

Preface

At a very early stage the Deutsche Forschungsgemeinschaft's Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (MAK Commission) recognised the possibilities offered by determination of chemical substances and their metabolites in human body fluids for the prevention of health impairment. Therefore the DFG established an "Analyses in Biological Material" working group in the early 1970s. The task of this group was to devise reliable analytical procedures as a basis on which the performance of human biomonitoring would be possible. To achieve this goal the analytical methods not only had to be validated but also described in such detail that they could be replicated in other laboratories. Thus all the methods contained in these volumes have been subjected to rigorous experimental testing in the laboratory. The concept underlying this work is that only valid and comparable results of human biomonitoring can offer the same health protection for everyone. The quality of the analytical methods has therefore always had priority over commercial considerations.

Today a collection of methods is available in German and English that enables the assay in body fluids of more than 250 of the most significant substances to occupational and environmental medicine and their metabolites. This collection of methods has been supplemented for the 11th time by eleven further analytical methods and by a monograph on the use of LC/MS in the field of human biomonitoring. On the basis of these analytical principles human biomonitoring has advanced to become an indispensable tool for occupational and environmental medicine.

As the chairwoman of the Deutsche Forschungsgemeinschaft's Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area I wish to thank all the present and past members and guests of the "Analyses in Biological Material" working group for their valuable contributions, which were provided in an honorary capacity. Moreover, I would like to extend special thanks to the Deutsche Forschungsgemeinschaft, which has continued to support this working group for many years, with the result that the German contribution to the field of human biomonitoring is regarded as excellent throughout the world.

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Chemical Compounds in the Work Area

Foreword

This is the 11th English edition of this collection of validated analytical methods developed and issued by the DFG's Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area. Once again this publication contains a general analytical chapter, in this case introducing the combination of liquid chromatography and mass spectrometry (LC/MS). Thereafter we present eleven methods for the assay of chemical substances or their metabolites in human fluids in detailed "Standard Operating Procedures" that, as always, have been checked for their reliability and reproducibility.

Although this work has gone only a little way to extending the analytical basis of human biomonitoring, the many supplements to this collection that have been published in the past 30 years have helped to elevate human biomonitoring to an established and accepted procedure for the prevention of health impairment.

Human biomonitoring has long proved its worth as part of preventive examinations in occupational medicine. It has even been made obligatory by law in Germany. Throughout the world human biomonitoring is being increasingly used to resolve questions that arise in the field of environmental medicine. It is widely applied, especially in Germany and in the USA, for representative determination and documentation of the exposure of the general population to chemical substances.

These chemical substances are common to investigations in both occupational and environmental medicine. Those that are widely handled at the workplace are generally also found in the environment. Therefore it has proved advantageous to devise analytical methods for human biomonitoring that are sufficiently sensitive to enable determination of the concentration ranges that are of relevance to both environmental medicine and occupational medicine. It is increasingly becoming unnecessary to separate the substances that are predominantly discussed from the point of view of environmental medicine and those that are considered by occupational medicine. This applies to substances such as phthalates, organophosphates, bisphenol A and TCDD, for which methods are presented in this edition.

In recent years the media have shown increasing interest in human biomonitoring. The fact that each of us is exposed to many substances is not new, but this has been spectacularly demonstrated by human biomonitoring in the case of some prominent personalities. Now various national and international committees have expressed the fear that the analytical capabilities of human biomonitoring may have outstripped our ability to interpret the resulting data. This cannot be otherwise, as data must first be gathered before they can be interpreted. It is important only that these data are accurate, and the methods published here are intended to further this aim.

In the light of this discussion I would like to thank the Deutsche Forschungsgemeinschaft, which began to sponsor this collection of methods more than 30 years ago. Although in those days it was no more than a justified hope that measurement of pollutants in the body fluids of humans would prove more reliable than other pro-

cedures for detecting the absorbed doses and for reducing them if possible. Thanks to the support of the DFG, human biomonitoring has become an effective tool for the prevention of damage to health that requires no further legitimisation. I extend my personal thanks to Dr. Armin Krawisch from the business office of the DFG for his constant support, special thanks are also due to the members and guests of the “Analyses of Hazardous Substances in Working Materials” working group who are the mainstay of this publication. Moreover, I wish to thank Mr. Oliver Midasch and Ms. Barbara Müller-Göthert who also lend their reliable support to my work.

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