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BIOLOGICAL MONITORING

PART V—PREFERENCE AND AVOIDANCE STUDIES

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INTRODUCTION

General effects of temperature on behavior

Behavior has long been recognized as an excellent way to assess the condition and well-being of a particular organism. One remarks that a friend is probably not feeling well because one or more aspects of his/her behavior is altered. Certain predators are thought to identify suitable individuals to harvest from a prey species by noting aberrant or unusual behavior that makes them stand out from the rest of the population. Thus, certain behavioral characteristics may be associated with normality and well-being while others are associated with illness, injury, fatigue, and the like. Some of these behavioral changes can be identified at a considerable distance in larger animals. Of course, these changes would represent rather gross differences from normal or typical behavior. Such changes in large mammals might include limping, erratic circling behavior, and even markedly different posture which would signal to a predator that these animals might be easier to prey upon than the rest of the herd. In fish, behavioral indications of substandard performance or a lack of general well-being might include difficulty in maintaining equilibrium, inability to keep pace with the school, loss of swimming speed, or clamping of the fins.

Behavioral changes of the types just mentioned might be readily detected by comparing an individual with others in the population of which the individual is a part. In short, the changes are so marked that no prior acquaintance with the individual is necessary to make these distinctions. However, such gross alterations in behavior are often the result of severe, often irreversible, physiological damage. In order to detect the more subtle changes signaling the early onset of physiological stress, it is essential to know something about the normal behavior of each individual being examined. The reason for this is that natural variability in behavior is so great that more subtle variations are not apparent to the observer with only a casual knowledge of the individual. As a consequence, behavior, although recognized as an excellent integrator of physiological condition, is not commonly used in the assessment of pollutional effects. The requirement that statistically subtle changes in behavior can

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Number 3
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CONTENTS

Review Papers

A. L. BUIKEMA JR,
B. R. NIEDERLEHNER and
J. CAIRNS JR

239 Biological monitoring. Part IV—toxicity testing

**DONALD S. CHERRY and
JOHN CAIRNS JR**

**263 Biological monitoring. Part V—preference and
avoidance studies**

General Papers

R. J. ZOETEMEYER,
J. C. VAN DEN HEUVEL and
A. COHEN

303 pH influence on acidogenic dissimilation of glucose
in an anaerobic digester

R. J. ZOETEMEYER,
P. ARNOLDY, A. COHEN
and C. BOELHOUWER

313 Influence of temperature on the anaerobic acidifi-
cation of glucose in a mixed culture forming part of
a two-stage digestion process

KOHEI URANO,
HIROKO MAEDA,
KAORU OGURA and
HIROSHI WADA

323 Direct analytical method for aromatic compounds
in water by steam carrier gas chromatography

J. E. DUDDRIDGE and
M. WAINWRIGHT

329 Enzyme activity and kinetics in substrate-amended
river sediments

GEORGE T. F. WONG

335 The role of bromide in the dissipation of chlorine in
sea-water

SHAMIM AHMAD and
TARIQ A. MAHMOUD

345 Wastewater from a sugar refining industry

[Continued on outside back cover]

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