

# FLUORIDE

QUARTERLY JOURNAL  
OF THE INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH

<http://www.fluoride-journal.com> Email: [isfr@fluoride-journal.com](mailto:isfr@fluoride-journal.com)

Managing Editor:  
Dr Bruce Spittle  
Dunedin, New Zealand

Editor:  
Prof A W Burgstahler  
Lawrence, Kansas, USA

Associate Editors:  
Prof G W Miller Logan, Utah, USA  
Dr J R Lee Sebastopol, California, USA  
Prof Ming-Ho Yu Bellingham, Washington, USA

---

## CONTENTS

### GUEST EDITORIAL

Silicofluorides and fluoridation

Myron J Coplan, Roger D Masters ..... 161-164

### RESEARCH REPORTS

Effect of fluoride on thyroid function and cerebellar  
development in mice

Mahmoud Trabelsi, Fadhel Guermazi, Najiba Zeghal. Sfax, Tunisia ..... 165-173

Influence of fluoride ions on Na<sup>+</sup>-H<sup>+</sup> exchanger activity  
in human red blood cells

J Bober, D Chlubek, E Kwiatkowska, K Kędzierska, E Stachowska,  
P Wiczorek, E Byra, Z Machoy, E Herdzik. Szczecin, Poland..... 174-180

### BOOK REVIEW

Treatise on Fluorosis

by AK Susheela

(Fluorosis Research & Rural Development Foundation, India, 2001)

Reviewed by HC Moolenburgh ..... 181-183

**ABSTRACTS** ..... 184-193

### HEALTH/BIOLOGICAL EFFECTS

Regression analysis of cancer incidence rates and water  
fluoride in the U.S.A. based on IACR/IARC (WHO) data  
(1978-1992). International Agency for Research on Cancer

Takahashi K, Akiniwa K, Narita K..... 184

Vitamin D ameliorates fluoride-induced  
embryotoxicity in pregnant rats

Guna Sherlin DM, Verma RJ ..... 184-185

Dental caries among 10- to 14-year-old children in Ugandan rural areas  
with 0.5 and 2.5 mg fluoride per liter in drinking water

Rwenyonyi CM, Birkeland JM, Haugejorden O, Bjorvatn K..... 185

|   |         |
|---|---------|
| Multigenerational evaluation of sodium fluoride in rats<br>Collins TF, Sprando RL, Black TN, Shackelford ME,<br>Bryant MA, Olejnik N, Ames MJ, Rorie JI, Ruggles DI ..... | 186     |
| Urinary fluoride excretion in children<br>drinking fluoridated school milk<br>Ketley CE, Lennon MA .....  | 186-187 |
| Prevalence of dental fluorosis in the primary dentition<br>Warren JJ, Levy SM, Kanellis MJ .....  | 187     |

**DIETARY FLUORIDE**

|  |         |
|--|---------|
| Patterns of fluoride intake from birth to 36 months<br>Levy SM, Warren JJ, Davis CS, Kirchner HL, Kanellis MJ, Wefel JS .....  | 188     |
| Fluid consumption related to climate among<br>children in the United States<br>Sohn W, Heller KE, Burt BA .....  | 189     |
| Water wells in the Muenster region – results<br>of a preliminary investigation<br>Queste A, Lacombe M, Hellmeier W, Hillermann F,<br>Bortolussi B, Kaup M, Ott K, Mathys W ..... | 189-190 |
| Prevention of brick tea fluorosis in rats with low-<br>fluoride brick tea on laboratory observation<br>Cao J, Zhao Y, Liu J .....  | 190-191 |

**ENVIRONMENTAL FLUORIDE POLLUTION**

|  |         |
|--|---------|
| Mechanism of degradation of the quality of natural water<br>in the Lakes Region of the Ethiopian rift valley<br>Chernet T, Travi Y, Valles .....   | 191-192 |
| Inhalation exposure in secondary aluminium smelting<br>Healy J, Bradley SD, Northage C, Scobbie E .....  | 192     |
| Health effects of fluoride pollution caused by coal burning<br>Ando M, Tadano M, Yamamoto S, Tamura K,<br>Asanuma S, Watanabe T, Kondo T, Sakurai S,<br>Ji R, Liang C, Chen X, Hong Z, Cao S ..... | 192-193 |

**XXIVth ISFR CONFERENCE ABSTRACTS****ENVIRONMENTAL FLUORIDE AND ANALYTICAL ASPECTS**

|  |         |
|--|---------|
| Fluoride and arsenic concentrations in<br>groundwater of Aguascalientes, Mexico<br>R Trejo-Vázquez, A Bonilla-Petriciolet, A Ortiz-Gómez ..... | 194     |
| Estimation of mean daily fluoride intake in Japan<br>H Koga, Y Maki, M Takashi, Y Takaesu .....  | 194-195 |
| Fluoride mobility in aluminium and calcium loaded soils<br>K Rai, M Agarwal, S Dass, R Shrivastav .....  | 195     |

|  |         |
|--|---------|
| Preparation of an adsorbent for fluoride removal from drinking water<br>R Trejo-Vázquez, A Bonilla-Petriciolet .....   | 195-196 |
| Effect of fluoride contamination of drinking water on human spermatozoa<br>M Bhatnagar, AK Susheela, CC Soundaram, D Takkar, KK Roy, A Kriplani .....  | 196     |
| Defluoridation of water using amended clays<br>M Agarwal, K Rai, R Shrivastav, S Dass .....  | 196-197 |
| Measurement of bone calcium, phosphorus, and fluoride in growing rats by X-ray fluorescence analysis<br>N Nagisa, M Shimahara, N Hashiguchi, Y Tanaka, K Kono, K Usuda, T Dote, H Nishiura ..... | 197     |
| Statistical neural network analysis of fluoride bioaccumulation in deer bones from Polish industrial areas<br>Z Machoy, J Straszko, V Dziedziejko, I Gutowska, H Zakrzewska .....                | 197-198 |
| British dietary fluoride intake<br>SM Mohamedally .....  | 198     |
| Water quality and fluoride levels in Lake Biwa of Japan<br>K Yoshitake, H Kawanabe .....   | 198-199 |
| Regression analysis of cancer incidence rates and water fluoridation in the U.S.A.<br>1. The methodology and results<br>K Takahashi, K Akiniwa, K Narita .....                                   | 199     |
| Regression analysis of cancer incidence rates and water fluoridation in the U.S.A.<br>2. Cancer of the oral cavity and pharynx<br>K Takahashi, K Akiniwa, K Narita .....                         | 199-200 |
| Regression analysis of cancer incidence rates and water fluoridation in the U.S.A.<br>3. An approach to the causal genesis<br>K Takahashi, K Akiniwa, K Narita .....                             | 200-201 |
| Water fluoridation in China<br>W Zandao .....  | 201     |
| <b>BIOLOGICAL EFFECTS OF FLUORIDE</b>  |         |
| Perisinusoidal (Ito) cells in hepatocellular carcinoma treated with fluorouracyl<br>P Kapp, M Bély, E Nemesánszky, B Szende .....  | 202     |
| Skeletal radiographs, hydroxyproline, alkaline phosphatase, and other biochemical parameters in endemic fluorosis<br>C Xuguang, K Qinpin, S Minhui, W Zandao .....                               | 202-203 |

|   |         |
|---|---------|
| Physicochemical properties of functionally<br>graded fluoridated hydroxyapatite<br>M Okazaki.....   | 203     |
| Effect of fluoride on cytokine expression in murine splenic<br>macrophages during subacute oral exposure<br>M Tsunoda, K Itai, H Tsunoda.....   | 204     |
| The influence of fluoride on the calcification induced in a co-culture<br>of mouse osteoblasts and nacre of mollusk <i>Hyriopsis schlegeli</i><br>N-C Su, G Yamamoto, Y Kimura, K Yoshitake.....                | 204-205 |
| Fluoride-induced apoptosis in human bone marrow<br>and cord blood CD34 <sup>+</sup> cells<br>B Machalinski, A Machalinska, A Machoy-Mokrzynska,<br>W Marlicz, E Dabkowska, I Stecewicz.....                     | 205     |
| Antidotes for fluoride and arsenic-induced kidney toxicity in mice<br>NJ Chinoy, SD Shah.....   | 206     |
| Antidotes for fluoride and arsenic-induced testicular<br>and ovarian toxicity in mice<br>NJ Chinoy, KS Tewari, DD Jhala.....  | 206-207 |
| Genotoxicity of sodium fluoride and aluminium<br>chloride on human lymphocytes<br>NJ Chinoy, D Chandel, TN Patel, MR Memon.....   | 207-208 |
| <b>HEALTH EFFECTS ON HUMANS AND ANIMALS</b>   |         |
| Expression of skin $\alpha 1(I)$ collagen gene in rats exposed to<br>sodium fluoride in drinking water<br>D Chlubek, T Olszowski, A Machoy-Mokrzynska,<br>A Ciechanowicz, G Adler.....                          | 208     |
| Effect of low formula weight antioxidants on<br>fluoride toxicity and fluoride excretion<br>GF Sun, GJ Dai, C Qian.....   | 208-209 |
| Increased water fluoride and physical development in children<br>V Povoronznjuk, I Govinsky, N Bachnarel,<br>N Grygoreva, Vilensky, N Bidenco.....  | 209-210 |
| Interaction of fluoride ions with fatty acids present<br>in atheromatous plaques from carotid arteries<br>D Chlubek, E Stachowska, B Dołęgowska, K Jakubowska,<br>J Bober, P Gutowski, R Turowski, I Noceń..... | 210     |
| Arsenic and fluoride-induced toxicity in gastrocnemius muscle<br>of mice and its reversal by therapeutic agents<br>NJ Chinoy, SB Nair.....  | 210-211 |
| Serum fluoride and bone turnover markers in humans<br>K Itai, A Okayama, H Tsunoda.....   | 211-212 |

|   |         |
|---|---------|
| Renal damage from continuous intravenous administration of sodium fluoride to rats<br>H Nishiura, K Kono, T Dote, K Usuda, M Akashi,<br>M Tominaga, Y Toshina, C Koizumi, M Shimahara,<br>N Nagisa, N Hashiguchi, Y Tanaka .....        | 212     |
| High fluoride concentrations in the serum and bone of patients with chronic renal failure<br>F Marumo, S Iwanami .....  | 213     |
| Cortical and trabecular bone fluoride in female patients with proximal femur fractures<br>A Bohatyrewicz .....  | 213-214 |
| Positive correlation between fluoride in drinking water and markers of bone resorption<br>H Nishino, M Zhang, T Shimmura, BI Lifu, ZY Liu,<br>M Iki, E Kajita, S Kagamimori .....   | 214-215 |
| Compressive strength of cancellous bone in young fluoride-treated rats<br>A Gusta, A Bohatyrewicz, P Bialecki, D Larysz .....   | 215-216 |
| Monitoring endemic fluorosis in China: 1991-1999<br>DJ Sun, YF Sun, LH Wang .....   | 216     |
| Fluoride deposition in atheromatous plaques<br>SM Mohamedally .....   | 217     |
| <b>FLUORIDE IN DENTISTRY</b>  |         |
| Fluoride and magnesium content in superficial enamel layers of permanent human teeth in relation to age<br>D Chlubek, K Jakubowska, R Łagocka, K Opalko, W Stokowska,<br>G Marczuk-Kolada, J Buczkowska-Radlinska .....                 | 217     |
| Fluoride levels in the enamel of permanent teeth of children exposed to fluoride pollution<br>D Chlubek, K Jakubowska, R Łagocka, K Opalko, J Banach .....  | 217-218 |
| Foam preparations of sodium fluoromonophosphate and sodium fluoride are ineffective for the management of dentin hypersensitivity<br>R Łagocka, M Trąbska-Świstelnicza, M Wiernicka,<br>M Mazurek-Mochol, K Jakubowska, D Chlubek ..... | 218     |
| Release of fluoride into enamel and saliva from paracervical dental filling materials<br>R Łagocka, J Buczkowska-Radlińska,<br>K Jakubowska, D Chlubek .....  | 219     |
| 30 years of accidental dental fluorosis in Takarazuda and Nishinomiya in Japan<br>I Sugita, H Imura, K Akiniwa .....  | 219-220 |
| Fluoridation and dental health<br>SM Mohamedally .....  | 220     |

# INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH

## OFFICERS AND BOARD FOR 2001

**President:**

Professor Zygmunt Machoy, Pomeranian Medical Academy, Szczecin, Poland

**Vice President:**

Professor Koichi Kono, Osaka Medical College, Osaka, Japan

**Second Vice President:**

Professor NJ Chinoy, Gujarat University, Ahmedabad, India

**Secretary:**

Professor Emeritus Gene W Miller, Utah State University, Logan, UT, USA

**Treasurer:**

Dr Bruce Spittle, University of Otago Medical School, Dunedin, New Zealand

**Editorial Board:**

Dr DJ Ballantyne, University of Victoria, Victoria, BC, Canada

Dr Miklos Bély, National Institute of Rheumatology, Budapest, Hungary

Prof AW Burgstahler, University of Kansas, Lawrence, KS, USA

Prof Shouren Cao, Chinese Academy of Preventive Medicine, Beijing, China

Dr M Chikuma, Osaka University of Pharmaceutical Sciences, Osaka, Japan

Prof NJ Chinoy, Gujarat University, Ahmedabad, India

Dr Edward Czerwinski, Kraków Academy of Medicine, Kraków, Poland

Prof Mark Diesendorf, University of Technology, Sydney, NSW, Australia

Dr Richard G Foulkes, Abbotsford, BC, Canada

Prof J Franke, Heinrich Mann Hospital, Bad Liebenstein, Germany

Prof G Neil Jenkins, Newcastle-upon-Tyne, England, UK

Prof Rongdi Ji, Chinese Academy of Preventive Medicine, Beijing, China

Prof K Kono, Osaka Medical College, Osaka, Japan

Prof Jerzy Krechniak, Medical University, Gdańsk, Poland

Dr KAVR Krishnamachari, National Institute of Nutrition, Hyderabad, India

Dr Lennart Krook, Professor Emeritus, Cornell University, Ithaca, NY, USA

Dr John R Lee, 9620 Bodega Hwy, Sebastopol, CA, USA

Prof C James Lovelace, Humbolt State University, Arcata, CA, USA

Dr Zygmunt Machoy, Pomeranian Medical Academy, Szczecin, Poland

Dr GW Miller, Professor Emeritus, Utah State University, Logan, UT, USA

Prof F Murray, Murdoch University, Murdoch, WA, Australia

Dr James C Pushnik, California State University, Chico, CA, USA

Dr BP Rajan, Madras Dental College, Madras, India

Dr Bruce Spittle, University of Otago Medical School, Dunedin, New Zealand

Dr Jörg Spitz, Dept. of Nuclear Medicine, Wiesbaden, Germany

Prof Guifan Sun, China Medical University, Shenyang, China

Prof AK Susheela, Fluorosis Res & Rural Develop Foundation, New Delhi, India

Prof SPS Teotia, LLRM Medical College, Meerut, India

Prof H Tsunoda, Iwate Medical University, Morioka, Japan

Prof Zan-Dao Wei, Guiyang Medical College, Guizhou, China

Dr Sally Wheeler, Hawkesbury Agricultural Res. Unit, Richmond, NSW, Australia

Prof Y Yoshida, Osaka Medical College, Osaka, Japan

Prof NBK Yoshitake, Shiga University of Medical Science, Shiga-Ken, Japan

Prof Ming-Ho Yu, Western Washington University, Bellingham, WA, USA

**FLUORIDE**, official journal of the International Society for Fluoride Research (ISFR), publishes quarterly reports on biological, chemical, ecological, industrial, toxicological and clinical aspects of inorganic and organic fluoride compounds. The International Standard Serial Number (ISSN) is 0015-4725.

**SUBSCRIPTION:** For the year 2001, payable in advance, US\$40, £25 or ¥4000, with a subscription agency discount of 12.5%. For residents of Australia and New Zealand only, A\$40 and NZ\$40, respectively. Send to ISFR Treasurer: Dr. B. Spittle, 727 Brighton Road, Ocean View, Dunedin 9051, New Zealand.

**COPIES** of articles in *Fluoride* are available from:

University Microfilms International, Box 91, Ann Arbor, MI 48106, USA.

Institute for Scientific Information, 3501 Market St., Philadelphia, PA 19104, USA.

BIOSIS, c/- Advanced Information Consultants, Box 87127, Canton, MI 48187, USA.

The UnCover Company, 3801 E. Florida, Suite 200, Denver, CO 80210, USA.

**MANUSCRIPTS:** including papers presented at ISFR conferences, are accepted for publication after appropriate evaluation and recommendation by qualified reviewers. Send to Prof A W Burgstahler, Editor, *Fluoride*, 1620 Massachusetts Street, Lawrence, KS 66044-4254, USA. Fax (USA) 785-843-0736. For more detailed instructions for submitting papers, please refer to *Fluoride* 2001;34(1):85-90, or our website: <http://www.fluoride-journal.com/papers.htm>

The following instructions apply to original research reports. Research reviews and discussion papers, with appropriate variations in format, may also be accepted.

#### **INSTRUCTIONS TO AUTHORS:**

The following is only a brief summary. For detailed instructions, see the Notice to Authors in the February 2001 issue of *Fluoride* 34(1), pages 85-90. Two copies of an initial version of the manuscript, typed double space with wide margins, should be submitted (*without* a computer disc at this initial stage) to the Editor, Dr AW Burgstahler, at the address given above.

**Membership:** Researchers and others interested in fluoride research are invited to join the ISFR. Applications for membership should be sent to the Secretary: Professor Emeritus Gene W Miller, P.O. Box 725, Logan, UT 84321, USA (E-mail: [plants@baicor.com](mailto:plants@baicor.com)). For the year 2001 the membership fee, which includes subscription to the journal, is the same as the subscription schedule above.