

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.



HHS Releases 13th Report on Carcinogens

[Source: National Institute of Environmental Health Sciences, October 2, 2014](#)

Four substances have been added in the U.S. Department of Health and Human Services 13th Report on Carcinogens, a science-based document that identifies chemical, biological, and physical agents that are considered cancer hazards for people living in the United States. The new report includes 243 listings.

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The chemical 1-bromopropane is a colorless to pale yellow liquid used as a solvent in many commercial industries. It is used as a cleaner for optics, electronics, and metals, as well as a solvent for aerosol-applied adhesives such as those used in foam cushion manufacturing. It is also used in dry cleaning and in solvent sprays for aircraft maintenance. Workers in certain occupations may be more exposed to 1-bromopropane than the general population. No human studies were identified that evaluated the relationship between human cancer and exposure specifically to 1-bromopropane. However, inhalation exposure to 1-bromopropane in rodents caused tumors in several organs, including the skin, lungs, and large intestine.

[Read more...](#)

Access 13th Report on Carcinogens [here](#).

TURI's Note: The TURA Administrative Council has recently voted to designate 1-bromopropane as a Higher Hazard Substance. See our [fact sheet on n-Propyl bromide](#).

[Source: Commission for Environmental Cooperation, October 1, 2014](#)

Montreal, 1 October 2014 – The Commission for Environmental Cooperation (CEC) has released a comprehensive report on the changing face of industrial pollution in North America, covering the years 2005 through 2010. This is the first time an edition of the CEC's Taking Stock series, which gathers data from pollutant release and transfer registers (PRTRs) in Canada, Mexico and the United States, has analyzed North American pollutant information over an extended timeframe.

This volume of Taking Stock documents pollutant releases and transfers reported over the six-year period by approximately 35,000 industrial facilities across the region.

[Read more...](#)

Access report [here](#).

More companies clean up with chemical leasing

[Source: GreenBiz.com, October 3, 2014](#)

Author: Elizabeth Grossman

Imagine if instead of making a list, buying groceries and sometimes running out of milk or ending up with spoiled food in the fridge, you engaged a company that helped analyze exactly how much food your household uses each week based on meals cooked and eaten. That company then would deliver precisely the right amount of food for seven days of breakfast, lunch and dinner and charge you based not on volume of food purchased but on meals consumed. Such a system easily could pencil out as better for your budget and for the environment.

This is essentially the idea behind chemical management services, also known as chemical leasing. To reduce waste and the inefficiency (and corresponding environmental burdens) that easily can occur in buying and handling individual chemicals – particularly for a large company that uses lots of chemicals – businesses around the world have begun to shift from buying chemicals as such to purchasing the services those chemicals provide.

[Read more...](#)

Also see from GreenBiz.com, "[How a decaying Swedish city became an eco-friendly hub](#)".

See from *Resources, Conservation and Recycling*, "[Critical reflections on the Chemical Leasing concept](#)".

Enhanced Formation of Disinfection Byproducts in Shale Gas Wastewater-Impacted Drinking Water Supplies

[Source: Environmental Science & Technology, September 9, 2014](#)

Authors: Kimberly M. Parker, Teng Zeng, Jennifer Harkness, Avner Vengosh, and William A. Mitch

The disposal and leaks of hydraulic fracturing wastewater (HFW) to the environment pose human health risks. Since HFW is typically characterized by elevated salinity, concerns have been raised whether the high bromide and iodide in HFW may promote the formation of disinfection byproducts (DBPs) and alter their speciation to more toxic brominated and iodinated analogues. This study evaluated the minimum volume percentage of two Marcellus Shale and one Fayetteville Shale HFWs diluted by fresh water collected from the Ohio and Allegheny Rivers that would generate and/or alter the formation and speciation of DBPs following chlorination, chloramination, and ozonation treatments of the blended solutions. During chlorination, dilutions as low as 0.01% HFW altered the speciation toward formation of brominated and iodinated trihalomethanes (THMs) and brominated haloacetonitriles (HANs), and dilutions as low as 0.03% increased the overall formation of both compound classes. The increase in bromide concentration associated with 0.01-0.03% contribution of Marcellus HFW (a range of 70-200 µg/L for HFW with bromide = 600 mg/L) mimics the increased bromide levels observed in western Pennsylvanian surface waters following the Marcellus Shale gas production boom. Chloramination reduced HAN and regulated THM formation; however, iodinated trihalomethane formation was observed at lower pH. For municipal wastewater-impacted river water, the presence of 0.1% HFW increased the formation of N-nitrosodimethylamine (NDMA) during chloramination, particularly for the high iodide (54 ppm) Fayetteville Shale HFW. Finally, ozonation of 0.01-0.03% HFW-impacted river water resulted in significant increases in bromate formation. The results suggest that total elimination of HFW discharge and/or installation of

halide-specific removal techniques in centralized brine treatment facilities may be a better strategy to mitigate impacts on downstream drinking water treatment plants than altering disinfection strategies. The potential formation of multiple DBPs in drinking water utilities in areas of shale gas development requires comprehensive monitoring plans beyond the common regulated DBPs.

[Read more...](#)

See article in *Environmental Leader*, "[ExxonMobil Releases Fracking Risk Report](#)".

Also see article from the University of Manchester, "[Fracking's environmental impacts scrutinized](#)".

Smart, ecofriendly new battery to solve problems

[Source: Uppsala University, September 29, 2014](#)

Present-day lithium batteries are efficient but involve a range of resource and environmental problems. Using materials from alfalfa (lucerne seed) and pine resin and a clever recycling strategy, Uppsala researchers have now come up with a highly interesting alternative. Their study will be presented soon in the scientific journal *ChemSusChem*. ...

In their latest study, researchers at Uppsala University's Ångström Laboratory have developed a whole new battery concept. The battery is based on recovery and renewable biological material with an energy content corresponding to that of current lithium-ion batteries. Components of the battery are made of renewable organic biomaterials from alfalfa and pine resin, and can be recycled with a low energy input and non-hazardous chemicals, such as ethanol and water.

[Read more...](#)

See original article in *ChemSusChem*, "[Environmentally-Friendly Lithium Recycling From a Spent Organic Li-Ion Battery](#)".

Passive Fire Protection: Intumescent Coatings

[Source: Journal of Protective Coatings and Linings, September 2014](#)

Today most buildings and structures have some degree of fire protection in order to protect lives, delay possible structural collapse allowing for evacuation, provide areas of temporary refuge in the case of fire, and ensure the integrity of escape routes by preventing or delaying the escalation of a fire and protect high-value assets.

There are two basic types of fire protection: active and passive. Active fire protection includes alarms and detection systems, sprinklers and water deluge systems, firefighting equipment and foam and powder extinguishers. Passive fire protection involves components of structural methods and materials such as concrete, mineral fiber boards, vermiculite cements and intumescent coatings. This article will describe how intumescent coatings can achieve passive fire protection in many structure types including offshore constructions, ships and commercial buildings.

[Read more...](#) (Must login for access to full article)

Nanoparticles Accumulate Quickly in Wetland Sediment

[Source: Duke University, October 1, 2014](#)

Author: Ken Kingery

A Duke University team has found that nanoparticles called single-walled carbon nanotubes accumulate quickly in the bottom sediments of an experimental wetland setting, an action they say could indirectly damage the aquatic food chain.

The results indicate little risk to humans ingesting the particles through drinking water, say scientists at Duke's Center for the Environmental Implications of Nanotechnology (CEINT). But the researchers warn that, based on their previous research, the tendency for the nanotubes to accumulate in sediment could indirectly damage the aquatic food chain in the long term if the nanoparticles provide "Trojan horse" piggyback rides to other harmful molecules.

[Read more...](#)

See original article in *Environmental Science: Nano*, "[Fate of single walled carbon nanotubes in wetland ecosystems](#)".

UW-Madison team developing 'tissue chip' to screen neurological toxins

Source: [University of Wisconsin-Madison, September 23, 2014](#)

Author: Brian Mattmiller

A multidisciplinary team at the University of Wisconsin-Madison and the Morgridge Institute for Research is creating a faster, more affordable way to screen for neural toxins, helping flag chemicals that may harm human development.

The National Institutes of Health (NIH) announced today that the UW-Madison and Morgridge team is among 11 universities receiving support to continue the promising work as part of the Tissue Chip for Drug Screening program. The team will receive approximately \$7 million over the three-year project.

The next phase of the NIH program aims to improve ways of predicting drug safety and effectiveness. Researchers will collaborate to refine existing 3-D human tissue chips and combine them into an integrated system that can mimic the complex functions of the human body.

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Solutions to Hazardous Plasticizers

Source: [BizNGO, October 2014](#)

The dominant movement in the marketplace is to alternative plasticizers to DEHP and other phthalates. Yet this is the less preferred solution to avoiding PVC and plasticizers altogether. Some recent assessments on alternative materials and plasticizers include:

Clean Production Action's Plastics Scorecard demonstrated the benefits of substituting medical IV bags made from PVC/DEHP with polyolefin bags that require no plasticizers. ... The substitution eliminated the need for plasticizers, which are roughly 30% of the weight of an IV bag.

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Environmental Sustainability Assessments of Pharmaceuticals: An Emerging Need for Simplification in Life Cycle Assessments

Source: [Environmental Science & Technology, September 22, 2014](#)

Authors: Wouter De Soete, Sam Debaveye, Steven De Meester, Geert Van der Vorst, Wim Aelterman, Bert Heirman, Philippe Cappuyns, and Jo Dewulf

The pharmaceutical and fine chemical industries are eager to strive toward innovative products and technologies. This study first derives hotspots in resource consumption of 2839 Basic Operations in 40 Active Pharmaceutical Ingredient synthesis steps through Exergetic Life Cycle Assessment (ELCA). Second, since companies are increasingly obliged to quantify the environmental sustainability of their products, two alternative ways of simplifying (E)LCA are discussed. The usage of averaged product group values ($R^2 = 3.40 \times 10^{-30}$) is compared with multiple linear regression models ($R^2 = 8.66 \times 10^{-01}$) in order to estimate resource consumption of synthesis steps. An optimal set of predictor variables is postulated to balance model complexity and embedded information with usability and capability of merging models with existing Enterprise Resource Planning (ERP) data systems. The amount of organic solvents used, molar efficiency, and duration of a synthesis step were shown to be the most significant predictor variables. Including additional predictor variables did not contribute to the predictive power and eventually weakens the model interpretation. Ideally, an organization should be able to derive its environmental impact from readily available ERP data, linking supply chains back to the cradle of resource extraction, excluding the need for an approximation with product group averages.

[Read more...](#)

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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