

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.

World's strongest biomaterial now comes from a tree

[Source: Chemical & Engineering News, June 19, 2018](#)

Author: Katharine Gammon

Spider silk has long been considered the strongest biological material in the world and has inspired generations of materials scientists to understand and mimic its properties. However, new findings knock spider silk off its pedestal, reporting that engineered cellulose fibers, derived from plant cell walls, are the strongest biobased material. ... The material is more than 20% stronger than and eight times as stiff as spider silk. It could eventually be used in lightweight biobased composites for cars, bikes, and medical devices, the researchers say.

L. Daniel Soderberg of KTH Royal Institute of Technology and his colleagues took inspiration from trees in their search for lightweight, strong, renewable materials. The outer cell walls of woody trees provide strength and stiffness, helping trees to stand tall. Those cell walls contain cellulose nanofibers, which are aligned and embedded in a matrix of lignin and hemicellulose. That alignment transmits the exceptional strength and stiffness of individual nanofibers to the macroscale properties associated with wood, says study coauthor Nitesh Mittal. Even so, wood is not as strong as the nanofibers themselves because defects in alignment occur, which weaken the material.

[Read more...](#)

See original article in *ACS Nano*, "[Multiscale](#)

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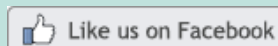
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Beyond The Safety Data Sheet: Finding Information on Chemical Hazards

**Thursday, August 23, 2018
10:00AM to 1:00PM**

OFS Fitel
50 Hall Road
Sturbridge, MA 01566

Solvents, cleaners, catalysts, and other chemicals can contribute to cancer, asthma, neurological disease, birth defects, and other health problems. But safer alternatives often exist. This free, 3 hour, informal, interactive workshop presented by the Toxics

[Control of Nanocellulose Assembly: Transferring Remarkable Nanoscale Fibril Mechanics to Macroscale Fibers](#)".

See from *Regulatory Toxicology and Pharmacology*, "[Characterizing risk assessments for the development of occupational exposure limits for engineered nanomaterials](#)" and from *Current Analytical Chemistry*, "[Nanocrystalline Cellulose as Reinforcement for Polymeric Matrix Nanocomposites and its Potential Applications: A Review](#)".

TURI's Note: See at UML, "[Biology Professor Aims to Untangle Secret of Spider Web's Super Toughness](#)".

Use Reduction Institute (TURI) will give you a hands-on opportunity to use online databases and other tools that give you more current and complete information on chemicals, and help you identify safer substitutes. If you use chemicals, we encourage you to attend.

MassDEP has approved this event for 3 continuing education credits.

Space is very limited. Find more information and register [here](#).

Pollution Prevention Case Studies

[Source: U.S. Environmental Protection Agency, June 21, 2018](#)

Pollution prevention, E3: Economy, Energy and Environment and Green Suppliers Network case studies searchable by keyword, sector and process used in achieving results.

[Read more...](#)

TURI's Note: See our [Case Studies](#) web page.

Toxicology and carcinogenesis findings for solvent released by US NTP

[Source: Chemical Watch, August 9, 2018](#)

The US National Toxicology Program (NTP) has released a technical report on its genetic toxicology and carcinogenesis studies of the solvent p-chloro- α,α,α -trifluorotoluene [PCBTF].

The substance -- used in paints and coatings, for automotive parts and body cleaning, and as an industrial intermediate in the production of other chemicals -- was nominated for study by the National Cancer Institute and chemical manufacturer, Kowa American Corporation, because of its high import volume and lack of occupational exposure limit.

[Read more...](#)

See [abstract and report from NTP](#).

Also see from the *Journal of Occupational and Environmental Hygiene*, "[Assessing Exposures to 1-chloro-4-\(trifluoromethyl\) Benzene \(PCBTF\) in U.S. Workplaces](#)".

Breathless: Pittsburgh's asthma epidemic and the fight to stop it

[Source: Environmental Health News, June 11, 2018](#)

Author: Kristina Marusic

Asthma plagues children in Allegheny County -- and air pollution is making it worse.

How bad is it? With data lacking, a pediatrician and her colleagues set out to put a number on the problem. Testing more than 1,200 elementary school students, they

found that 22 percent of kids in the region have asthma. At the state level, just 10 percent of kids have asthma.

The national average? Eight percent.

And there were consistently higher rates of asthma among kids living close to the region's big industrial polluters.

We're going beyond the numbers. Meet the children who get pulled from school or football practice because they cannot catch their breath, and the concerned parents trying to give their kids a normal, healthy life. Meet the scientists teasing out the true cost of growing up in the shadow of belching industrial plants, and the doctors and nurses on a campaign to reach kids living at the frontlines of pollution.

[Read more...](#)

TURI's Note: See our information on [Asthma-Related Chemicals](#).

A Toxic Substance Has Been Found in Crayons Again

Source: [The Atlantic, August 9, 2018](#)

Author: Angela Lashbrook

Crayons are generally an innocuous children's product, but a consumer-advocacy group has discovered a dangerous substance in one brand. In a newly released report on 27 back-to-school products, the United States Public Interest Research Group, or PIRG, revealed that some green crayons in packs by Playskool, available at Dollar Tree, Amazon, and eBay, contained a toxic chemical with a deadly history: asbestos. The substance is known to cause mesothelioma and lung cancer, and is suspected to contribute to chronic obstructive pulmonary disease and kidney cancer.

This sort of testing and detection of toxic chemicals is nothing new. Last year, the U.S. PIRG found lead in fidget spinners, and in 2015, the Environmental Working Group found trace amounts of asbestos in crayons. But the new incident highlights a hard-to-nail-down problem in the increasing availability of products on the internet: Enforcing bans with such disparate points of sale is an incredible challenge, and can make keeping kids safe a logistical nightmare.

[Read more...](#)

See U.S. PIRG report, "[Safer School Supplies: Shopping Guide](#)".

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