

Greenlist Bulletin

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

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In This Issue

The Trouble in Toyland Report:
Read This Before You Shop

4 Environmental Health Lessons
Learned From the Bhopal Disaster

Urinary Biomonitoring of Phosphate
Flame Retardants: Levels in
California Adults and
Recommendations for Future
Studies

Bioplastic - greener than ever

Endocrine-disrupting Chemicals
Alter Thyroid Levels in Pregnancy,
May Affect Fetal Brain
Development

Toiletry chemicals linked to
testicular cancer and male
infertility cost EU millions, report
says

Seminar highlights blueprint to a
carcinogen-free economy

IARC's Review of Carbon
Nanotubes: Substantiating Early
Warnings of Harm

Green plating of high aspect ratio
gold nanotubes and their
morphology-dependent
performance in enzyme-free
peroxide sensing

European Parliament compares EU
& US regulatory approaches for
nanomaterials

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[Greenlist Bulletin Archives](#)

[TURI Website](#)

This is the bi-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.



The Trouble in Toyland Report: Read This Before You Shop

[Source: Boston.com, December 3, 2014](#)

Author: Claire McCarthy

The holiday shopping season has started in earnest. All over the country, children are making their lists -- and parents are, too. It's exciting and fun to think about what will make kids happy, but it's just as important to think about keeping them safe.

Because not all toys are safe.

That's why it's so great that the MASSPIRG (Public Interest Research Group) Education Fund does an annual survey of toy safety -- and releases it right as we start shopping. It's an invaluable resource that anyone who buys toys for children should know about.

[Read more...](#)

See U.S. PIRG Education fund report, "[Trouble in Toyland: The 29th Annual Survey of Toy Safety](#)".

TURI's Note: See our Library Guide on [Toxic Chemicals in Children's Products](#).

4 Environmental Health Lessons Learned From the Bhopal Disaster

[Source: Huffington Post, December 3, 2014](#)

Author: Gary H. Cohen

The Sambhavna Clinic in Bhopal, India is an oasis of healing. Combining Western and traditional healing philosophies, the clinic empowers people to take responsibility for their own health. Clinic staff and patients maintain a healing garden where patients learn about the medicinal qualities of plants and then take home a plant to remedy some of their health problems. Satinath Sarangi, the clinic's director, says that "people take care of the plants and the plants take care of them."

All this, while sitting a quarter mile from the site of one of history's worst industrial disasters.

Just a short distance away is the rotting hulk of the Union Carbide pesticide factory. Thirty years ago the factory exploded, sending a poisonous cloud across a city of one million people as they slept in their beds. In one night of terror, thousands died and half a million people were injured.

Rightly called the "Hiroshima of the Chemical Industry", the abandoned factory still leaks poisons into the surrounding neighborhoods and children continue to be born with high levels of birth defects. Dow Chemical, the company that bought Union Carbide in 2001, claims it did not inherit Union Carbide's liability for Bhopal and refuses to clean up the Bhopal site or pay for any ongoing medical care for survivors.

[Read more...](#)

See from *The Safety Zone* by *Chemical & Engineering News*, "[Bhopal, 30 Year later](#)", specifically the [safety message from the U.S. Chemical Safety Board](#).

Also see from Elizabeth Grossman, "[Thirty Years Later, Victims of Bhopal Gas Disaster Are Still Waiting for Justice](#)".

Urinary Biomonitoring of Phosphate Flame Retardants: Levels in California Adults and Recommendations for Future Studies

[Source: Environmental Science & Technology, November 12, 2014](#)

Authors: Robin E. Dodson, Nele Van den Eede, Adrian Covaci, Laura J. Perovich, Julia Green Brody, and Ruthann A. Rudel

Phosphate flame retardants (PFRs) are abundant and found at the highest concentrations relative to other flame retardant chemicals in house dust; however, little is known about the biological levels of PFRs and their relationship with house dust concentrations. These relationships provide insight into major exposure pathways and potential health risks. We analyzed urine samples from 16 California residents in 2011 for 6 chlorinated and nonchlorinated dialkyl or diaryl phosphates (DAPs), the expected major metabolites of the most prominent PFRs, and qualitatively screened for 18 other metabolites predicted from in vitro studies. We detected all 6 DAPs within the range of previously reported levels, although very few comparisons are available. We found weakly positive nonsignificant correlations between urine and dust concentrations and maxima urine corresponding to maxima dust for the pairs bis(1,3-dichloro-2-propyl) phosphate (BDCIPP)-tris(1,3-dichloro-isopropyl) phosphate (TDCIPP) and bis(2-chloroethyl) phosphate (BCEP)-tris(2-chloroethyl) phosphate (TCEP). Metabolite levels of PFRs were correlated for many PFR combinations, suggesting they commonly co-occur. As far as we know, this is the first study to measure these 6 DAP metabolites simultaneously and to detect other PFR metabolites in US urine samples. We recommend biomonitoring studies include these 6 DAPs as well as several additional compounds detected through qualitative screening and previous ADME studies. PFRs represent a class of poorly studied commercial chemicals with widespread exposure and raise concerns for health effects including carcinogenicity and neurotoxicity.

[Read more...](#)

Also see press release on the study from Silent Spring Institute, "[Study measures carcinogenic flame retardants in people](#)".

TURI's Note: From December 5th to December 7th, the documentary film "Toxic Hot Seat" is freely available to watch online. Click [here](#) for details.

Source: [ETH Zurich, December 3, 2014](#)

Author: Angelika Jacobs

Plastic waste is one of today's major environmental concerns. Most types of plastic do not biodegrade but break up into ever smaller pieces while remaining a polymer. Also, most types are made from oil, a rapidly dwindling resource. But there are promising alternatives, and one of them is polylactic acid (PLA): it is biodegradable and made from renewable resources. Manufacturers use PLA for disposable cups, bags and other sorts of packaging. The demand for PLA is constantly rising and has been estimated to reach about one megaton per year by 2020.

The research groups of ETH professors Konrad Hungerbühler and Javier Pérez-Ramírez at the Institute for Chemical and Bioengineering are now introducing a new method to produce lactic acid. The process is more productive, cost-effective and climate-friendly than sugar fermentation, which is the technology currently used to produce lactic acid. The new method's greatest advantage is that it makes use of a waste feedstock: glycerol.

[Read more...](#)

See original article in *Energy & Environmental Science*, "[Environmental and economic assessment of lactic acid production from glycerol using cascade bio- and chemocatalysis](#)".

Also see from *Environmental Leader*, "[EPA Delays Renewable Fuel Mandate](#)".

Endocrine-disrupting Chemicals Alter Thyroid Levels in Pregnancy, May Affect Fetal Brain Development

Source: [UMass Amherst, December 4, 2014](#)

Author: Janet Lathrop

AMHERST, Mass. – A new study led by biologist R. Thomas Zoeller of the University of Massachusetts Amherst provides "the strongest evidence to date" that endocrine disrupting chemicals such as polychlorinated biphenyls (PCBs) found in flame retardant cloth, paint, adhesives and electrical transformers, can interfere with thyroid hormone action in pregnant women and may travel across the placenta to affect the fetus.

Results appeared in an early online edition and in the December print edition of the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*. The paper was honored this week as an "extramural paper of the month" by the National Institute of Environmental Health Sciences.

Zoeller says, "As endocrine-disrupting chemicals, PCBs interfere with the way the thyroid hormone functions, but they don't actually change the amount of the hormone found in the body. Although these effects are largely invisible in scientific studies that only judge thyroid activity by measuring hormone levels, they may be having a real impact on infants' brain development."

[Read more...](#)

See original article in *Journal of Clinical Endocrinology & Metabolism*, "[Endocrine Disruption in Human Placenta: Expression of the Dioxin-Inducible Enzyme, Cyp1a1, Is Correlated With That of Thyroid Hormone-Regulated Genes](#)".

Also see blurb from NIEHS, "[Endocrine-disrupting chemicals interfere with placental thyroid hormone activity](#)".

Toiletry chemicals linked to testicular cancer and male infertility cost EU millions, report says

Source: [The Guardian, December 2, 2014](#)

Author: Damian Carrington

The hormone-mimicking chemicals used routinely in toiletries, cosmetics, medicines, plastics and pesticides cause hundreds of millions of euros of damage to EU citizens every year, according to the first estimate of their economic impact.

The endocrine disruptor compounds (EDCs) are thought to be particularly harmful to male reproductive health and can cause testicular cancer, infertility, deformation of the penis and

undescended testicles.

The new report, from the Nordic Council of Ministers, focuses on the costs of these on health and the ability to work but warns that they "only represent a fraction of the endocrine-related diseases" and does not consider damage to wildlife. Another new study, published in a medical journal, showed an EDC found in anti-perspirants reduced male fertility by 30%.

[Read more...](#)

Access report from the Nordic Council of Ministers, "[The Cost of Inaction - A socioeconomic analysis of costs linked to effects of endocrine disrupting substances on male reproductive health](#)".

Seminar highlights blueprint to a carcinogen-free economy

[Source: Workers Health and Safety Centre, November 17, 2014](#)

"The so-called war on cancer is not going so well," says Dr. David Kriebel, Co-Director, University of Massachusetts Lowell Center for Sustainable Production.

Dr. Kriebel recently led a seminar in Toronto as part of the ongoing Occupational and Environmental Health (OEH) series. He pointed out how the cancer establishment often cites lowering death rates as a sign of progress in the war on cancer. Kriebel, and many others, however point to the continued upward trend in cancer incidence as evidence the war rages on.

U.S. data was shared with seminar participants highlighting examples of specific cancers and age groups experiencing growing rates including the fact teen cancer has risen 30 percent over the past 40 years.

Incidence rates are also rising here in Canada. According to the Canadian Cancer Society more than 190,000 Canadians will be diagnosed with cancer this year up from 149,000 just 10 years ago.

[Read more...](#)

IARC's Review of Carbon Nanotubes: Substantiating Early Warnings of Harm

[Source: Physicians for Social Responsibility, November 20, 2014](#)

Authors: Molly Jacobs, Michael Ellenbecker, Joel Tickner, Polly Hoppin

This fall, the International Agency for Research on Cancer (IARC) convened 21 experts from ten countries to assess the carcinogenicity of carbon nanotubes (CNTs), a class of nanomaterials. What did they find? As published in the October 31, 2014 issue of *The Lancet Oncology Online*, their conclusion was this: there is sufficient evidence from existing toxicological studies to warrant a classification of "possibly carcinogenic to humans (Group 2B)" for one type of CNTs - multi-walled carbon nanotube-7 (MWCNT-7). These IARC findings reveal complexities facing our growing understanding of the hazards posed by CNTs, and the need to act on early predictions of harm.

Current and anticipated uses of engineered carbon nanotubes are numerous and diverse: sporting equipment, anti-static paints, solar cells, wind turbines, disk drives, batteries, biosensors and water filters, among others. CNTs are also being marketed as replacements for known chemicals of high concern, such as halogenated flame retardants in textiles and polymers and tributyltin in anti-fouling paints.

[Read more...](#)

See article in the *The Lancet Oncology*, "[Carcinogenicity of fluoro-edenite, silicon carbide fibres and whiskers, and carbon nanotubes](#)".

Also see from *Particle and Fibre Toxicology*, "[The carcinogenic effect of various multi-walled carbon nanotubes \(MWCNTs\) after intraperitoneal injection in rats](#)".

Green plating of high aspect ratio gold nanotubes and their morphology-dependent performance in enzyme-free peroxide sensing

[Source: RSC Advances, May 23, 2014](#)

Authors: Eva-Maria Felix, Falk Muench, Wolfgang Ensinger

The development of a green electroless plating protocol allowing the homogeneous deposition of

nanoscale gold films on complex shaped substrates is presented. It is based on the environmentally benign reducing agent ascorbic acid and was used for the fabrication of gold nanotubes in porous polymer templates. The key action to achieve well-defined nanotubes of high aspect ratio (>100) was to reduce the reaction rate in order to ensure homogeneous metal deposition within the extended inner surface of the template. Depending on the plating time, nanotubes with porous as well as closed walls could be synthesized, which were characterized by SEM and EDX. Both nanostructure types were successfully implemented in the amperometric detection of hydrogen peroxide. The generally improved performance of the porous nanotubes compared to their closed counterparts was attributed to their better accessible and higher surface area (limit of detection: 2.3 μM vs. 8.2 μM ; maximum of linear range: 11.7 mM vs. 8.0 mM; response time: 3.6 s vs. 5.5 s; sensitivity: 770 $\mu\text{A mM cm}^{-2}$ vs. 360 $\mu\text{A mM cm}^{-2}$). These excellent performance parameters surpass comparable, conventionally synthesized Au nanotube arrays as well as enzyme-modified one-dimensional Au catalysts, proving the high potential of adapted electroless plating reactions for green nanotechnology.

[Read more...](#)

See article on this study in *Phys.Org*, "[Green meets nano: Scientists create multifunctional nanotubes using nontoxic materials](#)".

European Parliament compares EU & US regulatory approaches for nanomaterials

[Source: SafeNano, November 24, 2014](#)

The European Parliament (EP) Committee on Environment, Public Health, and Food Safety (ENVI) has published a study which analyzes the main differences between European Union (EU) and US legislation. This covers eight main subject areas including, amongst others, nanomaterials.

The study highlights that currently in both the EU and the US there is no specific legislation on nanomaterials. Rules for the use of nanomaterials or products containing nanomaterials are implicitly included in general regulations on chemicals. These regulations are Regulation (EC) No 1907/2006 on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) in the EU, and the Toxic Substances Control Act (TSCA) in the US. The TSCA is more flexible regarding the submission of safety data and the use restrictions than REACH. Furthermore, where the US does not include requirements for nanomaterials in other regulations, the EU expressly includes such requirements in product-specific legislation, notably notification and labelling rules for nanomaterials contained in cosmetics, food additives and biocides.

[Read more...](#)

Access report [here](#).

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.

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