

P2Post



National Pollution Prevention Roundtable

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Special points of interest:

- Auto industry turns the page on gas guzzlers
- New sources of energy from water to the human body

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A New Look for the American Auto Industry

After years of making vehicles to be larger, and therefore less full efficient a change has swept through the American auto industry. The 2011 North American International Auto Show (NAIAS) in Detroit gave consumers and car enthusiast a glimpse of that coming change. This included the debuting concept vehicles, as well as, the car and truck of the year.

Chrysler introduced an eight-gear 300, which is expected to get 30 miles to the gallon on the

highway. Chrysler has gone through some of the biggest changes since the economic downturn, particularly it being purchased by Italian automaker Fiat.

The 2011 North American Car of the Year went to the Chevrolet Volt. A hybrid that runs on electricity for 40 miles, the Volt then uses a four-cylinder gasoline engine as an electric generator that can extend the range by an additional 300 miles.

Ford Motor Company

received the 2011 North American Truck of the Year for its redesigned Explorer. The new Explorer may not be as fuel efficient as the Volt, but with 25 miles per gallon on the highway and 17 m.p.g. in the city it becomes one of the most fuel efficient in its class. Ford also debuted the new concept car Vertrek, which the next generation Escape will be based on. The Vertrek engine shuts down when the vehicle is stopped and a regenerative braking system helps keep the battery charged.

New Recycling Technology

Paijit Sangchai, chief executive and founder of Flexoresearch Group, the first Thai firm ever selected for the World Economic Forum's list of "Technology Pioneers", has developed a process that could revolutionize recycling.

Flexoresearch has developed a series of blended enzymes that can recover pulp or fiber

from laminated paper such as cigarette packets, stickers or milk cartons that were previously hard or impossible to recycle.

First one enzyme attacks the water resistant chemical coating the surface, then others take over and tackle the paper and adhesive layers. The resulting pulp can be used to produce new

paper products or turned into building materials that can be used as an alternative to asbestos, which is potentially hazardous to human health.

The technique, believed to be the first of its kind, also produces clean plastic that can be recycled and used to produce new products.

Trees as Streetlights

Could glowing trees replace streetlights?

Scientists from the Academia Sinica and the National Cheng Kung University in Taipei and Tainan are researching just that. They have implanted glowing, sea urchin shaped gold nanoparticles, known as bio light emitting diodes, or bio LEDs, inside the leaves of a plant.

The new trees could replace the electricity powered street light with biologically powered light that removes CO2 from the atmosphere

24 hours a days.

Chlorophyll, the photosynthetic pigment that gives leaves their characteristic green color, absorb certain wavelengths of light. Under certain circumstances, such as being exposed to violet light, chlorophyll can also produce a light of its own.

Violet light is hard to come by though, especially at night. The scientists needed a source of violet light, which they found in the gold nanoparticles.

When shorter wavelengths of light, invisible to the human eye, hit the gold nanoparticles, they get excited and start to glow violet. That violet light strikes the nearby chlorophyll molecules, excites them, and the chlorophyll then produces the red light.

Currently, the effect is limited to an aquatic plant known as *Bacopa caroliniana*. Though, scientist believe that the science could be expanded to terrestrial plants.



Environmental Apparel Design Tool

NIKE, Inc. has released its Environmental Apparel Design Tool. Based on Nike's Considered Design Index, the release of the tool aims to accelerate collaboration between companies, fast-track sustainable innovation and decrease the use of natural resources like oil and water.

Designed and built by Nike over seven years with a six million dollar investment, the software-based Environmental Apparel Design Tool helps designers to make real time choices that decrease the environmental impacts of their work.

The tool rates how apparel designs score in reducing waste and increasing the use of environmentally preferred

materials while allowing the designers to make real time adjustments.

In the last year alone, Nike doubled its use of recycled polyester, saving 82 million plastic bottles from landfill. If all apparel companies committed to converting one third of their polyester garments to recycled polyester, the demand for recycled polyester would be greater than the annual production of plastic bottles, diverting PET bottles from landfill.

In addition to the Environmental Apparel Design Tool, Nike will also be releasing its Footwear Design Tool, Material Assessment Tool and Water Assessment Tool in 2011.

These efforts come after Nike's announcement earlier this year about the GreenX-change (GX), a Web-based marketplace where companies can collaborate and share intellectual property which can lead to new sustainability business models and innovation. Nike committed to placing more than 400 patents on GX for research, demonstrating its belief that the best way to stimulate sustainable innovation is through open innovation.

The Environmental Apparel Design Tool can be found at www.nikebiz.com/responsibility/nikeenvironmentaldesign-tool.



Fresh Water and Reusable Energy

Researchers from the University of Colorado Denver College of Engineering and Applied Science may have discovered a way to produce both fresh water and reusable energy. Current water purification techniques require a lot of energy, while utility companies need large amounts of water for energy production.

Last year, a study published in *Environmental Science & Technology* incorporated desalination into microbial

fuel cells, a new technology that can treat wastewater and produce electricity simultaneously. However, putting it into practical use proved to be challenging due to current fluctuation. Zhiyong (Jason) Ren and his team with the University of Colorado Denver discovered, after six months from the initial hypothesis to completion, that they could produce hydrogen gas, which is collectable and storable, thus making improvements in the technology.

A recent study by Logan group at Penn State University also demonstrated similar findings in that the energy contained in hydrogen gas not only can offset the energy used for the desalination process but has surplus that can be used for downstream processing.

Next steps for Ren and his team will include using real wastewater to test the efficiency as well as optimizing the reactor configuration to improve system performance.



Sustainability and General Mills

From harnessing wind power in Spain to reducing water usage in Georgia, General Mills detailed its progress in four environmental sustainability areas, and announced new environmental sustainability goals for 2015. General Mills global environmental sustainability goals for 2015 include the following:

1. Reducing water usage by 20 percent
2. Reducing solid waste generation by 50 percent
3. Reducing energy usage by 20 percent
4. Reducing greenhouse gas emission by 20 percent

The four global environmental sustainability goals measure the company's global manufacturing operations using rates normalized per metric ton of product. The water usage goal is

measured against a 2006 baseline, while the solid waste, energy and greenhouse gas goals are measured against a 2005 baseline.

General Mills has also established a U.S. transportation goal of reducing the amount of fuel used to ship each pound of product by fiscal 2015, using fiscal 2009 as a baseline. Achieving the U.S. transportation goal would reduce the rate of greenhouse gas emissions generated by shipping the company's products by 35 percent by fiscal 2015.

General Mills also detailed its progress in each category through the end of the company's 2010 fiscal year. Specifically, the company said it has:

- Reduced its water usage

rate by 9 percent – nearly twice the 5 percent goal set in fiscal 2006;

- Reduced its solid waste generation rate by 33 percent – more than twice the 15 percent goal set in fiscal year 2005;
- Reduced its energy consumption rate by 6 percent – short of the company's 15 percent goal set in fiscal 2005, and;
- Reduced its greenhouse gas emission rate by 8 percent – about half the company's 15 percent reduction goal from fiscal 2005.

For examples and additional discussion of the company's commitment to environmental sustainability, download the company's 2010 Corporate Social Responsibility Report, released earlier this year, at GeneralMills.com.



Happy New Year - A Time to Re-examine those Old Resolutions

According to usa.gov four of the most popular New Year's resolutions are get fit, lose weight, manage debt, and save money. As the memories of New Year's fade so do many people's commitment to their resolutions. One way to make those resolutions stick around longer may be to make some decisive and simple lifestyle changes. Rather than spend more money on fitness equipment and wasted gym memberships. Here are some simple ways to save money and work on those resolutions to get fit and lose weight, while also being green.

1. Give up plastic bags - Some municipalities have begun charging folks who still use plastic bags at the store. There are several retailers, such as Target, who will give you five cents off your purchase for bringing in your own bag.
2. Walk or ride a bike - If you have a short distance to travel, especially in the summer, opt to walk or take a bike. This will save you money, provide a good source of exercise, and is the green alternative to cars and public transit.
3. Stop buying bottled water - Many new studies have shown that tap water is cleaner than bottled water, not to mention the toxic chemicals in the plastic.
4. Stop using traditional cleaning products - There are a lot of great uses for vinegar and baking soda when it comes to cleaning. Neither products are toxic and both are inexpensive when compared to traditional cleaners. There are also many new plant-based and biodegradable products on the market. Many of these products work just as well if not better than their toxic counter-parts.
5. Eat locally grown and cut down on the meat - A couple simple changes in shopping habits and selecting a day or more a week to go vegetarian can help local farmers, cut down on CO2 emissions, and help with that weight loss.

Pollution Prevention where sustainable practices begin!

Using the Human Body to Power an MP3 Player



As a society we sure love our digital gadgets. Many of us have a cell phone or smart phone, a personal computer, GPS device, MP3 player or iPod, and now there are also digital books. All of those device require batteries and somewhere to recharge those batteries, adding both to the drain on energy and CO2 levels.

A new concept by Industrial designers Chih-Wei Wang

and Shou-His Fu could change that energy source, particularly when it comes to MP3 players.

The concept is the Skinny Player. About the size and shape of a Band-Aid the device would harness heat from the human body harness, using a flexible battery charging device that is in contact with the skin whenever the player is being used.

Unlike a Band-Aid this is not a one time use device. Instead it is said to continue to re-stick to the body use after use.

This concept MP3 player would not use head phone, but instead would have flexible speakers. It could also be easily cleaned with a wet cloth if it get's dirty. The production of this concept as a product is still a long ways off.