

THE CHANGE AGENT

Adult Education for
Social Justice: News,
Issues, and Ideas

Fighting Contamination in a Chicago Neighborhood

Elvia Saltillo

Playing in Contamination

When my children were little, they played in the alley behind our house. The alley was wet and moldy. When it rained, the dirty moldy water came into the garage and yard. Sometimes it came into the basement. The kids were playing in god-knows-what contamination.

The children got rashes. The rashes were so bad. Sometimes the children looked like they had cigarette burns on their legs. Other parents had the same problem with their children. But there was no where else to play. All the parents took their kids to the doctor. But the doctor didn't know where the rashes came from. We didn't know what to do, so we didn't do anything.

continued on p. 24



STAYING SAFE IN A TOXIC WORLD

STORIES FROM THE HOME look at baby bottles, lead poisoning, hand soap, and "real cool stuff": pp. 3-7; **CIGARETTES** are toxic and addictive: pp. 8-9; **STORIES OF PEOPLE MAKING CHANGE**: pp. 27, 28, 30, 32-33, 37; **ORDINARY PEOPLE FIGHT AND WIN!** pp. 12-13, 16-18, 19, 48-49; **MATH PRACTICE** (fractions, percents, and ratios): pp. 9, 14, 15, 16, 26, 32-33, 34, 45, 49, 52; **PICTURING A PART PER MILLION** (and *verysmall* units for measuring contaminants): pp. 4-5, 26; **IDLING ENGINES** and diesel pollution: pp. 22-23; **APPLES, ORANGES, AND STRAWBERRIES**: pp. 15, 32, 34; **RECIPES**: pp. 7, 27, 39; **TAKING ACTION** at work: pp. 36-37, 48, 53; **QUIZ**: p. 39; **COAL MINING**: pp. 40, 41; **ALL ABOUT TRASH**—from chicken litter to packaging to the Gulf oil spill clean-up: pp. 42-53; **GARBAGE STINKS** (landfills to zero waste told in pictures): pp. 46-47; **SMART MOVES** for doing math: p. 35; **GLOSSARY**: p. 54; **SURVEY!** Tell us what you think of this issue: p. 55.

The Change Agent is the biannual publication of The New England Literacy Resource Center. Each issue of the paper helps teachers incorporate social justice content into their curriculum. The paper is designed for intermediate-level ESOL, ABE, GED, and adult diploma classes. Each issue focuses on a different topic that is relevant to learners' lives.

In New England, *The Change Agent* is available free of charge in limited quantities through NELRC's affiliated state literacy resource centers (SABES, ATDN, CALL, Vermont Adult Education Board, Literacy Resources/Rhode Island, New Hampshire Department of Education). Contact these centers to learn how to receive your free copies. PDF versions of *The Change Agent* can be downloaded from our Website.

Submissions. Our next issue marks the 10th anniversary of 9-11. See the "Call for Articles" on the back cover. We welcome submissions from teachers and students as well as activists and thinkers from outside the field. For submission guidelines visit <www.nelrc.org/changeagent> or contact us at 617-482-9485 or changeagent@worlded.org.

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From the Editors

Staying safe in a toxic world – not an easy task. We all need and deserve clean air, water, and soil for life. Becoming informed about threats to air, soil, and water means confronting complex-looking math and technical vocabulary, and can quickly lead one to feel overwhelmed. The good news is that working together we can understand the data, learn new science concepts, and advocate for solutions. Read on for ideas and inspiration. *The Change Agent* editors want to know how this issue affected you. Fill out the survey on p. 55 or go to <tinyurl.com/4mlm4ut>. We'll thank 10 of the first 100 to respond with a gift certificate.

—Martha Merson and Cynthia Peters

Note: on many of the following pages, you will see references to the *SfA Facilitator's Manual*. You can find it at <sfa.terc.edu>.

This issue includes a lot of math and science content. Keep the *Smart Moves* (p. 35) handy for complicated-looking problems.

Check our website for issue "extras": <www.nelrc.org/changeagent/extras>.

Meet the Editorial Board

Statistics for Action (SfA) is a joint project of TERC and its environmental organization partners (like the ones listed below). SfA produces guides to help communities begin to manage the science and math of environmental contamination.

The advisors and contributors to this issue include SfA staff and partners from environmental organizations with resources to help communities. If you have toxic troubles, reach out.

The Blue Ridge Environmental Defense League has information on their website on topics from asphalt plants to nuclear reactors. They have seen it all and offer assistance to communities in the southeastern states. www.bredl.org

Do an internet search for "environmental justice." Groups like Little Village Environmental Justice Organization in Chicago and Alternatives for Community and Environment in Roxbury, MA, work with residents on issues like transportation, air quality, open space, and clean ups. www.lvejo.org

Pesticide Watch works with California families and farmworkers to find sustainable solutions to control pests. www.pesticidewatch.org

Toxics Action Center offers assistance and training to citizen groups in New England facing toxics problems. Staff provide groups with information and resources to understand environmental threats, laws, and regulations, and to achieve their vision of a healthy, safe environment. Learn more about the problems communities have faced and solutions they've found at www.toxicsaction.org

River Network offers information and training for groups looking out for the water quality in their local waterways and the health of people, plants, and animals around them. www.rivernetwork.org

Boston University's School of Public Health has assisted community groups with health studies of all kinds, and the Superfund Research Program Community Engagement Core has contributed to the SfA project. Contact <MLS@bu.edu>.



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I Can Protect My Baby

Cassandra Holloway

Today we are exposed to a world full of toxins. Babies are exposed by the most seemingly innocent items, such as baby bottles and canned formulas. These items contain a harmful chemical called BPA.

When we buy baby bottles, the first thing we are told to do by the manufacturer is to sterilize the bottles by boiling. But when plastic is heated, it releases a harmful chemical called bisphenol A (BPA). By boiling baby bottles, we release BPA 55 times faster than normal use. 95% of baby bottles contain the BPA toxin.



BPA is not only found in baby bottles, but it is also found in toddler sippy cups, water bottles, and liquid formula. The U.S. government's Food and Drug Administration (FDA) estimates that formula cans carry 200 times the government's so-called "safe" level of exposure to BPA. The FDA also estimates that babies



"I can see how exposure adds up. That's what they mean by chronic exposure."

Exposed!

To compare infants' and adults' exposure, you would need to know how much BPA is in drink containers. What is the dose? How often and for how long do they drink? How vulnerable is the person? Is the brain or body developing?

Explore exposure further on p. 10.



have 12.5 times more BPA exposure than adults due to the chemical leaching from formula and bottles. Also, consider the size of a baby compared to that of an adult.

BPA can cause birth defects and developmental problems. It is still unclear at what level we begin to be harmed by the chemical. The safest way to avoid exposure for babies is to purchase bottles, sippy cups, and breast pumps that state that they are BPA free. If you use formula, use powdered rather than liquid formula. Furthermore, if you do have bottles with BPA, do not expose them to the high heats of boiling or microwave ovens.

Protecting our children from toxins may seem like a hard task; however, becoming aware of the toxins in everyday products is a good first step.

Sources: <USNEWS.com>; <brighthub.com>; <EWG.org>.

The safest way to avoid exposure for babies is to purchase bottles, sippy cups, and breast pumps that state that they are BPA free.

Cassandra Holloway attends the Adult Education Center in Fort Smith, AR. She is studying for her GED so she can go to college. She has two children, and she would like nothing more than to protect them from the world of toxins that they are exposed to.



Protecting My Son from Lead

Jaslyn Corbett



When my son was a newborn, he came dangerously close to getting very sick. I found out that the apartment we were living in had lead paint. This was scary because the paint was chipping off the walls. I immediately made an appointment with my son's pediatrician to get him tested for lead. Meanwhile, I started looking up information on the dangers of lead paint.

I discovered that just one chip of paint can cause serious health problems in children six and under. Just the opening and closing of doors or windows can cause lead dust particles to fly into the air. The dust particles land on objects in the

house, and children often put those objects in their mouths.

Over the years, many toys have been recalled because they contained lead. I also found out that lead affects children more severely than adults.

Children's growing bodies absorb more lead. Their brains are more sensitive to the damaging affects of lead.

Lead poisoning can harm people in many ways. It can cause hearing problems, kidney damage, behavioral

problems, anemia, and brain damage. This is just a small list of possible problems. (See the chart for more about lead testing.)

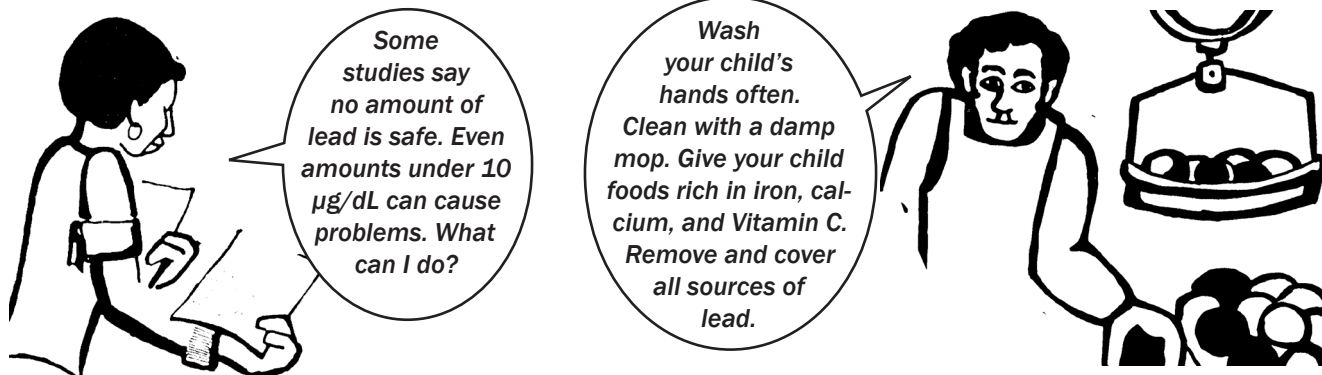
My son was fortunate because his lead test came back negative. I decided to move out of the old apartment and find one with no lead. I am careful about all the hazardous things in our environment. I make sure he eats healthy and nutritious meals, and I make sure to keep him clean.

Some states require landlords to protect tenants from the lead in old paint. Find out what your state's lead laws are: <www.weareleadfree.net>

Get Your Child Tested for Lead	
Lead Level in micrograms per deciliter (µg/dL)*	Finger-stick Method (this method is inexpensive and allows a large number of children to be screened, but it is not as accurate as a venous blood test)
Less than 10	Re-screen in 1 year.
10 - 44	Your child needs a venous blood test within 1 month for a more accurate reading. Meanwhile, take precautions. Talk with your doctor immediately.
45 and above	Lead poisoning at this level is VERY SERIOUS. Talk with you doctor immediately. A blood lead level over 70 is a medical emergency.

Source: Detroit Health Department <www.lead-info.com>. *See next page for information about micrograms (µg) and deciliters (dL).

Jaslynn Corbett is a GED student at Bristol Community College in Attleboro, MA. She hopes to go to college when she finishes her GED. She is the mother of 2-year-old Carl.



Real Cool Stuff? Or Toxic Stuff?

Sherri Collins

To protect my children from toxins in the environment, I will teach them to read the labels on the personal products that they use on a daily basis. For example, my boys like to put model cars and airplanes together, but the glue used to assemble the cars and airplanes has a strong odor. My daughter likes to use hair spray and non-permanent hair dye. I want her to understand that aerosol cans and their ingredients could hurt her and the environment if they are not used and discarded properly.

The problem with trying to teach my children to be cautious is that the ads on television and in magazines make it seem as if no harm could come from using these toxic products. These ads make all of the products seem like “real cool stuff.” So my kids sometimes say, “Aw, Mom,” when I limit the use of them.



Sherri Collins was laid off from her job in April 2010. She decided to use this time to earn her GED at the Adult Education Center in Fort Smith, Arkansas. She has three wonderful children and a husband of thirteen years who supports her in everything that she is trying to do.

Making Sense of the Measurements

Read the article and study the chart on the p. 4. Use the information below to get a better sense of the units it mentions—liters and micrograms.

Liters measure volume of liquid. A deciliter is one-tenth of a liter or 3.4 ounces. That’s about half of a small coffee cup. Find other ways to describe a deciliter.

Grams measure weight. A dime weighs about one gram. What else weighs one gram?

Amounts smaller than a milligram can be measured in micrograms (μg). A microgram is one-millionth of a gram. Is it visible?

Do too many numbers make your brain freeze? You’re not alone! See “Smart Moves” on p. 35 for tips to help you *keep thinking* even when approaching difficult math problems!



Washing Hands with Toxic Pesticides?

Barbara D'Emilio

"Tug on anything at all and you'll find it connected to everything else in the universe."

— John Muir, advocate for preserving wilderness, co-founder of the Sierra Club

The Softsoap ads tell us that hand washing prevents the spread of infection and promotes good health. Yet they don't mention that Softsoap Anti-bacterial Liquid Soap contains triclosan, a toxic

pesticide that has been linked to health problems.

Many people think anti-bacterial products will help them stay healthy. But does it make sense to kill germs with a toxic pesticide?

Manufacturers are adding triclosan to large number of products including deodorants, cleaning supplies, shaving cream, and mouthwash. Under the name of microban, this pesticide

is added to bedding, socks, backpacks, kitchenware, toys, and furniture.

Many people think anti-bacterial products will help them stay healthy. But does it make sense to kill germs with a pesticide that is basically a nerve gas? If you tug, as John Muir suggests, you find that triclosan is linked to liver damage, respiratory problems, and thyroid imbalances. Most importantly, triclosan may impact the development of the brain and nervous system in children, causing learning problems.

What Happens When You Tug?

Get a blank sheet of paper. Write the word triclosan in the middle. Circle it. Elsewhere on the page, write the names of things that it affects. Draw lines that appropriately connect all these things. Do you agree with John Muir's quote above?



Triclosan is not even very effective. You can get your hands just as clean by washing them for 20 seconds using regular soap and water. The increased use of triclosan creates "superbugs," bacteria that mutate, become resistant to the pesticide, and grow more rapidly. In addition, when this newly resistant bacteria infect people, they do not respond as well to antibiotics.

Tug yet again and you find triclosan in our environment. As triclosan enters the waterways, it kills algae. Fish become toxic. Triclosan is also found in the soil where we grow our food. Studies have found this neurotoxin in the blood urine and breast milk of women across the globe.

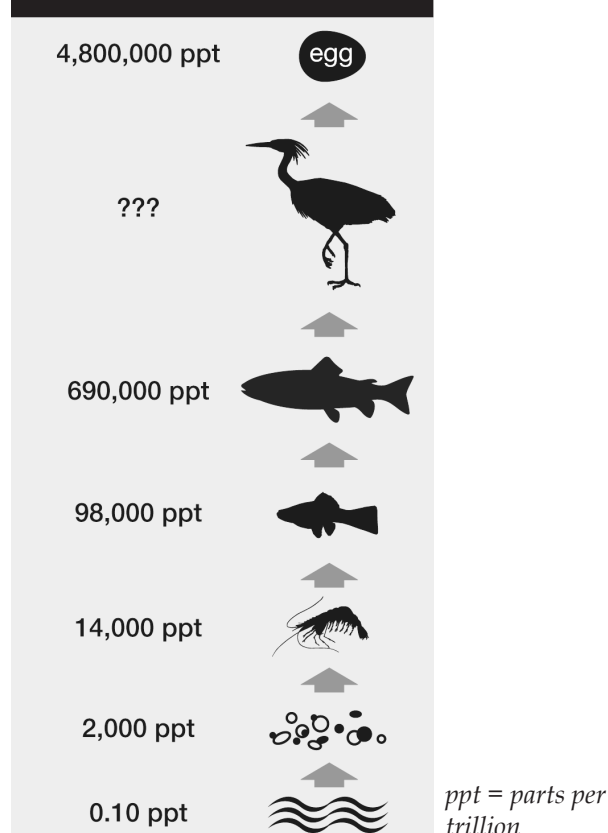
John Muir reminded us that everything is connected to everything else. If we wash our hands with triclosan, we might think we are simply cleaning our hands. But we might also be damaging our bodies, our children, and our environment. Japan, Canada, and the European Union have restricted the use of triclosan. The U.S. should take action as well. See the box for some

things you can do. Your action now will help assure that the connections we have with each other and with the environment are healthy, nurturing, and long lasting.

Barbara D'Emilio has taught ESL at Prince Georges Community College and developed curricula. She currently works as an educational consultant. She lives in Washington, DC, and is a member of Beyond Pesticides.

Sources: <www.huffingtonpost.com> 4/8/2010; Allmyr M. et al. "Triclosan in plasma and milk ..." *Science of the Total Environment*, 372(1): 87-93 Dec. 2006; <beyondpesticides.org>.

Toxins in the Food Chain



In the process of "biomagnification," a toxin enters the water and gets more concentrated as it moves up the food chain. Some pesticides are endocrine disruptors – they act like hormones in the body, changing the way cells act and develop. These pesticides are linked to birth defects, cancers, and reproductive problems. The damage they cause may not be seen or felt for years.

Source: <www.nrdc.org/health/effects/qendoc.asp>

What Can You do about Triclosan?

A high-quality, foam soap that is 99

Drug Facts

Active ingredient

Triclosan, 0.30%

Uses ■ For hand washing to reduce

1. Read the label! Don't use products that contain triclosan, triclocarban, and microban. Consult <www.beyondpesticides.org/anti-bacterial/products.htm> for information on product safety.
2. Write a letter to your favorite stores; ask them to stop selling products that contain triclosan.
3. Visit <www.foodandwaterwatch.org/2010/12/ban-ban-the-triclosan> to submit a public comment to the EPA regarding triclosan. The Environmental Protection Agency is accepting comments from the public on triclosan.
4. Make your own non-toxic cleaning supplies. Get your children to help. Here's one recipe. Find more at: <www.care2.com/greenliving/make-your-own-non-toxic-cleaning-kit.html>.

Creamy Soft Scrubber

- Pour about 1/2 cup of baking soda into a bowl, and add enough liquid detergent to make a texture like frosting.
- Scoop the mixture onto a sponge, and wash the surface.

Rinses easily and doesn't leave grit.



Cigarettes are Toxic

Ashley Knox

Cigarette smoke is extremely toxic. It can cause lung cancer, emphysema, and many other health problems. The smoke in cigarettes contains 4,000 chemicals; 69 of those chemicals cause cancer. Here are some of the harmful chemicals: butane, ammonia, methane, arsenic, and many more.

There are three ways that cigarette smoke can hurt people. The first one is first-hand smoke which happens when you inhale the smoke and all the chemicals from the cigarette go directly into your lungs. The second way that cigarettes are harmful is through second-hand smoke, which is when the people around you inhale the smoke that you exhale.

The last way that cigarette smoke can hurt people is through third-hand smoke. Third-hand smoke is when the toxic chemicals from cigarette smoke get in your clothing, your hair, and the furniture. The more you smoke in a room or in your car, the more you get layers of these toxic chemicals on everything around you, and so you

expose other people to the harmful effects of cigarettes.

There is a solution to stopping the spread of these toxins, and it is to STOP smoking.

However, that is easier said than done. Cigarettes contain nicotine, which is extremely addictive, so it is hard to quit. Also, cigarette manufacturers spend millions of dollars on advertising, trying to convince people that smoking is cool.

I believe the reason cigarettes will continue to sell is because manufacturers are making too much money from their sales. We as a country need to come up with ways to convince the manufacturers to stop making and selling cigarettes so we can have a healthier environment to live in.



Ashley Knox is working on her GED at Bristol Community College. She lives in Attleboro, MA. Source: <www.tricountycessation.org>



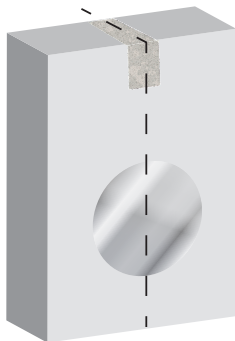
The Food and Drug Administration (FDA) will require cigarette manufacturers to put graphic warnings on each cigarette package. What do you think of these warnings? Which do you think is most effective? Is it fair of government to force cigarette makers to use these graphic warnings? Read on (p. 9) for more on the seller's responsibility.

What is the Seller's Responsibility?

Martha Merson and Cynthia Peters

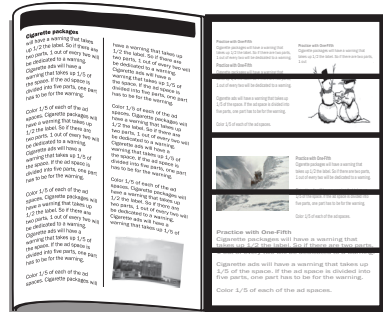
Despite the recession, major cigarette manufacturers reported large increases in profits last year. In the last 3 months of 2010, one company reported that revenue was up 9 percent to \$1.02 billion. Do the sellers of this toxic product have a responsibility to warn the consumer? The Food and Drug Administration (FDA) thinks so. See some of their warnings on the previous page. Read more below about the FDA's requirements for cigarette packages and cigarette ads.

Source: <www.allvoices.com/contributed-news/8128529-lorillard-profits-up-as-cigarette-sales-increase>.



Warning!

Cigarette packages will have a warning that takes up 1/2 the label. So if there are two parts, 1 out of every two will be dedicated to a warning.



Cigarette ads will have a warning that takes up 1/5 of the space. If the ad space is divided into five parts, one part has to be for the warning.

Where will cigarette companies place the warning?

Name four fractions that keep the ratio of one part out of every five. These are equivalent fractions.

Another way to say 1/5 is 20%, just as 20 squares out of 100 is 1/5 the space.

If you know the amount that is 20% or 1/5, what ways can you figure out the total? Adding is just one way.

What if 1/5 is 2?

2
+ 2
+ 2
+ 2
+ 2

\$100
+
+
+
+

Ad space costs \$100 for 1/5 page. The total for the page is _____.




46.6

20% of the adult population smokes. That is 46.6 million people. How would you show 1 in 5?

About 19.5 percent of high school students, or 3.4 million teens are smokers. The percents for adults and teens are not so different. Are the actual totals very different?

Exposed!

Statistics for Action

<p>Arsenic is very dangerous. We're worried about the arsenic levels on the orchard property.</p>  <p>Parent</p>	<p>My buddies and I go there all the time!</p>  <p>Rodrigo</p>	<p>What would you say is the highest number of hours per year that children spend in the orchard?</p>  <p>Assessor</p>
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To understand how dangerous the orchard is for children, the assessor needs to know how much time they spend in the area. Read below about four children who spend time at the orchard. What child spends the most time in the orchard? Guess first, then calculate it. See more about exposure and ranking risk on p. 90 of the *Statistics for Action Facilitator's Manual*.

Think about the idea of risk. How do you decide what risks to take? What risks are you exposed to that you did not choose (such as toxins in the air or water)? Who should decide what is an acceptable level of risk?

<p>Rodrigo</p> <p>Played in the orchard for 6 hours every day on his 6-day spring break. Also came to the orchard to pick apples for about a half hour, about 5 times in October.</p>	<p>Sofia</p> <p>Walked through the orchard every day going to and from school. It takes her about 5 minutes to cross the orchard going one way. There are 180 school days per year.</p>
<p>Ellen</p> <p>Sat beneath her favorite tree in the orchard for about 2 hours a day on warm days in the summer, which was about half of the days during her 12-week vacation.</p>	<p>David</p> <p>Goes jogging around the orchard for about a half hour each weekday morning, about 8 months per year.</p>

A Different Meaning of Toxic

Alecia Daye

When I was growing up, “toxic” had a very real meaning for me. From the time I was born until the time I was 7 years old, I lived on the streets with my mother, father, and older brother.

Baby formula is very expensive. My parents could not afford to buy it for me. You might wonder why my mother never nursed me. My mother was diagnosed with HIV when she was

It can be toxic just to be around certain things, even if you don’t put them directly in your body.

17 years old. She couldn’t nurse me because I might have gotten HIV as well. The doctors told me how lucky I was that I didn’t get it. Maybe I am lucky. However,

due to my family’s circumstances, I was often given water from the Des Moines River. I was given the water in a regular baby bottle. When I think about that time in my life, I can almost taste the grime of that filthy water.

It can be toxic just to be around certain things, even if you don’t put them directly in your body.

My mother was a heroin addict, and I was often around the substance. I lived on the streets of an unsanitary neighborhood. When you walked in someone’s yard, you

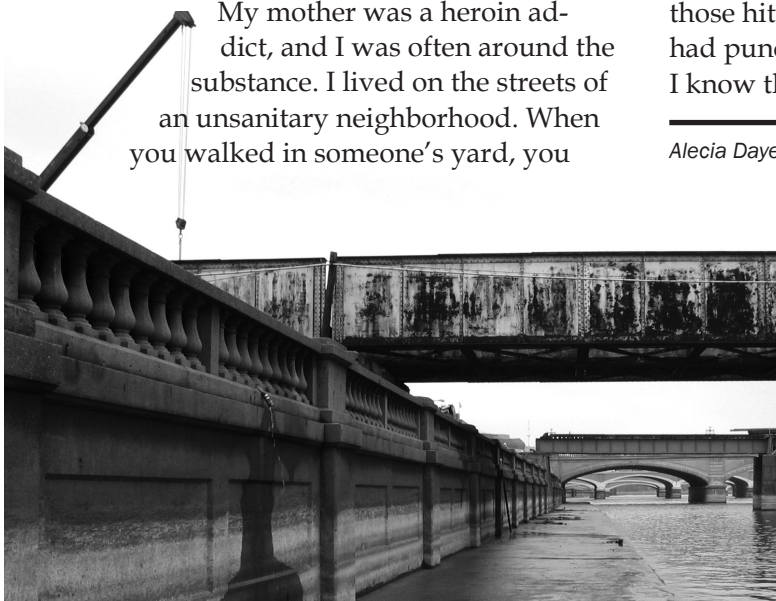
could find enough needles for a diabetic’s lifetime supply. You could always smell someone cooking. They were making meth or other drugs. In other words, it wasn’t food they were cooking.

Some people think that toxins only come from acid rain and factory pollution. But toxins had a different role in my life. Not only did I experience physical toxins but I also experienced social toxins. My environment was so unsafe, it was hard to perform daily activities, like eating a meal or going to school. Growing up like that has left me feeling vulnerable.

In my life, the best antidote to all these toxins was having someone that I could depend on. Don’t be afraid to lean on someone’s shoulder. I always leaned on my older brother and my grandparents. I have to keep reminding myself that life is going to throw punches. I just have to dodge those hits and keep going. Without a doubt, I have had punches knock me down. But in the long run, I know they just make me stronger.

Alecia Daye is in a GED program in Waterloo, Iowa.

Not only did I experience physical toxins but I also experienced social toxins.



Making Sense of Toxins

Make a list of physical toxins and a list of social toxins. How are they the same? Different?

Poison is poison, but there are ways to compare toxicity, see p. 156 of the SfA Manual.

What Makes a Mom an Activist?

An Interview with Lois Gibbs

Over thirty years ago, Lois Gibbs was a 27-year-old mother and housewife living near Love Canal in up-state New York. Her children began to get sick, and she wondered if their illnesses were related to the fact that the local grammar school was built next to a toxic waste dump. She decided to talk to her neighbors. It was 1978, and with those first steps going door-to-door in her neighborhood, Ms. Gibbs went from being a housewife to a community activist. She is currently the executive director of Center for Health, Environment and Justice.

Can you describe the events that made you go door-to-door in your neighborhood?

My son and my daughter got very sick. I found out that their illnesses were related to the chemical waste that was buried near our house and right next to the school where my son attended kindergarten. The Board of Education called me a hysterical housewife. I realized that if I was going to protect my children, I only had one choice, and that was to find other parents with sick children and to close the 99th Street School.

Why did you decide that going to your neighbors was the first thing to do?

Because every single government door was slammed in our faces and the health officials said, "Yes, your son has all these diseases but you prob-



Lois Gibbs with her daughter Melissa during the early days of organizing the Love Canal protests, 1979.

ably have bad genes." But my children's illnesses obviously were related to Love Canal. Benzene was leaking out of the toxic waste dump. Benzene causes leukemia and blood disorders, and my daughter had a blood disorder. There were toxic pesticides on the playground where Michael played. These pesticides cause seizure disorders, and Michael had a seizure disorder. You don't need to be a medical expert to put those together.

What was it like to go door to door?

Going door to door was probably the most frightening thing I did. I believed that when I knocked on the door, everybody was going to tell me that I was crazy. It took a lot of courage to begin to talk to people. But then people were receptive. They told me stories that were similar to my story. Their children were sick; their husbands were sick; their wives were sick; they had different colored chemicals coming into their basements.

What is the biggest obstacle to organizing?

Fear is the biggest obstacle. If you are organizing in your community, it is probably because you



tried to go the authorities—the people that are supposed to be the experts—and you have been told that you are wrong. So you start your organizing with a sense of insecurity. You think maybe you really are nuts.

How did this work become a lifetime pursuit?

After Love Canal I received calls from people all over the country, who said, “I’ve got a dump just like that. How do I clean it up? How do I get some medical testing of our community?” I saw there was a need out there. I didn’t have *all* the answers, but I had *some* of the answers. I could help people figure out how to organize. I’m still angry. Here in the richest country in the world, we are supposed to be the home of the free. But it isn’t so. The poorer you are, the more “of color” you are, the less you get from society; it really makes me angry.

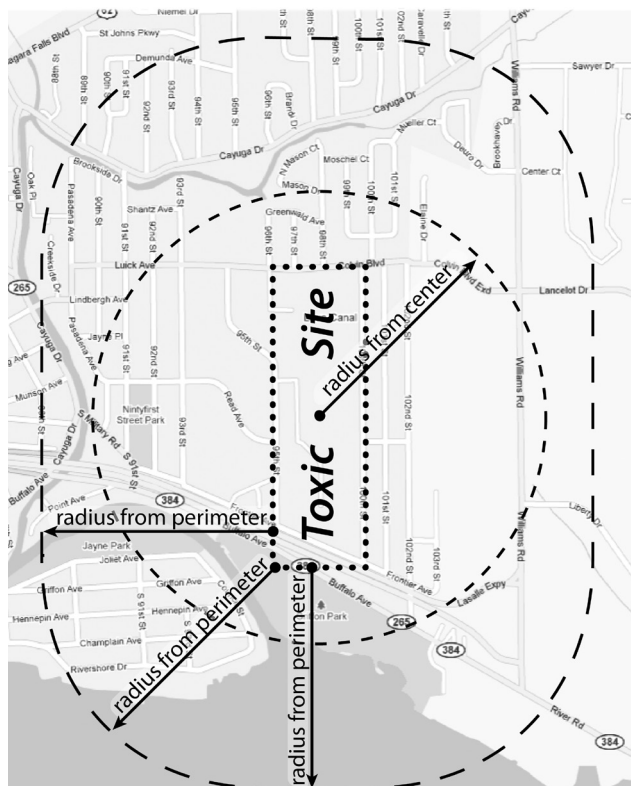
What issues are you focusing on now?

We are looking at children and environmental health. There are many schools built within a half-mile radius of Superfund sites or even being built directly on top of toxic waste sites. I look at them and say, “Oh my god, it’s like Love Canal all over again. It’s like the 99th Street School being put next to a dump site. Why would people do that?” We are also working on Dioxin, which is one of the most toxic chemicals known to man, and it comes from the manufacture of plastic, which has chlorine in it. We are working to try and eliminate that type of plastic from the market place.

This article originally appeared on <www.pbs.org/pov/fenceline/getinvolved_article01.php>. Adapted for *The Change Agent* by Cynthia Peters. Photos from *Love Canal: The Story Continues*.



Lois Gibbs (left) protested at the Eagle Rock Mine Project in Michigan in 2010. Photo courtesy of Greg Peterson.



A news report might talk about people who live “within a half-mile radius” of a toxic site. A radius might make you think of a circle. On this map, the inner circle is a half-mile radius from the exact center of the toxic site. The outer shape is a half-mile away from the perimeter of the toxic site. If you lived in this neighborhood, which shape would you want to use to describe people who live “within a half-mile radius” of the site?

How Close are You?

Visit <<http://toxmap.nlm.nih.gov/toxmap/main/index.jsp>> and input your location to find out how close you are to toxic releases or hazardous waste sites.

Organic Gardening

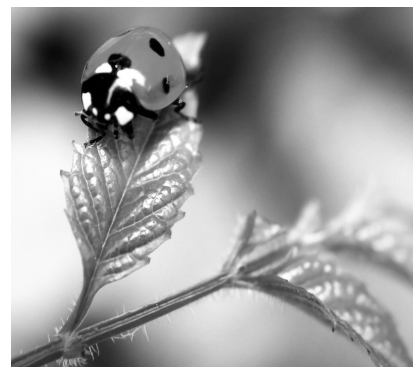
Glen McDaniel

One way to reduce toxins in my community is to practice organic gardening. This past summer, I became a member of the River Valley Master Gardeners, an organization which works with the University of Arkansas Extension Agency to provide education on gardening to the public.

Although I am new to the organization, I have already learned that in order to grow flowers and vegetables, you have to have good soil. In addition, you can grow almost anything by using commercial fertilizers. This is much like baseball players who use steroids to help them play better. In the long run, steroids are bad for the players, and commercial fertilizers are bad for the garden. In organic gardening, we try to build up the soil so that it gets better each year instead of detroying it. We use composting, crop rotation, and natural fertilizers to build the soil.

It is common for gardeners to use insecticides to control insects, but not all insects are bad. We need bees and other insects to pollinate the crops. If you kill all of the insects, you will not have a good crop of fruits or vegetables. Also, some of the good insects eat the bad ones.

Too many insecticides, herbicides, and commercial fertilizers can be toxic. They can stay on the fruits and vegetables when we consume them, and thus make us sick. As a member of Master Gardeners, I try to grow my garden naturally. The practice is good for the soil and for those who consume the produce.

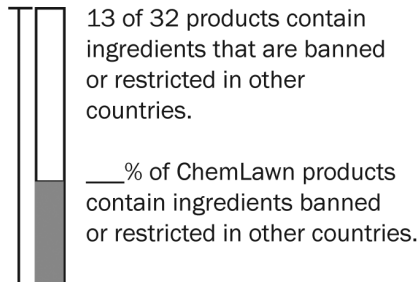
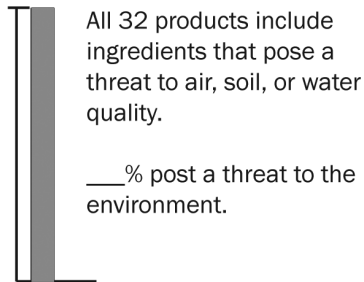
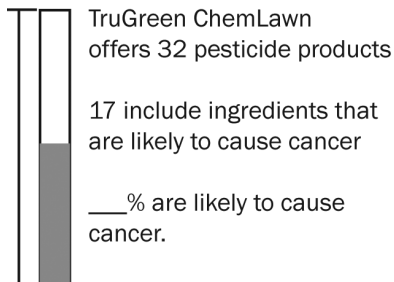


Glen McDaniel is a student at the Adult Education Center in Fort Smith, AR.

Is it TruGreen or Truly Toxic?

Around the U.S., homeowners use pesticides on their trees, roses, and lawns. TruGreen ChemLawn is the number one lawn care provider in the U.S., servicing more than 3.5 million households. Use your percent and fraction sense to fill in the blanks below. Then use what you've learned to complete this statement:

"I believe ChemLawn products are [mostly safe/mostly unsafe] because ..."



Pesticide Persistence

What's that You're Eating with Your Apple?

PRE-READING The word pesticide includes the latin root "cide." Think of other words that end in "cide"? What do you think "cide" means?



What Happens to Pesticides?

Agricultural industries use 1.2 billion pounds of pesticides every year. Pesticides are designed to kill the insects that might want to eat the same fruits and vegetables that we want to eat.

After the pesticide kills the pests, it is supposed to break down. Many pesticides break down in sunlight. Some are dissolved by water. Usually the pesticides break down to less toxic chemicals, but sometimes they are more toxic.

Scientists label the *persistence* of pesticides in the following way:

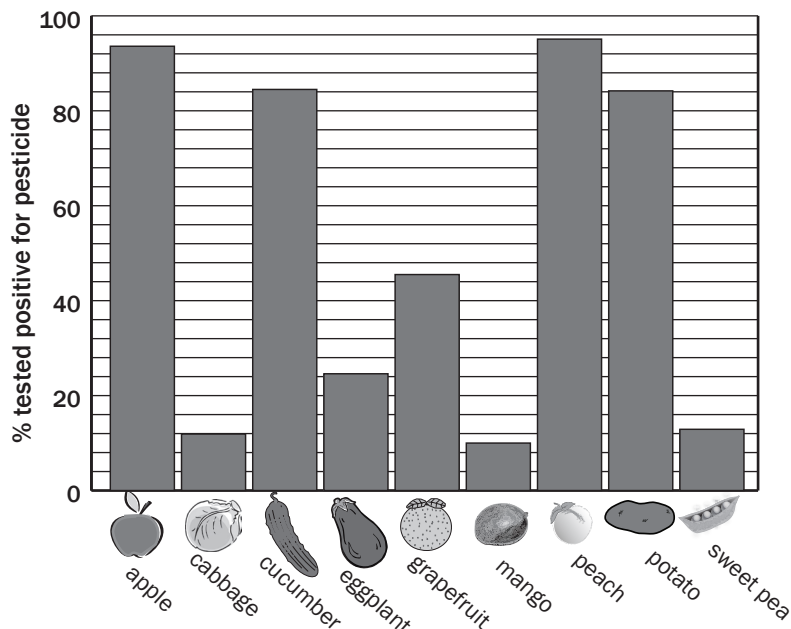
- Non persistent < 30 days
- Moderately persistent 30 – 100 days
- Persistent > 100 days

Persistent pesticides leave a residue on food. Any pesticide can be carried away by wind or rain or by people who touch the plants or the ground and carry the pesticides with them on their shoes and clothing. Farmworkers and their families are especially at risk.

Your Favorite Foods?

Circle the items on the graph below that you like to eat. The graph shows what percent of the time the food tested positive for pesticides.

Fruits and vegetables are the ultimate health foods. We are supposed to get 5 servings of them everyday! Don't stop eating fruits and vegetables, but do think about how to deal with the pesticide problem.



Apple Lovers Unite!

Are you upset to see that apples test positive for pesticides about 90% of the time? Another way of expressing that is as a ratio: 9 out of 10 times. How do apples compare with other foods?

What can you do if your favorite foods have high pesticide residue? Would washing and peeling help? Could you buy organic apples or choose a different fruit? Will you act to support changes in pesticide use?

Source: <www.ewg.org>

Storybook Farm's Backyard

Beverly Kerr



This year my husband Julius and I celebrated our 40th wedding anniversary. Julius has a medical condition that causes severe cramping of his muscles, especially in his legs. He is often

in pain and there are times when he cannot walk. The doctors do not know what the condition is or why he is having these symptoms. We wonder if our environment is to blame. This is a sad situation, but it does make us grateful for each day we are together.

Share the Test Results

What statements should Beverly make when she talks about her soil test results?

Pollutants Found in Three Soil Samples in Storybook Farm's Yard

Chemical Name	Sample A	Sample B	Sample C	Typical US Level in soils
Chromium	43.3	86.6	40.6	40.00
Lead	23.7	23.2	14.5	10.00
Zinc	181.0	30.1	258.0	50.00

1. On average, zinc levels are _____.
2. Sample C of zinc is _____ times higher than typical U.S. soil.
3. The lead levels look lower than the others, but Samples A and B are still about _____ times higher than typical.

Data on soil results are in mg/Kg. Table provided by BREDL. BREDL staff advise using the highest level for comparison. There is a chance that a person in Storybook Farm's backyard may be exposed to the highest level. To learn more about the dangers of exposure to chemicals, check <www.atsdr.cdc.gov>.

Our Neighbor: A Toxic Polluter

Our family was settled in our home and our child care business, A Storybook Farm, was in operation for over ten years when a galvanizing plant opened next door to us. We received no warning about the galvanizing plant, even though this polluting industry ad-joins our property.

Galvanizing plants operate with almost no pollution controls. Their tanks of hot metal, acid, and caustic chemicals are open to the atmosphere.

Galvanizing contaminants include lead, zinc, chromium, and particulates. Our soil shows elevated levels of these pollutants. Our daughters and grandchildren are showing signs of the same condition that torments my husband. They were all raised or spent much of their childhood right here in our home beside the galvanizing plant.

Before this polluting industry showed up in our backyard, we never gave much thought to clean air and water or our peaceful neighborhood. We took it all for granted.

We Used to Take Clean Air for Granted

After many complaints by our family and others in the community, the North Carolina Division of Air Quality (NC-DAQ) set up air quality testing equipment to monitor the galvanizing emissions. The results of the air testing were "inconclusive."

Before this polluting industry showed up in our backyard, we never gave much thought to clean air and water or our peaceful neighborhood. We took it all for granted. We were not active in environmental work or volunteer work except through our church. We didn't pay much atten-



Here's Julius on the far right, getting ready for an old fashioned tractor-pulled hay wagon ride!

tion to politics. Now that we have opened our eyes to environmental threats, we are aware and active. My husband Julius and I and many of our neighbors monitor the community closely for new activity, new permits, and new threats.

We know that once a business is in place, it is almost impossible to stop it. This is why we took quick action when a neighbor noticed workers clearing land in our community. He alerted neighbors that we might have a problem. We found that an application for an asphalt plant had already been approved by our county commissioners.

Learning, Organizing, and Getting Help

We needed help to figure out how to stop the asphalt plant. We held meetings in each other's homes and discussed our battle plan. A typical meeting would be held Sunday afternoon, with a gracious hostess serving iced tea and key lime pie. We invited Blue Ridge Environmental Defense League (BREDL) to help us organize our campaign to stop the asphalt plant.

BREDL provided technical reports that gave an overview of 7 toxic substances released from asphalt processing facilities. Their report showed that asphalt plants are sources of gaseous volatile organic compounds (VOCs). These pollutants are dangerous to human health. Some VOCs are also suspected carcinogens or cancer-causing agents. Here is a list of pollutants typically found in emissions from asphalt plants: hydrogen sulfide, ben-

zene, chromium, formaldehyde, polycyclic aromatic hydrocarbons (PAHs), cadmium, and arsenic.

BREDL also taught us how to talk to the media and the public. For instance, we learned that it is better to compose a press release to say exactly what you choose instead of answering the questions of a reporter and risking saying something that might not help your cause. Our group presented our goal to help free our community of serious pollution, noxious


odors, excessive noise, and heavy traffic that can destroy the health and environment of our rural neighborhoods.

An Important Win!

We befriended our county commissioners and had individual meetings with them to explain our concerns. We placed yard signs everywhere that read "NO Asphalt Plants!" We made phone calls, mailed letters, emailed, faxed, and spoke at every available public meeting. We called for a public hearing and spoke as if we had already won. "Our community is grateful that our county commis-



My granddaughter and I in our backyard, standing beside an air monitor. The air quality tests were "inconclusive." We later found out they were testing for Particulate Matter (PM), which is not the biggest problem with galvanizing plants. When we asked the state why they did that, they said that was the only equipment they had, and that the equipment required to test for galvanizing chemicals was too expensive.



Odor Log Book

A system for recording information about noxious odors from industrial facilities.
Blue Ridge Environmental Defense League

Information gathered on this form will help determine where and when testing of air samples should take place.

DATE <small>month/day/year</small>	TIME <small>AM or PM?</small>	WHAT DID YOU EXPERIENCE ? <small>Any smells? health effects? smoke? noises?</small>
Wed, 6-10-09	6:30pm	WEST WIND 3mph, SMOKE TALLOW SMELL BURN BAD METAL TASTE, LOUD SLAMMING OF STEEL
Thur 6-11-09	3:08pm	LOUD FORK LIFT, LOUD BEEPING APPX 65 DB WEST WIND SLIGHT, BURNT METAL SMELL
6-11-09	3:41pm	HAMMERING ON STEEL T3 DB
6-15-09	8:44am	SLIGHT WIND S. BURNT METAL SMELL
6-15-09	9:14am	SLAMMING STEEL SLIGHT S. WIND BURNT METAL SMELL

An odor log is one way Julius and others monitor their area.

We won! No longer can polluting industries open in Alamance County.

sioners will not allow polluting industries here. If you appreciate our commissioners, stand up and give them a big round of applause.” The whole room of citizens stood up and applauded, and our commissioners smiled and thought of all those votes and approved a moratorium on the asphalt plant. Next, BREDL helped us to propose a polluting industries ordinance for our county,

which was also approved. We won! No longer can polluting industries open in Alamance County.

Now We Protect Each Other

We feel powerful and useful; we are grateful that we have come together to know each other better and to work to stop environmental threats. We are an extended family now, protecting one another. We know our neighbors by name. We’ve visited in each other’s homes. We monitor our planning board and our county commissioner meetings. We know that we are responsible for our own protection. We cannot leave it up to anyone else.

Sadly, the galvanizing plant is “grandfathered” in under the ordinance and continues to

operate. We are working towards better control of the toxic emissions.

I have many mixed emotions about my environmental work. I am mad when I am insulted for trying to protect my family and my environment. I am discouraged when results are labeled “inconclusive” again and again.

I am embarrassed for our system when county, state, and federal representatives say they are short-staffed and cannot help. I am concerned when I get veiled threats. Yet, I am determined to tell my story and to help others protect their community.

I started out with no knowledge of environmental issues. Now I work full time with the Blue Ridge Environmental Defense League as a community organizer. The misfortune of having a galvanizing plant next door has given me a most interesting and rewarding job. I am certainly not in a perfect situation, but I do believe I am exactly where I should be in my life and I count my blessings every day.

Beverly Kerr is a wife, mother, grandmother, childcare provider, and community organizer with the Blue Ridge Environmental Defense League <www.bredl.org>.

Lessons Learned?

List some of the things Beverly used to take for granted.

What did she learn about herself and her community?

How has her story affected you?

Write about a time you went through a transformation. What was hard about it? What was inspiring?

Counting and Calculating

How Does Math Matter When You're Fighting Pollution?

Steve Dickens

In the United States, we like to say we live in a free country. However, these days, laws that protect “freedom” are sometimes aimed more at protecting the freedom of big industries to pollute. Industries that discharge toxic substances don’t have to prove that those substances are safe. If residents suspect a problem, *we* have to prove that the toxic substances are *unsafe*. In many communities, people are using data and statistics to make their case.


“A handful of crazies”

In the 1990s, residents in Corrales, NM, began to have symptoms like fainting, rashes, seizures, and irritations of the nose, throat and lungs. Then there were miscarriages and birth defects. Some people blamed the Intel plant located 100 yards uphill.

But Intel supporters wanted to ignore residents’ concerns. The *Albuquerque Journal* quoted a state representative who said only a “handful of crazies” had complaints. So, Corrales Residents for Clean Air and Water reached out to River Network, a national environmental organization, and the Southwest Organizing Project, a regional community organizing group, for help. Together,

So You Want to Conduct a Study?

Environmental organizations, public health schools, and local departments of health can be helpful resources. Before you start, check out “Is a Health Study the Answer for Your Community?” by Madeleine Scammell and Greg Howard. (Contact mks@bu.edu for a copy.) And before you start paying for air, soil, or water tests, talk to an environmental organization with experience in monitoring.



20 Cents VOL. XXIV, No. 18 November 5, 2005 Two sections

HEALTH SURVEY STATISTICS LINK PROXIMITY TO INTEL WITH ILLNESSES

Statistical analysis of responses to a health survey among Corrales residents reveals strong correlation between proximity to Intel and certain adverse health effects.

Results of a survey mailed to all Corrales residents in February 2002 show that people living near Intel's microchip manufacturing plants are more likely than other villagers to have persistent coughs, frequent headaches, sore throats and other allergy-like symptoms.

And that's not at all likely to be pure chance. Detailed statistical analysis by the Oregon-based River Network indicates that odds are only two in 100 that the link between proximity to Intel and

Among the more startling findings was the contrast between the exposure to Intel emissions and smoking on the likelihood that people report persistent coughs.

People who live near Intel and smell unusual odors are nearly three times more likely to have a persistent cough than people who don't. By contrast, the survey found that people who smoke are only twice as likely to have a persistent cough as people who don't smoke.

The health survey was conducted by Southwest Organizing Project (SWOP) and Corrales Residents for Clean Air and Water (CRCAW). A mass-mailed questionnaire, based on a NM

of New Mexico. Returns from that mailing were then field tested with follow-up interviews by River Network for corroboration.

The mission statement for the health program of the not-for-profit River Network is "to help people investigate, understand and take action to address community health problems related to pollution." The group's assistance with the Corrales health survey was arranged through SWOP and a former UNM faculty member with a doctorate in environmental epidemiology from the Harvard School of Public Health.

After statistics show strong correlation with...

they designed and conducted two health surveys to show there were a number of real problems.

Data Supports Residents' Case

The survey results clearly demonstrated two things: 1) over 55% of Corrales residents surveyed reported that they smelled obnoxious odors; and 2) those who lived close to Intel and reported smelling obnoxious odors had significantly more health problems than those lived farther away from Intel or did not smell obnoxious odors.

The study had to be carefully designed so that other factors like smoking, drinking, or a history of working around toxic chemicals did not affect the findings.

The data were presented in hearings set up to review Intel's air quality permit. In the end, Intel agreed to reduce their emissions.

The results of this research produced data that helped the community make its case. Sometimes survey results do not support a community group's case. Before starting a health study, make a careful plan and talk it through with others who have experience doing health surveys.

Steve Dickens is the Health and Environment Director at River Network <www.rivernetwork.org>.

Suspect a problem? Will testing uncover it?

Martha Merson

Do you suspect a problem with the air or soil or water in your area? You can't test ALL the soil, ALL the air, or ALL the water. Environmental professionals are trained to take samples to find out how much contamination is present.

The basic rule is that the more samples you take, at the most likely locations and depths, the more confident you can be in the results. If you do not feel confident in the sampling plan, you might have to push for more testing.

The Case of Dow Chemical

In the town of Wayland, Massachusetts, Dow Chemical used to have a research lab. Its workers experimented with chemicals that they sometimes dumped outside the building. Residents were afraid that some of these dangerous chemicals were still on the property.

Community members formed a group with help from Toxics Action Center. They also applied

for and received a grant from the state's Department of Environmental Protection. Together, they forced Dow to clean up the land. Part of the process was to test soil samples from the area. When it came time to start testing, the community had a chance to comment on the sampling plan. Linda Segal, one neighbor who was active in the community, remembers, "This was an important point for us to get an expert opinion. The expert said we needed more samples. He wanted more data and he told us to insist. Just because Dow had admitted there was a problem and agreed to clean-up the site didn't mean we could go mind our own business while they got the job done. We had to pay close attention through the whole process."

Getting a hazardous waste clean-up going

The current owner is usually the one who has to pay; it can vary from state to state. The owner may want more tests to show that others share the






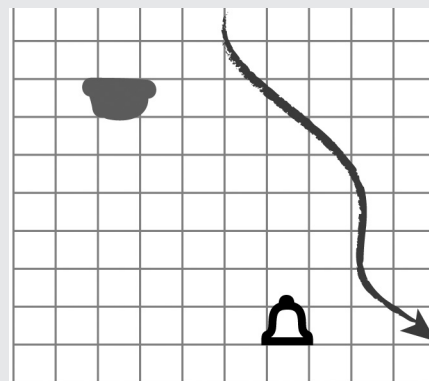
Your turn: Make Up a Sampling Plan

Read the tips (on the next page) for where to sample.

Mark an x on 5 spots where you think it is important to test.

There is no one right answer. Explain your thinking. Talk it over with others.

-  = oil tank
-  = creek
-  = school
- x = proposed groundwater sample



blame. More testing can delay the clean-up.

At talks about clean-up, the cost may seem like the biggest issue. Everyone seems to agree: “We would like to clean up.” But then the owner complains: “The cost is too high.”

Jim Luker, an environmental consultant, noted, “Many times owners select the cheapest clean-up option. Years later tests show that the clean-up failed. Then the owner has to go back to square one and use a more expensive option. This means the final cost is double or triple the original estimated cost.” Picking the best plan should take into account:

- the cost for clean-up
- the site history – knowing where to test and what contaminants to look for
- plans for the property’s use
- risks to anyone using the property
- length of time for clean-up

Will all the contamination be gone?

In some cases, communities have asked property owners to make the site as clean as other land in the area. This is called cleaning up to background levels.

The state can enforce a clean-up only to the standards it has set to protect people’s health. These may be higher or lower than background levels, so it’s worth looking into.

Martha Merson is the project director for Statistics for Action. For more on sampling, see SfA Soil Guide: Digging into the Dirt <<http://sfa.terc.edu>>.

Tips for Soil Testing

On land where you know or suspect a problem, like an oil tank leak or dry cleaning fluid spill, samples should be collected:

- on all four sides
- downstream or downhill; sometimes contamination travels.
- near the edges of the property, especially if a school, playground, or wetland borders the property
- near any spot
 - ⇒ with discolored soil or water with a sheen
 - ⇒ with soil that has a chemical smell
 - ⇒ where hazardous chemicals were stored or used
 - ⇒ near the surface where people come into contact with the soil such as a playground
 - ⇒ with trees that are sick or dying for no natural reason

These tips for sampling soil or water come from an environmental professional with the MA Department of Environmental Protection.

Great, so we all agree it’s time to move ahead with cleaning up the property.



I don’t know. My land isn’t even worth a million dollars and the clean up will cost \$5,000,000. This doesn’t make sense.

Please Turn Off Your Engines

Cynthia Peters

In a Massachusetts town, a soccer coach noticed parents waiting in their cars at pick-up time. Many parents left their cars running right next to the soccer field. The benzene that is in car exhaust is bad for children's health. It is a proven cause of cancer in children.

The coach wanted parents to cut back on idling. He felt some people would be open to the idea and some would not. He wanted to write a note to the parents that would convince them to turn off their engines.

What would be helpful for parents to know about idling? Write your own letter to the parents. Find a graphic to go with your letter. Or create your own!

If you drive, think about what your own idling habits. Fill out the chart below. Discuss your answers with others.



Cynthia Peters is editor of The Change Agent.



FAQs about Idling

Doesn't my car engine need time to warm up during the winter?

No! Today's engines are electronic and do not need idling to warm up.

Doesn't restarting an engine burn more fuel than just leaving a vehicle idling?

No! In fact, idling for just ten seconds wastes more fuel than restarting the engine.

Aren't frequent restarts hard on the vehicle's engine and battery?

Not any more! Engines and batteries are now more durable.

But if I turn off the car, I will get cold.

It is better for your health to turn off the car. Fumes leak into the car.

For more info go to <www.edf.org/stopidling>.

What Can I Do about Idling?

	I already do this	I could try to do this	I will definitely do this	I will get support from others to do this
Stop idling to warm up the car				
Turn off the car while waiting for someone				
Share with others what I know about idling				
Contact schools or places where idling happens, and work with others to find ways to reduce idling.				
Find out what the anti-idling laws are in my community; spread the word about these laws; check that they are enforced.				

Illustration above courtesy of the East Toronto Climate Action Group

We Could Decrease Diesel Pollution

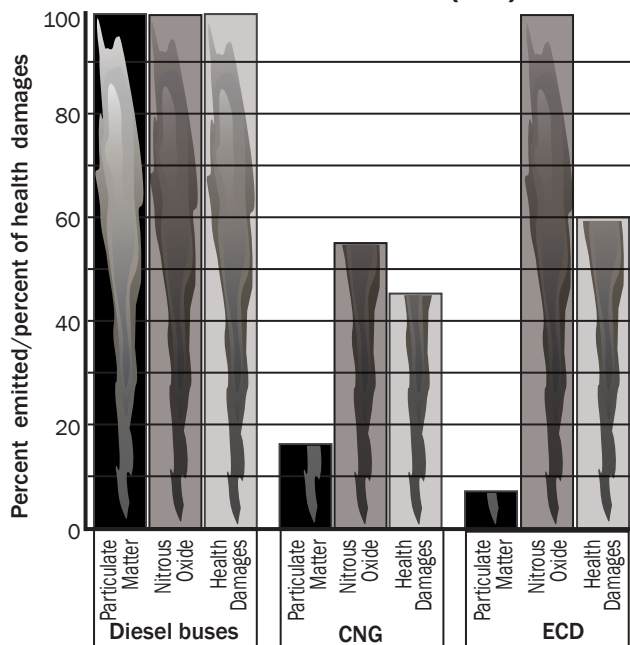
Robert Huey

I spent my childhood in Columbia, CT, in Tolland County. Growing up I was exposed to diesel soot pollution. The area is a high traffic route for 18-wheelers and other bigger diesel trucks. The life-time cancer risk for diesel soot in this community exceeds the risk of all other air toxics combined that are tracked by the Environmental Protection Agency (EPA). The average lifetime diesel soot cancer risk for a resident of Tolland County is 1 in 4,857. This risk is 206 times greater than EPA's acceptable cancer level of 1 in one million.

Two Truths and a Lie

1. Write three statements—two truths and one lie—based on the graph below.
2. Exchange with a partner.
3. Take turns pointing out the truths and lies.

Emissions for Buses that Run on Diesel, Compressed Natural Gas (CNG), and Emission Control Diesel (ECD)



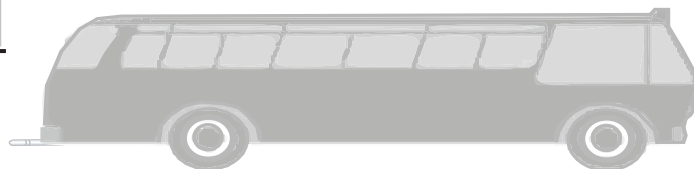
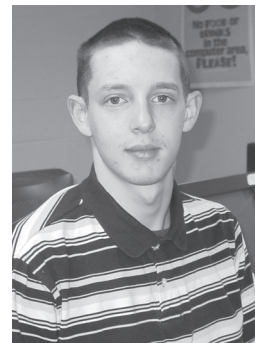
This area is ranked 6th out of the 8 counties in Connecticut for the most polluted. Unlike the industrial pollutants released from smokestacks, diesel engine exhaust is emitted at ground level, where people walk, bike, jog, drive cars, take the bus, or use other types of commuting. Diesel exhaust is composed of microscopic carbon soot particles that act to absorb metals and other toxic substances. When inhaled by humans, these tiny particles go from the lungs to the blood stream, which delivers them to vital organs. This causes diseases such as cancer, stroke, and heart attacks.

Unlike many of today's complex environmental problems, diesel pollution (thankfully) has readily available solutions. One of these solutions is that trucks should use a Diesel Particles Filter (DPF). These filters are put on the exhaust of diesel engines. These DPFs reduce particulate matter by 90%. This would greatly reduce the risk of disease and benefit our climate and environment.

Thousands of people in Tolland county are exposed to diesel soot. If people chose to do something about these potential harmful effects to their health and the health of their loved ones, children, friends, and family, I'm sure the voices of that many people could not be ignored.

Robert Huey was born in 1989 and raised in Tolland County, CT. He currently lives in Plainville, CT, and is enrolled in Plainville High School's Credit Diploma Program. After graduation, he hopes to enroll at New England Tractor Trailer Training School.

Sources: <catf.us/diesel>; <sustainability.psa-peugeot-citroen.com>



continued from the front cover

A Meeting of Neighbors

In 2005, I saw a flyer about a meeting in my community. The meeting was organized by Little Village Environmental Justice Organization (LVEJO). They told us that the Celotex factory had operated in our neighborhood from 1914-1984. The factory was closed now, but they left behind a lot of contamination.

The contamination could be spreading to our homes and yards. At the meeting, we decided to

The children looked like they had cigarette burns on their legs.

ask the Environmental Protection Agency (EPA) to come and check. They found out that the Celotex factory was

contaminated with PAHs. (See box.) So we asked them to check all the yards in the neighborhood.

Forcing Celotex to Clean Up Their Mess

Illinois State Law says that the soil should not have PAH concentrations of more than 0.001 ppm. We found out that many homes in the neighborhood were contaminated. It was interesting that the homes farthest from the site had some of the highest concentrations of PAH, in some cases 100+ ppm. (See box below.)

PAH and ppm stand for...?

PAH stands for Polynuclear Aromatic Hydrocarbons. They are by products of burning oil, coal, and garbage. Celotex made roofing products, asphalt and other items that created PAHs. Some PAHs may cause cancer in humans. PAHs have also been linked to birth defects and low birth weight in lab animals.

Ppm stands for parts per million.



Neighbors meet in the living room of an LVEJO member.

LVEJO held lots of meetings and organized many neighbors to fight for the Celotex owner to clean up the contamination. By 2008, we succeeded in making Celotex clean up all of the 155 homes that were contaminated.

At my house, they replaced the top 3 feet of soil. They put in clean soil.

Now we are trying to get the city to build a park on top of the abandoned Celotex site. We want them to cap the polluted soil and put in clean soil. We want the area to have a playground and a community center.





LVEJO activists go to a hearing on the Celotex clean-up.

Change Happens Little by Little

Even though my kids are grown, I care for the children growing up around here. I want them to have what my kids never had. I want them to have a clean park, not a contaminated alley. When my kids were little, we didn't have information. We didn't know any better. Now that we know better, we must try to improve the things that we can.

I have a lot of neighbors that did not want to get involved. They didn't want to bother. But I said, "No. Someone has to get involved." We must try and try and try until we are heard. Sometimes

I feel discouraged. Sometimes things take a long time. I go to the houses, I talk to the neighbors. I tell them, "If we don't get involved, we will never be heard." So then the neighbors start coming to meetings. They see that change can happen if you work for it. It happens little by little.

I know it's going to take a lot. We're going to have to work hard. We're going to be doing the same thing: working hard to get what we need.

I like being a community activist. I'm going to be 75. I can't do hard work, but I can work with my mind and my presence. And my mouth! Whatever is within my reach, I can give it to my community so it can be a better community. When you find out that something is not right, find out what you can do about it.

Elvia Saltillo is a 75-year-old grandmother and an active member of Little Village Environmental Justice Organization (LVEJO).



Doña Elvia Saltillo

Take it Further

The law says PAH concentrations should not be greater than 0.001 ppm. But some people's yards had concentrations of 100 ppm. How many times greater is that?

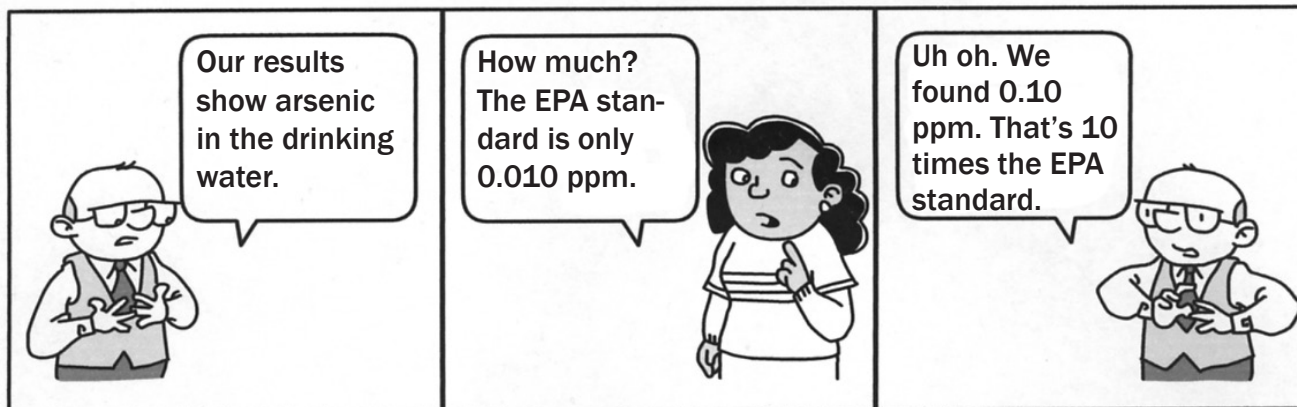
Write about a change in your life that happened little by little. How did you respond to challenges and celebrate victories?

Write a letter to Elvia Saltillo c/o LVEJO, 2856 S. Millard Ave., Chicago, IL 60623

What if you decide to take steps to clean up your community? What government agency might help? See <www.nelrc.org/change-agent/extras> for a listing of local and national agencies.

Picturing A Part Per Million (ppm)

Statistics for Action



But what is a part per million (ppm)? Is it like a drop of ink in...
(answer upside down below)



A



B



C



D

More ways to picture a part per million:

(But don't believe everything you hear; be a skeptic. Check the math. We did the first one for you.)



One inch in 16 miles

$1760 \text{ (yards in a mile)} \times 3 \text{ (feet in a yard)} = 5280 \times 12 \text{ (inches in a foot)} = 63,360 \times 16 \text{ miles} = 1,013,760$



About one minute in two years



One car in a line of bumper-to-bumper traffic from Cleveland to San Francisco.



One penny in \$10,000.

Answer: A large kitchen sink. Take it further by trying to picture 0.10 and 0.010 ppm.

Extra!

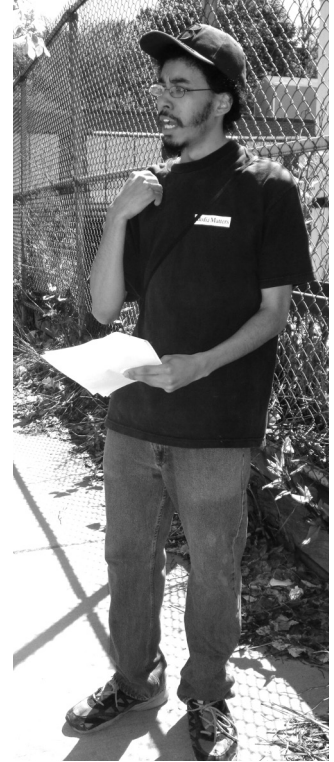
Read "Water is Precious" by Luis Costa at www.nelrc.org/changeagent/extras.

Take a Tour of Your Town

Martha Merson

To get to know the history of a place, tourists sign up for walking tours. Along the Freedom Trail in Boston, on a tour of monuments in Washington, DC, and down under the sidewalks in Seattle, guides tell stories of times gone by — heroes and bad guys, wars, fires and floods.

People in the Little Village neighborhood in Chicago and in Roxbury, MA, and in Detroit, MI, also have stories to tell — stories about towering piles of toxic soil left standing uncovered, stories about leaking drums and mysterious health problems. They have designed “toxic tours” to show people the environmental problems in their neighborhoods and to celebrate their successes in cleaning up toxic messes.



Stuart Spina of Alternatives for Community and the Environment explains the history of toxic sites in Roxbury, MA.

Recipe for a Walking Tour

1. Get a map or make a rough drawing of the neighborhood.
2. List places around the neighborhood that have a toxic history and mark them on the map.
3. Identify places that are assets too, like gardens.
4. Add one or more answers for each place:
 - What is the problem?
 - What statistic explains the size of the problem or its toxicity?
 - How long has it been going on?
 - What actions have been taken?
5. Season with principles, for instance: fairness or lack of input from the community.
6. Sprinkle with hope by explaining what people were able to accomplish when they took action.
7. Final Prep
 - Practice it
 - Time it
 - Schedule it
 - Advertise it
8. Serve to some people who want to hear the stories.

Problem Solved?

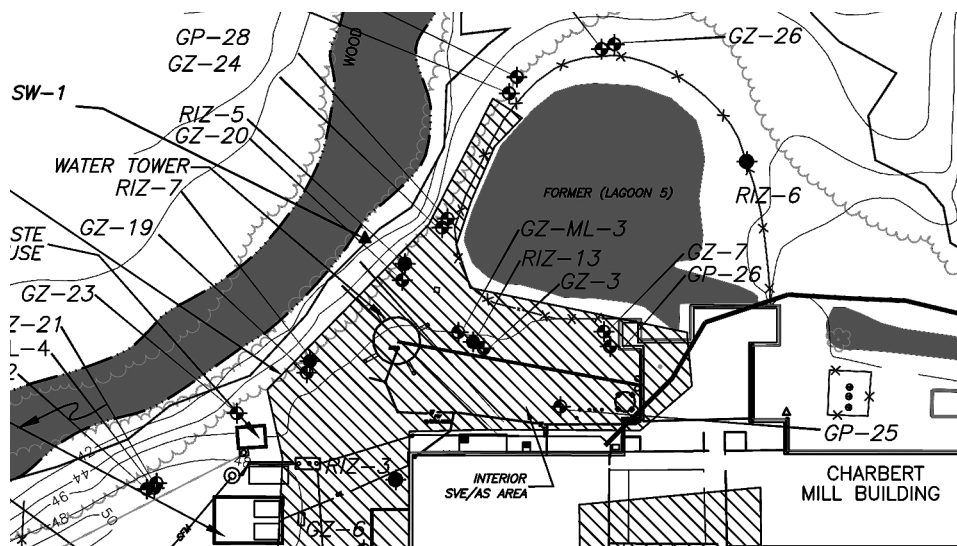
Residents Work to Make Sure Clean-Up is a Success

Sylvia Broude

The lagoons in the small town of Alton, Rhode Island, were large. Picture four football fields of wastewater giving off smells that caused nausea, breathing problems, and head-aches.

For years, neighbors suffered from the effects of Charbert Dye Company's operations. Neighbors formed a group and, with help from Toxics Action Center, they asked for and got testing. They learned the hydrogen sulfide levels were so high they violated the state's air pollution regulations. In 2004 the Department of Health recommended that residents stop using well water for drinking, cooking, or bathing infants.

Working with the state to get Charbert Dye Company to clean up its land was a slow process. Then Charbert shut down in 2008 due to overseas competition. Charbert hired GZA Environmental to clean-up the site. The company submits quarter-



Here is a map of the area northeast of the Charbert Mill Building. The arrows point to places where water samples were taken. Find samples GZ-19 and GP-28. Then read the tables on the next page to see what researchers found in those water samples. The table for GZ-19 has explanatory notes. We have left GP-28 for you to interpret. Tips for reading and interpreting the tables are below.

ly reports that are 100s of pages long, but it is hard to tell if the clean-up is working. See the test results on p. 29. What would you think if you lived in this community? Is the clean-up sufficient?

Sylvia Broude is the organizing director of Toxics Action Center. For more practice, see "Assessing Conditions Using Maps" and "Assessing Conditions by Comparing Levels" in SfA's Manual.

Making Sense of the Tables: Step by Step

Tips for Reading the Tables

1. Look for the contaminant names on the left.
2. Look across the top for the dates.
3. Find the column with the levels for the clean-up objectives.
4. Find the unit.

Tips for Interpreting a Table

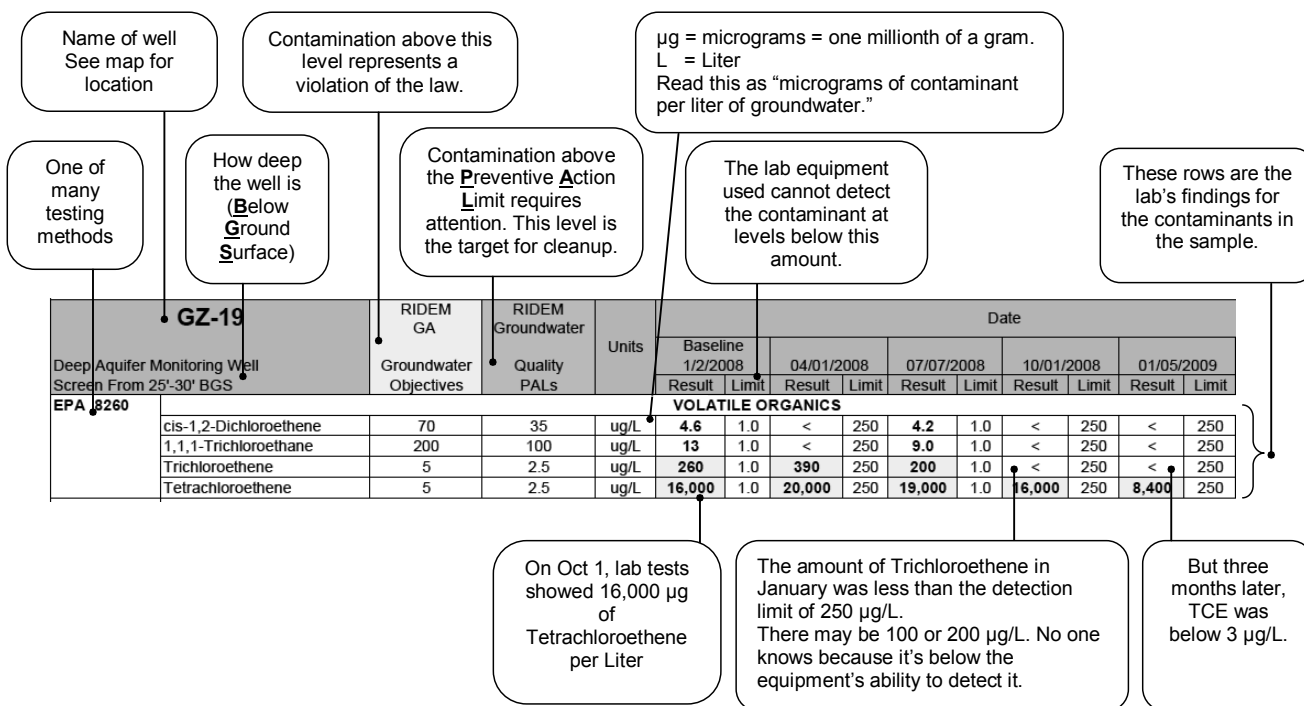
1. Locate the well. Is it next to a river, a known spill, or near homes?
2. Compare the amounts with the clean-up objectives. Make a graph to get a sense.
3. Find the highest and lowest levels. How do they compare over time?

Not for Scientists Only!

Remember Your Smart Moves. (See p. 35.) Take it Slowly!

Ethan Contini-Field

In order to track the clean-up of the land around Charbert Dye (see p. 28), the people of Alton, Rhode Island, look at charts like the ones you see below. At first, these charts might seem too complicated — like only a scientist could understand them! But take your time and see if you can make sense of them.



GP-28		RIDEM GA	RIDEM Groundwater	Units	Date									
Shallow Aquifer Monitoring Well Screen From 3'-15' BGS		Groundwater Objectives	Quality PALs		Baseline 1/2/2008		04/01/2008		07/07/2008		10/01/2008		01/05/2009	
					Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit
EPA 8260		VOLATILE ORGANICS												
Vinyl Chloride		2	1	ug/L	1,200	5.0	180	2.5	<	1.0	10	1.0	140	1.0
cis-1,2-Dichloroethene		70	35	ug/L	1,400	5.0	200	2.5	6.2	1.0	2.9	1.0	940	1.0
Trichloroethene		5	2.5	ug/L	<	5.0	<	2.5	<	1.0	<	1.0	350	1.0
Tetrachloroethene		5	2.5	ua/L	<	5.0	<	2.5	<	1.0	<	1.0	2,900	1.0

Vinyl chloride causes cancer in humans. According to test results at GP-28, how is the clean-up affecting vinyl chloride levels? Follow the tips on p. 28 and the hints above to help you interpret the data.

Environmental Issues in My Neighborhood

Lavona Brown

There are several environmental problems in my neighborhood, such as flooding in the nearby park and the accumulation of trash and bugs as a result.

Our community park is in an area that floods every time it rains. In fact, a housing project in our area was closed and torn down because of flooding. Water stands about two feet on the basketball court and soccer field after every rain. If the sun doesn't come out soon after the rain, the areas are left with the smell of stagnated water. The water flows down stream and settles in the park.



As a result of the flooding, we get trash such as cans and bottles flowing downstream to our circle drive. Then the mosquitoes and gnats swarm causing illnesses, especially for the children who play outside often. Therefore, the parents often have to keep their children inside.

The people who live in my neighborhood need to band together to protest these conditions. During the twelve years that I have lived in this neighborhood, I haven't seen much concern about

these conditions from city officials. Nor have I heard of any plans to improve the area. Something needs to be done. For a start, my neighbors and I need to go to city council meetings and sit there until the members of the council recognize us.

Before the next council meeting, I will talk to as many neighbors as I can to get them involved in a solution to our problem. Next, I will circulate a petition that addresses our concerns: the flooding, the trash, and the insects. Also, I will get as many people together as I can to attend council meetings until our concerns are addressed.

Our neighborhood is a mixture of at least three ethnic groups, but we are all working together to help solve our problems. United we stand, and divided we fall. If we work together, we will accomplish what we set out to do.



Lavona Brown is a student at the Fort Smith Adult Education Center in Fort Smith, AR, where she is studying for her GED. She is very active in her church and her community. In addition, she is involved with her extended family of nieces and nephews.

Your Neighborhood

Describe an environmental problem in your neighborhood. Write an essay that:

- describes the problem
- discusses solutions
- identifies possible challenges



What's Happening Here? What Can You Do?

See a Problem. Take Action.

In the first set of pictures, say what you see happening. Describe the problem. Use words like:

contamination
pollution
release
toxin
levels
tons



In the second set of pictures, say what you see happening. Describe the solution. Use words like:

action
change
meeting
learn
plan
sacrifice



Now pick one picture from the top and one from the bottom and act out a conversation that could lead to a solution. Use at least one statistic in your conversation, such as:

About half
Almost 100%
Less than 25%
7 out of 8



Can't Stop Breathing

Californians for Pesticide Reform

Living Near an Orange Grove

Where did that yummy, perfect orange come from? Rub the skin and breathe in a citrus smell. What do you know about how that orange was grown and the people who fought to try to make sure it was grown safely?



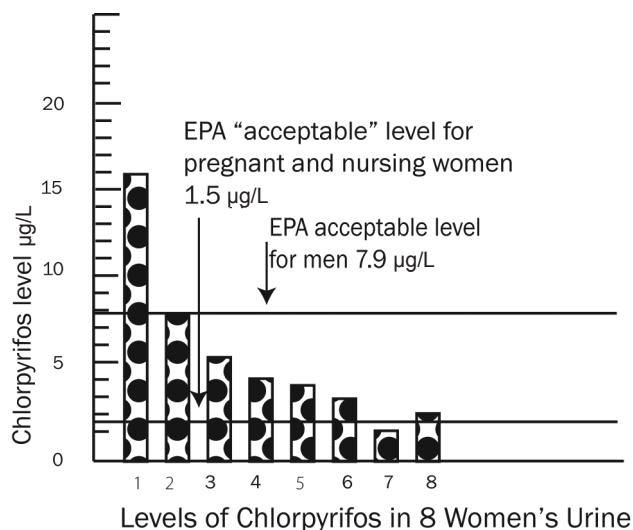
Perhaps the orange came from Lindsay, California, a small town with hundreds of acres of orange groves. To make a “perfect”-looking orange, growers use chlorpyrifos (pronounced: clor-peer-i-fos) to keep insects off the orange trees. Back in 2001, the Environmental Protection Agency (EPA) banned the use of chlorpyrifos in homes and apartments because it poses severe health risks to children. But California orange growers still use chlorpyrifos. In 2005, they used nearly two million pounds!

In Lindsay, CA, it is common for people to feel sick when the orange groves are sprayed. Peo-



Irma Arrollo, mother of four children and resident of Lindsay, California, calling for an end to pesticide air pollution.

ple report headaches, blurry vision, weakness, and vomiting after the spray is used. Some residents wanted to know if the insecticide was getting into their bodies and how much was present. They gave urine samples that were tested for chlorpyrifos. The graph below shows the results for eight of the women who had their urine tested.



Only one woman had a level considered acceptable for pregnant and nursing women. Amounts are in micrograms per liter (µg/L). See p. 5 for more on micrograms.

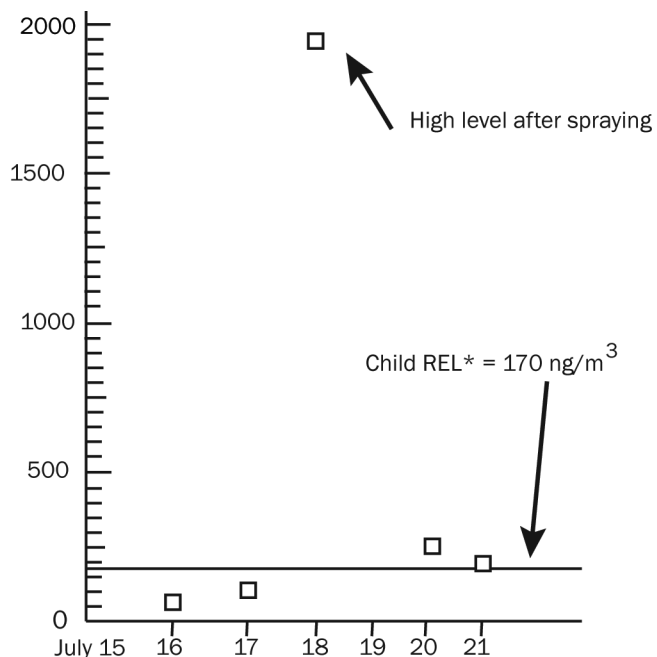
Move Away or Stay and Fight?

Ana Espinoza is one of the women who had her urine tested. The doctor told her that her chlorpyrifos level was two to three times higher than normal. She says, “I’m waiting before I have another baby.” She knows that if pregnant women are exposed to pesticides, their babies might be born with health problems. Ana wants the best for her whole community. “Sometimes I think we should move to another place away from agriculture, but I know it does not solve the problem. We need to participate to make changes.”



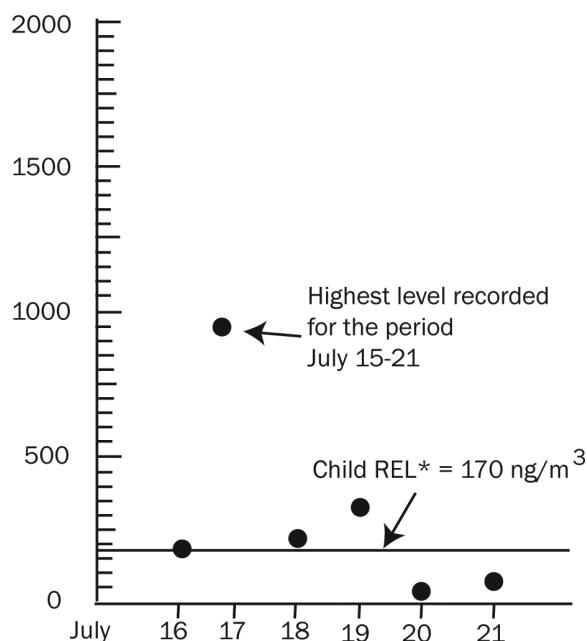
Ana Espinoza and her baby in Lindsay, CA

Chlorpyrifos in the Orange Groves



This graph shows levels of chlorpyrifos in the air measured in the groves on Lindmore Street during one week in July 2005. **NOTE:** REL stands for Reference Exposure Level. For children's safety, the concentration of chlorpyrifos should not go above this level.

Chlorpyrifos Near a School



This graph shows levels of chlorpyrifos in the air measured near a school during the same week. **NOTE:** ng stands for nanogram, which is 0.000000001 grams. And m³ is cubic meters. To imagine a cubic meter, think of a box with a length, width, and height all one meter.

Getting Help and Winning

In Lindsay, The SAFE (Safe Air For Everyone) Campaign helped people set up drift catchers. Drift catchers suck in air that goes into a tube with sticky sides. The air passes through and any pesticides stick to it. A lab analyzes it and reports the pesticide levels.

Working with SAFE, community members organized to get a law passed that would protect their families. After two years of struggle, it is now illegal to spray pesticides within a quarter mile of schools, residences, and labor camps. Now, four more counties have used the drift catcher data to win protections for their communities.

This article was adapted from the SAFE website <www.pesticidereform.org/SAFE> with help from the Pesticide Watch Education Fund.

Tell the Media

Imagine you will speak to the press about the test results on pp. 32-33. Be ready to explain the trends. For example:

1. What are the high and low values?
2. What was the average over the time period?
3. How do the high results compare with levels set to protect children?
4. The levels are different in different parts of Lindsay. How so?

120 Times More: So Scary, It's Silly

Thanks to an intense effort by Arysta LifeScience, one of the largest pesticide companies in the world, the state of California recently approved the use of methyl iodide (*pronounced meth-ul i-o-dide*) on strawberries. Methyl iodide is a powerful pesticide. Scientists say it causes cancer and is dangerous for the environment. Yet California lawmakers have said it is okay for the agricultural industry to spray it on strawberries. Farmers can now spray *120 times more* methyl iodide than what scientists recommend for safe use.



Think about something you normally do. Could you repeat it 120 times in one day? What would happen?

Spend 30 minutes watching TV.



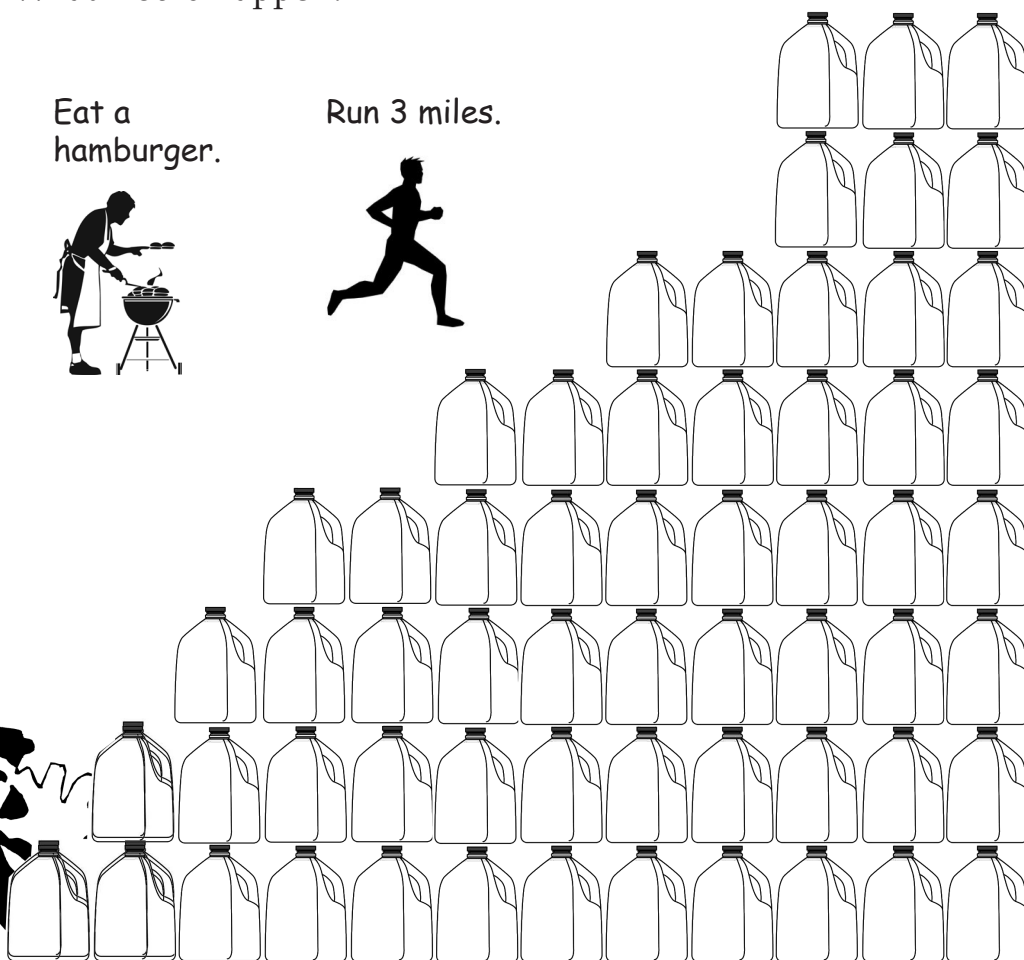
Eat a hamburger.



Run 3 miles.



Drink 8 cups of water a day.



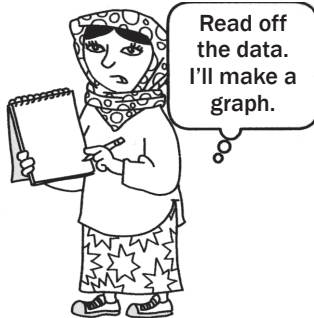
Smart Moves!

Take Control of Math

Statistics for Action



Slow Down.
Believe you can understand it better.



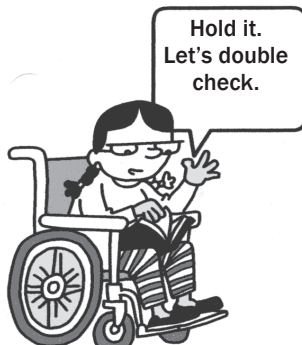
Play with different ways
to show it and say it.



Compare it.
Connect to what you already know.



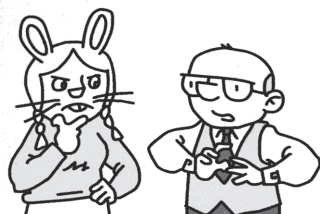
Use friendly numbers.



Seek verification.
Think about how to check yourself: consult a peer, a calculator, or an expert.



Use your senses.
Visualize it. Touch it.



Talk it out loud.
Learn from each other.

What's your strategy for taking control of math?



Health and Safety Checklist

Massachusetts Coalition for Occupational Safety and Health

Check this list before you use chemicals. Do you follow some or all of the advice below? To find out more about federal and state laws that protect you on the job, visit <www.osha.gov>.

☐ **Know what is in the product**

You have a right to know what hazardous chemicals are in the products you use and how to use them safely. Your employer must have a Material Safety Data Sheet (MSDS) for each product and let you read it. Your employer must give you training about how to use chemicals safely.

☐ **Find a safer product**

There are many products that are safer (for the environment and for you!) than the usual cleaning products. Make sure to use the right product for the job. Not all surfaces need a heavy duty cleaner or disinfectant.

☐ **Use as little as possible**

Using more does not mean the product will work better. Less exposure to chemicals is better. Dis-

pense the product using a “stream” instead of a spray. This reduces the amount of chemical that gets in the air around you.

☐ **Get the right personal protective equipment (PPE)**

Use the right PPE for the type of work you are doing and the particular chemical you use. The MSDS will tell you what PPE is needed (for example: a respirator, gloves, or goggles).

☐ **Set up good ventilation**

Chemicals can build up in enclosed areas with little or no air movement (like bathrooms, hallways, and storage closets). If you can’t get good ventilation, use a fan to move fumes away from you. If you work outside, stand so the wind is blowing the chemical fumes away from you – not toward you.

☐ **Give people nearby a warning**

Post notices to warn people when you are using chemicals. Block off the work area or use the chemical when there are fewer people around.

☐ **Protect your family from work hazards**

Change your clothes right away if they get wet with chemicals or covered with dust. Don’t bring contaminated clothes or shoes inside your home. They can expose your family to chemicals. When working around chemicals or dust, wash your hands before you eat or drink. No one hand cleaner is best for all chemicals – the best thing is to prevent them from getting on your skin in the first place!

Custodians, Chemicals, and Kids

A single custodian uses an average of 194 pounds of chemicals each year.

25% of these are hazardous substances.

Custodians experience one of the highest rates of occupational asthma.

Asthma is the **#1** chronic illness of children attending public schools and the **#1** reason why kids stay in the hospital.

Interview a custodian you know and ask him or her if s/he has experienced any health problems related to their work.

MassCOSH is a non-profit organization that brings together workers and allies to organize and advocate for safe, secure jobs and healthy communities throughout eastern Massachusetts.

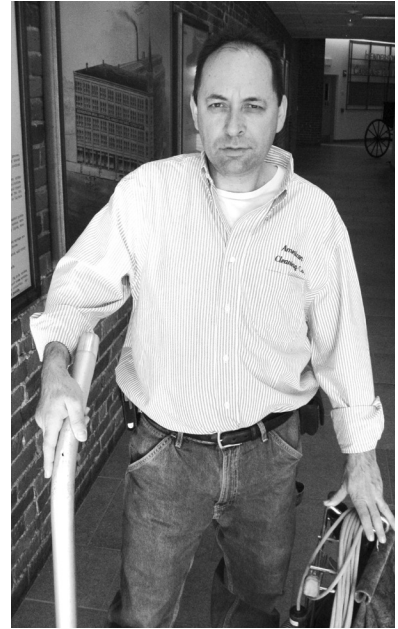
Custodians Organize for Safer Cleaners

A Success Story

In 2005, custodians in four Boston Public Schools tried something new. They used “green” cleaning products instead of cleansers with hazardous ingredients. They hoped that if their experiment with green cleaners was a success, then all the schools could switch to green cleaning products.

“Custodians care about the health of children and teachers, and about their own health and safety,” said Michael Lafferty, a representative of the School Custodial Union. “We hope that we can have green cleaners in all public school buildings.”

In 2006, Boston Public Schools announced that it would start buying only green cleaning products. The custodians’ project was a success!



This article was adapted by Cynthia Peters from <www.masscosh.org>. Photo (by Ethan Contini-Field) is of Albeiro Salazar, the custodian at a building in Cambridge, MA.

Working Together

Talk about a time you have worked together with others. When does it make sense to work with others? When does it make sense to work alone?

Four organizations worked together to make this project a success. They included:

1. MA Coalition for Occupational Safety & Health
2. Boston Urban Asthma Coalition
3. Boston Custodial Union
4. Boston Public Schools

If you want to get green cleaners in your city’s schools, who could you contact? List some organizations in your area.

Find out what you can do to make schools healthier for kids and workers. Visit <www.healthyschools.org>.

For change to take place, you need the important players on board. For this story: who took action? _____

who decided? _____

who paid? _____

who won? _____

Pick another issue from the magazine or from your community, and answer the above questions.

Less is More

How Ratios Can Help You Use Cleaning Products Safely

PRE-READING

CONCENTRATED: the manufacturer has taken most of the water out of the product. *This orange juice is **concentrated**. You have to add water.*

DILUTE: to add water. *Don't drink that concentrated orange juice. You should **dilute** it first with water.*

RATIO: the measure of one thing relative to another. *For every can of orange juice, you should add three cans of water. The **ratio** of orange juice to water is one to three or 1 : 3.*

The good thing about concentrated products is the package can be smaller. You get *more* product in *less* packaging. A smaller container means less trash. *But* you have to carefully check the label. If it says "concentrate" or "dilute with water," you must add water to use the product safely.



Mix It Up!

The directions on some packages tell you how to mix up a gallon. What if you want more or less than a gallon? You'll have to scale up or down, keeping the ratios the same. Use the chart below to practice scaling up and down.

	Cleanser	Water
The directions say:	$\frac{1}{4}$ cup	1 gallon
To make half that amount, combine:		
To make a quarter of that amount, combine:		
To make five times that amount, combine:		



twice	$1\frac{1}{4}$ cups	5 gallons
quarter	$\frac{1}{16}$ cup	1 quart
half	$\frac{1}{8}$ cup	$\frac{1}{2}$ gallon
	Cleanser	Water

Answer key

Clean Up Quiz

Check Your Understanding (of pp. 36-39)

1. What does MSDS stand for? What do they tell you?

2. What does PPE stand for? What does it do?

3. If a worker does have the right protection, answer:

Who pays?

Who wins?

Who decides?

4. If a worker does not have the right protection, answer:

Who pays?

Who wins?

Who decides?

5. If you have to use dangerous chemicals, name 3 things you can do to protect yourself and others.



Window Cleaner	Window Cleaner	Window Cleaner
<p><i>1/2 cup cornstarch</i> <i>2 quarts warm water</i></p>		

6. In the blank recipe cards, double the recipe and halve the recipe. Keep the ingredients in balance.

7. Share your own recipe for a home-made cleaning solution.



Coal mining in Sebastian County

Glen McDaniel

In Sebastian County, Arkansas, where I have lived my whole life, coal mines provided jobs to people from 1880 to 1965. But they also caused a lot of problems. These problems did not go away when the coal mines closed.

Almost every family in the district had someone working for the coal company, or supplying goods or services to them or the people that worked for the coal companies. Some boys as young as ten years old started working in the mines.

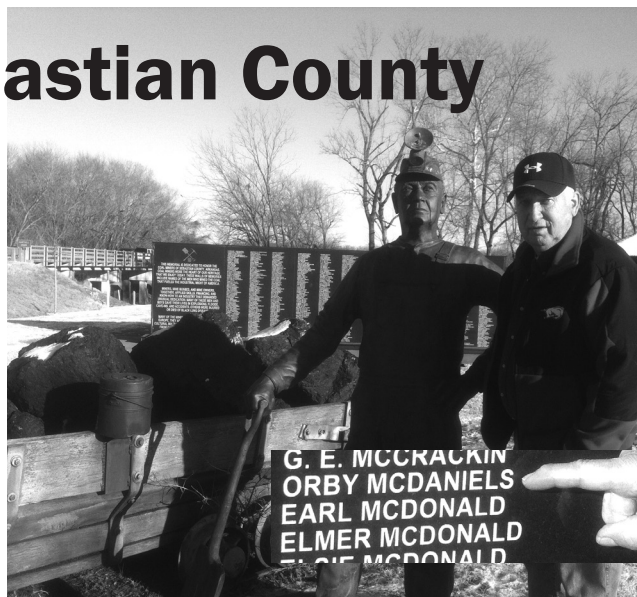
Although coal mining was a good income for most families, it also had a bad side. Coal mining is a very dangerous occupation. It left a number of

Coal mining seemed good for the economy. It put people to work and it provided cheap fuel to industries. But, in the long run, coal mining proved to be costly for the environment and the miners.

families, without husbands or sons. In the mines, the roof and walls can collapse, and there can be explosions, fires, and poison gas. Even if you were not killed in a mining accident, you breathed the coal dust. Most miners who live to be older have some type of respiratory disease such as black lung. New technology and regulations have helped to make mining safer today, but it is still a dangerous job.

In the 1960s, the coal companies moved out of the area. They left all of the machinery to rust and they had destroyed much of the land. The strip pits were up to 80 feet deep and there was dirt piled up 40 or 50 feet high. Some of the land has since been reclaimed.

Burning coal for energy is bad for the environment. It puts out a lot of smoke that is thicker and blacker than other types of smoke. When it rains,



The author stands by a statue honoring the coal miners of Sebastian County. Inset: the author's father, Orby McDaniel is listed on the memorial.

the rain picks up the toxins from the polluted air and carries them down to the ground and the waterways. This rain is called "acid rain." It can sterilize whole areas, leaving them so barren that nothing can grow.

The health of many people as well as the landscape has been destroyed by the burning of coal. Strip mining destroys the land and defaces it so it cannot be used. The underground mines pollute the ground water that runs into our lakes and streams.

Coal mining seemed good for the economy. It put people to work and it provided cheap fuel to industries. But, in the long run, coal mining proved to be costly for the environment and the miners. The government has had to pay disability payments to all the miners suffering from black lung. And the cost of reclaiming the land usually falls on the government as well. A lot of areas that are nowhere near coal mines have had to deal with the effects of acid rain. I hope we find ways to improve mining and the use of coal so that it will be safer.

Glen McDaniel has lived his whole life in Sebastian County, AR. He is a student in the ABE class at Fort Smith Educational Center in Fort Smith, AR.

There Are No Jobs on a Dead Planet

Judy Bonds

In southern West Virginia we live in a war zone. Three and one-half million pounds of explosives are being used every day to blow up the mountains. Blasting our communities, blasting our homes, poisoning us, trying to intimidate us. I don't mind being poor. I mind being blasted and poisoned. There ARE no jobs on a dead planet.

Judy Bonds was the co-director of Coal River Mountain Watch in West Virginia. Bonds was a coal miner's daughter and granddaughter. She started fighting for justice in the Appalachian coalfields in 1998. She died from cancer in January 2011 at the age of 58. Photo from <www.ohiocitizen.org>.



What do You Think?

Study the information on these two pages. Make a list of the advantages and disadvantages of coal.

Would you be willing to give up any of the advantages of coal in order to *not* have the disadvantages?



This area of Perry, Kentucky, was once hills and trees. The photo shows the results of mountaintop removal, a technique used in coal mining. Photo from <www.mountainroadshow.com>.

Poultry Litter: Is it Fertilizer or Pollution?

Janet Scharbor

PRE-READING: Consider the following vocabulary before you read:

ARSENIC: a poisonous chemical that occurs naturally and is used in fertilizers and industry

BROILER: a chicken being raised for its meat

CARCINOGEN: something that causes cancer

LITTER: trash or waste

METRIC TON: equals 2,205 pounds or 1,000 kg

You Can Smell it from Miles Away

I grew up in the country. A lot of people in my community had chicken houses and everyone spread their litter on their fields. Also they gave it

Research shows that excessive use of litter causes pollution. It gets washed into waterways and pollutes our rivers and streams.

to their neighbors to put on their crops or gardens. My dad has used chicken litter for as long as I can remember on our garden. We never gave it a thought as to whether or not it was good for us. Around the first of spring, when everyone was about to put in a garden, you could smell the chicken litter from miles away. I always hated that time of year, but you get used to it after you've lived there most of your life. The environmentalists tell us that chicken litter is polluting our streams and rivers. I have never thought of chicken litter as a pollutant, so I thought I would do some investigating. This is what I came up with.



Arsenic in Our Chicken?

In Arkansas, broiler houses produce 1.3 million metric tons of litter annually. This litter is used mostly for fertilizing pastures. However, research shows that excessive use of litter causes pollution. It gets washed into waterways and pollutes our rivers and streams. Chicken litter contains arsenic, which is a carcinogen and may also lead to heart disease, diabetes, and a decline in mental functioning. Arsenic is added to the chicken feed to make the chickens fatter. In 2004/2005, studies confirmed that arsenic has been found in chicken sold at supermarkets and fast food restaurants.

Chicken Litter for Forests and Farms

In the Arkansas pine forest, we use poultry litter to increase timber production. Forests can absorb and retain relatively large amounts of the elements found in poultry litter without causing environmental problems. The University of Arkansas is doing studies to find the long-term effects, both good and bad on the uses of poultry litter. Their findings show that proper use of poultry litter can support farmers, pine forests, and crop growers.

Swimming in Chicken Litter

The state of Oklahoma has had a long-running suit against the state of Arkansas. In Tulsa, Oklahoma, attorneys for the Oklahoma and Arkansas poultry

industry were in court disputing whether the companies knew for decades that the over-application of poultry waste on farmland was polluting the Illinois River watershed.

To illustrate the harm caused by massive amounts of poultry litter in the river valley, the attorney held up two jars filled with dark brown waste. He claimed that in the water are phosphorus, nitrogen, arsenic, estrogen, antibiotics, and harmful pathogens. The attorneys claimed that the runoff from the fields has polluted the Illinois River with harmful bacteria and chemicals that threaten the health of the tens of thousands of people who raft and fish there each year.

He also accused the companies, such as Tyson Foods, Inc., of placing the burden of handling the waste on the farmers who raise the birds. The attorneys argued that the industry took the easy and cheap way out. They spread it directly on the fields instead of disposing of it more responsibly by burning it as energy, processing it into pellets, or composting it. This case is still in court today.

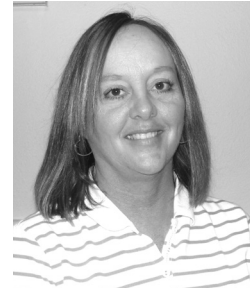
I have never thought of poultry litter as something that could be dangerous to our environment.

If the big industries would work closer with the farmers and work out some economical way of disposing of the waste from our birds, we could clean up this mess. We should find safer ways to raise our chickens. People raised chickens on their farms for years and never used chemicals, so let's sit down and figure out cheaper and safer ways to raise and process chicken. Passing the buck never did anyone any good.

I know I will think twice before I take a swim or eat the fish in the Illinois River. And writing this article didn't make me want to fry up any chicken for dinner, that's for sure.

Sources: <www.nytimes.com/2006/04/05/dining/05well.html?_r=1>; <www.naturalnews.com/029133_arsenic_meat.html>; <www.afrc.uamont.edu/liechtyh/Poultry%20Litter%20Research.htm>; <www.msnbc.msn.com/id/33010159>; <water.usgs.gov>; <www.grist.org/article/parker1/>.

Janet Scharbor, former dislocated worker. Currently working at the Adult Education Center in Fort Smith, AR, as a Substitute Aide. She is married and has four children and nine grandchildren.



Coming Home to Roost

Arsenic is one of the harmful ingredients in chicken litter. How did it get into the chicken litter?

What pressures do poultry farmers experience? How could we persuade them to make choices that are better for the environment?

Have you or has anyone in your community used manure to fertilize a garden or plants? What are the advantages and disadvantages of using waste as fertilizer?

Want to figure out how to compost your food waste and make your own fertilizer at home? Vist <www.howtocompost.org>.

Oil in Gulf: Bad. Oil in Landfill: Not Bad?

by Robert D. Bullard

When British Petroleum's deepwater oil well exploded in April 2010, the media focused on the massive leak and the clean-up efforts. However, there has not been much public discussion about which communities were selected as the final resting place for BP's oil-spill garbage. What has happened to the thousands of tons of polluted sand, oil-coated materials, and other refuse that washed ashore?

Cleaned Up and Dumped Where?

As of July 2010, 55.4 percent of the waste from the BP oil spill has been dumped in communities that are mostly people of color. (See table on p. 45.) This is not a small point since African Americans make up just 22 percent of the coastal counties in Alabama, Florida, Mississippi, and Louisiana, while people of color comprise about 26 percent of the population in coastal counties.

Clearly, the flow of BP oil spill waste to Gulf Coast communities is not random. There is a pattern in the U.S. of sending waste to communities of color. In 1982, toxic PCBs were cleaned up from North Carolina roadways and later dumped in a landfill in mostly black and poor Warren County. We also saw the pattern in 2009 when 3.9 million tons of toxic coal ash from the massive Tennessee Valley Authority (TVA) power plant spill in East Tennessee was cleaned up and shipped more than 300 miles south by train and disposed of in a landfill in rural and mostly black Perry County, Alabama.

Sacrifice Zones

For decades, African American and Latino communities in the South became the dumping grounds for all



kinds of waste — making them “sacrifice zones.” Gulf Coast residents, who live on the fenceline with landfills and waste sites, are asking why their communities should be the final resting place for so much of the waste from the giant BP oil spill. (See pp. 46-47 for more on landfills.)

Environmental Justice

This pattern of using communities of color as dumping grounds for toxic waste gave rise to the environmental justice movement in the early 1980s. Community members continue organizing today. In Florida, David Guest, an environmental attorney with Earthjustice, said he's had calls from anguished residents asking about legal recourse to stop oil spill debris from reaching the Springhill Landfill near Campbellton in Jackson County. “There's a genuinely serious risk of poisoning the aquifer years from now,” Guest said, arguing that the landfills, once closed, are not monitored.

In Harrison County, Mississippi, where the Pecan Grove Landfill is based, community members persuaded the board of supervisors to pass a resolution not to accept BP waste. Residents were worried that the estimated 1,200 tons of oil-tainted by-products dumped at the landfill would contaminate its soil and water. “We're left to deal with it 15, 20 years later if and when this landfill has a problem. BP



is long gone, and we're stuck with the problem. Nobody is going to say I'm sorry," Holleman said.

Robert D. Bullard is director of the Environmental Justice Resource Center (EJRC) at Clark Atlanta University and author of Race, Place, and Environmental Justice After Hurricane Katrina: Struggles to Reclaim, Rebuild, and Revitalize New Orleans and the Gulf Coast (Westview 2009).

Sources: This article was adapted by Cynthia Peters from an article by Robert Bullard originally published on 7/29/10 in <<http://dissidentvoice.org/2010/07/bp%E2%80%99s-waste-management-plan-raises-environmental-justice-concerns>>; a correction to the data was published on 8/24/10 at < www.ejrc.cau.edu/GulfCorrection8-24-2010.html>; additional sources include <colorlines.com/archives/2010/08/environmental_racism_surfacing_in_bp_spill_waste_management.html>; <www.truth-out.org/oil-soaked-waste-worries-gulf-coast-landfills-neighbors61925>; <www.cnn.com/2010/US/08/05/oil.recycle/index.html>

Where is the BP oil being dumped?

State and Landfill	Tons of waste from the clean-up	% of people of color within a 1-mile radius
Alabama		
Chastang Landfill, Mount Vernon	6,008	56.2%
Magnolia Landfill, Summerdale	5,966	11.5%
Florida		
Springhill Regional Landfill, Campbellton	14,228	76.0%
Louisiana		
Colonial Landfill, Ascension Parish	7,729	34.7%
Jefferson Parish Sanitary Landfill, Avondale	225	51.7%
Jefferson Davis Parish Landfill, Welsh	182	19.2%
River Birch Landfill, Avondale	1,406	53.2%
Tide Water Landfill, Venice	2,204	37.6%
Mississippi		
Pecan Grove Landfill, Harrison	1,509	12.5%

Making Sense of the Numbers

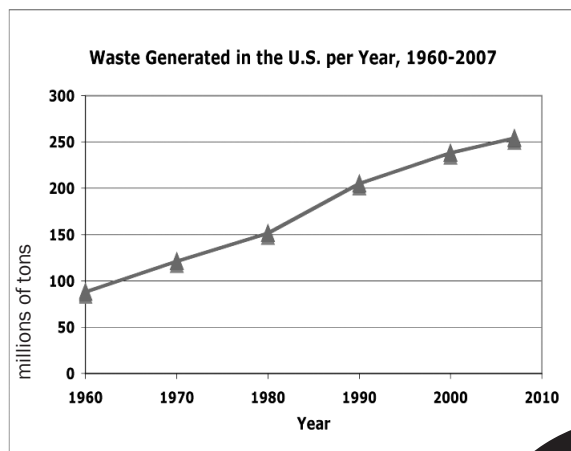
Compare. How could the people near the Springhill Regional Landfill in Florida compare their situation to that of the people who live near the Pecan Grove Landfill in Mississippi?

Think about proportion. 22-26% is the typical population of color in the region. So you'd expect any dump to affect about 25% people of color and about 75% white people. Which community comes closest to that proportion? Which community has the most disproportionate representation?

The author claims that more than half of the waste is going to communities with a majority of people of color. Can you confirm this? How?

Garbage Stinks, Landfills Leak...

Ethan Contini-Field



For years people have buried or burned their trash. What do people do now? Why is it different? What if you had to keep all your garbage with you?

After 6 months, Americans have kept 1% of their purchases.



Landfill owners and operators bear the cost of leaks for 30-50 years. After that, taxpayers have to pay to fix problems and clean up.

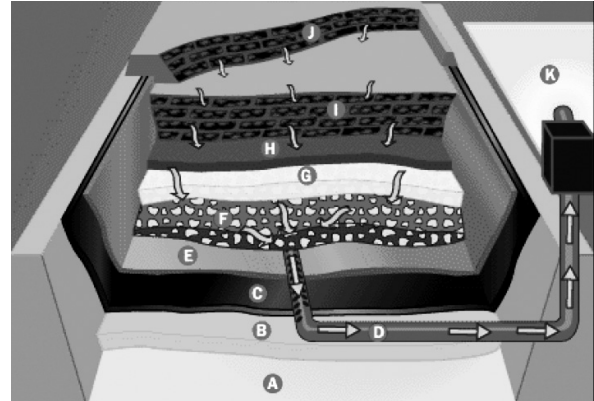
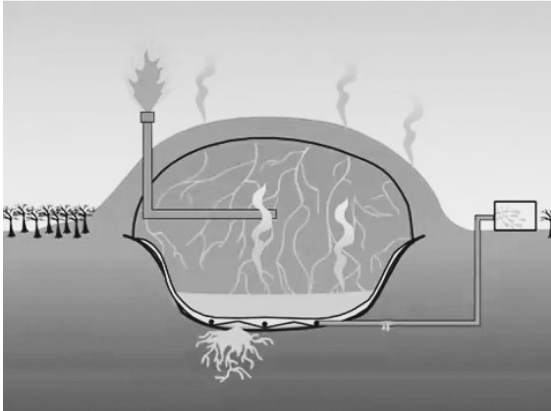


Municipal solid waste contains 80,000 chemicals. The EPA has required the testing of about 200 of them. U.S. laws assume that a chemical is safe unless proven otherwise.



No one wants to live near stinky trash. But it has to go somewhere. Do you live near a landfill? Which communities do you think get dumped on? (See article on pp. 44-45 about disproportionate dumping.)

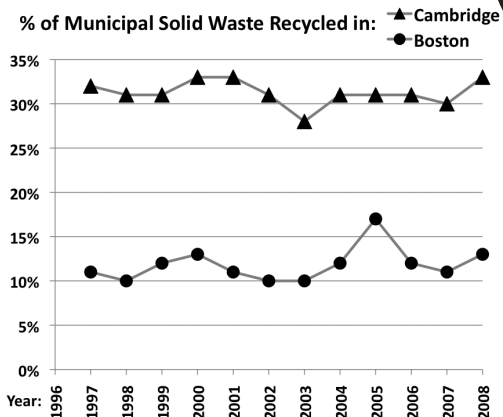
... But Zero Waste is Possible!



Plastic liners are supposed to keep the trash from contaminating the soil and groundwater. The liners are about 1/10 of an inch thick. All liners leak. To learn more, search youtube for “How Does a Modern Landfill Work.”

Landfills are the biggest source of methane gas made by people in the U.S. Methane contributes to climate change. Some landfills have systems that capture the methane and use it for energy.

**100%
of landfills
leak.**



Why do you think recycling rates vary so much between these two cities? In most cities, recycling rates are under 50%. How could you get your city or region to develop more effective recycling practices?



Austin, Texas hopes to reduce trash by 20% by 2012 and to achieve zero waste by 2040. Other cities, like Seattle and San Francisco, have similar plans. Visit <www.grrn.org/zerowaste> to learn more about zero waste.

Intensive Care. Intensive Hazards?

Martha Merson

One of my best friends spent over 60 days in the ICU (intensive care unit) in 2010. Every day I am grateful to the medical staff who watched over her and the cleaning staff who prevented infections. At the same time that the hospital saved her life, it made other people sicker. This has to change.

Health Care Creates Dangerous waste

Health care facilities dispose of more than four billion pounds of waste each year. For every patient every day, over a pound of trash goes into red bins for “regulated medical waste.” Some hospitals create four pounds of waste per patient per day.

Much of this is trucked away to incinerators. You can imagine the items being burned: gloves, IV bags, tubes, mattress covers. Many of these items contain chlorine, which forms dioxin when it burns. Dioxin causes cancer and many other health problems. Scientists believe there is no safe level of dioxin exposure. One gram of dioxin would be enough to poison 8.8 billion gallons of milk.

Incinerators Make Residents Prisoners in Their Homes

Residents near the medical waste incinerator in Matthews, NC, where medical waste from 12 states is burned, have complained for years about

strong odors, fumes, falling ash, and other problems. For two decades Blue Ridge Environmental Defense League and its members have documented visible emissions, flames from the smoke stacks, and half-burned gauze and waste from the incinerator. They have appeared before county and town boards many times. Ten years ago, Geneva Johnson, who lived in Matthews and founded Prisoners Of Our Homes, said, “We shouldn’t have to live in a cloud of toxic fumes. It is time Mecklenburg County stopped protecting this polluting industry and protect the citizens.”

A Solvable Problem

As I sat by my friend’s bedside in Boston, I hated to think of all the waste getting carted away from her hospital room to incinerators where it would burn and release toxins like dioxin, which would then harm other people’s health, possibly putting them in intensive care someday. It sounds bleak, but this is a solvable problem, and you could be part of the solution.

As a citizen: If you live in a state that incinerates medical waste, you could speak out. Tell decision-makers that no amount of dioxin is safe.

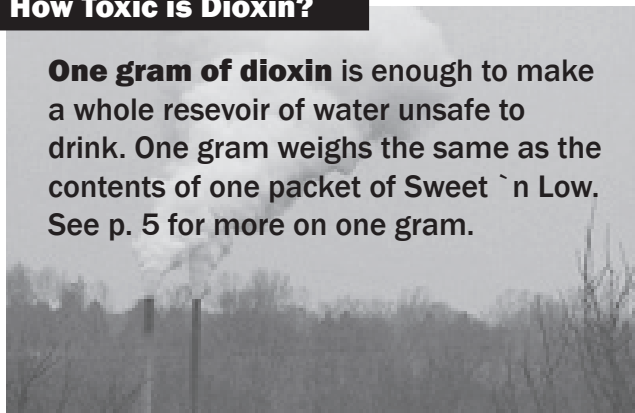
As a worker: If you work at a hospital or health care facility, ask the director to find ways to reduce waste. Hospitals can cut costs when they reduce waste.

As a consumer of health care: If you are a patient or a family member or friend of a patient, you could write a letter thanking the hospital for their care and asking them to take steps to prevent illness in other communities by reducing hospital waste.



How Toxic is Dioxin?

One gram of dioxin is enough to make a whole reservoir of water unsafe to drink. One gram weighs the same as the contents of one packet of Sweet `n Low. See p. 5 for more on one gram.



Martha Merson is a researcher and educator at Statistics for Action. **Sources:** Cynthia Graber <www.scientificamerican.com> 10-03-04; <ejnet.org/dioxin>; <www.bredl.org>.

Measuring Dioxin in the Air

Analyzing the Data

When the people of Matthews, NC, decided to fight for clean air (see p. 48), they got help from the Blue Ridge Environmental Defense League. In addition to holding meetings, talking with neighbors, and educating themselves about the issue, they had to analyze data like the kind you see in the chart below. If you were looking into air pollution data, you might analyze data like this. Try the hands-on activity below to get a feel for the numbers.



Comparison of Observed and Predicted Concentrations of Dioxin from an Incinerator (in fg/m³)

Type of Dioxin	Predicted	First Period Observed	Second Period Observed
TCDD	67	490	851
PCDD	204	594	1144
HxCDD	632	543	1402

A femtogram (fg) is 0.000000000000001 (or 10^{-15}). A cubic meter (m³) of air is the amount of air that would fit inside a box with a length, width, and height all one meter. The predicted number is the amount expected based on a computer prediction. The observed number is based on data collected at nearby locations.



Making Sense of the Data

1. Using the strip on the right, write in the predicted amount for TCDD. What would be 2, 3, 5, or 10 times that amount? Write those amounts in the spaces provided.
2. Now find the observed amounts for TCDD. Where would those amounts go on your strip? Write a (1) where your first observed amount goes, and a (2) where the second one goes. How many times higher than the predicted amount are each of the observed amounts?
3. Make strips for the other types of dioxin, and follow the same steps.
4. Which dioxin type has the highest observed level? Which dioxin type has the highest level compared to the predicted amount? Is your answer the same for both questions, or different?
5. What does it tell us when the observed numbers are different from the predicted numbers? What does it tell us when the observed numbers change from the first to the second period?

The Good, The Bad, and The Ugly Biosolids

Brenda Greenough

I toured a plant here in Nova Scotia, Canada called Loomers Pumping Services. What they do is pump septic tanks, holding tanks, and camp sites and then treat the waste turning it into fertilizer. This fertilizer referred to as biosolids, is then used on parks, golf courses, community lawns and gardens, even on the White House lawn. The waste product can consist of:

- Feces
- Blood
- Urine
- Parasites
- Solvents
- Detergents
- Vomit
- Pesticides
- Synthetic hormones
- Pills
- Antibiotics
- Bacteria
- Viruses
- Protozoa
- Heavy metals

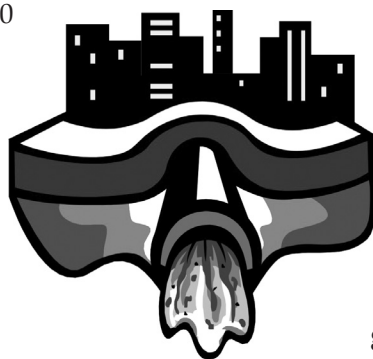
Farmers and gardeners have been using biosolids on agricultural crops, and to fertilize gardens and parks for decades. Land application of biosolids is legal in every province in Canada and also takes place in all 50 states. The only Canadian province to ban the use of biosolids is Newfoundland. Sweden, Switzerland, France and Holland are among countries that have either banned or have tougher standards on the use of biosolids as a fertilizer. Nestle, Delmonte, and Gerber will not use foods that have been fertilized with biosolids because they are concerned that trace amounts of heavy metals



might find their way into the food chain. The real Canadian Superstore has recently stated that they will not sell any produce grown in biosolids. There is much controversy over whether this practice is safe or whether it is harmful to people, as well as the environment, because once biosolids are used on any type of surface or field they have entered the food chain. But, of course, there are always a minimum of two sides to every story.

The process for treating sewage and producing what is known as biosolids is as follows:

Waste is collected and pumped into a holding tank. The waste then goes through a strainer, or a skimmer is passed over the top of the liquid, to remove hair, condoms, personal care products, and any other inor-



Sewage refers to human waste that is flushed down the toilet or washes down the drain.

ganic material. A polymer is then mixed with the waste product. The polymer adheres to the solids to make them stick together while the liquid is removed with a sieve. The liquid is then pumped into another holding tank, treated, and put back into our waterways, rivers, oceans, and streams.

The solids are then combined with wood chips, leaves, and sometimes lime and spread into rows approximately 5 feet high. These rows are then left to “cook” at a temperature of 55 degrees Fahrenheit and they will be turned every couple of weeks for up to three years before the product is ready to use.

The Nova Scotia Federation of Agriculture would like to see the sewage sludge used to power farms instead of fertilizing the fields. The material, when mixed with agricultural waste, produces

biogas, which is an alternative energy source used in Europe and the US. In Sweden public transit is run using biofuels generated from Organic waste.

There is no question that something needs to be done with the vast amounts of sewage that are produced. In Halifax, Nova Scotia alone, more than 7 million tonnes of waste had to be dealt with in 2009. I would like to see mini-bioreactors located under apartment buildings that are able to convert raw sewage from the apartments into methane gas to heat the building. The treated waste water is then recycled back to flush the toilet. Lower water bills, and no heating bills!

Brenda Greenough is a nurse's aid whose love of learning has taken her back to school. At age 50, she is a student in an Adult Learning Program in Nova Scotia Canada where she will complete her high school diploma and move on to becoming a Licensed Practical Nurse.

Learn. Think. Act.

AppalShop <appalshop.org> Multi-media with an Appalachian focus.

Biomimicry <biomimicryinstitute.org> Studies Nature's models, like a cat's tongue, and uses these forms and strategies to solve human problems—sustainably.

Change Agent <www.nelrc.org/changeagent> Special issue on climate change—teaches basic skills and critical thinking, and tells stories of people taking action.

Freecycle <www.freecycle.org> Read one person's adventures using this method for giving away and receiving free stuff at <www.nelrc.org/changeagent/extras>.

Global Alliance for Incinerator Alternatives <www.no-burn.org> Resources and action for managing waste and global warming.

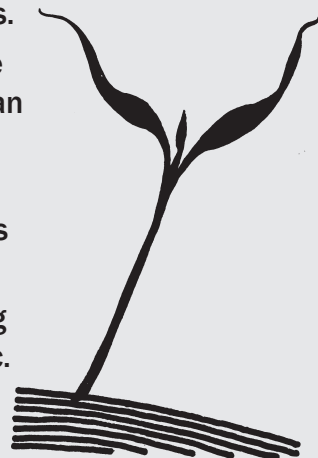
Global Community Monitoring <www.gcmonitor.org/index.php> What is in the air? Tools to show the impact of fossil fuel pollution on communities.

Environmental Working Group <ewg.org> Exposes environmental threats.

Story of Stuff <www.storyofstuff.com> Animated stories about the life-cycle of stuff!

Statistics for Action <statisticsforaction.terc.edu>

Contains activities and resources to help regular people begin manage the science and math of environmental contamination.



Too Much Packaging!

Brenda Greenough

I am a woman in my fifties who has decided to go back to school. To make this financially possible, I have taken in three students from a nearby college. These guys have been teaching me about recycling and composting, separating garbage into paper, plastic, and organics.

I am learning a lot about this process, much of which I don't like. It seems to me in watching these boys, that because they recycle "garbage" they have lost site of the bigger picture. I have more garbage in different coloured coded bags now than I did when I was raising six kids. What has changed? Why is there so much packaging for me to deal with? Shouldn't the responsibility belong to the manufacturer? Why do I have to sort *their* garbage?

Apparently if I do it wrong the garbage collectors will leave that bag on the curb and I will receive a warning. What do I do with it now? Why should I be penalized for dealing with someone else's waste? I don't want it but I have no choice. I shouldn't have to go through layers of packaging to get to the product in the first place. These

young people in my home seem to believe that if it's recyclable then it's OK, yet they take two long hot showers a day. I have been told

by my teachers that my campus has decreased its garbage output immensely since putting in recycling stations. Does this mean it has increased its recycling output immensely? I'm still not sure what the difference is.

Let's try to REDUCE and REUSE. We should RECYCLE as a last resort. I believe the problem lies with the corporations. They are the ones who should be penalized for over packaging. If I put my corn flakes box in the wrong bag, take it up with Kellogg's. I am definitely getting an education!



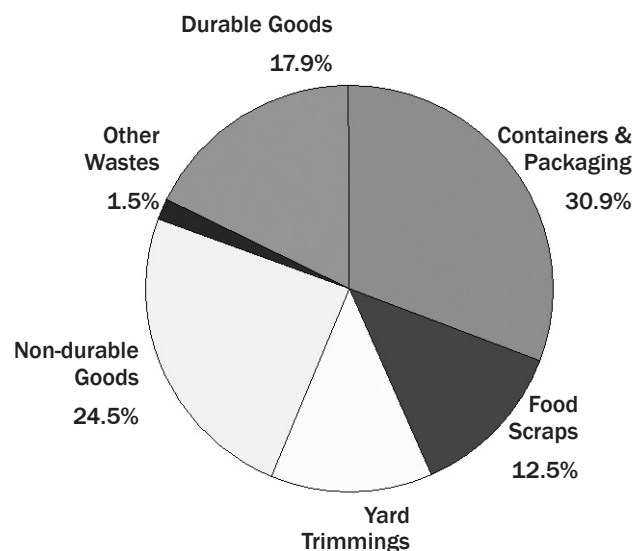
Brenda Greenough is a nurse's aide whose love of learning has taken her back to school. At age 50, she is a student in Nova Scotia, Canada, where she will complete her high school diploma and study to be a Licensed Practical Nurse.

Figuring out Trash!

Study the pie chart on the right. Is there anything you find surprising? Which wedges of the pie chart could we reduce?

What's in your trash? Make a circle graph. Show the types of things that make up your trash.

Vocabulary note: *durable goods* are items that last a long time, like a necklace or a refrigerator. *Nondurable goods* are things you use once or a few times, like a disposable diaper or a container of shampoo.



Source: <www.epa.gov/osw/nonhaz/municipal/pubs/msw07-rpt.pdf>

Talking Trash at Work

Lily Ko

I wanted a job that would connect me to environmental change. But the job I found does not have any direct relation to the environment. At this point, you might be thinking, “You lose.” Indeed, it did feel like I had failed to connect my work life to an issue that I am deeply interested in—the environment. I racked my brains about this problem

for quite a while.

I think some folks believe there’s a magical trash-collection fairy that takes all of our garbage away... They need a dose of reality—we’re drowning ourselves in our own crap!

And now, a year later, I can say that I didn’t lose. Nothing like it. I realized that wherever you work, you can do something for the environment.

I decided to host an informal brainstorming session for people inter-

ested in making our workplace more environmentally friendly. People came and shared their ideas and even volunteered for duties. Within weeks, we had started:

- Using plates, mugs, and utensils that we bought from Goodwill
- Replacing paper towels with cloth towels
- Encouraging double-sided printing
- A re-use box to hold papers that were printed only on one side

I was so proud of us. I came to realize that people really do care, but sometimes they just need reminders or simply someone to lead the way. As happy as I was with our changes though, it wasn’t enough. My biggest problem is with garbage. We are overwhelming ourselves with our own waste! I think some folks believe there’s a magical trash-collection fairy that takes all of

our garbage away and turns it into pixie dust somewhere. They need a dose of reality—we’re drowning ourselves in our own crap!

So, we started talking trash at work. We called a compost-collection service, discussed the idea of composting outside the building on our own, and considered taking the waste to a Whole Foods market that takes community compost. Unfortunately, for various reasons, we were left with hauling the compost ourselves.

So we did! Someone brought in a 5-liter, odor-free, stainless steel, carbon-filtered bin. I made a list of the waste we’d accept (raw fruits and veggies, tea bags, and coffee grounds and filters) and made a sign-up sheet for volunteers. The bin started filling up regularly, and one of us took the bin home weekly. By now, a year later, the sign-up sheet is gone, but the operation still runs itself.

Last week, my friend told me that she felt people our age were hopeless in terms of civic participation. I can’t completely disagree. However, my belief is that there’s no use turning things into a self-fulfilling prophecy. I have learned that I can make change wherever I am.

The story doesn’t end here. I finally got the motivation I needed to compost at home. Some of my co-workers have told me that they have started composting at home too. I’m pushing myself to learn more and do more in my own life and in all the different settings I come across. Over time, hopefully everyone will be doing more as well.

Don’t abandon all hope, planet Earth. We got you.



Lily Ko is a Research Assistant at TERC, a non-profit, education research and development center in Cambridge, MA.

Glossary

concentration	A ratio showing the amount of contamination per a stated amount of water, soil, or air.
contamination	Chemicals in the air, soil, or water that should not be there.
disproportionate	When a relationship of some kind is out of balance, so when a contaminant has a bigger effect on one group of people than another, the effect is disproportionate.
drift (pesticides)	When pesticides move from where they were first sprayed.
emissions	Toxins that come out of a factory or vehicle into the air.
"grandfathered"	When new rules are passed, sometimes they only apply in the future, so an old business can be "grandfathered in" – meaning it doesn't need to obey the new rules.
hazard, hazardous	Anything harmful to health.
leaching, leachate	Chemicals slowly leaking into the soil, when they were supposed to be contained.
level	The amount of contamination measured in something.
moratorium	Putting a stop to an activity for a period of time.
particles	Very tiny solid things mixed into air or water.
release	In pollution science, this means an accident when hazardous chemicals enter the air, soil, or water
quality	A measure of how clean something is. If water has low contamination, it has high quality.
sample	A small part of something that might tell you about something much larger. If you take a soil sample from a field and find contamination in the sample, you may find contamination in other places in the field, too.
standards	Governments set rules about how much contamination is allowed in air, soil, and water. These may be based on science but are often influenced by politics. For more on how standards are set, see "Water Quality: Read Before You Drink" at <sfa.terc.edu>.
testing	A scientific test is used to measure how much contamination is in something. After testing is done in a lab, they report the test results.
toxic	Means poisonous, it can hurt you. A toxin is something that is toxic.

Reader Survey

Tell us about your experience reading the spring 2011 edition of *The Change Agent*, "Staying Safe in a Toxic World." We'll send a thank-you gift to 10 of the first 100 respondents.

Send your survey to: TERC,
2067 Mass. Ave.
Cambridge, MA
02140



1. This issue of *The Change Agent* helped me...

(Check all that are true for you.)

☐ learn about how people are making changes

☐ learn new ways to imagine very large and very small amounts

☐ learn about environmental issues that were new to me

☐ learn new ways to compare numbers

Comment:

2. Circle the number that best fits how much you agree with the sentence.

After reading the current issue of *The Change Agent*...

a. *I want to learn more about the math, science, and politics of environmental issues.*

1 2 3 4 5 6 7 8 9 10

Strongly Disagree

Strongly Agree

b. *I have already looked for more information on the topics that interested me.*

1 2 3 4 5 6 7 8 9 10

Strongly Disagree

Strongly Agree

c. *I know more ways to stay safe in a toxic world.*

1 2 3 4 5 6 7 8 9 10

Strongly Disagree

Strongly Agree

3. What habits have you changed (or do you plan to change) after reading *The Change Agent*?

For example: Use safer products, reach out to neighbors and co-workers about environmental issues, etc.

4. Any other thoughts or feelings you'd like to share about this issue of *The Change Agent*?

Please write them on an additional sheet of paper.

If you're interested in being entered in the drawing to receive a thank-you gift for participating, please enter your email address here. Thank you for sharing your feedback with us!

Name _____ Email _____

Address _____

Change Agent CALL FOR ARTICLES

THEME: Peaceful Tomorrows, Marking the 10th anniversary of 9-11 This September marks the 10th anniversary of 9-11. In the past 10 years, individuals, families, communities, and nations have struggled with the repercussions of the awful events of that day. The next issue of *The Change Agent* (produced in collaboration with 9-11 Families for Peaceful Tomorrows) will explore the ways that people have struggled to make sense of the terrible loss, the personal and governmental responses to the calamity, and the large moral/ethical/legal questions about how we should respond to terrorism and criminal acts.

SAMPLE QUESTIONS TO CONSIDER:

- How were you affected by the events of 9-11?
- How has your response to that day changed over time?
- Perhaps you were not directly affected by 9-11 but have been affected by some other loss due to crime or act of terrorism. How have you responded to the crime committed against you? What lessons could you share? Have you been able to find peace? How?
- Consider the U.S. response to 9-11. What have been the costs and benefits, if any, of U.S. actions abroad, such as wars in Iraq and Afghanistan? Have U.S. actions made us more secure? If so, how? If not, why not?
- What are the costs and benefits of U.S. actions at home – like the USA Patriot Act? Have they made us more secure? If so, how? If not, why not?
- What would be a meaningful way to mark the 10th anniversary of 9-11?
- Martin Luther King wrote, “Wars are poor chisels for carving out peaceful tomorrows.” What do you think about this idea? You can write about this quote in the context of 9-11 or in the context of an event that happened to you personally or to your community.
- Write about a time you and/or your community were able to combat fear and achieve some level of peace. What worked? What didn't? What lessons can you share?
- If we are aiming for peaceful tomorrows, how do you think we should get there?

DEADLINE FOR SUBMISSIONS: May 7, 2011. Please submit illustrations, cartoons, and graphics on this theme too! The complete “call for articles” is at www.nelrc.org/changeagent.



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- ☐ I'd like to receive a 1-year bulk subscription (set of 25 copies) for \$75 (two years \$150); 20% more for Canadian orders.

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