

## FLUORIDE CONFERENCES IN TORONTO

### XVIIIth CONFERENCE OF THE ISFR

The International Society for Fluoride Research (ISFR) held its 28th conference at the Mississauga Campus of the University of Toronto, August 7–10. Hosted by Hardy Limeback, Associate Professor of Preventive Dentistry, University of Toronto, the conference focused on new findings concerning effects of fluoride on the brain, bones, and teeth. In attendance were approximately 100 participants from 15 countries who gave 10 invited and over 30 contributed oral and poster presentations. Immediately following at the same location was the two-day 3rd Citizens Conference of the Fluoride Action Network (FAN), August 10–11, organized by Professor Emeritus of Chemistry Paul Connert, St Lawrence University, Canton, New York.

The keynote speaker at the ISFR conference, Professor AK Susheela, Director of the Fluorosis Research and Rural Development Foundation, Delhi, India, who also spoke at the FAN conference, gave two presentations: one on the action of fluoride on hard and soft tissue matrix molecules and the other on the multiple clinical manifestations, diagnosis, and management of fluorosis, especially in its early stages. The manifestations of fluoride toxicity include diminished bone strength with increased fractures, arthritis affecting various joints, and calcification of ligaments and interosseous membranes. Early symptoms include gastrointestinal discomfort with indigestion, diarrhea, constipation, bloating, and various neuromuscular disorders. Fluoride destruction of the microvilli in the duodenal mucosa, as evidenced by microscopy, occurs, thus reducing digestive absorption of vital nutrients like iron. In India, a program to treat anemia during pregnancy with iron and folic acid was unsuccessful until fluoride-induced damage was alleviated by changing to low-fluoride water for drinking and cooking and to a diet containing sufficient anti-oxidants from fresh fruits and vegetables, thereby leading to fewer low birth-weight babies. Professor Susheela also noted that excessive ingestion of fluoride can cause hypothyroidism as well as anemia, thereby creating symptomatic fatigue.

In two of three contributed papers, Vice-President of the ISFR, Jashwanti Sharma, Associate Professor of Zoology, University of Rajasthan, Jaipur, India, observed the above-mentioned gastrointestinal, neurological, and other early-stage symptoms in persons residing in high-fluoride villages of Sangar Tehsil and showed how they can be mitigated using studies in rats with calcium and vitamins C and D. Bearing on these findings in humans, Managing Editor of *Fluoride*, Dr Bruce Spittle, Dunedin, New Zealand, presented a new clinical case report of reversible fluoride toxicity from 0.85 ppm fluoridated drinking water in a 67-year-old woman residing in Dunedin. Among various contributed papers concerning fluoride and teeth, Bellevue, WA, dentist Dr Bill Osmunson, presented current findings on the lack of significant evidence for caries reduction by water fluoridation and the extensive damage and costs associated with dental fluorosis.

Invited ISFR speakers included Dr Kathleen Thiessen, Oak Ridge, TN, who discussed how fluoride can impair glucose metabolism and affect the thyroid, parathyroid, and pineal glands; Pamela K Den Besten, Professor of Dentistry, University of California San Francisco, who presented her research on tooth enamel forming cells and the mineralization matrix; Marc Grynepas, Professor of

Laboratory Medicine and Pathology, University of Toronto, who spoke on the influence of genetic factors on bone quality affected by fluoride; James P Simmer, Professor of Biologic and Materials Sciences in the School of Dentistry, University of Michigan, who also discussed genetic influences on tooth development, dental fluorosis, and the occurrence of amelogenesis imperfecta which can mimic dental fluorosis; and Heather Gingerich, International Association for Medical Geology, who presented the Daniel Boyle Memorial Lecture on earth science foundations of 100 years of fluoride medical research.

Three other invited speakers addressed effects of fluoride on the brain. Professor Emeritus Robert Isaacson, NY University at Binghamton, noted that 0.5 ppm aluminum fluoride in the drinking water of rats incurred brain changes resembling changes found in Alzheimer's disease. Dr Jennifer Luke, University of Surrey, reported on fluoride accumulation in the pineal gland, noting that gerbils on an elevated fluoride intake from birth had reduced melatonin levels leading to an earlier onset of sexual maturity in females. Vyvyan Howard, Professor of Bioimaging, University of Ulster, Northern Ireland, who was a featured speaker at the FAN conference, noted how minute amounts of toxic substances, including fluoride, that reach the brain during critical stages of intrauterine and post-natal development can adversely affect post-natal behavior. Central to his presentation was a systematic review by Associate Professor Hardy Limeback and FAN Research Director Michael Connett, which found that 18 out of 20 studies from China, India, Iran, and Mexico, showed a lowering of IQ in children living in endemic fluorosis areas. In a related contributed paper, the research group of Professor Jundong Wang, Shanxi Agricultural University, reported detecting abnormal behavior in rats induced by fluoride by using a repeating photographic imaging technique similar to the computer pattern recognition program devised by Dr Phyllis Mullenix at the Forsyth Dental Institute, Boston.

The conference theme of effects of fluoride on bones was also addressed by Kim Labuschagne of the National Zoological Gardens of South Africa, who reported that industrial fluoride emissions had led to lameness in antelopes. Chris Neurath of the Fluoride Action Network, Canton, NY, presented a critical analysis of the 2006 case-control study by Dr Elise Bassin showing a strong association between fluoride exposure from fluoridated drinking fluoride and often fatal osteosarcoma in boys at age 5–10, noting that this work has not been refuted.

Associate Professor Limeback summed up his concerns by noting, “Most dental and medical students are taught that the only side effect of consuming fluoridated water is dental fluorosis. When the National Research Council panel, of which I was a member, reviewed the literature—largely from nonfluoridated countries like India and China—we found fluoride had adverse effects on several other tissues. We brought some of the researchers who have done this work to Toronto. The key question is whether there is an adequate margin of safety between the doses of fluoride at which these effects are observed and the doses that people living in fluoridated communities are receiving, not only from drinking uncontrolled amounts of fluoridated water, but also from several other sources. Many of the scientists who attended this conference do not believe that there is.”

Following the formal papers, the participants enjoyed a banquet dinner and a visit to the Niagara peninsula to see the falls and vineyards.

At a business meeting of the Society on August 9, Professor Dariusz Chlubek was elected to the position of second vice-president with prospect of hosting the ISFR XXX conference for 2012, and Professor AK Susheela was nominated and approved as a new member at large for Asia. Motions (moved by Professor Emeritus Albert W Burgstahler, seconded by Professor Emeritus Paul Connett) were passed to confirm that Associate Professor Jashwanti Sharma will host the next meeting, the ISFR XXIX conference in Jaipur, India, in 2010 rather than in 2009, as originally planned, and for the constitution to be amended to allow the Society to register under the Charities Act 2005 in New Zealand. Notice was given that the inaugural Niloufer Chinoy awards would be made at the ISFR XXIX conference in Jaipur, India, in 2010. Prizes of Euro 1000, funded by a special bequest from Professor Jörg Spitz, will be made for the best oral and poster presentations for researchers aged less than 35 at the closing date for the conference abstracts. The conference organizer will appoint two teams of three judges to adjudicate for each award.

Albert W Burgstahler, PhD, Editor, *Fluoride*  
Bruce Spittle, MB ChB, Managing Editor, *Fluoride*

### 3RD CITIZENS CONFERENCE OF THE FLUORIDE ACTION NETWORK

At the 3rd Citizens Conference of the Fluoride Action Network, attended by about 60 persons, Dr Bill Osmunson, who, as already mentioned, spoke at the ISFR conference, noted that the presence of very good or excellent teeth in children correlated with having a high family income but not with water fluoridation. Another dentist, Dr Andrew Harms, ex-president of the South Australia Dental Association, reported that after studying the literature on fluoridation he found that the scientific evidence to support its continuation does not exist. He expressed concern that some dentists were advising patients to swallow fluoridated toothpaste.

Dr Luke, Dr Spittle, Professor Susheela, and Professor Howard also spoke again. Professor Susheela said that she was shocked that medical students in Western countries are not trained to identify the early symptoms of fluorosis. She said, “These symptoms are easily reversible once the source of fluoride is removed, but your hospitals and clinics do not perform simple tests to measure fluoride in the blood and urine of suspected cases.”

In a further commentary on the systematic review of studies indicating a lowering of IQ occurred in children living in areas of endemic fluorosis, Professor Howard concluded that, “While the epidemiological evidence is not perfect—it seldom is—it certainly compares very favorably with the early studies which purported that fluoridation reduced tooth decay. With such a delicate instrument as the developing brain at stake, this is not the time we should be exposing babies to fluoride concentrations that are over 100 times the level in mother’s milk. As a precautionary matter we should be stopping water fluoridation without further delay.”

Paul Connett, PhD, Director, Fluoride Action Network



Associate Professor Hardy Limeback, recipient of the Albert W. Burgstahler Integrity in Science Award, with his wife Lynne Limeback.



Associate Professor Hardy Limeback introducing Professor Susheela



Some of the delegates from India, Canada, and the United Kingdom. (From the left) Professor Bihari Singh, Assistant Professor Rakesh Ranjan, Dr Rushabh Dagli, Associate Professor Hardy Limeback, Associate Professor Sohan Singh Sankhala, Professor Jayaprakash, Associate Professor Jashwanti D Sharma, Dr Sheik Mohamedally, Professor Mandava V Rao



Participants in the *Niagara: see the falls taste the wine* tour at the Niagara River near the Niagara Falls. (From the left) Dianjun Sun, Sheik Mohamedally, Umit Demeril, Sohan Singh Sankhala, Bihari Singh, Kim Labuschagne, Jennifer Luke, Hardy Limeback, Tilmann Wurtz, Euridice Prado, Jundong Wang, Jianhua Hong, AK Susheela, Yanhui Gao, Xiaoyan Yan, Ruiyan Niu, Quanmei Zheng, Guifan Sun.