

# Greenlist Bulletin

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

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**Researchers harness nature to produce the fuel of the future**

[Source: Princeton University, January 30, 2013](#)

Author: Catherine Zandonella

Hydrogen has tremendous potential as an eco-friendly fuel, but it is expensive to produce. Now researchers at Princeton University and Rutgers University have moved a step closer to harnessing nature to produce hydrogen for us.

The team, led by Princeton chemistry professor Annabella Selloni, takes inspiration from bacteria that make hydrogen from water using enzymes called di-iron hydrogenases. Selloni's team uses computer models to figure out how to incorporate the magic of these enzymes into the design of practical synthetic catalysts that humans can use to produce hydrogen from water.

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View abstract for original article in the *Proceedings of the National Academy of Sciences*, "[Oxygen tolerance of an in silico-designed bioinspired hydrogen-evolving catalyst in water.](#)"

## EPA Bans Reckitt Benckiser Rat Baits

[Source: Environmental Leader, January 31, 2013](#)

Twelve D-Con brand mouse and rat poison products produced by Reckitt Benckiser are to be banned by the EPA, and two new products denied approval, because they fail to comply with current safety standards set by the agency.

About 10,000 children a year are accidentally exposed to mouse and rat baits, and the EPA says it expects the ban to substantially reduce that exposure.

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### Flame retardants may leach from your walls

[Source: San Francisco Chronicle, February 4, 2013](#)

Author: Stephanie M. Lee

Couches throughout the nation have become notorious for containing flame-retardant chemicals that may do more harm than good.

Now, it turns out, those chemicals may also be leaching from the walls that surround you.

Because of laws passed in the 1970s, many homes and workplaces built in the United States since then contain foam insulation doused with flame retardants.

Not only are these substances potentially hazardous, but they also often do not make a structure any safer from fire, say researchers from UC Berkeley, Lawrence Berkeley National Laboratory and other institutions, in a study published in November.

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### ORNL scientists solve mercury mystery, Science reports

[Source: Oak Ridge National Laboratory, February 8, 2013](#)

OAK RIDGE, TN – By identifying two genes required for transforming inorganic into organic mercury, which is far more toxic, scientists today have taken a significant step toward protecting human health.

The question of how methylmercury, an organic form of mercury, is produced by natural processes in the environment has stumped scientists for decades, but a team led by researchers at Oak Ridge National Laboratory has solved the puzzle. Results of the study, published in the journal *Science*, provide the genetic basis for this process, known as microbial mercury methylation, and have far-reaching implications.

"Until now, we did not know how the bacteria convert mercury from natural and industrial processes into methylmercury," said ORNL's Liyuan Liang, a co-author and leader of a large Department of Energy-funded mercury research program that includes researchers from the University of Missouri-Columbia and University of Tennessee.

"This newly gained knowledge will allow scientists to study proteins responsible for the conversion process and learn what controls the activity," said Liang, adding that it may lead to ways of limiting methylmercury production in the environment.


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### Greener Method to a Manganese Oxygen Reduction Reaction Electrocatalyst: Anion Electrolyte Effects on Electrocatalytic Performance

[Source: ACS Sustainable Chemistry & Engineering, January 24, 2013](#)

Authors: Garrett G. W. Lee and Shelley D. Minteer

Efforts to reduce the cost of production and reduce hazards associated with catalyst production, as well as improve catalytic performance of fuel cells, is increasingly gaining attention in chemistry, materials science, and chemical engineering. Costs, particularly of the catalyst system, are incurred in each step of production, including raw materials and their processing, catalyst preparation, and immobilization on electrodes. Here is described a low-temperature neutral pH method of electrodepositing a manganese oxygen-reducing electrocatalyst for alkaline fuel cell systems. The analysis emphasizes the effects of anions used during the deposition process and their effect on catalytic performance.



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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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