

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.

Addressing Hazardous Implications of Additive Manufacturing: Complementing Life Cycle Assessment with a Framework for Evaluating Direct Human Health and Environmental Impacts

[Source: Journal of Industrial Ecology, November 2017](#)

[Author\(s\): Justin Bours, Brian Adzima, Susan Gladwin, Julia Cabral, Serena Mau](#)

Additive manufacturing (AM) is transforming manufacturing technology and the distribution of production capital. As the use of three-dimensional printers begins to extend into homes, schools, and factories, the industry is not well equipped to address the potential for deleterious environmental and health impacts. Proactive assessment tools are needed so that materials developers and designers, printer operators, and print end users can create and choose the most appropriate and safe materials and AM processes based on their use cases. Current life cycle assessments (LCAs) do not provide sufficient information to support materials decisions based on concerns about hazard exposure. To address this shortcoming, we developed a framework that complements LCA with hazard and green design metrics derived from analyzing human health and environmental impacts in the later stages of the AM life cycle. We then identified suitable existing methodologies for evaluation across these stages and synthesized the methodologies into higher-level metrics for comparative analysis of materials. To illustrate the benefits of this framework, we compared two

In This Issue

[Addressing Hazardous Implications of Additive Manufacturing: Complementing Life Cycle Assessment with a Framework for Evaluating Direct Human Health and Environmental Impacts](#)

[New method maps chemicals in the skin](#)

[32nd Annual "Trouble In Toyland" Survey Finds Dangerous Toys on Store Shelves](#)

[The Globally Harmonized System of Classification and Labelling of Chemicals-Explaining the Legal Implementation Gap](#)

[A new order for chemicals: Could a management hierarchy for chemicals like that for waste be in the pipeline?](#)

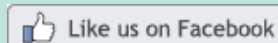
[Report provides global look at e-scrap's toxicity issues](#)

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Quick Links

[Greenlist Bulletin Archives](#)

[TURI Website](#)



TURI WEBINAR: Nanotechnology Use & Implications

Nanotechnology promises a wide range of opportunities for

common AM materials: Autodesk Standard Clear Prototyping Resin (PR48), an open-source formulation used in photopolymerization processing AM, and *bio*-polylactic acid, a ubiquitous, biosourced polymer used in an extrusion-based AM system called fused filament fabrication.

[Read more...](#)

See the [table of contents for the full special issue from the *Journal of Industrial Ecology*, "Environmental Dimensions of Additive Manufacturing and 3D Printing"](#).

See article in *Environmental Leader*, "[3D Printing -- Environmentally Friendly or Not -- Is Coming to a Manufacturer Near You](#)".

innovation in areas like biomedical devices, improved electronic devices, clean energy technology and materials engineering. TURI's research program looks at two aspects of nanotechnology: its possibilities for producing safer alternatives to traditional materials, and its potential impacts on environmental and occupational health. This webinar will provide the latest findings on EH&S issues related to nanotechnology.

Register [HERE](#).

New method maps chemicals in the skin

[Source: Chalmers University, November 29, 2017](#)

A new method of examining the skin can reduce the number of animal experiments while providing new opportunities to develop pharmaceuticals and cosmetics. Chemical imaging allows all layers of the skin to be seen and the presence of virtually any substance in any part of the skin to be measured with a very high degree of precision.

More and more chemicals are being released into our environment. For example, parabens and phthalates are under discussion as two types of chemicals that can affect us. But so far it has not been possible to find out how they are absorbed by the skin. A new study from Chalmers University of Technology and the University of Gothenburg shows how what is termed chemical imaging can provide comprehensive information about the human skin with a very high level of precision.

[Read more...](#)

See original article in *Contact Dermatitis*, "[Imaging mass spectrometry for novel insights into contact allergy - a proof-of-concept study on nickel](#)".

32nd Annual "Trouble In Toyland" Survey Finds Dangerous Toys on Store Shelves

[Source: U.S. PIRG, November 21, 2017](#)

Author: Dev Gowda

Chicago, IL -- Stores nationwide are still offering dangerous and toxic toys this holiday season and, in some cases, ignoring explicit government safety regulations in the process, according to U.S. Public Interest Research Group (PIRG) Education Fund's 32nd annual *Trouble in Toyland* report. The survey of potentially hazardous toys found that, despite recent progress, consumers must still be wary when shopping for children's gifts.

The report exposes fidget spinners full of lead, inadequately-labeled toys and balloons that pose a choking hazard, and data-collecting toys that may violate children's privacy and other consumer protection laws. We also provide a list of toys that have been recalled over the past year.

[Read more...](#)

See November 2017 report, "[Trouble in Toyland: The 32nd Annual Survey of Toy Safety](#)".

The Globally Harmonized System of Classification and Labelling of Chemicals-Explaining the Legal Implementation Gap

[Source: Sustainability, November 25, 2017](#)

Authors: Linn Persson, Sylvia Karlsson-Vinkhuyzen, Adelene Lai, Asa Persson and Stephen Fick

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is a system for classifying and labelling chemicals according to their intrinsic hazardous properties. The GHS is one of the cornerstones of sound chemicals management, an issue consistently on the international sustainable development agenda since 1992. In 2002, it was agreed under the United Nations that all countries should be encouraged to implement the GHS by 2008. However, to date, it is unclear where, how, and to what extent the GHS has been implemented and what factors best explain any differences in implementation coverage. The aim of this paper is to provide a global overview of current GHS implementation status in national legislation using primary and secondary data, and explain differences between countries based on theory on motivational and capacity-related factors for implementation of international standards. We conclude that there seems to be broad support from countries for enhanced international collaboration in the field of sound chemicals management. However, several drivers and barriers for national GHS implementation co-exist, and there is a clear positive correlation between the financial and regulatory capacities of a country and its GHS implementation status. At the same time, our data suggest that it is possible to increase the global implementation coverage by using a combination of motivational and capacity related strategies.

[Read more...](#)

A new order for chemicals: Could a management hierarchy for chemicals like that for waste be in the pipeline?

[Source: Chemical Watch, November 2017](#)

Google the term 'chemical management hierarchy' -- until now, at least -- and you would have found only one hit, as a concept mentioned in a conference paper in the US three years ago. The term could soon become much more common, if a major new study for the European Commission that *Chemical Watch* reported on recently comes to prominence.

Study for the strategy for a non-toxic environment of the 7th Environment Action Programme (EAP) was written by Belgian law firm Milieu, with input from UK-based consultancy RPA, Hamburg-based institute specialising in environmental strategies Ökopol, and RIVM, the Dutch state-funded research institute.

The study was written as part of the Commission's mandate, under the EAP, to develop a strategy for a non-toxic environment by 2018. It emerged in part out of a workshop involving NGOs, industry, EU member states and others. Much of it is a comprehensive overview on the functioning of current EU chemicals policy and legislative framework in seven 'sub-studies'.

The report highlights the shortcomings of the REACH authorisation process in not covering SVHCs in imported articles, plus the fact that hazardous substances will inevitably appear in waste streams and in recycled materials for many years to come, whatever legislation does or does not do.

[Read more...](#)

Access the final report, "[Study for the strategy for a non-toxic environment of the 7th Environment Action Programme](#)".

Report provides global look at e-scrap's toxicity issues

Source: [E-Scrap News, November 16, 2017](#)

Author: Jared Paben

A study takes a wide-ranging look at the health and environmental impacts of improperly managed scrap electronics, and it suggests ways the whole value chain can work to solve the problems.

The analysis, slated to be published in the journal *Environment International* in January, is entitled "Has the question of e-waste opened a Pandora's box? An overview of unpredictable issues and challenges." It was written by researchers from Harvard University, the National Institute for Occupational Safety and Health and Canada's Université de Montréal.

One of the authors, Diana Ceballos of the Harvard T.H. Chan School of Public Health, has conducted research into hazards from toxic substances at e-scrap recycling facilities. ...

The latest paper takes a high-level look at the global issue of e-scrap management and details known toxics and their effects on the human body. It points to testing of polluted recycling sites not just in developing countries but also in the U.S. and Western Europe.

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See study in *Environment International*, "[Has the question of e-waste opened a Pandora's box? An overview of unpredictable issues and challenges](#)".

Greenlist Bulletin is compiled by:
Mary Butow
Research and Reference Specialist
Toxics Use Reduction Institute
University of Massachusetts Lowell
600 Suffolk Street, Wannalancit Mills Suite 501
Lowell, MA 01854-2866
978-934-4365
978-934-3050 (fax)
mary@turi.org