

Greenlist Bulletin

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

January 3, 2014

In This Issue

Chemical Manufacturers Made Far Fewer Confidentiality Claims Than Thought in 2010

Cancer-linked Flame Retardants Eased Out of Furniture in 2014

Why electronic ingredient lists should be a 'must-see' at CES

Israeli biopesticides give chemicals a 'break'

The Data Gap: Can a Lack of Monitors Obscure Loss of Clean Air Act Benefits in Fracking Areas?

From Nitric Acid Dip Cleaning To Closed-Loop Solvent Cleaning

New method for assessing nanoparticle toxicity in cells

Benchmarking Organic Micropollutants in Wastewater, Recycled Water and Drinking Water with In Vitro Bioassays

Improved saccharification and ethanol yield from field-grown transgenic poplar deficient in cinnamoyl-CoA reductase

[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.



Editor's Note

Dear *Greenlist* Subscribers:

HAPPY NEW YEAR from all of us at TURI! Thank you for your continued readership throughout 2013. We hope you enjoyed the special issues on *Bisphenol A*, *Chemicals Policy*, *Hydraulic Fracturing*, *Nanotechnology* and *Green Building* and are looking forward to the issues we have planned for 2014 as well as the contributions of guest editors.

We will be trying out a biweekly schedule for the first quarter of 2014. Your next issue will be emailed on January 17th. The issues will be longer and have more depth of information in the "Read More" sections. We plan to check in with you at the end of March to request feedback on this modification to the publication.

Thanks again for your support!

Best,
Mary

Chemical Manufacturers Made Far Fewer Confidentiality Claims Than Thought in 2010

Source: [Bloomberg BNA - Chemical Regulation Reporter, December 23, 2013](#)

Author: Pat Rizzuto

Dec. 18 -- More than half the confidential business information claims that the Environmental

Protection Agency thought chemical manufacturers had made in 2010 when it launched a declassification effort involved information that companies had never claimed warranted such protection, Bloomberg BNA has learned in interviews with agency and industry officials.

The agency's chemical data tracking system was overreporting the confidential business information, or CBI, claims, Jim Jones, assistant EPA administrator for chemical safety and pollution prevention, told Bloomberg BNA Dec. 16.

"But when we dug in, there weren't as many claims as we thought," Jones said.

[Read more...](#)

Also see from *BNA - Chemical Regulation Reporter*, "[California to Add Diisononyl Phthalate to Proposition 65 List of Carcinogens.](#)"

Cancer-linked Flame Retardants Eased Out of Furniture in 2014

[Source: Scientific American, December 31, 2013](#)

Author: Dina Fine Maron

When the clock strikes midnight on December 31, new regulations kick into effect that may help usher in an era of less pervasive flame retardants in our home furnishings. The move caps a years-long campaign to alter regulations inextricably linked with a tobacco industry that sought to elude production of self-extinguishing cigarettes designed to limit couch fires. Deception and intrigue led to a 1970s regulation that prompted the injection of chemicals into home furniture, stemming from a distortion of scientific findings that suggested flame retardants would be more effective at reducing sofa fires than they really are. In reality, retardants provide no meaningful protection, a finding uncovered in a 2012 investigative series by *The Chicago Tribune* and highlighted in a recent documentary *Toxic Hot Seat*.

Yet even as environmentalists hail the passage of new standards in California that will facilitate this change nation-wide, there's no guarantee that our bodies will be free anytime soon of these chemicals, including polybrominated diphenyl ethers, which have now been linked to cancer, reproductive problems and lower IQs in children. In fact, some experts worry that manufacturers will simply recycle chemical-laden foam into different household products or that the furniture will effectively migrate to the homes of lower income families. At the very least, chemicals will continue to seep into our environment via landfills. And the risk is long-term the substances do not quickly break down into safer chemicals and they tend to accumulate in food chains and living tissue.

[Read more...](#)

See also, from *PBS NewsHour*, "[Calif. law change sparks debate over use of flame retardants in furniture.](#)"

Why electronic ingredient lists should be a 'must-see' at CES

[Source: GreenBiz.com, January 2, 2014](#)

Authors: Pamela Gordon and Tony Kingsbury

Those attending the Consumer Electronics Show, taking place Jan. 7-10 in Las Vegas, can feast their eyes on 3,200 exhibitors' sparkling new products. What attendees won't be able to see are those products' ingredient lists. With more "ingredients" than in your typical morning cereal or shampoo, electronic products have long global supply chains, making it difficult for electronics companies to completely and definitely answer the question: "What's in my products?"

Why is it important that this question be answered more quickly and clearly? Here are three good reasons:

1. Corporate customers can require it...
2. Executives can get market distinction by proactively restricting substances....
3. Regulations force the issue....

And now, California's new Safer Consumer Products Regulation (SCP) -- effective Oct. 1, 2013 -- may provide the most compelling reason yet to once and for all diligently track the substances in electronic products.

[Read more...](#)

Israeli biopesticides give chemicals a 'break'

Source: [FreshPlaza, January 2, 2014](#)

As a type of pesticide, biopesticides, of course, are supposed to kill bugs, or, preferably, keep them off crops, by using natural, organic methods, instead of chemicals. However, the field is relatively new, and as of now there are no biopesticides strong enough to handle the entire growth cycle. There are various technologies to produce biopesticides, such as using plant extracts to develop organic chemicals that can be applied to plants and crops, along with microbial biopesticides based on using bacteria, fungi and yeast extracted from plants (Stockton uses both, said Ziv Tirosh, CEO of Israel's Stockton Group).

Though promising, wide-scale, cost-effective production of genetically engineered biopesticides is years away. "A lot more research is needed, and the small start-ups that generally work on these projects don't have the money or resources needed," he said. The infrastructure -- from the marketing and sales channels to the methods of application -- is all geared towards chemical pesticide treatment, so replacing it is a non-starter.

However, Tirosh said, biopesticides can -- and already do, thanks to Stockton -- play a crucial role in assisting chemicals do a better job. "If, for example, a cucumber crop will be sprayed ten times, we could replace two or three of those chemical pesticide sprayings with biopesticide sprayings that will have an important impact on the final results."

Timorex, Stockton's main product, has been feted not only by the EU, but by industry as well. The company won this year's Agrow Award (given out by agriculture industry information giant Informa Agra) for the best new biopesticide.

[Read more...](#)

For basic information on biopesticides, see the U.S. EPA's page on "[What Are Biopesticides?](#)"

Also see, from *Beyond Pesticides*, "[Bedbugs May Be Controlled by Natural Fungus.](#)"

For an example of the danger of overusing biopesticides, read "[Biopesticides join the pesticide treadmill](#)" from the Pesticide Action Network UK.

The Data Gap: Can a Lack of Monitors Obscure Loss of Clean Air Act Benefits in Fracking Areas?

Source: [Environmental Science & Technology, January 2, 2014](#)

Authors: Annmarie G. Carlton, Eleana Little, Michael Moeller, Stella Odoyo, and Paul B. Shepson

The U.S. is shifting to a greater reliance on natural gas to meet its energy needs, and a large part of this demand is being met by the development of shale gas formations. The increased utilization of natural gas is driven by the supply and thus lower cost, which largely results from new advances in engineering techniques. Primarily, gas production from horizontal drilling and high-volume hydraulic fracturing of shale and other low-porosity rock drives the favorable economics. Discussion of the environmental impacts of these operations has largely focused on water quality issues, but air pollution is also an important potential impact due to emissions associated with drilling, extraction, and associated transportation activities. Recently, air quality impacts have been measured in active oil and gas well areas. The extent to which these increased emissions impact air quality, especially in highly developed shale gas regions where there are no air monitors represents a substantial data gap and hinders effective air quality management.

Throughout the United States, ambient concentrations of criteria pollutants have been decreasing in response to the implementation of the Clean Air Act.... This improvement in air quality through reduction in ambient concentrations of a variety of criteria air pollutants represents a tremendous success of the Clean Air Act. However, there can be local differences. An example is the Marcellus Shale Region of Western Pennsylvania where the amount of gas development activities has recently exploded (e.g., >6000 active wells in Pennsylvania alone). Ambient NO_x (NO+NO₂) concentrations generally were decreasing since the mid 2000s in most Eastern U.S. locations. However, in some areas a clear decrease is not evident and at a few locations the pollutant concentrations have been increasing in recent years.... In addition to these findings, we observe that the individual counties with the highest number of active wells by State in the Marcellus Shale region, that is, Carroll, OH;

Marshall, WV, and Bradford, PA have no routine air quality monitors. As a consequence, current trends in criteria air pollutants such as NO₂, SO₂, CO, Pb, PM_{2.5} cannot be effectively evaluated with observational data in those locations. This represents a data gap that may be obscuring negative air quality effects from shale gas activities.

[Read more...](#)

From Nitric Acid Dip Cleaning To Closed-Loop Solvent Cleaning

[Source: *Products Finishing*, January 1, 2014](#)

Author: Doris Schultz

With the change from a nitric acid aqua based cleaning system to a closed-loop solvent system, Superior Products in Cleveland, Ohio, reduced annual water consumption from two million gallons to zero, dropped daily cleaning labor from 15 hours to one per day, and has achieved better cleaning results.

[Read more...](#)

New method for assessing nanoparticle toxicity in cells

[Source: *SAFENANO*, December 11, 2013](#)

Researchers from École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland have developed a novel method, based on optical techniques, for measuring the level of oxidative stress induced by nanoparticles in cells.

When a cell is exposed to a toxic product or a pathogen, this causes the internal equilibrium between the oxidants and antioxidants within the cell to break. Oxidants [are] produced in excessive quantities and start to attack the cell's proteins, sugars and its membrane. This brings about a faster cellular aging, causes certain diseases to the cell, and may even lead to its death.

Thus, the overproduction of such oxidants is a sign that the cell is stressed, and that is exactly what the EPFL researchers wanted to measure. At the same time, they noticed that Cytochrome C, a protein present in the cellular membrane, was a particularly interesting biosensor. They found that when it was exposed to certain wavelengths of light, this protein would absorb less light when in the presence of one of these oxidising agents: hydrogen peroxide. Consequently, they developed a complex method for measuring the variations of light absorbed by Cytochrome C. Finally, they tested and verified their method on small unicellular algae.

This new test opens interesting possibilities for identifying not only the effect of nanomaterials, but also, on a wider perspective, the way cells react to an external perturbation. In addition, during their experiments the researchers were able to observe that the toxicity of certain products could be conditioned and modulated by its surrounding environment.

[Read more...](#)

See the original study in *Scientific Reports*, "[Sensing the dynamics of oxidative stress using enhanced absorption in protein-loaded random media.](#)"

Benchmarking Organic Micropollutants in Wastewater, Recycled Water and Drinking Water with In Vitro Bioassays

[Source: *Environmental Science & Technology*, December 10, 2013](#)

Authors: Beate I. Escher, Mayumi Allinson, Rolf Altenburger, Peter A. Bain, Patrick Balaguer, Wibke Busch, Jordan Crago, Nancy D. Denslow, Elke Dopp, Klara Hilscherova, Andrew R. Humpage, Anu Kumar, Marina Grimaldi, B. Sumith Jayasinghe, Barbora Jarosova, Ai Jia, Sergei Makarov, Keith A. Maruya, Alex Medvedev, Alvine C. Mehinto, Jamie E. Mendez, Anita Poulsen, Erik Prochazka, Jessica Richard, Andrea Schifferli, Daniel Schlenk, Stefan Scholz, Fujio Shiraishi, Shane Snyder, Guanyong Su, Janet Y.M. Tang, Bart van der Burg, Sander C. van der Linden, Inge Werner, Sandy D. Westerheide, Chris K.C. Wong, Min Yang, Bonnie H.Y. Yeung, Xiaowei Zhang, and Frederic D.L. Leusch

Thousands of organic micropollutants and their transformation products occur in water. Although often present at low concentrations, individual compounds contribute to mixture effects. Cell-based bioassays that target health-relevant biological endpoints may therefore complement chemical

analysis for water quality assessment. The objective of this study was to evaluate cell-based bioassays for their suitability to benchmark water quality and to assess efficacy of water treatment processes. The selected bioassays cover relevant steps in the toxicity pathways including induction of xenobiotic metabolism, specific and reactive modes of toxic action, activation of adaptive stress response pathways and system responses. Twenty laboratories applied 103 unique in vitro bioassays to a common set of 10 water samples collected in Australia, including wastewater treatment plant effluent, two types of recycled water (reverse osmosis and ozonation/activated carbon filtration), stormwater, surface water, and drinking water. Sixty-five bioassays (63%) showed positive results in at least one sample, typically in wastewater treatment plant effluent, and only five (5%) were positive in the control (ultrapure water). Each water type had a characteristic bioanalytical profile with particular groups of toxicity pathways either consistently responsive or not responsive across test systems. The most responsive health-relevant endpoints were related to xenobiotic metabolism (pregnane X and aryl hydrocarbon receptors), hormone-mediated modes of action (mainly related to the estrogen, glucocorticoid, and antiandrogen activities), reactive modes of action (genotoxicity) and adaptive stress response pathway (oxidative stress response). This study has demonstrated that selected cell-based bioassays are suitable to benchmark water quality and it is recommended to use a purpose-tailored panel of bioassays for routine monitoring.

[Read more...](#)

Improved saccharification and ethanol yield from field-grown transgenic poplar deficient in cinnamoyl-CoA reductase

[Source: Proceedings of the National Academy of Sciences of the United States of America, December 30, 2013](#)

Authors: Rebecca Van Acker, Jean-Charles Lep le, Dirk Aerts, V ronique Storme, Geert Goeminne, Bart Ivens, Fr d ric L g e, Catherine Lapierre, Kathleen Piens, Marc C. E. Van Montagu, Nicholas Santoro, Clifton E. Foster, John Ralph, Wim Soetaert, Gilles Pilate, and Wout Boerjan

Lignin is one of the main factors determining recalcitrance to enzymatic processing of lignocellulosic biomass. Poplars (*Populus tremula* x *Populus alba*) down-regulated for cinnamoyl-CoA reductase (CCR), the enzyme catalyzing the first step in the monolignol-specific branch of the lignin biosynthetic pathway, were grown in field trials in Belgium and France under short-rotation coppice culture. Wood samples were classified according to the intensity of the red xylem coloration typically associated with CCR down-regulation. Saccharification assays under different pretreatment conditions (none, two alkaline, and one acid pretreatment) and simultaneous saccharification and fermentation assays showed that wood from the most affected transgenic trees had up to 161% increased ethanol yield. Fermentations of combined material from the complete set of 20-mo-old CCR-down-regulated trees, including bark and less efficiently down-regulated trees, still yielded ~20% more ethanol on a weight basis. However, strong down-regulation of CCR also affected biomass yield. We conclude that CCR down-regulation may become a successful strategy to improve biomass processing if the variability in down-regulation and the yield penalty can be overcome.

[Read more...](#)

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 Mill
Lowell MA 01854
978-934-4365
978-934-3050 (fax)
mary@turi.org

