

## GLP COMPLIANCE IN FIELD RESEARCH

*The Principles of GLP (Good Laboratory Practice) represent an internationally recognised benchmark of test methods and processes for non-clinical health and environmental safety studies. It provides a uniform standard upon which researches are carried out and forms the basis for mutual acceptance of research data between countries. To researchers and government agencies for environmental control, being GLP-compliant is important in lending recognition to the integrity of their research, as well as ensuring a smooth audit process.*

This said, managing the quality of a GLP-compliant research without the support of laboratory facilities can be a tricky affair, especially in settings where several factors are beyond the researcher's influence.

Housing of the equipment should also be sufficiently rugged, and waterproof to survive the outdoors elements. At the same time, sophistication of the apparatus should be balanced with ease-of-use so as not to hinder the test processes.

To ensure accuracy, all research instruments must be cleaned, checked, maintained and calibrated periodically, with calibration benchmarked against national or international standards of measurements.

The GLP Principles require researchers to keep records of each maintenance and calibration session for auditing purposes. For instance, the calibration-due alarm in the CyberScan 600 series alerts on a user-defined calibration date allowing them to keep check of calibration dates easily.

## Laboratory Products Focus

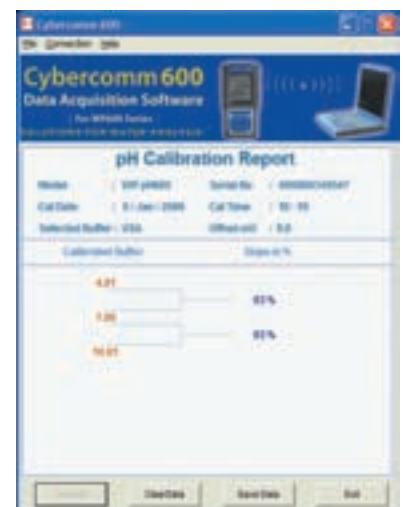
Since data collected from field research essentially forms the fundamental to research work – and that means that results collected from the field ought to be as accurate as possible – the process of field data acquisition must be carefully managed, among external elements outside the control of a researcher, to ensure GLP compliance.

Because of this, in the context of studies involving surface water analysis, the meters used during fieldwork are not only important in providing accurate results, but also instrumental in helping to ensure compliance during data-acquisition. In particular, the OECD's published Consensus Document, "Application of the GLP Principles to Field Studies" (OECD, 1999) underscore the need to place special emphasis on two major aspects of fieldwork – Equipment and Data Recording in the field:

### EQUIPMENT

The apparatus employed should be of appropriate design and adequate capacity. For instruments used in outdoors water analysis, this translates into a need to measure accurately at a required range and resolution.

Late calibrations are reflected in the meter, and all calibration details can be generated into a report and saved as an in-editable file in the computer using the supplied Data Acquisition Software (see *Figure 1*).



*Figure 1: The CyberScan 600 Series allows the generation of a detailed calibration report that records the time, date, selected buffer option as well as the electrode performance slope.*

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## DATA RECORDING

The GLP Principles require raw data generated during the field research to be documented legibly, directly and promptly. Using the auto-logging function in a meter can facilitate immediate and accurate data-entry without the risk of accidental data-loss or human error that may occur with recording on paper. For full traceability, recorded data must be stamped with time and date of measure.

A common problem with field-research is the amount of storage facilities available for recording data. Instruments intended to measure and record should have enough temporary storage memory for sufficient samplings to ensure integrity of the research.

Until the raw data can be transferred for analysis and archiving, the data should be secured from accidental deletion or editing. For this, password protection and volatile memory function on the meter is important to ensure that the acquired data is well-preserved, even when the equipment is out of batteries.

Finally, in the case of where data is transferred to and generated using a computer programme, the designed programme used must ensure identification of the individual responsible for data-entry.

Figures 2 and 3 illustrate how the data acquisition software accompanying the CyberScan 600 series waterproof handheld meters prompt for identification person responsible for the entry. The data, which is directly and wirelessly transferred to the computer, is presented in the form of an in-editable report. Researchers can transfer the information out onto another programme for further analysis. Any changes to the raw data should not obscure the original figures, and should be fully justified for by means of documentation in the "Note" section.



Figure 2: Raw data collected from the field is transferred wirelessly to a computer in the form of a comprehensive report.

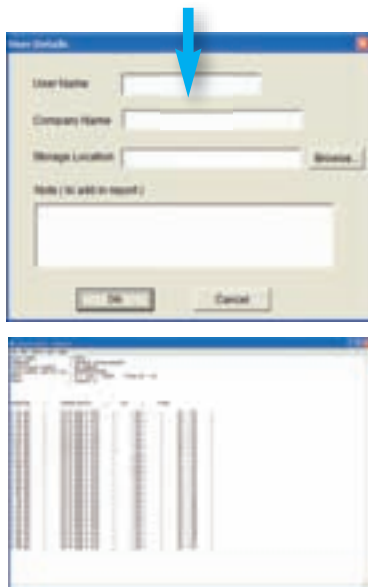


Figure 3: Programme prompts user for identification when transferring data out into editable versions.

Unlike the laboratory setting, the nature of fieldwork makes it more difficult to implement GLP Principles in the research process.

While a field researcher cannot do more to control the weather, technology has made it possible to obtain better equipment

support. By choosing the right instruments, complying with GLP can be effortless, even when conducting researches in the field with external factors, without the infrastructure of a laboratory.

### Measure Smart with the Eutech CyberScan 600 Series

Eutech's CyberScan 600 Series – a line of waterproof, intuitive handheld meters designed especially for rugged, outdoor applications, yet versatile and powerful enough to be used in the laboratories.

Incorporating unparalleled functionality such as compensation of temperature, salinity and barometric pressure, adjustable cell constant settings, high resolution and wide measurement ranges, the meters are engineered to help you achieve unprecedented, lab-accurate results effortlessly, ensuring high quality GLP-compliant research.



Available for the measurement of pH, ORP, Ion, Conductivity, TDS, Salinity, Resistivity, Dissolved Oxygen and Temperature.

#### Sources:

"OECD Series on Principles of Good Laboratory Practice and Compliance Monitoring: OECD Principles on Good Laboratory Practice", OECD, 1997

"OECD Series on Principles of GLP and Compliance Monitoring Number 6 (Consensus Document): The Application of the GLP Principles to Field Studies", OECD, 1999

## All-Singing Automation

Eppendorf AG has scored a major hit with the epMotion music video, recording over 200,000 viewings in just four weeks since its release. This love song extolling the freedom which comes from automated pipetting highlights the efficiency, accuracy and ease of use of the epMotion product range. Holger Eggert, Eppendorfs epMotion Product Manager, is delighted with the impact made by this new marketing approach: "The feedback from the scientific community has been fantastic. As well as featuring in editorials, including nature.com and national geographic.com, there have been countless positive comments about the video in newsgroup posts." The video can be viewed at [www.epMotion.com/video](http://www.epMotion.com/video). This dedicated web page offers a choice of downloads so that the song, 'It's called epMotion', can be enjoyed on an MP3 player or as a mobile phone ringtone. The lyrics are available as a pdf – useful for the lab groups that apparently like to sing along – while visual resources include photos taken during the video shoot in California and a Wallpaper gallery of key scenes from the video.

