ACCREDITATION & QUALITY ASSURANCE IN ANALYTICAL CHEMISTRY

Helmut Günzler (Ed.)

Accreditation and Quality Assurance in Analytical Chemistry

Translated by Gaida Lapitajs

With 53 Figures and 11 Tables

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Foreword

Chemical measurements of various kinds are playing a rapidly expanding role in modern society and increasingly form the basis of important decisions. On the basis of these decisions national and international regulations with commercial, legal, medical, and environmental impact are set in force. Therefore, the reliability of chemical measurements is of utmost importance. No acceptance of these regulations without trustworthy decisions and no trustworthy decisions without reliable measurements.

The quality of traded products and therefore their value in trade, depends crucially on the measurements which determine the degree of quality. Furthermore, trust in quality can only exist on the basis of trust in the measurements in proving this quality. On the international scene, acceptance of quality is a transnational problem: how can one trust claimed quality? The Council of the European Union recognized that the differences in the national accreditation systems of laboratories were an obstacle to fair trade and that a harmonization of the national accreditation systems was needed through the introduction of uniform and universally binding criteria.

Without doubt, transnational economical entities such as NAFTA and EFTA will (have to) come to the same conclusion. Thus the EN 45 000 series was born from existing systems for national accreditation of test laboratories and many branches of the economy have set up appropriate accreditation agencies.

Chemical compounds and products, however, have also invaded the environment either unwillingly at the endpoint of their industrial life cycle e.g. CFCs, or by accident e.g. oil spills at sea, or as waste e.g. dioxins, radioactive gases, or on purpose e.g. fertilizers and tanker cleaning. Nature can cope with trace amounts of non-natural chemicals, but the extent to which modern society and economy can release chemical compounds into the soil, the water and the air as well as into the human body, sometimes exceeds the absorptive power of the natural systems or, worse, disturbs natural equilibria. In a number of cases, regulation is not only unavoidable but mandatory.

Regulation means setting limits. Verifying the implementation, i.e. compliance with these limits, means chemical measurements. Since chemical pathways in the environment totally ignore man-made borders, chemical compounds in the environment cross these and become, by definition, border-crossing problems. Decisions to cope with these problems must be acceptable across borders, i.e. internationally. Hence, compliance with the necessary international regulations becomes a matter of (trust in) reliable chemical

measurements as the basis of these decisions. Quality and reliability in chemical measurement are again of paramount importance.

Never before, have so many discussions taken place around quality in chemical measurement and have so many formal procedures been developed to fulfil the wish to demonstrate quality. Assuming reliability because the chemical measurement was "scientific" seems to be being replaced gradually by assuming lack of reliability unless proven otherwise. The time that chemical measurements were little more than declarations of isolated figures, is definitely over.

Measurements of high quality are not possible without qualified analysts in the field. This book is intended to help the analysts-in-the-field and to support their attempts to be well-informed and to continuously shape and improve the quality of their measurement work. It is not sufficiently recognized that analysts pursue an important societal task by achieving reliable and accepted chemical measurements. It is an explicit purpose of this book to assist the chemical analyst in this task.

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