

Green Chemistry: An Interdisciplinary Approach to Sustainability

A Course Developed at the
Berkeley Center for Green Chemistry
University of California at Berkeley
Spring Semester 2013

Course Readings, Supplemental Readings and Materials

- Iles and Mulvihill, "Collaboration Across Disciplines for Sustainability: Green Chemistry as an Emerging Multistakeholder Community, *Environmental Science & Technology* (May 2012).
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- James H. Clark, Rafael Luque, and Avtar S. Matharu, "Green Chemistry, Biofuels, and Biorefinery" *Annual Reviews of Chemistry and Biomolecular Engineering*, **2012**, 183-207.
- Small dose of toxicology: Principles of Toxicology (Chapter 2)
- Joseph H. Guth, "Two Rules For Decisions: Trust In Economic Growth Vs. Precaution," *Rachel's Democracy & Health News* #919 (August 19, 2007), <http://www.sehn.org/lawpdf/DecisionRules.pdf>
- Several sections of Presidential Executive Order 12866, "Regulatory Planning and Review" (58 FR 51735; October 4, 1993): Read §§ 1(a) and (b), particularly §1(b)(6) (federal agencies must justify rules using CBA), <http://www.reginfo.gov/public/>.
- Several Sections of U.S. Toxic Substances Control Act: (i) 15 U.S.C. Sec. 2605(a) "Scope of Regulation" (especially the first paragraph), (ii) Sec. 2605(c)(1) "Promulgation of subsection (a) rules," <http://uscode.house.gov/download/pls/15C53.txt>
- Wallace E. Tyner, "The UU Ethanol and Biofuels Boom: Its Origins, Current Status, and Future Prospects," *BioScience*, 58(7): 646-653 (2008).
- Solecki et als, "Advanced Biofuel Market Report 2012: Meeting U.S. Fuel Standards" *Environmental Entrepreneurs* (2012).
- David Biello, "The False Promise of Biofuels," *Scientific American* (Aug. 2011), 58-65.

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- Buyx and Tait. "Biofuels: ethics and policy-making." *Biofuels, Bioproducts, and Biorefining*. 2011 5(6): 631–639. (this is a summary of the Nuffield Council report).
- Wingspread Statement of Precautionary Principle <http://www.sehn.org/state.html>
- Cass R. Sunstein, "Throwing precaution to the wind -- Why the 'Safe' Choice Can Be Dangerous," ***Boston Globe*** (July 13, 2008). http://www.boston.com/bostonglobe/ideas/articles/2008/07/13/throwing_precaution_to_the_wind
- Dana Kralisch, Christin Staffel, Denise Ott, Samir Bensaid, Guido Saracco, Pierluigi Bellantoni and Patrick Loeb, "Process design accompanying life cycle management and risk analysis as a decision support tool for sustainable biodiesel production," *Green Chemistry*, **2012**, 10.1039/c2gc36410g.
- Sections 5-8 of the *Energy and Society: Toolkit 2 Back of the Envelope Calculations*, by Dan Kammen for the Energy and Society Class.
- Review the [OEHHA Hazard Traits, Ecological and toxicological endpoints](#).
- Review the Green Screen for Safer Chemicals [Hazard Criteria](#)
- Judson, R. "Differential Toxicity Characterization of Green Alternative Chemicals," *Handbook of Green Chemistry Volume 9: Green Processes*, First Edition. Edited by Robert Boethling and Adelina Voutchkova (2012).
- Phuong J, Kim S, Thomas R, and Zhang L. "Predicted Toxicity of the Biofuel Candidate 2,5-Dimethylfuran in Environmental and Biological Systems." *Environmental and Molecular Mutagenesis* 53:478-487 (2012).
- Safer Consumer Products: Summary of Proposed Regulations Z-2012-0717-04
- Stephen C. DeVito, "Structural and Toxic Mechanism-Based Approaches to Designing Safer Chemicals" in Robert Boethling and Adelina Voutchkov, *Handbook of Green Chemistry Vol. 9: Green Processes* (2012)
- Robert D. Combes, "In Silico Methods for Toxicity Predictions," in Michael Balls et als (eds), *New Technologies for Toxicity Testing*, edited by Michael Balls, Robert D. Combes,(2012).
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- Carbon Intensity Lookup Table for Gasoline and Fuels that Substitute for Gasoline
- Daniel L Villeneuve and Gerald T Akley, "Toxicogenomics Applied to Ecological Risk Assessment," in Darrell R. Boverhof and B. Bhaskar Gollapudi (eds), *Applications of Toxicogenomics in Safety Evaluation and Risk Assessment* (2011)
- Laura M. Plunkett et als, "An Enhanced Tiered Toxicity Testing Framework with Triggers for Assessing Hazards and Risks of Commodity Chemicals," *Regulatory Toxicology and Pharmacology* 58 (2010), 382-394.

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- Dina Fine Maron, "Much-Touted Cellulosic Ethanol is Late in Making Mandated Appearance," *ClimateWire*, Jan. 11, 2011.
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- Wallace E. Tyner, "Comparison of US and EU Approaches to Stimulating Biofuels," *Biofuels* 1 (1) (2010), 19-21.
- Jadwiga Ziolkowska, "Targets and Mandates: Lessons Learned from EU and US Biofuels Policy Mechanisms," *AgBioForum*, 13(4) (2010), 398-412.
- EPA Office of Research and Development, "EPA and Biofuels: A Primer on EPA's Authorities, Responsibilities, and Research."
- EPA, "Environmental Laws Applicable to Construction and Operation of Biodiesel Production Facilities," Nov. 2008 EPA-908-B-08-001.
- Theresa Selfa, "Global Benefits, Local Burdens? The Paradox of Governing Biofuels Production in Kansas and Iowa," *Renewable Agriculture and Food Systems*: 25(2): 120-142 (2010).
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