

Greenlist Bulletin

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

December 28, 2012

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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.




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The Guide to Safer Chemicals

[Source: BizNGO, December 2012](#)

The *BizNGO Guide to Safer Chemicals* is a unique resource for downstream users of chemicals. It is a hands-on guide that charts pathways to safer chemicals in products and supply chains for brand name companies, product manufacturers, architects and designers, retailers, and health care organizations.

Chemicals are at the core of our materials, products, and manufacturing systems, and as such should be at the core of our sustainability programs. Yet many a downstream business, those organizations that use chemicals by virtue of the products they purchase, has avoided starting this journey thinking that the path to greener and safer chemicals is too clouded in complexity and uncertainty. *The Guide* is our response to these uncertainties and is intended for both novices and experts.

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Waterborne Epoxy Zinc-Rich Primers: There Are Viable Options

[Source: *Paint and Coatings Industry*, September 4, 2012](#)

Authors: Pascale Bouuaert, Derek Crawford, Jim Elmore, Bedri Erdem, Françoise Heine, and Nathalie Wauters

With stringent environmental and health regulations, waterborne coatings are increasingly replacing solventborne paints. Significant advances have been made: new waterborne epoxy resin and amine curing agent technologies provide excellent corrosion resistance when appropriate two-component (2K) formulations are used.

In the specific case of epoxy primers enriched with zinc for extra corrosion resistance, the challenge of incorporating a very high weight (often 80-85%) of zinc powder into an epoxy/curing agent binder system is compounded by zinc's reactivity with protic components such as water, acidic solvents and dispersing aids.

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Predicting Fish Acute Toxicity Using a Fish Gill Cell Line-Based Toxicity Assay

[Source: *Environmental Science and Technology*, December 11, 2012](#)

Authors: Katrin Tanneberger, Melanie Knobel, Frans J. M. Busser, Theo L. Sinnige, Joop L. M. Hermens, and Kristin Schirmer

The OECD test guideline 203 for determination of fish acute toxicity requires substantial numbers of fish and uses death as an apical end point. One potential alternative are fish cell lines; however, several studies indicated that these appear up to several orders of magnitude less sensitive than fish. We developed a fish gill cell line-based (RTgill-W1) assay, using several measures to improve sensitivity. The optimized assay was applied to determine the toxicity of 35 organic chemicals, having a wide range of toxicity to fish, mode of action and physicochemical properties. We found a very good agreement between in vivo and in vitro effective concentrations. For up to 73% of the tested compounds, the difference between the two approaches was less than 5-fold, covering baseline toxicants but as well compounds with presumed specific modes of action, including reactivity, inhibition of acetylcholine esterase or uncoupling of oxidative phosphorylation. Accounting for measured chemical concentrations eliminated two outliers, the hydrophobic 4-decylaniline and the volatile 2,3-dimethyl-1,3-butadiene, with an outlier being operationally defined as a substance showing a more than 10-fold difference between in vivo/in vitro effect concentrations. Few outliers remained. The most striking were allyl alcohol (2700-fold), which likely needs to be metabolically activated, and permethrin (190-fold) and lindane (63-fold), compounds acting, respectively, on sodium and chloride channels in the brain of fish. We discuss further developments of this assay and suggest its use beyond predicting acute toxicity to fish, for example, as part of adverse outcome pathways to replace, reduce, or refine chronic fish tests.

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American Coatings Association's Paint Council Network

[Source: *American Coatings Association Paint Council Network*, December 2012](#)

The Paint Councils and individual state representation help coordinate ACA and industry's response and actions regarding key issues such as, Paint Product Stewardship, Chemicals Management, and Childhood Lead Poisoning Prevention. Working with member companies in the states and providing those companies with a forum for discussion and collaboration has proven valuable when dealing with specific state issues.

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Designing Away Endocrine Disruption

[Source: *Chemical & Engineering News*, December 17, 2012](#)

Author: Stephen K. Ritter

When a chemical company sets out to design a molecule for a new application, researchers think first about functionality, efficacy, and cost. Typically further down the list of priorities is environmental performance. Consumer awareness, however, is changing that perspective. But even when toxicity rises to a level of concern during product design, chemists in general don't have the expertise or predictive tools they can use to defuse a potential problem.

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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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