

Greenlist Bulletin

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

May 9, 2014

In This Issue

[Low-Dose Arsenic: In Search of a Risk Threshold](#)

[U.S. Green Building Council Launches Real-Time Green Building Data Resource for U.S. States](#)

[Conflict minerals reporting deadline: is your business ready?](#)

[Environmental Impacts of Shale Gas Extraction in Canada](#)

[Natural citrus scent may produce renewable solvents, fuel](#)

[Carbon Aerogel from Winter Melon for Highly Efficient and Recyclable Oils and Organic Solvents Absorption](#)

[CIEL and European partners* publish position paper on the regulation of nanomaterials at a meeting of EU competent authorities](#)

[Clues to Autistic Behaviors: Exploring the Role of Endocrine Disruptors](#)

[Ditching microbeads: the search for sustainable skincare](#)

[A protein key to the next green revolution sits for its portrait](#)

[Join Our Mailing List!](#)

Quick Links

[Greenlist Bulletin Archives](#)

[TURI Website](#)



Like us on Facebook

This is the 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.



Low-Dose Arsenic: In Search of a Risk Threshold

[Source: *Environmental Health Perspectives*, May 2014](#)

Author: Charles W. Schmidt

Scientists long ago linked high levels of arsenic in groundwater to cancer and other environmental illnesses, particularly in Taiwan, Bangladesh, and South America, where the contamination can often reach extraordinarily high levels of 1,000 ppb or more. Now concerns are shifting to the health effects of much lower doses such as those that many Americans live with every day.

Margaret Karagas, who directs the Children's Environmental Health and Disease Prevention Research Center at Dartmouth College, says researchers increasingly believe that arsenic risks are more widespread than previously recognized, particularly during vulnerable periods such as pregnancy and childhood. Protecting against low-level exposure is challenging, however, given that arsenic is a natural element in the Earth's crust and ubiquitous throughout the environment.

Moreover, the evidence for low-dose effects is controversial. One view holds that arsenic has a dose threshold below which exposures aren't harmful. But controversial studies in the peer-reviewed literature increasingly suggest this threshold may not exist, so that any exposure -- no matter how small -- could boost risks for diabetes, heart disease, immunological problems, and cancer.

[Read more...](#)

[Source: U.S. Green Building Council, April 23, 2014](#)

Author: Cecilia Shuttters

Washington, D.C. -- (April 23, 2014) -- [Today], the U.S. Green Building Council (USGBC) launched its new online data visualization resource that highlights real-time green building data for each state in the U.S. and Washington, D.C. The enhanced state market briefs -- highlighting LEED projects, LEED-credentialed professionals and USGBC membership in each state -- provide green building advocates and the general public a look into LEED's impact within any U.S. state.

"Our state-level market briefs demonstrate USGBC's commitment to data and information transparency at an important level of granularity. You can't find this data anywhere else in the market," said Mahesh Ramanujam, chief operating officer, USGBC. "The choice to build green buildings is simple. These state-level data visualizations make it even simpler."

The dynamic market briefs for each state were created to supply green building advocates with on-the-ground information to tell robust stories about the multifaceted benefits of LEED green buildings. Each market brief acts as a state-level barometer of economic activity taking place in an industry that McGraw-Hill projects could be worth up to \$248 billion and represent more than half of all commercial and institutional construction in the U.S. by 2016.

[Read more...](#)

Access the Council's "[Green Building Information Gateway](#)".

Conflict minerals reporting deadline: is your business ready?

[Source: Guardian Sustainable Business, May 6, 2014](#)

Author: Jeff Leinaweaver

As US businesses scramble to meet the US Securities and Exchange Commission's conflict minerals disclosure rule -- with the first reporting deadline rapidly approaching 2 June -- some are complaining of uncertainty and other concerns, while others say they are ready.

A PwC study released in April found that many companies -- 26% of respondents -- are running behind on preparing their disclosures, even though 89% have at least one full-time staffer working on their conflict minerals compliance efforts (and some have more than five).

The rule requires most US companies to report whether they use conflict minerals from the Democratic Republic of the Congo (DRC) and neighboring countries.

Last week, the SEC halted part of its controversial conflict minerals rule -- at least for now -- that would have required companies to declare products that aren't free of DRC conflict minerals as "not found to be 'DRC conflict-free'" or "DRC conflict-undeterminable". The decision came after a US appeals court ruled the requirement to be unconstitutional, saying it would violate First Amendment rights by compelling commercial speech.

[Read more...](#)

Environmental Impacts of Shale Gas Extraction in Canada

[Source: Council of Canadian Academies, 2014](#)

The North American energy landscape is undergoing dramatic change. Unconventional oil and gas resources are fueling an energy boom that is having profound economic, environmental, and social impacts across much of the continent, including Canada. At the forefront of this change is shale gas, which has been characterized as a "game changer" because it is abundant, often close to major markets, and relatively inexpensive to produce. Understanding potential impacts is critical for policy makers as they consider how best to manage this resource.

This report comes at the request of Environment Canada, which asked the Council to assemble a multidisciplinary expert panel to consider the state of knowledge of potential environmental impacts from the exploration, extraction, and development of Canada's shale gas resources. The Council's report presents a comprehensive examination of shale gas development in Canada. It does not, however, determine the safety, nor the economic benefits, of development. It reviews the use of new

and conventional technologies in shale gas extraction, and examines several issues of concern including potential impacts on surface water and groundwater, greenhouse gas emissions, cumulative land disturbance, and human health. The report also outlines approaches for monitoring and research, as well as mitigation and management strategies.

[Read more...](#)

Access Executive Summary of report [here](#).

Natural citrus scent may produce renewable solvents, fuel

Source: [Biomass Magazine, May 2, 2014](#)

Author: South Dakota State University

A natural citrus scent called limonene may be the key to sustainability when it comes to making fragrances, solvents and perhaps even jet fuel, according to South Dakota State University doctoral student Charles Halfmann.

The Luverne, Minn., native has been working with associate professor Ruanbao Zhou of the SDSU Department of Biology and Microbiology to create genetically engineered cyanobacteria, commonly known as blue-green algae, that are capable of producing limonene.

Limonene is among a class of naturally emitted plant long-chain carbon chemicals called isoprenoids with biofuel potential.

[Read more...](#)

See original article in *Green Chemistry*, "[Engineering cyanobacteria for the production of a cyclic hydrocarbon fuel from CO₂ and H₂O](#)".

Also see in *Biomass Magazine*, "[Hawaii law authorizes industrial hemp research for biofuels](#)".

Carbon Aerogel from Winter Melon for Highly Efficient and Recyclable Oils and Organic Solvents Absorption

Source: [ACS Sustainable Chemistry & Engineering, April 30, 2014](#)

Authors: Yuan-Qing Li, Yarjan Abdul Samad, Kyriaki Polychronopoulou, Saeed M. Alhassan, and Kin Liao

Direct conversion of biomass to carbon aerogel provides a promising approach to developing absorbent materials for spilled oils and organic solvents recovery. In this work, three-dimensional carbon aerogels were fabricated via a hydrothermal and post-pyrolysis process using winter melon as the only raw materials. The winter melon carbon aerogel (WCA) prepared shows a low density of 0.048 g/cm³, excellent hydrophobicity with a water contact angle of 135°, and selective absorption for organic solvents and oils. The absorption capacity of WCA for organic solvents and oils can be 16-50 times its own weight. Moreover, distillation can be employed to recover WCA and harvest the pollutants. Over five absorption-harvesting cycles, the absorption capacity of WCA to organic solvents and low boiling point oils can recover almost 100% of its starting capacity. With a combination of low-cost biomass as raw materials, green preparation process, low density, and excellent hydrophobicity, WCA as an absorber has great potential in application of spilled oil recovery and environmental protection.

[Read more...](#)

CIEL and European partners* publish position paper on the regulation of nanomaterials at a meeting of EU competent authorities

Source: [The Center for International Environmental Law, April 2014](#)

Nanomaterials are different from their bulk counterparts. They are specifically engineered to exploit the novel properties deriving from their size. The European Commission's 2012 Second Regulatory Review on Nanomaterials considers that, as with other substances, some could be hazardous, whilst others may be safe. Therefore, as for every other chemical substance placed on the EU market, nanomaterials need to undergo a thorough risk assessment, including an assessment of the potential risks deriving from their novel properties. Current EU legislation does not guarantee that all nanomaterials on the market are safe by being assessed separately from the bulk form of the substance. Therefore, we ask the European Commission to come forward with concrete proposals for

a comprehensive revision of the existing legal framework addressing the potential risks of nanomaterials.

*ClientEarth, The European Environmental Bureau, European Citizen's Organization for Standardisation, The European Consumer Voice in Standardisation -ANEC, and Health Care Without Harm, Bureau of European Consumers

[Read more...](#)

Clues to Autistic Behaviors: Exploring the Role of Endocrine Disruptors

[Source: *Environmental Health Perspectives*, May 2014](#)

Author: Kellyn S. Betts

Two lines of evidence suggest that endocrine disruption may be a factor in autism spectrum disorders (ASDs). First, the observation that males may be four times as likely to be diagnosed with ASDs as females suggests hormonal involvement. Second, adrenal, gonadal, and thyroid hormones play an important role in fetal neurodevelopment, and any chemical that interferes with the actions of these hormones therefore has the potential to disrupt brain development. By analyzing samples and data from a prospective birth cohort study, a team of U.S. and Canadian researchers have identified a handful of endocrine-disrupting chemicals (EDCs) they believe merit further study as possible contributors to ASDs.

ASDs encompass a complex set of disorders that have been associated with more than 800 potential genetic risk factors, says Isaac Pessah, associate dean of research and graduate education at the University of California, Davis, who was not involved with the study. In March 2014 the Centers for Disease Control and Prevention revised its estimates of the number of children with ASDs to 1 in 68, up from 1 in 88.

[Read more...](#)

Ditching microbeads: the search for sustainable skincare

[Source: *Guardian Sustainable Business*, May 5, 2014](#)

Author: Amy DuFault

Is smoother skin worth more than having potable water or edible fish?

For years, research has shown that beauty products made with tiny microbeads, gritty cleansers that scrub off dead skin cells, have been damaging water supplies, marine life and the ecological balance of the planet.

Beat the Microbead, an international campaign to ban the plastic beads, reports that marine species are unable to distinguish between food and microbeads. According to the campaign, "over 663 different species were negatively impacted by marine debris with approximately 11% of reported cases specifically related to the ingestion of microplastics".

To make things worse, microbeads can act like tiny sponges, absorbing several other dangerous chemicals, including pesticides and flame retardants. As they ingest microbeads, marine animals also consume these other poisons.

The obvious solution to the microbead problem is to cut it off at the source. But while major cosmetic companies like Johnson & Johnson, Unilever, and Procter & Gamble have pledged to phase out the use of microbeads in favor of natural alternatives, they also say that the shift could take several years. And as more research is done, it appears that microbead replacements may come with dangers of their own.

[Read more...](#)

Also read in *Environmental Science & Technology*, "[Distribution of Surface Plastic Debris in the Eastern Pacific Ocean from an 11-Year Data Set](#)".

A protein key to the next green revolution sits for its portrait

[Source: *Washington University in St. Louis*, April 28, 2014](#)

Author: Diana Lutz

If you pull up a soybean or bean plant and shake off the dirt, you might see odd swellings or bumps, like rheumatic finger joints, on its roots. Inside the cool, soil-covered bumps are bacteria that are making nitrogen with the help of an enzyme, something chemical factories can do only with the help of a catalyst and at high temperature and pressure.


The bacteria, typically members of the genus *Rhizobia*, break the strong triple bond between the nitrogen molecules in the air and repackage the nitrogen atoms in chemical compounds the plant can use. In return, the plant supplies the bacteria with the energy needed to split the nitrogen molecules in the form of sugar.

Legume-*Rhizobia* partnerships generate more nitrogen for plants than all industrial fertilizers used today, and they provide the right amount of nitrogen at the right time.

By contrast, much of the synthetic fertilizer applied to farm fields is wasted, washing out the soil into waterways or evaporating into the atmosphere in the form of nitrous oxide, where it becomes an environmental and health risk.

[Read more...](#)

See article in the *Proceedings of the National Academy of Sciences of the United States of America*, "[Structural basis for regulation of rhizobial nodulation and symbiosis gene expression by the regulatory protein NodR](#)".



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.

Greenlist Bulletin is compiled by:

Mary Butow
Research and Reference Specialist
Toxics Use Reduction Institute
University of Massachusetts Lowell
600 Suffolk St., Woburn Millis
Lowell MA 01854
978-934-4365
978-934-3050 (fax)
mary@turi.org