

# IH&S 725 - Air Sampling Project

## Phase I: Planning to sample

### Develop the Sampling Plan Due 3/2/06 or sooner

This step must be done with the consultation of your sampling mentor. To do a good job of sampling you must have a very clear idea of the purpose for doing the sampling. Developing the sampling plan is your responsibility not your mentor's. They are to be used as a resource and not to do the work.

You will not be allowed to proceed with the actual air sampling if your sampling plan is not reviewed and approved by your mentor and Dr. Guffey.

The sampling plan will consist of the following components:

### Problem Statement:

The problem statement should be a thoughtful and concise statement of the reason(s) the sampling is being done. This is much harder than it sounds! Before you can undertake a sampling campaign that will yield meaning information it is vitally important that you clearly know the reason(s) for sampling and what information you hope to gain from it. In general, unless the campaign is very large or is of a research nature the problem statement will not be more than 1 or 2 paragraphs long.

### Background:

Should:

1. Describe the part of the process involved in the locations you plan to sample and their part in the overall process.
2. Discuss previous sampling results, taking care to discuss the adequacy of the methods and sample sizes.
3. Include a task analysis of the work that will be sampled with an eye towards tasks and work practices that may affect exposure levels. Should make a table of number of workers exposed in each job function or task, their durations of exposures, etc.
4. Describe past attempts to reduce exposures and discuss how effective they may have been.

### Review of Literature:

The purpose of reviewing the literature is two fold. First it will give you insight into the types and possibly, the ambient concentration levels, of airborne contaminants other IH's have looked for or found in operations, industries, etc. similar to yours. You can gain much from their experiences.

Secondly, you will find out what sampling media and analytical methods were used. This information will help you make the best-informed decision about selecting the most appropriate sampling media and analysis for the purpose of your sampling.

### Sampling Methodology:

This section will identify the details of and justification for your sampling. It must consider the following but depending on your particular assessment problem may need to include more than these issues:

- a. What types of samples you plan to collect and why.  
E.g. - area, personal, real-time, respirable dust, etc.
- b. What sampling strategies you plan to use and why.  
E.g. - continuous 8 hr., grab, etc.
- c. When you plan to do sample collection and why.  
E.g. - day shift, one day, once a month, etc.

- d. Who you are going to sample.
- e. How many of them you'll select to sample.
- f. Will you need to do replicate sampling?
- g. Type of sampling media selected and why.  
E.g. - passive dosimeters, PVC filters, color detector tubes, etc.
- h. Sampling parameters.  
Minimum sampling time and volume vs. desired flow rates and sample times,  
LOD and LOQ of the method, Minimum measurable quantities in work place,  
Calibrations to be done, etc
- i. Analytical parameters  
Analytical procedure employed, Sampling interferences, Types of blanks required
- j. Special shipping and handling requirements and/or sample life restrictions

### Data Reduction:

This section will detail how the data will be reduced and analyzed. It is important for you to consider these issues so that you are sure that your data is collected in a manner that it is appropriate for the data analysis you require. You will need to iterate these considerations with your sampling methodology so that sufficient numbers of samples will be collected; the appropriate number of replications will be done, etc.

This section should also identify the formulae you will use, how you will use your blank values, and your *a priori* criteria for accepting or rejecting any sample (i.e. contamination of sample, miss numbering, % of material on backup section, etc.).

### Approval Page:

This page must have signature approval lines for both your mentor and Dr. Guffey

## Phase II: Sample collection

Sample collection can commence immediately after your sampling plan is approved. In no case should you delay starting past March 17. Working in conjunction with your mentor, ship your samples to the laboratory. Samples should be sent no later than April 3.

## Phase III: Data Reduction and Analysis and Report Finalization

As soon as you receive your laboratory sampling results begin to reduce your data and conduct whatever statistical treatment of the data you proposed in your sampling plan. The final report must include the following:

- Title Page - to include sampling project title, course, your name and date
- Signature page for mentor
- Executive summary
- Table of Contents
- Introduction and Problem Statement
- Background, including review of past sampling results and remediation efforts
- Literature Review
- Apparatus
- Sampling and Data Reduction Methodology
- Data Analysis and Results
- Discussion, including weaknesses in the sampling and analyses
- Conclusions and recommendations
- Caveats

## Phase IV: Project Presentation – Due April 27, 2006

Prepare a 15-20 minute presentation on your project. This presentation will be given during the last week of the semester. This is required regardless of whether your laboratory analysis is complete. In such an event you will present the purpose for conducting the sampling and the rationale used to develop your sampling plan.

## Phase V: Turn in Final Sampling Report – Due May 4, 2006

You **MUST** have your final report approved and signed by your mentor before Dr. Guffey will grade it.