



# ICCID IDD NEWSLETTER

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# IDD elimination in Russia: challenges and solutions

Russian companies producing iodine products amass profits and discourage adoption of iodized salt legislation, leaving 20 million Russian infants and children at risk of intellectual impairment due to iodine deficiency



**Gregory Gerasimov** ICCIDD Regional Coordinator for Eastern Europe and Central Asia

## Historical Background

Although endemic goiter was known in Russia for centuries, systemic measures to address this problem in Russia started in the 1950s. For more than forty years, goiter control in the former USSR was regulated by the Ministry of Health Ordinance "On Improvement of Measures to Fight Endemic Goiter". It defined regions of the former USSR with endemic goiter for which iodized salt was supplied on a mandatory basis, gave legal basis for the organization of special medical

**THE INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS (ICCID)** is a nonprofit, nongovernmental organization dedicated to sustained optimal iodine nutrition and the elimination of iodine deficiency throughout the world. Its activities have been supported by the international aid programs of Australia, Canada, Netherlands, USA, and also by funds from UNICEF, the World Bank and others.

units (anti-goiter dispensaries) and made sanitary-hygienic control units of the Ministry of Health responsible for quality control of iodized salt (1). Sixty three dispensaries were established and there was a sharp increase of supply of iodized salt. From 1955-1970, there was a significant reduction of endemic goiter: a 1969 survey suggested the prevalence of total goiter was less than 5%. Iodized salt production increased up to 1 million tons annually, or 4.5-5 kg per capita, iodine supplements were distributed to high-risk groups and there was careful monitoring.

However, as has occurred in other countries, IDD returned when the system became lax, supervision waned and regular monitoring was reduced. Sporadic goiter surveys in the 1980s showed it was common in regions when prophylactic



because of broader economic problems in the Soviet Union, IDD control was deteriorating and finally collapsed with the break up of the country.

There are several lessons from the history of IDD control in the USSR that are of relevance for future IDD control programs in Russia and beyond. Sustainability of such programs is based on several pillars, including:

### Recovering from IDD amnesia

In the early 1970s, endemic goiter was officially declared as virtually eliminated. Soon after, monitoring of endemic goiter was discontinued at the national and regional levels and the special medical form for the registration of goiter was abolished. From that time onwards, overall national control of the program was lost, and subsequent changes in the prevalence of goiter were not tracked. From 1987 – 1988, the USSR Ministry of Health re-organized the former anti-goiter dispensaries into endocrinology dispensaries, and changed their orientation from control and treatment of endemic goiter to diagnosis and treatment of other medical conditions, primarily diabetes (2-4).

IDD control activities resumed in 1991 with a major role played by the Moscow Endocrinology Research Center (ERC). It has organized IDD assessments in many regions of Russia and in former Soviet republics. In 2001, ERC, under the Russian Ministry of Health, published a synopsis of epidemiological studies in different areas of Russia from 1991 to 2000. These surveys covered 28 of the 89 administrative districts of Russia, and in terms of population and size these studies covered more than half of the territory of the Russian Federation (5). Results of these surveys provided clear information that:

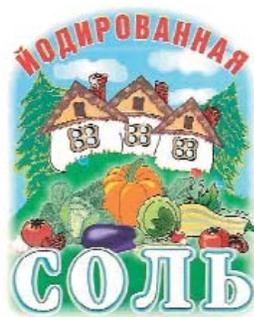
- All of the populations surveyed in the territory of Russia were exposed to some degree of iodine deficiency
- In remote regions, severe manifestations of iodine deficiency (cretinism) were found
- Iodine deficiency was present in large cities (Moscow, St. Petersburg and others) and in coastal areas, and was generally more prevalent in rural than in urban regions
- Iodine deficiency was prevalent in regions earlier not considered as “endemic for goiter”
- Iodine deficiency was more prevalent in the Eastern (Asian) districts of the country than in the Western (European) part



**IDD bars Russian children from developing their full potential**

lactic measures were reduced or discontinued. The main shortcoming of IDD control in the USSR was that it did not cover the entire population; it was limited to only select areas (about 60% of its territory). Another problem was the Soviet salt industry lacked capital to reconstruct mines and implement modern iodization techniques. This resulted in production of low quality iodized salt: in 1990, only a small fraction of iodized salt met the required standards for iodine content. Even before the dissolution of the country in 1991,

- Existence and rigorous enforcement of legislation or other legal acts regulating mandatory iodization of salt for human consumption
- An effective monitoring system to track production, distribution and quality of iodized salt, as well as impact
- Education, information and communication activities to ensure that IDD would not become a “forgotten” problem as happened in Russia at the end of the 20th century



#### Russian iodized salt label

■ Only sporadic measures had been taken to prevent iodine deficiency in the Russian population.

Median urinary iodine (UI) levels in all the surveyed regions were less than 100 µg/L indicating widespread iodine deficiency. A knowledge, attitude and practice (KAP) survey performed in 2000 in nine regions interviewed 3,470 respondents in both rural and urban settings (6). Results of this study showed:

- 80% of the population knew about IDD and iodized salt
- 60% thought iodized salt is beneficial to them in some way (but only 40% knew iodized salt is the key to preventing IDD)
- 40% had seen iodized salt in local shops
- 20% used iodized salt exclusively (the use of iodized salt was limited by its availability in local shops)

Overall, 27% of the urban and 10% of the rural respondents (and their households) consumed exclusively iodized salt, while an additional 20% purchased and consumed iodized salt from time to time. These results are similar to results of a 2002 salt situation analysis, which indicated the current supply of iodized salt to the Russian population was meeting only 25-30% of potential demand.

#### Legislation

Following several international and national meetings on the prevention of micronutrient deficiencies, on 2 May 1997, the Head State Sanitary Physician of the Russian Federation issued resolution No.11 "On the Prevention of

Iodine-Deficiency Conditions". Among other things, this resolution envisaged a ban on the import of non-iodized cooking salt. Unfortunately, this resolution was not put into effect as the Ministry of Justice argued that it violated several articles of Russian Constitution. In November 1997, the first meeting of salt producers developed recommendations to improve the quality of iodized salt. These were taken into account in resolution No. 11 of April 1998 of the Head State Sanitary Physician of the Russian Federation, "On Additional Measures to Prevent Iodine-Deficiency Conditions". This resolution introduced a new standard of 40+/-15 mg/kg for iodine-enriched salt in Russia. Salt industry enterprises were recommended to change to manufacture of iodized salt by the end of 1998, using potassium iodate in accordance with the established standard. Instructions were also given to draw up and approve methods of quality control over the iodine content in salt.

In October 1999, the government of the Russian Federation adopted resolution No.1119 "On Measures to Prevent

Iodine Deficiency Disorders". According to this resolution, several Federal Departments (the Ministries of Defense, Interior, and Justice, and the Russian Federation Federal Border Service) must purchase iodized salt every year. In addition, the executive structures of the Russian Federation were requested to adopt measures to saturate the market with food containing iodized salt, to supply children in preschool, educational and health establishments with iodized food products, and to conduct outreach work to raise the public's awareness concerning IDD prevention. The subsequent ordinance of the Russian Federation Ministry of Health No.444 of December 1999, and resolution No. 17 of December 1999 of the Head State Sanitary Physician of the Russian Federation made it mandatory for children's and medical institutions under the jurisdiction of the Ministry of Health to be provided with a continuous supply of iodized salt, and for quality control of iodized salt to be stepped up during its manufacture and sale.

**Table 1: Supply (production and import) of iodized salt in the Russian Federation in 1997-2007 (tons) from information provided by Russian Association of Salt Producers**

1997	1998	2000	2001	2004	2005	2006	2007
25,000	100,000	131,000	136,000	157,000	163,000	160,000	145,000

**Table 2: Results of Iodized Salt Quality Control Testing in Russia (2000-2006) from the annual Public Health reports of the Russian Ministry of Health**

	Samples (%) with inadequate iodine level			
	2000	2002	2004	2006
All salt samples	16.7	9.6	6.7	4.5
Imported salt	15.8	13.7	7.5	3.0
Salt production enterprises	8.7	4.2	3.9	0.7
Trade outlets	14.6	9.5	6.7	4.5
Hospitals, schools and kindergartens	18.7	10.6	6.4	4.3

The key obstacle in reaching IDD elimination in Russia is the lack of national legislation on mandatory salt iodization, resulting in relatively low consumption of iodized salt at the household level.

The first and second versions of the draft law “On IDD Prevention” were submitted to the State Duma (lower Chamber of the Russian Parliament) in 2003 and 2004 with major support from UNICEF Goodwill Ambassador Anatoly Karpov, the former Russian chess champion.

**Table 3: Goiter prevalence and median urinary iodine levels in selected regions of Russia in 1991-1999 and 2000-2005**

Region	Goiter rate (%)		Median UI (µg/L)	
	1991-99	2000-05	1991-99	2000-05
Years of study	1991-99	2000-05	1991-99	2000-05
Moscow region	12-29	3-17	25-83	77-121
Belgorod region	8-13	12-16	74-136	58-61
Komi republic	6-15	7-30	52-160	43-108
Arkhangelsk region	11-98	17-89	30-74	29-82
Volgograd region	4-16	9-16	16-65	58-96
Krasnodar region	10-23	0-8	48-57	38-129
Tatarstan republic	48	4-12	77	47-89
Udmurtia republic	16-48	5	64-86	55
Kirov region	14-28	18-37	56-78	52-84

A majority of Russian regions supported this draft law. However, the Council of Ministers rejected both draft law versions and objected to the principle of USI, arguing that the law limited freedom of choice and free entrepreneurship. The safety of iodized salt was also questioned. An amended version of the law was rejected for a third time in 2007.

Thus, current official regulations stipulate a voluntary model of IDD prevention through the use of iodized salt and other iodine-enriched products. Production and supply of iodized salt is to be regulated by demand from customers (retail trade, food industry, government agencies). In theory, in accordance with the government resolution, several federal government agencies should procure iodized salt for their employees, but enforcement of this resolution appears to be poor. It was felt a mandatory model of IDD prevention though USI in Russia could only be implemented

through federal legislation, and that it would require the adoption of a special act (law) on IDD prevention, or the amendment of existing laws (for example, the Food Safety Act) by the Russian Parliament.

### Iodized salt production

Pilot production of iodized salt in Russia started in the 1930s, but was interrupted by the Second World War. Production of iodized salt was restored in 1948, with

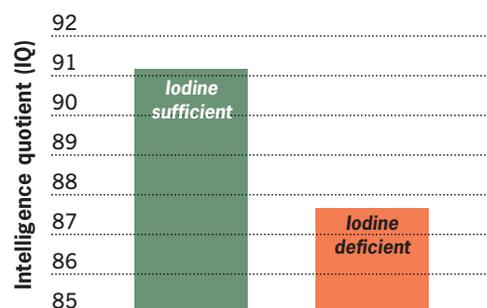
potassium iodide used as the fortificant at the level of 25 g of iodine per ton of salt. In the 1970s and 1980s, production of iodized salt remained at the annual level of 900,000 – 1,000,000 tons. Between 1985 and 1990 production of iodized salt began to decrease due to the crisis of the centralized Soviet economy. At the beginning of the 1990s, many enterprises of the salt industry and almost the entire wholesale and retail trade system were privatized. After the collapse of the Soviet Union, there was no legislative framework in the Russian Federation for conducting an IDD prevention program under the conditions of a market economy. As a result, production of iodized salt ceased between 1993 and 1996, and only 25,000 tons of iodized salt were produced in Russia in 1997.

The situation began to improve gradually after 1997 when, owing to the joint efforts of national salt manufacturers, the

Russian government and the Ministry of Health (Table 1). With the active participation and financial support from international organizations, primarily UNICEF, the problem of eliminating iodine deficiency began to receive priority attention. By 2002 Russian salt producers had built up sufficient production capacities, refurbished their production facilities, drawn up and introduced new advanced quality standards based on international experience, and improved iodization, quality assurance and the packaging of iodized salt (Table 2). It is now safe to say there are no remaining obstacles preventing the Russian salt industry from fully meeting the country’s demand for iodized salt (7).

State Industry Standard (GOST R51574-2000) “Common Salt Technical Specifications” sets forth detailed regulations for the technical specifications of iodized salt, its labeling and packaging, quality-control methods and storage. The weight proportion of iodine in iodized salt is stipulated at 40+/-15 mg/kg. All the enterprises of the Russian salt industry produce iodized salt exclusively using stable potassium iodate. The six main Russian salt enterprises now have the technological potential to produce up to one million tons of iodized salt annually. Estimated demand for iodized salt in Russia is approximately 500,000 tons (based on 3.5 kg of salt per capita a year and a population size of 142 million).

**Figure 1: IQ in iodine sufficient schoolchildren (n=313) and iodine deficient schoolchildren (n=378) in Russia (ref.9).**





**1 million Russian babies are born each year at risk of brain damage from IDD**

Supply of iodized salt in Russia in 2004–2005 reached 150–160 thousand tons (Table 1). The Salt Producer’s Association recommended increasing production and supply of iodized salt. However, after a steady increase of production and import of iodized salt from 2000 to 2005, in 2007, the supply of iodized salt declined by 15,000 tons. This negative trend is likely due to a decrease in iodized salt production in Russia and a decline in iodized salt imports from Ukraine, both due to insufficient demand from the retail trade and food industry. In 2000, the Ministry of Health strengthened control over the quality of iodized salt and required regular monitoring of iodized salt from its regional units. Iodized salt is tested in more than 1,500 food control laboratories in Centers of Sanitary Epidemiological Surveillance and the results are reported to the Ministry of Health. Almost 50,000 samples of iodized salt are checked annually nationwide. There has been an improvement of iodized salt quality (Table 2). The price of nationally produced iodized salt is only slightly higher (5–15%) than the price of ordinary salt, mainly due to the cost of the fortificant. Iodized salt is the least expensive way of meeting the population’s requirement for this essential micronutrient and is affordable to all social groups. However, the production

of iodized salt is still hindered by insufficient consumer demand for this product.

### The adverse effects of IDD

In 2006, the National IDD Center with UNICEF published a national report “Iodine Deficiency – a Threat to Health and Development of Children in Russia: Ways for Solution” (8). It stressed that iodine deficiency leads to almost 1 million children being born each year with impaired intellect. In 2005, thyroid disorders were found in nearly 650,000 children; in 95% of cases the main cause was iodine deficiency. Official health statistics also show a significant increase of endocrine morbidity in children and adolescents, most of which is due to an increase in the registration of endemic goiter. In 2002–2006, in 15 out of 19 surveyed regions of Russia, goiter prevalence in schoolchildren (assessed by thyroid ultrasonography) was between 5 and 19%. In 3 regions (Arkhangelsk, Nizhny Novgorod and Astrakhan), goiter preva-

valence and median urinary iodine levels in Russian regions and selected cities for 1991–1999 and 2000–2005. While some progress was recorded in certain regions (Moscow Region, Tatarstan Republic), the status of iodine nutrition in many other regions remained unchanged. Results of monitoring conducted by the ERC in 2002 – 2006 showed less than 30% of households in Russia consume iodized salt. Significant differences were observed in consumption of iodized salt in Russian regions. For example, in 7 out of 17 surveyed regions less than 10% of households were using iodized salt.

A study conducted by ERC assessed IQ (Intellectual Quotient) in schoolchildren from different regions of Russia (9). In this study researchers compared IQ levels in schoolchildren from regions (cities) with a relatively sufficient level of iodine nutrition to regions (cities) with different degrees of iodine deficiency. A highly significant decrease in IQ was



**Russian regions in Asia are particularly iodine deficient**

lence was 20 to 29%, and in the Sverdlovsk region, it was greater than 30%.

Further studies showed that the main reason for such high goiter prevalence is persisting iodine deficiency. In 16 out of 19 surveyed regions, median UIs indicated iodine deficiency. Table 3 presents comparative data of endemic goiter pre-

observed in schoolchildren from iodine deficient regions (Figure 1). Mean IQ levels were below 90, i.e. appeared in the so-called “grey zone” of borderline mental deficiency. This is a huge “brain drain”, an irreversible loss of brain power of future generations of the Russian citizens.

## Private companies challenge universal salt iodization

The political commitment to adopt legislation on USI in Russia is challenged by a number of different organizations, including some government agencies, on the “limitation of consumer choice and entrepreneurial activities”. There are also objections from some representatives of the health sector on impact of iodized salt upon the population that has alleged “contraindications” to iodine. Moreover, there is a widespread myth among the population that iodized salt may interfere with quality of pickles, salted fish, meat and lard.



However, underlying all official arguments raised against USI is the pervasive influence of the manufacturers of other iodized products; this prevents decision makers from adopting USI as the main strategy. USI runs against interests of many businesses: pharmaceuticals (supplying iodine tablets through pharmacies), producers of nutritional supplements (more than 40 iodine containing nutritional supplements are currently registered and marketed in Russia), and even the food industry. These businesses amass profits of hundreds of millions of rubles through trade of iodine containing substances other than iodized salt. Consumers are exposed to commercials of different iodine-containing products every day during the most expensive prime time on the main channels of Russian television.

Additionally, initiated by the Radiological Research Centre in Obninsk (Kaluga district), an organic iodine compound termed “iodocasein” is marketed for addition to bread, milk and

other food products. The bread is said to be widely available but it is unclear to what extent it is being bought, especially in rural areas. Iodocasein (under the trade name “Iodactive”) is also produced and supplied to the pharmaceutical market as a nutritional supplement. Unfortunately, because of the marketing strategy for iodocasein, universal salt iodization is being increasingly discredited as a method of IDD prevention. A critical review of the pros and cons of iodocasein has been published in a Russian medical journal (10). Aggressive promotion of this and other “alternative” substances is a major barrier to the adoption of USI.

Salt iodization remains the most affordable, safe and cost-efficient method of prevention and elimination of IDD. The average cost of prevention of IDD through USI is only 8-10 rubles (US\$ 0.35 – 0.45) per person per year since the price difference between common and iodized salt is small. It is at least 10 times less expensive than use of pharmaceuticals and food supplements that are currently aggressively advertised and promoted in the Russian Federation. For example, cost of IDD prevention with iodine pharmaceuticals during first 3 years of life was recently evaluated at 769 rubles (US\$33.00), and if costs of iodine supplementation during pregnancy and breastfeeding are included, the price tag increases to 1579 rubles (US\$ 67.76) (11).

## The way forward

The most critical constraint on IDD prevention activities in Russia is the lack of responsibility of the Federal Government for meeting its international obligation to eliminate IDD by 2005. A concluding observation of the 2006 UN Committee on the Rights of the Child raised concern on IDD in Russia and called on the Government of the Russian Federation to adopt legislation on USI and ensure its enforcement (12).

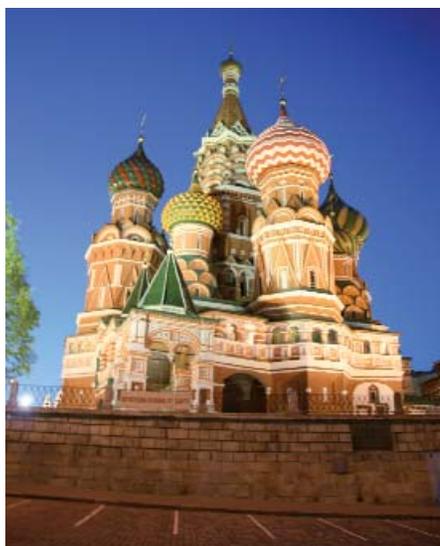
The Russian government considers health improvement as one of four major national priorities. The World Health

Organization (WHO) places Russia in 127th place in terms of its population's health, and 130th in terms of its health care system effectiveness. Russia is considerably behind the majority of East European and Latin American countries with a similar level of economic development. Of course, fixing the health care system is not a simple process. However, there is something that Russia can do quickly and without any significant investments: it can eliminate iodine deficiency among its population by ensuring access of its people to iodized salt. International experience has convincingly demonstrated that USI is the most reliable, safe and cost-effective way to eliminate IDD. More than one hundred countries have adopted USI and prevented irreversible brain damage from iodine deficiency in future generations. Russia should follow this path.

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# ICCIDD Annual Board Meeting and Round Table on IDD in Moscow



The ICCIDD Board of Directors held its annual meeting in Moscow on April 27–28, 2008. The meeting was graciously organized by Gregory Gerasimov (see photo), ICCIDD Regional Coordinator for Eastern Europe and Central Asia, and a Muscovite himself. The Executive presented their reports, and the Regional Coordinators gave succinct summaries of the challenges and progress in their regions. Pieter Jooste was reelected as Secretary, and David Haxton was reelected to a 3-year term as Executive Director.

Following the meeting, on April 29, ICCIDD organized a 'Round Table' with Russian experts. This provided a unique chance to bring international expertise and experience in IDD control and to present it to Russian decision makers and the expert community. ICCIDD, after discussions with UNICEF, identified several issues that could accelerate national actions in Russia. The major focus of discussion was on those issues that ICCIDD members have first hand experience with: (a) problems of sustaining USI in developed countries

(Australia, Italy); (b) problems of consumer choice in developed countries (Italy and Central Europe, USA); and (c) problems overcoming resistance (China, Iran, Peru). The objective was to provide Russian decision makers and experts with comprehensive information on status of IDD elimination worldwide, and to share international experience in solving difficult problems (such as issues of "freedom of choice").

Participants were senior leaders from government institutions: the Institute of Nutrition (the main expert body on nutrition policy in Russia), the Endocrinology Research Center, the Confederation of Consumer Societies (Konfop), the Salt Producers Association, and other industry representatives. Invitations to the Round Table meeting were sent to Head of Rospotrebnadzor under Ministry of Health and Social Development Dr. G. Onishenko, and members of the Health Committee of the Parliament. While all possible efforts were made to ensure participation of senior government leaders, Rospotrebnadzor was represented by Deputy Director of the Institute of Nutrition Prof. M. Gapparov.

The Chairpersons were ICCIDD Chair, Prof. G. Burrow and the Director of the Moscow Endocrinology Research Center, Prof. G. Melnichenko. They opened the Round Table with short welcome speeches. After that Prof. E. Troshina (Endocrinology Research Center) made a presentation on current status of IDD elimination program in Russia. Only 30% of households in Russia are consuming iodized salt. IQ levels in schoolchildren in most regions are below 100 suggesting the adverse impact of iodine deficiency on brain development. Efforts of the State Duma Health Committee

to pass legislation on mandatory use of some sorts and types of iodized salt have not been successful. Mr. B. Apanasenko, the Chairperson of Association of Russian Salt Producers, reported that currently Russian salt producers have full capacity to saturate domestic markets with iodized salt. They generally support legislation on IDD prevention through iodized salt. However, without enforceable legislation they are unable to shift to production of iodized salt only. Prof. Chen Zupei (China) provided data of the most recent round of monitoring activities in China: coverage rate of adequately iodized salt is 90.2%; coverage rate of iodized salt (over 5 mg/kg of iodine) is 94.9%. The China experience indicates USI can play a central role in the correction of iodine deficiency nationwide. Prof. F. Azizi (Iran) reported on successful elimination of IDD in Iran. Prof. E. Pretell (Peru) reviewed the remarkable progress achieved in the Americas. Prof. G. Gerasimov (Russia) discussed IDD elimination in countries of Commonwealth of Independent States (CIS). Legislation or other normative documents on USI were adopted in 10 out of 12 countries of the CIS. Three countries have reached the goal of USI and elimination of iodine deficiency (Turkmenistan, Armenia and Kazakhstan) and several others are close to this goal. Only Russia and Ukraine are lagging behind. Prof. N. Kolomiets (Belarus) informed that a government decree on IDD prevention was passed in 2001. It requires mandatory use of iodized salt in the food industry and public catering. While trade of non-iodized salt in retail shops was not forbidden, a massive communication and education campaign was conducted with UNICEF support. Results of recent surveys show adequate iodine nutrition in most regions. However, over the past

year sales on iodized salt in retail shops dropped, possibly due to competition with other “iodized” products. Draft legislation on mandatory trade of iodized salt in retail shops has passed a first reading in the Parliament.



**ICCIDD Board meeting**



**Prof. Gregory Gerasimov hosted the Round Table**

In the ensuing discussion, Prof. M. Gapparov (Institute of Nutrition, Russia) stated the Ministry of Health and Social Development and its public health arm, Rospotrebnadzor, are concerned with iodine nutrition in Russia. They favor the so-called “complex approach” in iodine deficiency prevention. He mentioned that besides iodized salt there are other iodine vehicles, such as seaweeds, or nutritional supplements with iodine (iodocasein). Also besides deficiency in iodine, the population of Russia is experiencing deficiencies in iron, calcium, selenium and many other micronutrients. Legislation on IDD prevention should be broadened to include measures to combat other micronutrient deficiencies. At the same time, there is no need to limit entrepreneurial activities and production of iodized water, milk and milk products, bread, etc. Nutritional supplements must also find their place in an overall strategy. Currently the Russian government is strengthening the program of school breakfasts and lunches to include fortified products in children’s diets. In contrast, Prof. G. Melnichenko reminded the audience of the Okkam

Razor principle, and said: “entity identifiers should not be multiplied beyond necessity”. He questioned the need for multiple iodine vehicles when universal use of iodized salt is the most effective, safe and cost efficient method to fight iodine deficiency, as proved in over 100 countries around the world. Prof. F van der Haar (Holland) touched upon issues of iodized salt safety.

Mr. D.Yanin (KONFOP, Russia) agreed with Prof. Gapparov that a “complex approach” is needed, but in another sense. While the market is growing, some companies are using aggressive marketing strategies to increase sales of their products. Unfortunately, there is still steady growth in sales of tobacco, alcohol and sugar in Russia. Many attempts to regulate this market are facing opposition from companies insisting on “free choice” to push up their sales. Less than 5% of Russian medical doctors have sufficient knowledge of the English language and hence have no access to unbiased information. Iodized salt is a cheap product and a marketing approach to increase sales of iodized salt is not effective. Unfortunately, until now all efforts to convince the government to adopt legislation on mandatory salt iodization were not successful. Mandatory salt iodization is not contradicted within the Russian Constitution. KONFOP will continue discussion with Rospotrebnadzor on issues of salt iodization and will be supporting legislation on mandatory salt iodization. Prof. A.Pinchera (Italy) mentioned that efforts to adopt legislation on IDD prevention in Italy faced fierce opposition that it might limit consumer choice. To overcome this challenge, current legislation requires that both iodized and common salt shall be available on sale in retail shops. However, common salt is sold only on explicit request from the customers.



**Moscow IDD Round Table**

The Round table meeting was followed by Press Conference that was attended by 15 journalists and the TV program “21st Cabinet” from Federal TV Channel “TVC”. This TV program also took additional interviews from the participants, including G.Burrow, C.Zupej, R.Hannemann and others, and is planning to prepare a new video on IDD prevention to be broadcast later this year. The Press Conference supported the media campaign to raise and sustain public awareness in IDD and benefits of iodized salt.

At the Round Table meeting, ICCIDD was able to offer high level, competent and respected commentary on experience from countries where many problems that Russia faces have been addressed and overcome, or are being discussed. It is hoped the meeting can help overcome resistance from the government and provide an opportunity for redoubling efforts to draft and adopt enforceable legislation (or a Ministerial decree) on mandatory iodization of the most frequently used types and sorts of salt. Outcomes and recommendations of the Round Table meeting will be reported to the Ministry of Health and Social Development and Rospotrebnadzor. Proceedings on this Round Table will be published in the Russian medical journals: “Public Health” and “Clinical and Experimental Thyroidology”.

# ICCIDD Workshop on standardization of thyroid ultrasonography for IDD assessment and monitoring

A training workshop “Standardization and improvement of quality of IDD monitoring” was conducted on June 26-29, 2007 in St. Petersburg, Russia.

The most precise way to assess goiter prevalence is to measure thyroid volume (Tvol) in school children by ultrasonography (US) and to compare it with reference values (obtained in iodine sufficient regions). On reviewing the Russian national capacities to complete ultrasound goiter surveys according to international standards, one of the gaps identified was standardization of the Tvol measurements. To improve this capacity, training was provided by Prof. M. Zimmermann (Switzerland). Participants were endocrinologists who are actively involved in IDD epidemiological studies in Russia.



**Participants discussing ultrasound methods during the St. Petersburg thyroid volume workshop**



The participants included Dr. Malakhova Tatiana (Medical Academy, St. Petersburg), Dr. Turovina Elena (Medical University, Tyumen), Dr. Abdulhabirova Fatima (Endocrinology Research Center, Moscow), Dr. Mazurina Natalia (Endocrinology Research Center, Moscow), Dr. Platonova Nadezhda (Endocrinology Research Center, Moscow), and Dr. Gregory Gerasimov (ICCIDD). After a seminar by Prof. Zimmermann on the recommended WHO technique,

ultrasound measurements were done by all operators independently using standardized technique on thirteen Moscow schoolchildren, and then compared. The average coefficient of variation (interobserver error) was found to be acceptable at 16%. The aim of the Workshop was to demonstrate that standardization of thyroid US examinations can significantly improve the accuracy and precision of the technique for goiter monitoring. All participants agreed this task was met during training in Russia.

# Reference values for urinary iodine concentrations in newborns using a new pad collection method

Corine Dorey and Michael Zimmermann, ETH Zürich, Switzerland

Monitoring of iodine deficiency should focus on pregnancy and infancy, and the main indicator of iodine intake in populations is the median urinary iodine concentration (UI). WHO/UNICEF/ICCIDD recommend a median UI  $\geq 100$   $\mu\text{g}/\text{liter}$  in infants indicates iodine sufficiency (1). However, the WHO also recommends an iodine intake of 90  $\mu\text{g}/\text{day}$  during infancy and suggests extrapolating from this to a median UI assuming a urine volume of 300 to 500 ml/day, but this would produce a higher cut-off of  $\geq 180$   $\mu\text{g}/\text{liter}$ .

For clarification, representative data on UI in a large sample of iodine-sufficient infants would be valuable. Switzerland has a model iodized salt program;  $>95\%$  of households are using iodized salt (iodized at 20 ppm), and national urinary iodine monitoring in pregnancy as well as newborn TSH screening indicate optimal iodine nutrition (2). Thus, Swiss newborns are a good reference population.

Worldwide, access by health workers to newborns in the first few days after birth is generally good; in many countries most births take place in maternity clinics. Collection of spot urine samples for UI could be used, together with newborn TSH screening when available, to help monitor iodine nutrition during this important life stage. WHO has stated the major challenge to using median UI in this age group is the difficulties of sample collection. Therefore, the objectives of this study (3) were:

- to develop and validate a simple method for spot urine collection in newborns
- to establish a reference range for UI

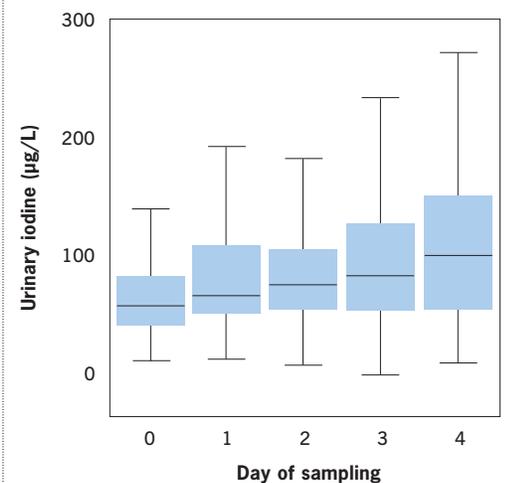
in iodine-sufficient newborns in the first 4–5 days after birth

A 2-stage cluster sampling was used to obtain a representative national sample of healthy, term Swiss infants, 0 to 5 days old ( $n=634$ ). Gestational information, whole blood for TSH, and spot urine samples on two consecutive days were collected using a pad collection method (Newcastle sterile urine collection packs, Ontex UK, Corby) (4). The nurse placed a pad inside a disposable diaper (at some centers, the pads were cut in half to improve fit inside the diaper) and checked every 10 minutes until the pad was wet with urine. The pad was then removed and using a disposable syringe, 2 ml of urine was expressed from the pad.

The pad collection system was well-accepted and performed well during recovery and contamination testing. Median UI in all newborns ( $n=1224$  samples) was 77 (95% CI; 76, 81)  $\mu\text{g}/\text{liter}$ ; there was a gradual increase in median UI within the range of 70–100  $\mu\text{g}/\text{liter}$  from days 1 through 4 (Figure 1). Because urinary creatinine concentrations were high and variable, the UI:creatinine ratio was not useful for standardization.

The results of this study suggest the current WHO median UI cut-off ( $>100$   $\mu\text{g}/\text{liter}$ ) for iodine sufficiency in infancy may be too high for the first week after birth. Reference data from iodine-sufficient newborns and a simple collection system may facilitate use of urinary iodine concentration as an indicator of iodine status in this age group. Worldwide, there are many national and regional laboratories where UI is a routine measurement. These reference data could be used by other countries for monitoring,

and, if necessary, allow early and thus more effective iodine prophylaxis during pregnancy, lactation and infancy.



**Figure 1: Spot urinary iodine concentrations ( $n=1224$ ) in a national sample of iodine-sufficient euthyroid term Swiss newborns collected at days 0–4 after birth. The boxes contain data between the 25% and 75% percentiles with medians; whiskers represent the range.**

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# A call for improved monitoring of the IDD Control Program in India

**Chandrakant Pandav** and the **ICCIDD India Office**

In the Jan-Mar 2008 issue of the Indian Journal of Public Health, Dr. Pandav and co-authors wrote an impassioned editorial on the need to accelerate IDD control efforts in India. India and Bangladesh are two of United Nations declared 18 priority countries who are yet to achieve Universal Salt Iodization.

Paradoxically, India contributed to IDD control in many other countries worldwide. Some of them have done remarkably well - Bhutan, China, Thailand, Sri Lanka, but India lags far behind. Despite the historical presence of an adequate program and legislation, it is more than unfortunate that only 50% of Indian households have access to adequately iodized salt. According to the latest National Family Health Survey - 3, only 51% of the India's population has access to adequately iodized salt. This fact is more than thought provoking. This is especially crucial if the results of the previous survey (NFHS - 2) are examined, which showed 49%. There is hardly any progress! Climbing up 2% points in six years is not an achievement that makes one proud. It is disheartening to know that India's quest to become a superpower and the effort to keep its prestigious role in shaping the global economy will face serious obstacles, if the country is unable to defeat chronic iodine deficiency by 2015.

India is poised to show unprecedented economic growth by 2050. However, in the region, India is the worst performer after Pakistan and Afghanistan in consuming adequately iodized salt. Iodized salt

can prevent mental and physical impairment, brain damage, and endemic goiter. How can a country like India tolerate this situation? Does India not care about its greatest asset - the intellectual capacity of its people? Notably, that the rural population and those living in the low income segment continue to have poor access to adequately iodized salt (41.2%). Salt predominantly transported by rail has better levels of iodization as compared to salts that are transported by road. This is evident in the north eastern states where households have a high percentage of coverage with adequately iodized salt (Assam: 71.8% to Manipur 93.8%). Not surprisingly, the household coverage is better in those states that have iodized salt available in their public distribution system (PDS).

Ensuring consistent quality delivery and assurance, the authors suggest to simultaneously engage the All India Institute of Medical Sciences (AIIMS), New Delhi, National Institute of Nutrition (NIN), Hyderabad and National Institute of Communicable Diseases (NICD), New Delhi as the National Institutes for carrying out Quality Assurance of iodized salt and introduce Annual Cyclic Monitoring for the three indicators (goiter, UI, and iodized salt). India should give priority to advocacy and Behavioral Change Communication (BCC) in the low-income population.

On 20th April, 2006, during the 21st ICCIDD Board Meeting in New Delhi, one of the main events was the announce-

ment of the formation of National Coalition for Sustained Iodine Intake (NCSII). The coalition aims to ensure sustained iodine intake by monitoring iodine status of the population, monitoring the implementation of rules and regulations, information sharing and advising involved institutions and sectors to achieve sustained elimination of IDD in India. The board proposed that



the coalition would have representation from the Government of India, judicial bodies, civil society organizations and salt producers from across the country, besides the scientists and the program managers involved in the elimination of IDD in India. The authors strongly suggest that the Government should call for a national advocacy event for meeting with the salt producers and write to the Chief Ministers of Gujarat, Tamil Nadu and Rajasthan for increased political commitment.

# A new iodine laboratory improves Kyrgyzstan's capacity to monitor iodine nutrition

More than 20,000 babies are born intellectually impaired each year as a result of iodine deficiency in Kyrgyzstan

**Ludmila Ivanova** UNICEF Consultant; and **Arnold Timmer** Nutrition Specialist, UNICEF, Geneva



Kyrgyzstan remains the second poorest country in Eastern Europe and Central Asia. More than half of the population lives in poverty and more than one quarter in extreme poverty, affecting more than 60 per cent of children under the age of 14. Government expenditures on health, education and social protection are low.

In the framework of eliminating iodine deficiency disorders (IDD) in Kyrgyzstan, UNICEF has provided technical assistance to the government to build capacity for monitoring and evaluation of the impact of salt iodization in the country. Kyrgyzstan is still iodine deficient and only 42 per cent of households are consuming standard iodized salt (1).

After the adoption of the second national program for IDD control, 2003–2007, the consumption of iodized salt in some regions increased up to 75 per cent, but low iodine intake remains a problem. Small scale studies on iodine status of school children conducted during the last five years show positive trends in iodine nutrition, but there are no national representative survey data available (2). The IDD/USI monitoring system in Kyrgyzstan still needs serious improvements and one of the key problems is the poor laboratory infrastructure for measurements of iodine in urine.

Strengthening the system of biological monitoring will ensure reliable data for evaluation the progress of IDD elimination.

According to WHO/UNICEF/ICCIDD recommendations, the median urinary iodine excretion is the most reliable indicator for assessment of a population's iodine nutrition (3). A good operating laboratory to measure ioduria in Kyrgyzstan would strengthen the national capacity for assessment of the impact of salt iodisation.



*Adequate iodine for Kyrgyzstan's children means better school performance*

Bishkek, the capital of the Republic of Kyrgyzstan, is situated in the north part of the country (Chui-Region) and has a population of about 1 million. A new iodine laboratory was established at the Bishkek Endocrinology Dispensary after the renovation and reconstruction of a dedicated room. UNICEF assisted in delivering equipment and the reagents, providing a spectrophotometer, deionizer, electronic laboratory scale, vortex mixer, hot plate with stirrer, dry bath for mineralization and laboratory glassware. Two laboratory specialists, Kyal Ormokojeva and Ajgul Musambetova, and two laboratory technicians built a laboratory team for further monitoring activities.



**In the new laboratory, Kyal Osmokojeva demonstrates the method to the laboratory staff**

Although the laboratory is well equipped, it was necessary that the new team be carefully trained how to manage the laboratory and how to introduce the principles of Total Laboratory Quality Assurance (TLQA) and Quality Control (QC). The one-week training was organized by UNICEF Kyrgyzstan



**The team on the last day of the training – from left: Kyal Ormokojeva (Head of Laboratory), Cholpon Imanalieva (UNICEF Health and Nutrition Officer), Timothy Schaefer (UNICEF Representative), Ajgul Musambetova (Laboratory Specialist), Ludmila Ivanova (Consultant), Roza Sultanalieva (MoH), Svetlana Mametova (Head Endocrinologist)**

during the last week of March 2008, with the help of Dr. Ivanova. The laboratory staff was trained in the ioduria method (digestion using ammonium persulfate), internal quality control principles, preparation of QC pools, validation of QC pools, using statistical procedure for introduction of internal and external QC, applying Westgard rules for QC purposes, and interpretation of results. The laboratory manager was assisted in establishing contacts with the CDC/IRLI laboratory in Atlanta, GA, USA.

After the very intensive one week practical training, the laboratory team was confident of its capacity to conduct the analyses and to provide to the Ministry of Health and UNICEF reliable data on iodine status of children. The establishment of a state-of-the-art laboratory for iodine determination in urine at the dispensary in Bishkek is an important step forward in the IDD control program in Kyrgyzstan.

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# Is that salt salty or not salty? What a question!

Personal Stories | By **Lorenzo Locatelli-Rossi** International Salt Consultant , ICCIDD Board Member

As a salt expert, I am often asked: “That brand of salt does not add salt flavor to my food, why?” Good question and you may have heard it. So here is my explanation.



Often, after visiting a solar salt pan, I would make sure I left with a bag of the good salt, “connoisseurs salt”, the “fior di sale” (the flower of salt) or, as it is now known, ‘gourmet salt’! So what is the appeal of this ‘gourmet salt’? Is there any truth to the idea that it has better, ‘more salty’, flavor?

First, let’s talk about the salt industry. More than 90% of salt produced by modern salt factories is for the food and chemical industries and therefore is very highly refined to be >99% sodium chloride. The remaining 10% produced is for household consumption. In a way, the salt industry works for industry, while table salt for the public is a ‘by-product’. Industries require pure sodium chloride, but the consumer is deprived of certain minerals that the salt refineries extract and throw away that are important to taste and probably health. In particular, the magnesium salts also known as the bitter salts.

Looking at the Table 1, the salt industry produces highly refined salt (sodium

chloride), eliminating magnesium and calcium compounds that provide additional taste to salt.

What happens when these additional ingredients are refined away? It may be that when consuming highly refined salt on, say, your salad, you will add more salt in order to achieve some kind of ‘salty’ flavor compared to the more natural salt. You may add less salt when using the natural salt because the additional components (the ‘bitter salts’) give the food a highly salty taste. Hence you may use less salt, making the meal healthier.

One should simply decide oneself. Whoever eats at my table has experienced my choices of good natural salts such as sea salt from India and North Korea, boiled salt from Vietnam or pan dried solar salt made by myself on the roof of our house in Katmandu!

But there is one big problem with ‘gourmet’ salt: producers will not add iodine. They say adding the “chemical” degrades the natural status, the “organic like” product. This is appalling! Producers should

use our knowledge of the importance of iodine for health and adapt this ancient gift of nature into a product suited to our modern times. After all, iodine has no taste, color or smell and iodine is natural to the sea. Maybe they refuse to add iodine because of their lower IQ from consuming only their ‘gourmet’ non-iodized salt!

Needless to say, all salt on my table – even natural sea salt – is iodized.



**Table 1: The composition of different salts.**

Chemical Name	Percentage Chemical Compositions					
	Oceanic Salts	Great Lake (USA)	Rock Salt (general)	Solar Salt* (natural/ washed)	Washed Refined Dry	Pure “Vacuum” Dry
Sodium chloride	77	83.81	96.39	96.29	99.76	99.9
Magnesium chloride	10.88	5.73	0.047	0.16	0.013	0.00
Magnesium sulfate	4.74	2.45	--	0.12	0.018	0.006
Calcium sulfate	3.60	0.57	0.88	0.22	0.16	0.009
Potassium Sulfate	2.46	6.98	--	--	--	--
Magnesium bromide	0.22	--	--	--	--	--
Calcium carbonate	0.34	--	--	--	--	--
Calcium chloride	--	--	0.049	--	--	0.00
Other	--	0.43	--	--	--	--

\* The content expressed here are the upper limits, as unwashed salt can be 94% NaCl with other elements increasing in content. **Note: None of these salts is iodized!**

# Progress in salt iodization among small salt producers in West Africa

In Ghana and Senegal, a focus on encouraging salt iodization by small producers is paying dividends

**Alexander Miloff** The Iodine Network. Ottawa, Canada

## Introduction

Stretched out over 74 square kilometers, the Songor lagoon near Ada, Ghana dries out seasonally, leaving a white snow-like layer of salt covering its floor. Salt is wealth in this area. During this time, hundreds of members of nearby communities gather here to collect and sell their salt to traders who bring the product to market on heavily laden trucks. It's a feverish explosion of physical and economic activity that lasts just a few short weeks and yet it produces a significant portion of Ghana's total salt production for the year. A similar event occurs in Senegal during the hot summer between January and June, when rivers that reach hundreds of kilometres inland from the ocean dry to a thick layer of white.

For communities living along these flats, collecting salt is their livelihood and the industry has probably existed in this informal way for hundreds, perhaps thousands of years. National governments who seek to prevent iodine deficiency disorders through Universal Salt Iodization (USI) in their countries have faced an uphill battle attempting to change the way these markets operate. New models of how to do this, however, are being demonstrated that will make a significant contribution to improving the populations' health.

Ghana and Senegal are the two largest salt producers in West Africa, producing an estimated combined total of 600,000 metric tons of salt, about 80% of which



**Salt production at the Songor Lagoon near the town of Ada, Ghana.**

is exported to countries in the region. However, the two countries also have relatively low levels of salt iodization. A recent UNICEF Survey (2006) found only one-third of households have adequately iodized salt in Ghana; in Senegal the result was only slightly better at 40% salt iodization (2004 DHS). Although about half the salt produced in these countries comes from medium to large producers with adequate iodization capacity, the other half comes from thousands of small producers who work seasonally, producing no more than 50 tons individually per year from the salt fields in the vicinity of their homes.

## Challenges and solutions

Small producers tend to be more difficult to work with than large producers.

Large producers, more often than not, have more knowledge of salt iodization, are more organized, have larger incomes and have fixed operation addresses where governments can monitor iodization. Small producers, on the other hand, tend to be less informed about the need to iodize, exist in hard-to-reach areas often without an address, do not have the means to invest in iodization equipment and function outside the formal economy, and thus outside the purview and control of national governments.

The secret of the work with small producers has been ensuring they derive clear benefits from salt iodization, and are adequately supported in the uptake and use of iodization technology, thereby preventing a habitual return to traditional methods. Support, as we will see

below, embraces not only a long-term, up-close commitment to assisting the producers, but also the formulation of incentives which the producers understand. The mostly poor and uneducated small producers, having low profit margins and risk aversion, will only apply salt iodization techniques when they clearly recognize the benefits to them. As the living conditions of small producers improves through collaboration with organizations supporting USI, so does their motivation to continue iodization.



*Small salt producers in Fatick, Senegal*

### GPS mapping

One of the very first steps development organizations needed to carry out was to identify the locations of small producers' salt sites. In large, uncharted rural areas the most efficient way to do this was through aerial photographs and GPS mapping. This step allowed numerous new salt production locations, previously unknown by governments, to be discovered. It also aided existing and potential producers, with whom the information was shared, by revealing potential land for expansion or investment; the capacity and suitability of that land for production; the existence of road networks; and the layout and density of the local populations needing salt.

### Small producer cooperatives

Once the small producer sites were located, contact with producers was made and, where they didn't exist, assistance was offered to establish cooperatives to farm the salt and receive development assistance. In Senegal, for instance, the growth of cooperatives was supported by government agencies such as *chambres des métiers* (chambers of commerce) and the internal trade bureau. In their favor,

cooperatives are more likely to be profitable, with their ability to collectively negotiate higher prices from traders, manage price fluctuations, take advantage of economies of scale and access new markets. However, their firm establishment often requires difficult changes in perception and behavior regarding such issues as competition, self-reliance and group functioning. In Senegal, there have been occasions where tempers have flared in some cooperatives over access to the iodization machine.

### Iodization machine improvements

The management and adaptation of technology is another problem area which had to be addressed. Iodization machines, which form the core of the iodization process, are relatively complex pieces of machinery that require training to operate and expertise to maintain. In the past, they were often tethered to inappropriately sized fixed generators that consumed too much fuel to be used efficiently by small producers. Moreover, their movement through the salt fields was impeded by their attachment to cords and small wheels which were ineffective in sandy and muddy terrain. These machines have, however, undergone substantial improvements since their introduction including the use of an on-board power source, large wheels, adjustable speed capacity, steering to navigate through salt fields as well continually simplified and streamlined mechanics and electronics. The machines have been upgraded specifically with the needs of the small producer in mind and producers appreciate the efficiency with which they are able to bag and bring their salt to market.

### Sustainable potassium iodate procurement

Sustainable and easy access to potassium iodate has been another hurdle to overcome. Unlike large producers which have the capacity to procure and stockpile large quantities of the substance, small producers need relatively small quantities over extended periods of time. Although iodate was given to producers at the outset at no cost, it's expected that they will eventually purchase the product themselves and become self-sustaining.

In Senegal, a system of procurement centers have been established through *chambres des métiers*. Other models, such as those used in Ghana, have attempted to harness the private sector to procure on behalf of the industry. In both cases, finding the optimal system for an individual country will take some time.

### National Support for Iodization

The overall context in the country is also of crucial importance to the success of small-scale iodization. The more active and well-organized the national networks, the greater the prospects of support for small producers. In most countries a well-functioning national coalition comprised of the government, private sector, civil society, the media and development agencies is the key to this work. In a select few countries, including Senegal, highly effective government bodies, such as CLM (a multi-sectoral coordination commission responsible for national nutritional implementation), are able to work alongside a coalition and support small producers through its many local and partner NGO offices. This reflects an important degree of ownership which translates into a better organized and resourced campaign to achieve salt iodization throughout the country.

### Conclusions

In Senegal, where there has been significant progress, a second phase of marked quantitative and qualitative expansion can begin. This phase will:

- increase the number of cooperatives involved
- guarantee that sustainable and timely procurement of iodate takes place
- continue to ensure records of iodized salt productions are kept by producers
- pilot new business models to ensure small producers and cooperatives become more profitable.

In Ghana, where the progress of work with small producers has been slower, partially due to poor weather conditions affecting production, development organizations must continue to increase their presence on the ground and their interaction with small producers as the key method of ensuring success.

# Book Review

**John B. Stanbury:** *The Iodine Trail. Exploring iodine deficiency and its prevention around the world.* Lisa Farber Publisher. 2008.

Once a disease is well understood in scientific terms, it appears in books as a sober text with clear-cut illustrations presenting the known facts in logical sequence. The public perceives the medical scientist as a scholar spending most of his time in the laboratory, library or hospital ward performing experiments in logical sequence. However, there is another side to medical research: it allows (and often even necessitates) travels to remote places off the usual tourist paths, some times by adventurous routes; it often leads to unexpected encounters with fellow scientists, political dignitaries, missionaries, or just plain adventurers. It is this side of medical research that this book by John Stanbury is about.

It starts in 1951 with a scientific expedition crossing the Andes by train from Santiago and establishing a research station with local scientists in Mendoza, Argentina, complete with spectrophotometer, Geiger counters and radioisotopes, all shipped from Boston. The resulting monograph, "Endemic Goiter. The Adaptation of Man to Iodine Deficiency", established the Thyroid Lab at the Massachusetts General Hospital as the leading research institution in the field of iodine deficiency for many years. There followed travels by John Stanbury to other South American countries and later to Africa,



Papua New Guinea, China, India and many other places.

The book describes with black humour all the hardships workers in the field of iodine deficiency have to face, such as take-offs with hopelessly overloaded planes or crossing of bridges of dubious strength. Often, housing accommodation was primitive and hygienic installations were nonexistent. There were encounters with mountain gorillas, venomous sna-

kes, lions, hippopotami, African revolutionaries, and South American dictators.

Most travels followed the same scheme: physicians noted a high goiter prevalence in their country, came to Boston for training, then went home and started a collaborative study with John Stanbury and other specialists. The book lets the reader participate in the evolution of the concept of iodine deficiency disorders, with mental retardation being less visible, but more damaging than goitre. In all places, the author keeps a keen eye on the dire social and political situation in many countries, facts that render difficult a sustained elimination of iodine deficiency.

The book is good reading for non-specialists as well as specialists. The former may appreciate an easy introduction into the field not

overloaded with scientific data; IDD specialists, on the other hand, will enjoy the account of the functioning of the network of IDD scientists, many of whom they know personally.

**Hans Bürgi** Solothurn, Switzerland

# Meetings and Announcements

## Nigeria: Benue State Signs Pact on Salt Iodization Plant

As reported in the Daily Trust, Abuja, Nigeria, on 12 March 2008, Mr. Lorenzo Locatelli-Rossi signed a Memorandum of Understanding (MOU) with the Benue State government to set up a salt processing and iodization plant at Ugba, an area in Logo Local Government Area known to have large salt deposits. Mr. Locatelli-Rossi, an international salt consultant, is to set up the multi-million naira plant with the Benue government, according to the MOU which was signed by Governor Gabriel Tor-Suswam in Makurdi. Suswam, who was represented by his Special Adviser on Public Utilities, Agbo Madaki, said the project had become necessary because according to him, the state has been identified as one where non-iodized salt is still being consumed. This, the governor said, has the attendant dire consequences on the economy and health of the people. The governor therefore expressed the hope that the setting up of the salt plant will reverse the trend and improve the economy and health of the people. The agreement also mandated the Mr. Locatelli-Rossi to explore and assess all salt mines in Benue with a view to determining the feasibility of expanding production and the possibility of setting up similar plants at the identified sites. UNICEF representative, Dr. Stephen Alo and the Public Relations Officer of the National Agency for Food, Drugs, and Administration Control (NAFDAC), Mr. Abubakar Jimoh were also present at the MOU signing ceremony.



## The 46th Conference of East, Central and Southern African Health Community Health Ministers

**Saba Mebrahtu**  
Regional Nutrition Advisor, UNICEF ESARO



### East, Central and Southern African Health Community

An advocacy session was held on “Cost-effective Micronutrients Interventions: Successes, Challenges and the Way Forward” involving Ministers of Health from 12 countries (Burundi, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Seychelles, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe) during the 46th East, Central and Southern African (ECSA) Health Community Health Ministers Conference, on 28 February 2008, in Victoria, Mahe, Seychelles. The session was organized jointly by ECSA, UNICEF and ICCIDD.

The following main conclusions were reached with regards to significance of IDD in the region and steps needed to accelerate progress on its sustained elimination:

■ Iodine deficiency is a significant public health problem in all ECSA countries, with 123 million people, including 4.7 million infants that still remain unprotected from IDD.

■ ECSA Member States recognized the importance of IDD elimination for their respective population health, economic and physical productivity – which in the long run has enormous implications for national social and economic development.

■ It was noted that IDD elimination through USI is highly cost effective – for every US\$1 spent, US\$ 28 is saved through productivity gains.

■ ECSA Member States committed to accelerate progress on sustained IDD elimination, as per resolution adopted during the meeting (ECSA/HMC46/R10.5).

■ Several countries in the region have amassed considerable experience particularly on salt iodization over the last 10 years. Valuable lessons and best practices can be drawn from these countries for future application in other countries towards their effort to accelerate progress on sustained IDD elimination – two of these countries (Uganda and Zimbabwe) were specifically highlighted to share their successes and challenges ahead at the meeting, while another two provided progress updates on recent developments on salt and other fortification initiatives – Swaziland and Zambia.

**Table 1: ECSA national progress: % households consuming iodized salt**

No	Group 1 Reached USI (>90%)	Group 2 Closing in on USI (50-89%)	Group 3 Lagging Behind (<50%)	Group 4 No Data
1	Burundi (98%)	Botswana (66%)	Angola (35%)	Mauritius
2	Kenya (91%)	Comoros (82%)	Ethiopia (28%)	Seychelles
3	Lesotho (91%)	Eritrea (68%)	Somalia (1%)	
4	Rwanda (90%)	Madagascar (75%)		
5	Swaziland (92%)	Malawi (55%)		
6	Uganda (96%)	Mozambique (54%)		
7	Zimbabwe (90%)	Namibia (63%)		
8		South Africa (62%)		
9		Tanzania (83%)		
10		Zambia (77%)		

It was noted that, on average, 60% of households in ESA region have access to iodized salt, which means that 40% or 123 million adults, including 4.7 million infants remain yet to be protected from IDD through consumption of iodized salt.

A review of the regional IDD situation, based on the UNICEF ESARO latest database (2008), has shown that seven countries have reached USI (over 90% households are consuming iodized salt (see Table 1). These include: Burundi, Kenya, Lesotho, Rwanda, Swaziland, Uganda and Zimbabwe. Out of these, only one country is salt producing (Kenya) and six others are importers (Burundi, Lesotho, Rwanda, Swaziland, Uganda and Zimbabwe).

Some of the key success factors for Kenya include: large-scale salt producers are highly committed to IDD elimination; a functional coalition for micronutrients including IDD, involving strong collaboration between the private and public sectors; persisting quality assurance and enforcement of the legislation; continuous communication and marketing of iodized salt supported by both the private and public sectors; and periodic monitoring of iodine nutrition in the population.

The remaining six countries represent successful salt importing countries (Burundi, Lesotho, Rwanda, Swaziland, Uganda and Zimbabwe), with iodized salt legislation which is being observed by traders. Two of these countries (Burundi and Uganda)

import salt from companies that produce adequately iodized salt in Kenya, which means that progress in Kenya is not only benefiting its own people but also that of its neighboring countries. Another two (Lesotho and Swaziland) import salt from South Africa. And, in the case of Zimbabwe, it is sourced from Botswana. Though both Botswana and South Africa seem to be benefiting their neighboring countries, a large proportion of their own population remain unprotected (34% in Botswana and 38% in South Africa). As such, additional advocacy effort is required highlighting the damage of IDD and benefits of iodized salt – given that these countries clearly have the technical and economic capacity to reach the remaining population yet to be protected from IDD through USI.



More countries (10) in the region have achieved moderate levels of household access to iodized salt ranging from 50 to 89 percent. These include Botswana, Comoros, Eritrea, Madagascar, Malawi, Mozambique, Namibia, South Africa, Tanzania and Zambia (see Table 1). Out of these two are very close to reaching the USI goal (Comoros and Tanzania – with over 80% of households consuming iodized salt), and another two have over 70% households with access to iodized salt (Zambia at 77% and Madagascar at 75%). Therefore, with additional focused effort to address the remaining main bottlenecks, these four countries are more likely to rapidly achieve the USI goal.

Three countries, Angola, Ethiopia, and Somalia, have less than 50% households consuming iodized salt. Intensified effort is required in these countries to tackle major impediments to salt production, distribution and marketing. Table 2 summarizes the main follow-up action points for the Member States and ECSA Secretariat with support from the key partners (UNICEF ESARO and ICCIDD).

**Table 2: Follow-up Action Points to accelerate progress towards sustained IDD elimination in ECSA by country groupings**

Member States (see Table 1)	ECSA Secretariat and Partners
<p><b>Group 1</b></p> <ul style="list-style-type: none"> <li>Initiate steps to review existing data and if readiness is indicated request for external assessment (Uganda and Zimbabwe), and accelerate progress to undertake an external assessment (Kenya)</li> <li>Address the main remaining challenges or gaps – review of standards, adoption of revised standards, strengthened quality assurance, continuous communication</li> <li>Apply best practices and lessons learned to other food fortification initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate support to countries to ensure external assessment is undertaken within the next year – in coordination with ICCIDD/ UNICEF/Global Network for Sustained IDD Elimination</li> <li>Provide immediate technical assistance to countries address the main challenges with support from key partners – UNICEF/ICCIDD</li> </ul>
<p><b>Group 2</b></p> <ul style="list-style-type: none"> <li>Enhanced commitment to re-double effort on accelerated progress towards USI</li> <li>Consider innovative approaches to tackle main bottlenecks: activate coalition with strong public-private partnership, assess economic feasibility and sustainability of smallscale production, strengthen monitoring and enforcement, support activation of or support continuous advocacy and consumer awareness</li> </ul>	<ul style="list-style-type: none"> <li>Provide advocacy support, follow-up before the end of March 2008 with ECSA Ministers of Health to monitor implementation of agreed action points – through the existing international support</li> <li>Provide immediate technical assistance to countries to address the main bottlenecks with the key partners</li> </ul>
<p><b>Group 3</b></p> <ul style="list-style-type: none"> <li>Initiate immediate steps to undertake a comprehensive review of the situation</li> <li>Revitalize or renew political commitment to sustained elimination of IDD</li> <li>Develop and implement accelerated IDD elimination plans</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate immediate support to countries to ensure external assessment is undertaken</li> <li>Support revitalized or renewed advocacy in coordination with ICCIDD/ UNICEF/Global Network for Sustained IDD Elimination</li> <li>Provide technical assistance to implement accelerated IDD elimination plans and to address the main challenges with support from key partners – UNICEF/ICCIDD</li> </ul>
<p><b>Group 4</b></p> <ul style="list-style-type: none"> <li>Undertake assessments to determine the iodine status of the population or if information is already available report to regional and international responsible agencies (UNICEF/WHO/ICCIDD)</li> </ul>	<ul style="list-style-type: none"> <li>Follow-up communication to obtain the needed data and information</li> </ul>

# Abstracts

**Ategbo EA et al. An assessment of progress toward universal salt iodization in Rajasthan, India, using iodine nutrition indicators in school-aged children and pregnant women from the same households. *Asia Pac J Clin Nutr* 2008;17 (1):56-62**

In Rajasthan, an Indian State with significant salt production, the sale of non-iodized salt for human consumption was banned in 1992. This study explored the relationships between the use of iodized salt in Rajasthan and the iodine status of children and pregnant women living in the area. Salt iodine content was >15mg/kg in 41.9% of the households, and 23.0% used non-iodized salt. Median UI concentration was 139µg/L in children and 127µg/L in pregnant women. In households using non-iodized salt, the median UIs were 96µg/L and 100µg/L in children and women, respectively. The iodine status of both children and pregnant women attained the optimal range only when the salt iodine content was close to 30mg/kg. For optimum iodine status in the population of Rajasthan, the iodization of household salt should be mandated at a higher level than what is practiced at present.

**Moleti M et al. Iodine prophylaxis using iodized salt and risk of maternal thyroid failure in conditions of mild iodine deficiency. *J Clin Endocrinol Metab*. 2008 Apr 15 [Epub ahead of print]**

This longitudinal study aimed to investigate the effects of long-term iodized salt consumption on maternal thyroid function during gestation. The authors prospectively evaluated thyroid function in 100 consecutive TPO-Ab-negative pregnant women from a mildly iodine-deficient area. Sixty-two women who had regularly used iodized salt for at least 2yrs prior to becoming pregnant and 38 who commenced iodized salt consumption upon becoming pregnant were classified as long-term (LT) and short-term (ST) iodine supplemented, respectively. Long-term iodized salt consumption resulted in a very low prevalence of maternal thyroid failure (MTF) in LT women. Conversely, short-term iodine prophylaxis does not seem to protect against the risk of MTF, the prevalence of which was almost 6-fold higher in ST than in LT women [36.8% vs. 6.4%; relative risk, 5.7]. Prolonged iodized salt significantly improves maternal thyroid economy and reduces the risk of maternal thyroid insufficiency during gestation probably because of a nearly restoring intra-thyroidal iodine stores.

**Markou KB et al. Treating iodine deficiency: long-term effects of iodine repletion on growth and pubertal development in school-age children. *Thyroid*. 2008;18(4):449-54.**

The aim of this study was to assess the long-term effects on growth and pubertal development of correcting severe ID in areas of Azerbaijan between 1999 and 2000. Methods: Iodized oil was administered orally to 293,000 children, aged 6-16 years. Among those, 364 children were randomly selected and were examined 1 year before the administration of iodized oil and 295 children were examined 4 or 5 years after the last dose of iodide. The results demonstrated that long-term correction of severe ID leads to sustained improvement of linear growth accompanied by a normalization of the time of onset of pubertal development for both sexes.

**Restani P et al. Analysis of food supplements containing iodine: a survey of Italian market. *Clin Toxicol (Phila)*. 2008;46(4):282-6.**

The aims of this research were to compare claimed concentrations of iodine with measured ones in various iodine products, estimate the amount of iodine ingested by Italians who use these products, and compare the calculated intakes to recommended intakes and the tolerable upper level. A convenience sample of 43 food supplements was analyzed for iodine concentration. Analytical values resembled those declared in the label in fewer than half of the examples; in four cases, the maximal daily dose was higher than the EU tolerable upper level for iodine of 600 µg/day. Labeling of iodine-rich food supplements appears to be unreliable and caution should be exercised in the consumption of food supplements rich in iodine as there is a risk of exceeding the established safe upper level of daily intake.

**Stilwell G et al. The influence of gestational stage on urinary iodine excretion in pregnancy. *J Clin Endocrinol Metab*. 2008 Feb 19 [Epub ahead of print]**

The objective of this study was to document the impact of advancing gestation on UI in normal pregnancy, and to determine if the current reference intervals for general population iodine monitoring are appropriate for use in the context of pregnancy. Tasmania has a well described history of mild iodine deficiency (school-age children, median UI of 84 µg/L). We assessed UI in 759 urine samples from 431 women attending the Antenatal Clinic at the Royal Hobart Hospital, Tasmania's primary teaching hospital. The overall median UI during pregnancy was 75 µg/L at a median gestation of 19.4 weeks. Median UI was elevated in early pregnancy and subsequently declined with advancing gestation. Gestation-specific UI reference intervals may be required to classify iodine nutrition during pregnancy.

**Najafi M et al. Neonatal thyroid screening in a mild iodine deficiency endemic area in Iran. *Indian J Med Sci*. 2008;62(3):113-6.**

The aim of the study was to estimate the incidence of neonatal hypothyroidism and assessment of iodine deficiency in the eastern part of Iran. The measurement of blood TSH spotted on filter paper was performed by ELISA in 59,436 neonates. A TSH value equal to 5 mU/L was considered the cut off point. The diagnosis of hypothyroidism in neonates with a blood TSH higher than the cut off point was based on clinical examinations and laboratory tests (serum TSH and T4). In the study, the recall rate and incidence of hypothyroidism were 3.6% and 2 per 1000 neonates, respectively. These results suggest mild iodine deficiency in the area.

**Gérard AC et al. Iodine deficiency induces a TSH-independent early phase of microvascular reshaping in the thyroid. *Am J Pathol*. 2008;172(3):748-60.**

Expansion of the thyroid microvasculature is the earliest event during goiter formation, always occurring before thyrocyte proliferation; however, the precise mechanisms governing this physiological angiogenesis are not well understood. The authors show that goiter-associated angiogenesis promotes thyroid adaptation to iodine deficiency. Specifically, as soon as the iodine supply is limited, thyrocytes produce proangiogenic signals that elicit early TSH-independent microvascular activation; if iodine deficiency persists, TSH plasma levels increase, triggering the second angiogenic phase that supports thyrocyte proliferation.

**Weng HX et al. Increment of iodine content in vegetable plants by applying iodized fertilizer and the residual characteristics of iodine in soil. *Biol Trace Elem Res*. 2008 Feb 12 [Epub ahead of print]**

The authors explored a potential method of iodine supplementation by raising the iodine content in vegetables. When grown in soil supplemented with iodized fertilizer, the three experimental plant species (cucumber, aubergine, and radish) showed increasing iodine levels in both leaf and fruit/rhizome tissues as the iodine content added to the soil increased. Excessive iodine added to soil can be toxic to plants, whereas the tolerance limit to excessive iodine varied in the three plant species tested. The migration and volatilization of iodine in soil was correlated with the properties of the soil used, and the residual iodine in soil increased as the iodine added to soil increased. The diatomite in the iodized fertilizer helped to increase the durability of the iodized fertilizer. This strategy could provide a safe and organic method to control IDD.

**THE IDD NEWSLETTER** is published quarterly by ICCIDD and distributed free of charge in bulk by international agencies and by individual mailing. The Newsletter is also distributed to email subscribers and appears on ICCIDD's website ([www.iccidd.org](http://www.iccidd.org)). The Newsletter welcomes comments, new information, and relevant manuscripts on all aspects of iodine nutrition, as well as human interest stories on IDD elimination in countries.

For further details about the IDD Newsletter, please contact:

Michael B. Zimmermann, M.D., the editor of the Newsletter, at the Human Nutrition Laboratory, Swiss Federal Institute of Technology Zürich, ETH Zentrum, Schmelzbergstrasse 7, LFW E19, CH-8092 Zürich, Switzerland, phone: +41 44 632 8657, fax: +41 44 632 1470, [iccidd.newsletter@ilw.agrl.ethz.ch](mailto:iccidd.newsletter@ilw.agrl.ethz.ch).

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