GROUP Assignment

Part I: “SAMPLING AND ANALYSIS PLAN”

Part II: PEER REVIEW

Work within your group to identify an Environmental problem and develop a “Sampling and Analysis Plan”

Receive a plan from another group and provide a one-page comments/questions

Work with your group to provide answers to your Peer-review

Submit: Original Plan, Peer-review, and response to peer Review in a single file

“Keep track of the information in your cover page”

EPA document guidelines is available on Elms

An Example “Mercury in areas degraded by artisanal gold mining in the Peruvian Amazon” is posted on ELMS

Examples from DOE Legacy Sites available on ELMS

Examples of Standard Operating Procedures (SOP) for organic pollutants are available on ELMS

PART I:

You are asked to work with your group and identify a toxic chemical (microbial, organic, or inorganic) that poses some environmental risks (human and/or ecological). One of you should be identified as the “Project Manager”, to maintain correspondence with the reviewers and be the contact person to review another group. Think about the steps described by EPA’s Data Quality Objective Plan requirements to introduce your project and concerns. In here you are asked to develop a Sampling Plan and provide information on how your samples would be analyzed (let’s assume you are a consulting engineer in the field that needs to prepare samples to send to a commercial lab and request the lab to follow specific protocols!). Make sure you use EPA as a resource and provide information of the analytical method that you would use. For example, if you want to measure the concentration of polychlorinated biphenyls (EPA Method 8082A), copper, zinc, lead (EPA Method 1669) and nitrate (EPA Method 352.1 or ASTM D 8083) in the surface water of the creek in our campus.

Maximum 8 pages including figures and tables.
The Outline should be as follows:

Cover Page: Title and “team” manager’s name and e-mail (this will be used to exchange information with your reviewers”. A timeline on when the plan was submitted and reviewed.

A. Identification of the problem, provide justification (references) on why it is a problem (standards if available, toxicity, ….); objectives of the plan

B. Write a sample plan, you can start by answering these:

1. Analyte: the chemical compound, class of compound
2. Sample Type: the type of material to be collected for analysis.
3. Sample Size: the amount of sample that should be collected for a minimum of one analysis. Make sure you include all samples needed for QA-QC
4. Parameters to be measured (on site and at the lab)
5. Sampling Device/tools: accuracy, detection limit
6. Sample location
7. Sampling time: Time of the day, time of the year, frequency, holding time
8. Container
9. Preservation
10. A table with Sample Collection Information
11. QA/QC procedures: field blanks, field replicates, equipment calibration on site

C. Recommend the EPA method that your sample should follow.

1. Briefly describe the analysis method: equipment, reagents
2. QA/QC procedures: lab blanks, lab replicates, spiked samples, equipment calibration at the lab

After this module, you should be able to:

1. Understand the importance of sample collection and preservation.
2. Understand what to prepare before sample collection.
3. Understand how to choose container based on the class of compound.
4. Know what sampling device to choose for different environmental matrices.
5. Understand how to handle samples from different environmental matrices.

Possible questions for different scenarios:

1. I want to study the impact of land use on the concentration of polychlorinated biphenyls (PCBs) in soil. How should I choose sampling sites?
2. I am interested in how the particulate phase of stormwater is related to the concentration of polycyclic aromatic hydrocarbons (PAHs). What major parameters of the water sample should I measure other than PAH concentration?
3. I am interested in the concentration of PCBs at different depths in the sediment from Baltimore Harbor. What sample should I collect and what sampler can I use?
4. If you are collecting soil samples from an orchard historically contaminated by DDT, how will you choose your background sample?

PART II

“Peer review of a Sampling Plan”

Groups will work together to review another's groups Sampling and Analysis Plan and provide a 1-page specific comments.

When reviewing a Sampling and analysis plan, you should check for the following:

- Make sure details about the physical environment of the site and site history are included.
- Make sure the type of samples (sample media) that will be collected is described.
- Make sure the frequency of the samples to be taken in time and space is described.
- Make sure the QA/QC requirements are included.
- Make sure details about the sample’s preservation are included (temperature, reagents (chemicals) to be used, etc.)
- Make sure details about the analysis method and equipment to be used are included.
- Make sure details about QA/QC procedures for the analysis are included.

Timeline (Group Manager is responsible for the timeline): see ELMS