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WITH GREAT POWER COMES GREAT IRRESPONSIBILITY

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Our plastic world

ENVIRONMENTALLY SPEAKING

Peter Schwartzman

If we were to compare our lives to our ancestors living one hundred years ago, there are clearly many differences. Computers, televisions, cellular phones, nuclear weapons, & synthetic pesticides weren't yet around and such a list could go on and on. However, one often overlooked difference is the almost ubiquitous use of a new material with which to make things—plastics. A quick look at our lives today reveals that plastics are found nearly everywhere. Consider these items, often now made of plastic: tooth brushes, combs, siding, clothing, sunglasses, auto interiors,

Plastics can be formed with smooth edges and rounded corners, something difficult to do with metal or wood. They tend to be low in mass thus they allow many items to be light, such as automobile interiors and packaging peanuts. There are so many types of plastics that their versatility is seemingly endless.

With all these benefits, why on earth should we be concerned? As positive and benign as they may seem, there are many reasons to reconsider the use of plastics in our society. Let's consider just two of them here. First, they represent chemicals that



Reyes Molina sorts through the Plastic bottles trickle onto a conveyor belt at a recycling facility in South Carolina.

Photo: Janet Blackmon Morgan/Myrtle Beach Sun-News

trash cans, computers, picnic utensils, carpets, laundry baskets, food containers, keyboards, syringes, yarn, office furniture, clothes (nylon, acrylic, polyester), shower curtains, tires, snow shovels, professional Scrabble® tiles, etc. Plastics have become so commonplace in our lives that it seems implausible to imagine our lives were ever without them. Yet, historically speaking, we know that they are very recent human creations; previously, we got along with plant fibers, rocks/minerals, and metals. Doesn't such a major change in our lives beg several questions, such as: Are plastics good for us?; What kind of world have they created?; and, Do we really need them? (I'll deal with the first question here, and the subsequent ones in a future essay.)

No doubt, plastics have provided us with many beneficial things. They have desirable properties and are relatively easy to make.

weren't part of the living environment for the entire history of human evolution. And since they are so commonplace now, we should wonder if they pose a threat to us and/or the environment? Second, given our need to reduce our fossil fuel dependency, and the fact that most plastics are currently made from these fossilized forms, can we expect the recycling of plastics to minimize future extraction of fossil fuels?

Regarding the threat that plastics pose, let's first recognize that it is difficult to categorically say "yes" or "no" to the issue because there are simply so many to keep track off. How many of these common ones do you know anything about (listed with a common usage and "recycle" number): Polyethylene terephthalate (PET; soda bottles; labeled #1); Polyethylene (milk

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Phil Hare talks tough on trade



Story, photo by Karen S. Lynch

U.S. Rep. Phil Hare, D-Rock Island, spoke in opposition to a proposed free trade agreement with Colombia recently from the Steelworkers Union Hall in Galesburg.

Figures from the "Economic Policy Institute" in October 2006 show after the passage of NAFTA the trade deficit has soared over the past dozen years, displacing one million jobs nationwide. The report also stated there was a \$112 billion trade deficit between the U.S., Canada, and Mexico alone, a number that is growing with the weak U.S. dollar. A similar agreement, CAFTA passed with Central America.

Three million jobs have been lost in the U.S. over the last seven years. Hare wrote in a news release March 11, "With the U.S.

economy on the brink of recession — 63,000 jobs lost in February, an annual trade deficit over \$700 billion, and foreclosures reaching all-time highs, the American people cannot afford another failed Bush trade agreement."

According to Hare, there was a meeting with Colombian President Alvaro Uribe six months ago asking the United States to have patience with them on continuing violence in Columbia. Uribe has been releasing paramilitary forces, reportedly responsible for the assassination of 2500 trade unionists and their families over the last 20 years. The U.S. has spent \$5 billion on "Plan Colombia" to help defeat narco-terrorists and eliminate illegal activity. The efforts are claimed to

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bottles and plastic bags; #2 & #4 (low- & high- density, respectively); Polypropylene (bottle caps; #5); Polystyrene (egg crates and plastic utensils; #6); and, Polyvinyl chloride (PVC) (water pipes, "linoleum" flooring, and carpet backing; #3)? (There is also a seventh category, referred to as "other," which contains a large number of other plastic compounds.) Though we use (and, thus, are exposed to) these every day, we do so without much thought or concern. When one considers the following health threats due to plastics, we should wonder if our "ignorance is bliss" in this case.

Those keeping up with the news should have seen several serious issues about plastics surface recently. Baby bottles have been found to leach Bisphenol A which has been shown to be a developmental, neural and reproductive toxin. (See, *Baby's Toxic Bottle*, a study recently released by a coalition of U.S. public health and environmental NGOs and David Biello's piece last month in *Scientific American*.) Apparently, it isn't only baby bottles that leach however, not that this wouldn't be serious enough given they are among the most vulnerable (and helpless) to exposures of such chemicals. Many Nalgene bottles (usually labeled #7) and other "clear" plastic containers, which are currently the rage for "cheap" hydration (i.e., bottled water), are also releasing Biphenol A. According to an animal study, conducted by Dr. Patricia Hunt at Case Western Reserve University, washing these bottles can aid in the release of this estrogen-mimicking hormone as well (Whittelsey).

And it isn't just the bottles. Have you heard of phthalates? Sad to say, most of us haven't. They are a PVC additive that is found in shower curtains, raincoats, and even in "new car" smells. They are also in lots of infant toys, unfortunately many of the ones that get repeatedly put in the mouth over the course of a baby's day. Apparently, once ingested they disrupt a male newborn's ability to properly form his penis. This plastic is also possibly tied to lower sperm counts among men and increased incidence of testicular cancer (Shapiro). According to Dr. Swan, director of the Center of Reproductive Epidemiology at the Rochester School of Medicine and Dentistry, no babies are now born without "measurable levels of phthalates" in their bodies (in Grossman). (So saying we are becoming plasticized doesn't seem so unrealistic now, does it?) With evidence of this horrifying relationship between a widely used plastic and serious human health disorders, the European Union temporarily banned the use of phthalates in toys over eight years ago (a ban that was made permanent in July 2005). No such luck in the United States, where corporate rights to profits often trump citizen's rights to safety.

In April of 2004, about 75 miles southeast of Galesburg (in the small town of Illiopolis), there was a horrific explosion and fire at a plastics manufacturing plant. The plant, which produces an astounding 325,000,000 pounds of PVC annually, remained on fire for more than 2 days, likely resulting in the release of huge amounts of dioxin, one of the most toxic substances known; dioxin is released when many plastics are burned, particularly PVC. Nearly 300 fire personnel, almost a third of the town's population, were brought to the scene to put out this major conflagration. As dangerous as this event was to the public and the environment nearby and downwind (or downstream), did we even know it happened? (For more on this major local event, read Steingraber's article "The Pirates of Illiopolis.")

A quick search of the Environmental Protection Agency's website will establish that PVCs are also making for unhealthy conditions in hospitals. PVC is used to make "IV bags and surgical tubing," so patients

can get exposed directly from their use. Some hospitals actually burn (incinerate) their waste onsite as well. This releases very dangerous HAPs (hazardous air pollutants) including dioxin into the air, which patients and local residents are bound to inhale.

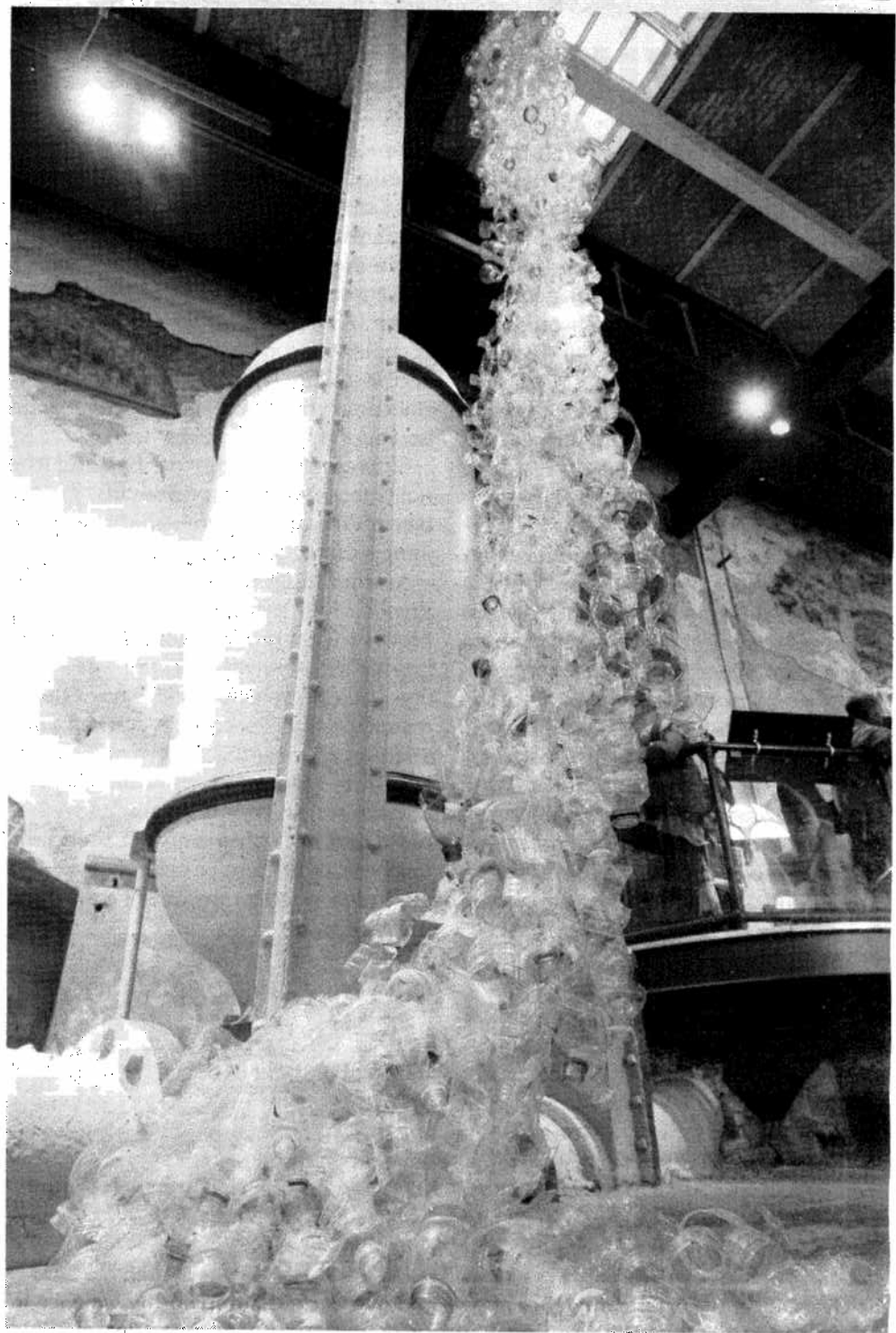
All of the above items are just a short list of the suspected hazards surrounding the use of plastics. Yet, despite all of this (and other) evidence, our society is noticeably silent on these issues. Why?

On a different matter, will recycling plastics reduce our use of fossil fuels? The answer is emphatically "No." We often hear from environmentally-conscious people that we should recycle. And while this is a good principle, it doesn't work for plastics—in theory it works but in practice it is nightmare. First of all, so little plastic gets recycled, largely because it degrades in quality so much when it is recycled. Also manufacturers can control the color of plastic products more easily with new materials. Thus, there is little economic incentive for companies to market items made of recycled plastic. Second, despite all the hype, most recyclable materials have seen decreasing rates of recovery, with PET plastic having dropped the most; only 20% was recycled in 2002, equivalent to 3.2 billion pounds of PET being buried or burned rather than recycled (Royte). According to the U.S. Geological Survey, less than 6% of discarded plastic is actually recycled (a mind-shattering number when compared to 35% for metals, 23% for glass, and 42% of paper) (Blatt). Paradoxically, recycling of plastic actually leads to **greater** (not less) demand for new plastic production (Royte) because consumers become more comfortable with purchasing plastic products when they think (wrongly) that it can be recycled so readily. Third, recycling plastic further exacerbates inequalities in our society. Consider where plastics are recycled. Overwhelmingly, they are reprocessed in poor communities. This means that the costs of harmful byproducts of reprocessing (i.e., toxic airborne and waterborne effluent) are inequitably paid by disadvantaged groups of our society.

Holistically speaking, plastics cannot be recycled. Unlike wood or glass which decomposes into naturally found materials, plastics degrade into unnatural substances (leaching during their lifetimes and often being burned along the way). That is, plastics never really go away. Plastics degrade into "pieces that choke turtles ... fill the stomachs of seabirds—which then starve ... because they always feel full." Scariest of all, Charles Moore, a marine scientist, surveyed five hundred square miles in the North Pacific Ocean and found six pounds of floating plastic for every pound of naturally occurring zooplankton! (Royte) He followed up the study 3 years later and found that the ratio was no longer 6 to 1, but 10 to 1! This is probably the largest "landfill" of recyclables anywhere. (Just for the record, I do advocate that people recycle plastics. However, it should be understood that this is only a short-term response to a much more serious problem.)

There you have it. In 2008, plastics are extremely common and some appear to have very serious health and environmental effects. Little is being done about it, at least in the United States. Recycling plastics conceals the harm that they do. Reducing (or removing) them seems like the best call. Yet, this is not all as I'll have more to say soon enough. In the meantime, check out some of the following list of references. Take the time to do some of your own research. Don't rely on a climatologist to tell you everything about plastics.

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A 20-foot "waterfall" of plastic water bottles by artist Deb Hoy is at the Fairmount Water Works Interpretive Center in Philadelphia.

photo: (Gerald S. Williams/Philadelphia Inquirer/MCT)

two amazing girls, Peter hopes that their lives will be lived on a cleaner, more just, more environmentally-aware planet. A nationally-ranked Scrabble® junkie, he is also the founder and maintainer of websites dedicated to peace, empowerment, and environmental well-being (www.onehuman.org & www.blackthornhill.org) as well as cofounder of The Center (thecenteringalesburg.org).

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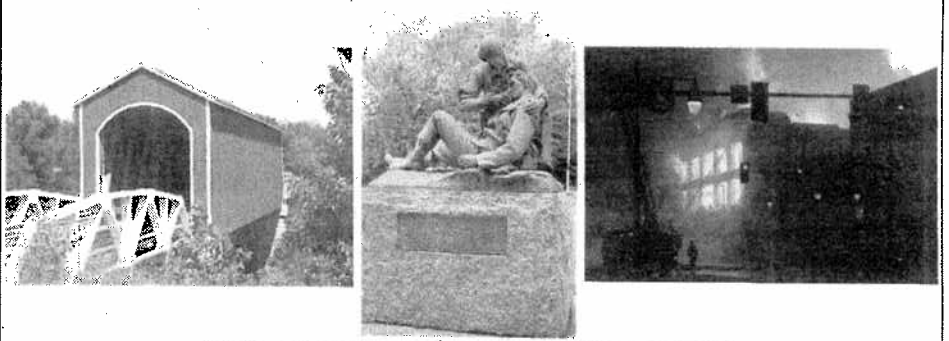
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