



## **TEOM Data Correction Using the Volatile Correction Model (VCM) - 2008**

### **Introduction**

AEA has been funded by The Scottish Government to provide VCM corrected TEOM (Tapered Element Oscillating Microbalance) data to Local Authorities under the Scottish Air Quality Archive Website project. This is a short summary outlining the method used by AEA for correcting the Scottish Archive TEOM data.

### **Method**

The following data are required as inputs to the VCM:

- Daily average temperatures
- Daily average pressures
- Daily average TEOM concentrations ( $\mu\text{g m}^{-3}$ )
- Daily average FDMS (Filter Dynamic Measurement System) purge measurements ( $\mu\text{g m}^{-3}$ )

The VCM can also use hourly average inputs, however, it was found that the model has difficulty in coping with hourly data and therefore daily average data was used.

Daily average temperatures and pressures measurements from the Edinburgh St Leonards AURN site were used in the model. This site was selected as a good representation the weather in the central belt of Scotland and the data showed good correlation with Leuchars Meteorological Station data.

The VCM uses inputs from up to three FDMS sites in the correction of TEOM data. However, it was found that the results varied depending on which three FDMS sites were used. Therefore, daily average purge measurements from 9 Scottish FDMS sites were used for the correction. The 9 sites used are:

- East Dunbarionshire Kirkintilloch,
- Edinburgh St Leonards,
- Fife Rosyth,
- Glasgow Abercromby,
- Glasgow Broomhill,
- Glasgow Nithsdale Road,
- Paisley Gordon Street,
- West Lothian Broxburn,
- West Lothian Linlithgow.

The average of the daily purge measurements from the 9 sites was then calculated with any outliers identified during the ratification process being removed from the data-set. This average purge measurement was then used in the VCM.

### **VCM Spreadsheet**

A template VCM spreadsheet was produced using the meteorological and purge measurement data describe above. All TEOM data was then inputted into this template and the results recorded.

The attached VCM spreadsheet displays all the data inputs used by AEA for the correction of your TEOM data. The final tab named "Analyses" displays the VCM corrected annual average  $\text{PM}_{10}$  concentrations and the number of daily exceedences.



For further information about VCM or for carrying out your own correction please visit the following website:

<http://www.volatile-correction-model.info/Default.aspx>

### **Contacts**

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