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_ARTICLEMAIN&node_id=1415&content_id=WPCP_007504&use_sec=true&sec_url_var=region1&__uuid=8efb2f3d-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