

Greenlist Bulletin

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

December 19, 2014

In This Issue

New Tool Launched Today
Measures Corporate Progress
Towards Safer Chemicals

ASETSDefense 2014: Sustainable
Surface Engineering for Aerospace
and Defense, November 18-20,
2014

Fine particulate air pollution linked
with increased autism risk

Evaluation of Integrated Pollution
Prevention Control in a textile fiber
production and dyeing mill

EPA Prevents Harmful Chemicals
from Entering the Marketplace

A Public Health Review of High
Volume Hydraulic Fracturing for
Shale Gas Development

Microplastics in Four Estuarine
Rivers in the Chesapeake Bay,
U.S.A

Materials Fabrication from Native
and Recombinant Thermoplastic
Squid Proteins

Coke, GM Boost Revenue, Benefit
the Environment by Leasing
Chemicals

The Green Fields of
Chromatography

[Join Our Mailing List!](#)

Quick Links

[Greenlist Bulletin Archives](#)

[TURI Website](#)



Like us on Facebook

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.



New Tool Launched [Today] Measures Corporate Progress Towards Safer Chemicals

[Source: BizNGO, December 8, 2014](#)

A group of corporate and NGO leaders [today] released a new tool for assessing leadership in corporate chemicals management. The Chemical Footprint Project (CFP) provides the first-ever common metric of its kind for publicly benchmarking corporate chemicals management and profiling leadership companies.

"You can't manage what you don't measure," said Dr. Mark Rossi, Co-Director of the nonprofit Clean Production Action and Chair and Founder of BizNGO, who released the Chemical Footprint Project today with the Lowell Center for Sustainable Production and Pure Strategies. "The CFP finally establishes a meaningful measurement of overall corporate performance to safer chemicals in products and supply chains. We look forward to engaging business leaders in tracking and disclosing their Chemical Footprints."

Business leaders are moving ahead of regulations to avoid chemicals of high concern to human health or the environment in their products and supply chains. They are meeting the needs of customers large and small who are concerned with toxic chemicals in products. From health care to retail, purchasers are seeking products made with inherently safer chemicals. Now these purchasers will have a tool to quickly compare and benchmark suppliers. In addition, socially responsible investment firms can use this new tool to evaluate companies on their chemical management and select companies for investment.

[Read more...](#)

Click [here](#) for more information about the Chemical Footprint Project.

Also see related article, "[Public Data will Empower Responsible Investors to Recognize Leaders](#)".

[Source: Advanced Surface Engineering Technologies for Sustainable Defense, November 18-20, 2014](#)

Workshop Sessions - Presentations are available on-line.

Session 1: Aerospace and Defense Policies, Needs, and Approaches
Session 2: [Cadmium and Chromate Replacement in DoD and Industry](#)
Session 3: Light Materials
Session 4: [Cadmium and Chromate Replacement on Military Platforms](#)
Session 5: Wear Coatings and Treatments
Session 6: Ongoing Projects
Session 7: The Nuts and Bolts of Zinc Nickel
Session 8: Chromate-Free Paint Systems

[Read more...](#)

Also see, "[Development of a Nonchromate Structural Adhesive Bond Primer](#)" and "[Continued Activities Related to the Development of a Trivalent Chromium Plating Process for Hard Chrome Applications](#)".

Fine particulate air pollution linked with increased autism risk

[Source: Harvard School of Public Health, December 18, 2014](#)

Boston, MA -- Women exposed to high levels of fine particulate matter specifically during pregnancy -- particularly during the third trimester -- may face up to twice the risk of having a child with autism than mothers living in areas with low particulate matter, according to a new study from Harvard School of Public Health (HSPH). The greater the exposure, the greater the risk, researchers found. It was the first U.S.-wide study exploring the link between airborne particulate matter and autism.

"Our data add additional important support to the hypothesis that maternal exposure to air pollution contributes to the risk of autism spectrum disorders," said Marc Weisskopf, associate professor of environmental and occupational epidemiology and senior author of the study. "The specificity of our findings for the pregnancy period, and third trimester in particular, rules out many other possible explanations for these findings."

[Read more...](#)

See original article in *Environmental Health Perspectives*, "[Autism Spectrum Disorder and Particulate Matter Air Pollution before, during, and after Pregnancy: A Nested Case-Control Analysis within the Nurses' Health Study II Cohort](#)".

Evaluation of Integrated Pollution Prevention Control in a textile fiber production and dyeing mill

[Source: Journal of Cleaner Production, Volume 88, 1 February 2015](#)

Authors: Emrah Ozturk, Mustafa Karaboyaci, Ulku Yetis, Nevzat O. Yigit, Mehmet Kitis

Cleaner production assessment studies were conducted in a textile mill employing wool and acrylic fiber production and subsequent dyeing. A company-wide mass-balance analysis was performed. Various specific consumptions, emissions and waste generations were determined. The performance of the mill was evaluated based on BREF Documents. Water quality analysis indicated that process wastewaters from wool yarn softening, LP-VP printing machines and acrylic yarn washing could be reused in these processes, even without further treatment. Process wastewaters from wool yarn washing and softening in hank dyeing machines could be directly reused in tank washings and/or blended with process waters for direct reuse in the same or other processes. By the application of suggested BAT including wastewater reuse, machinery modifications, reuse of steam condensate, and good management practices, total water consumption may be reduced 35-65%. Substitution of 12 chemicals with more biodegradable and less toxic ones and installation of automatic chemical dosage systems may decrease COD loads about 25-50%. Furthermore, chemical and dyestuff consumptions could be reduced 31%. Energy consumption could be reduced by BAT suggestions including implementation of energy recovery systems for high temperature wastewater flows and flue gas emissions; process monitoring-control and various machinery optimization. Thus, potential reductions in total energy consumption in the mill may be up to 70%.

Waste gas emissions should be reduced 25-65%. Waste generations may be decreased 5-10% with good management practices and reuse of especially textile wastes. Pay-back period of the suggested BAT options was found to be generally up to 4 years.

[Read more...](#)

EPA Prevents Harmful Chemicals from Entering the Marketplace

[Source: U.S. Environmental Protection Agency, December 17, 2014](#)

WASHINGTON -- The U.S. Environmental Protection Agency (EPA) is taking action to protect the public from certain chemicals that have the potential to cause a range of health effects from cancer to reproductive and developmental harm to people and aquatic organisms.

"We are committed to protecting all Americans from exposure to harmful chemicals used in domestic and imported products," said Jim Jones, assistant administrator for chemical safety and pollution prevention. "There must be a level playing field for U.S. businesses -- which is why we're targeting harmful chemicals no longer used in the U.S. that find their way into commerce, sometimes through imported products. This final action will give EPA the opportunity to restrict or limit any new uses of these chemicals, including imported goods with these chemicals."

[Today's] action addresses the following chemicals:

Most uses of certain benzidine-based dyes which can be used in textiles, paints and inks and can be converted in the body into a chemical that is known to cause cancer;

Most uses of DnPP, a phthalate, which can be used in PVC plastics and shown to cause developmental and/or reproductive effects in laboratory animals; and

Alkanes C₁₂₋₁₃, chloro, a short-chain chlorinated paraffin (SCCP), which can be used as industrial lubricants and are persistent, bioaccumulative and toxic to aquatic organisms at low concentrations and can be transported globally in the environment.

[Read more...](#)

See an EPA [fact sheet on DnPP](#) and read the final Significant New Use Rule (SNUR) [here](#).

A Public Health Review of High Volume Hydraulic Fracturing for Shale Gas Development

[Source: New York State Department of Health, December 2014](#)

The New York State Department of Health (DOH) is charged with protecting the public health of New Yorkers. In assessing whether public health would be adequately protected from a complex activity such as high volume hydraulic fracturing (HVHF), a guarantee of absolute safety is not required. However, at a minimum, there must be sufficient information to understand what the likely public health risks will be. Currently, that information is insufficient.

In 2012, the New York State Department of Environmental Conservation (DEC) requested that DOH review and assess DEC's analysis of potential health impacts contained in DEC's draft supplemental generic environmental impact statement (SGEIS) for HVHF. In response to the original request from DEC, DOH initiated an HVHF Public Health Review process. In conducting this public health review DOH: (i) reviewed and evaluated scientific literature to determine whether the current scientific research is sufficient to inform questions regarding public health impacts of HVHF; (ii) sought input from three outside public health expert consultants; (iii) engaged in field visits and discussions with health and environmental authorities in states with HVHF activity; and (iv) communicated with multiple local, state, federal, international, academic, environmental, and public health stakeholders. The evaluation considered the available information on potential pathways that connect HVHF activities and environmental impacts to human exposure and the risk for adverse public health impacts.

[Read more...](#)

See a report with several contributors, "[Disclosing the Facts 2014: Transparency and Risk in Hydraulic Fracturing Operations](#)".

See article in *Chemical & Engineering News*, "[Industry Creates A Forum To Improve Fracking's Environmental Footprint](#)" and from the University of Pittsburgh, "[The State of Shale: Pitt faculty edit](#),"

[contribute findings to special issue of *Energy Technology*](#)".

Also see article in *Reviews on Environmental Health*, "[Developmental and reproductive effects of chemicals associated with unconventional oil and natural gas operations](#)".

TURI's Note: Visit the TURI Library to view a copy of the recently released, "The Real Cost of Fracking: How America's Shale-Gas Boom is Threatening Our Families, Pets, and Food" by Michelle Bamberger and Robert Oswald.

Microplastics in Four Estuarine Rivers in the Chesapeake Bay, U.S.A.

[Source: *Environmental Science & Technology*, November 12, 2014](#)

Authors: Lance T. Yonkos, Elizabeth A. Friedel, Ana C. Perez-Reyes, Sutapa Ghosal, and Courtney D. Arthur

Once believed to degrade into simple compounds, increasing evidence suggests plastics entering the environment are mechanically, photochemically, and/or biologically degraded to the extent that they become imperceptible to the naked eye yet are not significantly reduced in total mass. Thus, more and smaller plastics particles, termed microplastics, reside in the environment and are now a contaminant category of concern. The current study tested the hypotheses that microplastics concentration would be higher in proximity to urban sources, and vary temporally in response to weather phenomena such as storm events. Triplicate surface water samples were collected approximately monthly between July and December 2011 from four estuarine tributaries within the Chesapeake Bay, U.S.A. using a manta net to capture appropriately sized microplastics (operationally defined as 0.3-5.0 mm). Selected sites have watersheds with broadly divergent land use characteristics (e.g., proportion urban/suburban, agricultural and/or forested) and wide ranging population densities. Microplastics were found in all but one of 60 samples, with concentrations ranging over 3 orders of magnitude (<1.0 to >560 g/km²). Concentrations demonstrated statistically significant positive correlations with population density and proportion of urban/suburban development within watersheds. The greatest microplastics concentrations also occurred at three of four sites shortly after major rain events.

[Read more...](#)

Materials Fabrication from Native and Recombinant Thermoplastic Squid Proteins

[Source: *Advanced Functional Materials*, December 17, 2014](#)

Authors: Abdon Pena-Francesch, Sergio Florez, Huihun Jung, Aswathy Sebastian, Istvan Albert, Wayne Curtis and Melik C. Demirel

Natural elastomers made from protein extracts have received significant interest as eco-friendly functional materials due to their unique mechanical and optical properties emanating from secondary structures. The next generation sequencing approach is used to identify protein sequences in a squid ring teeth complex extracted from *Loligo vulgaris* and the use of recombinant expression is demonstrated in the fabrication of a new generation of thermoplastic materials. Native and recombinant thermoplastic squid proteins exhibit reversible solid to melt phase transition, enabling them to be thermally shaped into 3D geometries such as fibers, colloids, and thin films. Direct extraction or recombinant expression of protein based thermoplastics opens up new avenues for materials fabrication and synthesis, which will eventually be competitive with the high-end synthetic oil based plastics.

[Read more...](#)

Coke, GM Boost Revenue, Benefit the Environment by Leasing Chemicals

[Source: *Environmental Leader*, December 12, 2014](#)

Major companies including Coca-Cola, Ecolab, Carlsberg, Henkel, Ikea and General Motors are leasing chemicals instead of buying them, boosting their profits and benefiting the environment, the *Guardian* reports.

Chemical leasing -- a business model promoted by the United Nations Industrial Development Organization -- encourages companies to improve their operational efficiency and focus on climate change, water management, environmental pollution and waste management.

For example, in regions with scarce freshwater resources, service companies have a greater

incentive to cut their processes' water use.

[Read more...](#)

The Green Fields of Chromatography

Source: [BioTechniques](#), December 2014

Author: Sarah A. Webb

Researchers are finding that chromatographic separations that use less solvent and stationary phase provide cheaper, more efficient, and more sensitive results. Sarah Webb explores how these changes are leading to the "greening" of chromatography. ...

Organic solvents such as acetonitrile, hydrocarbons, and dichloromethane are flammable, toxic, and tend to be expensive to purchase and dispose of. As a result, researchers, particularly in industry, are looking for technologies that either reduce the amount of these solvents required or avoid them entirely. Business considerations are actually prompting many of these changes: safer, faster, cheaper, and more effective purifications save money, enabling companies to deliver products more quickly. At the same time, the move toward less toxic and smaller scale chromatography also fulfills many of the principles of "green chemistry," environmental standards that have also become increasingly important over the last 20 years. Fueled by these two motivations, a once niche technique called supercritical fluid chromatography (SFC) is gaining ground with researchers who recognize its speed and efficiency, particularly for preparative chromatography and liquid chromatography (LC) at a microscale, reducing column size and eluent volumes.

[Read more...](#)

Also see from Averica, "[What is Scalable Separation using Supercritical Fluid Chromatography?](#)".

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., Wannalancit Mills
Lowell MA 01854-2866
978-934-4365
978-934-3050 (fax)
mary@turi.org