

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](mailto:mary@turi.org) if you would like more information on any of the articles listed here, or if this email is not displaying properly.

## **NIOSH releases skin-hazard profiles on nine chemicals**

[Source: Safety + Health, August 30, 2017](#)

Washington -- NIOSH has published nine new skin notation profiles to "alert workers and employers to the health risks of skin exposures to chemicals in the workplace."

Each profile provides supplemental information to the skin notation -- in particular, specific hazards to skin from a certain chemical -- including a summary of the relevant data used to help determine these hazards.

The new profiles are:

- Arsenic and inorganic arsenic containing compounds
- Disulfoton
- Heptachlor
- 1-Bromopropane
- 2-Hydroxypropyl acrylate
- Dimethyl sulfate
- Tetraethyl lead
- Tetramethyl lead
- Trichloroethylene

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Also see the NIOSH page on [Skin Notation \(SK\) Profiles](#).

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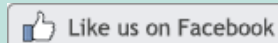
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## Air quality in "green" housing affected by toxic chemicals in building materials

[Source: Silent Spring Institute, September 12, 2017](#)

Indoor air pollution can be a problem in many homes, even in eco-friendly buildings. Thanks to a new innovative study ... led by Silent Spring Institute, researchers have a better idea of where these pollutants come from -- which ones come from chemicals leaching out of building materials and which ones from the personal items people bring into their homes. The findings could inform the development of new green building standards and lead to healthier housing, especially for low-income communities.

"Most buildings aren't designed with people's health in mind," says lead author Robin Dodson, an environmental exposure scientist at Silent Spring Institute. "Yet, indoor air pollution can lead to a range of health problems." To identify the major sources of pollution, she and her colleagues collected air and dust samples inside newly-renovated subsidized housing in the City of Boston, before and after residents moved in. The units were renovated to meet certain "green" standards, mainly focused on energy efficiency. "This is the first study to look at air pollutants pre- and post-occupancy, allowing us to really hone in on the sources."

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See original article in *Environment International*, "[Chemical exposures in recently renovated low-income housing: Influence of building materials and occupant activities](#)".

## Nurses' regular use of disinfectants is associated with developing COPD

[Source: European Respiratory Society, September 13, 2017](#)

Milan, Italy -- Regular use of disinfectants is linked to a higher risk of developing chronic obstructive pulmonary disease (COPD), according to new research looking at incidence of the disease in over 55,000 nurses in the USA.

Dr. Oriane Dumas (PhD) from INSERM, Villejuif, France, will tell the European Respiratory Society International Congress ... that certain tasks involving frequent exposure to disinfectants, such as cleaning surfaces, and specific chemicals in disinfectants, were associated with a 22% to 32% increased risk of developing COPD.

Dr. Dumas and her colleagues analysed data from 55,185 female registered nurses enrolled in the US Nurses' Health Study II, which started in 1989. They looked at those nurses who were still in a nursing job and with no history of COPD in 2009, and then followed them for approximately eight years until May 2017. During that time 663 nurses were diagnosed with COPD. The nurses' exposure to disinfectants was evaluated via a questionnaire and a matrix that assigns exposure to disinfectants by job or task. The results were adjusted for factors that might affect the outcome, such as smoking, age, body mass index and ethnicity.

"We found that nurses who use disinfectants to clean surfaces on a regular basis -- at least once a week -- had a 22% increased risk of developing COPD," says Dr. Dumas. "There was a suggestion of a link with the weekly use of disinfectants to clean instruments but this was not statistically significant."

The researchers also looked at exposure to specific disinfectants: glutaraldehyde (a strong disinfectant used for medical instruments), bleach, hydrogen peroxide, alcohol and quaternary ammonium compounds (known as "quats", mainly used for low-level disinfection of surfaces such as floors and furniture). All of these were associated with an

increased risk of COPD of between 24% to 32%.

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Also see from *MedPage Today*, "[CDC: Highest Asthma Rates in Healthcare Workers - State-specific analysis showed wide variation in asthma prevalence by industry](#)".

## California passes cleaning product disclosure bill

*Source: Chemical Watch, September 14, 2017*

California's legislature has passed a bill that would require increased disclosure of ingredients in cleaning products. The development comes after stakeholder negotiations produced a compromise that addressed industry concerns about protecting confidential business information (CBI).

Governor Jerry Brown is expected to sign the measure, whose final version was approved by the Assembly on 12 September and the Senate a day later.

The original Cleaning Product Right to Know Act (SB 258) would have required manufacturers to list all ingredients on the label, indicate any that are "contaminants of concern", and include a pictogram communicating health concerns.

The final version requires no pictogram and the listing on the label of only those chemicals that are "of concern" because they appear on any of 23 specified lists of toxicants, maintained by the state or federal agencies in the US and other countries. The labels must also contain a website address where the full list of product ingredients can be found.

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## An Intuitive Approach for Predicting Potential Human Health Risk with the Tox21 10k Library

*Source: Environmental Science & Technology, August 15, 2017*

Authors: Nisha Sipes, John Wambaugh, Robert Pearce, Scott Auerbach, Barbara Wetmore, Jui-Hua Hsieh, Andrew Shapiro, Daniel Svoboda, Michael DeVito, and Stephen Ferguson

In vitro-in vivo extrapolation (IVIVE) analyses translating high-throughput screening (HTS) data to human relevance have been limited. This study represents the first report applying IVIVE approaches and exposure comparisons using the entirety of the Tox21 federal collaboration chemical screening data, incorporating assay response efficacy and quality of concentration-response fits, and providing quantitative anchoring to first address the likelihood of human in vivo interactions with Tox21 compounds. This likelihood was assessed using a maximum blood concentration to in vitro response ratio approach ( $C_{max}/AC_{50}$ ), analogous to decision-making methods for clinical drug-drug interactions. Fraction unbound in plasma ( $f_{up}$ ) and intrinsic hepatic clearance ( $CL_{int}$ ) parameters were estimated in silico and incorporated in a three-compartment toxicokinetic (TK) model to first predict  $C_{max}$  for in vivo corroboration using therapeutic scenarios. Toward lower exposure scenarios, 36 compounds of 3,925 unique chemicals with curated activity in the HTS data using high-quality dose-response model fits and  $\geq 40\%$  efficacy gave "possible" human in vivo interaction likelihoods lower than median human exposures predicted in the United States Environmental Protection Agency's ExpoCast program. A publicly available web application has been designed to provide all Tox21-ToxCast dose-likelihood predictions. Overall, this approach provides an intuitive framework to relate in vitro toxicology data rapidly and quantitatively to exposures using either in vitro or in silico derived TK parameters and can be thought of as an important

step toward estimating plausible biological interactions in a high-throughput risk-assessment framework.

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