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**New ICCIDD Global Network website is on-line!**

The ICCIDD Global Network is leading the worldwide campaign to eliminate IDD. Check out our new website, <http://www.iccidd.org>, with many new features including a powerful search function and a full archive of the IDD Newsletter, back to 2006.

## Striking progress against IDD in Pakistan

50% decrease in iodine deficiency in children over the past decade

Data from: *Pakistan- National Nutrition Survey 2011*. Aga Khan University, Pakistan Medical Research Council (PMRC) and the Nutrition Wing, Ministry of Health, Pakistan.



*Iodized salt means better lives for girls in Jamshoro village, Pakistan.* ©Kristen Elsby

The population of Pakistan has surged from 34 million when the country was founded in 1947 to 180 million today, including 89 million children. Maternal and child nutrition remain major challenges. The 2011 National Nutrition Survey (NNS) found many indicators of malnutrition actually worsened over the past decade. However, there was a remarkable improvement in iodine nutrition in children and young women – one of the few ‘bright spots’ in the report.

The last Pakistan NNS was conducted in 2001-02, and one of the specific objectives of the NNS 2011 was to determine how iodine status of women of reproductive age and school children had changed over the past decade. A cross-sectional survey design was chosen to collect data and the sampling frame consisted of all urban and rural areas of all four provinces of Pakistan, Federally Administered Tribal Areas (FATA), Azad Jammu Kashmir (AJK) and Gilgit-Baltistan defined as such by Population Census 1998, and the subsequent changes made by the provincial governments periodically. A sample of 30,000 households was fixed comprising 1500 Primary Sampling Units (PSUs) out of which 618 were urban and 882 were rural. After fixing the sample size at provincial level, further distribution of sample PSUs to different strata in rural and urban domains in each province was made proportionately.



**These four brothers work at a salt factory in Pakistan. The two in the center suffer from cretinism, caused by iodine deficiency during pregnancy. But now they all use iodized salt in their households to prevent cretinism in the next generation and give their children the iodine they need for intellectual development.**

**Results**

**6-12 year-old Children**

Iodine deficiency causes varying degrees of brain damage, physical impairment, mental retardation and goiter. To assess the prevalence of iodine deficiency, urinary iodine concentrations were measured in children aged 6-12 years for comparison with the NNS 2001. As shown in Table 1, 63.3% of the children (urban 61.8% and rural 64.6%) showed sufficient values, 24.4% of children (urban 27.4% and rural 22.9%) were mildly deficient, 10.1% of children (urban 7.4% and rural 11.4%) moderately deficient and only 2.2% of children (urban 3.4% and rural

**Table 1: Prevalence (%) of children in Pakistan in the urinary iodine concentrations (UIC) ranges indicating severity of iodine deficiency, by residence and region in 2011.**

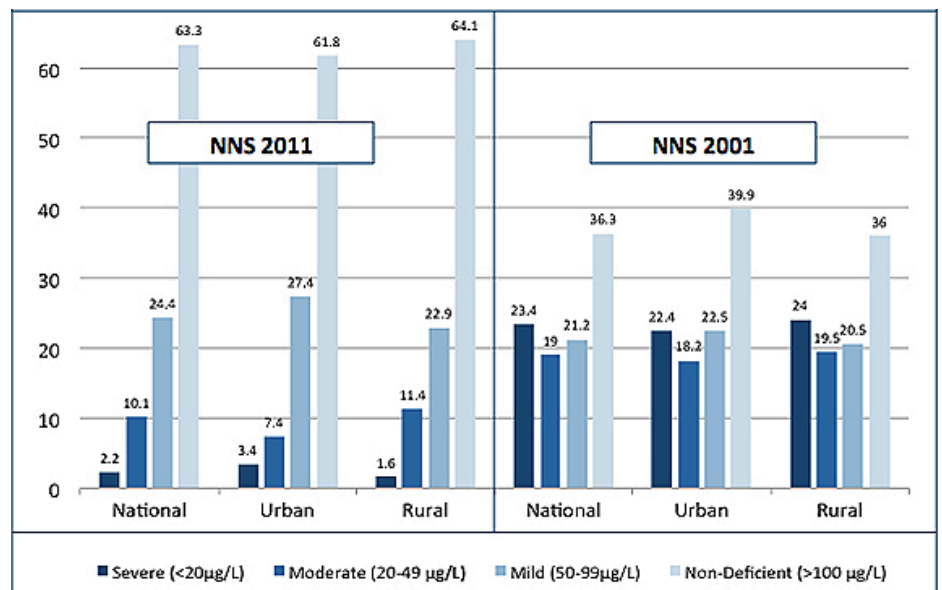
Iodine nutrition in 6-12 y-old children in Pakistan										
Category of severity of iodine deficiency based on UIC	Total	Residence		Province / Region						
		Urban	Rural	Punjab	Sindh	KPK	Balochistan	FATA	AJK	Gilgit
N	1222	524	698	585	307	162	61	13	65	29
Severe (<20 µg/L)	2.2	3.4	1.6	2.1	2.1	1.0	5.5	0	6.5	18.2
Moderate (20 to 49 µg/L)	10.1	7.4	11.4	11.8	7.2	5.8	7.3	0	30.5	20.3
Mild (50 to 99 µg/L)	24.4	27.4	22.9	25.3	25.6	18.9	21.9	10.3	28.5	31.3
Sufficient (≥100 µg/L)	63.3	61.8	64.1	60.7	65.0	74.2	65.3	89.7	34.6	30.1

1.6%) were categorized as severely iodine deficient at national level.

Comparatively, the FATA region has the highest percentage (78.4%) of iodine sufficient children, followed by KPK with 74.2%, Sindh and Balochistan 65%, Punjab 60.7%, and AJK 34.6%, while Gilgit-Baltistan has the lowest percentage of sufficient children (30.1%). In consonance with the above, the overall percentage of severely deficient children at the national level was 2.1%, with Gilgit (18.2%) and AJK (6.5%) showing the highest percentage of children severely deficient.

As shown in Figure 1 below, major improvement was observed in the prevalence of iodine deficiency between NNS 2001 and 2011. In NNS 2001 the prevalence of severe iodine deficiency was 23.4% and this came down to 2.2% at national level; similarly, the prevalence of moderate iodine deficiency in NNS 2001 was 19% and in NNS 2011 10.1%. However, there was a slight increase in the prevalence of mild deficiency, which increased to 24% (NNS 2011) from 21.2% (NNS 2001).

**Figure 1: Comparison of UIC distributions in the Pakistan National Nutrition Surveys in 2001 and 2011.**



# GIS mapping to monitor iodized salt in Pakistan

Imagine a tool that could help significantly reduce preventable brain damage, caused by a lack of iodine in the diet, by monitoring the quality of iodized salt produced. In a country with a high incidence of iodine deficiency, such technology would be invaluable for its potential to improve the quality of life for millions.

In Pakistan, this technology exists and is already well on its way to improving the health of the nation's citizens through a project led by the Ministry of Health and for which the Micronutrient Initiative (MI) provided technical and financial support. On March 22, 2011, Pakistan's Ministry of Health launched the Geographic Information System (GIS) to monitor and improve salt iodization all across the country.

Under the project, District Focal Persons and USI Field Officers collect data on iodization levels at salt processors large and small. The GIS mapping system can then create an easy access interactive digital map covering the amount of adequately iodized salt produced in each province and in



**Dr. TA Janjua, MI Pakistan, demonstrating the salt sector GIS.**

Azad Jammu and Kashmir. The mapping system contains complete information about 168 raw salt sources in Pakistan and information on the geographic locations, contact details and production of adequately iodized salt from 1353 salt processors. The GIS monitors the salt processors' performance in terms of the iodized salt they produce and the quality of their salt.

"Pakistan's GIS to monitor iodized salt is an excellent example of technology being used for public good to help the most vulnerable at a very low cost," said MI President V Mannar. "This tool helps us monitor iodization levels and enables quick corrective action when we notice downward trends."

At the launch, Minister for Science & Technology, Mir CK Jamali outlined the potential benefits the GIS could have and said the, "mental capability of more than 38 million children worldwide can be enhanced if parents make iodized salt the essential part of their daily diet."

The GIS project's true value lies in it having empowered salt processors in Pakistan to help significantly improve the health of their fellow citizens, thereby acting as catalysts in the process that will allow the most marginalized to begin improving their lives and achieving long-lasting socio-economic changes.



**Table 2: Median urinary iodine concentrations (UIC) in women in Pakistan, by residence and region in 2011.**

Women (15-49 y-old)										
	Total	Urban	Rural	Punjab	Sindh	KPK	Balochistan	FATA	AJK	Gilgit
N	1460	-	-	742	330	213	53	23	65	34
Median UIC (µg/L)	124	117	130	116	133	154	136	184	64	68

### Women of reproductive age (15-49 y)

The median UIC was also determined in young women (Table 2). A median UIC of  $\geq 100$  µg/L in a population of adult non-pregnant, non-lactating women is considered sufficient. Nationally, the median UIC in mothers was 124 µg/L; the median UIC was 117 µg/L in urban areas and 130 µg/L in rural areas. The provincial distribution of median UIC in mothers was 116 µg/L in Punjab, 133 µg/L in Sindh, 154 µg/L in KP, 136 µg/L in Balochistan, 184 µg/L in FATA, 64 µg/L in AJK and 68 µg/L in Gilgit.

### Conclusions

The report concludes: "The key finding from the NNS 2011 is that very little has changed over the last decade in terms of core maternal and childhood nutrition indicators. **The survey does point towards gains in iodine status nationally following the implementation of a universal salt iodization and promotion strategy**, but is counterbalanced by... little to no gains in other areas of micronutrient deficiencies. Pakistan urgently needs a nutrition policy and strategy for a coordinated, interlinked, and multi-pronged approach for future endeavors to address malnutrition." Continuing to expand and strengthen USI, particularly in the Azad Jammu Kashmir (AJK) and Gilgit-Baltistan regions that remain iodine deficient, should be an integral part of this strategy.





# Salt rumors add to health crisis in Pakistan

By **Richard Leiby** published December 31 in The Washington Post, USA



**Iodine deficiency is a common cause of goiters, an affliction visible in this woman and child in Nothiya, Pakistan. Courtesy of NCP.**

LAHORE, Pakistan — At a bustling general store in Lahore, a major metropolitan center of culture and learning, people ask a lot of questions about one seemingly innocuous product: table salt.

If it contains iodine, about 40 percent of his customers spurn it, according to proprietor Muhammad Waqas Vicky. They won't allow their families to consume what they call "mixed salt," believing it causes infertility. "The majority among them are businessmen and religious people," Vicky said from behind the counter. Pakistanis of all classes have been hearing about the alleged dangers of iodized salt for nearly two decades. But insufficient iodine in the diet can cause spontaneous abortion, stillbirth, goiters, mental

retardation, birth defects and other developmental problems.

Anti-polio campaigns here have been the target of deadly attacks that stemmed from similar myths, but officials blame the iodine-related infertility rumors, at least in part, for a massive health crisis.

How did this happen? Some experts see little mystery in the evolution of what has become one of Pakistan's more bizarre, longer-running and destructive conspiracy theories. Seventeen years ago, well-meaning government officials launched a maternal health initiative in the face of ever-rising birth rates. To this day, people remember a slide show on official Pakistani television — at the time

the nation's only channel — that pushed prenatal care and awareness of vital nutrients. The next-to-the-last slide promoted one element in particular: iodine. The final slide, officials recall, credited the initiative to the government's department of primary health and family planning. "There was a communication mistake," Tariq Aziz, an expert on production of iodized salt, said of the 1995 broadcast. "People thought this was purely a family-planning initiative."

After the public conflated iodine with government-enforced birth control, rumors took off about an international scheme to limit Muslim population growth through iodized salt. The falsehoods became especially potent in a society that prizes large families and where contraception use is low.

By 2001, a mere 17 percent of Pakistani households used iodized salt, UNICEF reported, compared with, say, Bangladesh, where the consumption rate was 78 percent. Today as many as 30 percent of Pakistanis still won't allow the dread element to reach their tables, according to Aziz, a Lahore-based official with the nonprofit Micronutrient Initiative, a Canadian-funded program that promotes more use not just of iodine but also vitamin A, zinc and iron.

In the United States, medical researchers began goiter-prevention programs using iodine in the 1920s. Access to and consumption of iodized salt is universal in many developed nations. But according to research published this year in the *Journal of Nutrition*, an estimated 242 million children worldwide don't get enough iodine, and about 30 percent of the planet's population still has insufficient iodine intake, "despite

remarkable progress.” From 2003 to 2011, the number of countries rated iodine-deficient dropped from 54 to 32.

Pakistan’s health crisis isn’t just the fault of rumors. The country’s soil is already deficient in iodine because of flooding and

erosion, and successive administrations failed to heed calls for mandatory-iodization laws. Politicians dallied for years before crafting legislation to require universal iodization, despite the well-proved damage inflicted on children. No federal law ever passed, and in 2010, responsibilities for many federal

functions devolved to the provinces under a constitutional amendment. But critics say salt-iodization laws are not uniform and are haphazardly applied at local levels.

**Michael Zimmermann** interviewed **Richard Leiby**, Pakistan Bureau Chief of the Washington Post, based in Islamabad, Pakistan, for the IDD Newsletter.



**1. How long have you been working for the Post and how long have you been assigned to the Pakistan Bureau?**

**A:** I have been at the Post nearly 22 years. I just completed one year at the Pakistan bureau.

**2. Do you often write on regional health issues? If so, what other health issues have you recently covered?**

**A:** My coverage of health issues started with a polio story I did in Lahore in the fall.

**3. How did you get involved in this story on iodized salt? Where did the idea come from?**

**A:** The story grew out of the polio story I reported in Lahore. I was checking into the overall battle against polio and reports of positive samples in sewage near Pashtun-speaking areas. Many people in these areas of Lahore (and also Karachi) were Afghan refugees or their descendants.

While in Lahore I went to a small, weekly meeting of neighborhood women in a Pashtun-settled area of the city. There, a UN

„social mobilizer“ -- a community member hired to encourage polio vaccination -- took questions from the women, some of whom had young children with them.

One mother talked of lingering community fears over the potential for polio drops to cause infertility. She said that she, personally, did not believe this rumor, but other women did. They viewed polio drops with the same suspicion as they viewed iodized salt, she said, noting that iodine was also connected to family planning efforts to decrease the Muslim population -- or so she’d long heard. She indicated that iodized salt was a form „birth control.“

A Pakistani reporter I know in Lahore, Babar Dogar, was helping me that day with translating and setting up meetings. I expressed to him my surprise over the women’s views on iodine, but he said it was a common conspiracy theory that had been around for years. He had done stories himself about the Micronutrient Initiative, and he introduced me to their staff the same day we were reporting on polio.

Micronutrient officials later emailed me a Powerpoint presentation that distilled their survey work and highlighted some other fascinating information about the history of iodized salt use in Pakistan. I also talked to various Pakistani acquaintances from middle-class backgrounds and learned that some of them grew up in families that forbade the presence of iodized salt in their homes.

**4. Why did you and your editors think this story would have interest to the Post’s readership?**

**A:** I just trust my gut on whether something is a good story. This one raised the kind of sociological, cultural and scientific questions that I like to explore. I had always seen „iodized“ highlighted on Morton’s salt and other brands, but I never actually knew why it was added. Now I knew!

I mentioned the salt/infertility rumors in an email to my editor (who had himself reported from Pakistan for a year). I said I’d like to pursue them further for a story after the polio piece ran; however, I suggested we wait a bit because of some similarities in the two stories. The editor agreed. We both knew that our Washington readers (and those in many other nations) might find the story surprising or at least interesting.

Avoidance of iodine tends to be most common in rural areas where illiteracy rates are high, public health advocates say, but it reaches across the nation. In one school district near Lahore, half of the 1,200 students showed signs of iodine-deficiency disorders, according to the Micronutrient Initiative. In a small village on the outskirts of Islamabad, the capital, 58 percent of the inhabitants had developed visible goiters, said Rubina Bhatti of the Network for Consumer Protection, a health advocacy group. In rural parts of Punjab province and other areas, people tend to use natural rock salt that they mine and grind themselves.

“Once I bought a packet of salt along with other household items and my wife refused to use it,” said Muhammad Zafar, a laborer from a village 60 miles from Lahore. “Even

some of my friends have told me stories that the doctors have advised them to not use iodized salt if they want to avoid infertility.”

Mosque leaders also continue to argue that iodine is a health scourge, or at the very least a Western plot. “I do not use iodine salt, and I advise my relatives and friends not to use it as well,” said one Lahore cleric, Maulana Muhammad Asim. “I do not have any evidence to prove that it is causing infertility,” he added. “But my question is: Why are the U.S. and the West so worried about the health of Pakistanis that they are forcing us to use iodine? ... They have an agenda.”

In Pakistan, some nongovernmental public health organizations have resorted to what amounts to stealth iodization, providing subsidies to salt factory owners who add

the micronutrient during production.

The salt often reaches markets unpackaged, to be vended by weight. “It is sold in bulk, unbranded — it is open-bag salt, and consumers will not know if it contains iodine,” said Muhammad Yasin with the Micronutrient Initiative. “They get the health benefit even if they don’t know it.”

# USI ensures adequate iodine intake in Canada

Statistics Canada, Nov.29, 2012. Data from the Canadian Health Measures Survey. <http://www.statcan.gc.ca/pub/82-625-x/2012001/article/11733-eng.htm>

In 2009-2011, the median urinary iodine concentration in Canadians was 134 µg/L, indicating optimal national iodine nutrition.

Iodine deficiency was prevalent in most of central and western Canada until the 1920s, when efforts to eliminate endemic goiter with the use of iodized salt were introduced. Iodine deficiency can lead to goiter, stunted physical and intellectual development, stillbirths, and spontaneous abortions - these have been virtually eliminated in Canada through salt iodization.



**Optimal iodine nutrition allows Canadian children to learn well at school**

In contrast to the U.S., where both iodized and non-iodized salt are available, all table salt in Canada is iodized with 100 ppm potassium iodide, which corresponds to approximately 77 µg iodine per gram of salt (1). Iodization of table salt was made mandatory by law in Canada in 1949. Specialty salts are exempt, but their sales are such a small fraction of the market that iodized salt consumption is thought to be close to 100%. Iodine is also obtained from other foods in the Canadian diet, including seafood, milk and grain products.

The Canadian Health Measures Survey (CHMS) measured the iodine concentration in spot urine samples on a nationally representative population sample in 2009-2011.

Based on results from the CHMS, the median iodine concentration of Canadians in 2009 to 2011 was 134 µg/L (*Table 1*), which is within the range of adequate intake recommended by the WHO. The median iodine concentration in urine was higher in children: 215 µg/L for 3 to 5 year olds and 189 µg/L for 6 to 11 year olds.

**Table 1: Median urinary iodine concentration (UIC), by age group, household population aged 3 to 79, Canada, 2009 to 2011**

Age (years)	Median UIC (µg/L)
Total	134
3 to 5	215
6 to 11	189
12 to 19	163
20 to 39	124
40 to 59	122
60 to 79	125

Urinary iodine levels suggesting low iodine intakes were found in 22% of Canadians aged 3 to 79 (*Table 2*). Recent U.S. surveys have shown an increasing prevalence of low iodine levels (2). This increase in low iodine levels has been attributed to a change in food production and consumption, such as a reduction of salt in the diet, the increasing popularity of non-iodized salt like sea salt, the reduction of iodine supplementation in commercial dairy products and the replacement of iodine with bromine salts as dough conditioner in breads (3,4).

**Table 2: Percentage of the population with low and high urine iodine levels, by age group, household population aged 3 to 79, Canada, 2009 to 2011, percent (%)**

Age (years)	UIC <100 µg/L (at risk for low iodine intake)	UIC >300µg/L (at risk for excess iodine intake)
Total	22	15
3 to 5	9	39
6 to 11	13	29
12 to 19	16	21
20 to 39	21	14
40 to 59	25	12
60 to 79	26	12

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# Restructuring the global coordination of IDD control programs

**The consolidation of ICCIDD and the Network for the Sustained Elimination of Iodine Deficiency Disorders creates a new organization, the ICCIDD Global Network**

During 2012, extensive discussions amongst and between the members of ICCIDD and The Network for the Sustained Elimination of IDD culminated in an agreement by both Boards to consolidate the two organizations into a single new entity, the 'ICCIDD Global Network'.

The reasons were several. It was felt that two separate entities working toward the same goal could lead to redundancy of efforts and confusion on regional/national guidance. Both organizations recognized that shrinking resources for IDD programs meant the need for improved coordination and efficiency was now particularly acute. Also, it was felt that a new global structure was needed to ensure sustainability of the remarkable achievements of the past two decades.

A 'kick-off' workshop for this new organization was held in Zurich, Switzerland, on November 1 and 2, 2012. Participants included the new Board of Directors, ten invited external experts and two external facilitators from Accenture Development Partners (ADP). Michael Zimmermann, ICCIDD, hosted the meeting and welcomed all participants to snowy Zurich. He briefly reviewed the events leading to this historic meeting and handed over to Larry Grummer-Strawn, Chief of Nutrition at the U.S. CDC, who chaired the meeting in the absence of the Chair, Jerry Burrow. The workshop aims were to discuss vision, mission, objectives and functioning of the new ICCIDD Global Network. Kiwanis International, through Stan Soderstrom, provided generous financial support for the meeting and the external facilitation by ADP.



## Current iodine landscape

Arnold Timmer, UNICEF, provided a comprehensive landscape analysis of iodine nutrition and USI, entitled: "Current state of IDD and USI: key statistics, progress achieved, and

what remains to be done" (reported in the Nov 2012 issue of the IDD Newsletter). He outlined a wide range of challenges and needs that current programs face. These included a background landscape analysis, the evolving iodine nutrition and program landscape, a summary of the current global iodine and USI status, the program status of countries, and global and national challenges and developments. A consensus emerged to use this landscape analysis as a strategy and function framework for the ICCIDD Global Network.

## Call for action: a unified mission

To set the stage for a discussion on the functions of the ICCIDD Global Network, Larry Grummer-Strawn made a presentation on

## Box 1: Vision, Mission and Goals of the ICCIDD Global Network

### VISION

Our vision is a world where all people attain optimal iodine nutrition and children can reach their full cognitive potential.

### MISSION

Our mission is to be the authoritative voice for iodine nutrition. We support and catalyze global and national iodine programs, working with key public, private, academic, and civic stakeholders. We focus on universal salt iodization as the most cost-effective and sustainable solution for prevention of iodine deficiency disorders.

### GOALS

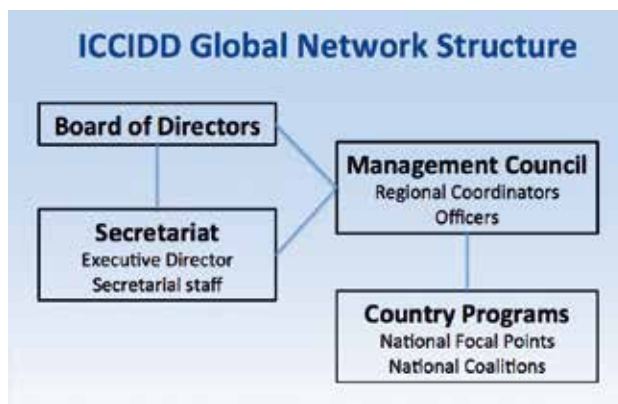
1. To support the harmonization of national and international iodine program delivery through alignment of approaches, partnerships and resources
2. To advocate for political will and increased attention and resources for iodine programs in the context of the broader global nutrition landscape
3. To identify and help address challenges to iodine programs and thereby accelerate progress towards sustained IDD elimination
4. To support and strengthen national programs and fortification coalitions through consistent programmatic guidance and enhanced communication to, from and among national programs
5. To identify and address scientific questions and influence the research agenda in order to increase the effectiveness of iodine programs



“The rationale for consolidation, collective goals, and proposed mission and strategy”. He explained the background and operation of the two former entities. Because of the overall mutual aim around iodine, a process was started to bring these bodies together in a single entity integrating the horizontal (global) and vertical (countries, programs and research) organizational strengths of both bodies. Vision, mission and goals statements for the new ICCIDD Global were drafted and adapted after the meeting (Box 1).

### Analysing the strategic options and priorities

Willy Pillinger, the external facilitator from ADP, introduced key concepts by means of a presentation on “Strategy methodology, the key question, and prioritization framework”. Participants then subdivided into three groups to identify key activities on a benefit vs. execution viability scale to distinguish activities with high feasibility and greater benefit to the goals of the new ICCIDD Global Network and to relate the priorities to the organizational structure.



### Proposed operating structure

Operating under the existing ICCIDD By-Laws, the ICCIDD Global Network will continue to be a Canadian chartered organization and a UN-recognized NGO. Its structure is outlined above. The Board of Directors may have up to 18 Directors responsible for the overall policy, strategy and program planning. The Officers –the Chair, Vice-Chair, Secretary and Treasurer– are elected by the Board. The Executive Director (ED) is appointed by the Board to lead in developing budget and programs and directing implementation.

The Secretariat of the ICCIDD Global Network will be based in Zurich, Switzerland at the Swiss Federal Institute of Technology (ETH), hosted by Michael Zimmermann.

The Management Council consists of the Regional Coordinators and their deputies as well as the Officers, and is chaired by the ED. The Regional Coordinators develop, execute and evaluate work plans and budgets for their regions, in conjunction with the National Coordinators in their regions, and make policy and program recommendations to the Board. The legally-defined voting membership of the organization consists of the Board Directors, the Management Council and the National Coordinators.

### Closing

In his concluding remarks Willy Pillinger congratulated the participants for their open discussion of a wide range of topics, differences, and perceptions, all of which form a platform for refinement and implementation. The Chair, Larry Grummer-Strawn, remarked that common views and consensus existed in most respects and that differences on some issues need to be reconciled. The Executive Director, Michael Zimmermann, suggested many of the short term goals are achievable and was enthusiastic to move forward. He thanked the facilitators for the role they played, the participants for their valued contributions and the meeting was closed.

### 2012-2013 BOARD | ICCIDD GLOBAL NETWORK

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# A day in the life of the Araltuz salt facility: high quality iodized salt for Kazakhstan

From: englishrussia.com. Photographs © voxpupuli.kz



In former times of the USSR, the production volume of Araltuz salt reached 600,000 tons annually. This amount was enough to provide many of the 15 republics of the Soviet Union. Now it's only 250,000 tons which are sold exclusively in Kazakhstan. Times have changed and even its salt has become different...



Salt reserves in the southern basin contain 11 million tons. It'll be enough for another 40-50 years. The lake needs about 35-45 years to completely restock itself. The thickness of the salt layer is about 1.5 meters. Its extraction is held every two years: from May to November. Salt is formed after the evaporation of highly concentrated salt brine.



In 6 months, rubber boots are so corroded by salt, they have to be changed. The salt is located 10 km from a nearby village of 6,000 people. About 100 people work on salt production and transportation. About 700 more work at the Araltuz plant. The monthly wage is about USD\$ 205-235.



Once the salt is extracted, it is put into train cars and transported to a central salt mountain for storage.



The height of the salt mountain reaches 25 meters.





The raw salt goes to the receiving hopper for processing. Then it heads to the shop for grinding and enrichment. Some time ago, when there was no special equipment, salt had a grayish tint. Now it is white.



After that, the salt goes to the drying room, where it's dried by means of hot air.



The salt is iodized.



Every two hours the laboratory checks the salt for iodine content.



The iodized salt is put into polypropylene bags of 10, 30 and 50 kg.



The warehouse of Araltuz accommodates 750 tons. Daily, the plant sends 4-5 railroad cars of salt all over Kazakhstan.



# Flawed approach in the GBD 2010 for iodine deficiency compromises its findings

**Michael Zimmermann** Executive Director, ICCIDD Global Network, Zurich, Switzerland

The Global Burden of Disease 2010 was an ambitious effort to describe the global distribution and causes of a wide array of major diseases, injuries, and health risk factors. The results show that infectious diseases, maternal and child illness, and malnutrition now cause fewer deaths and less illness than they did twenty years ago. Full reports were in the Lancet in December 2012 (<http://www.thelancet.com/themed/global-burden-of-disease>). Additional interactive data available at: <http://www.healthmetricsandevaluation.org>.

From 1990 to 2010, there was remarkable progress against IDD worldwide. Global household coverage of iodized salt increased from <20% to 70% and the number of iodine-deficient countries was sharply reduced from 110 in 1993 to 32 in 2012 (2).

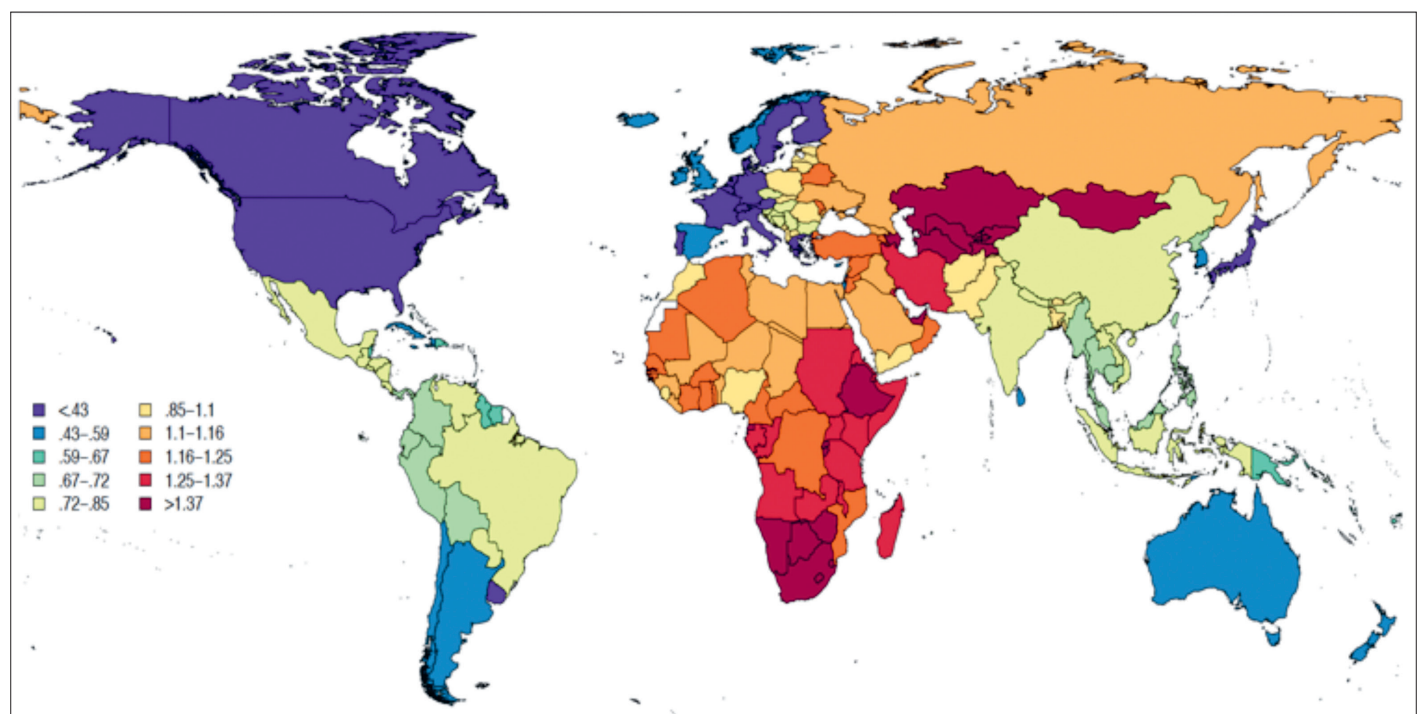
Despite this, the GDB 2010 reports a 23% increase in global DALYs (disability-adjusted life years) due to iodine deficiency between 1990 and 2010!

The reason for this discrepancy is that the approach used to define the 2010 GBD due to iodine deficiency (1) contains major errors.

- First and foremost, prevalence estimates for all disability in 2010 were derived from grade 2 (visible) goiter rates in the WHO Vitamin and Mineral Nutrition Information System (VMNIS). This was done despite the fact that WHO, ICCIDD and the VMNIS have been using urinary iodine concentrations to define IDD prevalence for a decade. Nearly all the goiter data used in the GBD is far out-of-date and irrelevant in 2010.
- In addition, the only IDD impact on mental impairment was cretinism; rates of cretinism were estimated based on Grade 2

**Figure 1: The proportion of years living with disability (YLDs) attributable to iodine deficiency in 2010.**

<http://www.healthmetricsandevaluation.org>



**Table 1: Global DALYs (disability-adjusted life years) in 1990 and 2010 for all ages, both sexes combined, and per 100,000 and percentage change, for nutritional deficiencies, including iodine deficiency**

	All ages DALYs (thousands)			DALYs (per 100 000)		
	1990	2010	%Δ	1990	2010	%Δ
<b>Iodine deficiency</b>	<b>3273</b>	<b>4027</b>	<b>+23.0</b>	<b>62</b>	<b>58</b>	<b>-5.3</b>
Vitamin A deficiency	740	806	9.0	14	12	-16.1
Protein-energy malnutrition	60 543	34 874	-42.4	1142	506	-55.7
Iron-deficiency anemia	46 792	45338	-3.1	883	658	-25.4
All nutritional deficiencies	111 787	85 341	-23.7	2109	1239	-41.3

**Table 2: Ranking of iodine deficiency, global and regional, DALYs (disability-adjusted life years) and YLDs (years living with disability) in 2010 for all ages, both sexes combined, and school age children (10-14 y), both sexes. Ranking in the top 30 indicated in red font.**

	All ages		School age children	
	DALYs	YLDs	DALYs	YLDs
<b>Global</b>	<b>85</b>	<b>42</b>	<b>46</b>	<b>28</b>
South Asia	79	33	50	22
East Asia	97	59	53	38
Southeast Asia	92	51	51	33
High-income Asia Pacific	104	66	47	39
Australasia	91	53	41	35
Oceania	75	31	38	23
Central Asia	52	23	19	11
Western Europe	85	45	30	27
Central Europe	76	37	29	23
Eastern Europe	76	36	28	19
North Africa and Middle East	50	23	26	16
Southern sub-Saharan Africa	51	24	25	16
Eastern sub-Saharan Africa	65	29	29	19
Central sub-Saharan Africa	43	15	21	11
Western sub-Saharan Africa	78	38	40	28
Southern Latin America	127	79	66	47
Tropical Latin America	100	56	51	37
Central Latin America	114	73	68	48
Andean Latin America	97	56	59	35
Caribbean	72	38	42	30
High-income North America	128	83	61	45

goiter rates and a disability of moderate mental retardation was assigned to the cretinism cases. More subtle and widespread degrees of mental impairment due to IDD were not considered.

Tables 1 and 2 and Figure 1 are generated from data at: <http://www.healthmetricsandevaluation.org>. Because of the mistakes in the GBD 2010 approach, the YLD and DALY estimates for 2010 in the tables and figure are largely inaccurate and are presented here only for illustrative purposes.

It is unfortunate the GBD 2010 project made these fundamental mistakes, because an opportunity was missed to highlight the enormous global progress against IDD achieved over the past two decades.

## References

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# Breakthroughs in Bangladesh boost iodized salt quality

**Chandrakant Pandav** Regional Coordinator ICCIDD South Asia Region, New Delhi, India



On the Bay of Bengal, the Ganges, Brahmaputra and Meghna rivers meet in Bangladesh to form the world's largest delta. Extremely fertile, yet vulnerable to floods depleting iodine from soils, this low-lying country supports a population of around 150 million people. Nearly 40 per cent are children. Although Bangladesh has a growing economy, half of these children continue to live below the international poverty line.

In 1993, the first national IDD survey in Bangladesh found a 47% goiter rate and low iodine intakes in over 2/3rds of the population. Responding to this threat, the Bangladeshi government passed iodized salt legislation in the mid-1990s and recently, substantial investments have been made in the infrastructure of salt iodization.

Bangladesh has made a remarkable progress in sustainable elimination of IDD (*Figure 1*). According to a national survey in 2004-05, the goiter rate came down to 6.2% and the median urinary iodine concentration was 163 µg/L. However, the household coverage with adequately iodized salt remained at 51.2% and had declined from the previous

survey. Sustained advocacy among policy makers, administrators, academicians, program managers and salt manufacturers is required for achieving USI.

A symposium 'Current Status and Future Strategies for Sustainable Elimination of IDD in Bangladesh' was organized by ICCIDD in collaboration with the Micronutrient Initiative (MI) on 13 December 2012 during the 3rd Regional Public Health Conference at the Bangladesh Institute of Health Sciences (BIHS) in Dhaka. The Symposium provided an ideal platform for advocacy and dissemination of scientific information related to IDD and USI in Bangladesh. More than 200 delegates attended the symposium from the South Asia region. The audience included students, policy makers, administrators, and experts in the field of IDD and health. The symposium discussed the current status (*Tables 1 and 2, p.17*) and deliberated the future strategies for sustainable elimination of IDD, as summarized below.

## Current status of USI in Bangladesh: Mr. Abu Taher Khan, Project Director, Control of IDD (CIDD) Bangladesh

Bangladesh has adopted a number of measures for achieving USI in the last two decades. The legal and organizational measures include:

- Enactment of the Prevention of IDD Act in 1989 and framing of the Prevention of IDD Regulation in 1993
- Constitution of national, district and sub-district level salt committees
- Establishment of eight zonal offices along with eight salt iodine testing laboratories
- Adoption of a National Salt Policy in 2011

A total of 267 salt mills have been equipped with Salt Iodization Plants (SIPs), 200 SIPs have been upgraded and 105 salt mills have established their own laboratories.







**Dr. Pandav, ICCIDD, handing over salt testing kits to Mr. Khan, Project Director, CIDD (left).**



**Dr. Mahmud (right) receiving a memento from Ms. Galvin, with Prof. Sandip Kumar Ray (on the left).**

According to the preliminary reports of the Bangladesh National Nutrient Survey 2012, 57.6% of households are consuming adequately iodized salt ( $\geq 15$  ppm), 80.3% of households are consuming salt with some iodine ( $\geq 5$  ppm) and 75.8% of the households are consuming packet salt. CIDD has developed a revolving fund of 200 million Bangladesh Taka (BDT) to procure and distribute potassium iodate among the salt producers. More and more salt entrepreneurs are investing in research and development. Against the demand of 1.43 million MT, Bangladesh is producing 1.17 million MT

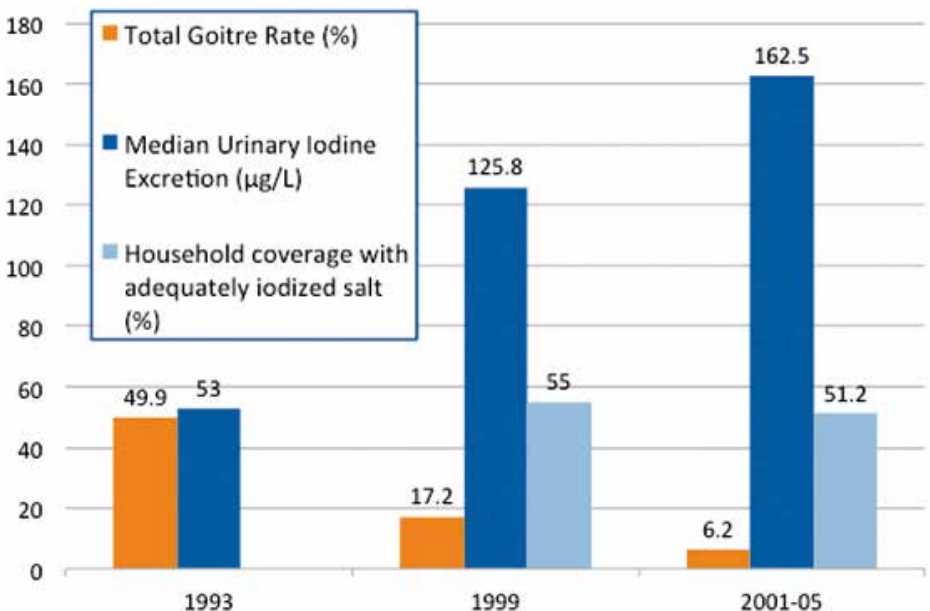
of salt. These measures have led to a decline in prevalence of goiter and improvements in iodine nutrition.

Forthcoming challenges are to ensure 100% of edible salt is optimally iodized (40–45 ppm) at production level, to continue the program after June 2016 without donor funding, and to restrict selling of unpacked open salt for edible purposes. Future strategies will include immediate amendment of the IDD law to make one uniform standard for the iodine level in the salt, inclusion of cattle feed and bakery items in the compulsory

use of iodized salt and enhancement of the punishment limit. Other strategies will be to:

- start advocacy programs in the low coverage districts on a priority basis
- utilize the Bangladesh Small & Cottage Industries Corporation's (BSCIC) country-wide institutional network for USI
- introduce the IDD issue in the curriculum of primary and secondary level text books, and also in medical and nutrition curriculum.

**Figure 1: Monitoring IDD in Bangladesh, 1993-2005**



# A new national quality assurance and control manual to improve USI in Bangladesh

January 12, 2013; NGO News Desk.



The Bangladesh Small and Cottage Industries Corporation— with the financial and technical support of the Global Alliance for Improved Nutrition (GAIN) — convened a two-day workshop in Dhaka among key government and industry partners to solicit feedback on and approval of a national manual to improve the quality of iodized salt available in the country. GAIN and ICCIDD are providing technical assistance to ensure the manual incorporates best global practice.

The Government of Bangladesh began its commitment to eliminating iodine deficiencies in 1989 when it established the Control of Iodine Deficiency Disorder (CIDD)

Project within the Small and Cottage Industries Corporation under the Ministry of Industries. Maintaining quality of iodized salt from production to consumption is a key project focus.

The manual, which is aligned with internationally agreed-upon best practice and management and salt quality standards, will be adapted to the Bangladeshi context. The tool will provide guidelines so salt producers and regulatory agencies can improve their iodization and testing practices.

Key partners participating in the workshop gave feedback on the tool:

- Mr. Dilip Barua, Honorable Minister, Ministry of Industries: “The manual will help ensure consistent availability of adequately iodized salt through engaging salt producers. I congratulate GAIN for this great initiative.”
- Eng. Md. Mansur Ali Sikder Additional Secretary, Ministry of Industries: “The effort will help increase the availability of adequately iodized salt in the consumer market to eliminate iodine deficiency. I appreciate GAIN’s effort and look forward to GAIN’s technical leadership on operationalization of quality assurance/quality control protocols in the country.”
- Chairman, BSCIC, Mr. Fakhru Islam: “Adaptation of the appropriate manual will help sustainably reach 90 percent of Bangladeshis with adequately iodized salt.”
- Executive Director, GAIN, Marc Van Ameringen: “Partnership, policy and political commitment will bring a significant improvement of iodized salt quality to benefit the most marginalized.”
- Project Coordinator, ICCIDD, Dr. Gregory Gerasimov: “Salt producers must make sure that iodized food grade salt is always safe and contains the right level of iodine.”

## Quality assurance for USI in Bangladesh: Dr. Zeba Mahmud, Country Director. The Micronutrient Initiative, Bangladesh

MI provides technical maintenance, operational support and continuous counseling for adequate iodization to 200 small and medium scale salt processors producing 360,000 MT of salt. To support the national government, MI revitalized and is maintaining the eight BSCIC salt laboratories. MI also augments the skill and capacity of the BSCIC staff involved with salt on monitoring, laboratory

techniques, and computer/internet. It has established an internet network among the salt zones and the head office for effective communication and monitoring.

The following measures have been undertaken to support continuous improvement in the quality of salt:

- All salt mills have been provided a manual for operating and maintaining the Salt Iodization Plants (SIPs).
- The salt tests at the BSCIC laboratories are validated through the Institute of

Food and Science Technology (IFST) Science Laboratory under the Ministry of Science and the Institute of Public Health Nutrition (IPHN) under the Ministry of Health and Family Welfare.

- The Bangladesh Salt Iodization Information System (BSIIS) has been set up.
- All gathered information is used at the Quarterly Review Meetings at the salt zones between the salt millers and BSCIC to analyze, find solutions and take immediate decisions for corrective measures if needed.

- Deployment of USI Extenders with technical knowledge and expertise in the total process of quality salt iodization, to facilitate BSCIC salt inspectors, chemists and monitoring officers and provide hands on training to SIP operators, including troubleshooting of technical problems of SIPs and raising awareness.
- Introduction of a dewatering device on a cost sharing basis by medium entrepreneurs and holding of advocacy meetings.

Further sessions included a presentation by Mr. Mohiduzzaman, Professor, Institute of Nutrition and Food Sciences (INFS), University of Dhaka, on the role of iodine monitoring laboratories in sustainable elimination of IDD in Bangladesh, a presentation entitled ‘Iodine Deficiency Disorders: The Last Mile to Success’ by Ms. Nance Webber, Chief, Communication for Development, UNICEF, Bangladesh, and a presentation by Mr. Whiduzzaman, of GAIN, Bangladesh on the role of the private sector in achieving USI in Bangladesh.



Mr. M. G. Venkatesh Mannar, President, The Micronutrient Initiative, gave a global overview of IDD. He stated that IDD remains a significant public health problem in at least 32 countries, but access to adequately iodized salt has increased from <20% in 1990 to 71% of households in 2012. Globally US\$ 400 million in external investment towards supporting IDD programs were matched by an estimated US\$ 2 billion investment by the salt industry. Yet nearly 1.8 billion people do not have access to effectively iodized salt. A combination of continued government prioritization and industry motivation and commitment to USI is essential to achieve and sustain global elimination of IDD.

**Table 1: Tracking progress towards sustainable elimination of IDD in Bangladesh (National survey on IDD and USI in Bangladesh, 2004-05).**

Indicators	Goals recommended	Goals achieved in Bangladesh
<b>Salt iodization</b>		
Proportion of households using adequately iodized salt	>90%	51.2%
<b>Median Urinary Iodine Concentration</b>		
In the general population	100 - 199 µg/L	163 µg/L
In pregnant women	150 - 249 µg/L	158 µg/L
Programmatic indicators	Attainment of 8/10 indicators shown in Table 2	7/10

**Table 2: Current status of program indicators for tracking progress towards sustainable elimination of IDD in Bangladesh**

Indicator	Current Status
1 Presence of a national multi-sector coalition responsible to the government for the national programme for the elimination of IDD	Attained
2 Demonstration of political commitment	Attained
3 Enactment of legislation and supportive regulations on universal salt iodization, which establishes a routine mechanism for external quality assurance	Attained
4 Establishment of methods for assessment of progress in the elimination of IDD	Attained
5 Access to laboratories to provide accurate data on salt and urinary iodine levels and thyroid function	Attained
6 Establishment of a program of education and social mobilization	Information Awaited
7 Routine availability of data on salt iodine content at the factory level at least monthly, and at the household level at least every five years	Partially Attained
8 Routine availability of population-based data on urinary iodine every five years	Attained
9 Demonstration of ongoing cooperation from the salt industry	Attained
10 Database for recording of results of regular monitoring procedures on household coverage and urinary iodine concentrations	Information Awaited

In the final session, the advocacy booklet entitled “Prevention of Brain Damage: Universal Salt Iodization for Control of Iodine Deficiency Disorders in Bangladesh” was presented to the audience by Dr. Rakesh Kumar, ICCIDD, New Delhi, and feedback from the audience was obtained. The booklet will be widely circulated to medical and nutrition institutes.



## Meetings and Announcements

### Venkatesh Mannar of the Micronutrient Initiative appointed as an Officer of the Order of Canada

OTTAWA, Dec. 31, 2012 - The Micronutrient Initiative is proud to announce that its long-standing President, M.G. Venkatesh Mannar, has been appointed as an Officer of the Order of Canada. For almost 40 years, Mr. Mannar has been working to reduce debilitating micronutrient deficiencies among the world's most vulnerable. The Officer of the Order of Canada recognizes a lifetime of achievement and merit of a high degree,

especially in service to Canada or to humanity at large.

Mannar, as a sixth-generation salt processor in India, became fascinated with the opportunities to end iodine deficiency disorders, the leading cause of preventable brain damage, by using salt as a vehicle for iodine.

He helped establish salt iodization in more than 50 countries, making a huge contributi-

on to what is largely considered to be one of the most successful public health campaigns of the 20th century. Today nearly 4 billion people have access to iodized salt.

### Hidden Hunger - From Assessment to Solutions, Stuttgart, March 6-9, 2013

The International Congress "Hidden Hunger", including discussions of iodine nutrition and USI, will take place March 6-9, 2013, at the University of Hohenheim, in Stuttgart, Germany. <https://hiddenhunger.uni-hohenheim.de/> The meeting has three objectives: 1) to create awareness of the global problem Hidden Hunger; 2) to get scientific issues on the agenda of policy makers,

academicians, politicians and industry; 3) to discuss solutions to address worldwide micronutrient deficiencies.

Scientists from different areas, field workers, members of non-governmental organizations (NGOs) and representatives from administration, management and policy will be invited. Attention will be given to Africa and Asia as well as North America and Europe. Hidden

Hunger is an increasing problem even in the developed countries, whose potential negative consequences on long-term health are often overlooked and underestimated.

### Iodine Task Force Symposium: "Driving successful IDD control programs" at the 20th International Congress of Nutrition, Granada, September 15, 2013

The 20th ICN will be held in Granada, Spain. It is a 5 day congress (Sept.15-20) and will include plenary lectures, debate sessions, parallel symposia dedicated to major Food and Nutrition topics, including international nutrition and iodine deficiency, with an estimated number of 64 symposia, and two sessions of poster discussions. In addition, two days of Pre-Congress Satellite Symposia will be organized.

A Satellite Symposium on the afternoon (from 14:30 to 18:00) of September 15th, sponsored by the Micronutrient Initiative, will present the findings of the Iodine Task Force, an international expert panel review. It is entitled: "Driving successful IDD control programs: new findings from an international task force". There will be presentations and discussions on new and emerging key issues in programs, policy and the science of USI and IDD control. This will be an opportunity to get a preview of the much awaited ITF results as well as discuss the finding with the Iodine Task Force participants.



## Low Australian test results linked to iodine deficiency

Jan 21, 2013. The Australian Institute of Food Science and Technology.

In response to the outcry over recently released test results where Australian schoolchildren posted some fairly low scores, a Sydney-based expert on iodine deficiency claims that lack of dietary iodine may help explain the rather abysmal results.

Cres Eastman, a professor at Sydney Medical School and regional co-ordinator for the Asia Pacific region of ICCIDD, published an article for Fairfax Media where he noted that countries with diets high in iodine – including Singapore, Korea, Hong Kong, Taiwan and Japan – came out tops in the

academic tables for math, science and literacy. Australian students, on the other hand, ranked 27 out of 49 countries for reading, 22 in science and 18 in math. Eastman acknowledged the complexity of the problem and that numerous causes have been suggested to explain the low performances but said that the possibility that Australian children have an „intellectual performance“ problem is one area that hasn't been explored.

Changes in Australian dairy industry practices over the past two decades have resulted in a decrease in iodine in milk and dairy products

that, along with a reluctance of Australian consumers to purchase iodized salt to use at home, appears to have contributed to the problem. According to Eastman: „Until we eliminate the scourge of iodine deficiency from Australia it is likely that the intellectual performances of current and future generations will decline further when compared with countries where iodine nutrition is optimal.“

## Iodine deficiency in Welsh children risks mental impairment in future generations

By **Martin Shipton** WalesOnline, January 5, 2013

Professor John Lazarus (ICCIDD Regional Coordinator for Western and Central Europe) has called on the Welsh Government to take a leading role in addressing the causes of iodine deficiency, which was confirmed in a study he and colleagues undertook involving around 900 15-year-old schoolgirls in Cardiff and eight other British cities. In an article for the Institute of Welsh Affairs Agenda journal, Prof Lazarus of Cardiff University School of Medicine said: “Shocking, the UK is now eighth on the list of the top 10 iodine deficient countries in the world in terms of the number of schoolchildren with insufficient iodine intake. We are placed between Angola and Mozambique.”

From the 1920s onwards iodine deficiency has been recognized as a characteristic of large parts of western Britain. Prof Lazarus said: “No specific legislation was enacted to

correct the problem and a laissez faire situation was allowed to continue. In fact the iodine status of the UK improved due to the use of iodophors [added iodine] in the milk industry and the practice of feeding cattle cake to cows in winter. This cake contains iodine. But in recent decades we have seen not only the end of universal provision of milk in schools, but also a general decline in milk consumption throughout the population.”

Iodized salt is the preferred method of iodization in many countries and is cost effective and a major public health success. But there has never been any legislation in the UK requiring the use of iodized salt. As a consequence, this type of salt is not available in most supermarkets and only around 5% of salt contains iodine. Prof Lazarus added: “While many countries in the EU have enacted a salt law requiring the addition of

certain concentrations of iodine to salt, not all these laws are being adhered to. There could be a need for general legislation across the EU. But it would be better if pressure came from below. It is important, therefore, that if it wishes to take the lead in public health matters, Wales plays its part in putting this issue onto the wider public health agenda. For the sake of future generations it is not something we should allow to be kicked into the long grass.”

A Welsh Government spokeswoman said: “We are committed to improving the health and well being of the people of Wales and to reducing health inequalities. As part of our Big Health Debate surrounding the proposed Public Health (Wales) Bill, we welcome all contributions on ways to improve health in Wales, including those of Professor John Lazarus.”

## Humorous Indian TV commercial advertises the ‚benefits‘ of iodized salt

27 Nov 2012. Varshi Foods India has created an amusing video to advertise the benefits of their iodized salt. Directed by K Krishna,

music by Koti, with Ajay and Manasa acting the lead roles. Watch the video at: <http://www.youtube.com/watch?v=BMh5e5DmUcE>

## Abstracts

### Infant neurocognitive development is independent of the use of iodized salt or iodine supplements given during pregnancy.

The benefits of iodine supplements during pregnancy remain controversial in areas with a mild-to-moderate iodine deficiency. The aim of the present study was to determine the effect of improving iodine intakes, with iodized salt (IS) or iodine supplements, in pregnant Spanish women. A total of 131 pregnant women in their first trimester were randomly assigned to three groups: (1) advice to use IS in cooking and at the table, (2) 200 µg potassium iodide (KI)/d or (3) 300 µg KI/d. No differences in the 2nd and 3rd trimester were found in maternal thyroid hormones or thyroid volume between the three groups. Treatment group did not affect children's neurological development at 1 year. In conclusion, iodine supplementation was not associated with maternal thyroid function or children's neurological development. *Santiago et al. Br J Nutr. 2013 Feb 4:1-9. [Epub ahead of print]*

### Iodine and creatinine testing in urine dried on filter paper.

A convenient and inexpensive method to monitor urine iodine levels would have enormous benefit. Current methods require collection of urine and its transport to a testing laboratory. To circumvent these limitations the authors developed and validated a method to collect and measure iodine and creatinine in urine dried on filter paper strips. They tested liquid urine and liquid-extracted dried urine for iodine and creatinine in a 96-well format using Sandell-Kolthoff and Jaffe reactions, respectively. The modified dried urine iodine and creatinine assays correlated well with established liquid urine methods (iodine:  $R^2=0.9483$ ; creatinine:  $R^2=0.9782$ ). These dried urine iodine and creatinine assays may prove useful for application in iodine screening programs. *Zava et al. Anal Chim Acta. 2013;764:64-9*

### Iodized salt supplementation and its effects on thyroid status in Hulu Selangor, Malaysia.

This study determined the prevalence of IDD and the effects of iodized salt supplementation on thyroid status amongst in Hulu Selangor, Malaysia. Participants were from three target groups: pre-school children, primary school-going children and adult women. Each household was supplied with iodized salt (20 to 30 ppm) for 12 months. Urine samples were collected before and after 6 and 12 months in all groups. The study clearly demonstrated that iodized salt improved iodine status in the population. *Lim et al. Asia Pac J Clin Nutr. 2013;22(1):41-7*

### Availability of iodized table salt in the UK - is it likely to influence population iodine intake?

Iodine deficiency affects young women in the United Kingdom, but there is a lack of data on iodized salt availability. Availability of iodized salt for household use was determined by a shelf survey in five supermarket chains in each of 16 UK areas (in Southern England, Wales and Northern Ireland); a total of 77 supermarkets. Iodized salt was available in 42% of supermarkets. After accounting for market share and including all six UK supermarket chains, the weighted availability of iodized salt was 22%. The iodine concentration of the major UK brand of iodized salt was low, at 11.5 ppm. The authors concluded that iodized household salt is unlikely to contribute meaningfully to UK iodine intake as availability is low and table salt is only a small percentage of total UK salt intakes. *Bath et al. Public Health Nutr. 2013 Jan 16:1-5. [Epub ahead of print]*

### Association of socioeconomic status with iodine supply and thyroid disorders in northeast Germany.

This study investigated whether socioeconomic status (SES) is correlated with urinary iodine excretion (UIE) or thyroid disorders in northeast

Germany. The study population was 4056 adults for cross-sectional and 2860 adults for longitudinal analyses. Assessment of SES comprised different scales of education, income, employment and occupation. Thyroid-related outcomes included UIE, TSH, goiter and thyroid nodules. There was no significant correlation of SES and iodine supply or prevalence of thyroid disorders indicating equitable efficacy of the German iodized salt program over all socioeconomic groups. *Völzke et al. Thyroid. 2013 Jan 15. [Epub ahead of print]*

### A lowered salt intake does not compromise iodine status in South Africa, a country with mandatory salt iodization.

This study investigated whether salt intakes at recommended low levels compromises iodine status in a country where salt is the vehicle for iodine fortification. Three 24-h urine samples for the assessment of urinary sodium and one for urinary iodine concentrations (UICs) were collected in 262 adults in Cape Town. Median UIC was compared across categories of sodium excretion equivalent to salt intakes lower than 5, 5 to 9, and greater than or equal to 9 g/d. The median UIC was 120 µg/L (interquartile range 75-196), indicating iodine sufficiency. 23% of subjects had urinary sodium excretion values within the desirable range (salt <5 g/d), 51% had high values (5-9 g/d), and 23% had very high values ( $\geq 9$  g/d). No significant association between UIC and mean  $3 \times 24$ -h urinary sodium concentration was found. South Africans with salt intakes within the recommended low range (<5 g/d) were iodine replete, and median UIC did not differ across categories of salt intake. *Charlton KE et al. Nutrition. 2012 Dec 27. j.nut.2012.09.010. [Epub ahead of print]*

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