Greenlist Bulletin

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

October 31, 2014

In This Issue

Join Our Mailing List!

Quick Links

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.

More Fat, Less Bone? Flame Retardant May Deliver a One-Two Punch

Source: *Environmental Health Perspectives*, November 2014
Author: Wendee Nicole

Firemaster®550 (FM550) was introduced in 2003 as an alternative to the toxic, persistent flame retardant pentabromodiphenyl ether, for use in mattresses, couches, and other items containing polyurethane foam. FM550 contains a mixture of brominated phthalates and organophosphates. In 2013 a groundbreaking study found that pre- and postnatal exposure to FM550 was associated with increased anxiety, obesity, and early-onset puberty in rats, raising concern over the continued use of these chemicals. In this issue of *EHP*, a team of investigators report further evidence that components of FM550 may act as environmental obesogens, stimulating adipogenesis (fat formation) at the expense of bone health.

Using computer modeling and receptor binding and activity assays, the authors of the current study found that the phosphate components of FM550 bound to and activated peroxisome proliferator-activated receptor γ, the master regulator of adipogenesis. The brominated components of FM550 did not. Using multipotent mesenchymal stromal cells from rats, they also showed that FM550 and its constituent triphenyl phosphate (TPP) stimulated formation of fat cells.

Read more...

See original study in *EHP*, "Ligand Binding and Activation of PPARγ by Firemaster® 550: Effects on Adipogenesis and Osteogenesis in Vitro".

Cape Cod studies seek link between breast cancer, septic systems

Source: *The Beacon Villager*, October 20, 2014

Author: Conor Powers-Smith

CAPE COD -- As advances continue in the detection and treatment of breast cancer, some argue that more investigation is needed into the root causes of the disease. Silent Spring Institute, the Newton-based group dedicated to uncovering links between environmental factors and women's health issues, is conducting several studies aimed at gathering information on potentially harmful substances in Cape Cod's drinking water.

"When people think of water on the Cape, they often think of the ocean, or the beautiful ponds," said Dr. Laurel Schaider, staff scientist at Silent Spring, during a recent presentation at Barnstable Town Hall. Drinking water is as important on the Cape as anywhere else, though, and more susceptible to contamination than in many places, due to the region's sandy soil and sole-source aquifer.

A third factor that may contribute to water contamination on the Cape is the prevalence of septic systems. While the release of nitrogen and other environmentally undesirable substances has become a major issue in recent years, not much is known about whether septic systems also contribute chemicals that may have a more direct impact on residents' health.

Read more...

Holding Thermal Receipt Paper and Eating Food after Using Hand Sanitizer Results in High Serum Bioactive and Urine Total Levels of Bisphenol A (BPA)

Source: *PLOS One*, October 22, 2014
Authors: Annette M. Hormann, Frederick S. vom Saal, Susan C. Nagel, Richard W. Stahlhut, Carol L. Moyer, Mark R. Ellersieck, Wade V. Welshons, Pierre-Louis Toutain, Julia A. Taylor

Bisphenol A (BPA) is an endocrine disrupting environmental contaminant used in a wide variety of products, and BPA metabolites are found in almost everyone's urine, suggesting widespread exposure from multiple sources. Regulatory agencies estimate that virtually all BPA exposure is from food and beverage packaging. However, free BPA is applied to the outer layer of thermal receipt paper present in very high (~20 mg BPA/g paper) quantities as a print developer. Not taken into account when considering thermal paper as a source of BPA exposure is that some commonly used hand sanitizers, as well as other skin care products, contain mixtures of dermal penetration enhancing chemicals that can increase by up to 100 fold the dermal absorption of lipophilic compounds such as BPA. We found that when men and women held thermal receipt paper immediately after using a hand sanitizer with penetration enhancing chemicals, significant free BPA was transferred to their hands and then to French fries that were eaten, and the combination of dermal and oral BPA absorption led to a rapid and dramatic average maximum increase (Cmax) in unconjugated (bioactive) BPA of ~7 ng/mL in serum and ~20 µg total BPA/g creatinine in urine within 90 min. The default method used by regulatory agencies to test for hazards posed by chemicals is intra-gastric gavage. For BPA this approach results in less than 1% of the administered dose being bioavailable in blood. It also ignores dermal absorption as well as sublingual absorption in the mouth that both bypass first-pass liver metabolism. The elevated levels of BPA that we observed due to holding thermal paper after using a product containing dermal penetration enhancing chemicals have been related to an increased risk for a wide range of developmental abnormalities as well as diseases in adults.

Read more...

See additional information on BPA in thermal receipt paper from the Minnesota Pollution Control Agency and information on the US EPA BPA Alternatives in Thermal Paper Partnership.

Also see from *The Journal of the Federation of American Societies for Experimental Biology*, "Food intolerance at adulthood after perinatal exposure to the endocrine disruptor bisphenol A".

EPA Proposes to Remove 72 Chemicals from Approved Pesticide Inert Ingredient List

Source: U.S. Environmental Protection Agency, October 23, 2014

WASHINGTON -- The U.S. Environmental Protection Agency (EPA) is requesting public comment on a proposal to remove 72 chemicals from its list of substances approved for use as inert ingredients in pesticide products.

"We are taking action to ensure that these ingredients are not added to any pesticide products unless they have been fully vetted by EPA," said Jim Jones, Assistant Administrator for the Office

of Chemical Safety and Pollution Prevention. "This is the first major step in our strategy to reduce risks from pesticides containing potentially hazardous inert ingredients."

EPA is taking this action in response to petitions by the Center for Environmental Health, Beyond Pesticides, Physicians for Social Responsibility and others. These groups asked the agency to issue a rule requiring disclosure of 371 inert ingredients found in pesticide products. EPA developed an alternative strategy designed to reduce the risks posed by hazardous inert ingredients in pesticide products more effectively than by disclosure rulemaking. ...

Many of the 72 inert ingredients targeted for removal are on the list of 371 inert ingredients identified by the petitioners as hazardous. The 72 chemicals are not currently being used as inert ingredients in any pesticide product. Chemicals such as turpentine oil and nitrous oxide are listed as candidates for removal.

Read more...

What Updates Were Made to the TSCA Work Plan?

Source: U.S. Environmental Protection Agency, October 23, 2014

In October 2014, EPA issued the TSCA Work Plan for Chemical Assessments: 2014 Update to reflect updated data submitted to EPA by the chemical industry on chemical releases and potential exposures. This is the first update to the TSCA Work Plan. The new data was submitted in 2012 under TSCA's Chemical Data Reporting or in 2011 as part of the EPA's Toxics Release Inventory reporting. These data were used to update the exposure rankings for the chemicals initially screened as part of the Work Plan. These data were also used to screen ten Action Plan chemicals and two additional chemicals identified by the Agency during EPA's assessment of flame retardants. The exposure ranking is part of the screening methodology used to develop the Work Plan in 2012 and is described in detail in the Work Plan Methods Document.

Read more...

Access the TSCA Work Plan for Chemical Assessments: 2014 Update.

High Throughput Heuristics for Prioritizing Human Exposure to Environmental Chemicals

Source: *Environmental Science & Technology*, October 13, 2014
Authors: John F. Wambaugh, Anran Wang, Kathie L. Dionisio, Alicia Frame, Peter Egeghy, Richard Judson, and R. Woodrow Setzer

The risk posed to human health by any of the thousands of untested anthropogenic chemicals in our environment is a function of both the hazard presented by the chemical and the extent of exposure. However, many chemicals lack estimates of exposure intake, limiting the understanding of health risks. We aim to develop a rapid heuristic method to determine potential human exposure to chemicals for application to the thousands of chemicals with little or no exposure data. We used Bayesian methodology to infer ranges of exposure consistent with biomarkers identified in urine samples from the U.S. population by the National Health and Nutrition Examination Survey (NHANES). We performed linear regression on inferred exposure for demographic subsets of NHANES demarked by age, gender, and weight using chemical descriptors and use information from multiple databases and structure-based calculators. Five descriptors are capable of explaining roughly 50% of the variability in geometric means across 106 NHANES chemicals for all the demographic groups, including children aged 6-11. We use these descriptors to estimate human exposure to 7,968 chemicals, the majority of which have no other quantitative exposure prediction. For thousands of chemicals with no other information, this approach allows forecasting of average exposure intake of environmental chemicals.

Read more...

REACH - nine more SVHCs "promoted" to Annex XIV

Source: ERA Technology, October 2014

Only 4 SVHCs have been put forward to the candidate list of SVHCs but 9 have progressed to Annex XIV and 22 more have been recommended -- a considerable step up for this step of the process which will impact manufacturing. Most significantly, the much trailed ECHA SVHC roadmap database PACT was published on 23 September featuring 80 substances under scrutiny. PACT

provides an earlier view on likely regulatory options for substances than has been available previously. Of the 80 substances, they recommend 5 as possible SVHCs, 11 for restriction and 5 for no action. The remaining 56 are on hold or still under consideration.

Read more...

See the page for the SVHC Roadmap Implementation Plan.

Also see the Public Activities Coordination Tool (PACT) list of substances for which a Risk Management Options Analysis (RMOA) is either under development or has been completed since the implementation of the SVHC Roadmap commenced in February 2013.

Plastics chemical linked to changes in baby boys' genitals

Source: *Environmental Health News*, October 29, 2014
Author: Lindsey Konkel

Boys exposed in the womb to high levels of a chemical found in vinyl products are born with slightly altered genital development, according to research published today.

The study of nearly 200 Swedish babies is the first to link the chemical di-isononyl phthalate (DiNP) to changes in the development of the human male reproductive tract.

Previous studies of baby boys in three countries found that a similar plastics chemical, DEHP, was associated with the same type of changes in their genitalia.

Less is known about the reproductive risks of DiNP, a chemical which scientists say may be replacing DEHP in many products such as vinyl toys, flooring and packaging. In mice, high levels block testosterone and alter testicular development.

Read more...

See original article in *Environmental Health Perspectives*, "Prenatal Phthalate Exposures and Anogenital Distance in Swedish Boys".

Biobased Polymers

Source: *Chemical & Engineering News*, October 27, 2014
Author: Melody M. Bomgardner

Consumers who are paying close attention will soon notice a change in products they use every day. Some diapers, clothing, athletic shoes, and automobile tires currently made from petroleum will instead be made entirely from plants. Yet the quality and performance of these products will be identical to those made the old-fashioned way.

Thanks to many years of work on engineered microbes and new catalysts, the reach of biobased chemicals into consumer items is expanding. A host of biobased intermediates are approaching commercialization, and others are on the horizon. They include raw materials for such common polymers as polyester, spandex, synthetic rubber, and nylon.

Read more...

Also read from *Environmental Leader*, "Biobased Materials, Chemicals Funding on the Rise".

Natural Grass vs. Synthetic Turf Surfaces Study Final Report

Source: Government of Western Australia - Department of Sport and Recreation, October 27, 2014

Traditionally sport has been played on natural grass surfaces. As towns and cities were established natural grass sports surfaces were developed on open space sites set aside for recreation. The nature of the sporting activity determined the requirements for the sports ground, in relation to size and surface characteristics.

The construction of natural grass sports surfaces has varied according to the site, and in many cases, sports grounds have been developed either, on original soil, fill sites with poor quality imported soil or in some cases old landfill or drainage sites which can be prone to sinkage. As a

result, the quality of natural grass sports grounds is variable, particularly in winter months or following high rain fall events.

Read more...

See Chapter 10 of report on Life Cycle Cost.

Also see article, "How Taxpayers Get Fooled On The Cost of An Artificial Turf Field".

TURI's Note: See our Library Guide on Artificial Turf.

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