

Greenlist Bulletin

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

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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.



OSHA releases new resources to better protect workers from hazardous chemicals

[Source: U.S. Occupational Safety and Health Administration, October 24, 2013](#)

WASHINGTON -- Each year in the United States, tens of thousands of workers are made sick or die from occupational exposures to the thousands of hazardous chemicals that are used in workplaces every day. The U.S. Department of Labor's Occupational Safety and Health Administration today launched two new web resources to assist companies with keeping their workers safe.

While many chemicals are suspected of being harmful, OSHA's exposure standards are out-of-date and inadequately protective for the small number of chemicals that are regulated in the workplace. The first resource OSHA has created is a toolkit to identify safer chemicals that can be used in place of more hazardous ones. This toolkit walks employers and workers step-by-step through information, methods, tools and guidance to either eliminate hazardous chemicals or make informed substitution decisions in the workplace by finding a safer chemical, material, product or process. . . .

OSHA also created another new web resource: the Annotated Permissible Exposure Limits, or annotated PEL tables, which will enable employers to voluntarily adopt newer, more protective workplace exposure limits. OSHA's PELs set mandatory limits on the amount or concentration of a substance in the air to protect workers against the health effects of certain hazardous chemicals; and OSHA will continue to enforce those mandatory PELs. Since OSHA's adoption of the majority of its PELs more than 40 years ago, new scientific data, industrial experience and developments in technology clearly indicate that in many instances these mandatory limits are not sufficiently protective of workers' health. . . .

The annotated PEL tables provide a side-by-side comparison of OSHA PELs for general industry to the California Division of Occupational Safety and Health PELs, National Institute for Occupational Safety and Health recommended exposure limits,

and American Conference of Governmental Industrial Hygienist threshold limit values.

[Read more...](#)

Access the [toolkit](#).

Access the [annotated PEL tables](#).

Electronic Waste Disassembly with Industrial Waste Heat

[Source: *Environmental Science & Technology*, September 27, 2013](#)

Authors: Mengjun Chen, Jianbo Wang, Haiyan Chen, Oladele A. Ogunseitan, Mingxin Zhang, Hongbin Zang, and Jiukun Hu

Waste printed circuit boards (WPCBs) are resource-rich but hazardous, demanding innovative strategies for post-consumer collection, recycling, and mining for economically precious constituents. A novel technology for disassembling electronic components from WPCBs is proposed, using hot air to melt solders and to separate the components and base boards. An automatic heated-air disassembling equipment was designed to operate at a heating source temperature at a maximum of 260 °C and an inlet pressure of 0.5 MPa. A total of 13 individual WPCBs were subjected to disassembling tests at different preheat temperatures in increments of 20 °C between 80 and 160 °C, heating source temperatures ranging from 220 to 300 °C in increments of 20 °C, and incubation periods of 1, 2, 4, 6, or 8 min. For each experimental treatment, the disassembly efficiency was calculated as the ratio of electronic components released from the board to the total number of its original components. The optimal preheat temperature, heating source temperature, and incubation period to disassemble intact components were 120 °C, 260 °C, and 2 min, respectively. The disassembly rate of small surface mount components (side length ≤ 3 mm) was 40-50% lower than that of other surface mount components and pin through hole components. On the basis of these results, a reproducible and sustainable industrial ecological protocol using steam produced by industrial exhaust heat coupled to electronic-waste recycling is proposed, providing an efficient, promising, and green method for both electronic component recovery and industrial exhaust heat reutilization.

[Read more...](#)

Phthalate Levels in Nursery Schools and Related Factors

[Source: *Environmental Science & Technology*, September 27, 2013](#)

Authors: Won Kim, Inja Choi, Yeonhee Jung, Jihye Lee, Sungjae Min, and Chungsik Yoon

Phthalate esters, which are known endocrine disruptors, are ubiquitously present throughout indoor environments. Leaching from building materials may be a major source of phthalate esters. In this study, we evaluated phthalate ester concentrations in dust samples from 64 classrooms located in 50 nursery schools and explored the critical factors affecting phthalate concentrations, especially with regard to building materials. Dust was sampled by a modified vacuuming method, and building materials were assessed using a portable X-ray fluorescence (XRF) analyzer to determine whether they contained polyvinyl chloride. Di-n-butyl phthalate (DBP), di(2-ethylhexyl) phthalate (DEHP), and di-isononyl phthalate (DINP) were the most frequently detected phthalates. Of these, DEHP was the most abundant phthalate, with a geometric mean of 3170 µg/g dust, and concentrations were significantly correlated with the area of polyvinyl chloride (PVC)-verified flooring. DINP, which has not been well-reported in other studies, was the second-most abundant phthalate, with a geometric mean of 688 µg/g dust, and showed a critical relationship with the number of children in the institution and the agency operating the nursery school. This is the first study to verify the sources of phthalates with an XRF analyzer and to evaluate the relationship between phthalate concentrations and PVC-verified materials.

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Team uses forest waste to develop cheaper, greener supercapacitors

[Source: Illinois Sustainable Technology Center, University of Illinois, October 23, 2013](#)

Author: Diana Yates

CHAMPAIGN, Ill. -- Researchers report that wood-biochar supercapacitors can produce as much power as today's activated-carbon supercapacitors at a fraction of the cost - and with

environmentally friendly byproducts.

"Supercapacitors are power devices very similar to our batteries," said study leader Junhua Jiang, a senior research engineer at the Illinois Sustainable Technology Center at the University of Illinois. While batteries rely on chemical reactions to produce sustained electrical energy, supercapacitors collect charged ions on their electrodes (in this case, the biochar), and quickly release those ions during discharge. This allows them to supply energy in short, powerful bursts - during a camera flash, for example, or in response to peak demand on the energy grid, Jiang said.

"Supercapacitors are ideal for applications needing instant power and can even provide constant power - like batteries, but at lower cost," he said. They are useful in transportation, electronics and solar- and wind-power energy storage and distribution.

Many of today's supercapacitors use activated carbon - usually from a fossil-fuel source, Jiang said.

"Costly and complicated procedures are normally used to develop the microstructures of the carbon - to increase the number of pores and optimize the pore network," he said. "This increases the surface area of the electrode and the pores' ability to rapidly capture and release the ions."

In wood-biochar supercapacitors, the wood's natural pore structure serves as the electrode surface, eliminating the need for advanced techniques to fabricate an elaborate pore structure. Wood biochar is produced by heating wood in low oxygen.

[Read more...](#)

Read article in *Electrochimica Acta*, '[Highly ordered macroporous woody biochar with ultra-high carbon content as supercapacitor electrodes.](#)'

IARC Scientific Publication No. 161: Air Pollution and Cancer

[Source: International Agency for Research on Cancer, 2013](#)

Editors: Kurt Straif, Aaron Cohen, and Jonathan Samet

Emissions from motor vehicles, industrial processes, power generation, the household combustion of solid fuel, and other sources pollute the ambient air across the globe. The precise chemical and physical features of ambient air pollution, which comprises a myriad of individual chemical constituents, vary around the world due to differences in the sources of pollution, climate, and meteorology, but the mixtures of ambient air pollution invariably contain specific chemicals known to be carcinogenic to humans.

Recent estimates suggest that the disease burden due to air pollution is substantial. Exposure to ambient fine particles was recently estimated to have contributed 3.2 million premature deaths worldwide in 2010, due largely to cardiovascular disease, and 223,000 deaths from lung cancer. More than half of the lung cancer deaths attributable to ambient fine particles were projected to have been in China and other East Asian countries.

The IARC Monographs Programme convened a multidisciplinary Advisory Group that included epidemiologists, toxicologists, atmospheric scientists, cancer biologists, and regulators to make recommendations for the development of a series of Monographs on air pollution. This book provides the updated state-of-the-art overviews from this Advisory Group on topics related to exposure characterization, atmospheric and engineering sciences, epidemiological studies on cancer, results of pertinent cancer bioassays, and data elucidating potential mechanisms of carcinogenicity of compounds related to air pollution.

[Read more...](#)

Also read, from *Environmental Science and Technology*, "[Confronting Unknown Planetary Boundary Threats from Chemical Pollution.](#)"

International Lead Poisoning Awareness Week (20 - 26 October 2013)

[Source: United Nations Environment Programme, October 2013](#)

Despite what is known about the health risks arising from lead paint, such paints are still widely available and used in many countries for decorating the interiors and exteriors of homes. It can also be found in paint in public buildings such as schools and hospitals, as well as on toys, toy jewellery, glazes, furniture, and playground equipment.

Lead poisoning is entirely preventable, yet lead exposure is estimated to account for 0.6% of the global burden of disease, with the highest burden in developing regions. Childhood lead exposure is estimated to contribute to about 600,000 new cases of children with intellectual disabilities every year. . . .

The International Week of Action on Prevention of Lead Poisoning (October 20-26th 2013) is aimed at addressing the lack of awareness of this issue. During the campaign week, the Global Alliance to Eliminate Lead Paint aims, among other actions, to:

Raise awareness about lead poisoning:

- Highlight countries and partners' efforts to prevent childhood lead poisoning; and
- Urge further action to eliminate lead paint.

[Read more...](#)

Read more about the [Global Alliance to Eliminate Lead Paint](#) on the UNEP web site.

Read from the *Journal of Protective Coatings and Linings*, "[Is Lead Dead? A Look Back and Look Forward at 20 Years of Bridge Painting Under the OSHA Lead in Construction Interim Final Rule and Other Related Standards.](#)"

and from *Paintsquare.com*, "[WHO Pushes Global Ban on Lead Paint.](#)"

Also read a press release from the U.S. Environmental Protection Agency, "[U.S. National Lead Poisoning Prevention Week Goes Global.](#)"

POPs Committee Recommends Global Action On Two Chemicals; India Blocks Dicofof Ban

[Source: Chemical Regulation Reporter, October 21, 2013](#)

Author: Daniel Pruzin

Oct. 18 -- Scientists have agreed to recommend a global ban on the production and use of two toxic substances deemed to be persistent organic pollutants (POPs) and to advance reviews that could lead to restrictions on two others, but failed to take action on one widely used pesticide due to resistance from India.

Wrapping up an Oct. 14-18 meeting in Rome, the Stockholm Convention's POPs Review Committee (POPRC) agreed to recommend the listing of hexachlorobutadiene (HCB) and chlorinated naphthalenes (CNs) under Annexes A and C of the convention.

Chemicals listed under Annex A are subject to a ban on their production or use, while those under Annex C are subject to measures aimed at reducing or eliminating releases from unintentional production. . . .

The Review Committee also took the first step toward new restrictions on the flame retardant decabromodiphenyl ether (decaBDE) by agreeing that it met the screening criteria for consideration. The committee will now prepare a draft risk profile for decaBDE for consideration at its next annual meeting in 2014. . . .

The Review Committee failed, however, to reach consensus on a European Union proposal for the listing of dicofof, an organochlorine pesticide that is chemically related to DDT. According to the EU, the substance is used in many countries around the world on a wide variety of fruit, vegetables, and ornamental and field crops.

[Read more...](#)

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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