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The Applicability of Chemical Alternatives Assessment for Engineered Nanomaterials

Source: [Integrated Environmental Assessment and Management](#), February 2016

Authors: Rune Hjorth, Steffen Foss Hansen, Molly Jacobs, Joel Tickner, Michael Ellenbecker and Anders Baun

The use of alternatives assessment to substitute hazardous chemicals with inherently safer options is gaining momentum worldwide as a legislative and corporate strategy to minimize consumer, occupational, and environmental risks. Engineered nanomaterials represent an interesting case for alternatives assessment approaches, because they can be considered both emerging "chemicals" of concern, as well as potentially safer alternatives to hazardous chemicals. However, comparing the hazards of nanomaterials to traditional chemicals or to other nanomaterials is challenging, and critical elements in chemical hazard and exposure assessment may have to be fundamentally altered to sufficiently address nanomaterials. The aim of this paper is to assess the overall applicability of alternatives assessment methods for nanomaterials and to outline recommendations to enhance their use in this context. The present paper focuses on the adaptability of existing hazard and exposure assessment approaches to engineered nanomaterials as well as strategies to design inherently safer nanomaterials.

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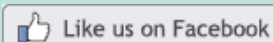
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How a competitor's data can help your company cut pollution

Source: [GreenBiz.com, April 14, 2016](#)

Authors: Kara Koehm and Dave Turk

Companies looking for ways to reduce pollution need look no further than the Environmental Protection Agency.

The EPA's Toxics Release Inventory (TRI) Program has been collecting and distributing information about pollution prevention (P2) activities implemented at industrial facilities since the early 1990s.

Recently, the TRI Program has improved the quality, accessibility and usefulness of its P2 data. For example, the data includes information on green chemistry and barriers to implementing P2. Additionally, EPA has made it easy to view P2 trends and specific activities performed by facilities by providing the TRI Pollution Prevention Search Tool.

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New seaweed-based material could eliminate plastic in packaging

Source: [Plastics Today, March 15, 2016](#)

Author: Kari Embree

Japanese design firm AMAM is developing a more environmentally friendly way to package goods without using plastic. Called Agar Plasticity, the product is derived from agar, a gelatinous material that can be readily found in red marine algae. The design team's project is one of four finalists for the 2016 Lexus Design Award, which is a contest that pairs each team with a design mentor to create a prototype for Milan Design Week.

Traditionally consumed as food in Japan, seaweed-derived agar has been used in scientific and medical applications across the globe. Because of its porous, lightweight, feathery structure the team took notice of these features and have been exploring its possibility as packaging material.

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Also see article in *Quartz*, "[Forget bubble wrap, the future of packaging is marine algae](#)".

Dow Research Earns Industry Accolades

Source: [PaintSquare, April 14, 2016](#)

Erin Vogel, Ph.D., research scientist for industrial coatings at Dow Coating Materials, a business unit of The Dow Chemical Company, accepted the American Coatings Award from the American Coatings Association and partner Vincentz Network during the conference's plenary session, Monday (April 11), the company announced. ...

Vogel's technical paper details the development of new alkyd chemistry offerings to help solve the industry challenge of developing environmentally friendly alkyd-based paints and coatings that resist corrosion, adhere well and remain glossy. ...

According to Dow, market trends have favored solvent-borne alkyds, particularly in industrial coatings, because of their fast hardness development, high gloss, excellent adhesion and overall corrosion protection. Despite these performance properties solvent-borne alkyd coatings contain volatile organic compounds (VOCs) that enter the

air as coatings dry.

In contrast, waterborne alkyd coatings have low- and near-zero VOC capabilities, but developing waterborne alkyd chemistries that perform well has remained challenging because alkyds do not mix with water, the company said.

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See abstract of Dr. Vogel's award-winning paper, "[Ultra-Low VOC Waterborne Alkyd Dispersions with Solvent-borne Alkyd Performance](#)".

Fast food may increase exposure to harmful chemicals

Source: [Boston.com, April 14, 2016](#)

Author: Dialynn Dwyer

You may be getting more than fries with your burger.

Consuming fast food may increase your exposure to harmful chemicals called phthalates, STAT reports.

Phthalates are commonly found in food packaging and used in the production of fast food, according to STAT. Looking at data from 9,000 participants reporting their diet for the past 24 hours, researchers recently found the more fast food the person consumed, the higher the level of phthalates found in their urine samples.

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See from Center for Science In The Public Interest, "[FDA Considers Action to Eliminate Toxic Chemicals in Food Packaging](#)".

Also see article from Separationsnow.com, "[Exposing the toxic whitening agents in food packaging](#)", based on research in the *Journal of Separation Science*, "[Ionic liquid as a mobile phase additive in high-performance liquid chromatography for the simultaneous determination of eleven fluorescent whitening agents in paper materials](#)".

GHS Chemical Labeling Deadline Looms. Is Your Company in Compliance?

Source: [Environmental Leader, April 15, 2016](#)

Author: Jessica Lyons Hardcastle

US companies have until June 1 to update their workplace chemical labels to comply with the Globally Harmonized System (GHS).

GHS, which was established by the United Nations, aims to standardize the way hazardous chemicals are identified and labeled. OSHA set the US deadline, and says the new standard covers over 43 million workers who produce or handle hazardous chemicals in more than 5 million workplaces across the country.

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Bisphenol A, Bisphenol S, and 4-Hydroxyphenyl 4-Isopropoxyphenylsulfone (BPSIP) in Urine and Blood of Cashiers

Source: [Environmental Health Perspectives, April 2016](#)

Authors: Kristina A. Thayer, Kyla W. Taylor, Stavros Garantziotis, Shepherd H. Schurman, Grace E. Kissling, Dawn Hunt, Brenda Herbert, Rebecca Church, Rachael Jankowich, Mona I. Churchwell, Richard C. Scheri, Linda S. Birnbaum, and John R. Bucher

Background: Bisphenol A (BPA) is a high-production-volume chemical associated with a wide range of health outcomes in animal and human studies. BPA is used as a developer in thermal paper products, including cash register receipt paper; however, little is known about exposure of cashiers to BPA and alternative compounds in receipt paper.

Objective: We determined whether handling receipt paper results in measurable absorption of BPA or the BPA alternatives bisphenol S (BPS) and 4-hydroxyphenyl 4-isopropoxyphenylsulfone (BPSIP). ...

Results: Each receipt contained 1-2% by weight of the paper of BPA, BPS, or BPSIP. The post-shift geometric mean total urinary BPS concentration was significantly higher than the pre-shift mean in 33 cashiers who handled receipts containing BPS. The mean urine BPA concentrations in 31 cashiers who handled BPA receipts were as likely to decrease as to increase after a shift, but the mean post-shift concentrations were significantly higher than those in non-cashiers. BPSIP was detected more frequently in the urine of cashiers handling BPSIP receipts than in the urine of non-cashiers. Only a few cashiers had detectable levels of total BPA or BPS in serum, whereas BPSIP tended to be detected more frequently.

Conclusions: Thermal receipt paper is a potential source of occupational exposure to BPA, BPS, and BPSIP.

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Garden-care giant to drop chemicals linked to bee declines

Source: [89.3 KPCC, April 12, 2016](#)

Author: Dan Elliott

Amid ominous warnings about threats to pollinators and the food crops they make possible, garden-care giant Ortho said Tuesday it will stop using a class of chemicals widely believed to harm the most important pollinators of all: bees.

The company plans to phase out chemicals known as neonicotinoids by 2021 in eight of its products used to control garden pests and diseases.

Ortho is believed to be the first garden products brand to announce it will stop using the chemicals, said Lori Ann Burd, director of the Environmental Health Program at the Center for Biological Diversity.

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Human Exposure to Wastewater-Derived Pharmaceuticals in Fresh Produce: A Randomized Controlled Trial Focusing on Carbamazepine

Source: [Environmental Science & Technology, March 29, 2016](#)

Authors: Ora Paltiel, Ganna Fedorova, Galit Tadmor, Geffen Kleinstern, Yehoshua Maor, and Benny Chefetz

Fresh water scarcity has led to increased use of reclaimed wastewater as an alternative and reliable source for crop irrigation. Beyond microbiological safety, concerns have been raised regarding contamination of reclaimed wastewater by xenobiotics including

pharmaceuticals. This study focuses on carbamazepine, an anticonvulsant drug which is ubiquitously detected in reclaimed wastewater, highly persistent in soil, and taken up by crops. In a randomized controlled trial we demonstrate that healthy individuals consuming reclaimed wastewater-irrigated produce excreted carbamazepine and its metabolites in their urine, while subjects consuming fresh water-irrigated produce excreted undetectable or significantly lower levels of carbamazepine. We also report that the carbamazepine metabolite pattern at this low exposure level differed from that observed at therapeutic doses. This "proof of concept" study demonstrates that human exposure to xenobiotics occurs through ingestion of reclaimed wastewater-irrigated produce, providing real world data which could guide risk assessments and policy designed to ensure the safe use of wastewater for crop irrigation.

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