




Green Chemistry - Discussion

Breakout Session 1



Green Chemistry - a buzz word we've all heard

- Benefits of incorporating Green Chemistry in laboratory practice?
 - More positive perception of Chemistry
 - Increased enrollment

What is Green Chemistry?

- Replace conventional reactions with “greener” ones
 - Lower impact on human health and on the environment
- Using greener solvents – eg. Water, liquid CO₂
- Using less reagents
- Atom economy
- E-factor



What is a Green Chemistry experiment?

- Not black and white!
- Any improvement can be considered green
- Calculated by atom economy and E-factor

How do we implement Green Chemistry in the laboratory?

- Introduce importance in lecture
 - Demonstrating relevance, what Green Chemistry is and how you make an experiment “green”
 - E-factor and 12 principles of Green Chemistry

http://portal.acs.org/portal/acs/corg/content?nfpb=true&pageLabel=PP_ARTICLE_MAIN&node_id=1415&content_id=WPCP_007504&use_sec=true&sec_url_var=region1&uuid=8efb2fdf-0804-4527-ab26-11a0c46b856a

- Provide instruction on proper lab techniques and reinforce Green Chemistry concepts
 - Feedback from TA's
 - Science 100 may be good place to start



In the lab...

- Minimizing reagent usage:
 - Dispense reagents
 - Charge for excess reagent usage
 - Bonus mark incentives
- Understand environmental and health impacts of reagents:
 - Look up MSDS
 - Pre-lab exercises

Skepticism

- Will Green Chemistry labs allow students to develop fluency in techniques and a full skill set?
 - Mock handling of more dangerous reagents
- Co-operation with faculty
- A change of curriculum is required
 - This has been done!

Green Chemistry at the University of Oregon

- A model for implementing Green Chemistry labs
 - Green Chemistry curriculum, research programs, database of educational materials, incorporation into curriculum and textbook
- Full time staff member
 - Runs workshop every summer

<http://greenchem.uoregon.edu/>



Other Initiatives:

- ACS Summer School on Green Chemistry and Sustainable Energy @ McGill
 - Graduate students and Postdocs
- Green Center Canada
 - Funding
 - Industry partnerships
 - Providing a connection of Green Chemistry developed in academia to industrial practices



<http://www.greencentrecanada.com>