

# Greenlist Bulletin

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

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## General Safe Practices for Working with Engineered Nanomaterials in Research Laboratories

[Source: Centers for Disease Control and Prevention - National Institute for Occupational Safety and Health, May 2012](#)

This document contains recommendations on engineering controls and safe practices for handling engineered nanomaterials in laboratories and some pilot scale operations. This guidance was designed to be used in tandem with well-established practices and the laboratory's chemical hygiene plan. As our knowledge of nanotechnology increases, so too will our efforts to provide additional guidance materials for working safely with engineered nanomaterials.

Access report [here](#).

## New technique allows simulation of noncrystalline materials

[Source: Massachusetts Institute of Technology, June 22, 2012](#)

### ***Multidisciplinary team develops mathematical approach that could help in simulating materials for solar cells and LEDs***

CAMBRIDGE, Mass. -- A multidisciplinary team of researchers at MIT and in Spain has found a new mathematical approach to simulating the electronic behavior of noncrystalline materials, which may eventually play an important part in new devices including solar cells, organic LED lights and printable, flexible electronic circuits.

The new method uses a mathematical technique that has not previously been applied in physics or chemistry. Even though the method uses approximations rather than exact solutions, the resulting predictions turn out to match the actual electronic properties of noncrystalline materials with great precision, the researchers say. The research is being reported in the journal *Physical Review Letters*, published June 29.

Jiahao Chen, a postdoc in MIT's Department of Chemistry and lead author of the report, says that finding this novel approach to simulating the electronic properties of "disordered materials" - those that lack an orderly crystal structure - involved a team of physicists, chemists, mathematicians at MIT and a computer scientist at the Universidad Autónoma de Madrid. The work was funded by a

grant from the National Science Foundation aimed specifically at fostering interdisciplinary research.

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### A Peek Inside Google's Healthy Materials Program

[Source: GreenSource, June 26, 2012](#)

Author: Nadav Malin

Since November 2010, Google's facilities teams have been methodically adhering to stringent building product selection criteria for all of the company's North American projects. To date, these have all been tenant fit-outs, but Google is moving into its first whole-building new construction project under the program and expanding it to other offices internationally in July 2012, beginning with pilot tenant improvement projects in Dublin, São Paulo, and Bangalore. Google had about 32,500 employees at the end of 2011, according to its financial report.

"Maintaining a healthy workplace is a strong priority for Google," says Anne Less of Mary Davidge Associates, a consulting firm that supports Google's sustainable facilities programs. This mandate comes right from the top, with strong support from co-founder and CEO Larry Page, who has been known to walk around the offices with a particle counter. Among other benefits, Google's focus on occupant health is helpful when the company competes for talent around the world.

Google's healthy materials program seeks to avoid substances on the Living Building Challenge Red List and U.S. EPA's Chemicals of Concern list. Extending beyond the LBC requirements, the program includes furniture and furnishings. The company is also pushing for transparency by requiring full participation in the Healthy Building Network's Pharos product ingredient and hazard screening tool for any product in a category that Pharos covers, according to Less.

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### New technique could reduce number of animals needed to test chemical safety

[Source: Biotechnology and Biological Sciences Research Council, June 29, 2012](#)

A new way of testing the safety of natural and synthetic chemicals has been developed by scientists with funding from the Biotechnology and Biological Sciences Research Council (BBSRC). Their research, published today in the journal *Ecotoxicology*, could reduce the number of fish needed to test the toxicity of a range of chemicals including pharmaceuticals and environmental pollutants.

The researchers, led by Professor Awadhesh Jha of Plymouth University, have managed to coax cells from the liver of a rainbow trout to form a ball-shaped structure called a spheroid in a petri dish. This ball of cells behaves much more like normal animal tissue than cells grown in traditional ways in the lab and so can give researchers a more accurate picture of how an animal's body would respond to a chemical in the environment.

Fish are used to test whether both new and existing chemicals like pharmaceuticals can damage wildlife or the environment. Because a large number of spheroids can be produced from a single fish the use of this technique could mean less fish are needed to do these tests.

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### Novel clay-based coating may point the way to new generation of green flame retardants

[Source: National Institute of Standards and Technology \(NIST\), June 28, 2012](#)

In searching for better flame retardants for home furnishings – a large source of fuel in house fires – National Institute of Standards and Technology (NIST) researchers defied the conventional wisdom and literally hit a wall, one made of clay.

It wasn't a dead end, but rather a surprising result that may lead to a new generation of nonhalogenated, sustainable flame retardant technology for polyurethane foam. The thick, fast-

forming coating that the NIST team created has a uniformly high concentration of flame-inhibiting clay particles, and it adheres strongly to the Swiss cheese-like surface of polyurethane foam, which is used in furniture cushions, carpet padding, children's car seats, and other items.

"In effect, we can build the equivalent of a flame-retarding clay wall on the foam in a way that has no adverse impact on the foam manufacturing process," explains NIST fire researcher Rick Davis. "Our clay-based coatings perform at least as well as commercial retardant approaches, and we think there's room for improvement. We hope this new approach provides industry with practical alternative flame retardants."

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#### Simpler lifestyle found to reduce exposure to endocrine-disrupting chemicals

[Source: The Mount Sinai Hospital/Mount Sinai School of Medicine. June 26, 2012](#)

A lifestyle that features fresh foods and limited use of products likely to contain environmental chemicals has been shown to reduce exposure to endocrine-disrupting chemicals (EDCs), such as BPA and phthalates, in a small population study. EDCs are linked to a number of adverse health complications including neuro-developmental delays, behavioral issues and fertility problems. They are produced by the millions of pounds per year and found extensively in a range of products that contain certain plastics.

Researchers from Mount Sinai School of Medicine and University of Rochester School of Medicine and Dentistry examined individual behavioral choices and community lifestyle practices, as well as analyzed urine samples, from a group of Old Order Mennonite (OOM) women in mid-pregnancy and determined that they have lower levels EDCs in their systems than the general population. The study is published online today in the journal *NeuroToxicology*.

Bisphenol A (BPA) and phthalates are part of a group of chemicals known as endocrine disruptors, chemicals in plastic that interfere with the body's endocrine, or hormone, system. They are used at length in a range of products, including clothing, furniture, cosmetics, and medical supplies and are also commonly found in food, water, and dust. EDC exposure can occur through ingestion, inhalation and absorption through the skin.

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#### Prenatal Exposure to Butylbenzyl Phthalate and Early Eczema in an Urban Cohort

[Source: Environmental Health Perspectives. June 26, 2012](#)


Authors: Allan C. Just, Robin M. Whyatt, Matthew S. Perzanowski, Antonia M. Calafat, Frederica P. Perera, Inge F. Goldstein, Qixuan Chen, Andrew G. Rundle, Rachel L. Miller

Background: Recent cross-sectional studies suggest a link between butylbenzyl phthalate (BBzP) in house dust and childhood eczema.

Objectives: To evaluate whether monobenzyl phthalate (MBzP), the main BBzP metabolite in urine, during pregnancy is associated prospectively with eczema in young children, and whether this association varies by the child's sensitization to indoor allergens or serological evidence of any allergies.

Conclusions: Prenatal exposure to BBzP may influence the risk of developing eczema in early childhood.

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