



SHUTTERSTOCK: VECTORSTOCK

# Black Gold Miners

## Saving Money and the Planet

I live in the town of Acton, Massachusetts, an hour away from the Atlantic Ocean. But the trash that comes into Acton's transfer station (about 3,600 tons a year) is sent to a landfill in Ohio, on trucks that travel over 600 miles each way. In 2010, that was 184 truckloads of trash! The hauling rate is \$75 per ton, which comes out to \$270,000, not to mention the rising price of gas for all those trucks. And there's an environmental cost as well. In addition to the carbon monoxide and dioxide the trucks release as exhaust, trash in landfills produces methane.

**by Nikhil Srinivasan**

Three of my friends and I wanted to change that. When we were in seventh grade, a team of eighth graders from our school won third place in the Siemens We Can Change The World Challenge, a competition that encourages kids to make a difference in their community. Their project had involved reducing households' phantom load, the electricity wasted when certain electronic devices are left plugged in. When my friends and I learned about their project, we decided to attempt the Siemens Challenge ourselves.

### **Composting 101**

We held our first meeting in my family room one Sunday afternoon in September 2011. After discussing our town's trash disposal problems, we decided to focus on composting. We knew that there would be economic benefits; for example, if the 27 percent of trash that is compostable were actually composted, our town would save \$73,000 a year in hauling costs alone. Our goal was to help the town reduce this cost by raising awareness about the benefits of composting, not only among the town officials but among those who create the trash, such as schools and town residents.

In order to educate our community about composting, we first had to educate ourselves. Starting out, we knew as much about composting as the next person: "Oh, yeah, composting is when people throw their food scraps into a hole in their backyard and wait for it to turn into soil." But as we researched the science of composting, we found that there is much more going on. We learned that composting depends on a range of factors including temperature, pH, moisture, surface area, and the ratio of carbon-concentrated materials ("browns" such as dead leaves, sawdust, and cardboard) to nitrogen-concentrated materials ("greens" such as leaves, grass clippings, and certain plant wastes). When we read that compost is so valuable to farmers that they call it "black gold," we named our team the Black Gold Miners.

After we learned about the science of composting, we took trips to places that run successful composting programs. We visited a model "green" neighborhood in our town, where most of the residents did backyard composting. We also visited Harvard University, which runs a large program in which food waste is hauled to a composting farm, and Drumlin Farms, which does their own composting onsite for use in their vegetable gardens. We also met with groups in Acton that support

green initiatives in order to learn about our town's history of composting and to gain their support for our own efforts.

### **Reaching Neighbors, Teaching Leaders**

Once we understood how composting worked on large and small scales, we conducted an online survey to assess Acton residents' interest in and awareness of composting. Of the nearly 300 residents who responded, about 80 percent were interested in composting and 60 percent were interested in workshops to learn how to compost. In addition, approximately 95 percent of people responded that they would encourage their kids to participate in their school's food waste composting program if one existed.

Encouraged by those results, we decided to hold workshops from January to early March to teach town residents how to compost. We were happy to have the support of such community leaders as State Senator Jamie Eldridge and Chairman Mike Gowing of the Board of Selectmen, each of whom attended at least one of our workshops. We were also pleased to see how excited kids became about composting. The worms we used to demonstrate vermicomposting (composting with worms) were a huge hit with the kids at our workshops. We had a composting scavenger hunt for the kids at our town's Winter Carnival, and we created a puzzle packet for our workshop at the Discovery Museum as a fun way for them to learn about composting.

The success of these outreach efforts gave us confidence when we presented our plan for a school composting model to our middle school administration. In our proposal, we explained the logistics of how food waste from the cafeteria would be taken to a compost bin in the school courtyard. The compost would be used in a vegetable garden, and those vegetables would be used by the kitchen staff in the school food. The plan detailed the responsibilities of everyone from the principal and staff to students and custodians. Although our plan was very well-received, we learned that our school would be hiring a new principal, so the plan had to be put on hold.

Our next presentation was at a televised public meeting of our town's Board of Selectmen. Because Acton does minimal yard waste composting, we proposed ways that the town could enhance its existing composting system. We educated the Board about composting programs that nearby towns were using and informed them about small-scale initiative funds

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Left: Nikhil drums up interest for his team's booth at his town's winter carnival. Right: The Black Gold Miners presented a plan for a school-based composting program to administrators at their middle school.



**The Siemens We Can Change the World Challenge** encourages students in grades K-12 to learn about and propose solutions to environmental issues in their community. The challenge opens in late summer/early fall. In mid-March, teams (two to four members for middle and high school teams) submit an application describing how they completed these six steps:

**Choose It:** how the team picked the topic for their project

**Research It:** research the team conducted on their topic and related issues

**Plan It:** how the team created a plan of action

**Do It:** how the team executed their plan

**Analyze It:** what the team learned from assessing their efforts

**Share It:** how the team's project can work in other communities

Learn more at [www.wecanchange.com](http://www.wecanchange.com).

For more information about the Black Gold Miners' project, visit their website at <https://sites.google.com/site/compostinacton>.

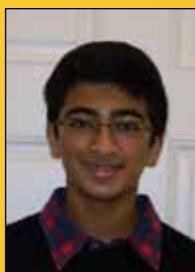
that the Massachusetts Department of Environmental Protection grants to towns to start composting programs. Our proposal included short-term and long-term composting models that involved different levels of investment from the town. We also recommended that they offer incentives—such as discounted compost bins or free compost from the town transfer station—to encourage residents to compost. The Board told us that our presentation was excellent and promised to get back to us. Sure enough, in May, the town began to allow residents to take compost for free. We were excited to see one of our ideas put into action so quickly!

### Prizes and Rewards

We documented all the research we did and actions we took in the online application for the Siemens Challenge. Completing the application involved a grueling process of writing, editing, rewriting, and editing again until it was finally submitted on March 15, the contest deadline.

After weeks of nerve-wracking suspense, on May 14 we got the email we had been waiting for: our team had been selected as the Massachusetts state finalist, qualifying us for the national round. Two weeks later, we got a phone call telling us we'd placed third nationally! We each won a tablet, a \$5,000 savings bond, and other prizes, but in the end, what mattered most to us was that we made a difference in our community.

The ancient Chinese philosopher Lao Tzu wrote, "Great acts are made up of small deeds." I now know that each of us can make a difference, and that our actions can inspire others to make a difference as well. If you try hard enough, you can change things for yourself and for others around you. So why not do what we did? Go green and get composting! **i**



**Nikhil Srinivasan** is a freshman at Acton-Boxborough Regional High School in Acton, MA. He plays violin with the New England Conservatory youth orchestra. Nikhil sings Indian classical music and regularly performs in the Boston area. In his free time, Nikhil likes to read, listen to music and hang out with friends. He attended CTY for three summers and, after taking Biology last summer, hopes to pursue research in the field of neuroscience.