Greenlist Bulletin

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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.

New report: The future of evidence in chemicals policy

Source: The Policy from Science Project, November 5, 2013
Author: Paul Whaley

The report advocates the use of systematic review techniques first developed for use in medicine as a new approach to reviewing evidence in the conduct of chemical risk assessment, in order to strengthen the connection between the decisions made in chemicals policy and the evidence base which supports them.

Chemicals policy is increasingly characterized by controversy rather than consensus. For chemicals such as BPA, [the author sees] a range of opinions as to its safety, from EFSA's position that it poses no threat to health at current exposure levels, to Swedish regulators even banning its use in thermal paper. This diversity of opinion exists in spite of everyone having, at least in theory, access to the same evidence base. . . .

A comparison between EFSA's recent Scientific Opinions on BPA with a scientific approach to reviewing evidence produces a similar result as to that which was seen in medicine: review objectives are not sufficiently clearly stated; there are no pre-published protocols; methods for locating data are not consistently given; the criteria for selecting data for analysis are incompletely stated; how studies are evaluated for quality appears to be neither transparent nor consistent; the synthesis and presentation of results is unclear.

Read more...

View report, Systematic review and the future of evidence in chemicals policy.

Low dose effects of bisphenol A: An integrated review of in vitro, laboratory animal, and epidemiology studies

Source: *Endocrine Disruptors*, October-December 2013
Authors: Laura N Vandenberg, Shelley Ehrlich, Scott M Belcher, Nira Ben-Jonathan, Dana C Dolinoy, Eric R Hugo, Patricia A Hunt, Retha R Newbold, Beverly S Rubin, Katerine S Saili, Ana M

Soto, Hong-Sheng Wang, Frederick S vom Saal

Abstract: In 2007, a group of experts critically analyzed hundreds of publications on bisphenol A (BPA), including the evidence for low dose effects. Here, [the authors] have updated these evaluations to determine the strength of the evidence for low dose effects of BPA. Based on the cut-offs for "low doses" established previously (i.e., the lowest observed adverse effect level [LOAEL], or 50 mg/kg/day for mammalian studies), we identified more than 450 low dose studies. Using an integrative approach, we examined five endpoints in depth that had evidence from two or more study types (in vitro, in vivo laboratory animal, and human). Based on all available studies, we are confident that consistent, reproducible, low dose effects have been demonstrated for BPA. We conclude that the doses that reliably produce effects in animals are 1-4 magnitudes of order lower than the current LOAEL of 50 mg/kg/day and many should be considered adverse.

Read more...

Also read press release, BPA in dialysis machine components may be toxic to patients' cells.

Register for the Green Science Policy webinar with Dr. Carol Kwiatkowski of The Endocrine Disruption Exchange, Inc., November 12 at 2pm EST, "Plasticizers & Endocrine Disruptors".

TURI's Note: Liz Harriman, TURI's Deputy Director, will be presenting a Green Science Policy webinar about "Solvents" on November 19 at 2pm EST.

Companies close to reusing the greenhouse gas carbon dioxide

Source: American Chemical Society, November 6, 2013

Reusing the major greenhouse gas carbon dioxide (CO_2) from industrial plants -- rather than releasing its warming potential into the environment -- is on the verge of becoming a commercial reality. Several large chemical companies in Germany and small start-ups in the U.S. are leading the way, according to an article in *Chemical & Engineering News*, the weekly newsmagazine of the American Chemical Society.

Alex Scott, *C&EN's* senior editor for Europe, points out that German firms are at the forefront thanks partly to an infusion of cash from the government encouraging academic-industrial collaborations to develop CO_2-based processes. Within the next few years, chemical giants including BASF and Bayer expect to roll out new processes to use waste CO_2 to make plastics, additives, fuels and other materials in an energy-efficient and cost-effective way.

The article notes that unlike their established counterparts across the Atlantic, the U.S. pioneers in this burgeoning sector are start-ups. Illinois-based LanzaTech is developing a process to convert CO_2 back into useful chemicals such as acetic acid, an important substance used in industrial processes. Novomer, based in Massachusetts, plans to commercialize its products, including a raw material for plastics, as early as next year.

Read article in *Chemical & Engineering News*, Carbon Dioxide-To-Chemical Processes Poised For Commercialization.

United States Joins Minamata Convention on Mercury

Source: U.S. Department of State, November 6, 2013

On behalf of the United States, Dr. Kerri-Ann Jones, Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, signed on November 6 the Minamata Convention on Mercury and deposited the U.S. Instrument of Acceptance to enable the United States to become a party to the Convention. Assistant Secretary Jones was scheduled to sign the Minamata Convention on October 10 at the Conference of Plenipotentiaries in Kumamoto Prefecture, Japan, but U.S. participation in that meeting, which took place during the partial government shutdown, was cancelled.

The Minamata Convention represents a global step forward to reduce exposure to mercury, a toxic chemical with significant health effects on the brain and nervous system. The United States has already taken significant steps to reduce the amount of mercury we generate and release to the environment, and can implement Convention obligations under existing legislative and regulatory authority. The Minamata Convention complements domestic measures by addressing the transnational nature of the problem.

Also read a press release from the United Nations Environment Programme, Global Treaty on Mercury Pollution Gets Boost from United States.

Burning biomass pellets instead of wood or plants in China could lower mercury emissions

Source: American Chemical Society, November 6, 2013

For millions of homes, plants, wood and other types of "biomass" serve as an essential source of fuel, especially in developing countries, but their mercury content has raised flags among environmentalists and researchers. Scientists are now reporting that among dozens of sources of biomass, processed pellets burned under realistic conditions in China emit relatively low levels of the potentially harmful substance. The report was published in the ACS journal *Energy & Fuels*.

Xuejun Wang and colleagues explain that mercury is associated with health problems, particularly in children. But reducing exposure to mercury remains a huge challenge. In 2010 alone, coal-fired power plants, gold mining, the burning of biomass for fuel and other sources generated about 2,000 tons of mercury emissions around the world. In China, biomass such as plants and wood contributes to nearly a third of the energy used in the nation's rural areas. To take steps to reduce mercury emissions, however, researchers first need know how much of the substance comes from burning different types of biomass. The problem is that previous estimates were based on data measured in industrialized countries, which may not be accurate for other locations. To get a clearer picture of what's happening in China, Wang's team took measurements there with biomass sources and stoves that rural residents actually use to cook and keep themselves warm.

Read more...

Read the corresponding article in *Energy & Fuels*, Emission of Speciated Mercury from Residential Biomass Fuel Combustion in China.

Also read an article in *The Daily Illini*, Environmentally friendly energy discovered in wood biochar.

Organochlorine Pesticides and Risk of Endometriosis: Findings from a Population-Based Case-Control Study

Source: *Environmental Health Perspectives*, November 5, 2013
Authors: Kristen Upson, Anneclaire J. De Roos, Mary Lou Thompson, Sheela Sathyanarayana, Delia Scholes, Dana Boyd Barr, and Victoria L. Holt

Background: Endometriosis is considered an estrogen-dependent disease. Persistent environmental chemicals that exhibit hormonal properties, such as organochlorine pesticides (OCPs), may affect endometriosis risk.

Objectives: We investigated endometriosis risk in relation to environmental exposure to OCPs. . . .

Conclusions: In our case-control study of women enrolled in a large healthcare system in the U.S. Pacific Northwest, serum concentrations of β-HCH and mirex were positively associated with endometriosis. Extensive past use of environmentally persistent OCPs in the United States or present use in other countries may impact the health of reproductive-age women.

Read more...

Read article in *Environmental Health News* based on the study, Banned pesticides linked to endometriosis.

Clean Air Act has led to improved water quality in the Chesapeake Bay watershed

Source: University of Maryland - Center for Environmental Science, November 6, 2013

FROSTBURG, MD -- A new study shows that the reduction of pollution emissions from power plants in the mid-Atlantic is making an impact on the quality of the water that ends up in the Chesapeake Bay. The study by scientists at the University of Maryland Center for Environmental Science confirms that as the amount of emissions of nitrogen oxide from coal-fired power plants declined in response to the Clean Air Act, the amount of nitrogen pollution found in the waterways of forested areas in Pennsylvania, Maryland and Virginia fell as well.

"When we set out to reduce nitrogen pollution to the Chesapeake Bay, deposition of nitrogen resulting

from air pollution on the watershed was considered uncontrollable," said Donald Boesch, president of the University of Maryland Center for Environmental Science. "This study shows that improvements in air quality provided benefits to water quality that we were not counting on."

Researchers evaluated long-term water quality trends for nine forested mountain watersheds located along the spine of the Appalachian Mountains from Pennsylvania to southern Virginia over a 23-year period (1986 to 2009). The sampling began slightly before the Clean Air Act of 1990 imposed controls on power plant emissions to reduce nitrogen oxide pollution through its Acid Rain Program. According to the EPA, total human-caused nitrogen oxide emissions declined 32% from 1997 to 2005 in 20 eastern U.S. states that participated in the program.

Read more...

View study in *Environmental Science & Technology,* Surface Water Quality is Improving due to Declining Atmospheric N Deposition.

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.

Greenlist Bulletin is compiled by:

Mary Butow
Research and Reference Specialist
Toxics Use Reduction Institute
University of Massachusetts Lowell
600 Suffolk St., Wannalancit Mills
Lowell MA 01854
978-934-4365
978-934-3050 (fax)
mary@turi.org