

ORGANIC MICROPOLLUTANTS IN DRINKING WATER AND HEALTH

Edited by ~
H.A.M. de Kruijf
H.J. Kool

ORGANIC MICROPOLLUTANTS IN DRINKING WATER AND HEALTH

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edited by

H.A.M. de Kruijf

and

H.J. Kool

National Institute of Public Health and Environmental Hygiene, Bilthoven, The Netherlands

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Preface

The occurrence of organic micropollutants in raw water sources presents a serious threat to the quality of drinking water and therefore to human health. Under various conditions before, during, and after treatment processes, hazardous compounds may be formed. The papers in this volume were presented at a Symposium which was specifically directed to exchange and communicate the most recent information and concepts on the fate and behaviour of organic micropollutants in raw water sources before, during and after treatment processes and the potential risks such compounds may present to human health when present in drinking water.

Legislation and standards in some countries are based on toxicity data of individual compounds. As several speakers reported that numerous unknown compounds occur in water, there is a demand for reliable group parameters and methods to selectively identify compounds which are biologically active.

Treatment methods based on (micro)biological techniques tend to be the most promising with regard to the effectiveness of removal of dangerous substances. Chlorination, a widely used disinfection method, is certainly a major cause of the increase of mutagenicity in drinking water. Analytical methods may, within a reasonable timespan, enable identification of such mutagenic compounds, but several carcinogenic and mutagenic substances have already been identified in drinking water.

Disinfection by chlorination should be minimized as much as possible or banned altogether where the bacteriological conditions allow such a drastic measure. Several alternatives exist, chlorine dioxide especially appears to be a promising alternative. An excellent suggestion was made to simply increase the residence time reservoirs, which will then apparently decrease the load of biologically active compounds.

Drinking water is not only used for intake but also for washing, showers etc. In an elegant study it was shown that if a rather volatile compound, such as trichloroethylene, is present in drinking water the inhalation route in the household may be much more important than the actual consumption route via drinking water with respect to health hazards. Studies on the carcinogenicity of compounds in drinking water unequivocally indicate that indeed such compounds are present. Results of epidemiological studies in this respect, however, are not too convincing.

Although the importance of hazardous compounds in drinking water should not at all be neglected, its place in the total burden of hazardous compounds to which man is exposed should not be overrated. This Symposium was only possible through the generous assistance of the National Institute of Public Health and Environmental Hygiene, the United States Environmental Protection Agency, the Ministry of Housing, Physical Planning and Environment, and the Netherlands Waterworks Testing and Research Institute Ltd. Also, the World Health Organization, Copenhagen and the Water Research Center of the United Kingdom cosponsored this Symposium.

It is a pleasure for the editors to acknowledge the help of a great number of persons in preparing this manuscript. We are especially grateful to Mrs. I. Huijgen-Regtien for her invaluable assistance during the whole process of organizing the Symposium and the preparation of the manuscript. We also thank a number of colleagues who helped us at various stages of the Symposium organisation, especially Drs. A. Minderhoud, Drs. W. van de Meent, Ir. J. Hrubec, G. Piet, Dr. B. Haring and others. We thank a number of scientists for reviewing the manuscript and finally we are indebted to Elsevier Science Publishers for their assistance.

We hope that this volume may contribute substantially to the development of methods and understanding in the field of organic micropollutants in drinking water and their significance for public health.

H.A.M. de Kruijf

H.J. Kool

Leidschendam, July 1985.

LIST OF PARTICIPANTS

International Symposium on Organic Micropollutants in Drinking Water and Health, Amsterdam 11-14th June, 1985

Andelman, J.

University of Pittsburgh
Graduate School of Public Health
PITTSBURGH, PA 15217
USA

Bull, R.J.

College of Pharmacy
State University of Washington
PULLMAN WA 99164
USA

Backlund, P.

Institute of Organic Chemistry
Abo Akademi
Akademig. 1
20500 TURKU 50
FINLAND

Christman, R.F.

University of North Carolina
Department of Environmental Sciences
and Engineering
Rosenau Hall 201 H
CHAPEL HILL, NC 27514
USA

Bassie, W.

N.V. Watermij. Z.W. Nederland
Postbus 121
4460 AC GOES
THE NETHERLANDS

Condie, L.

U.S. Environmental Protection Agency
26 West St. Clair
CINCINNATI, Ohio 45268
USA

Baxter, K.

Water Research Centre
Medmenham Laboratory
P.O. Box 16
MEDMENHAM, Marlow, Bucks
UNITED KINGDOM

Cotruvo, J.

U.S. Environmental Protection Agency
Office of Drinking Water
401 M. Street SW
WASHINGTON DC 20460
USA

Böre, M.

NOKIA Chemicals
SF - 32740 AESTA
FINLAND

Craun, G.F.

U.S. Environmental Protection Agency
26 West St. Clair
CINCINNATI OH 45268
USA

Brauch, H.J.

Engler-Bunte Institute
University Karlsruhe
R. Willstätter Allee 5
7500 KARLSRUHE
FEDERAL REPUBLIC OF GERMANY

Dienst, J.A. van

Aramco Overseas Co.
Plesmanlaan 100
Room 3-134
2332 CB LEIDEN
THE NETHERLANDS

Brumen, S.B.

Zavod ZA
Promajska 1
MARIBOR, 62000
YUGOSLAVIA

XIV

Dijk-Looijaard, Mrs. A.M.van
National Institute of Public Health
and Environmental Hygiene
P.O. Box 150
2260 AD LEIDSCHEIDAM
THE NETHERLANDS

Dreo, A.
Public Health Institute
Pavomajska 1
62000 MARIBOR
YUGOSLAVIA

Erkelens, Mrs. C.
TH - Delft
Jaffalaan 9
2628 BX DELFT
THE NETHERLANDS

Fawell, J.
Water Research Centre
Medmenham Laboratory
P.O. Box 16
MEDMENHAM, Marlow, Bucks
UNITED KINGDOM

Fayad, N.
Univ. of Petroleum and Minerals
P.O. Box 1479
DHAHRAN 31261
SAUDI ARABIA

Fielding, M.
Water Research Centre
P.O. Box 16
MEDMENHAM, Marlow S17 2HD
UNITED KINGDOM

Fiessinger, F.
Laboratoire Central
Lyonnaise des Eaux
38, rue du President Wilson
78230 LE PECQ
FRANCE

Fletcher, I.J.
The South Staffordshire Waterworks Co.
Central Office
Green Lane, Walsall
WEST MIDLANDS WS2 7PD
UNITED KINGDOM

Gaag, M.A. van der
Netherlands Waterworks Testing and
Research Institute KIWA NV
P.O. Box 1072
3430 BB NIEUWEGEIN
THE NETHERLANDS

Gjessing, E.
Norwegian Institute for Water Research
P.O. Box 333
Brekkeveien 19
OSLO 3
NORWAY

Goewie, C.
National Institute of Public Health
and Environmental Hygiene
P.O. Box 1
3720 BA BILTHOVEN
THE NETHERLANDS

Grimvall, A.
Department of Water in Environment and
Society
Linköping University
S-58183 LINKÖPING
SWEDEN

Haring, B.J.A.M.
Ministry of Housing, Physical Planning
and Environment
P.O.Box 450
2260 MB LEIDSCHEIDAM
THE NETHERLANDS

Hayes, C.
Anglian Water
Ambury Road
PE18 6NZ HUNTINGDON
UNITED KINGDOM

Heijden, C.A. van der
National Institute of Public Health
and Environmental Hygiene
P.O. Box 1
3720 BA BILTHOVEN
THE NETHERLANDS

Hofman, M.
Gem. Drinkwaterleiding Rotterdam
Postbus 6610
3002 AP ROTTERDAM
THE NETHERLANDS

Hoigne, J.
EAWAG
Überlandstrasse 133
CH-8600 DÜBENDORF
SWITZERLAND

Hoof, F. van
Antwerpse Waterwerken
Mechelsesteenweg 64
2018 ANTWERPEN
BELGIUM

Hrubec, J.
National Institute of Public Health
and Environmental Hygiene
P.O.Box 150
2260 AD LEIDSCHENDAM
THE NETHERLANDS

Huck, P.
Department of Civil Engineering
University of Alberta
EDMONTON, Alberta
CANADA

Huijgen-Regtien, Mrs. I.J.J.
National Institute of Public Health
and Environmental Hygiene
P.O.Box 150
2260 AD LEIDSCHENDAM
THE NETHERLANDS

Keller, A.
CIBA - GEIGY AG
CH-4002 BASEL
SWITZERLAND

Klijnhout, A.F.
Heineken Technisch Beheer B.V.
P.O. Box 510
2380 BB ZOETERWOUDE
THE NETHERLANDS

Kool, H.J.
National Institute of Public Health
and Environmental Hygiene
P.O.Box 150
2260 AD LEIDSCHENDAM
THE NETHERLANDS

Kooy, D. van der
Netherlands Waterworks Testing
& Research Inst. KIWA N.V.
P.O. Box 1072
3430 BB NIEUWEGEIN
THE NETHERLANDS

Kraus, J.
Deutscher Verein des Gas- und
Wasserfaches
Frankfurter Allee 27
6263 ESCHBORN
FEDERAL REPUBLIC OF GERMANY

Kreijl, C.F. van
National Institute of Public Health and
Environmental Hygiene
P.O.Box 1
3720 BA BILTHOVEN
THE NETHERLANDS

Kronberg, L.
Institute of Organic Chemistry
Abo Akademi
Akademig 9
SF-20500 TURKU
FINLAND

Kruijf, H.A.M.de
National Institute of Public Health and
Environmental Hygiene
P.O.Box 150
2260 AD LEIDSCHENDAM
THE NETHERLANDS

Kruithof, J.C.
Netherlands Waterworks Testing and
Research Institute KIWA N.V.
P.O. Box 1072
3430 BB NIEUWEGEIN
THE NETHERLANDS

Laegreid, Mrs. M.
National Inst. of Public Health
Geithyrsvn. 75
0566 OSLO 5
NORWAY

Leer, E.W.B. De
Lab. Anal. Chem. TH - Delft
Jaffalaan 9
2628 BX DELFT
THE NETHERLANDS

Legube, B.
University of Poitiers
40, Ave. du Recteur Pineau
86022 POITIERS
FRANCE

Leuken, R.G.J. van
Division of Technology TNO
P.O. Box 217
2600 AE DELFT
THE NETHERLANDS

Lewis, W.M.
World Health Organisation
8, Scherfigsvej
DK-2100 COPENHAGEN
DENMARK

Lieshout, J. van
Water Laboratorium Oost
Kastanjelaan 8
7004 AK DOETINCHEM
THE NETHERLANDS

Liimatainen, A.
Dept. of Environmental Hygiene
University of Kuopio
P.O. Box 6
70211 KUOPIO 21
FINLAND

Luijten, J.A.
National Institute of Public Health
and Environmental Hygiene
P.O.Box 150
2260 AD LEIDSCHENDAM
THE NETHERLANDS

Mallevalle, J.
Laboratoire Central
Lyonnaise des Eaux
38, rue du President Wilson
78230 LE PECQ
FRANCE

Masters, Mrs. S.J.
EAWAG - ETH
Überlandstrasse
8600 DÜBENDORF
SWITZERLAND

Hedved, M.

Inst. for Public Health

Provomajska 1

62000 MARIBOR

YUGOSLAVIA

Noordam, P.C.

Netherlands Waterworks Testing

& Research Institute KIWA N.V.

P.O.Box 1072

3430 BB NIEUWEGEIN

THE NETHERLANDS

Meent, W. van de

Netherlands Waterworks Testing

& Research Institute KIWA N.V.

P.O. Box 1072

3430 BB NIEUWEGEIN

THE NETHERLANDS

Noordsij, A.

Netherlands Waterworks Testing

& Research Institute KIWA N.V.

P.O. Box 1972

3430 BB NIEUWEGEIN

THE NETHERLANDS

Meijers, A.P.

WRK

P.O.Box 10

3430 AA NIEUWEGEIN

THE NETHERLANDS

Norwood, D.

University of North Carolina

Department of Environmental Sciences
and Engineering

Rosenau Hall 201 H

CHAPEL HILL, NC 27514

USA

Merlet, Mrs. N.

Univ. of Poitiers

Lab. Chimie d L'eau

40, Avenue du Recteur Pineau

86022 POITIERS

FRANCE

Piet, G.

National Institute of Public Health
and Environmental Hygiene

P.O.Box 150

2260 AD LEIDSCHENDAM

THE NETHERLANDS

Minderhoud A.

National Institute of Public Health
and Environmental Hygiene

P.O.Box 1

3720 BA BILTHOVEN

THE NETHERLANDS

Praag, F. van

Purewater.B.V.

Amperestraat 42

SCHAESBERG

THE NETHERLANDS

Naerssen, E.A. van

Municipal Waterworks Dordrecht

Postbus 62

3300 AB DORDRECHT

THE NETHERLANDS

Prest, J.

Imperial Chemical Industries

Mond Division

P.O. Box 8

THE HEATH, Runcorn

UNITED KINGDOM

Puffelen, J. van

Duinwaterleiding van 's-Gravenhage

P.O.Box 710

2501 CS DEN HAAG

THE NETHERLANDS

Rossum, P. van

National Institute for Water Research

P.O. Box 395

PRETORIA 0001

SOUTH AFRICA

Rauzy, S.

Ville de Paris - Controle des Eaux

144 Av PV Couturier

75014 PARIS

FRANCE

Schraa, G.

Department of Microbiology

Agricultural University

H. v. Suchtelenweg 4

6703 CT WAGENINGEN

THE NETHERLANDS

Reckhow, D.

Compagnie Generale des Eaux

Rue de la Digue

78600 MAISONS LAFITTE

FRANCE

Snoeyink, V.L.

University of Illinois

208, N. Romine Street

URBANA IL 61801

USA

Rismal, R.

Institut za zdrastu. hidrotehniko

Hajdrihoua 28

61000 LJUBLJANA

YUGOSLAVIA

So, Mrs. M.L.

Hong Kong Baptist College

224 Waterloo Road

HONG KONG

Ritsema, R.

Government Institute for Sewage

Treatment

Herenweg 99a

9721 AA GRONINGEN

THE NETHERLANDS

Sontheimer, H.

Engler Bunte Institute

University of Karlsruhe

KARLSRUHE

FEDERAL REPUBLIC OF GERMANY

Rittman, B.E

University of Illinois

URBANA IL 61801

USA

Soppe, A.I.A.

Gemeentelijk Waterbedrijf Groningen

Van Kerckhoffstraat 2

9701 BN GRONINGEN

THE NETHERLANDS

Rook, J.J.

Laboratoire Central

Lyonnaise des Eaux

38, rue du President Wilson

78230 LE PECQ

FRANCE

Struijs, J.

National Institute of Public Health

and Environmental Hygiene

P.O.Box 1

3720 BA BILTHOVEN

THE NETHERLANDS

Suijlekom, G. van
 Natronchemie
 Westersingel 102
 3015 LD ROTTERDAM
 THE NETHERLANDS

Taylor, D.H.
 University of Miami
 Department of Zoology
 OXFORD, Ohio 45056
 USA

Toft, P.
 Environmental Standard Division
 Bureau Chemical Hazards
 OTTAWA, Ontario
 CANADA

Tiovanen, E.
 Helsinki City Water and Sewage Works
 Water Research Office
 Kylasaarenkatu 10
 0550 HELSINKI
 FINLAND

Trouwborst T.
 Ministry of Housing, Physical Planning
 and Environment
 P.O.Box 450
 2260 HB LEIDSCHENDAM
 THE NETHERLANDS

Vachon, J.
 Environment - Quebec
 723, Rue Marly (4th floor)
 3900 STRASBOURG - SAINTE FOY
 QC-GIX 4E4 FRANCE

Vakkuri, T.
 Helsinki City Water and Sewage Works
 Water Research Office
 Kuninkaantammentie 11
 00430 HELSINKI
 FINLAND

Vasseur, P.
 Centre des Sciences de l'Environnement
 Universite de Metz
 57000 METZ
 FRANCE

Veenendaal, G.
 Netherlands Waterworks Testing
 & Research Institute KIWA N.V.
 P.O. Box 1072
 3420 BB NIEUWEGEIN
 THE NETHERLANDS

Villeneuve, D.
 Environmental Contaminants Section
 Bureau of Chemical Hazards
 Health Protection Branch
 Ottawa, K1A 0L2
 CANADA

Waring, M.
 Department of Health and Social Security
 Room 907, Hannibal House
 Elephant and Castle
 LONDON SE1 6TE
 UNITED KINGDOM

Warren, S.
 Water Research Centre
 Medmenham Laboratory
 P.O. Box 16 Marlow
 BUCKINGHAMSHIRE SL 7 2HD
 UNITED KINGDOM

Wigilius, B.
Department of Water in Environment
and Society
Linköping University
S-8183 LINKÖPING
SWEDEN

Witholt, B.
Rijksuniversiteit Groningen
Lab. voor Biochemie
Nijenborgh 16
9747 AG GRONINGEN
THE NETHERLANDS

Ziglio, G.
University of Milano
Istituto di Igiene
Via F. Sforza 35
20122 MILANO
ITALY

Zoeteman, B.C.J.
National Institute of Public Health
and Environmental Hygiene
P.O. Box 1
3720 BA BILTHOVEN
THE NETHERLANDS

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