

# Greenlist Bulletin

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

April 11, 2014

## In This Issue

Lead-Based Decorative Paints:  
Where Are They Still Sold – and  
Why?

Nanomedicine: new solutions or  
new problems?

SmartCell project: Novel plant  
biotechnology approach for  
sustainable production of  
pharmaceutical compounds

A Threat to Male Fertility

Refreshingly cool, potentially toxic

Triclosan Promotes *Staphylococcus*  
*aureus* Nasal Colonization

Progress in Green Polymer  
Composites from Lignin for  
Multifunctional Applications: A  
Review

EPA Sets Meeting on  
Formaldehyde Proposed Rule

Momentive Announces its  
Commitment to Beyond Benign's  
Green Chemistry Program

BPA and BPS in Thermal Paper:  
Results of Testing in Minnesota  
Hospitality Industry

Minnesota bills to incentivize  
biofuel, biochemicals, biomass  
thermal

[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](mailto:mary@turi.org) if you would like more information on any of the articles listed here, or if this email is not displaying properly.



## Lead-Based Decorative Paints: Where Are They Still Sold -- and Why?

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

Author: Rebecca Kessler

In 2002 researchers at South Africa's Medical Research Council collected blood from first-graders in impoverished townships of Johannesburg to check their exposure to lead, a powerful neurotoxicant. The children's blood lead levels were high by today's standards, averaging 9 µg/dL. But one student had 52 µg/dL of lead coursing through her veins, far above the 5-µg/dL concentration at which intervention is currently recommended in the United States. The researchers went to her apartment to investigate and met a skinny, withdrawn little girl and her parents.

"You're here because of what she eats," study leader Angela Mathee recalls the girl's mother saying. Huge patches of pale lemon-yellow paint were missing from every wall in the apartment, where the girl had spent hours chipping it away and eating it. The windowpanes were loose because she had eaten the painted putty holding them in place, and the dirt outside was pitted where she had devoured it, too. Carmelita (a pseudonym) had severe pica, the compulsive consumption of nonfood substances. Her parents had taken her to various doctors, but they had offered little help. None had tested her blood, although lead poisoning often shadows pica like a phantom.

[Read more...](#)

Also view from *PaintSquare*, ['Major' Changes Loom for Coating Makers](#).

Source: [SafeNano, March 27, 2014](#)

Health Care Without Harm, an international coalition of healthcare and medical groups, has published a new report entitled "Nanomedicine: new solutions or new problems?" which gives an overview of nanomedicine in general with particular emphasis on environmental and human health risks. In addition, the report highlights a number of regulatory issues that need to be addressed in order for nanomedicine to deliver on its promises without unduly introducing new risks to patients, workers or to the environment.

In the healthcare sector, nanomaterials offer the prospect of a wide range of medical applications, such as improved drug solubility, drug delivery systems, cellular and tissue repair systems, diagnostic and imaging tools, and therapeutic medicines that can target specific diseased tissues within a patient's body. The research by Health Care Without Harm aims to better understand and monitor the bioavailability, bioaccumulation, toxicity and/or environmental transformations and interactions of nanomaterials.

[Read more...](#)

Access full report [here](#).

## SmartCell project: Novel plant biotechnology approach for sustainable production of pharmaceutical compounds

Source: [VTT, April 7, 2014](#)

European scientists have made ground-breaking discoveries for improving the efficiency of the production of pharmaceuticals through plant biotechnology. Biotechnological production offers a cost-effective and environmentally friendly alternative to the chemical synthesis of rare and complex pharmaceutical compounds currently isolated from plants. The results have been achieved in the European SmartCell project coordinated by VTT Technical Research Centre of Finland.

Several expensive anticancer alkaloid blockbusters used in chemotherapy, such as terpenoid indole alkaloids - vinblastine and vincristine, are currently extracted from the plant *Catharanthus roseus* (Madagascar periwinkle) at high price. These compounds are used to treat Hodgkin's lymphoma, breast cancer, small-cell lung cancer and leukemia. Typically, very low levels accumulate in plant tissues, but chemical synthesis is not an economical alternative either, due to their highly complex structures and specific stereochemical features. Internationally, much effort has been invested to develop more accessible and cost-effective sources of these drugs.

The biotechnological production of high-value plant-derived compounds using plant cell cultures is an attractive and sustainable alternative to extraction from whole plant material. However, the biosynthetic pathway leading to these compounds in plants is long and complex, with multiple enzymatic steps that are still largely uncharacterized at the genetic level. One of the main goals of the European Consortium SmartCell was to unravel the metabolic pathway leading to the periwinkle terpenoid indole alkaloids.

[Read more...](#)

Read study in *Nature Communications*, [The seco-iridoid pathway from \*Catharanthus roseus\*](#).

## A Threat to Male Fertility

Source: [The New York Times, March 21, 2014](#)

Author: Deborah Blum

To study the impact of everyday chemicals on fertility, federal researchers recently spent four years tracking 501 couples as they tried to have children. One of the findings stood out: while both men and women were exposed to known toxic chemicals, men seemed much more likely to suffer fertility problems as a result.

The gender gap was particularly wide when it came to phthalates, those ubiquitous compounds used to make plastics more flexible and cosmetic lotions slide on more smoothly. Women who wore cosmetics often had higher levels of phthalates in their bodies, as measured by urinalysis. But only in their male partners were phthalate levels correlated with infertility.

"It's the males in the study that are driving the effect," said Germaine Buck Louis, an epidemiologist at the National Institute of Child Health and Human Development and lead author of the report, published in February in *Fertility and Sterility*. "They're the signal."

[Read more...](#)

See abstract of study in *Fertility and Sterility*, [Urinary bisphenol A, phthalates, and couple fecundity: the Longitudinal Investigation of Fertility and the Environment \(LIFE\) Study](#).

### Refreshingly cool, potentially toxic

[Source: Ludwig Maximilian University of Munich, April 9, 2014](#)

The refrigerant R1234yf is being considered for use in air conditioning systems in cars. LMU chemists now show that, in the event of a fire, it releases the highly poisonous carbonyl fluoride, and urge that its safety be reassessed.

According to EU guidelines, the new compound R1234yf should in [the] future be used as the refrigerant in air-conditioning systems for automobiles. But the compound is inflammable, and LMU chemists have now shown that combustion of the cooling agent leads to the formation of the highly toxic carbonyl fluoride. "It has been known for some time now that combustion of R1234yf results in production of the toxic hydrogen fluoride. Our analysis has now shown that 20% of the gases produced by combustion of the compound consist of the even more poisonous chemical carbonyl fluoride," says Andreas Kornath, Professor of Inorganic Chemistry at LMU Munich. He and his co-workers have just published the results of their investigation in the journal *Zeitschrift für Naturforschung*.

[Read more...](#)

### Triclosan Promotes *Staphylococcus aureus* Nasal Colonization

[Source: mBio, April 8, 2014](#)

Authors: Adnan K. Syed, Sudeshna Ghosh, Nancy G. Love, Blaise R. Boles

The biocide triclosan is used in many personal care products, including toothpastes, soaps, clothing, and medical equipment. Consequently, it is present as a contaminant in the environment and has been detected in some human fluids, including serum, urine, and milk. *Staphylococcus aureus* is an opportunistic pathogen that colonizes the noses and throats of approximately 30% of the population. Colonization with *S. aureus* is known to be a risk factor for several types of infection. Here [the authors] demonstrate that triclosan is commonly found in the nasal secretions of healthy adults and the presence of triclosan trends positively with nasal colonization by *S. aureus*. [The authors] demonstrate that triclosan can promote the binding of *S. aureus* to host proteins such as collagen, fibronectin, and keratin, as well as inanimate surfaces such as plastic and glass. Lastly, triclosan-exposed rats are more susceptible to nasal colonization with *S. aureus*. These data reveal a novel factor that influences the ability of *S. aureus* to bind surfaces and alters *S. aureus* nasal colonization.

[Read more...](#)

### Progress in Green Polymer Composites from Lignin for Multifunctional Applications: A Review

[Source: ACS Sustainable Chemistry & Engineering, March 16, 2014](#)

Authors: Vijay Kumar Thakur, Manju Kumari Thakur, Prasanth Raghavan, and Michael R. Kessler

Rising environmental concerns and depletion of petro-chemical resources has resulted in an increased interest in biorenewable polymer-based environmentally friendly materials. Among biorenewable polymers, lignin is the second most abundant and fascinating natural polymer next to cellulose. Lignin is one of the three major components found in the cell walls of natural lignocellulosic materials. Lignin is widely available as a major byproduct of a number of industries involved in retrieving the polysaccharide components of plants for industrial applications, such as in paper making, ethanol production from biomass, etc. The impressive properties of lignin, such as its high abundance, low weight, environmental friendliness and its antioxidant, antimicrobial, and biodegradable nature, along with its CO<sub>2</sub> neutrality and reinforcing capability, make it an ideal candidate for the development of novel polymer composite materials. Considerable efforts are now being made to effectively utilize waste lignin as one of the components in polymer matrices for high

performance composite applications. This article is intended to summarize the recent advances and issues involving the use of lignin in the development of new polymer composite materials. In this review, [the authors] have made an attempt to classify different types of lignin-reinforced polymer composites starting from synthetic to biodegradable polymer matrices and highlight recent advances in multifunctional applications of lignin. The structural features and functions of the lignin/polymer composite systems are discussed in each section. The current research trends in lignin-based materials for engineering applications, including strategies for modification of lignin, fabrication of thermoset/thermoplastic/biodegradable/rubber/foam composites, and the use of lignin as a compatibilizer are presented. This study will increase the interest of researchers all around the globe in lignin-based polymer composites and the development of new ideas in this field.

[Read more...](#)

### EPA Sets Meeting on Formaldehyde Proposed Rule

[Source: Occupational Health & Safety, April 08, 2014](#)

EPA has scheduled a public meeting for April 28 to get comments and input about a rulemaking proposal that concerns formaldehyde emissions standards for composite wood products. The meeting will take place in Washington, D.C., from 1-3:30 p.m.; requests to participate in the meeting must be received on or before April 21.

Companies that manufacture or sell composite wood products and related materials - furniture, veneer, plywood, even mobile homes and prefabricated buildings - will be affected by the proposed rule.

[Read more...](#)

Also read in *Environmental Health Perspectives*, [Outdoor Formaldehyde and NO<sub>2</sub> Exposures and Markers of Genotoxicity in Children Living Near Chipboard Industries](#).

*TURI's Note:* Formaldehyde was designated as a Higher Hazard Substance in 2011. See our updated chemical fact sheet [here](#).

### Momentive Announces its Commitment to Beyond Benign's Green Chemistry Program

[Source: Momentive, March 25, 2014](#)

Author: Ken Gordon

COLUMBUS, Ohio -- (BUSINESS WIRE) -- Momentive Specialty Chemicals Inc. and Momentive Performance Materials Inc. (collectively "Momentive" or the "Company") are taking another step in their commitment to sustainability by supporting science education through a partnership with Beyond Benign and its Green Chemistry Commitment (GCC).

Beyond Benign's vision is to revolutionize the way chemistry is taught to better prepare students to engage with their world while connecting chemistry, human health and the environment. The GCC is a consortium of universities and industry partners designed to create systemic and lasting change in university-level chemistry education, and to increase the number of green chemists and scientists in the U.S.

[Read more...](#)

### BPA and BPS in Thermal Paper: Results of Testing in Minnesota Hospitality Industry

[Source: Minnesota Pollution Control Agency, March 2014](#)

Authors: Mark Apfelbacher, Madalyn Cioci, & Phyllis Strong

Over the past two decades, there has been rising concern about the use of Bisphenol A (BPA), a chemical commonly found in plastic and food packaging products, and its impact on humans and the environment. ...

For this study, the receipt paper from 19 hospitality businesses was analyzed for BPA and BPS content by the Minnesota Department of Health. Only one of the businesses didn't use thermal paper. Samples were also taken at a paper recycler, and from domestically manufactured Boise Cascade's Aspen 30% and Aspen 100% recycled copy paper; the MPCA is concerned about the potential contamination of recycled paper stocks by BPA and BPS-laden thermal papers in the

recycling stream.

All the thermal receipt paper tested in this study contained either BPA or BPS in various quantities. In the recycled-content paperboard, testing detected BPA and BPS at levels 2 and 3 orders of magnitude (respectively) less than in thermal papers. No BPA or BPS was detected in the recycled content copy papers tested.

[Read more...](#)

### Minnesota bills to incentivize biofuel, biochemicals, biomass thermal

Source: [Biomass Magazine, March 12, 2014](#)

Author: Erin Voegele

Legislation pending in the Minnesota Legislature aims to create incentives for renewable chemicals, advanced biofuels, and biomass thermal energy.

In the Minnesota House of Representatives, H.F. 2456 aims to create a capital equipment loan program for renewable chemicals and advanced biofuel. It would also create incentive programs for advanced biofuel production, renewable chemical production and biomass production. A companion bill, S.F. 2101, was also introduced in the Minnesota Senate. ...

The incentive program would be available for qualified facilities that source at least 80 percent of their raw materials from Minnesota. The feedstock must be from agricultural or forestry sources or from the organic content of municipal solid waste (MSW). Eligible facilities include those that begin operation after Jan. 1, 2015. Existing facilities that expand production after this time can also qualify. To be eligible for the program, advanced biofuel facilities must produce at least 950,000 MMBtu per year. Similarly, renewable chemical facilities must produce at least 30 million pounds per year, and biomass thermal energy projects must produce at least 7,500 MMBtu per year to be eligible.

[Read more...](#)

Also see [Stanford scientists model a win-win situation: growing crops on photovoltaic farms.](#)

Please send a message to [mary@turi.org](mailto: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  
978-934-4365  
978-934-3050 (fax)  
[mary@turi.org](mailto:mary@turi.org)