Next time you take a breath of that crisp winter air, you might be inhaling some of the most polluted air in the country. Believe it or not, Cumberland County is among the top ten worst airsheds in the United States for diesel air particulate emissions. Much like a watershed, an airshed is a geographical area that shares the same air based on climate, meteorology, and topography. While the air might look clean, it is full of diesel particulate matter (DPM) approximately 2.5 microns in diameter—that's less than 1/20 the diameter of a human hair!

The main source of DPM in our airshed comes from heavy truck traffic, as Cumberland County’s “Miracle Mile” connects Route 11 to Interstates 76 and 81 and is a major trucking hub for the northeast. Much of DPM is emitted while trucks are idling during the federally mandated 10 hour rest period for every 11 hours on the road. Unlike smokestacks, trucks emit particulate matter at ground level where we are more susceptible to exposure. Children are exposed to diesel emissions everyday from school buses idling in bus loops, and even inhale DPM from the engine while riding the bus.

DPM doesn’t travel alone, as toxins, metals and carcinogens attach to the particle surfaces. In 2002, the Environmental Protection Agency listed diesel exhaust as a “likely carcinogen,” as it can contain many carcinogens like formaldehyde, polycyclic aromatic hydrocarbons (PAHs), acetaldehyde, dioxins, butadiene, and benzene. Diesel exhaust also contains acrolein, a notorious

“Breath” Continued on Page 13
In the past decade, bottled water consumption in America has more than doubled, and bottled water is now the second most popular beverage after soft drinks. American consumers have turned to bottled water for reasons of convenience and, in many cases, because of the belief that it is safer and healthier than tap water. Yet how many of us stop to consider what really goes into that bottled water we drink, and what makes it different from the water that comes out of the tap?

In 1999, the Natural Resources Defense Council (NRDC) released the results of a four year study on 1,000 bottles of 103 brands of bottled water. The NRDC found that “while most of the tested waters were found to be of high quality, some brands were contaminated: about one-third of the waters tested contained levels of contamination—including synthetic organic chemicals, bacteria, and arsenic—in at least one sample that exceeded allowable limits under either state or bottled water industry standards or guidelines.” The brands whose quality was “spottier” may threaten the health of people with weakened immune systems, like the elderly, infants, or people with cancer or HIV/AIDS. In addition, long term consumption of some contaminants in bottled water, according to the NRDC, “could cause cancer or other health problems.”

So what about water from the tap? After its bottled water study, in 2003 the NRDC studied tap water quality in 19 U.S. cities throughout the nation, and found contaminants in many cities’ drinking water from pollution and deteriorating plumbing. The principal author of the study, Erik Olson, commented that “Most Americans take it for granted that their tap water is pure and their water infrastructure is safe....Our report shows that they shouldn’t.”

Tap and bottled water are regulated by two different agencies—the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) respectively. When the EPA establishes a standard for contaminants in tap water, the FDA either adopts the same standard for bottled water, or determines that the standard is not necessary for bottled water. However, there is concern that the FDA regulations are not sufficient to protect consumers of bottled water from contamination. Bottled water is tested less often than tap water for bacterial and chemical contamination, has no requirements for disinfection or tests for parasites like cryptosporidium and giardia (unlike tap water), and is permitted to have some contamination by E. coli or fecal coliform bacteria, again unlike tap water.

Because the FDA regulates interstate commerce, it does not regulate water bottled and sold within the same state—an estimated 60 to 70 percent of all bottled water sold in the United States. About one in five states also does not regulate this bottled water. The inadequate regulations have in some cases made possible “intentional misrepresentation” of bottled water sources—an FDA rule allows bottling companies to label products as “spring water” even if they are brought to the surface using pumped wells, and treated with chemicals. In the NRDC’s report on bottled water, one product, labeled “spring water, with a picture of a lake surrounded by mountains...was actually from an industrial parking lot next to a hazardous waste site.”

But despite all the concerns about tap water and hype about bottled water, they may be more similar than consumers realize—they may in fact be the same thing. The NRDC estimates that 25 percent or more (“some estimates go as high as 40 percent”) of bottled water is “just tap water in a bottle,” generally treated with distillation, reverse osmosis, filtration of contaminants, or ozonation so that it can be labeled “purified.” Though the bottle does not always specify the water source, if it says “from a municipal source” or “from a community water system,” the water came from the tap.
Beyond these concerns about regulations and “traditional” contaminants like pesticides and heavy metals, there are emerging questions about contamination in our water that have not been broadly considered before. For bottled water, these include the effects of contaminants in the plastic bottles leaching into the supposedly pure water. A study conducted by Consumer Reports in 2000 found that eight of the ten polycarbonate water jugs they tested “left residues of the endocrine disrupter, bisphenol A, in the water.”

For tap water, there is growing concern about the cumulative effects of pharmaceuticals that make their way into drinking water through human and animal excretion, flushing unused medication down the toilet, and leachate from landfills. Conventional wastewater treatment does not adequately eliminate pharmaceuticals (like painkillers, tranquilizers, anti-depressants, antibiotics, birth control pills, estrogen replacement therapies, chemotherapy agents, anti-seizure medications, and more) from drinking water, and there has been very little study of their effects on the environment and human health. There is currently no national effort to monitor and effectively treat waste products and drinking water for pharmaceutical contamination.

This information about tap and bottled water can be troubling. But it is important to be informed—we have a right to know what goes into the water that goes into us. Under the Safe Drinking Water Act, consumers receive annual drinking water quality reports from their water suppliers stating where water comes from and what’s in it. More information on local drinking water is available on the EPA’s website, at http://www.epa.gov/safewater/dwinfo/index.html. For bottled water, you can check with the bottled water program in the state in which the water was bottled, or try contacting the bottling company to find the source of the water.

In light of concerns about the safety of bottled and tap water and the price and wastefulness of bottled water, some people choose to buy water treatment systems for their home taps. These can be a significant investment, and require some initial research to determine what type of system is right for the type of water in your home. However, the ultimate solution to concerns about both bottled and tap water quality must be to increase access to safe tap water for everyone. To reach this goal, we can lobby our local, state, and national representatives—go to www.congress.org to find information on your officials and how to contact them. You can also submit comments or petitions to the FDA and EPA through their websites, www.fda.gov and www.epa.gov. The NRDC lists some important talking points to communicate to these officials on its website, including adopting “strict requirements for bottled water safety, labeling, and public disclosure,” giving the FDA and state regulators more enforcement power, and supporting measurers to protect local watersheds and improve drinking water protection and treatment for tap water. Though it may seem daunting, remember that when it comes to issues that affect our environment and health, the power is ours!

Resources:
http://www.bottledwater.org/public/BWFact sHome_main.htm
http://www.nrdc.org/
  -water/index.htm
http://www.wcponline.com/column
  cfm?T=T&ID=2199

For more information:
On tap water:
http://www.epa.gov/safewater/wot/pdfs/book_
  waterontap_full.pdf
On pharmaceuticals:
  cfm?T=T&ID=2199
On bottled water:
http://www.consumerreports.org/cro/food/drinkwater-safety-103/whats-in-bottled-
  water/index.htm
On home water treatment:
http://www.nsf.org/consumer/drinking_water/
  selecting_dwtu.asp?program=WaterTre
http://www.grist.org/advice/possessi
  sions/2004/05/04/mcrandle-bottled/
According to 10000 Friends of Pennsylvania, a state-wide alliance of organizations, the costs of sprawl include:

1. Increases in the costs of roads, housing, schools, and utilities
2. Increases in the costs (in terms of money and stress) of transportation to the consumer
3. Consumption of agricultural lands, natural areas, and open spaces
4. Concentration of poverty and acceleration of socio-economic decline in cities, towns, and older suburbs
5. Increases in pollution

These surfaces are less permeable (less able to absorb rain water) than the forests, farmland, and wetlands they replace. Roads and parking lots collect oil, solvents and other contaminants, while yards are often treated with herbicides. In the event of rain and snow melt, all of this washes into streams and eventually into the Chesapeake Bay where it impairs the function of these ecosystems.

But there is a solution! A study in the Chesapeake Bay area found that moving from a sprawl pattern of development to a more concentrated pattern of development could decrease sedimentation in the bay by 2.3 million pounds, nitrogen...
According to the Smart Growth Network, the ten Smart Growth principles are:

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost effective
10. Encourage community and stakeholder collaboration in development decisions

If you would like to learn more or help Smart Growth in the fight to save land and water in the Chesapeake Bay, check out:

http://www.10000friends.org/
http://www.smartgrowthamerica.org/
http://www.smartgrowth.org/
www.cbf.org

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http://www.smartgrowth.org/
www.cbf.org

Methylmercury: A Real Danger
By Sunil Baidar

Mercury is a highly toxic naturally-occurring element in the crust of the earth. It is also introduced in the environment as a pollutant through human behavior. In fact, 70% of the mercury currently being released in the atmosphere is a result of human activities. Mercury occurs in three forms: elemental, organic and inorganic. Elemental mercury is a shiny silver-white odorless liquid which forms a colorless, odorless gas when heated. Mercury combines with other elements like sulfur and chlorine to form inorganic mercury compounds. Hg₂S, commonly known as cinnabar, is the naturally occurring ore of mercury. Mercury also combines with carbon to form the organic mercury compounds. The most common organic form, methylmercury, is produced by microorganisms in water and is the most toxic form of mercury.

Coal burning power plants are the largest source of mercury in the atmosphere. These power plants account for more than 40% of human-related mercury emission in the United States. Coal naturally contains mercury, so when it is burned in power plants mercury is released to the atmosphere. Old chlorine manufacturing plants are another source of mercury in the air. These plants, also known as char alkali plants, use mercury to treat salt to produce chlorine and caustic soda. Significant amounts of mercury used in these plants are not recovered each year. These plants account for around 5% of U.S. mercury emissions. Other sources of mercury are industrial boilers (10%) and hazardous waste burning (5%). Automobile scrap—specifically the light switches in automobiles—is another source of mercury. When these automobiles with mercury switches are scrapped and melted down for recycling, mercury is released to the atmosphere.

Mercury released into the atmosphere ultimately is deposited back into the earth’s surface through dry and wet deposition.

“Mercury” Continued on Page 16
Coke in India: Not always “the real thing”  
By Katie Fox

Last spring, I spent the semester studying abroad in the south Indian state of Tamil Nadu. Throughout the semester I read numerous newspaper articles and heard rumors about an environmental protest over a Coca-Cola factory in the Tirunelveli district, one of the southernmost districts of Tamil Nadu, in a village called Gangai-kondan. I decided to focus my independent research project for the semester on this protest. One day early in April, my translator and I made the three hour bus ride down to Gangaikondan to talk to the NGO leaders and villagers involved in the protest. Their stories fascinated, humbled, and angered me. Most of all, however, I was inspired by their commitment to saving their water resources even in the face of so many dangers and uncertainties.

Gangaikondan is primarily populated by Dalits (more commonly known as the Untouchables, the lowest in the Indian caste system), who have traditionally depended upon farming and animal husbandry for their livelihoods. Agriculture in the area relies upon canal-fed irrigation from tanks. However, some ten years ago, agriculture became a difficult livelihood due to the severing of the canals and the drying up of tanks from encroachment and industrial needs. The water shortages in the area have already led to massive unemployment and economic insecurity among the Dalit villages that depended upon agriculture and livestock to make a living (Ganeshan, personal communication).

The Coca-Cola Company began construction on a factory in Gangaikondan in January 2005. The company has received permission to access 900,000 liters of the district’s already stressed water supply (Jayaram 2005). The Tamiraparani River that runs through the Tirunelveli district where Gangai-kondan is located is the only perennial river in Tamil Nadu. It is an important asset to the area it traverses and it is attractive to water-intensive industries such as the Coca-Cola Company. Water is taken from the river by the government and is treated and distributed throughout the district for drinking water purposes. However, the water supplied is not enough to meet the drinking water needs of the district. There are pockets of places within the Tirunelveli district, including some areas along the riverbanks, where people have no water or insufficient water. Many people in the villages surrounding the district also have yet to get safe, protected water (Britto, personal communication).

Coca-Cola has a history of human rights violations and unsustainable environmental practices in India. In 2003, in the small village of Plachimada in Kerala, the state to the west of Tamil Nadu, the Coca-Cola Company set up a factory and sunk large bore wells, sucking up thousands of gallons of groundwater. The company gave the sludge, leftover from the processing, to the poor villagers to use as fertilizer. However, the sludge was found to have high levels of lead and cadmium, both highly toxic and dangerous to human health. All the agriculture dried up and rotted, animals died, people fell ill, and the river water became extremely contaminated. The people began to protest and now the production of the company is stopped while the case is in court. However, the damage to the water supply is done. Women of the village now must walk 14 kilometers to access clean water, and the agricultural fields are dry, unfit for yielding any crops (Ganeshan, personal communication).

One day in January 2005, a kilometer off the road in the woods, Elo-sius, a local Dalit man, stumbled upon the construction site for the Coca-Cola factory in Gangai-kondan while searching for his cows. Recalling the articles he had read...
about Plachimada, Ellosius realized the threat and contacted a local NGO in Tirunelveli, sparking an anti-Coca-Cola protest in the district (Ellosius, personal communication). At first many villagers were reluctant to join the protest, happy to finally have attracted large investment to their area which they believed was undesirable because of their social status as Untouchables. Many of the local leaders had been bought off by the company and raved to their neighbors about the benefits of Coca-Cola. The police, also bought off by the company, threatened anyone who joined the protest. However, the local NGOs heading the protest took a group of villagers to Plachimada to show them the destruction Coca-Cola had wreaked on the lives of the villagers there. Convinced of the grave threat that the Coca-Cola Company posed to their environment and lives, the majority of the villagers joined the protest with fervor, participating in the fasts and marches, signing petitions, and standing up for their beliefs at local government meetings (Ganeshan, personal communication).

As I sat in the cramped, dark room at the back of Ellosius’s house, he and two of his neighbors stood before me, passionately bombarding me with facts and stories about the protest. Ellosius tells me that if the 900,000 liters of water were given to the village, along with some of the land that the government has set aside for industrial activity, they could grow 50,000 tons of rice and could provide 1,000 people with jobs. They point out that as of now, only 10 people are employed by the Coca-Cola Company. Ellosius asked me, “How can you give so much water to a foreign industry when the people right here do not even have enough water to drink?” (Ellosius, personal communication).

This is an idea that echoed through all of my interviews in Gangaikondan. The coming of the Coca-Cola plant is the last straw in a series of violations of water rights in the district. It has finally brought these issues to the forefront and has turned the heads of NGOs, political parties, and locals. The people are incensed that the water they need for their occupations and health, which has been lacking in adequate amounts for over a decade, is being handed to a newly established industry. The company’s construction continues and the case has yet to be taken to the courts. Corruption is rampant throughout the district, and the threat of caste conflict between the Dalits and the Thevars, an upper caste, looms, but the community is determined to stand its ground and fight for their rights to the water on which their lives and livelihoods depend.

References:


Stream of Consciousness

Water, Water, Everywhere?
By Courtney Haynes

Today, as globalization brings people from all over the world closer together, many environmental issues are becoming international concerns. Desertification, or the degradation of land in arid, semi-arid and sub-humid environments, is one issue that is of increasing global concern. The degradation of these areas is mainly the result of human activities, although many complex factors are also involved and not fully understood. Debate about the extent, specific causes, and degree of desertification continues today.

Desertification was first recognized during the “Dust Bowl” era of the 1930s, when much of the Great Plains of the United States became a barren, dusty area because of drought and poor farming practices. Desertification today occurs on almost every continent, and it is projected that approximately 40% of the world’s land surface, and one fifth of the world’s population, is susceptible to desertification. Areas of China and parts of western and central Africa (the Sahel) are most affected by desertification.

Though water plays an integral role in human development and desertification in arid regions, a common misconception is that desertification is caused by droughts. Arid regions often experience droughts, but if well managed, these areas can recover when it rains again. It is the degradation of lands between and during droughts that causes the land to become unable to support human life. Desertification is created and spreads when the already limited amount of water in these regions is wastefully depleted by humans.

The increase in human population in these already dry areas of the world puts heavy pressure on the land, leading to a loss of biodiversity and accelerating desertification. While some areas are able to support limited crop harvesting, poor agricultural practices exhaust the ground water supply, and the overgrazing of livestock in these areas has reduced the vegetation that helps to bind the soil together. This loss of vegetation has accelerated rates of surface water drying, degraded soil productivity, and increased wind and water erosion.

A good example of these water issues is a study in the Indian arid zone, called the Jodhpur District. Since 1958, hydrological studies have been conducted in this area to assess water resource use. The main land use in the Jodhpur area is grazing, which has reduced vegetative cover. This in turn has accelerated rates of surface water evaporation and increased wind and water erosion of the land. Through overexploitation, ground water in a specific area within the Jodhpur District deteriorated between 1966 and 1976. In 16% of the wells in this area, the water table dropped over 12 meters and 54% of the wells had high saline content, indicating reduced water quality. More recently, between 1984 and 1994, approximately 50%
The World Trade Organization (WTO) is a complicated entity that is easy to misunderstand, and its decisions and actions often draw the criticism of various environmental and humanitarian watchdog groups. Their criticism is based in the concrete and far-reaching results of the WTO’s decisions. Greenpeace International says on its website, “Although the WTO agreement requires that its members use the world’s resources in accordance with the objective of sustainable development, in practice, free trade wins every time.”

The World Trade Organization is, according to its website, “the only global international organization dealing with the rules of trade between nations.” Its goal is “to help producers of goods and services, exporters, and importers conduct their business.” The WTO was established in 1995, as a result of the Uruguay Round of negotiations, which began in 1984. The WTO was established to maintain the principles of the General Agreement on Tariffs and Trade (GATT), which was the only remnant of the International Trade Organization, an idea that followed World War II but never got off the ground. The WTO has the institutional infrastructure to administer the GATT principles and other agreements, and to resolve disputes among member states. As of 2005 its membership consisted of 149 countries, with notable exceptions including North Korea, Somalia, and Turkmenistan. The WTO is located in Geneva, Switzerland, and its Director-General is currently Pascal Lamy.

The WTO has drawn the ire of numerous groups in response to many issues. Global Exchange, for example, claims on their website that the WTO “is fundamentally undemocratic,” “tramples labor and human rights,” “is increasing hunger,” “hurts poor, small countries in favor of rich powerful nations,” and “undermines local level decision-making and national sovereignty.” Public Citizen, a nonprofit consumer advocacy organization founded by Ralph Nader in 1971, claims on its website that “the WTO is one of the main mechanisms of corporate globalization.”

One of these issues that received much publicity in the United States involved the Clean Air Act. The following information was obtained from the WTO’s website. In 1990, the US amended the Clean Air Act, placing detailed regulations on the composition and cleanliness of gasoline in order to reduce air pollution. The amendment required all domestic producers of gasoline to meet a local standard. All importers of gasoline had to meet an average US standard. In practice, because of other details to the law, this meant that by 1994 the US was restricting gasoline imports and holding them to stricter cleanliness standards than most domestic gasoline.

In 1995, 22 days after the establishment of the WTO, Venezuela and Brazil argued that this policy was against GATT regulations. GATT’s only provision for environmental protection is found in Article XX, where it assures that GATT cannot prevent any members’ measures if the measures are “necessary to protect human, animal or plant life or health” (Article XX[b]), or “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption” (Article XX[g]). Article XX also requires that these measures not be “applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries ... or a disguised restriction on international trade.”

The WTO eventually ruled that these US policies regarding the Clean Air Act were indeed discriminatory. The US appealed once and failed, and in 1997 changed the Clean Air Act to comply with the WTO’s ruling. According to the Public Citizen website, the US estimated this change “would produce a five percent to seven percent
In recent years, rising gasoline prices, the war in Iraq, pressure on crude oil stocks, and increased awareness of global warming have all added a sense of urgency to the development of alternative fuel sources to run the world’s vehicles. Alternative fuels are any material or substance other than petroleum which is consumed to provide energy to power an engine. These “green fuels” are becoming more attractive and can be made by converting crops or waste material into a combustible liquid. Several alternative fuels which are currently being used are ethanol, biodiesel, methane, butanol, electricity, hydrogen, natural gas, and vegetable oil. Ethanol currently seems to be the most popular alternative fuel, and can be found blended with gasoline at pumps throughout America.

The number of vehicles using alternative fuels is increasing, and in 2000, there were approximately eight million vehicles around the world using alternative fuel sources. Today, the most popular choice for car owners is hybrid vehicles, which have a gasoline engine and an electric motor. Last February, President Bush announced the Advanced Energy Initiative which established a renewable fuels standard that will require 7.5 billion gallons of ethanol and biodiesel to be used annually by 2012, almost a 90 percent increase of America’s current usage, providing 5.75 percent of the nation’s fuel needs. This legislation also extends tax benefits which favor the use of both fuels.

There are numerous benefits of using alternative fuels, other than the obvious concerns that the future production of oil will no longer supply the demand. Alternative fuels produce lower emissions of greenhouse gases and atmospheric pollutants such as particulate matter, carbon monoxide, and sulfur dioxide than gasoline. For example, 100 percent biodiesel has been shown to reduce carbon dioxide, one of the main greenhouse gases contributing to global warming, by more than 75 percent over petroleum diesel, and using a blend of 20 percent biodiesel can reduce carbon dioxide emissions by 15 percent. The overall emissions benefit for alternative fuels ultimately depends upon the type of alternative fuel used. In addition, most of these fuels can be domestically produced and derived from renewable sources, helping to reduce U.S. dependence on imported petroleum; can lead to higher vehicle performance and efficiency; and in several cases have a lower risk of flammability than gasoline.

Although there are numerous benefits to alternative fuel usage, they have several downsides as well. The problems associated with alternative fuels include the high energy costs associated with alternative fuel crop production and environmental impacts such as fertilizer pollution and soil erosion. According to some critics, ethanol production from biomass requires the consumption of more fossil fuel derived energy than it saves. Growing large areas of a single crop also requires pesticides and fertilizers that can lead to water runoff from farms. It has been estimated that replacing the entire U.S. fuel supply with corn ethanol would require at least 60 percent of the nation’s available cropland. This argument can be countered by the usage of plant waste, called cellulosic biomass, rather than planting new crops for making fuels, which would reduce the need for large, single crop agricultural areas. In addition, the current costs of these fuels are significantly higher than gasoline prices. The current price of a gallon of 85
Americans use about 382 million gallons of gasoline every day, according to the Energy Information Association, and this accounts for 17 percent of the total energy use in the United States. Especially considering the recently high prices of gasoline, people are looking for ways to reduce their gas consumption and have less of an environmental impact. In 2005, 205,749 people found the answer in a hybrid car.

A hybrid car is a cross between an electric car and a traditional gas-powered vehicle. It combines the advantages of each type to achieve better gas mileage than a traditional car, and more practicality than an electric car. Hybrid cars use a gasoline engine, an electric motor, a battery, and a computer system. The computer determines how much power to use from the electric motor and how much to use from the gasoline engine. In most hybrids, the electric motor is the sole source of power at low speeds, and the gas engine kicks in at higher speeds. The electric motor can also work with the gasoline engine to provide a boost when extra power is required.

The battery powers the electric motor, but the electric motor can also supply power to the battery through regenerative braking. In a traditional gas-powered car, a great deal of energy is lost when braking, because friction is used to slow down the car. A hybrid car captures the energy that would otherwise be lost through braking. In regenerative braking, the electric motor acts as a generator, creating electrical energy that is stored in the battery. The energy that would have been lost through friction is used to turn the shaft of the electric motor, generating electricity and adding energy to the battery.

Hybrid cars are a good way to reduce gasoline consumption. Their gas mileage is significantly better than a car powered by only gasoline. For instance, a Honda Civic Hybrid gets 49 miles per gallon in the city and 51 miles per gallon on the highway. The non-hybrid model of the Honda Civic gets only 30 miles per gallon in the city, and 40 miles per gallon on the highway. The benefits of hybrid cars are not just environmental; their improved gas mileage helps save money as well. Many individuals and organizations are taking advantage of the benefits of hybrid vehicles. Dickinson College recently added a Honda Civic Hybrid to the school’s vehicle fleet.

Even if you do not own a hybrid, there are ways you can improve your gas mileage, help the environment, and spend less money on gas. Whenever possible, walk, bike, take public transit, or carpool to get to your destination. When you do drive, use the brakes and gas pedal only when necessary; smooth acceleration and smooth braking are more efficient than sudden starts and stops. Also, check to see if they are unnecessary items in your car; extra weight will decrease gas mileage. Make sure your car receives regular engine tune-ups and maintenance checks, and ensure that the tires are properly inflated and correctly aligned.

The potential for hybrid cars to reduce the nation’s gasoline consumption is undeniable. Whether you own a hybrid car, plan to purchase one, or are working towards better fuel efficiency, consider the following “Hybrid Haiku,” from a contest staged by HybridCars.com:

“Man with a Prius
Drives past many a gas station
And smiles to himself.”

For more information check out:
- www.hybridcars.com
- www.eia.gov
- www.epa.gov
- www.dickinson.edu
- http://automobiles.honda.com/
What comes to mind when you think of Valentine’s Day? Passion. Love. Beauty. Cupid. Red roses. Whether potted or fresh cut, flowers have a strong representation for many individuals, particularly in American culture. They represent varying emotions: roses are a sign of passion and love, while daisies and sunflowers are associated with joy and happiness. However, for many people in developing nations, these flowers have a negative association. As a flower giver and receiver, do you know where your bouquet came from? According to the Report on the Floral Greens Industry, approximately 70% of fresh cut flowers sold in the United States are imported. As of 2004, the top six countries or regions exporting cut flowers were Colombia, Ecuador, the European Union, Canada, Costa Rica, and Mexico (Floral Greens).

There are many social concerns associated with the international flower market. Studies are being conducted in many of these flower exporting countries to determine the impacts of these developing industries. One study, entitled “Cut-Flower Exports, Female Labor, and Community Participation in Highland Ecuador,” discusses the social dynamics and familial institutions of many individuals in the highlands in relation to the flower industry. The industry spread to the Ecuadorian highlands where land and wages were less costly and the trade unions were considerably weaker than in Colombia. This study exemplifies the social implications and harsh labor conditions associated with the flower industry. There are also concerns regarding the ethical and humane aspects of the industry. With the growth of the floral market, there has been an increase in employee responsibility; workers are required to maintain larger plots without an equivalent increase in pay. Employers claim that laborers are only working 40 hours a week; however, most employees are required to stay until their work is completed. Additionally, those individuals who work overtime receive the same pay rate or less than their allotted wages.

In addition to working extremely long hours, another general concern of workers in the industry is the usage and impact of pesticides. Workers are not provided with adequate protective gear when applying the pesticides. In Colombia, for example, a significant number of flower workers are suffering from various health conditions. According to the Pesticide Action Network, studies have been conducted on various Columbian greenhouses, finding documented use of 127 pesticides—which can cause nausea, headaches, fainting, and long term health conditions that require hospitalization. Studies also reported that some women experienced spontaneous abortions and premature births. These reports should raise questions regarding health conditions and the flower industry in other developing countries as well. Even in developed countries, such as Holland, Dutch workers have been exposed to concentrations up to 60 times more than those considered safe (Rembert). Many flowers are placed in preservatives to keep them fresh as they are shipped to their final destination, the consumer. In addition to the health problems of floriculture workers, there is concern that pesticides seep into local water supplies, affecting the larger population.

As the flower industry continues to expand internationally, more nations are entering the market. China, a lead exporter of goods, is working to develop its flower industry. There are concerns that it could pose a significant threat to the existing dominant industries, particularly those in Columbia, Thailand, Ecuador, Malaysia, and Kenya. According to the deputy chief of the Flower Association in China, the goal is to become the largest flower producer in Asia in 10-15 years, with a goal of quadrupling their flower exports by 2010—which would be more than a billion stem flowers. There is concern that Chinese exports will strongly affect prices in the market if they introduce them at a less expensive price. There have recently been several reports that confirm this. The growth of the flower industry in China and Africa is affecting Colombian companies. Dole Fresh Flowers closed two of their thirteen farms, laying off a third of the workers. There is speculation that the closing was because of Untraflores, the industry’s first independent union, which has been successful in protecting work-
ers from the pesticides, long work hours, and other abuses. As the industry grows, it will be interesting to see what social impacts and issues develop in China similar to other nations that have large, dominant flower industries.

As flower businesses continue to develop in foreign nations, it is important to consider the social and environmental impacts associated with the industry. Many of the workers are exploited for their labor and face numerous health hazards. As the flower industry becomes more important for developing countries, it is impacting their social dynamics and institutions. There is a general concern that fair trade and other standards need to be established to deal with social and human rights issues. The newly established Fair Flowers Fair Plants (FFP) initiative allows for retailers, producers and traders to label their flowers as being grown in a socially responsible and sustainable manner. There is a general belief that it will help “eliminate the abuses in the global flower industry, such as overuse of pesticides, child labor, and discrimination” (Black). Consumers must become more aware of where their flowers are grown, the impacts of pesticide use, and the social implications of the industry, because only then will initiatives for socially responsible flowers truly grow.

You can help reduce diesel emissions by getting involved in community groups such as the Clean Air Board of Central Pennsylvania and the Clean Air Task Force. These citizen groups are dedicated to raising public awareness, working towards clean air policies and practices, and monitoring air quality. Remember, this is your air and your chance to make a difference.

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If you haven’t been to the AL-LARM offices in a while, you are in for a pleasant surprise when you see our new facilities. Over the summer, ALLARM, along with Dickinson’s Environmental Studies, Geology, and Psychology Departments, moved to the newly acquired and renovated Kaufman Building. While our new digs are expected to be a temporary space for three years until we make our final move to Althouse (which will also be renovated for our use by then), we are very happy with our new space and are excited to show off the offices and lab.

As a student staff member of AL-LARM, I must say that one of the most exciting things about the new office is the large window. Our old offices in the James Center were windowless, which was frustrating to a group of environmentally-minded people. There is much more room in the new office for our staff and the lab has a whole new layout. While the main entrance is from West Louther Street, a special entrance to the Kaufman Building was put in on Cherry Street to allow the public easy access to the ALLARM offices. The Environmental Studies department also has three new labs, tailored specifically to meet the needs of courses offered. Students in the LUCE Semester who are completing independent research now have student research rooms available for use.

Our former home, the James Center, and nine college-owned houses were demolished over the summer in order to make space for what has been dubbed the ‘Rector Science Campus.’ The first classes are expected to be held in the new Rector Campus in the fall of 2008. The Campus is to include the Tome, Dana, and Althouse science buildings (the latter two will be renovated), Kaufman, and two new halls attached to Tome: James and Stuart Amick. The two new wings have been designed to achieve the Leadership of Energy and Environmental Design (LEED) green building rating of Silver Certification. This ranking system is based on the accrual of points in categories such as sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design.

As reported in the spring issue of ‘Stream of Consciousness,’ the Kaufman Building was formerly be the Reeves-Hoffman crystal manufacturing facility, which was classified as a brownfield when Dickinson purchased the four acre property. According to the U.S. Environmental Protection Agency (EPA), brownfields are abandoned, idled, or under-used industrial and commercial facilities at which expansion or redevelopment is complicated by real or perceived environmental contamination. While to date all of the contaminants have been cleaned below the Pennsylvania Department of Environmental Protection (PA DEP) and EPA required levels, remediation work is not over. Dickinson had imposed a lower set of contaminant concentration requirements that have not all been met based on air samples taken on July 4 and 5, 2006. These so called “walk away” levels were determined by calculating the concentration of a contaminant that would not produce an excess cancer risk of more than 1 person in 1,000,000 for long term occupancy (based on a 25 year work life, 50 weeks per year,
5 days per week, and 8 hours per day). Levels of polychlorinated biphenyls (PCB) and polynuclear aromatic hydrocarbons (PAHs, using naphthalene as an indicator of presence) are below the Dickinson walkaway levels. PCBs are known to cause skin changes in adults, neurobehavioral and immunological changes in children, and cancer in animals. In large amounts, naphthalene can damage or destroy red blood cells, and has also caused cancer in animals.

The concentration of trichloroethylene (TCE), however, was found to be above the walk away level, but below the state and federal standards. Groundwater remediation focusing on reducing the TCE concentration is occurring this fall, via groundwater injection wells. According to Kenneth Shultes, Dickinson Associate Vice President of Campus Operations, “much of the groundwater issue” is expected to be mitigated “with several months’ time.” An extensive air ventilation system is also in place. It is designed so that when these chemicals volatize, which occurs naturally as they decompose, they will be removed from the Kaufman Building quickly. Absorbing high levels of TCE through drinking or breathing may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death.

Some are still concerned about the contamination in the building. Only three air samples were taken in July, and did not span all areas of the building or areas with varying initial contaminant concentrations. However, this problem is to be solved over the next sampling period to occur in the winter of 2006, as faculty will be suggesting areas to be sampled. Another issue raised was that the departments were already moved into the Kaufman Building when the first round of air samples were taken after the project was completed. What would have happened if the concentration levels did not meet state or federal standards? There is also much scientific uncertainty about the effects of low doses of chemicals on humans over a long period of time. This should not be an issue, as the Environmental Studies and Geology departments are currently scheduled to move from the building in three years, but the Psychology department will remain in Kaufman until the last phase of construction is completed. As the construction of the new science building largely depends on continued funding, a definite timeline is not in place and it is not yet known when Psychology will vacate the building.

A lot of good has come from Dickinson’s purchase of the former crystal factory. The chemicals have been cleaned to state and federal levels, which is a service to both the campus and the greater Carlisle community. By redeveloping a brownfield, the land has in effect been “reused,” which reflects Dickinson’s policy of sustainability. Rather than a pristine forested area being destroyed for a new building, Dickinson has been able to responsibly use what resources are available.

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(rain and snow), and makes its way into water bodies. Certain bacteria in water which process sulfates take inorganic mercury and convert it into methylmercury, the organic form. Methylmercury gets into the food chain as small fish consume these methylmercury-producing bacteria or feed on the plankton which absorb the waste produced by those bacteria. As large predatory fish prey on the smaller ones, methylmercury makes its way up the food chain and to the human body. Methylmercury takes a long time to be removed from an organism’s body once it enters in, so the concentration of methylmercury in the body increases over time, especially for organisms higher in the food chain. Large predatory fish, for example, have higher concentrations of methylmercury in their bodies than smaller fish.

The toxic effects of methylmercury are of particular concern for humans. Methylmercury is a developmental neurotoxin, so it has a greater effect on developing organisms. Breast-fed infants and fetuses are exposed to methylmercury when their mothers consume fish contaminated with methylmercury. Methylmercury accumulates in the brain and interferes with its growth and development. High doses of methylmercury may result in methylmercury poisoning, which can lead to disabilities including blindness, deafness, mental retardation, and even death. Methylmercury poisoning at lower doses leads to learning problems, lower intelligence, and brain damage among children. In addition, though young children are most sensitive to methylmercury, in adults it can reduce fertility and cause irreversible damage to the brain and cardiovascular system.

An individual’s exposure to methylmercury depends on his or her body weight, fish consumption, and the concentration of methylmercury in the fish. The Environmental Protection Agency (EPA) has established a safe dose of mercury of 0.1 micrograms per kilogram of body weight per day. This dose is considered to be safe by the EPA according to current scientific knowledge. The Centers for Disease Control and Prevention (CDC) has found that about 6% of women in the U.S. have a higher blood mercury level than this safe level, which means that every year, around 600,000 babies are born who were exposed to unsafe levels of mercury while in their mothers’ wombs.

Since methylmercury is especially toxic to infants and fetuses, it is advised that women of child-bearing age reduce their fish consumption. It is also a good idea to consume smaller fish rather than large predatory fish like bass and trout, as smaller fish generally have lower concentrations of methylmercury.

Reducing mercury emission is a critical step in reducing mercury pollution in the atmosphere. In the mid 1990s, the EPA passed standards to reduce mercury emissions from municipal waste and medical waste by 90%. At that time, municipal waste accounted for around 22% of the mercury emissions, and medical waste accounted for 26%. The EPA standards have led to a significant decrease in mercury emissions from these sources, and at present they account for just 6% of the mercury emitted in the U.S.

Similar standards are required to reduce mercury emission from power plants. In 2001, the EPA proposed a rule with three options for power plants: to reduce mercury emissions by 89, 90 or 99% by December 2007. This rule would have reduced annual mercury emission by power plants from 48 tons to 5 tons. But the Bush administration took a step backwards in January 2004, issuing a proposal that caps mercury emission from power plants at 34 tons in 2010 and 15 tons in 2018. Further, the early energy credits option available to power plants allowed the plants to delay meeting the 34 ton mercury emission cap from 2010 until 2013. In response to this flawed proposal, several states have proposed their own standards to reduce mercury emissions. The Environmental Quality Board of Pennsylvania, for example, recently agreed to a plan requiring power plants to reduce mercury emissions by 80% by 2010 and by 90% by 2015 and prohibits the trading of mercury allowances. This is a step forward in reducing mercury emissions to the atmosphere, and protecting the environment and human health.

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percent ethanol and 15 percent gasoline is $2.41/gallon, and $3.40/gallon for 100 percent biodiesel, compared to $2.34/gallon of 100 percent gasoline. However, on the plus side, if gasoline prices become too high and we must look to other fuels, the increased competition may lead to oil producing nations reducing exported fuel costs.

By continuing to develop and use new alternative fuels, we can reduce our dependence on any single energy source in the future. A future investment in renewable energy infrastructure could include developments in wind, solar, tidal, geothermal, and hydropower. Alternatives will ultimately reduce greenhouse gases and promote renewable resources which are domestic in origin. However, although many fuel alternatives look promising, they are not yet a viable solution. Any significant advances in alternative fuels will take years or most likely decades to accomplish, while engineers and energy companies develop a new infrastructure and the ability to produce these products on a national scale. A collective effort will be necessary to effectively produce, manufacture, and distribute these fuel sources to all areas of the world.

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WTO faces opposition from environmentalists.

increase in annual emissions of nitrous oxide.”

A similar case involved the US Endangered Species Act of 1973. The original act required US shrimp trawlers to use turtle excluder devices (TEDs), in order to protect the five species of sea turtles listed as endangered. A law enacted by the US in 1989 effectively extended this policy to any country that exported shrimp to the US. The US gave several countries in the Caribbean assistance in this transition.

Four of the countries that did not receive assistance—India, Malaysia, Pakistan, and Thailand—lodged a complaint against the US in 1997. Again, the WTO ruled that the policy was discriminatory and not protected by Article XX. The US complied, and changed their policy to allow imported shrimp if the ship carrying them is equipped with TEDs. Public Citizen points out on their website that “regardless of whether the ship had actually caught the shrimp,” this policy “unenforceable.”

In sum, the WTO can be seen to consistently oppose environmental protection measures if they hinder free trade. Its decisions may be motivated equally by opposing countries and US corporations. Global Exchange points out on their website, “The US Trade Representative gets heavy input for negotiations from 17 ‘Industry Sector Advisory Committees.’ Citizen input by consumer, environmental, human rights, and labor organizations is consistently ignored.” Thus the US presence in the WTO offers no guarantees for the preservation of US environmental safeguards, or the protection of our environment.

For More Information
Check out:
The World Trade Organization:
http://www.wto.org/
Public Citizen:
http://www.citizen.org/trade/wto/
Candie Wilderman
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• Provides expertise for the Community Aquatic Research Laboratory
• Supervises data analysis and interpretation
• Develops and facilitates workshops for partner watershed groups
• Involves students in her courses with ALLARM projects and our partner groups
• Represents ALLARM on the editorial board of “The Volunteer Monitor”
• Coordinates ALLARM’s peer-reviewed publications and outreach to other academic institutions both in the U.S. and abroad
• Works cooperatively with professional staff to formulate and implement ALLARM’s operational policy

Lauren Imgrund
Director
• Develops annual project plan and budget and delegates tasks to staff
• Provides technical assistance to partner watershed organizations via training, facilitation, and project management
• Builds the program by developing partnerships with watershed organizations and cooperative efforts with other service providers, including non-profits, academic institutions, and local, state, and federal government
• Represents ALLARM on Keystone Watershed Network, PA Campaign for Clean Water, Consortium for Scientific Assistance to Watersheds and other state committees

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ALLARM, founded in 1986, is a project of the Dickinson College Environmental Studies Department. Our team of students, professional staff and faculty provides community groups with comprehensive technical support for locally-driven watershed assessments, protection and restoration. For more information visit our website: www.dickinson.edu/allarm.