

FLUORIDE

Quarterly Journal of The International Society for Fluoride Research Inc.

www.fluorideresearch.org

www.fluorideresearch.com

www.fluorideresearch.net

Owned & published by THE INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH INCORPORATED © 2009. All rights reserved.

Editor:

Professor Emeritus Albert W Burgstahler. Lawrence, KS, USA. E-mail: awburg@ku.edu

Associate Editors:

Professor Dariusz Chlubek. Dept. of Biochemistry and Chemistry, Pomeranian Medical University, Szczecin, Poland.

Professor Emeritus Lennart P Krook. Cornell University, Ithaca, NY, USA.

Associate Professor Hardy Limeback. University of Toronto, Toronto, ON, Canada.

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

Christopher Neurath. American Environmental Health Studies Project, Canton, NY, USA.

Associate Professor Jashwanti D Sharma. Dept. of Zoology, University of Rajasthan, Jaipur, India.

Professor Dianjun Sun. Chinese Research Center for Endemic Disease Control, Harbin Medical University, Harbin, China.

Associate Professor Masashi Tsunoda. Kitasato University School of Medicine, Sagami, Japan.

Professor Emeritus Ming-Ho Yu. Western Washington University, Bellingham, WA, USA.

Editorial Assistants:

Bill Wilson. North Shore City, New Zealand.

Peter Meiers. Saarbrücken, Germany.

Managing Editor:

Dr Bruce Spittle. Dunedin, New Zealand. E-mail: spittle@es.co.nz

EDITORIAL

- 73-74..... RECENT RESEARCH ON FLUORIDE AND OXIDATIVE STRESS
Albert W Burgstahler. Lawrence, KS, USA.

RESEARCH REVIEW

- 75-87..... FLUORIDE INTERACTIONS WITH IODINE AND IODIDE: IMPLICATIONS FOR
BREAST HEALTH
Carole Clinch. Waterloo, Ontario, Canada.

RESEARCH REPORTS

- 88-93..... OXIDATIVE STRESS INDICES IN ERYTHROCYTES, LIVER, AND KIDNEYS
OF FLUORIDE-EXPOSED RABBITS
R Ranjan, D Swarup, RC Patra. Izatnagar, India.
- 94-100..... INCREASED APOPTOTIC LYMPHOCYTE POPULATION IN THE SPLEEN OF
YOUNG CHICKENS FED DIETS HIGH IN FLUORINE
Tao Chen, Yun Cui, Caimin Bai, Tao Gong, Xi Peng, Hengmin Cui. Ya'an, China.
- 101-104..... THE INFLUENCE OF SODIUM FLUORIDE AND ANTIOXIDANTS ON THE
CONCENTRATION OF MALONDIALDEHYDE IN RAT BLOOD PLASMA
Ewa Grucka-Mamczar, Ewa Birkner, Iwona Błaszczyk, Sławomir Kasperczyk,
Tomasz Wielkoszyński, Elżbieta Świętochowska, Barbara Stawiarska-Pięta.
Zabrze, Poland.
- 105-109..... THE INFLUENCE OF SODIUM FLUORIDE AND CAFFEINE ON THE ACTIVITY
OF ANTIOXIDATIVE ENZYMES AND THE CONCENTRATION OF
MALONDIALDEHYDE IN RAT LIVER
Ewa Grucka-Mamczar, Jolanta Zalejska-Fiolka, Dariusz Chlubek,
Sławomir Kasperczyk, Urszula Błaszczyk, Aleksandra Kasperczyk,
Elżbieta Świętochowska, Ewa Birkner. Zabrze and Szczecin, Poland.
- 110-116..... MELATONIN REDUCTION OF FLUORIDE-INDUCED NEPHROTOXICITY
IN MICE
MV Rao, SL Chawla, N Patel. Ahmedabad, India.
- 117-120..... NEGLIGIBLE AMELIORATIVE EFFECT OF ALUMINIUM SULPHATE ON
OXIDATIVE STRESS PARAMETERS IN GOATS DURING SUBACUTE
FLUORIDE INTOXICATION
Vinay Kant, Anil K Srivastava, Pawan K Verma, Rajinder Raina, Nrip K Pankaj.
R.S. Pura, Jammu, India.

- 121–126.... INFLUENCE OF FLUORIDE ON CASPASE-3 EXPRESSION IN KIDNEY OF RATS FED A NORMAL OR A LOW CALCIUM AND PROTEIN DIET AND ITS REVERSAL BY PROTEIN AND CALCIUM SUPPLEMENTATION
Huacheng Chen, Jianhua Hong, Ruiyan Niu, Zilong Sun, Jundong Wang. Shanxi, China.
- 127–132.... PREVALENCE OF NEUROLOGICAL MANIFESTATIONS IN A HUMAN POPULATION EXPOSED TO FLUORIDE IN DRINKING WATER
JD Sharma, Deepika Sohu, Parul Jain. Jaipur, India.
- 133–136.... SERUM OSTEOCALCIN AND CALCITONIN IN ADULT MALES WITH DIFFERENT FLUORIDE EXPOSURES
Junxiang Ma, Mingfeng Li, Yu'e Song, Jun Tu, Fuqiang Liu, Kejian Liu. Wuhan, China.
- 137–141.... GROWTH INHIBITION OF SIBERIAN STURGEON (*ACIPENSER BAERII*) FROM DIETARY AND WATERBORNE FLUORIDE
Xiaotao Shi, Ping Zhuang, Longzhen Zhang, Guangpeng Feng, Liqiao Chen, Jianyi Liu, Ruifang Wang. Shanghai, China.
- 142–146.... PHYTOTOXICITY OF FLUORIDE IN THE GERMINATION OF PADDY (*ORYZA SATIVA*) AND ITS EFFECT ON THE PHYSIOLOGY AND BIOCHEMISTRY OF GERMINATED SEEDLINGS
S Gupta, S Banerjee, S Mondal. Burdwan, India.
- 147–151.... FLUORIDE RELEASE AND ANTIBACTERIAL PROPERTIES OF THE POLYACID-MODIFIED COMPOSITE DYRACT AP®
Grażyna Marczuk-Kolada, Elżbieta Łuczaj-Cepowicz, Danuta Waszkiel, Izabela Szarmach, Piotr Jakoniuk, Joanna Mystkowska. Białystok, Poland.

ABSTRACTS

- FLUOROSIS FROM GROUNDWATER IN CENTRAL RAJASTHAN, INDIA**
- 152..... FLUORIDE AND HEALTH HAZARDS: COMMUNITY PERCEPTION IN A FLUOROTIC AREA OF CENTRAL RAJASTHAN (INDIA): AN ARID ENVIRONMENT
Hussain J, Hussain I, Sharma KC. New Delhi, India.
- SOFT TISSUE TOXICITY OF FLUORIDE IN RATS**
- 153..... EFFECTS OF FLUORIDE ON THE TISSUE OXIDATIVE STRESS AND APOPTOSIS IN RATS: BIOCHEMICAL ASSAYS SUPPORTED BY IR SPECTROSCOPY DATA
Chouhan S, Flora S. Gwalior, India.
- ROLE OF IMPAIRED AMELOBLAST FUNCTION IN DENTAL FLUOROSIS**
- 153–154.... FLUORIDE INDUCES ENDOPLASMIC RETICULUM STRESS AND INHIBITS PROTEIN SYNTHESIS AND SECRETION
Sharma R, Tsuchiya M, Bartlett JD. Boston, Massachusetts, USA.
- WASTEWATER CONTAMINATION FROM A FERTILIZER PLANT**
- 154–155.... RADIOACTIVITY AND FLUORIDE CONTAMINATION DERIVED FROM A PHOSPHATE FERTILIZER PLANT IN EGYPT
Mourad NM, Sharshar T, Elnimr T, Mousa MA. Banha, Egypt.
- PERFLUOROCTANE SULFONATE ENVIRONMENTAL INVENTORY**
- 155..... A FIRST GLOBAL PRODUCTION, EMISSION, AND ENVIRONMENTAL INVENTORY FOR PERFLUOROCTANE SULFONATE
Paul AG, Jones KC, Sweetman AJ. Lancaster, UK.
- CENTRAL MECHANISM OF AUTISM SPECTRUM DISORDER: PART 3**
- 156..... THE ROLE OF EXCITOTOXIN FOOD ADDITIVES AND THE SYNERGISTIC EFFECTS OF OTHER ENVIRONMENTAL TOXINS
Blaylock RL. Jackson, Mississippi, USA.

AMELIORATION OF FLUORIDE TOXICITY ON REPRODUCTIVE ORGANS OF FEMALE RATS

- 156..... AMELIORATION OF FLUORIDE TOXICITY BY VITAMINS AND CALCIUM ON
REPRODUCTIVE ORGANS OF FEMALE RAT
Sharma JD, Solanki M, Solanki D. Jaipur India.

OSTEOSARCOMA CASE STUDY

- 157..... SERUM FLUORIDE AND SIALIC ACID LEVELS IN OSTEOSARCOMA
Sandhu R, Lal H, Kharb S. Rohtak, Haryana, India.

CORRECTION

- 157..... CHANGES IN MINERAL COMPOSITION OF HUMAN PRIMARY DENTITION
Grzegorz Pawlus, Izabela Gutowska and Zygmunt Machoy.
Fluoride 2009; 42(1):23-8.

ANNOUNCEMENT

- 158..... INTERNSHIP IN FLUOROSIS FOR TEACHING FACULTY OF MEDICAL AND
DENTAL SCHOOLS OF DEVELOPED COUNTRIES, JANUARY 18–22, 2010,
DELHI, INDIA
Prof. (Dr.) AK Susheela, Ashoka Fellow, Director of the Programme,
Fluorosis Foundation of India, Delhi, India.

APOLOGY

We apologize to our readers for a delay in the previously announced publication of the *In Memoriam* for Rudolf Ziegelbecker, 1924-2009, that will contain additional details of his work and life. This tribute is now scheduled to appear in the next issue of *Fluoride*.

THE INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH INC.

The International Society for Fluoride Research was founded in 1966, at a meeting in Detroit of the American Society for Fluoride Research, to promote the sharing of scientific information on all aspects of inorganic and organic fluorides. This is done by the publication of a quarterly journal *Fluoride* and the hosting of international conferences. The first ISFR conference was held in Frankfurt, Germany in 1967. Conferences have also been held in Spain, Austria, the Netherlands, England, the United States of America, Switzerland, India, Japan, Hungary, China, Poland, New Zealand, and Canada. The XXIXth ISFR conference will be hosted by Associate Professor JD Sharma in Jaipur, India in 2010. *Fluoride* is an open access journal available free on the internet at <http://www.fluorideresearch.org>, .com, and .net, in full text without an embargo period. Subscription to *Fluoride* in hardcopy and attendance at the conferences are welcomed for all interested in fluoride research. *Bona fide* fluoride researchers are invited to apply for Membership in the ISFR.

The Society does not hold an official position on issues such as water fluoridation but encourages, through its conferences, and the publication of papers, commentaries, and letters to the editor, a critical examination of the scientific basis of the views which are held by individuals and organizations.

MEMBERS OF THE ISFR INC. ADVISORY BOARD 2009

President:

Professor Guifan Sun. China Medical University, Shenyang, People's Republic of China.

First Vice President:

Associate Professor Jashwanti D Sharma. Dept. of Zoology, University of Rajasthan, Jaipur, India.

Second Vice President:

Professor Dariusz Chlubek. Pomeranian Medical University, Szczecin, Poland.

Co-Secretaries:

Professor Dariusz Chlubek. Pomeranian Medical University, Szczecin, Poland.
Associate Professor Masashi Tsunoda. Kitasato University School of Medicine, Sagamihara, Japan.

Editor of *Fluoride*:

Professor Emeritus Albert W Burgstahler. University of Kansas, Lawrence, KS, USA.

Members at Large:

Asia

Professor Koichi Kono. Osaka Medical College, Osaka, Japan.
Professor Emeritus Humio Tsunoda. Iwate Medical University, Morioka, Japan.

Europe

Professor Miklós Bély. Hungarian Academy of Science, Budapest, Hungary.
Professor Jürgen Franke. Rehaklinik an der Salza, Bad Langensalza, Germany.
Professor Emeritus Zygmunt Machoy. Pomeranian Medical Academy, Szczecin, Poland.
Professor Jörg Spitz. Society for Medical Information and Prevention, Wiesbaden, Germany.

North America

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

Treasurer and Managing Editor of *Fluoride*:

Dr Bruce Spittle. Dunedin, New Zealand.

MEMBERS OF THE ISFR INC. EDITORIAL BOARD 2009

Editor of *Fluoride*:

Professor Emeritus Albert W Burgstahler. University of Kansas, Lawrence, KS, USA

Associate Editors:

Prof. Dariusz Chlubek. Dept of Biochemistry & Chemistry, Pomeranian Medical University, Szczecin, Poland.

Professor Emeritus Lennart P Krook. Cornell University, Ithaca, NY, USA.

Professor Hardy Limeback. University of Toronto, Toronto, ON, Canada.

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

Christopher Neurath. American Environmental Health Studies Project, Canton, NY, USA.

Associate Professor Jashwanti D Sharma. Dept. of Zoology, University of Rajasthan, Jaipur, India.

Prof. Dianjun Sun. Chinese Research Center for Endemic Disease Control, Harbin Med. Uni., Harbin, PR China.

Associate Professor Masashi Tsunoda. Kitasato University School of Medicine, Sagamihara, Japan.

Professor Emeritus Ming-Ho Yu. Western Washington University, Bellingham, WA, USA.

Editorial Board Members:

Dr Miklos Bély. Hungarian Academy of Science, Budapest, Hungary.

Dr Russell L Blaylock. Ridgeland, Mississippi, USA.

Assoc. Prof. Andrzej Bohatyrewicz. Dept. of Orthopedics & Traumatology, Pom. Med. Uni., Szczecin, Poland.

Professor Masahiko Chikuma. Osaka University of Pharmaceutical Sciences, Osaka, Japan.

Professor Edward Czerwinski. Jagiellonian University, Kraków, Poland.

Dr Mark Diesendorf. Sustainability Centre, Box 521, Epping, NSW 1710, Australia.

Professor J Franke. Rehaklinik an der Salza, Bad Langensalza, Germany.

Assistant Professor Toshitaka Horiuchi. Nihon University School of Dentistry at Matsudo, Japan.

Associate Professor Kazuyoshi Itai. Iwate Medical University, Morioka, Iwate, Japan.

Professor K Kono. Osaka Medical College, Osaka, Japan.

Professor Jerzy Krechniak. Medical University, Gdańsk, Poland.

Professor Emeritus C James Lovelace. Humbolt State University, Arcata, CA, USA.

Dr Boguslaw Machaliński. Pomeranian Academy of Medicine, Szczecin, Poland.

Professor Emeritus Zygmunt Machoy. Pomeranian Medical Academy, Szczecin, Poland.

Professor F Murray. Murdoch University, Murdoch, WA, Australia.

Professor Masayuki Okazaki. Hiroshima University, Hiroshima, Japan.

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

Dr BP Rajan. Ragas Dental Clinic, Mylapore, Chennai, India.

Professor Masashi Shimahara. Osaka Medical College, Takatsuki City, Osaka, Japan.

Professor Jörg Spitz. Society for Medical Information and Prevention, Wiesbaden, Germany.

Professor Anna Strunecká. Charles University, Prague, Czech Republic.

Professor Dianjun Sun, Harbin Medical University, Harbin, P.R. China.

Professor Guifan Sun. China Medical University, Shenyang, China.

Professor Emeritus AK Susheela. Fluorosis Res & Rural Develop Foundation, New Delhi, India.

Professor Satoshi Takizawa. Dept. of Urban Engineering, Graduate School of Engineering, University of Tokyo.

Professor Emeritus SPS Teotia. Institute of Higher Medical Sciences, Whitefield, India.

Professor Emeritus Humio Tsunoda. Iwate Medical University, Morioka, Japan.

Prof. Jundong Wang. College of Animal Science & Veterinary Med., Shanxi Agri. Uni., Taigu, Shanxi, PR China.

Professor Emeritus Zan-Dao Wei. Guiyang Medical College, Guizhou, China.

Professor Emeritus Y Yoshida. Osaka Medical College, Osaka, Japan.

Professor Emeritus NBK Yoshitake. Shiga University of Medical Science, Otsu, Japan.

Prof. Boasham Zheng., Inst. of Geochemistry, Chinese Acad.of Sciences, Guiyang, Guizhou, PR China.

Editorial Assistants:

Bill Wilson. North Shore City, New Zealand.

Peter Meiers. Saarbrücken, Germany.

Managing Editor:

Dr Bruce Spittle. Dunedin, New Zealand.

FLUORIDE QUARTERLY JOURNAL OF THE INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH INC.

ISSN 0015-4725, is published four times a year (January-March, April-June, July-September, and October-December), and contains scientific reports on agricultural, analytical, biochemical, biological, chemical, clinical, dental, ecological, environmental, industrial, medical, metabolic, pharmacological, synergistic, toxicological, and veterinary aspects of inorganic and organic fluorides. Publication is usually made towards the end of each quarterly period rather than at the start of the period. The journal does not contain advertising.

COPYRIGHT. *Fluoride* is owned and published by the INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH INCORPORATED © 2009. All rights reserved.

ONLINE ACCESS *Fluoride* is an open access journal available without an embargo period and with free full text at: www.fluorideresearch.org, www.fluorideresearch.com, and www.fluorideresearch.net. Further details are given below in the section on past issues. Articles in *Fluoride* can be searched for using the 35-year Cumulative Author and Subject Indexes on the website and the Chemical Abstracts search engine *SciFinder Scholar* (from Chemical Abstracts Service) and *Web of Science* (from Thomson Corporation for Science Citation Index), but not, at present, through *Index Medicus/PubMed*. Some articles may also be found with the Google search engine and with Google Scholar and Google Advanced Scholar at: <http://scholar.google.com>.

SUBSCRIPTION TO FLUORIDE IN HARD COPY for the year 2009, is available for a fee, payable annually in advance, of: US\$51, Canadian\$63, £28, Japan¥5500, €42, Australian\$66, New Zealand\$72, with a discount of 10% for copies posted to a New Zealand address, which incurs a lower postal cost. No subscription agency discount is available.

Payment may be made in any of the currencies above. The rates have been kept at the same level as was set on 23 June 2005. No journals will be mailed until payment is received for the current subscription or membership period. Apply to Dr Spittle, Managing Editor *Fluoride*, 727 Brighton Road, Dunedin 9035, New Zealand. E-mail: spittle@es.co.nz. Please indicate if you would like the subscription to start with the calendar year or with a particular issue of the journal. Invoices are sent to subscribers with the last issue of each year, apart from those whose copies are ordered through a subscription agency.

PAYMENT OPTIONS for subscription to *Fluoride*, and the purchase of back issues are: bank transfer, cheque, cash, or PayPal. Bank transfers can be made to The Bank of New Zealand, New Lynn Branch, 3029 Great North Road, New Lynn, Auckland, New Zealand; Swift BKNZNZ22; Website: www.bnz.co.nz; Fax 64 09 827 6806; Account name: International Society for Fluoride Research; Account number 02 0184 0333239 000. Cheques should be made out to the same or to ISFR. Personal cheques, bank cheques or drafts, and cash may be posted to Dr Bruce Spittle, 727 Brighton Road, Ocean View, Dunedin 9035, New Zealand. Personal or bank cheques, and cash, in US\$, Canadian\$, £, €, Australian\$, and NZ\$ are fine. Cash as Japanese Yen is also fine. Please do not send Canadian or British Postal Notes, cheques drawn on Japanese banks, or cheques in US\$ drawn on British banks in the United Kingdom as they cannot be negotiated in New Zealand. PayPal allows payment by Visa or Mastercard directly to an E-mail address in a secure way. It is necessary to first register with PayPal at <http://paypal.com>. The recipient E-mail address for the payment is spittle@es.co.nz. Just giving the credit card number to the ISFR is not sufficient.

COPIES OF ARTICLES AND PREVIOUS ISSUES OF FLUORIDE: Hard copies of all of the previous issues of *Fluoride*, including the 35-year cumulative indexes in *Fluoride* 2002;35(4-Parts 1 and 2), are usually kept in stock and may be ordered directly through the Managing Editor for US\$10 or equivalent per single copy of an issue or part of *Fluoride* including postage. Individual articles can also be downloaded, free in full text, from the ISFR websites at: www.fluorideresearch.org, www.fluorideresearch.com, and www.fluorideresearch.net.

INSTRUCTIONS TO AUTHORS: Manuscripts, including reports of original research, papers presented at ISFR conferences, research reviews, discussion papers, and letters to the Editor, are accepted for publication after appropriate evaluation and recommendation by qualified reviewers. The initial version of the manuscript, double-spaced throughout with wide margins, should be submitted, as a Word attachment by E-mail, to Prof Emeritus AW Burgstahler, Editor, *Fluoride*, 1620 Massachusetts Street, Lawrence, KS 66044-4254, USA (E-mail: awburg@ku.edu). Do not send manuscripts to the Managing Editor. If submission is by post, please send two copies, without a computer disc. Detailed instructions for preparing papers are at www.fluorideresearch.org and in *Fluoride* 2009;42(1):67-72. These instructions should be followed meticulously to avoid publication delays.

The Editorial Officers of *Fluoride* strongly support the maintenance of the highest standards of animal care and the control of discomforts to animals in research. Authors must indicate whether their institutional and national guidelines for the care and use of laboratory animals were followed. When reporting experiments on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA* 2000 Dec 20;284(23):3043-5).

COMPLIMENTARY COPIES: Donors wishing to fund gift copies, which will be suitably inscribed, are invited to contact Dr Spittle.

MEMBERSHIP OF THE INTERNATIONAL SOCIETY FOR FLUORIDE RESEARCH INC. Membership in the ISFR Inc. is invited from *bona fide* fluoride researchers. Membership allows participating in the activities of the Society and voting at business meetings. No membership fee is payable. Application for membership may be made by letter to Dr Spittle, E-mail: spittle@es.co.nz, including name, postal address, E-mail address, and the area of fluoride research the applicant is involved in.

CO-SECRETARIES: Enquiries about ISFR Inc. membership, ISFR Inc. conferences and meetings, and other matters under their jurisdiction may be made to the co-secretaries:

Professor Dariusz Chlubek, Department of Biochemistry and Chemistry, Pomeranian Medical University, al. Powstancow Wlkp. 72, 70-111 Szczecin, Poland. E-mail: dclubek@pam.szczecin.pl

Associate Professor Masashi Tsunoda, Department of Preventive Medicine and Public Health, Kitasato University School of Medicine, Kitasato 1-15-1, Sagami-hara, Kanagawa, 228-8555, Japan. E-mail: mtsunoda@med.kitasato-u.ac.jp