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MANUAL ON URBAN AIR QUALITY MANAGEMENT

Editors

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PREFACE

Since its inception, the World Health Organization Regional Office for Europe has assisted Member States in the development of environmental health programmes for pollution control and environmental sanitation at both the country and the intercountry level. The training of sanitary engineers and sanitary inspectors, as well as of other specialists, has always been an important component of those programmes.

In 1969 the Regional Committee for Europe approved a long-term programme in environmental pollution control, and a large number of reports dealing with various aspects of this programme have been made available free of charge by the Regional Office for Europe. It is with pleasure and some measure of satisfaction that, on behalf of the Regional Office for Europe as a whole and, more particularly, the staff responsible for the promotion of environmental health, I now present this publication to a wider audience. This manual presents the results of a collaborative effort and represents the start of a new WHO venture in publishing—the Regional Publications series.

The control of air pollution is a subject of immediate concern to European countries, but it should also be of interest to countries elsewhere in the world. I hope that the manual will be of practical value to the growing number of engineers, scientists, physicians, and community leaders responsible for the protection of urban areas against the effects of pollution caused by human activities.

Leo A. Kaprio
Regional Director for Europe



INTRODUCTION

M. J. Suess^a

Pollution of the atmosphere affects the lives of millions of people in all parts of the world, especially those living in large industrialized cities with heavy motor traffic. Unpleasant fumes and odours, reduced visibility, injury to human health and crops and other forms of vegetation by noxious pollutants, and damage to property by dusts and corrosive gases rank among the major environmental problems of urban and industrial areas and their surroundings. Most people are willing to accept some environmental deterioration in exchange for a higher standard of living and a greater abundance of consumer goods, but as living standards rise man-made air pollution is seen first as a major irritation and then as a threat to the quality of life. Excessive pollution can jeopardize health, and certain types of pollution may even render some areas unfit for normal habitation, and it is therefore a serious obstacle to socio-economic development. Thus many national, regional, and city administrations now face an increasing public demand for the control and abatement of air pollution.

Conscious of the seriousness of the problem, the WHO Regional Committee for Europe decided in 1969 to adopt a long-term programme of environmental pollution control, which now covers a number of sectors including water and air pollution control, solid waste management, non-ionizing radiation protection, noise abatement, food hygiene, and occupational health, and two general problem areas (environmental planning, information, terminology, and manpower development; and institutions and services). The programme aims at the development

of aids to decision making and of management systems for the use of governments, administrations, and institutions concerned with the quality of the environment.

Development of the air pollution control sector of the programme began in 1970, and a working group on trends and developments in air pollution in Europe was convened in Copenhagen in 1971. The recommendations of this group formed the foundations on which the programme activities were built up. Work also began in 1971 on the preparation of this manual, and during 1972 most of the chapters, drafted by a number of specialists at the request of WHO, were reviewed by two special working groups (see Annex 1). On the basis of their comments the draft chapters were revised by the various authors. In addition, three chapters (1, 6, and 10) were commissioned at a later stage and were revised by the authors on the basis of comments made individually by members of the two working groups.

Chapter 1, written by Dr S. R. Craxford, who also undertook much of the editorial work on the manual as a whole, is a review of the whole field of air pollution control and abatement, prepared with administrators and policy makers particularly in mind. Although this chapter provides relevant background information without too much technical detail, it is neither a summary of the subsequent chapters nor an introduction to them. However, more detailed treatment of some of the points raised in Chapter 1 is included in later chapters.

Chapter 3 is a slightly shortened and edited version of a WHO expert committee report^b on guides and criteria for urban air pollutants. Chapter 10 evolved out of an international symposium, co-sponsored by WHO, on automatic air quality monitoring systems held in Bilthoven, Netherlands, in June 1973.

^a Regional Officer for Environmental Pollution Control, World Health Organization Regional Office for Europe, Copenhagen, Denmark.

^b WHO Technical Report Series, No. 506, 1972.

This manual is intended to provide guidance on ways and means of controlling air pollution through the application of technology and legislation. It is not a complete treatise on air quality management but, rather, a summary of international experience in the field of air pollution control. Although the manual was originally planned for use in European countries, in its present form it should prove equally useful to governments and official bodies in other countries developing programmes aimed at the control of emissions of harmful substances into the atmosphere; and it should provide air pollution control specialists in all parts of the world with an introduction to international practice—a desirable objective because air pollution knows no political boundaries. While not intended to serve as a textbook, the manual will also be a useful work of refer-

ence for teachers and students of environmental subjects in universities and technical colleges.^a

All chapters, except Chapter 3, which was not subject to revision, were revised anew just before publication was approved. The information in the manual is therefore as up to date as can be expected, but it is hoped that a revised edition will be published in a few years' time if the emergence of new knowledge and information make this desirable. Readers are therefore invited to submit comments and observations concerning the manual and suggestions for additional material for inclusion in a revised edition to the World Health Organization.^b

The World Health Organization is grateful to the governments of the Federal Republic of Germany and the Netherlands for the support they have given to this manual, in part through financial contributions to the Voluntary Fund for Health Protection. Thanks are also due to the United Nations Economic Commission for Europe and the World Meteorological Organization for their contributions to the manual.

^a For other WHO publications and documents dealing with air pollution see Annex 2.

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