

NGU-rapport nr. 87.068

Geomedisinsk symposium
London, april 1987.

Reiserapport



Norges geologiske undersøkelse

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<p>"Second International Symposium on Geochemistry and Health" and "Fifth European Meeting of the Society for Environmental Geochemistry and Health" ble holdt i London 22-24 april 1987. Rapporten gir følgende hovedinntrykk fra symposiet:</p> <ol style="list-style-type: none">1. Fagområdet geomedisin har økende betydning.2. Årsaken til presenilitet (Alzheimers sykdom) er ikke kjent, men høyt aluminiuminnhold er påvist i hjernen på Alzheimers pasienter, og stor forskningsinnsats pågår.3. Det er funnet korrelasjoner mellom kreft og kjemiske elementer i miljøet.					
Fagområde:			Reiserapport		Geomedisin

Second International symposium on Geochemistry and Health and fifth European Meeting of the Society for Environmental Geochemistry and Health, ble holdt i London 22-24 april 1987.

Program for møtet er vedlagt.

Disse møtene som holdes annethvert år er helt sentrale innenfor fagområdet geomedisin. Mine viktigste erfaringer fra møtet er oppsummert i punktene nedenfor.

- 1) Betydningen av miljøavhengige sykdommer blir mer og mer klar. Struma er fremdeles en meget utbredt sykdom i verden. Således har 46% av befolkningen på Sri Lanka struma, også i kystområder. Alvorlig fluorose (for mye fluor) med skjelett-deformasjon rammer bortimot ca. 30 mill. mennesker bare i Kina, og er også utbredt i India og Øst-Afrika. Keshan sykdommen i Kina som også rammer store folkegrupper skyldes selenmangel. Det er mistanke om at miljøet spiller en rolle for utbredelsen av en rekke andre sykdommer f.eks. kreft.
2. Alzheimers sykdom (presenilitet) ble viet spesiell oppmerksomhet, og proceedings fra møtet vil gi en meget god oversikt over hvor forskningen på dette området står idag. Sykdommen kan få meget stor betydning i de vestlige land, da pasientene er sterkt pleietrengende og sykdommen angriper også mange relativt unge personer i befolkninger med økende gjennomsnittsalder. Det må regnes fastslått at presenilitet er ledsaget av høyt aluminiuminnhold i bestemte lokaliteter i hjernen. Derimot vet man ennå ikke om det forhøyede aluminium er en årsak eller en virkning. Det ble klart poengtert at et epidemiologisk angrepspunkt vil være det mest fruktbare i den fortsatte forskning. Sykdommens utbredelse er usikker, fordi det ikke er entydige angivelser om Alzheimers sykdom på dødsattester. Dette gjelder også for Norge, som hadde symposiets eneste bidrag om sammenheng mellom Al i miljøet og utbredelse av presenilitet (Flaten og Vogt). P.g.a. usikre epidemiologiske data kan ingen helt sikre konklusjoner trekkes, selv om sammenhenger mellom Alzheimers sykdom og Al i drikkevann antydes.

3. Det var to foredrag om cancer og miljø, et fra Skottland og et fra Norge. De skotske forskere (Aggett et al.) var pesimistiske i sine konklusjoner når det gjaldt å komme videre med sammenligninger mellom epidemiologiske og geokjemiske data. Mine personlige oppfatning er at de skotske undersøkelser bygger på A) for små befolkningsgrunnlag, B) dårligere epidemiologiske data enn de som finnes i Norge og C) uoversiktlig struktur i befolkningen slik at betydningen av alders og yrkesfordelingen ikke er ivaretatt.

De norske forskere (Bølviken et al.) var mer optimistiske i sine konklusjoner. Det var funnet statistisk signifikante negative korrelasjoner for hudkreft (ICD 7191) versus syreløselig kalium og for kreft i tykktarm og endetarm versus syreløselig barium. En forklaringsmodell for kalium ble foreslått på basis av kalium-40 som er en radioaktiv isotop som utgjør ca. 0.01% av alt naturlig forekommende kalium.

**SECOND INTERNATIONAL SYMPOSIUM ON GEOCHEMISTRY AND HEALTH
FIFTH EUROPEAN MEETING OF THE SOCIETY FOR ENVIRONMENTAL
GEOCHEMISTRY AND HEALTH**

at: The Royal Society
6 Carlton House Terrace
London S W 1

on: 22 23 24 April 1987

WEDNESDAY 22 APRIL

09.30 Introductory remarks

Professor S H U Bowie FRS

Dr I Thornton
President Society for Environmental Geochemistry
and Health

SESSION I

DATA COLLECTION, MANAGEMENT AND INTERACTION

Co-Chairpersons

Professor S H U Bowie FRS

Dr J A Plant
Mineral Resources and Applied Geochemistry Unit
British Geological Survey

09.40 Introductory paper

Professor R Colwell
Department of Microbiology
University of Maryland, U S A

THE ROLE OF CODATA IN THE ENVIRONMENTAL SCIENCES

10.10 Dr Ulrich Siewers
Federal Institute for Geosciences and Natural Sciences
Federal Republic of Germany

**THE GEOCHEMICAL ATLAS OF THE FEDERAL REPUBLIC OF
GERMANY**

10.40 Dr H Tanskanen
Geological Survey of Finland

THE GEOCHEMICAL ATLAS OF FINLAND

11.10 Interval for coffee

- 11.40 Dr S P McGrath
Soils Division, Rothamsted Experimental Station
- Dr P Loveland
Soil Survey of England and Wales

**PROGRESS ON THE NATIONAL SOIL INVENTORY FOR ENGLAND
AND WALES**

- 12.10 Professor B E Davies and K Paveley
School of Studies in Environmental Science
University of Bradford

**BASELINE TRACE METAL SURVEY OF WELSH SOILS WITH
SPECIAL REFERENCE TO LEAD**

- 12.40 Interval for lunch

SESSION II

DATA COLLECTION, MANAGEMENT AND INTERACTION

Co-Chairpersons

Professor Yetang Hong
Department of Environmental Geochemistry
Institute of Geochemistry
People's Republic of China

Professor A L Page
Department of Soil and Environmental Sciences
University of California, Riverside, U S A

- 14.00 Dr I R Straughan
Southern California Edison Company, U S A

**MAPPING EMISSION, FALLOUT AND ADDITIONS TO BACKGROUND
OF ELEMENTS MOBILIZED BY THE COMBUSTION OF FOSSIL FUELS**

- 14.30 Dr R R Meglen
Center for Environmental Sciences
University of Colorado, Denver, U S A

**EXAMINATION OF LARGE GEOCHEMICAL DATA BASES USING
EXPLORATORY DATA ANALYSIS AND PATTERN RECOGNITION
TECHNIQUES**

15.00 Dr H M ApSimon
Nuclear Power Section
Mechanical Engineering, Imperial College, London

**DISPERSION AND DEPOSITION OF RADIONUCLIDES FROM
CHERNOBYL**

15.30 Interval for tea

16.00 Dr N F Suttle et al
Animal Diseases Research Association
Moredun Research Institute, Edinburgh

**RELATIONSHIPS BETWEEN THE TRACE ELEMENT STATUS OF
SOILS, PASTURE AND ANIMALS IN RELATION TO GROWTH RATE**

16.30 Dr P J Aggett
Department of Child Health, University of Aberdeen

Dr C F Mills
Rowett Research Institute, Aberdeen

Dr J A Plant
British Geological Survey

**PROBLEMS ENCOUNTERED IN RELATING GEOCHEMICAL AND
HUMAN HEALTH IN SCOTLAND**

17.00 Dr B Bolviken et al
Geological Survey of Norway

**COMPARISON OF CANCER INCIDENCE AND THE GEOCHEMICAL
ENVIRONMENT IN NORWAY**

17.30 Close

THURSDAY 23 APRIL

SESSION III

MULTI-DISCIPLINARY PROGRAMMES IN GEOCHEMISTRY AND HEALTH

Co-Chairpersons

Professor J Sutton FRS
Centre for Environmental Technology
Imperial College, London

Professor D D Hemphill
Environmental Trace Substances Research Center
University of Missouri, Columbia, U S A

09.30 Professor Yetang Hong
Department of Environmental Geochemistry
Institute of Geochemistry
People's Republic of China

HUMAN FLUOROSIS AND GOITRE IN CHINA AND THEIR CAUSES

10.00 Dr K A V R Krishnamachari
National Institute of Nutrition, Hyderabad, India

**GEOGRAPHIC DISTRIBUTION OF BONE AND JOINT DISEASES
IN INDIA**

10.30 Professor A Kabata-Pendias
Institute of Soil Science and Cultivation of Plants
Pulawy, Poland

**ENVIRONMENTAL GEOCHEMISTRY OF TRACE ELEMENTS IN
POLAND**

11.00 Interval for coffee

11.30 Professor C B Dissanayake
Department of Geology, University of Peradeniya
Sri Lanka

GEOCHEMISTRY AND HEALTH IN SRI LANKA

12.00

12.30 Interval for lunch

SESSION IV

MULTI-DISCIPLINARY PROGRAMMES IN GEOCHEMISTRY AND HEALTH

Co-Chairpersons

Professor B G Wixson
Center for International Programs & Studies
University of Missouri-Rolla, U S A

Dr I Thornton
Applied Geochemistry Research Group
Imperial College, London

- 14.00 Dr S van Dorst and Dr I Thornton
Applied Geochemistry Research Group
Department of Geology, Imperial College, London

SOURCES AND PATHWAYS OF SELENIUM IN THE SOIL-PLANT-ANIMAL SYSTEM IN BRITAIN

- 14.30 Professor A L Page
Department of Soil and Environmental Sciences
University of California, Riverside, U S A

GEOCHEMICAL AND OTHER SOURCES OF SELENIUM AND IMPORTANCE TO HEALTH IN CALIFORNIA

- 15.00 Professor Dr sc M Anke
Karl-Marx University
Leipzig, German Democratic Republic

THE INFLUENCE OF COPPER, CADMIUM, MANGANESE, IRON AND NICKEL ON THE PERFORMANCE OF DOMESTIC AND WILD RUMINANTS IN MIDDLE EUROPE

- 15.30 Interval for tea

- 16.00 Dr G A Fleming
Irish Agricultural Institute
Johnstown Castle
Co Wexford, Ireland

ASPECTS OF AGRICULTURAL AND ENVIRONMENTAL TRACE ELEMENT RESEARCH IN THE REPUBLIC OF IRELAND

- 16.30 Professor S P Arora
National Dairy Research Institute
Karnal, India

EFFECTS OF SOME TRACE ELEMENT DEFICIENCIES AND TOXICITIES ON ANIMAL HEALTH IN INDIA

17.00

Professor V Kuznetsov
Institute of Geochemistry and Geophysics
BSSR Academy of Sciences, Minsk, USSR

**LANDSCAPE GEOCHEMISTRY IN RELATION TO GOITRE AND
CANCERS IN THE SOVIET UNION**

19.00 for **SYMPOSIUM DINNER** - Sherfield Building
19.30 Imperial College
London S W 7

(Limited to those who have made reservations)

FRIDAY 24 APRIL

SESSION V

ALUMINIUM AND ALZHEIMER'S DISEASE

Co-Chairpersons

Professor R Perry
Civil Engineering, Imperial College, London

Professor B E Davies
School of Studies in Environmental Science
University of Bradford

09.30 Introductory paper

Professor D Perl
Mount Sinai Medical Center, New York

**REVIEW OF THE ASSOCIATION BETWEEN ALUMINIUM AND
ALZHEIMER'S DISEASE**

10.00 Dr S G Epstein
Aluminium Association, Washington D C

HEALTH EFFECTS OF ALUMINIUM AND ALUMINIUM COMPOUNDS

10.30 Dr B W Bache
Department of Applied Biology, Cambridge University

ALUMINIUM MOBILIZATION IN SOILS AND WATERS

11.00 Interval for coffee

11.30 Mr A M Simpson
Laporte Industries Limited, Widnes

Professor R Perry and Dr C J Sollars
Civil Engineering, Imperial College, London

**A EUROPEAN OVERVIEW OF ALUMINIUM IN WATER WITH
REFERENCE TO TREATMENT PROCESSES**

12.00 Professor J A Edwardson
MRC Neuroendocrinology Unit, Newcastle General
Hospital

**ALUMINIUM IN MAN: ABSORPTION, TRANSPORT AND TISSUE
DISTRIBUTION**

12.30 Interval for lunch

SESSION VI

ALUMINIUM AND ALZHEIMER'S DISEASE

Co-Chairpersons

Professor A G Shaper
Department of Clinical Epidemiology & General
Practice
The Royal Free Hospital

13.40 Dr J Sherlock
Ministry of Agriculture Fisheries and Food
Food Science Division, London

ALUMINIUM IN THE DIET AND HUMAN EXPOSURE

14.00 Dr J M Candy
MRC Endocrinology Unit, Newcastle General Hospital

ALUMINOSILICATES AND THE NEUROPATHOLOGY OF ALZHEIMER'S DISEASE

14.30 Professor J D Birchall
Research and Technology Department
Imperial Chemical Industries

BIOLOGICAL IMPLICATIONS OF THE INTERACTION OF SILICON AND ALUMINIUM

15.00 Professor D Perl
Mount Sinai Medical Center, New York

ALZHEIMER'S DISEASE AND RELATED PROBLEMS IN GUAM

15.30 Interval for tea

16.00 Dr T P Flaten
Department of Chemistry, University of Trondheim

Dr T Vogt
Central Bureau of Statistics of Norway

GEOGRAPHICAL ASSOCIATIONS BETWEEN ALUMINIUM IN DRINKING WATER AND REGISTERED DEATH RATES FROM DEMENTIA (INCLUDING ALZHEIMER'S DISEASE) IN NORWAY

16.30 Dr C N Martyn
MRC Environmental Epidemiology Unit
Southampton General Hospital

FACTS AND FALLACIES IN DEMENTIA EPIDEMIOLOGY

17.00 General discussion

17.30 Dr C F Mills
Rowett Research Institute, Aberdeen

CONCLUDING REMARKS

17.45 Close

**SECOND INTERNATIONAL SYMPOSIUM ON GEOCHEMISTRY AND HEALTH
FIFTH EUROPEAN MEETING OF THE SOCIETY FOR ENVIRONMENTAL
GEOCHEMISTRY AND HEALTH**

22 23 24 APRIL 1987

P O S T E R S

1. Dr Hans Kuerzl
Yoanneum Research Society, Leoban, Austria

REGIONAL STREAM SEDIMENT RECONNAISSANCE OF AUSTRIA

2. Dr K C Jones
Department of Environmental Sciences
University of Lancaster

**QUANTIFICATION OF HUMAN EXPOSURE TO ENVIRONMENTAL
ALUMINIUM**

3. Dr G Grupe
Institut fur Anthropologie der Universitat Gottingen
West Germany

TRACE ELEMENT ANALYSIS OF PREHISTORIC HUMAN BONES

4. Dr P W Lahermo, Dr J Hyppa and M Taka
Geological Survey of Finland
Espoo, Finland

**HYDROGEOCHEMISTRY OF FINNISH GROUNDWATERS WITH SOME
HEALTH IMPLICATIONS**

5. Professor Z Maksimovic
Faculty of Mining and Geology
University of Beograd, Yugoslavia

PROGRESS WITH GEOCHEMICAL MAPPING IN YUGOSLAVIA

6. Dr V Petrikova
Vizskumny Ustav Rostlinne Vyroby
Ruzyne, Czechoslovakia

**ENVIRONMENTAL PROJECTS IN CZECHOSLOVAKIA: INFLUENCE
OF INDUSTRIAL EMISSIONS ON PLANT PRODUCTION**

7. Dr J H Stoner
Welsh Water Authority

THE EFFECTS OF ACIDIFICATION ON THE ECOLOGY OF STREAMS

8. L E Burge and Professor B E Davies
School of Studies in Environmental Sciences
University of Bradford

BASELINE STUDY OF WATER QUALITY IN SEVERAL LAKES OF EAST WALES

9. R Matthews and Professor B E Davies
School of Studies in Environmental Sciences
University of Bradford

LEAD AND OTHER METALS IN THE COMPARTMENTS OF A SMALL CONTAMINATED ECOSYSTEM IN WALES

10. L Arnold, Dr S van Dorst and Dr I Thornton
Applied Geochemistry Research Group
Department of Geology, Imperial College, London

THE INFLUENCE OF pH AND FERTILIZER APPLICATION ON THE ACCUMULATION OF SELENIUM BY PASTURE SPECIES

11. J Watt, A Hunt and Dr I Thornton
Applied Geochemistry Research Group
Department of Geology, Imperial College, London

GEOCHEMICAL APPLICATIONS OF INDIVIDUAL PARTICLE ANALYSIS USING SCANNING ELECTRON MICROSCOPY AND RELATED TECHNIQUES

12. Dr O Selinus
Geochemical Department, Geological Survey of Sweden

GEOCHEMICAL MAPPING OF SWEDEN