

General Information

The following files were sent to you as an email attachment.

- HWsp_06.xls
- ELEM_06.TXT
- BLANK_06.TXT

The HWsp_04 file is present in Excel. If you need a Quattro or Lotus format let me know. The ELEM_04 and BLANK_04 files are in tab delimited text format.

The main spreadsheet is HWsp_06. The ELEM_06.TXT and BLANK_06.TXT files are as received from the analytical laboratory. The analytical data came on disks from the laboratory over the period of several months. Each disk contained data on from twenty to thirty sample filters. The data on individual disks were merged into the single file called ELEM_06.TXT. The BLANK_06.TXT file was constructed the same way. I have given you these in the *.TXT format to give you experience with bringing a different data format into the spreadsheet. These two files will need to be brought into HWsp_06 to complete this assignment but that will come later.

To complete this exercise you will need to work with all three files. They will need to be collated together. **Make sure the individual records are correctly collated.** I suggest you sort each on a common variable with can be matched.

I STRONGLY SUGGEST THAT YOU BACKUP FREQUENTLY

Spreadsheet Assignment Part I (Due 3/9/06)

Step 1

Open and explore the information in HWsp_06. I suggest that you make a backup of this file or save it to a new file name and then do your work on the new file.

Step 2

First, calculate the adjusted sample interval. Using the hour nd minute return functions create a formula to determine the length of the sampling interval. Subtract the time adjustment variable (TA) given in minutes and then determine the total sample volume for each record in the spreadsheet.

Step 3

Import the ELEM_06.TXT file into your spreadsheet. Make sure you import it to an area near but not into the existing records. This file contains the analytical results for each sample. It contains a column of data that is the total mass collected on the filter. It is expressed as a **mass**

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(μg) per unit of filter area (cm^2). This file also contains the “elemental” percent of this total mass that is copper, lead, and zinc.

Step 4

Collate the records in the ELEM_06.TXT file with those of the HWsp_06 file. You should now have a file in which each record has correctly appended lab data upon which exposure concentrations can be calculated.

Step 5

Insert a new column and label total mass. Using a sample filter area of 2.545 cm^2 calculate the total mass (TM) collected on each sample.

Step 6

Insert new columns and label mass of zinc, lead and copper. Multiply the total mass by the “elemental fraction of total mass” data for each element to determine the mass of zinc, lead and copper on the filter.

Step 7

Sort the data set by company and task.

Step 8

Bring the blank data into your spreadsheet. The BLANK_06.TXT file contains columns for observation number, company number, blank filter number (this number coincides with the blank numbers in your main file). You will need to calculate the total mass of each element on the blank filters so that you can make corrections to actual samples. NOTE: The area of each blank control filter is 2.545 cm^2

Step 9

Assign the element mass value(s) of the blanks to each ambient sample as appropriate. **NOTE:** There are not unique blanks for each of the personal samples collected. Normally you would have to think about how you would make your blank assignments.

We will discuss this in class.

Step 10

Calculate the concentration (mg/m^3) of zinc, lead, and copper exposures for each worker in each company.

Spreadsheet Assignment Part 2 (Due 4/20/06)

Scenario

You are an Industrial Hygienist on my staff. I assign you to review the sampling data for Foundries 1 and 3 and prepare a report detailing your evaluations based on the air monitoring data. Your report must provide a critical review of these exposure data. It is to document probable levels of exposure and make recommendations that will be key information to begin addressing concerns of airborne exposures at these foundries by management and labor.

Your report will need to:

- 1 Identify who has been exposed to what and who if anyone has had exposures that exceed any applicable OSHA standards;
- 2 Identify which task(s) are of more concern than others, including the basis of that conclusion(s);
- 3 Identify which if any workers you would do exposure assessment on during the coming year, including the rationale for their selection.
- 4 Express your professional opinion, based on your evaluation of the airborne exposure data, as to the probability, if any, that certain areas of the facility would be found to be out of OSHA compliance if an inspection were to occur; and
- 5 Include any other conclusions, comments, opinions, etc. you deem appropriate based on your critical evaluation of these exposure data.

You may use other background information from the literature that you feel is appropriate.

As a minimum you should incorporate the following data and graphs into your report. You are encouraged to include others, as you feel appropriate.

- 1 For the metal pourer job in both foundries report the zinc and lead exposures and provide the following concentration statistics – exposure range; geometric mean (μ_g) and GSD; 95% CL on the μ_g ; UTL on the μ_g ; and the exceedance fraction.
- 2 Using 3D bars, graph the exposure to zinc and lead expressed as μ_g /PEL, for the group of metal pourers for each foundry.

Your report should have a

Title Page with your name
Executive summary
Introduction
Data analysis and discussion (including possible deficiencies)
Conclusions
Caveats
References