

# Student Worksheet 3.1

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## Activity 3.1 Life Cycle Analysis

This activity consists of three related, but different exercises. Your instructor will tell you which of the following options you will complete.

### Option 1

Your instructor will divide the class into three groups, with each group representing either paper, plastic, or ceramic cup makers. Your group must conduct research to calculate the material flows, energy consumption, and water consumption of all three cups, and then make an argument for why your product is more environmentally sound. Perform the calculations on your own outside of class and then meet with your group to compare results and discuss. Consider how you could improve your product to make it more environmentally benign. Be prepared to present your findings and your argument to the class.

### Option 2

Imagine you are in a conference room with several of your colleagues in the life cycle analysis field. You have been discussing and comparing the environmental impacts associated with the production, use, and disposal of paper and polystyrene (foam) cups. Everyone in the room wants to reach an agreement on what factors need to be considered to compare the two disposable products and how these factors should be measured.

Your instructor will provide you with a written copy of the dialogue and some background information to help you understand what has been said. Your task is to finish the dialogue as if you are actually a part of the conversation in the conference room. Write down exactly what you would say. Begin by summarizing the conversation so far and suggesting how to move the discussion toward consensus. Be sure to add more than just your own words -- include additional dialogue from your colleagues. For example, if you think that Mrs. O would object to one of your statements, what would she say (besides "I object")? Feel free to expand the bounds of the initial question. If you think reusable ceramic cups, for instance, have eco-merit, you could argue that it is pointless to look at only paper and polystyrene. But be sure to support your argument!

After you've completed the dialogue, write a few additional paragraphs that respond to the following questions:

1. Was any relevant information left out of the discussion?
2. Were any of the comments in the dialogue redundant or unimportant?
3. Do you agree or disagree with what anyone said? Why?
4. Can all the variables in this debate really be measured quantitatively?
5. Are any value judgments evident?
6. What seem to be the biggest roadblocks to deciding which cup is best?

### **Option 3**

Determining the boundaries of a system and choosing the criteria for comparison (i.e., energy flow, material waste or both) are two of the most controversial aspects of a life cycle assessment. Read the article provided by your instructor and answer the questions below in a two to three page essay. While you read, be sure to consider the assumptions and value judgments implicit in the analysis.

1. What criteria did Hocking choose for his analysis?
2. Where did he draw the boundary of the system?
3. Does he consider the energy use associated with disposing of or recycling disposable cups? How would you determine the energy used in disposing of a cup?
4. Would the test results have been different if he had selected both materials flow and energy flow as his criteria?
5. What cup should *you* use and why?