



## **Preface**

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Scand J Work Environ Health [1984;10\(1\):5-6](#)

by [Ekberg K](#), [Hane M](#)

**Affiliation:** Department of Occupational Medicine, University Hospital, S-581 85 Linköping, Sweden.

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## Preface

Behavioral toxicology is concerned with the behavioral effects of toxic substances. Long-term effects of exposure to industrial solvents in the work environment were recognized in Scandinavia during the 1970s after the publication of a number of epidemiologic and cross-sectional studies. In Sweden and Finland the clinical condition is, as a rule, called the "psycho-organic syndrome," and in Denmark and Norway the term used is "presenile dementia." However, the difference in terminology does not appear to reflect differences in effects but is rather an expression of the lack of specificity of the behavioral and emotional symptoms. The diagnosis is based on psychological assessments, symptoms, neurophysiological measurements, and clinical findings. In Sweden it is generally agreed, based on empirical evidence, that at least 10 years in exposed occupations such as house painting or car painting are required to produce long-term effects. It is not known whether the syndrome is reversible.

The permitted level of occupational solvent exposure has been gradually lowered, and at the same time the general awareness of adverse health effects has increased. Consequently the effects of long-term exposure have become more difficult to detect clinically and experimentally, and more sensitive methods are required.

The psychometric methods currently used have, as a rule, not been intended solely for investigating or diagnosing the effects of solvent exposure but have mainly been selected from available clinical performance tests. Performance decrements have been interpreted as indicating organic effects on the central nervous system or impaired function. The syndrome suspected to be caused by exposure to solvents comprises disturbances in memory, thinking, and the affective state. However it has not yet been well defined and can be caused by many different factors, both internal and external. To identify the mechanisms behind the effects, better psychometric methods are needed. One aim of the conference was to learn more about neuropsychological assessment and the neuropsychological methods used in other fields.

Psychometric and neurophysiological findings rarely correlate. This lack of correlation indicates that the two types of findings either reflect different mechanisms or are too nonspecific to pick up common elements in the syndrome. Neither are they apparently related to the duration of exposure, and this nonrelationship is frequently interpreted as reflecting large intra-individual variations in sensitivity. A second aim of the conference was therefore to discuss the possibilities for broadening the methods used in behavioral toxicology, from strict performance measurements to measurements of other, perhaps more sensitive or specific variables.

It may prove necessary to abandon the present approach of identifying signs of organic damage by means of large test batteries and, instead, to establish what underlying psychological mechanisms are involved. This approach would call for the development of new tests, basic research, collaboration with other disciplines, etc. The conference was arranged to facilitate discussions on such topics. Occupational health psychologists in Sweden, Finland, Norway, and Denmark made short contributions. In addition, seven psychologists from the United States, Great Britain, and the Scandinavian countries were invited to give talks.

The *first section* of these proceedings covers reviews of current research on behavioral toxicology in Scandinavia and Great Britain. In the first communication (Monica Hane & Kerstin Ekberg) the current position in Scandinavia is presented. Several hypotheses concerning the mechanisms and effects of long-term exposure are presented and discussed. In the British paper (Nicola Cherry, Helen Venables & HA Waldron) the methodological problems of cross-sectional studies are emphasized.

In the *second section*, Methods Used in Clinical Behavioral Toxicology, the test battery used at occupational health clinics in Sweden is presented (Kerstin Ekberg & Monica Hane), and a few applications are described. In addition the British test battery is presented (Nicola Cherry, Helen Venables & HA Waldron), and an account is made of the projective Rorschach test and how it has been applied in behavioral toxicology (Kari Lindström).

The *third section* covers neuropsychological assessment techniques in other fields. Muriel D Lezak discusses techniques that have proved sensitive to organic brain damage, the problems associated with assessment and test interpretation, and the need for taking executive functions into account in behavioral toxicology. Thereafter Hans Bergman takes up the criteria for a good neuropsychological test battery and presents the Halstead-Reitan battery as applied to groups of alcoholics. In the final report of this section neuropsychological investigations by Luria's methods are presented by Anne-Lise Christensen.

In the *final section* development of new research strategies and methods is discussed. Kerstin Ekberg briefly reviews current trends in experimental cognitive psychology, and Lenart Sjöberg examines measurements of subjective experience and the applicability of subjective measurements in behavioral toxicology.

A list of the persons who participated in the conference can be found in the appendix.

The conference and the publication of its proceedings have been financially supported by the Swedish Work Environment Fund, which is gratefully acknowledged.

Kerstin Ekberg and Monica Hane