

Oklahoma Green Schools Program



Checklist of Environmental Actions for Schools

OKLAHOMA GREEN SCHOOLS PROGRAM CHECKLIST/MENU OF ENVIRONMENTAL ACTIONS FOR SCHOOLS

(Updated 6/03/11)

Is your school interested in reducing environmental impacts, improving learning conditions, and lowering operating costs, all at the same time? This *Oklahoma Green Schools Checklist* offers tips to help schools identify opportunities to “green” their buildings and operations, ranging from the solid waste they generate, to the indoor environment they provide, to the energy, water and supplies they consume.

The Oklahoma Department of Environmental Quality (DEQ) adapted this checklist from the Illinois EPA’s checklist. It focuses on common-sense improvements that schools can make in their daily operations that will increase efficiency, conserve resources, and often save money on monthly bills.

The environmental improvement strategies in our checklist have been organized into the following categories:

- **Energy**
- **Waste & Recycling**
- **Water**
- **Environmental Quality**
- **School Site**

This checklist was compiled to help administrators, facility staff, teachers and students raise awareness and promote environmentally sustainable practices within their schools. This checklist also contains tips on how to organize and secure support for an environmental improvement initiative.

Official participants in the Oklahoma Green Schools Program (Track One) are required to conduct at least three (3) of the investigations for the following categories. These may be found on the www.PLT.org Green Schools website. However, any Oklahoma school may utilize our resources to work unofficially toward greening their school. The Oklahoma Green Schools Program 2009-2010 pilot program is currently underway and the program is expected to be open to all Oklahoma schools statewide by fall of 2010.



BENEFITS OF A GREEN SCHOOL PROGRAM

A recent report from the American Institute of Architects (AIA), along with several other groups, documents the financial costs and benefits of green schools compared to conventional schools. Following are some of the main conclusions of this report.

- Greening school design provides an extraordinarily cost-effective way to enhance student learning
- Some green schools are built on the same budget as conventional schools.
- Market-wide energy cost savings represent an important benefit often not included in energy efficiency financial analyses.
- There is a large body of research linking health and productivity with specific building design attributes.
- 17 separate studies all found positive health impacts from improved indoor air quality, ranging from 13.5% up to 87% improvement.
- Good lighting "improves tests scores, reduces off-task behavior, and plays a significant role in the achievement of students.
- Greening school design is extraordinarily cost-effective compared with other available measures to enhance student performance.
- A recent review of five separate studies found an average asthma reduction of 38.5% in buildings with improved air quality.
- Greening public schools creates an opportunity to improve the health and educational settings for all students.
- The financial benefits of greening schools are about \$70 per ft², more than 20 times as high as the cost of going green.
- Greening schools today is extremely cost-effective, and represents a fiscally far better design choice.

Conventional schools are typically designed just to meet building codes – that are often incomplete. Design of schools to meet minimum code performance tends to minimize initial capital costs but delivers schools that are not designed specifically to provide comfortable, productive and healthy work environments for students and faculty. Few states regulate indoor air quality in schools or provide for minimum ventilation standards. Not surprisingly, a large number of studies have found that schools across the country are unhealthy – increasing illness and absenteeism and bringing down test scores.

This checklist is not intended to be a comprehensive list of all the techniques and practices that can potentially improve the way a school conducts business. Each school is unique, with its own set of environmental challenges and opportunities. Thus, the checklist has been designed to be flexible enough to conform to the specific conditions and needs of your school. Some categories will overlap, so several of the suggested actions have been duplicated and can be found in more than one category.

For a more comprehensive list, see Illinois EPA Green Schools Checklist:

<http://www.epa.state.il.us/p2/green-schools/green-schools-checklist.pdf> For educational resources in these categories, see our Oklahoma Green Schools website: www.okgreenschools.org.

The chances are you will not be able to solve all the environmental challenges facing your school at one time. Start with the easier strategies that will have the greatest impact; in other words, "think big, start small." Once you have built momentum, you can expand your environmental program to other areas.

MANAGEMENT STRATEGIES

- Create top management support by adopting an environmental policy statement for your school.
- Appoint a person to coordinate or “champion” your green school program. This person should be open to change, have a commitment to the environment and possess the ability to communicate well with all levels of the school.
- Establish a “Green Team” of employees and students to identify and brainstorm environmental improvement ideas. Making changes in the way your school uses materials, energy and water should not be just one person’s responsibility.
- Conduct a facility investigation or self-evaluation to assess current environmental conditions and identify areas for improvement.
- Identify operations where large quantities of water and energy are used, and those that generate a high volume of waste, and assign priority action to be taken in those areas. (See www.PLT.org for links to audit forms available for this task.)
- Seek employee and student suggestions, and find other ways to involve them in your environmental program (e.g., create a poster or slogan contest).
- Identify curriculum tie-ins. Project Learning Tree (PLT), Project WILD and Project WET are recommended as the primary Oklahoma Green Schools curriculum (see Resources Section for contact information).
- Create incentives, rewards or recognition for employees and students who take a leadership role in you school’s greening efforts.
- Apply for potential grants available for Oklahoma Green Schools (see Green School funding lists).
- Provide training to staff and students, if applicable, for new products and processes.
- Track and report your environmental progress. Look at what resources your schools uses and what it wastes. Try to calculate and quantify the savings potential of your environmental efforts.
- Build permanence into your green school program. Make your efforts long lasting by incorporating environmental improvement into core operations and curriculum.
- Seek recognition for your environmental efforts and share your experience with other schools. Celebrate your achievements.

ENERGY

- Have students conduct an energy investigation as a learning project. (See www.PLT.org for link to audit form.)
- Make sure your building systems (e.g., boilers, fans and pumps) are operating efficiently. Optimize efficiency through regular inspections and preventative maintenance.
- Clean lights and fixtures every two years to keep light output high.
- Convert to higher efficiency fluorescent lamps and electronic ballasts for most general lighting applications. (OGE Energy Corp. currently has replacement funding – Contact: Donney Dorton at 405-553-3712.)
- Take advantage of natural light or daylighting, particularly when a school undergoes significant remodeling or when new structures are added.
- Replace incandescent bulbs with compact fluorescent (CFL) light bulbs; LEDs (light-emitting diodes) are best for exit signs and other non-task lighting.
- Install double pane windows and/or windows with a low-emission coating.
- Plug holes and caulk windows to stop heat loss.
- Replace damaged doors and windows to reduce the need for heating and cooling in the building.
- Turn off lights in unoccupied rooms and machines during non-use hours. Consider time clocks, occupancy sensors, and dimming controls to reduce lighting energy.
- Investigate variable speed drives for fans and pumps.
- Install vending misers to turn off the light in vending machines when building is unoccupied.

WATER

- Have students conduct a water investigation as a learning project. (See www.PLT.org for link to audit form.)
- Install sub-meters to major building water users to monitor efficiency and identify leaks.
- Encourage students and teachers to report water leaks to the maintenance staff; ask maintenance staff to fix leaks in toilets, faucets and pipes right away.
- Run the dishwasher only when it is full.
- Presoak utensils and dishes in ponded water instead of using a running water rinse.
- Install low-flow faucet aerators and showerheads.
- Keep hot water pipes insulated.
- Clean equipment and areas, using dry methods (scraping, sweeping and shoveling) whenever possible.
- When washing, use high pressure, low volume washing equipment with minimal or no detergents.
- Plant hardy, native vegetation adapted to the local climate and rainfall.
- Use mulch around plants and trees to retain moisture.
- Keep sprinklers and hoses directed at grassy areas and not the pavement when watering.
- Water during cooler parts of the day (before 10:00 A.M and after 5:00 P.M.) to minimize evaporation loss.
- Do not water on windy days.
- Use drip and other high efficiency irrigation devices in lieu of sprinklers.
- Collect rainwater for irrigating or other non-potable uses.
- When mowing lawn areas and playing fields, set the mower blades to 2-3 inches high to help shade the soil and improve moisture retention.

WASTE & RECYCLING

- Have students conduct a waste investigation as a learning project. (See www.PLT.org for link to audit form.)
- Encourage practices that reduce waste paper (e.g., proofing documents on the computer screen before printing; storing final documents on CD or thumb drive rather than making final copies; making two sided copies; and reusing paper that is clean on one side for in-house drafts and message pads).
- Minimize packaging waste by specifying returnable or reduced packaging in supply agreements, particularly for items purchased in large quantities.
- Use electronic mail to send messages instead of written memos, whenever possible.
- Encourage employees to save e-mail documents electronically rather than printing them.
- Do research at libraries or online, rather than ordering written materials.
- Avoid using cover sheets to send fax transmittals.
- Recycle items, such as paper, cardboard, aluminum cans, cardboard and plastic bottles.
- Save used manila envelopes, file folders, and other supplies for in-house reuse.
- Keep a supply of extra reusable mugs and glasses in common areas.
- Reduce junk mail by taking your school name off unwanted mailing lists.
- Share periodicals with associates instead of receiving multiple copies, or read online when possible.
- Donate old or outdated equipment, books or furniture to local community organizations.
- Use rechargeable batteries and solar calculators.
- Consider worm bins for composting cafeteria food prep waste as a class project (Properly-managed worm bins are odor free.)
- Consider leasing equipment from manufacturers that will take back and properly recycle their goods at the "end of their useful life."
- Save and reuse boxes for shipping and other uses.
- Purchase only printers that can print on both sides of the paper at once.
- Post minutes or other handouts on an Intranet site, on a Google Group, or circulate them electronically after meetings.
- Save on paper by using smart boards or power points for student worksheets, quizzes, etc.
- Distribute handouts on CDs to eliminate paper waste.
- Encourage students to bring their lunch in reusable containers.
- Set up "swap" areas in the school or individual classrooms to share reusable materials.
- Work with custodial staff to practice resource efficiency, such as reusing plastic garbage can liners in rooms that generate only dry waste, buying bulk cleaning supplies and using plastic refillable spray bottles.
- Establish environmentally friendly guidelines for all purchases, including: products made from recycled materials, with minimal packaging; that can be recharged, refilled, or reused; have longer lifetimes; or can be easily repaired.

PURCHASING

- Review purchasing records, and consider disposal costs and costs for cleaning up accidents when evaluating products.
- Order print jobs on post-consumer recycled paper and specify that such jobs be double-sided wherever possible.
- Purchase Energy Star™ copiers, fax machines, computers and printers that power down when not in use. Specify energy efficient dishwashers and refrigerators.
- Use vegetable oil or water-based ink for printing.
- Purchase supplies and equipment made with recycled content materials (i.e., paper products, engine oil, paints, office products, carpeting, building materials and outdoor benches/tables).
- Buy products with less packaging or in returnable containers.
- Avoid buying products that are not easily recyclable in your area.

- Consider remanufactured items, such as recharged toner cartridges, re-formatted computer disks and returnable office equipment.
- Instead of paper, switch to cloth roll towels and/or air dryers in the restrooms, or switch to a dispenser that is not so generous with paper towels.
- Use water-based paints, and non/less-toxic floor cleaners and desk cleaners.
- Use products with toxic ingredients as infrequently as possible. Choose the least toxic product available for each task.
- Arrange for an expert training by vendors for new, complex equipment.
- Inspect deliveries on arrival.
- Consider renting or leasing infrequently used equipment.

FOOD SERVICE

- Print daily specials on a chalkboard or a dry-erase board rather than printing daily specials on new sheets of paper.
- Use refillable condiment bottles or containers instead of single-use packaging, and refill from bulk containers.
- Use washable wiping cloths instead of disposables.
- Purchase reusable coffee filters and compost the grounds.
- Place rubber mats around bus and dishwashing stations to reduce china and glass breakage.
- Work with suppliers to take back cardboard boxes or provide supplies in reusable containers, whenever possible.
- Provide employees with permanent-ware mugs or cups for their drinks.
- Serve straws and napkins from health department-approved dispensers rather than pre-wrapped.
- Rotate perishable stocks at each delivery to minimize waste from spoilage.
- Keep records of the demand for particular foods and use them in menu planning.
- Date items when delivered and use what was delivered first ("first-in, first-out").
- Store raw vegetables in reusable airtight containers to prevent spoilage.
- Reuse large containers for storage.
- Find local composting opportunities or animal farms that will accept non-edible foods.
- Avoid purchasing items with excessive packaging.
- Use dispenser items, such as juices or hot chocolate in concentrated or bulk form.
- Establish a routine cleaning and maintenance schedule for all equipment.
- When replacing equipment, buy energy and water conserving appliances like dishwashers, refrigerators and freezers.
- Clean up spills with a squeegee, broom or vacuum to avoid hosing materials down the floor drain.
- Using as much locally-grown food as possible in your food service program would meet both goals of the OK Green Schools Program. This provides healthier and tastier options to the students and staff as well as saving energy and transportation costs by purchasing food products from Oklahoma producers.

SCHOOL SITE

BUILDING CONSTRUCTION AND RENOVATION

- Orient buildings to catch breezes, minimize heat gain and take advantage of natural shading and light.
- Preserve existing vegetative cover and trees, along streams and other natural waterways to reduce storm water runoff. Design in bio-swales instead of ditches to help treat runoff as it passes through vegetation.
- Ensure that walls, floors, roofs and windows are as energy efficient as possible.
- Use high efficiency HVAC equipment that is "right sized" for the estimated demands of the facility. Use economizers and other controls that optimize system performance.
- Use a geothermal system to heat and cool your school.

- Design for good indoor air quality. Select building materials to limit the introduction of pollutants into the building in the first place.
- Specify particular building materials with recycled content, such as concrete aggregate, carpeting, insulation, ceiling tiles, drywall, floor tile, playground surfacing and parking stops.
- Consider wood products produced from sustainably managed forests.
- Use durable materials like linoleum sheet flooring made from natural sources.
- Maximize the use of natural daylight in building interiors as a source of ambient light.
- Consider on-site renewable energy like solar hot water and photovoltaics to generate a portion of your school's energy use. Use the project as an opportunity to teach students about renewable energy resources.
- Use water efficient plumbing fixtures, such as aerators and self-closing or electronic faucets for lavatories.
- Equip locker room showers with push button or timed on/off operation.
- Set high lighting efficiency standards, such as high efficiency lamps, reflectors and ballasts. Specify smart controls such as occupancy sensors and daylight dimming.
- Do not over-illuminate. Lighting levels should be tailored to the type of task being performed and the function of the illuminated space.
- Develop optimum design criteria for insulation and windows. Do not rely on code minimums.
- Specify light-emitting diodes or LED exit lights.
- Direct exterior lighting downward to reduce light pollution and allow the use of lower wattage lamps.
- Recycle demolition and construction waste whenever possible.
- Design pedestrian and bike-friendly features.
- Consider implementing a building commissioning plan to ensure installed components or systems meet the intent of the original design.

GROUNDSKEEPING

- Cut grass on regular basis and remove no more than one-third of the grass blade at any one time to maintain good root growth.
- Keep mower blades sharp.
- Leave grass clippings on the ground if your lawn is mowed regularly and you follow the "one-third" rule to produce short clippings that decompose quickly. If you collect grass clippings, consider composting your clippings.
- Buy a mulching mower when you update your equipment.
- Increase water penetration into soil by aerating every 2-3 years.
- Preserve local vegetation in place, especially mature trees.
- Choose trees, bushes and shrubs that require minimal pruning.
- Conserve existing natural areas and restore damaged ones.
- Landscape with slow growing, drought tolerant native plants or groundcovers that require less fertilizer and pest control measures. Consult with your local university or county extension program.
- Apply herbicides only according to manufacturer's direction and only as necessary. Apply only at a time when wind drift and runoff losses are unlikely.
- Select the most species-specific, least damaging treatment for pest and weed control.
- Practice spot application where a problem exists instead of spraying over an entire area.

INTEGRATED PEST MANAGEMENT

- Practice good sanitation and proper maintenance of structures and grounds.
- Caulk and seal structural cracks where pests can enter.
- Keep lockers and the building clean and dry.
- Fix plumbing leaks and other moisture problems.
- Monitor frequently for signs of pests and keep records of pest populations.
- Identify injury and action levels for each pest species.
- Use non-chemical pest control methods (trapping, swatting, hand removal, barriers, attractants, etc.).

- Specify criteria for use of pest management methods that include use of natural or low toxicity pesticides.
- Only spray pesticides when children are out of school.
- Apply the proper amount of product required and wear protective equipment. More is not necessarily better.
- Store pesticides in leak-proof containers in a secure place.

ENVIRONMENTAL QUALITY

INDOOR AIR QUALITY

- Inspect ventilation equipment air filters regularly and replace as needed.
- Specify maintenance supplies (paints, finishes, cleaners, caulks, sealants & cleaning supplies) that are low emitters of potential indoor air contaminants. Ask vendors and manufacturers to help select the safest products available that can accomplish the job effectively.
- Use carpet adhesives or adhesive free systems that minimize the amount of off-gassing of chemicals during installation of carpeting.
- Avoid wood products and furnishings that use large amounts of formaldehyde as a bonding agent.
- Clean spills promptly.
- Seal containers of volatile liquids.
- Ensure that the ventilation system is clean and that an adequate amount of outdoor air is supplied to occupied areas.
- Ensure that the mechanical rooms are free of trash and chemicals.
- Make sure the air intakes of ventilating systems are not in an area where cars or buses idle.
- Eliminate any bird or animal nests or droppings near outdoor air intakes.
- Check for cooking odors or smoke in areas adjacent to the cooking, preparation, and eating areas.
- Monitor trends in health complaints, especially in timing or location of complaints.
- Avoid tracking pollutants into work areas and seal off work areas from occupied portions of the building.
- Consider recessed grates, "walk off" mats and other techniques to reduce the amount of dirt entering the building.
- Clean up dust generated from construction activities.

LABORATORY WASTE

- Conduct a chemical inventory to help eliminate over-purchasing and reduce disposal costs of unneeded, out-of-date chemicals.
- Reduce the quantity of hazardous chemicals stored in your facility to the minimum necessary for quality instruction.
- Purchase chemicals in smaller lots and quantities. Delegate purchasing responsibility to one person or a single point of contact.
- Substitute non- or less-hazardous chemicals for more hazardous ones in science experiments. If this is not possible, use micro-scale chemistry techniques to reduce scale of experiments (and associated quantities of chemicals).
- Substitute computer simulations, videos, etc. for actual experiments.
- Purchase lab specimens in non-formaldehyde preservatives, whenever possible.
- Link purchasing requests into a centralized inventory system to help control the volume of chemicals, eliminate duplicate orders and ensure that excess chemicals in stock can be used before buying more.
- Establish a safe management system for remaining required chemicals.
- Adopt a standard labeling procedure for chemicals and waste.
- Designate a centralized place for chemical storage and another for waste storage, with spill containment.

- Store chemicals according to their chemical family, not alphabetically.
- Return expired material to supplier.
- Periodically inspect stored chemicals for signs of leakage, rusting, peeled labels, poor storage practices, or any other problems.
- Install spill and leak protection in chemical storerooms.

MERCURY

- Perform an inventory of mercury materials in science labs, maintenance areas, art rooms, nurse's office, home economic rooms, and industrial arts/metal shop areas.
- Label instruments containing mercury.
- Train staff on how to properly clean up a mercury spill. Mercury spill kits are available from many scientific supply catalogs.
- Ensure that mercury and mercury containing products are not disposed of down the drain.
- Create protocol to properly manage and recycle mercury and mercury containing products. Go for the easiest targets first. Eliminate liquid mercury, and then replace instruments that contain the largest amounts of mercury.
- Establish a mercury-free purchasing policy that chooses non-mercury products over those that contain mercury. If no mercury free alternative is available, choose the product containing the least amount of mercury available for that particular device.
- Clean historical mercury out of traps, sumps and pipes in your sewer lines. Whenever plumbing parts are removed or cleaned, caution should be taken to avoid spills. Follow proper mercury handling and disposal/recycling procedures.
- When remodeling or replacing old equipment, replace thermostats, switches, relays, sensors and gauges containing mercury with non-mercury alternatives.

MOLD

- Establish a regular schedule for inspecting roofs, ceilings, walls, floors and carpeting for water leakage, stains or discoloration, and mold growth or odors.
- Check the mechanical room and roof for leaks and spills.
- Fix the source of the water problem or leak to prevent mold growth.
- Vent showers and other moisture-generating sources to the outside.
- Reduce the potential for water vapor condensation on walls, underside of roof decks and around pipes or ducts.
- Keep building materials like wood, porous insulation, paper and fabric dry.
- Prevent rain and snow from entering air intakes.
- Provide adequate ventilation to maintain indoor humidity levels between 30%-50%.
- In areas with high humidity levels, consider switching the air conditioning system to a setback system at night.
- Use exhaust fans whenever cooking, dishwashing and cleaning in food service areas.
- Avoid standing water in ventilation systems, air conditioning or refrigerator drip pans.
- Avoid carpeting in areas where there is a perpetual moisture problem.
- Clean and dry any damp or wet building materials and furnishings within 28-48 hours of occurrence.
- Inspect bathrooms (especially around and under sinks) for signs of standing water, water stains or mold.