvania. Built to replace an old school on the same site, Clearview cost \$6.35 million—just \$150,000 more than the average cost for elementary schools in the state. But its projected energy savings of 40 percent will make up the

*Our schools are big energy users and contributors to global warming*



*Imagine if  
all our schools  
became  
sustainable  
resource users*

difference in less than a decade. It also is projected to reduce water use by 30 percent. Designers and builders made sure the building had superior indoor air quality, and was built with environmentally sound materials. The school district is incorporating the lessons that the building teaches into its curriculum.<sup>47</sup>

Some of the elements of a high performance school are as simple as making sure that the design allows for enough daylight to enter the classroom. As Tom Lent of the Healthy Building Network explains, the benefits are multiple:

Daylighting in conjunction with smart lighting control reduces lighting electricity needs, cutting operating costs while eliminating pollution from the electricity that would have been used. This in turn eliminates the waste heat from lights (even efficient fluorescent lights), reducing electricity needs for air conditioning leading to a further round of operating cost cuts and pollution reduction. Done well, it can sometimes even reduce air conditioning capacity needs sufficiently to allow downsizing the air conditioning system leading to lower capital costs. Finally, there is solid scientific evidence that windows and daylighting in classrooms promote better learning and increase test scores.<sup>48</sup>

The high performance schools “movement,” is an incipient one. But it is gaining momentum. The No Child Left Behind legislation has provisions for Healthy High Performance Schools. There is another bill in Congress that would promote more of the same.<sup>49</sup> And in late 2004, the Governor of California mandated that all new state buildings follow green guidelines.<sup>50</sup> Yet this movement is still miles away from having a serious impact on the majority of schools in the country, let alone aspiring to the vision of building schools that, for instance, produce all of their own power.

Indeed, none of the CHPS schools are utilizing solar or wind power—and while there are dozens of governmental and non-governmental organizations dedicated to promoting solar schools—the day that most of our schools are energy independent is still far from reality.<sup>51</sup> This may be primarily because solar economics have still not reached the point

where they are viable for individual schools and small districts. Without significant government subsidies—which implies a political will to finance the transition away from a fossil fuel-based energy model—and/or without a major improvement in solar economics, solar schools (at least in the US) will remain on the margins.

At the same time, there are signs of positive change. One important indicator comes from the realm of higher education. In 2003, after much pressure and lobbying from student activists, the environmental group Greenpeace and others, the University of California agreed to adopt a clean energy and green building policy. The policy mandates, among other things, that ten megawatts (equivalent to the power used by 5,000 homes) of clean, renewable energy will be installed across the ten UC campuses. Currently only 40 megawatts of solar energy are grid-connected in California and 52 megawatts total in the United States.

According to a Greenpeace study, the university’s solar commitment — along with the Los Angeles Community College District’s 2002 pledge to generate ten percent of its new buildings’ energy use with on-site renewables — can increase the total amount of grid-connected solar power in the U.S. by nearly 30 percent.<sup>52</sup> This in turn has the potential to help create economies of scale that could bring the price of solar down to a more competitive level. Greenpeace and other groups are now bringing this campaign to campuses across the country—helping generate the political will to generate renewable energy.

This step forward not only demonstrates that educational institutions such as Universities and K-12 schools can take the lead in implementing a precautionary approach to addressing serious environmental problems like global warming by reducing their share of greenhouse gas emissions. It also shows that through their resource use and procurement policies, they have the potential to create change more broadly by helping transform the economics of the energy industry.

The average K-12 school that goes 100 percent solar can reduce carbon dioxide emissions by nearly 140 metric tons a year—the equivalent of burning 325 barrels of oil, or nearly 16,000 gallons of gasoline.<sup>53</sup> So, once again, imagine for a moment: what if all US K-12 schools’ electricity were derived from clean,



renewable energy such as solar and wind? The answer is that the US would reduce its greenhouse gas output by more than 32 million metric tons every year—the equivalent of 42 days of US imports of Saudi Arabian oil.<sup>54</sup>

This pollution reduction of course, which would include the elimination of sulfur dioxide, nitrous oxide and other contaminants, would not only help mitigate global warming, it would also contribute to cleaner air and better health locally, along with greater energy independence and a strong jobs-based economy nationally.<sup>55</sup>

Other opportunities for reducing the greenhouse gasses and air pollution created by school systems abound. For instance, biodiesel—a fuel made from vegetable oil—is making significant strides as an alternative to petroleum diesel for buses. According to the US Department of Energy, biodiesel “is safe, biodegradable and reduces serious air pollutants such as soot particulates, carbon monoxide, hydrocarbons and air toxics.”<sup>56</sup> Biodiesel reduces net emissions of carbon dioxide, the main global warming gas, by 78 percent compared to petroleum diesel.<sup>57</sup>

Several school districts have adopted biodiesel for their bus fleets, including Medford Township in New Jersey, and Deer Valley Unified in Arizona.<sup>58</sup> Meanwhile, various cities are beginning to order hybrid-powered buses, as well as experimental hydrogen fuel cell buses for their fleets. If we invested the resources, our schools could follow suit. Indeed, the more quickly school districts can move away from petroleum diesel and toward alternative fuel-based transportation systems, the air children and communities breathe in and around school yards will be cleaner, and another source of global warming will be diminished.



Rot: Composting can reduce landfill use, nourish school gardens and teach many concepts

## THE FOUR R'S

Yet another area where many schools and districts can make a difference with respect to sustainable resource use is related to the consumption of office and school supplies. Here bringing the four ecological “R’s,” Reduce, Reuse, Recycle and Rot can help schools to teach reading, writing and arithmetic, and to function in a more environmentally sound fashion.

In other words, the more schools reduce the amount of office and school supplies they purchase, reuse as many materials as possible, and recycle the rest—the more sustainable they will become. And of course, the more they can engage children in this process, the more they can teach. What’s more, schools and school districts can take a further step by developing procurement policies that encourage or mandate the purchase of recycled products.

Similarly, the fourth “R,” rot, involves composting of organic waste such as lunch and yard scraps. Schools can strive to reduce organic waste, and then compost what remains. When done as part of a municipal program this can significantly reduce landfill use. For instance, San Francisco is the first major city to provide composting carts to schools for regular pick-up by the trash company. This, according to Tamar Hurwitz of San Francisco’s Environment Department, sets a precedent for what could ultimately become a national practice.<sup>59</sup> And when done locally in a single school context, it can provide a highly educational experience for children that can also help nourish the school gardens discussed in Pillar Three.

Of course, many schools can’t really afford the luxury of, for instance, reducing their paper consumption. Rather they’ve been forced by budget cuts to make those reductions anyway. Instead they wind up asking parents to buy and donate paper. Nevertheless, with the cost coming down and the availability of recycled office products going up, ample opportunity exists to implement a “Four R” strategy in most school settings.

Without solid national data, it is still clear that the current level of waste and pollution produced by schools today is significant. The top waste products coming from schools is paper which makes up nearly half of the school waste stream (see chart). According to the California Integrated Waste Management Board, which

*The 4 Rs:  
Reduce, Reuse,  
Recycle and Rot*

analyzes schools' waste on a district by district basis, Alameda County schools alone dispose of more than 11,700 tons of paper waste every year. San Diego runs through more than 24,000 tons, and Los Angeles schools go through a whopping 75,600 tons of paper annually.<sup>60</sup>

Once again, imagine for a moment. What if all the schools in the country were to use recycled, chlorine-free paper, which most currently do not? While there are no facts available for the amount of paper US schools consume, it is clear that simply shifting to recycled content could save a significant number of trees, while also reducing the related air and water pollution related to deforestation and paper production.

Switching to recycled paper makes a big difference for the environment. If all US schools would switch to recycled paper, they would save a lot of forests—including the critically endangered forests of the Southeast United States, where five million acres are

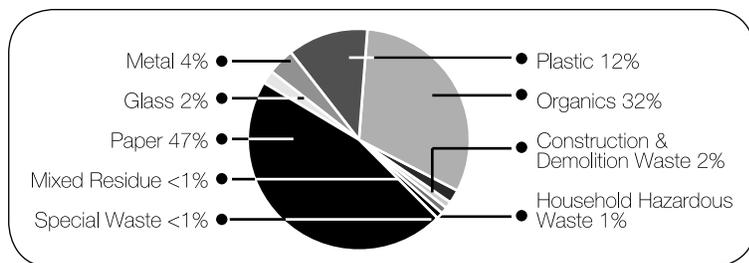
guidelines. Various cities also have mandatory initiatives.<sup>63</sup>

One exception is the organization Recycle Minnesota, which together with the state environment agency, runs a program dedicated to getting schools to teach and practice recycling while purchasing recycled products. According to this group, the recycled products schools could purchase include copy paper, envelopes, latex paint, paper towels, toilet paper, plastic waste bags, inkjet and laser toner cartridges, school lunch trays, cups, plates, and computers.<sup>64</sup>

In addition to schools' direct purchases, children spend hundreds of millions of dollars every year on school supplies, many of which are produced in environmentally unsound and socially unjust ways. For instance, "some brands of school notebooks and filler paper are being sourced directly from rainforests in Indonesia and other sensitive ecosystems," says Jim Ford, Research Director for the group Forest Ethics. "The companies making these products stand accused of gross human rights and other abuses." Their products can be found under various non-Mead brand names in WalMart, CVS, Staples and Office Max.<sup>65</sup> The organization Center for a New American Dream runs a back-to-school campaign that encourages children and families to buy responsibly.

When it comes to some cases, however, care must be taken to avoid merely participating in a company's marketing ploy. For instance, while many computer and printer companies have recycling programs for their toner cartridges, and many schools participate in these programs, one corporation, Epson, is promoting an environmentally destructive practice in the guise of recycling. In September 2004, Epson and the school fundraising organization Funding Factory announced a new program "that allows schools and non-profits nationwide to return ink cartridges for rewards that can boost fundraising efforts and help the environment...The cartridges will be converted to energy through an environmentally sound incineration process."<sup>66</sup> The problem is that incineration is not an environmentally sound practice, and is not recycling. Rather it is a widely discredited technology that produces airborne emissions and hazardous ash waste.<sup>67</sup> As Monica Wilson, of the Global Anti-Incinerator Alliance

#### SCHOOL WASTE STREAM



Source: CA Integrated Waste Management Board

logged every year to provide an astonishing 26 percent of the world's paper supply.<sup>61</sup>

For each ton of non-recycled office paper that a school district replaces with 35 percent post-consumer content (which is readily available from office supply chain stores), they consume 2,400 pounds less wood, thereby helping to preserve critical forest ecosystems, while keeping the following out of the air and water:

- 734 pounds of greenhouse gases.
- 1.5 pounds of nitrous oxides.
- 3,500 pounds of toxic effluents.<sup>62</sup>

Unfortunately, few school districts anywhere have procurement policies requiring or even encouraging the purchase of recycled products. Most don't even have recycling programs. At present, only seven states have mandatory recycling programs that apply to schools. Four more have voluntary

remarks: “Epson is misleading kids, teachers and schools by pretending that it is recycling ink cartridges. Many other companies refill ink cartridges or remanufacture them into new cartridges. Epson should do the right thing by truly recycling their cartridges.”<sup>68</sup>

Avoiding such situations, and truly promoting waste reduction and recycling in schools is a complex task. But it is not at all impossible. Building a strong recycling program and ethic requires work on many levels. At a district and school-wide level, it involves a serious look at budgetary, procurement, administrative and teaching practices. In the classroom it involves instilling and building a culture of sustainability and

participation. At home it means committing to buy environmentally sound school supplies.

At the same time that it is complicated, it is also quite simple if one’s approach is based on the formula of the basic “four R’s”: Reduce, Reuse, Recycle and Rot. In other words, before even thinking about recycling, first Reduce your consumption of resources. Then Reuse as many resources as you can. And finally, Recycle or compost (rot) those you can’t reuse.

*A strong recycling program requires work on many levels*

## **PILLAR 2: SPECIFIC STEPS FORWARD:**

In moving toward a proactive, precautionary approach to resource use, the following pragmatic steps would make an excellent start:<sup>69</sup>

### **1. PARENTS, STUDENTS AND SCHOOL STAFF SHOULD:**

- Organize to make sure each school develops and implements a sustainable resource use policy, including a recycling program, and a recycled products purchasing policy.
- Organize to make each school as energy efficient, and energy independent as possible.
- Demand a high performance learning environment for every child. Insist on ending the deficiencies and inequities in the conditions of public school buildings.
- Pressure school districts, along with local, state and federal governments, to do the following:

### **2. SCHOOL DISTRICTS AND LOCAL GOVERNMENTS SHOULD:**

- Mandate the creation of district-wide recycling programs, along with the procurement of recycled office and classroom supplies.
- Assure that new schools are built or refurbished following Healthy, High Performance school building criteria.
- Develop a district-wide plan to make schools more energy efficient and to transform schools into independent power producers by investing in clean renewable technologies such as solar and wind.

### **3. STATE EDUCATION DEPARTMENTS AND GOVERNMENTS SHOULD:**

- Mandate the creation of state-wide school recycling programs and curricula, along with the procurement of recycled office and classroom supplies.
- Require that all new school design, construction and renovation, undertaken with state funds, adhere to the highest High Performance School Building standards.
- Provide a regulatory climate and financial flexibility that foster high performance schools.
- Create a state-wide efficiency and renewable energy plan, that invests significant resources and provides subsidies to make schools energy independent.

### **4. THE FEDERAL GOVERNMENT SHOULD:**

- Congress should appropriate the money to fund the Healthy, High Performance School Act, which is part of No Child Left Behind.
- Set and enforce standards, provide technical assistance, and earmark funding to support the creation of healthy, high performance schools.
- Invest significant resources in making the US energy independent, and, as a component of this, support a nation-wide effort to make our schools energy independent.



## PILLAR 3

### GREEN AND HEALTHY SPACE

*Gardening, cooking, serving and eating, composting—these are truly basic things, but the lessons they could teach are drowned out by the clamor of the media and the insidious temptations of consumerism. Kids today are bombarded with a pop culture which teaches redemption through buying things. School gardens, on the other hand, turn pop culture upside-down. They teach redemption through a deep appreciation for the real, the authentic, and the lasting—for the things money can't buy—the very things that matter most of all if we are going to lead sane, healthy, and sustainable lives. Kids who learn environmental and nutritional lessons through school gardening—and school cooking and eating—learn how to lead ethical lives. —Alice Waters<sup>70</sup>*

Rochelle Davis is the director of the Healthy Schools Campaign, an organization that works in Illinois. When she started this dynamic group several years ago, she consulted with various parents, teachers and administrators across the state. As it turned out, their greatest environmental concerns revolved around school lunch. So Davis and her staff decided to launch a campaign to address the issue of pesticides used on fruits and vegetables served to children in the schools. “But we quickly found out” quips Davis, “that there weren’t enough fruits and vegetables in the school lunches to have pesticides on them.”<sup>71</sup>

As her organization reconsidered its approach, they began to focus on issues of basic nutrition, obesity, access to food, and fighting predatory marketing to children by soft drink corporations. Davis’ encounter with an inadequate and problem-ridden lunch program is a common theme throughout the country. As the Berkeley-based Center for EcoLiteracy’s Rethinking School Lunch program explains:

Of the 54 million children that attend public school in the United States, nearly half — 26 million — obtain breakfast, lunch and/or after school snacks though the National School Lunch Program. The alarming increase of diet related

disease among school age children is being connected, at least in part, to the quality of meals eaten at school.<sup>72</sup>

### EDUCATION IN A FAST FOOD NATION

Budgetary constraints frequently compel school districts and decision-makers (along with parents) to choose unhealthy, low-cost options for feeding children. Indeed, much of our country’s school lunch program consists of the unwanted surplus of industrial agriculture. Purchased by the US Department of Agriculture (USDA), and then turned over to schools, this surplus is often high in saturated fat and low in nutritional value. For instance, in 2002 USDA spent \$338 million on surplus cheese and beef for school meals, and only \$159 million on fruits and vegetables—most of which were canned, frozen, and often unappealing to children.<sup>73</sup>

On top of this, many schools have turned the cafeteria into a revenue stream at the expense of children’s health. As Gary Ruskin, of the organization Commercial Alert explains: “In thousands of schools across the country, corporations and school administrators have joined together to market high-calorie, caffeinated, high-sugar candy and soda pop, other junk food and fast food to impressionable children.”<sup>74</sup>

As a result, in most of the country, *The New York Times* reports that

A school lunch often looks like an exercise in fat loading, with a super-size soft drink from a vending machine, followed by a candy bar from another machine. The meal is more in keeping with one from a fast-food outlet than what the Department of Agriculture says is a nutritious meal.<sup>75</sup>

According to the Center for Disease Control figures, the overwhelming majority of K-12 schools (93.6%, 83.5% and 58.1% of high, middle and elementary schools) allow soft drinks and other high-added-sugar drinks to be sold in vending machines, cafeterias or other on-campus sites. Overall, from 1977 to 1996, soda consumption by 12-19 year olds increased by 75% for boys and 40% for girls. Chocolate candy sales are not that far behind. Meanwhile, more than 20 percent of public schools sell high-fat fast food such as Pizza Hut and McDonald’s.<sup>76</sup>

These companies have also harnessed



There is a clear correlation between the growth of junk and fast foods in schools and the wild increase in childhood obesity

the schools as an advertising vehicle to reach a prime target audience. Many schools allow the fast food and junk food corporations to place their ads on school grounds or even in the school buildings. Some of these companies also reach 12,000 schools and 8 million children via Channel One, an in-school marketing program that provides TV programming in exchange for running ads for Hostess Twinkies, Pepsi, Mountain Dew, M&M's and Snickers bars, among others to a captive audience of kids.<sup>77</sup>

The money schools receive from these vending and advertising concessions fund everything from books to music to sports programs. This, combined with severe funding shortages for education, makes fast and junk food deals particularly enticing for school districts, and particularly difficult to dislodge once they're in place.<sup>78</sup>

Once again, one cannot absolutely prove that the radical increase in junk food sales, advertising in schools and the growing prevalence of fast food in school lunches is a major cause of growing health problems in American children. However there is a clear correlation between the growth of junk and fast foods in schools and the wild increase in childhood obesity—a serious disease—over a similar time period. For instance, during roughly

the same time that soda and candy consumption radically escalated (1977–1996), the childhood obesity rate grew several-hundred-fold.<sup>79</sup>

## RETHINKING SCHOOL LUNCH

Addressing this epidemic by severely limiting children's exposure to soft drinks, junk food and fast food would be an important proactive, precautionary step toward solving the problem. In many places, this is already happening. People are organizing in various ways across the country to reverse the situation.

Commercial Alert, for instance, has set an education campaign goal "to rid the nation's schools of corporate marketers, junk food peddlers and market researchers, and to banish their influence upon textbooks and curricula as well." And while this may be quite ambitious, it has dared to imagine healthy, corporate-free schools. The organization also cites a series of victories, including various bans of soda, candy and junk food in California, Texas, Maine, Chicago and New York City among others.<sup>80</sup>

On a national level Senator Ted Kennedy has introduced the "Prevention of Childhood Obesity Act," which would require schools that receive federal funds to establish policies to "ban vending machines that sell foods of poor or minimal nutritional value," such as soda and candy. It would provide grants preferentially to schools that prohibit the advertising or marketing of junk food, that provide food options low in fat, calories and added sugars, such as fruits, vegetables and whole grains, or that encourage the consumption of water in school by maintaining a minimum number of water fountains.<sup>81</sup>

Meanwhile, a related, but entirely different kind of movement has sprung up across the country. Known as "Farm to School," these programs, according to the Los Angeles-based Center for Food and Justice, "connect schools with local farms with the objectives of serving healthy meals in school cafeterias, improving student nutrition, providing health and nutrition education opportunities that will last a lifetime, and supporting local small farmers." Overall as many as 400 school districts in 22 states are operating farm to school programs.<sup>82</sup> These initiatives not only promote children's health, but also support local, small-scale, sustainable, organic agriculture instead of the big agribusiness that dominates school lunch

*400 school districts in 22 states now operate farm to school programs*

programs, increasingly relies on the production of genetically modified crops, and walks hand in hand with the fast food industry.

Farm to School programs have proven that children will eat healthy, fresh and flavorful products if they are served in an appealing way, and reinforced through experiences in and out of the classroom that support healthy eating behavior. In 2004, advocacy efforts spearheaded by the Community Food Security Coalition led to the passage of the “National Farm to Cafeteria Legislation” which will create federal funding for schools wanting to initiate a farm to school program.<sup>83</sup>

In another, related development, in 2004 the Center for EcoLiteracy issued a guide for “Rethinking School Lunch.” This helpful roadmap offers suggestions and resources for schools and districts across the country on topics ranging from developing and implementing a food policy; to building a curriculum based on nutrition and local food systems; to discussions of professional development, procurement, waste management, and financial planning for implementing healthy school lunches.<sup>84</sup>

School gardens can help teach ecology, nutrition, science, math, art and social studies.



## GREENING THE SCHOOLYARD

One of the most creative ways to connect what children eat with teaching about health, nutrition and the environment, is to actually create a garden at school and grow food on site. This is a burgeoning movement across the country with literally thousands of gardens flourishing, as individual schools, districts and state education departments take it on. As green schoolyard expert Sharon Danks writes, “many schools around the world have planted edible gardens that they use to grow vegetables, fruits, herbs, and flowers. The students plant the gardens and then raise, harvest, and eat

the crops, improving their nutrition, their knowledge about plant growth, and their patience.”<sup>85</sup> Gardens that are integrated into school resource use planning, can compost food and yard waste, plowing it back into the soil. Teachers use the gardens to teach basic ecological principles hands-on, while teaching to standards on subjects such as science, math and social studies. They can also use the gardens for fostering art, music and much more.<sup>86</sup>

In many senses, the school gardens movement is a subset of a broader effort to promote ecological or green school yards. As Sharon Danks explains, “ecological schoolyards are outdoor learning environments that teach ecological principles through the design of the schoolyard landscape. They can substantially improve the appearance of school grounds while creating hands-on resources that allow teachers to lead exciting ‘fieldtrips’ without ever leaving school property.”<sup>87</sup> In a sense a counterpart to the efforts to build high-performance school buildings, those advocating for green school yards aim to transform a school’s outdoor environment, turning at least some of it from barren ground or blacktop to a living, healthy space that encourages creative play, environmental education and community participation. Danks and others have documented hundreds of inspiring efforts in the US and around the world where schools and communities have organized to turn the outdoor school landscape into a thriving, living zone. For instance, in San Francisco in 2004, voters approved a school bond that, in addition to other priorities, allocated \$2 million to create outdoor learning environments in 13 schools.<sup>88</sup>

Ultimately, to re-conceptualize our schools as green and healthy spaces, we need to strive to make them free of both violence and commercialism. We need to eliminate the multiplicity of health hazards our children face—whether they be toxins in the classroom, or junk food in the cafeteria. We need to create buildings and school yards that follow ecological principles, and provide the opportunity to teach about them. And we need to conceive of the space schools occupy as not ending at the playground fence, but rather extending to the broader sets of communities and ecosystems locally, nationally and even globally.



### **PILLAR 3: SPECIFIC STEPS FORWARD:**

#### **1. PARENTS, STUDENTS AND SCHOOL STAFF SHOULD:**

- Organize to ban soda, candy, junk food and fast food from school grounds.
- Create, or pressure your school district to create a healthy school lunch program, linked, if possible, to local or regional small-scale food producers.
- Organize school garden projects that engage children, teach about nutrition, and produce some food for their consumption. Promote the establishment of green schoolyards.
- Pressure school districts, along with local, state and federal governments to do the following:

#### **2. SCHOOL DISTRICTS AND LOCAL GOVERNMENTS SHOULD:**

- Follow and build upon the examples of New York City, Chicago, Nashville, San Francisco and others and ban soda, candy, junk food and fast food from all school grounds.
- Rethink the school lunch program and revamp it to prioritize nutrition, while, if possible, supporting local and regional small-scale food producers.
- Encourage the development of school gardens and green schoolyards.
- Adopt a wellness policy, based on the Childhood Obesity Prevention Agenda, which includes nutrition education and guidelines designed to promote student health and reduce childhood obesity.<sup>89</sup>

#### **5. STATE EDUCATION DEPARTMENTS AND GOVERNMENTS SHOULD:**

- Follow the examples of Texas, Maine, California and others by moving to ban soda, candy, junk food and fast food from all school grounds.
- Provide support for Farm to School initiatives that benefit small farmers, while providing fresh vegetables and healthy meals for children.
- Create mandatory statewide guidelines for healthy, nutritious lunches.
- Support school gardens and green school yard initiatives as a way to teach to educational standards.

#### **6. THE FEDERAL GOVERNMENT:**

- Congress should pass the “Prevention of Childhood Obesity Act” which would require schools that receive federal funds to ban junk food in vending machines, and would financially support schools that provide healthy lunches.
- Congress should pass the HeLP (Healthy Lifestyles and Prevention) America Act (SB 2558) which would require schools to formulate wellness policies, bring more fresh fruits and vegetables to schools, and restore the authority of the Secretary of Agriculture to regulate the sale of junk food in schools.<sup>90</sup>



## PILLAR 4

### TEACH, LEARN, ENGAGE

*Many of today's school-reform initiatives threaten to create "reform schools," those places where we used to send delinquent youth. These were basically lock-ups, offering education behind bars with an emphasis on strict discipline and rote memorization. Similarly, the cultural literacy and high-stakes standards movements threaten to lock the school doors and throw away the key...Instead, we need a school-reform model that focuses on the principle of sustainability—figuring out how to live within our means at both a local and global level. —David Sobel<sup>91</sup>*



More than two-thirds of all elementary and secondary teachers include environment in their curriculum. But the quality is uneven at best

Of the “four pillars” discussed in this paper, this last one is perhaps the most important—the bit that schools are supposed to be all about—pedagogy. What’s more, environmental education is perhaps the most well-grounded—the most established field of all those we review here.

It was more than thirty years ago that environmental education was widely introduced into our nation’s school systems. Consequently the United States has thousands of school

districts, as well as many wonderful organizations fostering a broad array of programs. Overall, almost two-thirds of all elementary and secondary teachers include environment in their curriculum.<sup>72</sup> And for instance, in the San Francisco Bay Area alone (admittedly a hot bed of environmentalism), there are more than 200 independent organizations providing environmental education programs to schools.<sup>93</sup>

### A FAILING GRADE

Yet the quality and coherence of what is taught and what is learned is uneven at best. The organizations providing environmental education programming often operate in a fragmented and piecemeal fashion. At the same time, they are extremely homogenous, failing to incorporate ethnic and racial diversity into their own ranks in an increasingly diverse society. Pedagogically speaking, environmental education is often quite isolated; rather than being integrated into curricula, environmental education is often seen as a supplement to it. Teachers are not trained or given support to do otherwise. Overall there is a lack of “pre-service” education in teacher training and credential programs. Environmental curricula do not generally “scope and sequence” or build strategically year by year from K through 12th grade. The big national environmental groups and foundations have not made any significant long-term investments in advocacy around this topic although some do have programs and produce curricula. Indeed, there is no national advocacy group that works on behalf of environmental education, although there are a handful of relatively weak professional associations, as well as state-based coalitions and alliances.<sup>94</sup>

Neither state nor federal government agencies have put near sufficient resources into environmental education over the years. The US EPA spends a paltry \$8 million on environmental education—the equivalent of 3 cents per citizen. Overall the Federal government spends an estimated \$160 million on environmental education (for all ages), while the 32 states that formally support environmental education efforts gave \$7.3 million to in-school programs in 1997. Overall, despite insufficient data, environmental education expert Jim Elder estimates that “total annual Environmental Literacy funding from federal, state, and private sources in this

country probably amounts to less than \$1 per person. Clearly, the first order of business in moving the field forward is to increase this figure by an order of magnitude.” Nor, in this era of focus on educational standards, have the states or federal government come up with any type of mandatory standard-based approach to environmental or ecological literacy in terms of national standards, state science standards, or teacher training standards.<sup>95</sup>

What’s more, environmental education is under siege from the right-wing and has been for more than a decade. Ideologues from think-tanks such as the Heritage Foundation, the Competitive Enterprise Institute and Hoover Institution, along with a gaggle of polluting corporations and politicians all attack the legitimacy of the concept of environmental education itself. Epitomized by the book *Facts, Not Fear: Teaching Children About the Environment*, this coalition challenges the scientific “proof” that many environmental problems exist, and advocates, among other things, multiple science-based perspectives on environmental topics.<sup>96</sup> This translates, for instance, into giving the perspective of the tiny minority of mostly industry-funded scientists an equal say on the issue of global warming. Interestingly, this anti-environmental education discourse is in many respects the antithesis of the approach advocated by the Precautionary Principle.

In parallel with this strong critique of environmental education, virtually the same group of foundations, corporations and institutions have developed a relatively sophisticated strategy to appropriate it. Especially gifted at this aspect are large

polluting corporations which have produced biased, self-serving curricula that they disseminate for free to under-funded schools.<sup>97</sup> But also of note is a relatively new organization, the Environmental Literacy Council which is funded by some of the same corporations and foundations that funded the publishers of *Facts Not Fear*: ELC’s funders include Georgia Pacific, International Paper, Lockheed Martin and Exxon Mobil, as well as conservative foundations such as Charles Koch, Sarah Scaife and others.<sup>98</sup>

Given all of the challenges the environmental education field faces, it is no wonder that despite its longevity, its efficacy seems to be diminishing. Exhibit A is a survey of more than 400,000 incoming freshmen at more than 700 colleges and universities nation-wide. The UCLA-based poll found that in the ten year period between 1993 and 2003, the percentage of students who saw cleaning up the environment as an important goal declined from close to 40 percent to just over 20 percent.<sup>99</sup> And while the figures are as much a reflection of the moment in which our entire country is living, this is certainly not the result K-12 environmental educators are looking for.

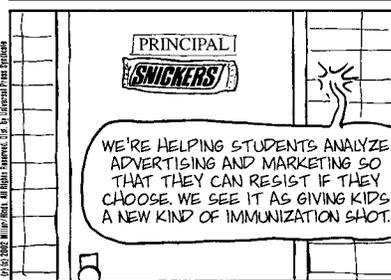
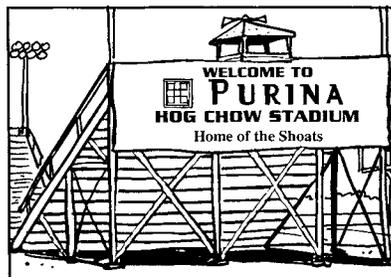
*Environmental education is underfunded and under seige*

## TEACHING GREEN

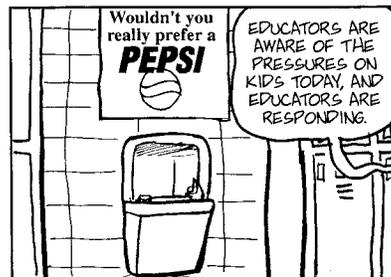
Much has been written and said about the environmental education field—the need for more funding, more coherence, and greater advocacy on its behalf. We’ll limit ourselves here to how environmental education can contribute to greening our school communities and vice versa.

A good place to start is to take a brief look at the theory and practice of what has come to

### TANK McNAMARA



### BY JEFF MILLAR & BILL HINDS



*Greening our schools can create a grand teachable moment*

be known as “place-based education.” Analyst Jack Chin defines it as follows:

Place-based education provides students with opportunities to connect with themselves, their community and their local environment through hands-on, real-world learning experiences. It is rooted in the integrated core curricular activities of science, social studies, communication arts and fine arts, and is expanded upon and applied by extending the classroom into the schoolyard and the neighborhood. This approach enables students to see that their learning is relevant to their world, to take pride in the place in which they live, to connect with the rest of the world in a natural way and to develop into concerned and contributing citizens.<sup>100</sup>

Chin and people like David Sobel, who works with COSEED, a network of place-based environmental educators in the Northeast, have documented dozens of examples of students increasing academic achievement through place-based education, while also learning about and contributing to improving the context in which they live and where their school sits.<sup>101</sup> Such an approach also has the added benefit of potentially increasing the long-term environmental and social justice commitment of the students involved. As Sobel argues, “Authentic environmental commitment emerges out of firsthand experiences with real places on a small, manageable scale [over time].”<sup>102</sup>

What better place to start than in the place known as school. Imagine a central element of national school reform being a curriculum designed to teach students about the resources their schools consume and involving them in making such consumption more sustainable. Imagine teaching them about toxics issues in and around a school and involving them in minimizing their use; about gardens and food systems, and involving them in growing their own food; and about the school’s place in the community, and for that matter the world, and involving them in helping make all three—school, community, planet—better places. Indeed, incorporating a strong, participatory curricular component to school-greening efforts is, in some respects, the ultimate place-based education.

Also imagine federal funding for such a place-based environmental education effort equaling the \$584 million currently allocated for school-based drug education programs. Depending on how you look at it, that’s triple the amount of all current federal funding for environmental education, less than what ten F-16 fighter jets cost the Department of Defense, or around two months’ worth of costs for the ongoing occupation of Iraq.<sup>103</sup>

Once again, place-based education focused on the school site is already happening, albeit without the funding and on a relatively small, fragmented scale. Various education departments in states as far ranging as Oregon, Wisconsin and Maryland have developed Green Schools programs that integrate addressing school-based environmental issues with involving students and teachers in the solution.<sup>104</sup> For instance, the

## 5 STEPS FOR EFFECTIVE ENVIRONMENTAL EDUCATION

- **Learner-Oriented** – Programs support the development of personal meaning through the learning process, with emphasis on age-appropriateness and ongoing (even life-long) learning
- **Promotes Wonder** – Programs incorporate inquiry and discovery-based approaches that build appreciation for the natural and built environment
- **In Context of Place/Community** – Programs place learning in the context of the local, relate directly to the learner’s life and culture, and encourage civic engagement
- **Action-Oriented** – Programs incorporate approaches that are hands-on, address real problems, and build confidence and hope
- **Focus on Relationships** – Programs forge connections across and outward from specific areas of study – integrate across issues such as water quality, energy production and economic development; cross disciplinary boundaries of academic subjects such as science and language arts; connect classroom and out-of-school learning; relate the local to the regional and global.

Source: Jack Chin, “Bay Area Environmental Education: How Do We Know We’re Making a Difference?” Draft Report, Blueprint Research and Design, April 30, 2004.

Wisconsin Green & Healthy Schools Program “encourages teachers, staff, students and parents to work together to use the school, its grounds, and the whole community as learning tools to help teach, promote, and apply healthy, safe and environmentally sound practices.”<sup>105</sup>

In fact, many school-greening initiatives are stronger with or even dependent upon student participation. This is particularly true for many of the efforts discussed in this report. For instance, the Los Angeles Unified School District’s Integrated Pest Management program relies on student participation in keeping schools pest-free and thereby avoiding pesticide use. The district has engaged in a major educational program to involve children in pest-control by encouraging them to clean up after they eat, not to leave old food in their lockers to remove paper clutter where pests can hide, to keep food and drinks in sealed containers, and to tell their teachers if they see pests.<sup>106</sup>

Similarly, an integral part of building high-performance schools is the ongoing teachable moment they create. Lessons on energy, for instance, can be particularly poignant when discussing solar panels on the roof and how they are lighting up the building. Or as British Prime Minister Tony Blair envisioned as he discussed energy-autonomous schools in his speech on climate change, “Our students won’t just be told about sustainable development, they will see and work within it: a living, learning, place in which to explore what a sustainable lifestyle means.”<sup>107</sup>

And central to a farm-to-school initiative designed to improve nutrition, is its educational aspect. As the Center for Food and Justice explains: “Connections with the local farms and agriculture help children better understand the cycle of food – how and who grows it, and how it impacts their bodies, health and the community. All these experiences complete the educational framework that motivates children towards healthier eating habits that will last a lifetime.”<sup>108</sup> And most obviously, the myriad green school yard and garden projects are all about teaching children strong ecological principles and connection with the earth via sustainable agriculture.

Various initiatives also encourage a grassroots approach to greening our school systems. These bottom-up, participatory efforts engage teachers, students, staff and administrators in jointly investigating the environmental conditions in and impacts of

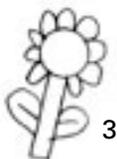
their schools. Once assessed, these student-led groups then come up with pragmatic action plans to address the problems. Schools that follow through on the process are awarded a green flag. Notable among these efforts are the fledgling Green Flag Schools program run by the Center for Health, Environment and Justice and the Oregon Green Schools Association in the US.<sup>109</sup> Internationally, the Eco-Schools International Network operates a similar, but much more highly evolved effort in more than 11,000 schools throughout the European Union, with fledgling programs in Eastern and Central Europe, South Africa, China, the Caribbean and South America.

These initiatives place a central focus on strong student participation in decision-making, as well as community involvement in addressing environmental issues in a school—thereby teaching advocacy and democratic participation.<sup>110</sup>

The fact that such place-based/school-based initiatives are happening all across the globe is a cause for optimism. We live in an increasingly globalized world, evermore connected with one another. Our communities run outward in concentric circles, from the local park to the global commons. Place-based education in this context presents us with the challenge and the opportunity to think and act both locally and globally simultaneously. We can begin to take this on by understanding that our schools do not exist in isolation of the communities in which they reside. Rather they are integral members of the larger society and the larger ecosystem. As such, whatever action one takes within a school is connected to the reality around it. If a school reduces its waste, the burden on the local landfill will also be reduced. If it generates its own power, local and global pollution will be reduced. If it buys its food from a local farmer, community and sustainability will be enhanced.

If we can invest the time and money to teach our children these lessons of precaution and sustainability, they can play an integral role in helping make our schools and communities more sustainable and healthy. Moreover, we will be training the next generation of leaders to think and act from both a precautionary and proactive approach, both locally and globally in relationship to the environment. If we are successful, the planet will be a healthier and more just place than it otherwise would be in the next generation.

*Every action we take in a school is connected to the communities and ecosystems it is a part of*





## PILLAR 4: SPECIFIC STEPS FORWARD<sup>111</sup>

### 1. PARENTS, STUDENTS AND SCHOOL STAFF SHOULD:

- Work to integrate student participation into efforts to make schools greener and healthier places, adapting established methodologies to do so.
- Develop or adapt hands-on, place-based approaches to environmental education.
- Work with and encourage environmental advocacy groups to work collaboratively to integrate place-based, environmental learning into the curriculum, highlighting the benefits for achieving academic standards as well as improving the environment.
- Pressure school districts, along with local, state and federal governments to do the following:

### 2. SCHOOL DISTRICTS AND LOCAL GOVERNMENTS SHOULD:

- Adapt frameworks that integrate environmental education and student participation into school greening initiatives.
- Promote partnerships with environmental education providers (nonprofit and public agencies) to help integrate environmental learning into the curriculum

### 3. STATE EDUCATION DEPARTMENTS AND GOVERNMENTS SHOULD:

- Adapt frameworks, like that of the Oregon Green Schools Association, that integrate environmental education and student participation into school greening initiatives.
- Significantly increase funding for environmental education using environmental fines or fees as a source for this funding.
- Make place-based environmental education central to the development of state-wide environmental education standards and curricula as part of the Leave No Child Behind mandate for science standards, as well as independently of them. A panel of environmental education groups should vigorously review such standards and curricula, so as to avoid industry co-optation.

### 4. THE FEDERAL GOVERNMENT SHOULD:

- Significantly increase funding for environmental education, using environmental fines or fees as a source for this funding.
- Integrate environmental education into national teacher accreditation standards.
- Make place-based environmental education central to the development of national environmental education standards.

# CONCLUSION

While over the last thirty years environmental advocates have, with varying degrees of success, targeted government agencies and large ecologically destructive industries for reform, schools, to a large degree, have slipped below the radar screen. Yet, as this paper has shown, our educational institutions are often environmental health hazards in and of themselves. Collectively, our schools are also significant consumers of natural resources and therefore contributors to a broad variety of society's environmental problems. The ecological state of our schools today is that they are, generally speaking, unsustainable, often—unhealthy places. And there's at least one in every community.

The good news, also touted throughout this report is that there are many indications of positive change. National and local healthy school networks of parents, professionals and educators are organizing to address children's environmental health problems. Related to this, the growing efforts to design green buildings have entered the educational realm, spawning a variety of initiatives to promote healthy, high-performance schools. Some universities and colleges are going solar, providing a potential example for K-12. People are increasingly organizing to get unhealthy food—soda, junk food and fast food—out of our school systems, and replace it, in some cases, with healthy food grown locally, on a small scale. School gardens and green school yard initiatives are sprouting and flourishing across the country. And all of these initiatives, plus many more, are regularly tied into programs designed to make our kids, and therefore our society, more eco-literate: teaching, learning and engaging on issues of health, environment, community and sustainability is happening in one form or another, almost everywhere.

Despite these positive steps forward, many of the laudable efforts to transform and green different aspects of our schools remain unfortunately isolated from one another. We are all working on our individual goals. And in some respects this focus is good and important for achieving tangible results. Yet the fragmentation—the lack of coherence—of what we might call the Sustainable and Healthy Schools Movement weakens all of our work, diminishing the ability to achieve what this report argues is the goal of creating a holistically green and healthy school system. Said another, more positive way, the more this fabulous patchwork of initiatives

comes together as a coherent tapestry, the more powerful effect and influence the composition will have on those who come into contact with it.

It is also clear that many of the transformations envisioned in this paper cannot happen unless they are part and parcel of a much broader transformation of our values, laws, and funding priorities nationally, at a state level and locally. But certainly, making changes in our schools can also help move this transformation along. For while schools may remain under the radar for many environmental advocates, they also have the potential to lead the way in finding solutions to the plethora of problems that we face. If school districts, for instance, begin to adopt the Precautionary Principle, as Los Angeles has done with respect to pesticides, it advances an approach to public health, the right to know, and environmental problem solving that will have repercussions in the greater social and political dynamic. If, as part of a precautionary approach school districts purchase “green” cleaning materials, recycled office products, and sustainably produced, healthy food, while generating their own renewable energy, they can begin to expand the markets for these products and therefore their economic viability.

## STEPS FORWARD

As we discussed in the introduction, this report aims to accomplish four things: First, it attempts to envision what a new reality of sustainable and healthy K-12 schools across the United States might look like. Second, it provides a reality check, zeroing in on just how unhealthy and unsustainable our current educational institutions are. Third, it bases its hope and optimism in the fabulous mosaic of possibility represented by the thousands of disparate efforts around the country to help create green and healthy schools. Fourth and finally, it attempts to group many of these wonderful efforts into a metaphorical green and healthy school building, comprised of a foundation made up of the Precautionary Principle, and four interrelated pillars.

Within each of these pillars the report has articulated specific steps already underway or those that can be taken to advance the various health and sustainability agendas we discuss. These measures include legislative initiatives, possible state or school district policies, school-wide and classroom level actions.

What we have not discussed up until now are

*There are many ways to create greener and healthier schools*

*One step is to organize and pass a school board resolution as a framework for moving forward*

mechanisms for moving from a vision of a holistic, healthy, sustainable school system—of moving from the rough sketch of the foundation and four pillars that this report necessarily is—toward an actual blueprint, and toward a tangible real deal.

There are, no doubt, many ways to get there. We would like to propose one approach for bringing these efforts together and moving the agenda forward.

Imagine, then, one last time: you are working with a group of parents, teachers, principals, district staff and advocacy groups. Your goal is to get your local school board to pass a resolution promoting sustainable and healthy schools. Then imagine the board discussing, debating and approving the resolution, which creates a proactive framework for fostering sustainable and healthy schools (see Sample School Board Resolution, p.38). And finally imagine working with your district to take the first steps toward implementing this vision.

Imagine now, hundreds of other school boards going through similar processes and adopting similar resolutions. Essentially, you are imagining the creation of a series of blueprints

for green and healthy schools at the district level all across the country. By organizing around a school board resolution, disparate local groups working on issues from pesticides in schools to environmental education can join forces and work together, both to get the resolution passed, and then to implement it. Such a resolution can also begin to educate and convince decision-makers at the district, individual school and even classroom level to begin to envision and work toward this positive transformation of our schools. And it can provide a road map to help guide future decisions, whether they have to do with what kind of new bus fleet to purchase, criteria for new building design, school remodels, or how to create an economically viable, nutritious school lunch program.

Overall, this vision of building green and healthy schools, while teaching engaged children rooted in their communities may be a far cry from today's reality. But we should not view it as impossible, and we should not let such reality get in the way of making a better world. Rather it is a challenge to be met.

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- 103 Jim Elder, *A Field Guide*, p. 44; F–16 figures from <http://www.f-16.net/>; Iraq figures, "Americans Pay High Cost For War," National Priorities Project, September 2004, <http://www.nationalpriorities.org/issues/military/iraq/highcost/us.pdf>
- 104 See <http://www.dnr.state.md.us/education/greenschools.html>, <http://www.oregongreenschools.org/>, <http://www.dnr.state.wi.us/org/caer/ce/greenschools/>
- 105 <http://www.dnr.state.wi.us/org/caer/ce/greenschools/>
- 106 <http://www.calisafe.org>
- 107 "Prime Minister's Speech" September 14, 2004, <http://www.pm.gov.uk/output/Page6333.asp>
- 108 <http://www.farmtoschool.org/faq.htm>
- 109 <http://www.greenflagschools.org>, <http://www.oregongreenschools.org/>
- 110 <http://www.eco-schools.org>
- 111 Some of the state and national-level recommendations are drawn from Jim Elder, *A Field Guide*, which contains further recommendations and much more detail.

# SAMPLE SCHOOL BOARD RESOLUTION:

## BLUEPRINT FOR HEALTHY, ENVIRONMENTALLY SOUND SCHOOLS

Whereas—Schools have the potential to make positive, tangible environmental change in the world while teaching students to be stewards of their communities, the earth and its resources;

Whereas—Our current school systems often suffer from inadequate facilities that frequently use energy, water and other resources unsustainably; use pesticides, cleaning agents and other chemicals that pose health risks; and can result in “sick building syndrome” from indoor air pollution and poor ventilation;

Whereas—Many schools across the nation are sited on or near toxic waste dumps, environmentally hazardous facilities, and other sources of pollution;

Whereas—Schools are important consumers of natural resources, including energy, water, food, and paper, and generators of waste materials, including garbage, runoff, and air emissions, which contribute to the world’s larger environmental problems like global warming, water and air pollution, and habitat destruction.

Whereas—Children, teachers, and staff are regularly exposed to toxic chemicals at school, are offered poor and unhealthy food choices, and use and manage resources unsustainably resulting in negative impacts on their health and their ability to teach and learn.

Whereas—This district expends considerable financial resources on chemical pest control, cleaning supplies, energy, water, office and school supplies, and educational activities (resolution could include specific statistics from the district on funds spent on specific resources);

Whereas—This district has a considerable opportunity through its purchasing power to improve both the environment and its financial bottom line.

Whereas—Many options and choices exist for schools to use natural resources more efficiently; to reduce, reuse, and recycle; to follow “Healthy, High Performance School Guidelines” for construction; to ban junk food

and soda and produce healthy lunches through local farm-to-school partnerships; to eliminate toxic chemicals; and to purchase (or produce) clean energy and recycled paper to protect our global environment.

Whereas—There is a tremendous opportunity to teach children about ecological sustainability, environmental health and nutrition; meet math, science and social studies standards; integrate environmental education into curricula; and support students to become leaders in making their own school a healthier and more ecologically friendly place;

Whereas—The Precautionary Principle has been adopted by a growing number of cities, as well as the Los Angeles Unified School District as a proactive approach to promote the safest, lowest risk way to protect people’s health, the environment, and property;

Recognizing all the excellent work already underway in the district in X, Y and Z, undertaken by parents, teachers, administrators, janitors, nurses and others;

Recognizing that this framework creates a long-term, inspiring vision that integrates and strengthens many efforts in our district.

Further recognizing that fully implementing this resolution will take time, and must be achieved in stages.

Be it resolved that to promote healthier, more environmentally sustainable schools and teach environmental leadership, the School Board hereby:

1. Adopts the Precautionary Principle as the foundation for its environmental policy. The Precautionary Principle includes the following elements: \*Anticipatory Action; Right to Know; Alternatives Assessment; Full-Cost Accounting; Participatory Decision Process [see: City of San Francisco, Precautionary Principle Ordinance]
2. Calls on the district to develop an action plan to implement a proactive environmental policy based on the Precautionary Principle

that includes the following to be prioritized and implemented step by step:

- 2.1 The development and adoption of an Integrated Pest Management program and other policies to minimize or eliminate the use of hazardous pesticides and herbicides in schools.
- 2.2 An audit of cleaning materials used in district schools and the development of a plan to use the least toxic substances.
- 2.3 Mechanisms to ensure that new schools are not sited near or on environmental health hazards.
- 2.4 A program to ensure that new schools are built and existing schools refurbished following Healthy, High Performance school building criteria that mandate the use of environmentally sound building material, efficient use of energy, water and other resources, and the creation of a healthy learning environment for children.
- 2.5 A district-wide plan to improve

the energy efficiency of schools, to increasingly rely on clean, renewable energy sources to power the district's facilities, and to ultimately transform schools into independent power producers by investing in clean renewable technologies such as solar and wind.

- 2.6 The creation of district-wide recycling and composting programs, along with the procurement of recycled office and classroom supplies.
- 2.7 Follow and build upon the examples of New York City, Chicago, Nashville, San Francisco and others and ban soda, candy, junk food and fast food from all school grounds.
- 2.8 Evaluate the district's school lunch program to ensure good nutrition and consider developing a farm-to-school program.
- 2.9 Encourage the development of school gardens and green schoolyards as hands-on learning tools that promote good nutrition, stewardship of the land, and that teach to standards.
- 2.10 Adopt frameworks that meet state standards and integrate environmental education and student participation into school-wide environmental initiatives, using partnerships with environmental education providers (non-profit and public agencies).



# THE GREEN SCHOOLS INITIATIVE

[www.greenschools.net](http://www.greenschools.net)

## SELECTED RESOURCES

### THE PRECAUTIONARY PRINCIPLE

**Be Safe**  
(a project of the Center for Health, Environment and Justice)  
[www.besafenet.com](http://www.besafenet.com)

**The Science and Environmental Health Network**  
[www.sehn.org](http://www.sehn.org)

**Bay Area Working Group on the Precautionary Principle**  
[www.takingprecaution.org](http://www.takingprecaution.org)

**San Francisco's Environment Department**  
[www.sfgov.org/sfenvironment](http://www.sfgov.org/sfenvironment)

### CHILDREN'S ENVIRONMENTAL HEALTH

**The Center for Health, Environment and Justice**  
Childproofing our Communities Campaign  
[www.childproofing.org](http://www.childproofing.org)

**The Healthy Schools Network**  
[www.healthyschools.org](http://www.healthyschools.org)

**Beyond Pesticides**  
[www.beyondpesticides.org](http://www.beyondpesticides.org)

**Californians for Pesticide Reform**  
[www.pesticidereform.org](http://www.pesticidereform.org)

**California Safe Schools Coalition**  
[www.calisafe.org](http://www.calisafe.org)

**Illinois Healthy Schools Campaign**  
[www.healthyschoolscampaign.org](http://www.healthyschoolscampaign.org)

**US Environmental Protection Agency**  
[www.epa.gov/envirohealth/children](http://www.epa.gov/envirohealth/children)

**Children's Environmental Health Network**  
[www.cehn.org](http://www.cehn.org)

### SUSTAINABLE RESOURCE USE AND GREEN SCHOOL BUILDINGS

**US Department of Energy**  
Energy Smart Schools Program  
[www.rebuild.org](http://www.rebuild.org)

**Interstate Renewable Energy Council**  
[www.irecusa.org](http://www.irecusa.org)

**Solar Schools**  
[www.solarschools.com](http://www.solarschools.com)

**Healthy Building Network**  
[www.healthybuilding.net](http://www.healthybuilding.net)

**California High Performance Schools**  
[www.chps.net](http://www.chps.net)

**New Jersey High Performance Schools**  
[www.globallearningnj.org](http://www.globallearningnj.org)

**Oregon High Performance Schools**  
[www.energy.state.or.us/school/highperform.htm](http://www.energy.state.or.us/school/highperform.htm)

**School Waste Reduction**  
[www.ciwmb.ca.gov/Schools/](http://www.ciwmb.ca.gov/Schools/)

**Center for a New American Dream**  
[www.newdream.org/make/bts/index.php](http://www.newdream.org/make/bts/index.php)

**Recycle Minnesota**  
[www.recycleminnesota.org](http://www.recycleminnesota.org)

**St. Louis Resourceful Schools**  
[www.resourcefulschools.org](http://www.resourcefulschools.org)

**Go Green Initiative**  
[www.gogreeninitiative.org](http://www.gogreeninitiative.org)

### FOOD, NUTRITION, GARDENS AND GREEN SCHOOL YARDS

**Commercial Alert**  
[www.commercialalert.org](http://www.commercialalert.org)

**Rethinking School Lunch**  
[www.rethinkingschoollunch.org](http://www.rethinkingschoollunch.org)

**The Center for Food and Justice**  
[www.farmtoschool.org](http://www.farmtoschool.org)

**The Center for Ecoliteracy**  
[www.ecoliteracy.org](http://www.ecoliteracy.org)

**The Occidental Arts and Ecology Center**  
School Garden Teacher Training Program  
[www.oaec.org](http://www.oaec.org)

**San Francisco Green Schoolyard Alliance**  
[www.sfgreenschools.org](http://www.sfgreenschools.org)

**EcoSchool Design**  
[www.ecoschools.com](http://www.ecoschools.com)

**The Edible Schoolyard**  
[www.edibleschoolyard.org](http://www.edibleschoolyard.org)

### TEACH, LEARN AND ENGAGE!

**Center for Environmental Education**  
[www.schoolsgogreen.org](http://www.schoolsgogreen.org)

**COSEED**  
[coseed.schoolsgogreen.org](http://coseed.schoolsgogreen.org)

**Earth Day Educator's Network**  
[www.earthday.net/howto/teachers-corner.stm](http://www.earthday.net/howto/teachers-corner.stm)

**Green Teacher**  
[www.greenteacher.com](http://www.greenteacher.com)

**EPA Green Chemistry** [www.epa.gov/greenchemistry/whats\\_gc.html](http://www.epa.gov/greenchemistry/whats_gc.html)

**North American Association for Environmental Education**  
[www.naaee.org](http://www.naaee.org) and [www.eelink.net](http://www.eelink.net)

**CHEJ's Green Flag Schools Program**  
[www.greenflagschools.org](http://www.greenflagschools.org)

**Oregon Green Schools Program**  
[www.oregongreenschools.org](http://www.oregongreenschools.org)

**Maryland Green Schools Program**  
[www.dnr.state.md.us/education/greenschools.html](http://www.dnr.state.md.us/education/greenschools.html)

**Wisconsin Green and Healthy Schools Program**  
[www.dnr.state.wi.us/org/caer/ce/greenschools](http://www.dnr.state.wi.us/org/caer/ce/greenschools)

**Eco-Schools International**  
[www.eco-schools.org](http://www.eco-schools.org)

### RESOURCES FOR YOUTH

**Kids for Saving Earth**  
[www.kidsforsavingearth.org](http://www.kidsforsavingearth.org)

**Kids Against Pollution**  
[www.kidsagainstpollution.org](http://www.kidsagainstpollution.org)

**NRDC's Green Squad**  
[www.nrdc.org/greensquad](http://www.nrdc.org/greensquad)

**EcoKids**  
[www.ecokidsonline.com/pub/index.cfm](http://www.ecokidsonline.com/pub/index.cfm)

**Rainforest Heroes**  
[www.rainforestheroes.com/kidscorner](http://www.rainforestheroes.com/kidscorner)

**Rainforest Action Network**  
(for teachers and students)  
[www.ran.org/info\\_center/teacherstudent.html](http://www.ran.org/info_center/teacherstudent.html)

**EPA's Global Warming Page**  
[www.epa.gov/globalwarming/kids/index.html](http://www.epa.gov/globalwarming/kids/index.html)