

Thinking Green

While Teaching Science



How we got started

- Skyline High School - Ann Arbor, Michigan
- LEED certified building
- Geo-thermal
- Recycled materials
- Wind Turbine



How we got started

- Motion Sensor lights
- Waterless urinals
- Retention ponds
- Planting of native plants
- Restoration of wetlands



Science at Skyline

- ACIS I and ACIS II
- Accelerated Integrated Science - 9th and 10th
- Sustainable/Green Chemistry
- Third trimester 10th
- Advanced Sustainable/Green Chemistry -11th
- Environmental Science and Ecology - 12th



Science at Skyline

- ACIS I and ACIS II
- Skyline's environmental impact research - 9th
 - Movement of wetlands
 - Salamander population count
 - Cameras in woods tracking wildlife
- Energy for the Future - 10th



Science at Skyline

- Sustainable/Green Chemistry
 - What are the 12 principles of Green Chemistry?
 - In industry
 - In a high school chemistry course
 - What are green chemistry technologies
 - Blackberry solar cells
 - Super critical carbon dioxide for extraction of orange oil



How does Green Chemistry works towards SUSTAINABILITY?

- Making chemical products that do not harm either our health or the environment.
- Using industrial processes that reduce or eliminate hazardous chemicals.
- Designing more efficient processes that minimize the production of waste materials and decreases the amount of non-renewable energy used.
- Green technology must address the three E's
 - Social Equity
 - Economics
 - Environment

The Footprint of a Chemistry Teacher

- Science teachers are acutely aware of the environment.
- We also have a footprint in our chemistry classrooms that can have a profound effect on the earth.
- We tend to conduct labs with very little thought as to the impact of our classroom on the environment.

Two most important topics that are missing in most chemistry courses in lab work

- Toxicity
- Impact on the environment



Chemistry in the 21st Century

- Before we begin an experiment: How have our starting materials been made?
- Can we trace them back to renewable resources?
- How much waste is generated from the process?
- What happens to our waste?
- From where do we get the energy needed for the reaction and how is it generated?
- Finally we will end up with a complete picture of not only what happens in our experiment but how our reaction interacts with the environment.
- In most cases it will be difficult to determine all parameters in exact measures, but even rough estimates allow the identification of problems and opportunities for improvement.
- Asking these questions in our laboratory courses will change the way students look at a chemical reaction and prepare them much better for the professional tasks.

ChemEd
2011



July 24-28, 2011

Chemistry Grows in Michigan
Western Michigan University

ChemEd Conferences

- Biennial Conference
- Chemistry teachers from around the country
- Committee is working on themes for each day of conference

Theme Ideas

- Green Chemistry
- Chemistry of Food
- Chemistry of Agriculture
- Chemistry of Materials



What is needed

- Sponsors
- Plenary Speakers
- Volunteers
- Green Chemistry workshop before or after conference



Questions?

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