

Green Guide for Schools

Strategy: Solid Waste and Food Production

Strategy: Recycling

Electronics Recycling

Fast Facts-

- Electronics contain hazardous materials that are harmful to the environment. If incinerated or taken to landfills, this can result in emitting millions of tons of carbon into the atmosphere.
- Recycling computers, printers, cell phones, radios, iPods, M P 3 Players, televisions and other electronic equipment can help reduce waste and carbon emissions.
- Energy savings for recycling is approximately 337 kg of CO₂ (*Scientific Study by Eric Williams*). Carbon emissions for full life of an "i-mac"=340 kg CO₂. When the product is recycled emissions is < 1%.

| Actions for Schools: |
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| Encouraged to recycle (has economic/environmental benefits) |
| Implement recycling programs (cell phones, and other small electronics) |
| Buy ENERGY STAR office products. |

WEB Resources:

US Counties with e-recycling:

- Hamilton County Department of Environmental Services <http://www.hcdoes.org/>
- <http://www.hcdoes.org/SWMD/Businesses/compreuserrecy.html>

Other resources:

- Rumpke Universal and E-Waste Department
<http://www.rumpke.com/Industrial/Universal.asp>
- Apple Computers
<http://www.recycleapc.com/>
- Full Circle Group
- <mailto:gbreyfogle@cinci.rr.com>
- Great Lakes Electronics
<mailto:jhestick@recycleelectronics.com>
- Greater Cincinnati Computers
<http://www.iapcomputers.com/>
- Ohio Valley Goodwill
<http://www.cincinnati goodwill.org/>
- Best Computing Services
<http://www.bestcomputingservices.com/>
- Cincinnati Computer Cooperative <http://www.cincinnati computer cooperative.org/>
<mailto:donations@cincinnati computer cooperative.org>
- TAPIN (Technology Assisting People in Need)
<http://www.tapin.org/>
- Technology Recycling Group (TRG)
<http://www.recyclegroup.net/>
- Computer Recycling
<http://www.comprecyclers.com/> <mailto:computerrecyclers@fuse.net>

Office Supplies Recycling

Fast Facts-

- Recycling office supplies lowers your environmental impacts.
- Recycling office supplies such as ink cartridges reduces oil and electricity usage to create new cartridges thus reducing carbon emissions.
- Recycling is also cheaper than buying pre-manufactured supplies. It also has long-term cost reduction for individuals and businesses.
- Most waste generated produces carbon in their production, use and disposal. Recycling saves energy and produces less carbon than at the initial production of materials.
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| Actions for Schools: |
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| Educate stakeholders (teachers, students, parents) about the benefits of recycling products. |
| Provide recycling containers in classrooms or at strategic points on the school grounds. |

WEB Resources-

US Counties recycling

- St. Louis County, Missouri http://www.stlouisco.com/doh/waste/waste_mg.html
- Fairfax County, Virginia <http://www.fairfaxcounty.gov/living/recycling/>
- Delaware County, Pennsylvania <http://www.co.delaware.pa.us/recycle/hhw.html>
- Broome County, New York <http://www.gobroomecounty.com/dpw/DPWRecycling.php>

Some Local Drop off Locations

- Local Merchants – Best Buy, Office Max, Office Depot, Wal-Mart and Circuit City
- Hamilton County Solid Waste District. <http://www.hcdoes.org/SWMD/home.html>

Tire Recycling

Fast Facts-

- Over 1 billion tires are disposed of each year in the United States.
- Only 10% of the tires produced are recycled, 50% end up in landfills, and 40% are incinerated.
- Discarded tires provide a breeding ground for harmful insects, such as mosquitoes. Incineration of tires increases carbon emissions into the atmosphere.

| Actions for Schools: |
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| Use recycled tires for playground surface. |

Resources and Contacts:

- Tire recycling facilities in the Cincinnati area: <http://www.co.warren.oh.us/solidwaste/outlets/tires.htm>.
- Ohio Scrap tire recyclers <http://www.scraptire.net/america/index-ohio1.html>
- Ohio Department of Natural Resources <http://www.dnr.state.oh.us/Home/ToolsandResources/ScrapTireRecycling/tabid/18026/Default.aspx>
- Ohio Environmental Protection Agency: Information on tire recycling <http://www.dnr.state.oh.us/Home/ToolsandResources/ScrapTireRecycling/tabid/18026/Default.aspx>
- Norwood Ohio Tire drop off weekend: <http://citizensforabetternorwood.blogspot.com/2008/03/public-works-appliance-recyclingtire.html>.
- Recycling grants information for Ohio: <http://www.dnr.state.oh.us/tabid/9394/Default.aspx>.

- Tire derived fuel facts. <http://www.tceq.state.tx.us/assets/public/compliance/tires/docs/tdf.pdf>
- Texas Natural Resource Conservation Commission
<http://www.tceq.state.tx.us/assets/public/compliance/tires/docs/localgov.pdf>

Aluminum Recycling

Fast Facts-

- Aluminum is a sustainable metal and can be recycled over and over again.
- On average, 40 mineworkers are killed on the job each day, and many more are injured. Recycling reduces the need for mining.
- Americans throw away enough aluminum to rebuild our entire commercial fleet of airplanes every 3 months.
- Making new aluminum cans from used cans takes 95 percent less energy and 20 recycled cans can be made with the energy needed to produce one can using virgin ore.
- Tossing away an aluminum can wastes as much energy as pouring out half of that can's volume of gasoline.
- In one year, recycling allows aluminum companies to save the equivalent of more than 19 million barrels of oil – enough energy to supply electricity to about 18 million households for a year.
- Recycling one aluminum can saves enough energy to keep a 100-watt bulb burning for almost four hours or run your television for three hours.

Actions for Schools:

Schools should take advantage of Hamilton County Solid Waste Management School Education Programs <http://www.hcdoes.org/SWMD/Schools/Schools.html#comprecy>

WEB Resources:

- Rumpke Recycling:
<http://www.rumpkerecycling.com/index.aspx>
- Waste On line:
<http://www.wasteonline.org.uk/>
- A Recycle Revolution:
<http://www.recycling-revolution.com/>
- Howard County Maryland-Bureau of Environmental Services
http://www.co.ho.md.us/DPW/recycling_cans.htm
- Environmental Defense Fund:
<http://www.edf.org/home.cfm>
- Pennsylvania Department of Environmental Protection
<http://www.depweb.state.pa.us/dep/site/default.asp>
- Container Recycling Institute, 2001

Paper Recycling

Fast Facts-

- Each day American businesses generate enough paper to circle the globe at least 40 times.
- Every person in the US receives junk mail that represents the equivalent of 1-1/2 trees a year
- Eliminating office paper from waste may reduce waste bills by as much as 50%.
- Making new paper from old paper reduces related air pollution by 95%.
- Nearly 68% of all newsprint used in the U.S. is recovered for recycling.
- Recycling 437,000 tons of paper reduces air emissions equivalent to that produced by 200,238 cars driving one year.
- Making paper from recycled content rather than virgin fiber creates 74% less air pollution and 35% less water pollution.
- If every household in the US replaced just one roll of 1,000-sheet virgin fiber bathroom tissues

with 100% recycled rolls, we could save 373,000 trees, 1.48 million cubic feet of landfill space, and 155 million gallons of water.

- If all morning newspapers in the US were recycled for one day, we would save the equivalent of 41,000 trees and 6 million tons of waste would never end up in landfills.
- Making recycled paper generates 74 percent less air pollution and 35 percent less water pollution

Actions for Schools:

Schools should take advantage of Hamilton County Solid Waster Management School Education Programs <http://www.hcdoes.org/SWMD/Schools/Schools.html#comprecy>

WEB Resources:

- Rumpke Recycling: <http://www.rumpkerecycling.com/index.aspx>
- Seventh Generation: <http://www.seventhgeneration.com>
- Worldwatch Institute: <http://www.worldwatch.org>,
- Carnegie Mellon University: <http://www.cmu.edu/greenpractices/recycling/paper>.
- Earth Answers: <http://www.tappi.org>

Glass Recycling

Fast Facts-

- Glass is one of the few materials that can be recycled indefinitely. Container glass can be recycled repeatedly with no loss of quantity or quality.
- Not all glass is recyclable; the glass in light bulbs, cookware and windowpanes are not recyclable because they have additives that would contaminate the recycling process.
- The energy we save when we recycle one glass bottle is enough to light a light bulb for four hours.
- Producing glass from crushed, used glass requires 30 percent less energy than producing glass from raw materials.
- Recycling one glass bottle or jar saves enough electricity to light a 100-watt bulb for four hours.
- Every ton of glass that is recycled results in a ton of raw materials saved to process new glass, including 1,300 pounds of sand, 410 pounds of soda ash and 380 pounds of limestone.
- Recycling two bottles saves enough energy to boil water for five cups of tea.
- Every ton of glass recycled saves the equivalent of nine gallons of fuel oil needed to make glass from virgin materials.
- For every ton of glass that is recycled to make new glass products 693 pounds of carbon dioxide is saved.

Actions for Schools:

Schools should take advantage of Hamilton County Solid Waster Management School Education Programs <http://www.hcdoes.org/SWMD/Schools/Schools.html#comprecy>

WEB Resources:

- Hamilton County Environmental Services: <http://www.hcdoes.org/SWMD/Residents/Recycling/recybenefits.html>
- Environment-Green: http://www.environment-green.com/Glass_Recycling.html
- Environmental Defense Fund: <http://www.edf.org>
- Oregon State University: <http://oregonstate.edu/ehs/hwpages/glass.php>

Strategy: Waste Reduction

Waste Reduction

Fast Facts-

- Waste reduction is the most effective method for reducing the need for landfill space and reducing carbon emissions.
- Even recycling contributes to some amount of carbon emissions through reprocessing of recycled materials and transportation of materials to processing centers.
- Waste reduction saves money by eliminating the costs to dispose of waste and replace materials and supplies.

| Actions for Schools: |
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| Schools should take advantage of Hamilton County Solid Waste Management School Waste Reduction Grant Program http://www.hcdoes.org/SWMD/Schools/Schools.html#wastemingrant |

WEB Resources:

- Hamilton County Solid Waste Management District-Industrial and Commercial Programs <http://www.hcdoes.org/SWMD/Businesses/businesses.html>
- Tips on reduction from the California Integrated Waste Management Board: <http://www.ciwmb.ca.gov/WPW/Coordinator/>.
- The story of stuff by Annie Leonard: <http://www.storyofstuff.com/>.
- Waste reduction tips from the Pennsylvania Department of Environmental Protection: <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/facts/reduce.htm>.
- More waste reduction tips: <http://www.recycle.cc/tips.htm>.
- Success story on waste reduction, the state of Ohio, from the EPA: <http://www.epa.gov/epawaste/partnerships/wastewise/success/state.htm>

Reducing Trash Going to Landfills

Fast Facts-

- It is important that alternatives are found to properly dispose of garbage.
- Increasing recycling not only reduces the amount of land required for disposal but also saves energy, reduces carbon emissions and promotes economic development through the enhanced industrial activity.
- Usually about 70% of most waste is recyclable material.
- Increasing national recycling could reduce waste from 28% to 35% reducing carbon emissions by 9.8 million metric tons of carbon equivalent (MTCE).

| Actions for Schools: |
|---|
| Separate your waste and only send what is necessary to the landfill |
| Reduce office waste going to landfills |

WEB Resources:

- Waste not, sort a lot
Landfill nearly full; officials stress recycling to reduce trash.
[Lance Cpl. Bryan A. Peterson](http://www.okinawa.usmc.mil/public%20affairs%20Info/Archive%20News%20Pages/2007/070615-recycle.html)

<http://www.okinawa.usmc.mil/public%20affairs%20Info/Archive%20News%20Pages/2007/070615-recycle.html>.

- Residents urged to reduce trash to save on hauling
<http://www.daytondailynews.com/green/content/oh/story/news/local/2008/05/15/ddn051608trashinside.html>.
- At Clean Plants, It's Waste Not <http://www.wired.com/science/planetearth/news/2005/08/68448>.
- Zero Waste, Recycling and Climate Change http://www.grrn.org/zerowaste/climate_change.html.
- Reducing Carbon One Garbage Can at a Time
<http://www.miller-mccune.com/article/657>.
- Landfill Gas to Energy
<http://www.landfillgastoenergy.com/>.
- Landfills: Hazardous to the Environment <http://www.zerowasteamerica.org/Landfills.htm>
- Turning Tech Green in Europe
http://www.businessweek.com/bwdaily/dnflash/jan2005/nf20050118_0815_db089.htm

Public Education and Awareness

Fast Facts-

- Education and awareness is a powerful tool for waste management.
- Education and awareness provides avenues for teaching citizens on ways they can reduce waste.
- Education and awareness can take the form of holding public seminars, distributing written flyers, and outreach through various forms of media including public access television.
- The best way to educate people is through proactive action.

| Actions for Schools: |
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| Popularize holidays, such as Earth Day and Arbor Day, for students to reach out to youth. |
| The best way to educate kids in waste management is through action. Let kids see you using resources wisely and recycling, not just talking about it. |

WEB Resources:

- Keep Cincinnati Beautiful
<http://www.keepcincinnatibeautiful.org/>
- Keep America Beautiful
<http://www.kab.org/site/PageServer?pagename=index>
- California Integrated Waste Management Board:
<http://www.ciwmb.ca.gov/WPW/Coordinator/media.htm>
- Zero waste Alliance:
<http://zerowaste.org>
- *Harnessing Collective Intelligence to Address Global Climate Change*, Thomas W. Malone and Mark Klein <http://www.mitpressjournals.org/doi/pdf/10.1162/itgg.2007.2.3.15>
- 100 Climate Change Councils-releasing our collective wisdom to take massive action on climate change (UK) <http://www.climatechangecouncils.com/2008/08/harnessing-collective-intelligence-to-address-global-climate-change.html>

Strategy: Food Production

Community Gardening

Fast Facts-

- Community gardens sequester carbon and reduce reliance on packaged foods.
- They reduce landfill space by reducing the need to dispose of packaging and increase community pride.
- They promote healthy diet and beautify communities.
- They reduce reliance on imported fruits and vegetables that increase carbon through shipping of produce to markets.
- Community gardens increase social interaction, improve the quality of life for people in the neighborhood. They reduce food costs and save resources (ACGA, 2008).
- Carbon Savings- each square foot of garden can sequester from about .3 to 2.5 lbs of carbon.

| Actions for Schools: |
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| Develop community gardening as part of a school project with focus on education in environmental issues. |

WEB Resources:

- Civic Garden Center of Greater Cincinnati Neighborhood Gardens Program <http://www.civiggardencenter.org/HTML/NG.html>
- American Community Gardening Association, 2008. Retrieved on November 1, 2008 from <http://www.communitygarden.org/learn/starting-a-community-garden.php>.
- Detroit Agriculture Garden Resource Program Collaborative <http://www.detroitagriculture.org/>
- Slow Food-Detroit <http://www.slowfood-detroit.org/home.html>
- Common Ground: Grow Your Own Way <http://commongroundmag.com/2008/07/growyourown0807.html>
- Better Homes and Gardens: the NYT on urban gardening <http://gristmill.grist.org/story/2008/5/7/164633/9072>
- The Vertical Farm Project Update <http://www.ecogeek.org/content/view/988/73/>

Community Supported Agriculture (CSAs)

Fast Facts-

- Community Supported Agriculture (CSA) is a mutual commitment between a farm and a community of supporters which provides a direct link between the production and consumption of food. (Local Harvest- <http://www.localharvest.org/csa.jsp>).
- CSA members cover a farm's operating budget by purchasing a share of a seasons' harvest.
- Participating in a CSA or buying locally grown food keeps money within the community.
- One fifth of all fossil fuels in US are used for agriculture. Buying locally grown foods decreases dependence on fossil fuels.
- One member share is usually planned to provide the weekly vegetable needs of a family of four.
- Some CSAs offer "working shares", where members commit to working on the farm 3-4 hours a week in exchange for a discount on membership cost.

| Actions for Schools: |
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| Support a local CSAs by buying foods grown locally. |
| Sponsor local farmers' markets on school property. |

WEB Resources:

- Local Harvest-real food, real farmers, real community
<http://www.localharvest.org/>
- Local Harvest-Cincinnati Area CSAs
<http://www.localharvest.org/search.jsp?map=1&lat=39.085561&lon=-84.513589&scale=8&ty=0&zip=45999>
- USDA –National Agriculture Library –Community Food Systems
http://fnic.nal.usda.gov/nal_display/index.php?info_center=4&tax_level=2&tax_subject=276&topic_id=1344
- Central Ohio River Valley Local Food Guides
<http://www.eatlocalcorv.org/>
- Ohio Ecological Food and Farm Association
<http://www.oeffa.org/>
- Cincinnati Locavore-Celebrating the Ohio Valley Foodshed
<http://cincinnatiocavore.blogspot.com/>

Buying Local Products

Fast Facts-

- Buying local is usually associated with farmers markets, however, food products are not the only things that can be provided locally.
- Local may not just refer to your jurisdiction; it may mean the state or the nation.
- Buying local helps the environment as well as the local and national economy.
- Reduce the use of beef by 25%. Livestock production is responsible for 18% of greenhouse gas emissions.
- All meat and poultry should be sourced from North America, 80% of the energy used by the food system comes not from growing the food, but by transporting and processing it.
- All fruits and vegetables should be sourced from North America, using seasonal local produce as a first preference and using tropical fruits only as "special" occasion ingredients. Most bananas have traveled 3,000 miles in high-speed refrigerated ships to reach an American breakfast plate. A local apple might be grown within 10 miles.
- Serving only domestic bottled water and reducing waste from plastic bottles -- Americans throw away 40 million plastic water bottles every day
http://www.ctahr.hawaii.edu/CS/blogs/sustainable_agriculture/archive/2007/08/07/buying-local.aspx

| Actions for Schools: |
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| Provide information about the environmental and economic benefits of choosing universities within the state/country. |
| Purchase local grown produce for school cafeterias. |
| Sponsor local farmers market day to encourage students to purchase locally grown produce. |

WEB Resources:

- Purchase from local businesses, farmers markets, in local areas.
- Buy Cincy
<http://www.buycincy.com/>
- Local.com
http://www.local.com/results.aspx?keyword=purchasing&cid=665&gid=US_-_National&gclid=CJiN-e7G9pYCFQrFGgodS0wNXw
- EcoSherpa: Realistic, Responsible Living <http://www.ecosherpa.com/green-living-tips/buying-local/>
- Green Options <http://greenoptions.com/tag/buying-local>

- Buying Local: Not Just for Food, Not Just About Shopping <http://www.blogger.com/buying-local-not-just-food-not-just-about-shopping>
- Buying Local Helps The Neighbors <http://yourbiz.msnbc.msn.com/archive/2008/01/25/601229.aspx>
- Toronto Buying Local Green Action <http://ecoworldly.com/2008/07/28/toronto-buying-local-green-action/>
- Support your community by buying local: Charlie Jackson's how-to guide for finding the freshest down-home fruits and veggies http://findarticles.com/p/articles/mi_m0KWZ/is_/ai_91398439
- Sustainable Agriculture: Buying Local http://www.ctahr.hawaii.edu/CS/blogs/sustainable_agriculture/archive/2007/08/07/buying-local.aspx

Farmers' Markets

Fast Facts-

- Most farmers selling their produce through farmers markets grow their foods organically hence buying produce from a farmers' market is a healthy way of eating.
- Besides supporting local production and businesses, it helps reduce energy use through transportation and lesser packaging of food.
- Farmers Markets provide an avenue for people within a community to interact hand-in-hand with providing an outlet for agricultural foods grown locally.
- Farmer's Markets are fast becoming common in many communities across the country.
- Many people are forgoing major chain stores to find Farmers Markets for organic and truly freshly grown fruits and vegetables.
- If you own a Farmers Market and you want to be found, you need to promote your service and your location.
- Farmers Markets establish friendships and renew a sense of community for residents.

| Actions for Schools: |
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| Support a local farmers' market by buying foods grown locally. |
| Sponsor local farmers' markets on school property. |

WEB Resources:

- Taste the Local Difference http://localdifference.org/forum/topic.asp?TOPIC_ID=82
- Portland Farmers' Market <http://www.portlandfarmersmarket.org/>
- Farmer's Market Online: <http://www.farmersmarketonline.com/howto33.htm>
- Farmers Market Dot Com: <http://farmersmarket.com/>

Composting

Fast Facts-

- Yard trimmings and food materials constitute up to 24% of municipal solid waste (US EPA, 2008).
- When yard waste and food materials are composted, they create organic fertilizers. Applying this to agricultural fields can increase the amount of carbon stored in these soils and significantly contribute to the reduction of carbon (SAGE, 2008).
- Carbon sequestration in soils has been recognized as a possible way through which greenhouse gases such as carbon can be mitigated.
- According to a European study, about 8.6% of the total EU emission-reduction objective could be met if 20% of the surface of agricultural land could be used as a sink for carbon (SAGE, 2008).

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| Actions for Schools: |
| Encourage composting at schools by having a separate “food only” container. This should be located in the cafeteria. |
| Teach students about the process and benefits of composting. |

WEB Resources:

- Hamilton County Solid Waste Management District-Backyard Composting
<http://www.hcdoes.org/SWMD/Residents/Yardwaste/ywcompost.html>
- Hamilton County Solid Waste Management District-Compost Demonstration Sits
<http://www.hcdoes.org/SWMD/Residents/Yardwaste/ywcompostdemo.html>
- Hamilton County Solid Waste Management District-Recycling Yardwaste in Your Community
http://www.hcdoes.org/sw/Yardwaste/yardwaste_in_community.htm
- SAGE (25 Feb 2008). “Compost can turn agricultural soils into a carbon sink, thus protecting against climate change.” Retrieved October 2008 from the World Wide Web:
http://www.eurekalert.org/pub_releases/2008-02/spu-cct022208.php.
- US EPA (US Environmental Protection Agency), (7 October 2008). “Composting.” Retrieved October 2008 from the World Wide Web:
<http://www.epa.gov/osw/conservation/rrr/composting/index.htm>.