Greenlist Bulletin

From the Toxics Use Reduction Institute
at the University of Massachusetts Lowell

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This is the bi-weekly bulletin of the TURI Library at the University of Massachusetts Lowell. Greenlist Bulletin provides previews of recent publications and websites relevant to reducing the use of toxic chemicals by industries, businesses, communities, individuals and government. You are welcome to send a message to mary@turi.org if you would like more information on any of the articles listed here, or if this email is not displaying properly.

U.S. EPA: Flame Retardant Alternatives for Hexabromocyclododecane (HBCD)

Source: U.S. Environmental Protection Agency, June 12, 2014

HBCD is a brominated flame retardant that has been found to have persistent, bioaccumulative, and toxic (PBT) characteristics. EPA's Action Plan for HBCD identified the chemical as persistent in the environment, bioaccumulative in living organisms, and highly toxic to aquatic organisms.

Human exposure is evidenced by the presence of HBCD in breast milk, adipose tissue, and blood, and it biomagnifies in the food chain.

HBCD also presents human health concerns based on animal test results indicating potential reproductive, developmental, and neurological effects. People may be exposed to HBCD from products and dust in the home and workplace.

Read more...

Access final report here.

TURI's Note: Also see a report by TURI's Industry Research Manager, Gregory Morose, which was referenced in the EPA assessment above, An Overview of Alternatives to Tetrabromobisphenol A (TBBPA) and Hexabromocyclododecane (HBCD).

'Chemical-free' cleaning is trending in the commercial sector

Source: *The Guardian*, June 25, 2014
Author: Debbi Gardiner McCullough

Randy Reed, deputy assistant director of housekeeping at North Carolina State University, North Carolina's largest campus, often fretted about the effects of chemicals on the 300 housekeepers as they cleaned. While nobody was ever seriously injured, he fielded several reports of rashes, occasional respiratory problems and headaches, possibly caused by exposure to the harsh smells the cleaners emitted.

The Occupational Safety and Health Administration, a government agency, warns of this in its public safety warnings. Cleaning chemicals, OSHA states, can cause dangerous gases causing headaches, dizziness, wheezing, even lung damage. With this in mind, two years ago, Reed replaced traditional industrial cleaners such as Diversey Glance and Comet Cleaner with Orbio SC 5000 split stream water technology to clean floors, surfaces, even urinals.

This new system uses a salt-based, chemical-free process, where water passes through the system giving it an electrical charge. The solution cleans and sanitizes surfaces leaving it 99% germ free, Reed explains. "On our first trial our hygiene meter monitored the bacteria count on a urinal and found the technology removed as many germs as a regular sanitizer."

Read more...

TURI's Note: Visit the TURI Laboratory's CleanerSolutions Database which provides simple solutions for surface cleaning.

The National Nanotechnology Initiative Releases Progress Review on Environmental, Health & Safety Research

Source: National Nanotechnology Initiative, June 25, 2014

The National Nanotechnology Initiative (NNI) released today a Progress Review on the Coordinated Implementation of the National Nanotechnology Initiative 2011 Environmental, Health, and Safety Research Strategy, a document that demonstrates the wide range of research activities, accomplishments, and collaborations of Federal agencies working toward the responsible development of nanotechnology.

This document is a result of efforts by the Federal agencies participating in the Nanotechnology Environmental and Health Implications (NEHI) Working Group. NEHI is a Working Group of the Nanoscale Science, Engineering, and Technology (NSET) Subcommittee of the Committee on Technology under the National Science and Technology Council (NSTC), a cabinet-level interagency council that coordinates science and technology policy across the Federal Government.

Read more...

See report here.

A Win-Win-Win Solution for Biofuel, Climate, and Biodiversity

Source: Woods Hole Research Center, June 25, 2014

Falmouth, Mass. June 25, 2014 -- Fossil fuel emissions release billions of tons of carbon into the atmosphere each year, which is changing the climate and threatening the sustainability of life on planet Earth. In Brazil, the demand for alternative energy sources has led to an increase in biofuel crops. A new "News and Views" paper in *Nature Climate Change*, co-authored by Woods Hole Research Center scientists Marcia Macedo and Eric Davidson, reviews new research conducted by Brazilian colleagues demonstrating the high carbon costs of converting intact Brazilian savanna compared to the carbon gains obtained from converting underutilized pastureland for biofuel crops.

Read more...

See study in *Nature Climate Change*, "Climate and land use: Forgive us our carbon debts".

Also see article in *Science*, "Ninety-nine percent of the ocean's plastic is missing".

Managing specialized microbes to clean stubborn chemicals from the environment

Source: Arizona State University - Biodesign Institute, June 23, 2014
Author: Richard Harth

Chlorinated chemicals perform a host of societally useful functions, but they also have a dark side. Once their use life has ended, such agents often become environmental contaminants, sometimes resistant to bioremediation.

In a series of new studies, Anca Delgado, a researcher at Arizona State University's Biodesign Institute, examines unique groups of microorganisms, capable of converting hazardous chlorinated chemicals like trichloroeth[yl]ene (or TCE) into ethene, a benign end product of microbial biodegradation.

Read more...

See original study in *PLOS One*, "Selective Enrichment Yields Robust Ethene-Producing Dechlorinating Cultures from Microcosms Stalled at *cis*-Dichloroethene".

USC Scientists Create New Battery That's Cheap, Clean, Rechargeable... and Organic

Source: University of Southern California, June 25, 2014

Scientists at USC have developed a water-based organic battery that is long lasting, built from cheap, eco-friendly components.

The new battery -- which uses no metals or toxic materials -- is intended for use in power plants, where it can make the energy grid more resilient and efficient by creating a large-scale means to store energy for use as needed.

"The batteries last for about 5,000 recharge cycles, giving them an estimated 15-year lifespan," said Sri Narayan, professor of chemistry at the USC Dornsife College of Letters, Arts and Sciences and corresponding author of a paper describing the new batteries that was published online by the *Journal of the Electrochemical Society* on June 20. "Lithium ion batteries degrade after around 1,000 cycles, and cost 10 times more to manufacture."

Read more...

See original abstract from the 224th Electrochemical Society meeting, "Inexpensive Flow Batteries Based on Organic Redox Couples".

Fracking flowback could pollute groundwater with heavy metals

Source: Cornell University, June 25, 2014
Author: Melissa Osgood

ITHACA, N.Y. -- The chemical makeup of wastewater generated by "hydrofracking" could cause the release of tiny particles in soils that often strongly bind heavy metals and pollutants, exacerbating the environmental risks during accidental spills, Cornell University researchers have found.

Previous research has shown 10 to 40 percent of the water and chemical solution mixture injected at high pressure into deep rock strata, surges back to the surface during well development. Scientists at the College of Agriculture and Life Sciences studying the environmental impacts of this "flowback fluid" found that the same properties that make it so effective at extracting natural gas from shale can also displace tiny particles that are naturally bound to soil, causing associated pollutants such as heavy metals to leach out.

Read more...

See original study in *Environmental Science & Technology*, "Effect of Hydrofracking Fluid on Colloid Transport in the Unsaturated Zone".

The strange science behind design: materials from unusual sources

Source: *The Guardian*, June 20, 2014
Author: Rachael Post

From as far back as the story of Adam and Eve, who used fig leaves as makeshift clothing in the Garden of Eden, humans have been imagining ways to use natural materials to clothe themselves. Today's textiles are more inventive and technically advanced than ever as new synthetic-natural hybrids with cradle-to-cradle principles make their mark.

Many of the examples here use existing waste streams or manufacturing byproducts to create unique materials. Makers and manufacturers are also increasingly growing a social conscience and moving beyond environmental impact alone. The process of making sustainable textiles and textile-related products requires buy-in at multiple levels -- from raw materials, manufacturing and distribution to design, branding and consumer preferences.

Read more...

Plastics Scorecard Press Release

Source: BizNGO, July 1, 2014

(Somerville, Massachusetts) By switching the type of plastic used in its IV bags, Dignity Health care system kept 700,000 pounds of high-concern chemicals -- the equivalent in weight of a Boeing 747 airplane -- out of the environment, according to a new analysis that measures the "chemical footprint" of plastics.

The data were released today along with a new report, Plastics Scorecard v.1.0, which offers the first comprehensive method for assessing and reducing chemicals of high concern in plastics.

"From baby bottles made with BPA to medical devices made with DEHP, plastics are a surprising source of exposure to chemicals of high concern to human health and the environment," said Ann Blake, PhD, co-author of the report and Principal at Environmental & Public Health Consulting. "Forward looking businesses are looking closely at plastics for chemicals that may be subject to future regulations or consumer scrutiny."

The Plastics Scorecard was designed as a tool to help purchasers choose safer plastics, and catalyze manufacturers to reduce the number and volume of chemicals of high concern used in manufacturing plastics and in the plastic products themselves.

Read more...

Click here for the Executive Summary of the Plastics Scorecard Version 1.0 report.

The Future of the OSHA PSM Standard

Source: *Occupational Health & Safety*, July 1, 2014
Author: David E. Kaelin Sr.

Process safety excellence still eludes most process manufacturers. It can be defined as having employees who all are genuinely proficient and competent in their requisite technical disciplines and having the appropriate levels of knowledge embedded in key positions throughout an organization with a mechanism for longevity. Or, more simply: "having the right people, with the right skills, implementing appropriately designed process safety programs, motivated by the right organizational culture, in the right way."

Results are far reaching and include protecting the workforce, facility, and the environment; maintaining stakeholder confidence; and complying with all legislation and avoiding regulatory intervention.

The catastrophic explosion at a Texas fertilizer warehouse in April 2013 has increased national awareness of the issues regarding hazardous chemicals and the potential community effects of a major incident. This incident also has increased concern regarding thermally unstable materials. Reactive and unstable materials are not currently included in the listing of highly hazardous chemicals in the OSHA Process Safety Management regulation (PSM, 29 CFR 1910.119).

Read more...

Gov. Shumlin Signs Toxics Bill Designed to Protect Children From Potentially Dangerous Chemicals

Source: State of Vermont, June 10, 2014

BURLINGTON -- June 10, 2014 -- Gov. Peter Shumlin today signed into law a bill requiring manufacturers of products with toxic chemicals that can cause harmful health effects to disclose when those chemicals are present in children's products. The new law identifies some chemicals of particular concern.

"This law now allows Vermont parents and all consumers to make choices about the type of chemicals in products they buy," the Governor said. "Preventing potential exposure to toxic chemicals is the best way to protect adults and children, as well as the environment. The first step in prevention -- and the point of this law -- is to make people aware of toxic chemicals in children's products."

Read more...

Also see a report from the German Federal Environment Agency on durable water repellent jackets, "Understanding the exposure pathways of per- and polyfluoralkyl substances (PFASs) via use of PFASs-containing products - risk estimation for man and environment".

TURI's Note: See articles that TURI's Policy Program Manager, Rachel Massey, co-authored in *Environmental, Science & Technology*, "Toxic Chemicals in Toys and Children's Products: Limitations of Current Responses and Recommendations for Government and Industry" and *Health Affairs*, "How Developing Nations Can Protect Children From Hazardous Chemical Exposures While Sustaining Economic Growth".

Please send a message to mary@turi.org if you would like more information on any of these resources. Also, please tell us what topics you are particularly interested in monitoring, and who else should see Greenlist. An online search of the TURI Library catalog can be done at http://library.turi.org for greater topic coverage.

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