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Eliminating Iodine Deficiency in Central Eastern Europe, Commonwealth Independent States and the Baltics

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Historic background

The UNICEF region of Central and Eastern Europe and Commonwealth Independent States and the Baltics (CEE/CIS/BS, also referred to in this article as 'the region') is comprised of 22 countries.¹ Salt iodization efforts date back to the time of the former Soviet Union² when iodized salt was centrally produced and distributed to areas where goiter had been identified as an endemic problem. The approach was generally limited to assessment and mass prophylaxis in endemic goiter areas only. Endemic goiter and cretinism were virtually eliminated through targeted distribution of iodine tablets among vulnerable groups and careful monitoring. In the 1970's and 80's the monitoring system weakened and gradually IDD returned.^{3,4} The entire system collapsed with the break up of the Soviet Union in 1991 and iodized salt production was completely interrupted in countries across the region except in the Former Republic of Yugoslavia⁵ where salt iodization continued.

In the early 1990's the countries began to recognize an increase of goiter that indicated IDD was a recurring problem. The response in some cases included production and distribution of iodized salt, but in most countries it was limited to the distribution of iodine

supplements. Where salt iodization did take place it mainly included only table salt, leaving out other types of edible salt including salt for food industry and animal consumption. Universal Salt Iodization (USI), the effort supported by UNICEF globally, includes all consumable salt as the optimum way to protect every newborn from brain damage due to iodine deficiency. In most countries of the region, however, no sustainable effort took place toward USI until late 1990's.

UNICEF initiated efforts to promote USI in the region in the early 1990's. While establishing its presence in the region, efforts were stepped up in 1993 with advocacy for USI legislation through specially organized meetings of national governments and salt industry partners.⁶

Many CIS countries have presented a unique set of challenges to the adoption of USI. These include: the remnants of centrally-directed thinking; a salt industry that is often quasi-private rather than private; a clinical perception of iodine deficiency; a lack of public awareness regarding the nature and enormity of iodine deficiency; a lack of awareness that salt iodization is an effective preventive measure; and the new and unique commercial structures producing alterna-

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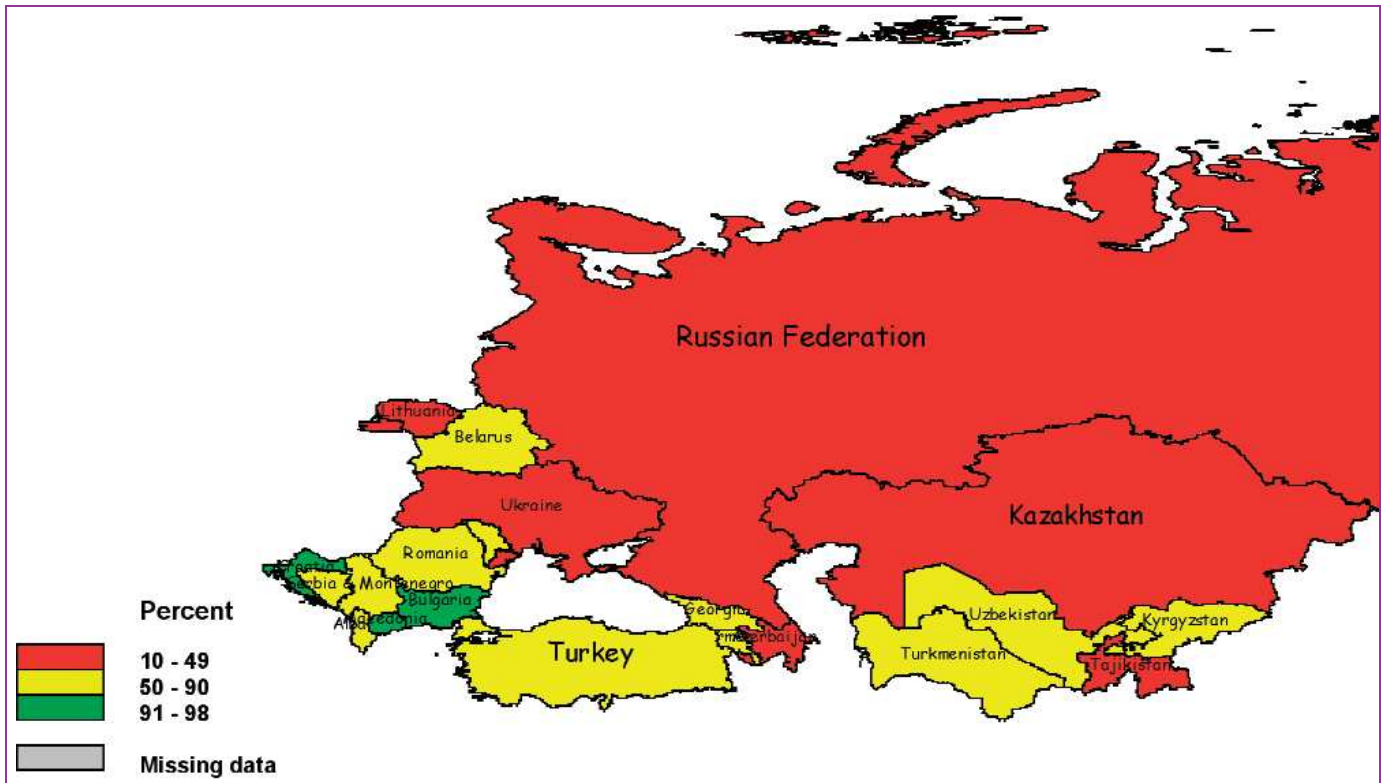


Figure 1 The regional map shows the percent of households using adequately iodized salt. Source: UNICEF Regional Office for CEE/CIS/BS, 2004

tive iodized foods. On the other hand, the large and well-developed salt industries producing good quality salt and a well educated population proved to be a good basis for salt iodization efforts.

As a result, initially, salt iodization did not increase significantly as shown by the household survey data of 2000 indicating that only 26% of households in the region were using adequately iodized salt. This was the lowest rate among all the regions in the world (Figure 1). The most recent results from several national surveys and iodized salt supply data indicate an increase of the regional average of households using iodized salt to 48%.

The lack of progress toward USI urged UNICEF and other partners to increase efforts substantially. In 2001, UNICEF made elimination of iodine deficiency through USI a regional priority. The first step was to strengthen internal technical and management capacity through recruitment of staff at the national and regional level. A thorough review was made of the identified program weaknesses and areas for improvement.

The main challenges that were identified included:

1. Weak political will to eliminate iodine deficiency through USI for which mandatory legislation of iodization of all salt for human and animal consumption is required and its enforcement.

2. Lack of awareness among the medical and academic community, program managers and decision makers of the nature and extent of the IDD problem beyond goiter. The effect on brain development of the fetus during pregnancy and the consequences on society as a whole were widely ignored.
3. Poor understanding that iodine deficiency is a public health problem which requires a population wide intervention in the form of USI rather than a targeted approach screening selected areas or individuals.
4. Little recognition by the government of the crucial role of the salt industry as a partner in national USI efforts.

In response, support was increased to national partners to advocate for high level political commitment for USI legislation, build national partnership and coordinate alliances, increase iodized salt production through support of the salt industry, ensure consumer acceptance of iodized salt, and increase understanding among scientific partners.

Crucial in this approach has been the financial support from USAID, Kiwanis International, the Bill and Melinda Gates Foundation, US Fund, and the Centers for Disease Control and Prevention (CDC). In sub-

regional partnership with Asian Development Bank (ADB), ICCIDD, WHO, EU Salt, USAID-MOST, and the Network for Sustainable Elimination of IDD, substantial progress was made between 2001 and 2004.

Progress towards the goal

With the World Fit for Children 2005 goal (elimination of iodine deficiency through USI) looming ahead there is still a long way to go for CEE/CIS/BS. Currently, 48% of the households use iodized salt. Based on national population data and birth rates, 51% of the 5.4 million newborn children in the region are protected. Unfortunately this also means that 2.7 million newborn children are not protected from IDD (table 1). Most of these children are born in Russia (1 million/year; 30% iodized salt usage), Turkey (400,000/year; 70% iodized salt usage) and Ukraine (260,000/year; 31% iodized salt usage). The regional average is greatly affected by these populous countries.

Recently, the UNICEF Regional Office made a projection where countries stand vis a vis their progress towards the 2005 goal.

- Currently, 7 countries (Macedonia, Bulgaria, Serbia & Montenegro, Croatia, Turkmenistan, Bosnia & Herzegovina, Armenia) have achieved USI where >90% of the households use iodized salt. Macedonia and Turkmenistan also have met all other criteria for sustainable elimination of iodine deficiency⁷ as confirmed by an external assessment team.
- Another 5 countries are expected to eliminate iodine deficiency by 2005 including Lithuania, Kazakhstan, Georgia, Romania, and Azerbaijan as well as the UN Administered Province of Kosovo.
- The remaining countries probably will need until 2006–2007 to achieve the goal (Kyrgyzstan, Uzbekistan, Tajikistan, Albania, Belarus, Moldova, Latvia and Turkey). Russia and Ukraine perhaps will require a longer time depending on the forthcoming political commitment for USI in these countries.

Political commitment and USI legislation

Successful achievement of USI depends greatly on the political commitment of the key decision makers. The main focus has been on evidence based advocacy for mandatory legislation. UNICEF focuses on mandatory legislation as a condition for achieving USI (the “push” factor) which is complemented by communication activities to stimulate use of iodized salt (the “pull” factor). In the absence of such manda-

tory legislation the effect of communication activities will be limited. Various regional and global events have been organized to advocate among the senior decision makers for USI legislation.

Commitments by government and civil society to the World Summit for Children goals (1990) including elimination of IDD were renewed through regional and national meetings related to the Global Movement for Children in Europe. The Heads of CIS States Conference met in Minsk (April 2001) where a joint declaration to collaborate on national efforts to reach USI was signed. The United Nations Special Session on Children in 2002 resulted in an outcome document—A World Fit for Children—which includes the goal to eliminate IDD through USI by 2005. This document was signed by every government in the region. Also, in October 2003, an international advocacy meeting was organized in China where nine countries from the CEE/CIS/BS were represented at a high political level. Georgia and Turkey are examples of countries where a big change in political will resulted in a rapid increase in the usage rates of iodized salt from $\pm 20\%$ to $\pm 70\%$ in both countries.

The regional Goodwill Ambassador and former chess world champion, Anatoly Karpov, has been advocating for USI legislation since 2002 in several countries through his high public profile and personal contacts with politicians (Figure 2). In the Russian Federation, Karpov discussed draft USI legislation with various government and Parliament members and succeeded to bring a draft of USI legislation to



Figure 2. The former world chess champion, Anatoly Karpov, has served as a regional Goodwill Ambassador.

the State Duma (parliament) in 2004, a significant step forward. In Ukraine, President Kuchma expressed his personal commitment for USI during a meeting with Karpov in 2002. Karpov also emphasized the need for more comprehensive USI efforts in various other countries including Lithuania, Kazakhstan, Serbia and Montenegro and Moldova.

Most advocacy activities by UNICEF and partners take place nationally. The consequences of USI and IDD have been presented as issues of national economic and social development, not simply health issues. For example, in Russia, awareness and support were first built in the Oblasts (regions) among local authorities, who then advocated for USI at the national level. The civil society has also been shown to be powerful advocates for USI in Azerbaijan and Ukraine.

All the efforts mentioned above have resulted in a legal framework for USI in 17 countries while in the remaining 5 countries efforts to educate the leadership continue. The Russian Federation and Ukraine have not yet enacted USI legislation because of a pervasive denial of the existence of iodine deficiency problem and the need for mandatory iodization of all edible salt. Also the producers of other iodized products in Russia and Ukraine lobby strongly for iodization with alternative food sources, thus enhancing a bias against USI. Therefore the main focus of strategy will remain on advocacy for USI legislation at the national and sub-national level. In countries where USI legislation is absent and is not expected soon, alternatives are being explored to increase the use of iodized salt in a sustainable way. For example, in the Russian Federation, merchandising techniques were tested in 2004 to help shop keepers shift salt sales to predominantly iodized salt.

Five of the countries have legislation on mandatory iodization of only table salt. The food producers in these countries believe, whether legitimate or not, that iodized salt affects the quality of their product. Table salt comprises only a small proportion of the total salt intake, about 30–40% in the industrialized countries. Achieving optimum iodine nutrition in a population would be unlikely if only the table salt or food grade salt are iodized. Because of the custom of high consumption of bread in this region, UNICEF advocates strongly to use iodized salt in baking of all breads. UNICEF continues to work with other food producers to promote USI because of their good experiences from other countries like Bulgaria, Belarus, Macedonia, and Western Europe.

Programme management and coordination

National coordination alliances with more balanced involvement of public (government, medical institutes), private (salt industry) and civic partners (consumer groups) to plan, manage and monitor are key for improving the ongoing national iodine deficiency elimination efforts. Support is necessary to build alliances and strengthen their required capacities. Micronutrient organized regional and national program management workshops for the members of national coordination teams. These workshops helped to further develop understanding, communication, and coordination of program activities.

In addition, several program review missions took place in all the countries in the region by consultants or by UNICEF staff who helped to identify weaknesses in the current approach and work plans and to make recommendations for improvements.

The national efforts for USI were strengthened in many countries involving public, private and increasingly the civic sector. Bulgaria is an example where a multi-sectoral partnership has been successful. In Russia the Public Coordinating Committee (PCC), without government members, has lobbied effectively for USI legislation resulting in a discussion of the law in the State Duma.

Sometimes national strategies have included corrective actions of limited impact such as communication activities to improve the household storage and utilization of iodized salt. Activities to build capacity have been organized to strengthen strategies through workshops, on-the-job capacity building, international exchange of experiences and round table discussions.

Production and supply of iodized salt

Production of only iodized edible salt is obviously the main pillar of the USI efforts. Several salt producers meetings were organized (Moscow 1997, regional producers meeting in Kiev 1999, Salt 2000 in The Hague, Tashkent, 2002 and Bishkek, 2004) to raise awareness about USI, build partnerships and to obtain a commitment to supply ever increasing amounts of iodized salt.

The initial strategy was to increase production of iodized salt rapidly. Support was provided for salt iodization equipment, potassium iodate, laboratory equipment and supplies for quality control within the factory. Technical support was provided for salt iodization and quality assurance which have

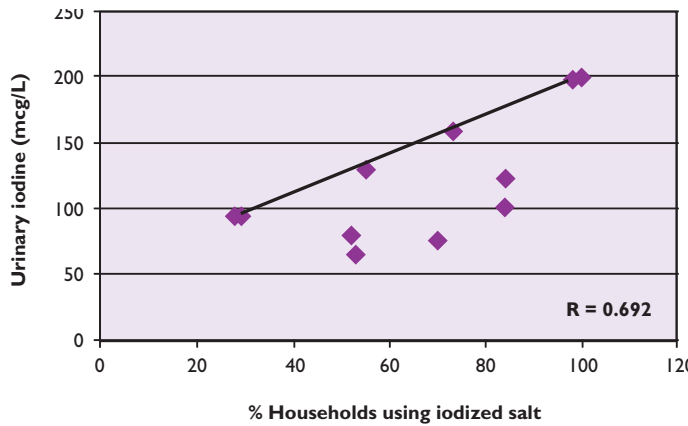


Figure 3. Relationship between urinary iodine content and household usage of iodized salt in school children.

improved the quality of iodized salt. Also emphasis was placed on involving the salt producers and importers as equal partners in the national coordination bodies. Salt producers have been encouraged to form associations that have facilitated work and communications amongst partners.

To sustain the production of iodized salt, efforts were focused on increasing awareness among the producers, importers, wholesalers, and retailers. Despite having new legislations in place, enforcement has remained weak in many countries. Therefore, to mobilize the suppliers to produce, promote and to sell only iodized salt is crucial to achieving USI. To sustain salt iodization without external support will be a long term concern. UNICEF has helped to identify potassium iodate producers and importing companies as well as to negotiate for more favorable import conditions.

The data of iodized salt production are useful and as monitoring tools, which roughly agree with the household survey data. Frequently the data can help to monitor progress as illustrated by the increase in total production of iodized salt, as % of total salt required, from 20% in years 1999–2000 to 52% in year 2003 (Figure 3).

Awareness raising and ensuring acceptance among partners and the end users

The approach and quality of communication activities vary greatly amongst countries in the region. In year 2003, UNICEF commissioned a review of IDD/USI communication activities in nine countries conducted by the Johns Hopkins University. The main conclusions pointed out an inadequate capacity in the area of communication, an under-utilization of the private sector as a communication channel, the

need for scaling up communication activities, and the limited impact of communication in absence of USI legislation as a "push factor".

To increase awareness and acceptance of USI among all the stakeholders need sustained campaigns which are expensive. Incorporation of iodine deficiency elimination and USI into the curriculum of primary and secondary education, and into the technical, medical and public health training programs are necessary to raise the level of public education. This approach is now pursued in several countries. Messages on the package of iodized salt and consumer information in sales outlets are other ways to raise public education level. The effectiveness of involving communities and schoolchildren in social mobilization was demonstrated in Uzbekistan where more than 6 million schoolchildren were included in a campaign to test the salt samples brought from their homes for the presence of iodine. This example of social mobilization has been followed by many other countries in the region with success.

The communication strategy is often weak on addressing critical information gaps such as mobilization of the salt supply channels, the lack of knowledge among food processing industries in using iodized salt, and the lack of evidence-based material on the transient effects of introduction of iodized salt in an iodine deficient population. Support has been provided for plans to develop communication and to improve exchange of experiences between countries.

Documenting lessons learned and utilization of regional expertise

A wealth of experience and expertise exists in countries. Efforts have been made to improve documentation of the lessons learned and to make them available to the relevant countries. Inter-country study tours, using local expertise and technical assistance have become more common. They have not only led to more successful transfer and sharing of knowledge but also have empowered country teams. A resource package is under development which includes scientific and technical material, guidelines on topics such as monitoring, communication, legislation, and also contains lessons learned from several countries in the region on a variety of topics.

Monitoring

Monitoring the process of salt iodization and its impact on the iodine nutrition is of major impor-

tance to ensure the efficiency and efficacy of USI in any given population. Both monitoring and enforcement serve the purpose of programme management and they need to be integrated. While more countries have enacted USI legislation and increased production of iodized salt, monitoring has received more attention in the last few years. With insufficient funding for monitoring, the main challenge is to set up an effective, affordable and manageable system. Monitoring of USI in CEE/CIS/BS is challenged by: i) poor data quality; ii) inadequate analysis and use of data for corrective actions; iii) inadequately trained technical staff whose responsibilities were unclear; and iv) an incoherent and fragmented system with numerous responsible parties.

UNICEF in collaboration with ADB, MOST-USAID,⁸ CDC⁹ and KAN¹⁰ has provided support for monitoring of USI through a variety of mechanisms including: consensus building workshops, technical support by consultants, and through exchange visits between countries (Romania with Bulgaria, former Yugoslav Republic of Macedonia with Kosovo, Russian Federation & Bulgaria with Turkmenistan, Tajikistan with Iran, Armenia with Italy, Kyrgyz Republic with Bangladesh, etc.).

Experiences show that transfer of information and development of monitoring systems need to be complemented with consensus building among all responsible parties and adoption of the monitoring plan by some high level decision makers. In addition, ownership and empowerment of partners are markedly enhanced during study tours and inter-country exchange among specialists. Also, monitoring data in isolation cannot be separated from programmatic characteristics and concerns. For example, illegally packaged salt being sold as iodized, and “leakage” of non-iodised industry salt into the consumer market have to be taken into consideration when reviewing the collected information. Finally, monitoring activities for iodine deficiency elimination need to be built into existing monitoring activities for other food fortification interventions.

Sustainability

While rapid progress is noted, sustainability of USI efforts remains a major concern because of lack of national ownership. The international agencies like

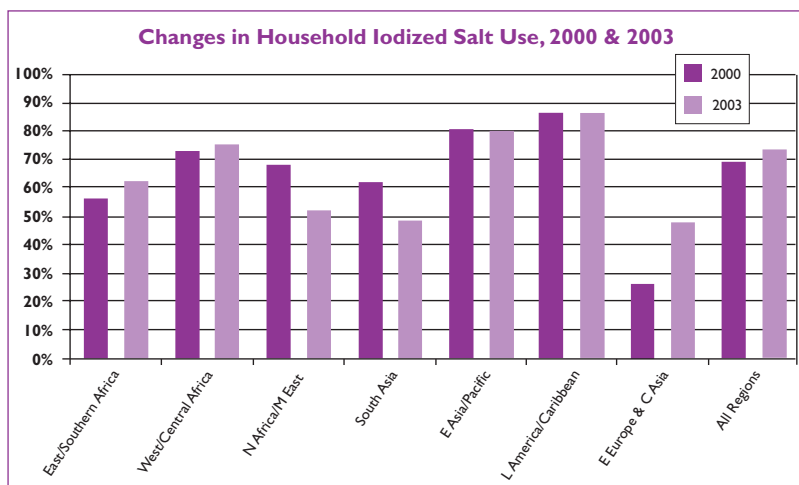


Figure 4. Improvements in household usage of iodized salt in years 2000 and 2003.

UNICEF are often seen as the driving force. A weak political will is often apparent at the highest levels of government, regulatory agencies and salt industry; the salt industry is not or inadequately represented in the national coordinating alliance. The producers of iodized salt do not maintain salt iodization without external support and they continue to depend on external funding.

UNICEF will focus on strengthening the national coordination and oversight function. It recognizes that limited external funding is still required once USI has been achieved.

Conclusion

CEE/CIS/BS has made a remarkable leap toward USI in a very short period of time. While further attainment of the success is imperative, UNICEF recognizes the challenges that lie ahead which need to be reflected in its strategic support. Because of the unique character of CEE/CIS/BS, UNICEF's role needs constant adjustment. Focus of support remains on advocacy for USI legislation, a balanced and effective national coordination alliance with involvement of the salt industry as an equal partner, sustainable monitoring and enforcement, and ensuring acceptance of iodized salt. There is need for constant renewal of high-level political commitments and national oversight.

UNICEF's initial role to establish rapid increase of salt iodization has slowly been shifting towards addressing sustainability concerns and national ownership, taking into account the lessons learned worldwide. The momentum built in CEE/CIS/BS creates an excellent opportunity to achieve elimination of iodine deficiency in more countries of the

		2003 Population (Millions)		Household Salt Iodized		2003 Annual Births (Thousands)				
UNICEF Region	Country	Total	Protected Against ID	%	Year	per 1,000 Population	Total	Number Protected	Number Unprotected	% of Region's Unprotected in IDD Affected Countries
CEE/CIS	Russian Federation	145.5	43.7	30		10	1,455	437	1,019	38%
CEE/CIS	Turkey	71.2	49.8	70	2003	22	1,566	1,096	470	17%
CEE/CIS	Ukraine	47.8	14.8	31	2002	8	382	119	264	10%
CEE/CIS	Uzbekistan	25.7	14.4	56	2003	20	514	288	226	8%
CEE/CIS	Romania	21.6	11.4	53	2002	10	216	114	102	4%
CEE/CIS	Kazakhstan	14.8	4.3	29	1999	15	222	64	158	6%
CEE/CIS	Tajikistan	6.6	1.8	28	2003	19	125	35	90	
CEE/CIS	Azerbaijan	8.2	3.4	41	2000	14	115	47	67	
CEE/CIS	Belarus	9.9	5.4	55	2003	9	89	49	40	
CEE/CIS	Serbia/Montenegro	10.7	7.8	73	2000	12	128	94	34	
CEE/CIS	Province of Kosovo	2.0	1.7	84	2002					
CEE/CIS	Kyrgyz Republic	5.0	3.4	67	2003	20	100	67	33	
CEE/CIS	Lithuania	3.5		10	2003	9	32	3	28	
CEE/CIS	Moldova	4.3	2.2	52	2003	9	39	20	19	
CEE/CIS	Albania	3.1	1.7	56	2000	16	50	28	22	
CEE/CIS	Latvia	2.3				9	21		21	
CEE/CIS	Georgia	4.7	3.2	68	2003	9	42	29	14	
CEE/CIS	Turkmenistan	5.7	5.7	100	2004	19	108	108	0	
CEE/CIS	Bosnia/Herzegovina	3.9	3.0	77	2003	10	39	30	9	
CEE/CIS	Armenia	3.2	2.7	84	2000	14	45	38	7	
CEE/CIS	Croatia	4.3	3.9	90	2000	9	39	35	4	
CEE/CIS	Bulgaria	7.5	7.3	98	2003	8	60	59	1	
CEE/CIS	TFYR Macedonia	2.1	2.1	100	2003	13	27	27	0	% newborns protected
	Total	413.6	194.2	48%		13.2	5,414	2,787	2,627	51%

Table 1. The household usage rate of iodized salt in Eastern Europe, CIS and Baltics

region, and thus ensures learning ability of the future generation within the next few years to come. ■

NOTES AND REFERENCES

1. Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, UN administered province of Kosovo, TFYR Macedonia, Moldova, Romania, Russian Federation, Serbia and Montenegro, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.
2. This analysis and background information generally does only apply to the Republics of the Former Soviet Union. Turkey is also not reflected in the statements in the historic background.
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For More Brain Power — A Family Producer of Iodized Salt in Karakalpakstan

BY ARNOLD TIMMER, UNICEF REGIONAL OFFICE FOR CEE/CIS AND THE BALTICS

“Salt is the only feasible and sustainable business in Karakalpakstan,” says Sayidvali Kadirkulov adjusting his black hat and looking at the workers packing and sealing sacks of salt. “All other things are unreliable. How could we rely on cotton, or rice, for instance, as all these crops depend on the water supply? Salt is the only safe venture here. There is enough salt in this region to last us for 200 to 300 years.”

The other reason why the 48-year-old Sayidvali, or Sayid, ventured into the salt production business is because of his wife of three years, Oyimkhon, a medical doctor working at the Sanitary and Epidemiological Centre in Xojily. Oyimkhon says she had seen so many patients suffering from the effects of iodine deficiency to want to do something about it. Iodizing salt, she says was a social responsibility as well as a profitable business. “There is all this salt in Karakalpakstan! There is salt elsewhere in the country too, in Surkhandarya and Navoyi, but none compares to the salt of Karakalpakstan for quality!”

So the couple pooled together their brains, assets and efforts and set up the Embergen salt factory in the premises where Oyimkhon’s deceased brother used to work, and also named after her late brother. Theirs is the only privately owned salt production plant in Karakalpakstan. They spent about US \$20,000 to set up the factory, including procurement of the premises. “Our cost would have been much higher, if we had to shell out the US \$15,000 or so for an iodizing machine. Ours was given to us by UNICEF,” says Sayid. Like some of the other factories in the country, the Embergen Factory also received two tonnes of iodate solution from UNICEF as well.

The Kadirkulovs have invested all their assets in the factory. They sold an apartment and two automobiles. They used all the savings from Sayid’s construction business and other personal assets. They also borrowed from their friends because they could not get a loan from the banks. They employ over a dozen workers who are paid on an average of 20,000–25,000 soums per month, (approximately twenty US dollars). “This pay is extremely high by local standards, let me tell you,” says Oyimkhon with a shy

smile. “My salary at SES is the same as theirs, 20,000 soums a month!”

“The production cost of iodized salt in Karakalpakstan is very reasonable because labour is



Sayid and Oyimkhon and their iodized salt.



Untreated Salt.



Salt after washing and drying.

very cheap here,” says Sayid. “We have been able to offer our salt for a very reasonable price because we received the iodizing machine from UNICEF.” Currently, they do not have their own packaging machine, so they have to sell their iodized salt in bulk to the traders in Tashkent who package the salt in one kilo packs.

“I sell the salt to these traders for less than 20 soums a kilo. They mark up the price more than 10 times and sell the salt in the Tashkent bazaars for up to 250 soums a kilo!” Oyimkhon says an automatic packaging machine would cost upwards of US \$5000 so for the moment they make do with plastic packs and a manual sealing machine. “I am waiting a bit to print the packs because the government is about to enforce a new standard for salt iodization. I can save a lot of money if I wait a bit,” says Oyimkhon. “Once we start producing iodized salt in smaller packs we can significantly increase our profit margin.”

Profit is not the only concern on the mind of this couple. Coming from a medical background, Oyimkhon has always known the manifestations of iodine deficiency. “Recently I attended a salt producers’ workshop organized by UNICEF in Tashkent. There I was reminded how iodine deficiency can permanently impair the mental development of an unborn child.”

Oyimkhon pointed to the cautionary advice printed in local language on the packaging that is currently being redesigned.

“In order to promote awareness of iodized salt, we have printed that not taking iodized salt can increase the risk of babies being born mentally and physically

impaired. On the back of the package, I have put all the necessary information the customers would need about the quality of the salt.”

The couple believe, despite the serious efforts of advocacy and education among the public, many low-income families will continue to buy non-iodised. “There are many factories operating illegally and they do not comply with the health and sanitation regulations,” says Oyimkhon. “Their salt is dirty and not iodized, but their product costs less than 10 soums per pack, whereas the iodized salt is sold at nearly five times that price.”

The Kadirkulovs believe a high level regulatory body is necessary to limit the production and sale of non-iodised table salt. “At the salt producers meeting we reviewed a draft of salt iodization law point by point before agreement,” says Oyimkhon. “We are on



A salt iodizing machine.

- Iodization of salt is the simplest and cheapest way of preventing IDD.
- It costs only 2–4 cents to iodize salt for a person for a whole year.
- Only 19 percent of household salt is iodized as per 2000 data.
- July 2002 data showed 55% of salt sold in shops and markets were iodized.
- There are 64 salt producing plants in Uzbekistan of which only 14 big plants are iodizing salt.
- Although Government of Uzbekistan has made USI a goal, it has yet to enforce legislations making the production and sale of non-iodized salt illegal.



Unevenly iodized salt. The dark grey patch in the salt (left) indicates optimal iodate level. The light salt on the right was not sprayed with potassium iodate.

the verge of forming a salt producers association. When that body is formed it can help lobby the government to pass the needed salt iodization legislation. It can also work for the collective benefit of all salt producers.”

The couple have many possibilities to make further investment to upgrade their factory. First, they need a clean concrete parking lot. Then in order to increase the factory capacity, they must first upgrade their electric system which is currently intermittent in supply with very low wattage. They could improve the transportation of salt using an existent train track running from the mine to their factory for loading and off-loading salt, while currently the salt is

brought from the mine 150 km away by trucks. “Eventually we would like to team up with some foreign investor and go in for expansion by a joint-venture scheme!” says Sayid.

The husband and wife team have divided their responsibilities very logically. “She takes care of research and development. She is the expert, the boss!” says Sayid with a grin. “I look after everything else concerning the operation of the plant!” ■

First Meeting of Salt Producers

There were over 50 people around the tables deliberating on the necessity of, and the challenges of salt iodization in Uzbekistan. They included 18 salt manufacturers from around the country amongst a host of medical professionals and government officials from the Ministry of Health and its affiliated institutions. It was the first meeting of salt producers in the country, and was organized jointly by UNICEF and ADB.

On the first day of the 2-day meeting held on 24–25 October 2002 in Tashkent, the participants were oriented on Universal Salt Iodization (USI), IDD and the development of the brain. They learnt about the progress made by Uzbekistan towards its goal of USI, about the technology of salt iodization, as well as the experiences of other countries in reaching USI. They spent the second day deliberating on the draft legislation on IDD/USI, and enforcement of monitoring salt iodization standards in the country as well as the formation of a salt producers association.

The meeting recommended that the level of salt iodization in the country be increased to 40±15 mg/kg ppm as per the recommendations of WHO and UNICEF and the practice in other CIS coun-

tries. However, the salt producers association could not be organized. Regardless, the salt producers were extremely satisfied with the results of the meeting. They have vowed to form their association as soon as possible and are meeting again in January 2003. As a unified voice, they say, they will be in a better position to advocate for USI in Uzbekistan. ■

JFPR9005 Improving Nutrition of Poor Mothers and Children in Asian Countries in Transition

BY FRITS VAN DER HAAR, ASSOCIATE PROFESSOR OF GLOBAL HEALTH, EMORY UNIVERSITY
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Summary

The 3 years since the Almaty Forum in October 2001 have witnessed a significant improvement in the production of iodized household salt and its supply among poor populations of the JFPR9005 participating countries Azerbaijan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan and Uzbekistan (i.e., “the area”). The evidence is clear that IDD at the beginning of the Project period was highly prevalent in major segments of the populations in the area, and no more than 25% of households in the area were using adequately iodized salt by end 2000.

The JFPR9005 Project set out with a challenging target in each Country Investment Plan (CIP) to reach 66% iodization of the national human salt consumption. In pursuit of its target, the Project, working in close collaboration with partners in the area, provided comprehensive support to the national leaderships in improving their management capacity and expanding the delivery infrastructure and operational oversight. Documented outcomes of the Project included improvements of political will and oversight; enactments of appropriate legal instruments and procedures; more salt inspections by regulatory authorities; cost-efficient Trade & Tariff regulations; upgraded processing and marketing in salt supply channels; increased utilization by producers of fortificant, equipment and packaging materials; stronger and more communications designs and efforts to improve the acceptance of iodized salt by poor consumers; and enhanced monitoring & evaluation capacities.

From producer self-reports on the utilization of the JFPR9005-supplied fortificant, the calculated realization over the 15-month period from January 2003 to March 2004 was 209 MT iodized salt, or 85% of the planned iodized salt production. Based on a global salt user rate estimate of 5kg/capita/year, the iodized salt production realized with JFPR9005 inputs was sufficient to supply 33.4 million people in the area or 53% of the total population, thus providing protection to 600 thousand newborns each year

against the brain damage of iodine deficiency that could have occurred otherwise.

The largest iodized salt production was reported in Kazakhstan, i.e., 78.2 MT, equivalent to the salt consumption needs of 12.5 million people per year. The utilization of JFPR9005-supplied potassium iodate (KIO₃), calculated from self-reported salt production data, ranged from 55% in Kyrgyz Republic to 165% in Tajikistan. Though the reimbursement of KIO₃ costs by the national salt industries was uneven and Tajikistan exempted due to economic hardships, overall 77% of the fortificant cost, or more than US\$33 thousand, was recovered in the Project.

The progress of JFPR9005 in salt iodization summarized above took place along with a range of planned action components that were managed through Country Project Offices (CPO) located in the Ministries of Health in each participant country, and supported from a lean Regional Coordinating Administrative Office (RCAO), located in Almaty, which maintained constant close liaison with the ADB cognizant officer. Focused support was directed at the policy process of legislative and regulatory enactments, which led to harmonious salt iodization laws in all countries except Uzbekistan. Attendant regulations on Taxes & Tariffs were enacted in Kyrgyz Republic and Kazakhstan, and iodized salt standards at 40±15ppm iodine were promulgated in all but Uzbekistan. Chemical supplies and equipment was provided for salt and urine measurement; numerous rapid salt iodine field tests were performed at salt enterprises, retail outlets and in households. JFPR9005 financed the holding of a series of capacity building events and workshops, and it supported the design, development and printing of numerous communications and media materials, targeted at a wide array of beneficiary groups, learner audiences and stakeholders. National and international expert advice and travel was fielded on explicit need, and strong admin-finance support was maintained throughout. The comprehensive nature of support in establishing policy instruments, technology, capacity development and admin-finance are a model example

for similar agency efforts elsewhere in efforts to reach the global IDD elimination goal on time.

Recommended next steps include the urgent enactment of the harmonized Universal Salt Iodization (USI) law and iodized salt standard in Uzbekistan, and appropriate attendant Tariff & Trade regulations in Uzbekistan, Mongolia, Tajikistan and Azerbaijan. The status of household iodized salt use at end-of-Project should be surveyed, rapidly and on small scale, in Azerbaijan, Kazakhstan, Kyrgyz Republic (separating the domestic and outside sources of iodized salt) Mongolia and Tajikistan. While not urgent, a review of legislation is indicated in each country from the viewpoint of mandating the use of iodized salt in animal feed and selected food processing industries. National policy should be established in each country that alternative iodized food products are banned for purchase in consumer markets.

The area has been accumulating a formidable experience in the efforts to improve USI for iodine deficiency disorders (IDD) elimination. The time may be ripe for local professional associations and the Kazakh Academy of Nutrition to begin a process of improved international exchange in the scientific assessment of the benefits from IDD elimination on national development. One next step could be that the International Council for Control of Iodine Deficiency Disorders (ICCIDD) may respond favorably to an invitation for holding its next annual meeting in Central Asia.

The experience of JFPR9005 demonstrates that the salt manufacturers in the area, and their allies in the salt trade, have risen to the challenge of improving their iodized salt production and supplies. This positive response must be consolidated and expanded to encompass all edible salt within the next short time period. A next step should be that each producer conducts a review of their customer base to ascertain that customers serving the human consumption markets are all insistent on iodized salt. Salt producers also should increase more frequent, self-initiated, more imaginative promotion through the channels of their customer-traders, to complement the sustained public sector consumer education. From the viewpoint of reaching the national IDD elimination goal in a cost-effective way, it is important to acknowledge that “small-scale”, “far-flung”, “rudimentary-technology” and “low salt-quality” salt producers are not capable to face up to these tasks. National policies that keep these salt enterprises afloat do not promote self-sufficient and sustained achievements.

Finally, National Coalitions should be further developed and become established from the experience in this Project, through making the functions of the national Steering Committees more solid and permanent. The national oversight of ensured progress toward optimum iodine nutrition is rooted in a demand for monitoring information expressed from above. National decision-making requires that the leadership is being informed. National Coalitions should demand that they are being supplied with regular data and information from ongoing monitoring and evaluation of the efforts in sustained IDD elimination through USI.

Background and history

The Almaty Forum, held 8–12 October 2001 in Almaty, Kazakhstan, represented the culmination of a process set in motion when in late 2000 the Japan Fund for Poverty Reduction (JFPR) offered the Asian Development Bank (ADB) a \$6 million grant to assist countries in Central Asia in the development of investment plans aimed at an increased delivery of fortified salt and flour to poor women and children. Early in this process, ADB sought close collaboration with the UNICEF network of country offices and technical support was connected with the Kazakh Academy of Nutrition (KAN), a reputed science resource in the area.

The total cost of the Project was budgeted at \$7.09 million equivalent, \$6.85 million of which was to be financed on a grant basis. Participating governments at the national and local levels, NGOs, and the private sector would finance the remaining \$240 thousand mostly through in kind contributions. Parallel assistance through UNICEF was foreseen for capacity strengthening, policy advocacy, public education and surveillance in its role as lead development agency partner in Universal Salt Iodization (USI).

The overall aim of the JFPR9005 Project, launched at the Almaty Forum, was to improve the nutrition status and physical and mental capacity of the poor by piloting an umbrella regional program for delivering micronutrient-fortified salt and wheat flour to poor populations of participant countries. A Consensus Statement adopted at the Almaty Forum reflected the broad objectives in the Country Investment Plans (CIP) of participant countries in improving the required policy capacity, delivery patterns and operational competence. The CIPs of Kazakhstan, Mongolia and Uzbekistan were signed at

the Forum, followed by those of Azerbaijan, Kyrgyz Republic and Tajikistan at a later date. Each CIP defined an ambitious target of 66% of household iodized salt use at end-of-project, in concert with an encompassing range of required supportive actions in high-level advocacy, public mobilization and education, legislative & regulatory enactments, standards and their enforcement, technology improvements in salt enterprises, capacity building in a broad variety of stakeholder and partner organizations, and assessment and monitoring of efforts and results. The Ministry of Health in each participating country was nominated as the national executing agency and a Country Project Office (CPO) was established in each Ministry. A small Regional Coordinating Administrative Office (RCAO) was established to support the CPOs in finance-admin issues and facilitate liaison among the CPOs, ADB and other partnering organizations.

The serious nature and presence of IDD and the limited progress made toward USI in the area prior to the Project underscored its urgent need. While repre-

sentative population data on IDD prevalence at Project start are scarce, IDD was a severe and clearly present threat in major segments of the populations in the area, as shown in Table 1. The salt iodization status at project start shows that the household use of iodized salt varied from 19% in Uzbekistan to 67.7% in Mongolia, with an average for the JFPR countries of 25% (Table 2). At the birth rates prevailing in 2000, the use of iodized salt in 25% of households meant that only 309 thousand of 1,185 thousand newborns every year were protected against the brain damage of iodine deficiency at Project beginning.

As was the case during the preparatory period leading to the Project launch in October 2001, ADB continued maintaining close working relationships with UNICEF also in Project execution. To facilitate decisions on investments in salt iodization, UNICEF arranged for salt situation assessments in participating countries prior to the Almaty Forum, except in Mongolia where a similar analysis had just been concluded. UNICEF project officers in each country assisted in CIP development, and coordinated the

Country	Information Cited in WHO Database	Reference
Azerbaijan	Median UIE 45mcg/L. 347 8–14 year-old children of 9 regions; 2001	Markou KB
Kazakhstan	Median UIE 53mcg/L. 951 15–49 year-old females, nationwide; 1999	Ospanova F
Kyrgyz Rep	Median UIE 30–45mcg/L. 9–10 year-old boys, Bishkek, Osh and Naryn; 1999	Sultanalieva R
Mongolia	Median UIE 102mcg/L. 4–16 year-old boys, nationwide; 2001	Bolormaa I
Tajikistan	Goiter rate 49–90%. School-aged boys at 3 survey sites; 1999	Kasymova S
Uzbekistan	UIE<100mcg/L among 97% school-aged children. National survey; 1998	Ismailov SI

Table 1. Pre-Project iodine nutrition in JFPR9005 countries. Source: WHOSIS database, accessed 28 July 2004.

JFPR9005 Countries End 2000 Situation	Population in Millions		Household Salt % Iodized		Annual Births in Thousands			
	Total	IDD	Value	Year	Per 1,000 Population	Total Number	Numbers Protected	Numbers Unprotected
Uzbekistan	24.8	4.7	19	2000	23	569	108	461
Kazakhstan	14.9	4.3	29	1999	14	207	60	147
Tajikistan	6.4	1.3	20.2	2000	21	133	27	106
Kyrgyz Republic	4.9	1.3	27.2	1997	22	109	30	80
Azerbaijan	7.7	3.3	43	2000	15	115	50	66
Mongolia	2.5	1.7	67.7	1998	20	51	34	16
	66.4	21.4	25			1,185	309	876
								74%

Table 2. Baseline Data in the JFPR9005 Countries showing the population data from UNICEF Population Reference Bureau, 2001 World Population Datasheet—www.prb.org. Data sources: Salt Situation Assessment; UNICEF

exchange of information among partners and the country team members involved in drafting the CIP. During spring 2002, UNICEF recruited a micronutrient assistant project officer in each of the country offices of CARK and trained them in the specifics of food fortification, with special reference to the aims and anticipated progress of the Project. In Uzbekistan, UNICEF and JFPR supported a national salt producers meeting in October 2002 and in Kyrgyz Republic, a local NGO through the Swiss Red Cross supported widespread testing of iodized household salt in Naryn Oblast, and JFPR supported the hosting by the Kyrgyz Salt Producers Association of a regional salt producers meeting attended by UNICEF. In summary, the blending of talents in collaborative support has continued among various supportive agencies in the many efforts during the Project period, including strategy analysis, capacity development, monitoring support and technical exchanges.

Appraisal of decision making and progress

Reports and summaries of the Project’s implementation benchmarks, the progress made and the achievements obtained are available and will not be repeated here.

This chapter focuses on an analysis of Project reports and summaries from a viewpoint of the national decision-making that took place in addressing iodine deficiency problems, and a preliminary assessment of the situation that materialized following upon these decisions. The reason for taking this approach is that it is not only desired to know what occurred and transpired in time with the Project, but also to assess how the decisions and outcomes took place in its particular way, so as to learn from the facts and circumstances that made it happen.

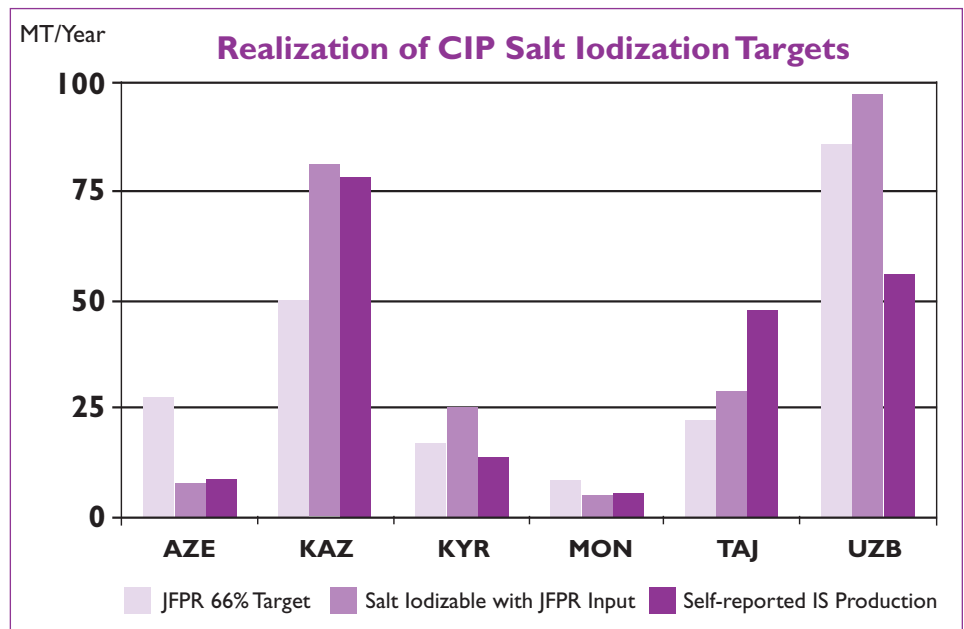
The following sections start out with data illustrations and a look at the outcomes of the Project, followed by comments on the progress in special Project elements. Rather than offering a comprehensive analysis of all elements, the paper reports on strategy considerations that present either

a recognizable threat or a key opportunity to national leaderships for further improvements during the near future.

End of Project USI situation

Was the JFPR target of 66% population salt consumption reached? From producer reports, the answer (see chart below) would appear clearly affirmative for Kazakhstan and Tajikistan, although the significant over-production in Tajikistan compared to the amount iodizable on basis of JFPR9005-supplied fortificant is somewhat puzzling. Although in Kyrgyz Republic the reported production fell short of the target and potential, the answer for Kyrgyz Republic is less certain because much of the national salt consumption is imported (mostly from Kazakhstan) and therefore, the household situation may differ significantly from the local production data. In Azerbaijan, Mongolia and Uzbekistan, however, it would appear from producer self-reporting that the CIP targets were not met.

Nevertheless, a tremendous improvement has taken place in iodized salt supplies in the area during the 3 years of JFPR9005. Overall from production reports, the realization between January 2003 and March 2004 is calculated at 209 MT iodized salt produced, or 85% of the target. Taking the global average consumption planning of 5 kg salt/person/year, this amount would suffice for the salt consumption needs of 33.4 million people, or 53% of the population in the area. And the aggregate supply estimate means that 600 thousand newborns per year were protected against the brain damage of iodine deficiency that



might have occurred otherwise—almost double the number of 2000.

Household-based estimates in the area of the use of iodized salt, although not up-to-date in each country, would indicate that the above supply figures may be conservative, however. For example, Mongolia reports that in 2003 more than 77% of the salt in households was iodized and rapid household salt testing by 6 million primary schoolchildren in Uzbekistan in 2004 identified that 57% of the salt was iodized. Encouraging household user rates have also been reported from Tajikistan (43%; Beijing Conference) and Kyrgyz Republic (72.4%) in 2003. A UNICEF report cites 70% for 2003 in Azerbaijan, and extensive community surveys by NGOs in major parts of Kazakhstan in the same year indicate that 90% of the salt in markets and households was iodized. In conclusion therefore, the reported production data may underestimate the true use of iodized salt in households in the area. Collecting up-to-date estimates of household iodized salt use will be important to verify the attainment of the JFPR9005 target of 66% consumption.

Legislation

The investments and advocacy in the Project period took place against the background of a high-level policy agreement, concluded in Minsk on 31 May 2001, where the Heads of Government in the Commonwealth of Independent States pledged to collaborate in unified approaches for dealing with the serious IDD situation in their nations. An example of harmony is the adoption of the same standard level of iodization, and the choice of potassium iodate as the single fortificant in almost all CIS States. Also in cross-border salt trade, the Minsk agreement provided an urge for better cost-efficiencies in import/export through improved Tariff & Trade regulations, which is highly beneficial for the salt requirements of Kyrgyz Republic where no local salt sources exist, and is also relevant in serving the Kazakh salt markets located more closely to salt sources in Russian Federation.

Enactment of legislation and establishment of iodized salt standards, Tax & Tariff regulations and the associated food quality control applications in JFPR9005 countries are grounded in the broader institutional and operational arrangements with roots in history. Oversight of the appropriate compliance with legal requirements in salt production, trade channels and markets are under the responsibility of the

Sanitary Epidemiological Services (SES). Observations in Kazakhstan indicate that once the SES inspectors, who are tasked with supervising the supply and use of salt in markets and shops, became convinced of the necessity of adequate support to USI, the insistence by traders on iodized salt in their purchase orders to the productive salt industry increased.

The key role of SES in assuring quality control also comes with special responsibilities. One issue, which is unique in the area and adjacent countries, is the aggressive promotion of food products that are being politically lobbied as alternatives for the USI strategy, but come along with either an unwarranted high profit margin, or are not a valued part of the regular, healthy consumption by all population segments.

Three observations apply directly to the present situation in the area as regards legislation and its follow-through. Firstly, a salt iodization law and standards has not been enacted yet in Uzbekistan and in less than half of the JFPR9005 countries have attendant requirements on facilitating international trade been put in pace. Secondly, although the agreed-upon recommendation for sustained IDD elimination (UNICEF-WHO, 1994) states universal salt iodization (USI), the term “universal” does not merely apply to the acceptance of iodized salt in all households but also to the use of iodized salt in all relevant food processing industries and in animal feeding. The point is that reliance on only household salt iodization for IDD elimination in all strata of the population may turn out to be risky. Thirdly, survey information of the use of iodized salt in households is promising, but it does not yet show evidence that USI has been achieved fully and therefore, legal applications by quality control officials must be sustained for attaining success of the UNGASS goal on time. All involved may take a special encouragement from the global experience (Maberly et al, 2003) that true USI can lead to assurance of sustained IDD elimination, irrespective whether a country is small or large, rich or poor, salt producing or import dependent.

Iodized salt manufacturers

Given the history of intensive advocacy for USI and the accompanying investments in salt industry since the ECO Conference in mid 1994 (Begin, 1994), it is unlikely that the rapid gains in iodized salt supplies during the past 3 years would have occurred under continuation of the former permissive iodization policies. With such an approach, a producer who decides to bear the extra work and

expense of supplying iodized salt is unprotected in the market from the competitor who does not respond to the national public health need.

Not all Project countries have yet passed USI legislation, however. In particular, Uzbekistan has not enacted a salt iodization law, despite the decision to hold the second JFPR9005 regional workshop on quality control and assurance issues, including legislative requirements and hold it in Tashkent, and the initiative by UNICEF to stimulate a National Salt Producers' Meeting in Tashkent in October 2002. Uzbekistan was a low achiever toward the common iodized salt supply target. The science of USI is known and clear, the practice of iodization is safe (WHO, 1994), there is abundant global experience of its benefits, and neither the technology nor the supplies or equipment are significant obstacles. Therefore, the issues in Uzbekistan would seem to be in management and public-private politics that are affecting the legislative process.

The structure of the salt industry in some JFPR9005 countries is diverse, but except in rare instances, the practice of adding iodine in salt processing is feasible and as profitable as salt manufacturing itself, regardless of scale, size or sophistication of the processing enterprises. The formation of a Salt Manufacturers Association may be helpful in ensuring equitable transfers and transparent sharing of knowledge and resources. In Kyrgyz Republic, the formation of an association was partly a response to the trade-off between the two scenarios of total dependence for domestic iodized salt from outside sources on the one hand, and of prohibition of iodized salt imports combined with mandatory iodization of all domestic needs in the country on the other. In Uzbekistan, despite vigorous stimulation by the agencies, the association continues to struggle in finding its true mandate and equitable functions.

As foreign aid is temporary by definition, the supply of KIO₃ fortificant will inevitably become the responsibility of the salt industry itself. It is encouraging to note that 33% of the fortificant costs in the Project were reimbursed by the producers, which indicates their capacity and political will to absorb this necessary expense. A manufacturer association may be helpful in maintaining stable and fairly-priced supplies of industry inputs, including the fortificant. The ideal situation, however, will be reached only when salt iodization is fully self-financing from the sales price paid by the ultimate consumer, and that ideal extends in principle also to the commercial purchase

by producers of the fortificant. Experiences in other countries with special constructions such as revolving funds or agency-assisted procurements are generally disappointing. Thus, the solution should be found in the normal commercial pricing principles that determine the supply, markets and sales through traders to consumers.

With the progress of time in WTO agreements, it will not continue to be possible for the borders in iodized salt trade to remain closed, or for domestic differential taxing on salt imports to remain in place. In the future of improved cost-efficient markets and better quality salt, inevitably the smallest-scale, most rudimentary and far-flung, and least quality salt producers will not be able to compete and survive.

Public opinion and education

The Project reports show a solid amount of investments in improving the public opinion, and on education, training and informing stakeholders. It is impossible at a distance to assess the quality of the effort or its contribution in Project achievements, however. The communication issues paper may shed light on this question.

In influencing the public opinion on USI and the need for additional iodine consumption through salt, the real challenge is in making the public acceptance certain. Thus, education and promotion of USI differs from a situation in which consumer demand drives the supply, such as is the case in fortified flour. The need to raise demand for iodized salt, however, does apply to the purchases by traders—the immediate customers of producers—because it is at this stage in the salt channels that the real competition takes place.

Once salt iodization is mandatory, salt producers do not have discretion in pricing of their sales solely on basis of iodization. Because there is not a shortage of salt sources in the area, the price paid by traders for their iodized salt purchases depends much more likely on the salt quality per se. This principle has lessons for the prospects of long-term sustained endogenous salt production in most of the industry in Mongolia, as well as for the future of those producers who similarly cannot attain the agreed-upon quality standard for food-grade salt as defined in the Codex Alimentarius.

Two future directions in communication efforts are suggested: Firstly, sustained success of USI is improved from the insertion of the essential knowledge on IDD and USI in the primary/secondary school curriculum and in schooling of selected profes-

sions; Secondly, public education is as much a responsibility of the private sector as it is of public channels. Private producers and their allies in salt trade should be more active in imaginative promotion of the product for acceptance among their market segments.

Legislating USI means that the choice of salt as the effective and sufficient vehicle for delivering additional iodine to the population has been made. The fear that promotion of USI would cause an increase in salt consumption has not been followed by any evidence that this indeed took place anywhere, also not in Mongolia where a previous report was alleged to suggest such a connection (Yamada C, 1988 and 2001). Also the recent global WHO policy that presses for reduced salt consumption specifically mentions that salt for human consumption requires iodization.

National leadership

Project reports mention the existence of Steering Committees. It is not known whether their establishment is a temporary arrangement to mainly serve the needs for deciding on Project-related issues, or whether the Steering Committees are the beginnings of permanent forums for oversight in response to an imperative that the national success in elimination of iodine, iron and other micronutrient deficiencies must be sustained. The composition of each Steering Committee is also not known to this observer. Because USI for IDD elimination rests on efforts based on divided (but balanced) roles and responsibilities, arrangements in public-private (and where possible, civic) partnership are required. The Steering Committees stimulated out of the JFPR9005 Project may be a seed for these partnerships to grow.

Sustaining the elimination of IDD comes from a persistent regular concern for assured quality and sufficiency. We shall need quality assurance of iodized salt production over time so that iodine levels in salt deliveries are always adequate, and we shall need sufficient supply for all at fair prices. We will need assured quality of performance by the various elements of national society that support these continuous efforts: political commitment must be regularly renewed and invigorated; communications must be open, transparent and persistent over time; finance is required for training and other support activity budgets—such as salt inspection, lab-based assessments, etc—and this needs constant management attention; public education must be penetrated so that all children learn of the needs for iodine and the dangers for brain cells of its deficiency; agriculture

leaders need constant reminding of the value of iodine for domestic animal feeding. Persistent and professional measurement of the progress in human iodine nutrition is vital, its regular monitoring must be assured and the findings publicly announced.

Hence the justification and need for a National Coalition, which operates on the principle that oversight of all the imperatives mentioned above, and their continued realization, are the minimum and essential requirements for ensuring sustained success.

Scientific underpinnings

In science-based work, the Project has invested in improved monitoring capacity as evidenced for instance by the great number of salt tests. Also, the Kazakh Academy of Nutrition has made outstanding substantive contributions in obtaining monitoring results, partly in response to a contractual arrangement under JFPR. Scientists from professional institutes in the area have been regularly attending the series of regional workshops, national workshops, and trainings held during the Project period and in international forums on the progress toward sustained IDD elimination. Nevertheless, the efforts to improve the scientific insights on the benefits for national development from IDD elimination through USI, and the extension of this new knowledge into the broader professional body of supportive science in the area have been somewhat limited. From consideration of the stated Project aim, namely to improve the nutritional status and physical and mental capacity of the poor, it would seem that only documenting direct Project-related outcomes and measuring change in the underlying indicators of nutritional impact misses out on a prospect to determine the associated physical and mental function improvements. To give one example, it would seem that a verification of the statement “No more cretins born since USI” is an attainable indicator for measuring impact

The importance of developing more scientific understanding and consolidating the evidence of impact from IDD elimination within the countries itself extends beyond the regular need for expert advice on policy development and operational implementation, e.g. in monitoring & evaluation, or on justifying other nutrition investment for national health and development. The long-term value of exploring and consolidating the functional impacts of IDD elimination in endogenous science is also that, at any future time, local experience may be needed to remind the

national leaderships of the imperative that progress in IDD elimination must be permanent and that hence, USI must be a constantly renewed habitual norm for every citizen, everywhere and for ever. Otherwise, IDD inevitably returns and along with it, the preventable mental retardation that underlies poverty in the area.

Conclusions

Tremendous progress took place in USI for IDD elimination in the area during the past 3 years. For the achievements to increase and endure, periodically renewed political will, persistent Government commitment and continued industry motivation are essential. The Minsk agreement, and the continued blending of the many talents, supportive resources and efforts in advocacy, investments and technical support work by all supportive groups have been conducive in positioning the countries of the area toward success in achieving the UNGASS goal of sustained IDD elimination. In all but one country, national laws and standards for iodization are in place, the beginnings are evident in improved Tax & Tariff applications. These new policy instruments are understood and respected by manufacturers and their allies in the salt trade alike. Quality assurance at all levels, with particular emphasis at production, is a key for consolidation of progress.

To protect those who don't yet have access to additional iodine from salt iodization, a managerial assessment of the national resources dedicated to the USI efforts deserves priority attention. In doing so, the danger must be avoided of thinking that the problem is mainly one among the poor and rural; the challenge is national. Countries with major resource problems such as Tajikistan may need more help and longer duration support; others need vigorous follow-through and acceleration of the existing plans.

The production, supply and use of iodized salt for humans and animals should become the behavioral norm. The rationale includes the right of each child to reach his genetic intellectual potential. This is not just a moral imperative, but it has economic justification also, because the national investments in education will not be effective when USI is not in place and when newborns are not protected from the brain damage of iodine deficiency. Ensuring funds through established national budget lines is a vital and continuing component in sustained elimination.

The final proof of the benefits from IDD elimination is reflected in a reduction of the functional

outcomes from preventable brain damage. The endogenous scientific community should become more active in monitoring and tracking these changes at regular intervals. This can be stimulated by international collaboration. Regular surveillance of the iodine nutrition status during early pregnancy is a key priority. The inevitable success in IDD elimination from true USI should be shared publicly.

The budding public-private-civic partnerships for ensuring sustained universal iodine supplies and consumption throughout the nation should continue to be improved. Each partner plays important roles. Salt producers and processors must assure supply and universal access. Governments must permanently support USI and monitor the situation. The social sector must insist on national supervision and guard against reversal. The public must understand and demand its right to adequate iodine nutrition. Therefore, National Coalitions that regularly demand accurate information and act on it are essential in next steps toward sustained IDD elimination in the area. ■

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A Success Story of IDD Elimination in Macedonia

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Summary

It can be concluded that progress has been achieved due to wide societal involvement and action and can be mainly attributed to the dedication and the political will of the Government of Republic of Macedonia. The decision of the Ministry of Health to establish the National Committee on Iodine Deficiency included all relevant stakeholders. The adoption of New Regulations for Salt Iodization was another turning point which was reached thanks to the excellent cooperation and coordination between the Ministry of Health, the Ministry of Economy and their respective institutions. The reinforcement of these regulations brought additional partners on board, having the Health and Sanitation Inspectors and the Market Inspectors responsible for monitoring salt quality from production to retail. The national coalition was continuously broadened and consolidated around the implementation of the National IDD program in several areas.

Many data clearly indicate that Macedonia had been an iodine deficient area in the past. The Ramzin study¹ carried out in the early fifties of the last century mentions that there had been around 200,000 people with goiter in Macedonia at that time. Since the iodine deficiency problem was present in the other republics of the former Yugoslavia as well, a law was passed in 1956 stipulating that all the salt for human consumption, including table salt, salt used in food industry, and animal salt must be iodized with 10 mg of potassium iodide (7 mg of iodine) per kg of salt. Enforcement of this law corrected the status of iodine deficiency only slightly. After many years of this suboptimal iodine prophylaxis, iodine deficiency persisted in Macedonia even among the population born after the introduction of iodine prophylaxis. Some preliminary studies showed that goiter was present in over 60% of the primary school children in certain villages of Macedonia.² These findings and other available research raised the awareness of the damaging effects of iodine deficiency (IDD) on the brain development, especially in fetus and infants that needed further investigation.

A countrywide survey conducted in 1995 adopted the recommended methodology published by WHO,

UNICEF and ICCIDD for detecting iodine deficiency, using palpation of the thyroid, measurement of the thyroid volume with ultrasonography and measurement of urinary iodine.

The results from thyroid palpation showed a goiter prevalence rate of 18.7 % in the children examined. Out of the 11,486 children examined with palpation, 2,487 were randomly selected for examination with ultrasonography. The calculated values of the thyroid volume were higher than the WHO/UNICEF/ICCIDD criteria. The median urinary iodine value from the total 2,380 urine samples in our study was 117 µg/L. Based on these findings and compared against WHO, UNICEF and ICCIDD criteria, iodine deficiency in Macedonia was found to be mild to moderate and the measures undertaken up to that point had not been enough to eliminate it.

Given our results, it was concluded that the best strategy to eliminate iodine deficiency in Macedonia is to increase the iodine level in the consumer salt to 20 to 30 mg of iodine per kg of salt. Our deliberation also took into account many factors which may influence the daily iodine needs of the body or cause iodine loss from salt from the moment of iodization until the moment of consumption, especially if the salt is stored under inappropriate conditions as is often the case in Macedonia; the habit of buying larger amounts of salt in order for it to last longer; the consumption related habits; and the way of food preparation.

In order to reduce iodine loss, the more stable potassium iodate (KIO₃) rather than the less stable potassium iodide (KI) was chosen for salt iodization in Macedonia. The research team shared these conclusions with the Ministry of Health and proposed the establishment of a National Iodine Deficiency Committee, gathering all relevant stakeholders who could make a contribution to the correction of iodine deficiency and its consequences in Macedonia.

On December 26, 1997, the Minister of Health issued a Decree for the establishment of a National Iodine Deficiency Committee with representatives from: the Ministry of Health, the Ministry of Economy, the Ministry of Education and Science, the

Year	Median urinary iodine ($\mu\text{g/L}$)	Goiter Prevalence Rate (%)	Median Thyroid Volume (ml)	Neonatal TSH Screening >5 mU/L (%)
1995/96	117.0	18.7	4.79	
2000	154.1			
2001	164.5	5.0		
2002	198.5	5.8	4.04	5.4
2003	191.0	4.7	3.72	4.3

Table 1. Yearly IDD survey in Macedonia after the adoption of iodized salt at 20–30 mg iodine/kg of salt. A baseline national survey was conducted during 1995–96.

Ministry of Agriculture, Forestry and Water Economy, the State Health and Sanitation Inspectorate, the State Market Inspectorate, the Republic's Institute for Health Protection, the Mother and Child Health Care Institute in the Skopje Health Center, the Institute of Pathophysiology and Nuclear Medicine, the Clinic for Children's Diseases, the Clinic for Endocrinology and Metabolism Diseases, UNICEF, WHO, Macedonian Radio and Television, the pharmaceutical company "Alkaloid" and AD "Zito Bitola" (salt producer).

The National Committee elected its president and held its first constitutive meeting on July 2, 1998. On June 28, 2000 the Committee adopted the Program for Correction of Iodine Deficiency in Macedonia. At the end of each following year the National Committee prepares an annual report and a working plan for the next year. The new regulations on the quality of table salt was signed by both the Minister of Health and the Minister of Economy on September 24, 1999 and it was published in the "Official Gazette of the Republic of Macedonia" No. 65, dated October 7, 1999, and came into force.

As proposed by the National Iodine Deficiency Committee the new rule book of the government mandates the iodization of all salts for human consumption to the level of 20 to 30 mg of iodine per kg of salt with potassium iodate only. It also includes provisions on packaging of household salt in impermeable plastic bags, each containing up to 1 kilo of salt maximum and showing the date of iodization on the packaging. These additional provisions ensure the consumption of appropriately iodized salt only at the retail and household levels.

Following the establishment of the National Iodine Deficiency Committee and the adoption of the new Rule book, other measures to prevent iodine deficiency were launched. The Annual Program of the National Committee consisted of (i) monitoring of Iodine defi-

ciency among the population in Macedonia, (ii) monitoring and control of salt iodization, and (iii) information dissemination and health promotion on the use of iodized salt at the household level.

Iodine deficiency among the population was closely monitored. In Macedonia, following methods recommended by WHO, UNICEF and ICCIDD using palpation of the thyroid gland, ultrasonographic measurement of the thyroid volume; and measurement of urinary iodine. These parameters were assessed during 1995 to 1996, prior to the adoption of the new regulations on salt iodization, and during each year following the adoption thereof (Table 1).

The incidence of goiter normalized in 2001 and remained normal in 2002 and 2003. Thyroid volume measured by ultrasonography decreased continuously following enforcement of the new regulations of salt iodization. The median of urinary iodine rose from 117 $\mu\text{g/L}$ in 1995/96 prior to the adoption of the new regulations, to 154.1 $\mu\text{g/L}$ in 2000, 164.5 $\mu\text{g/L}$ in 2001, 198.5 $\mu\text{g/L}$ in 2002 and 191 $\mu\text{g/L}$ in 2003.

During 2002 and 2003, TSH screening tests were carried out in a total of 16,193 newborns from 6 maternity hospitals in the laboratory of Prof. Mira Kochova at the Clinic for Child Diseases in Skopje. During the time of the study, the percent of children with TSH values higher than 5 mU/L was 5.4% in the first year and 4.3% in the second year.

The 2001 studies involving pregnant and lactating women showed that the improvements of Iodine status in the population was not sufficient to satisfy the increased iodine need of the pregnant and lactating women whose median urinary iodine was only 140.4 $\mu\text{g/L}$. It was 164.5 $\mu\text{g/L}$ in the school children in the same years. The optimal median urinary Iodine in the pregnant and lactating women is over 200 $\mu\text{g/L}$. It was found in only 22.7% of the subjects while 25.5% of the subjects studied had values below 100 $\mu\text{g/L}$ and 51.8% had median values between 100 and 200 $\mu\text{g/L}$.

One of the objectives of the National Iodine Deficiency Committee was to monitor whether the change in iodine status had any impact on the incidence of other thyroid diseases. The analyses are conducted every year after 1999 to assess whether an increase of iodine intake among the population can result in an increased incidence of Graves' disease and autoimmune hypothyroidism. The data from these last 13 years have shown no statistically significant differences in the incidence of thyroid diseases.

The National Iodine Deficiency Committee also conducts regular information dissemination and health education among the general population, focusing on IDD and in particular about the need to buy and consume iodized salt in the households, in cooperation with the Consumers Organization. In 2002 the Institute of Pathophysiology, expended its curriculum to include units on thyroid gland and iodine deficiency to the university students of medicine, dentistry and pharmacy, covering the causes and prevention of IDD, with a special focus on the situation in Macedonia.

A brief information sheet on iodine deficiency was prepared in collaboration with the Pedagogical Institute, Ministry of Education and Science, and distributed to all secondary and primary schools. In the last years, many daily newspapers, magazines and periodicals published information on iodine deficiency. The electronic media made a significant contribution keeping the population informed about iodine deficiency.

The health workers have been continuously informed about iodine deficiency in Macedonia through a large number of publications published in both national and international medical journals, as well as through the participation of national and international forums of doctors, nurses, sanitary technicians and medical laboratory workers. Workshops on iodine deficiency were held with the Association of Paediatricians and the Association of Gynecologists and Obstetricians. Several publications in Macedonian and English became available, including "Iodine deficiency in Macedonia" in 1997, "Iodine deficiency in Macedonia" in 2003, and the report by WHO, UNICEF and ICCIDD titled "External analysis of the progress made in the Republic of Macedonia towards a sustainable optimal nutrition with Iodine", published in Macedonian and English in 2003.

In 2001 and 2003, workshops were held with the inspectors of the State Health and Sanitary

Inspectorate in order to reinforce efforts in the continuous quality control of salt.

In 2001, the National Committee, based on survey findings, concluded that Macedonia has corrected the iodine deficiency and requested verification and certification of this success by WHO, UNICEF and ICCIDD review. The expert team visited Macedonia May 19–23, 2003. A thorough assessment of the program activities and the achievements was undertaken. The expert team in its final report concluded that the iodine deficiency in Macedonia was corrected.

It can be concluded that progress has been achieved due to the wide societal involvement and action and the dedication and political will of the government of the Republic of Macedonia. The Ministry of Health decided to establish the National Committee on Iodine Deficiency including all the relevant stakeholders. The adoption of the New Regulations for Salt Iodization was another turning point due to the excellent cooperation and coordination between the Ministry of Health and the Ministry of Economy and their respective institutions. The reinforcement of these regulations brought on board additional partners, the Health and Sanitary Inspectors and the Market Inspectors, responsible for monitoring salt quality from production to retail. The national coalition was continuously broadened and consolidated during the implementation of the National IDD program in several areas:

1. Monitoring of the situation and adjustment of the regulations towards optimal salt iodization. Old regulations were revised to stipulate that all salt for human consumption, including the food industry, should be iodized with 20 to 30 mg of iodine per kg of salt with the more stable potassium iodate. Now 90% of the households in Macedonia consume iodized salt. However the regulations on salt iodization need to adapt to the actual situation. This was the reason why we were in favor of having the salt iodization regulated by a Rule book (secondary legislation act), which is much easier to amend than the primary legislation (Law).
2. Enforcement of the regulations on salt iodization. Macedonia has the necessary organization, staff and material capacities. The State Health and Sanitary Inspectorate and the State Market Inspectorate, both responsible for the control of salt iodization, have experience and each has 100–140 competent inspectors. Macedonia does not produce salt. It imports two kinds of salt. The iodized salt goes directly to the market and the

non-iodized salt goes to two salt factories where it is iodized. One of the factories gradually increased its production that by 2003 it provided 40% of the needed iodized salt. The laboratory check on the salt iodine is carried out in the National and 10 Regional Public Health Institutes and in the Veterinary Institute, which have qualified staff and the necessary equipment, using the standardized methodology recommended by WHO, UNICEF and ICCIDD.

3. Monitoring the impact of salt iodization on IDD among the population. In Macedonia, this has been done on a continuous basis since 1995/96, using methods recommended by WHO, UNICEF and ICCIDD. The monitoring will continue in the future as well.
4. IDD information and education of the population on the importance of buying and using iodized salt

in the households. Health workers, the Consumers Organization and other non-governmental organizations, publications, printed and electronic media can disseminate important messages.

In conclusion, Macedonia is a country with a well-established IDD program and has achieved IDD elimination. It now faces the challenge of sustaining this progress. The answer must be continuously maintaining and promoting Universal Salt Iodization. ■

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The 2003 IDD Status Research in Russia: Using Thyromobil

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Several studies have identified IDD (iodine deficiency disorders) of varying levels of severity in different areas of Russia. These sub-national studies showed that in the European part of Russia iodine deficiency is more often mild in urban settings and moderate in rural ones; while in Eastern Russia (Siberia and the Far East) iodine deficiency is generally more prevalent. Some WHO publications estimated the prevalence of goiter to be 10%, but this was a “guesstimate.” The proportion of households consuming iodized salt was estimated to be 30% in a recent UNICEF report, but again this was not based on a nationally representative survey.

While a representative national IDD survey remains a challenge in a country as large as Russia that covers 11 time zones, IDD monitoring using Thyromobil appears to be a good alternative. This surveillance model was first introduced in West and Central Europe in mid-1990s and subsequently used in South America, Africa and Asia. The Thyromobil model provides rapid assessment of iodine nutrition status with standardized methodology and, in most



Thyromobil and the members of the 2003 Russian IDD survey team.

cases, by the same research staff.

In 2003, the National IDD Center (a branch of Endocrinology Research Center in Moscow) conducted IDD surveys in 12 regions of the European part of the Russian Federation which covered a combined population of 30 million (Figure 1). The Thyromobil van (Figure 2) used by the study traveled more than 10,000 km over some roads in less than optimal condition.

The study encompassed 2,673 schoolchildren between 8 to 10 years old. The information of goiter prevalence and thyroid volume were assessed by digital palpation and by ultrasonography. Iodine content in urine and salt was measured by using rapid test kits and titration. A portable ultrasound scanner (LOGIC 100 with linear 7.5 mHz transducer) was used for thyroid examination. The results of the project were analyzed using similar cut-off levels for thyroid volume in relation to body surface as suggested by F.Delange et al. (1997).

Results of the 2003 assessment showed that iodine deficiency remained a problem in the population of all surveyed regions. Iodine deficiency varied from mild in Sverdlovsk, Krasnodar, Moscow, and Penza regions to nearly severe in Volgograd and Astrakhan oblasts (Table). ■

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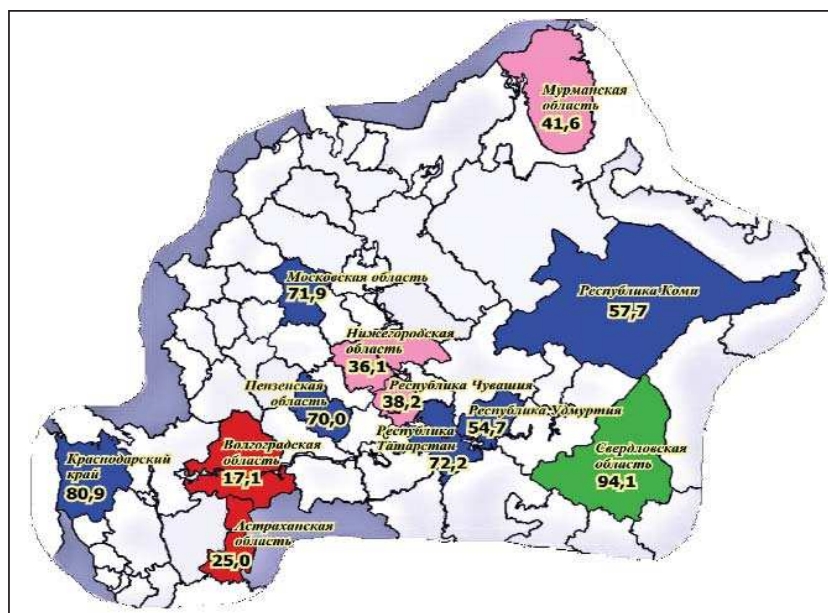


Figure 1. Median urinary iodine levels in the surveyed regions of European Russia.

Regions and Federal Districts (FD)	Municipalities Surveyed	Children Surveyed	Goiter Prevalence Rate by Palpation (%)	Goiter Prevalence Rate (%) by Ultrasonography	Median Urinary Iodine Levels (mcg/L)	Percent of Households Using Iodized Salt
Astrakhan Oblast (South FD)	1	252	14.6–35.3	17.5–42.6	25.0	6.3
Volgograd Oblast (South FD)	4	250	5.2–9.7	-	17.1	11.6
Krasnodar Kray (South FD)	3	249	9,1–35.5	0–8.1	80.9	12.3
Murmansk Oblast (North West FD)	5	262	17.5	3.9–22	41.6	—
Komi Republic (Norht West FD)	3	262	17–22	17–21.9	57.7	43
Nizhne-Novgorod Oblast (Privolzhski FD)	5	248	14–29	-	36.1	10.6
Tatarstan Republic (Privolzhski FD)	3	224	10.2	4.6–11.5	72.2	79.4
Udmurtia Republic (Privovzhski FD)	1	100	4	5	54.7	39.7
Chuvashia Republic (Privolzhski FD)	1	106	5.6	8.4	38.2	11
Penza Oblast (Privolzhski FD)	1	101	6	5.6	70	7
Moscow Oblast (Central FD)	4	365	—	6.7–11.5	71.9	44.3
Sverdlovsk Oblast (Uralski FD)	5	254	12–36	2–77	94.1	39.3

Table 1. Thyromobil assessment in 12 regions of the European part of the Russian Federation.

Iodized Salt for Bright School Children

Turkmenistan Keeps Promise to Eliminate Iodine Deficiency

BY GREGORY GERASIMOV, ICCIDD REGIONAL COORDINATOR FOR EASTERN EUROPE AND CENTRAL ASIA AND CONSULTANT ON RUSSIA AND CEECIS FOR UNICEF

Rakhim Annageldiyev is a bright pupil. He studies in the 4th grade at School N23 in Bakharly etrap, about hundred kilometers from Ashgabad, the capital of Turkmenistan. In January 2004 a group of medical doctors from the Research and Clinical Center for Mothers' and Children's Health visited and tested the children at this school as they did in 30 other schools all over the country. Their objective was to check whether the people of Turkmenistan were receiving enough iodine in their diet. Results of this survey confirmed previous findings that iodine deficiency is no longer a threat to health and intellectual development of a new generation of Turkmenistan children.

Intellectual capital is a crucial resource of every nation. Iodine deficiency is the single greatest cause of preventable mental retardation in the world today. Even mild endemic iodine deficiency lowers the intellectual capacity (IQ) of the population by 10–15% thus being a serious obstacle to the intellectual and economical potential of an entire nation. For lack of minute amounts of iodine in their diets, 1.6 billion people worldwide are at risk of diminished mental and physical capacities due to iodine deficiency disorders (IDD).

In 1990, countries gathered at the World Summit for Children in New York pledged to eliminate iodine deficiency. Subsequently, more than 170 countries agreed to set the goal of iodization of all salt for human consumption, the universal salt iodization (USI).



Rakhim Annageldiyev tests iodized salt

Iodization of all salt for human consumption is the most cost-effective and the safest and reliable method to fight iodine deficiency. Salt is consumed by virtually all people and it can deliver iodine quantitatively if the salt is enriched with iodine supplement. If all salt is iodized with sufficient amount of iodine and all families use only iodized salt, then iodine deficiency will no longer threaten the health and development of children.

Rakhim knows about iodised salt. His teacher, Ogulkeyik Mamedova, has explained the benefits of iodized salt to his class. Rakhim also knows if you drop a special testing solution on a few grains of iodised salt, they become purple. When the doctors from Ashgabad checked the salt samples brought by the pupils in his class from their homes, all the samples turned purple. It is no surprise, since all salt for human consumption has been iodised in Turkmenistan since year 2000, and iodine deficiency has vanished from the entire country.

The beginning

Turkmenistan, a Central Asian nation of 6 million people, became an independent country in 1991 after the fall of the Soviet Union. From mid-1950s to 1991 iodine deficiency in the Soviet Union was prevented through mass production of iodized salt, that even medical doctors almost forgot about endemic goiter, the most common feature of iodine deficiency. Iodized salt was also produced in Turkmenistan when Turkmenistan was a republic of the USSR. Then the production of iodized salt ceased in 1992 after the fall of the Soviet Union.

In 1994 United Nation's Children Fund (UNICEF) began actively supporting programs to eliminate iodine deficiency in Central Asia. In June of 1994 UNICEF and Turkmenistan government sponsored a conference of ECO (Organization for Economic Cooperation) for the countries in this region to discuss their common goal of IDD elimination.

In preparation for this meeting, the Turkmenistan Ministry of Health, with support of UNICEF and International Council for Control of Iodine Deficiency Disorders (ICCIDD) conducted a first

survey of iodine deficiency employing sensitive modern indicators of iodine nutrition, assessing goiter prevalence with ultrasonography and measuring iodine in urine. Two hundred children were assessed in two cities, the capital city of Ashgabat and Dashgowuz in an arid area near the Aral Sea. The study showed that 20% of the schoolchildren in Ashgabat and 64% of the children in Dashgowuz had enlarged thyroids. The Iodine levels in urine also indicated mild to moderate degree of iodine deficiency.

These results were reported at the 1994 UNICEF/ECO International Conference on Elimination of Iodine Deficiency in Ashgabat. The report helped to secure a commitment from the government to launch the program on elimination of iodine deficiency.

An initiative that is worth its salt

Turkmenistan is probably the only nation in the world where salt is distributed to its population free of charge in community shops. Each Turkmenistan citizen can get 400 grams of salt every month free. Due to a President's Decree, the practice has been further extended to year 2020.

Turkmenistan ratified the Convention on the Rights of Children and pledged to eliminate iodine deficiency and 27 other development goals. On May 28, 1996 the President of Turkmenistan, Saparmurad Nyazov, signed a Decree "On Salt Iodization and Flour Fortification with Iron" setting forth a requirement that all locally produced and imported salt shall be iodised with potassium iodate. Potassium iodate is a suitable chemical for fortification of salt because it is stable in salt even in hot climates. The shelf life of iodated salt is at least 12 months. More importantly, Turkmenistan is one of few nations in the world that produces its own potassium iodate.

Salt in Turkmenistan is produced in "Guvlyduz" salt plant. Salt is harvested from Guvly salt lake and delivered to salt factory after drying. UNICEF and the government of Turkmenistan made significant investments to upgrade iodization technology and packaging of iodized salt. Now more than 30% of iodized salt is supplied to consumers in small polyethylene bags and plastic boxes. The government reports that all salt for human consumption has been iodised since 2000. In 2003, the "Guvlyduz" salt plant supplied 32,200 tones of iodised salt for its local needs, or more than 5 kilo per person per year. By a resolution of the Ministry of Health, the iodine



The production line of iodized salt in the new "Guvlyduz" salt plant.



Assessment of goiter prevalence in schoolchildren of Ashgabat (1999).

content in salt was increased from 23 ± 11.5 mg/kg to the internationally recommended level of 40 ± 15 mg/kg starting from January 2003. The quality of iodized salt also increased markedly; in 2004 100% of the salt samples collected from households for testing contained adequate amounts of iodine.

As a result of the efforts of the government and UNICEF, Turkmenistan became the first country of the former USSR to reach universal salt iodization (USI). The achievement was declared by Dr. Annamurad Orazov, the head of State Sanitary Epidemiological Inspection of the Ministry of Health at the International Meeting for the Sustained Elimination of Iodine Deficiency Disorders in Beijing, 15–17 October 2003 with attendance by 27 countries and 10 international agencies and organizations.

Monitoring the success

Assessment and reassessment of iodine nutrition is important to track the effectiveness of universal salt iodization in a given population. The prevalence of goiter, meaning a lump in the neck, is the most common clinical feature of iodine deficiency that can be detected by palpation or by the more sensitive

method of thyroid ultrasonography. These methods were used for the initial assessment of iodine deficiency in Turkmenistan (Figure 3).

However, determination of iodine in urine is the most reliable and informative method for the assessment of iodine nutrition. With UNICEF and ICCIDD support, a special laboratory for urinary iodine analysis was organized in the Maternal and Children's Health (MCH) Center of the Ministry of Health. The Director of this Center, Ch. Nazarov, commented that "This state-of-the-art laboratory helped us to conduct a national survey of our iodine nutrition in 2004 to confirm that this nutritional disorder of IDD had been eliminated through effective salt iodization. We will use this laboratory for further monitoring to ensure sustained normal iodine nutrition in our population".

The National monitoring of iodine nutrition was conducted in 30 randomly selected schools in all provinces (velajats) of Turkmenistan in early 2004. Nine hundred school children were surveyed by the doctors from MCH Center. In addition, 900 salt samples were tested for iodine content by the specialists from local State Sanitary Epidemiological Inspection.

Normal iodine nutrition in the population was confirmed by urinary iodine determination: the median value of urinary iodine was found to be 170 micrograms per liter (mcg/l) that is within the optimal range of 100 to 300 mcg/l. There was only minimal discrepancy in status of iodine nutrition between different velajats of Turkmenistan with the highest median urinary iodine level of 232 mcg/l in Balkan velajat, which is close to the production site of iodized salt and the Caspian Sea, and with the lowest level of 156 mcg/l in Dashoguz velajat.

Previous health survey conducted in year 2000 showed that 78% of the salt samples tested had adequate iodine content. After increasing the level of iodine in salt to the internationally recommended level, the percentage of food grade salt with adequate iodine content increased from 83% in year 2001 to 100% in year 2004.

By all international criteria, Turkmenistan can now be considered as a country that has eliminated iodine deficiency among its population.

Committed partners

Many countries in the region of Eastern Europe and Central Asia are making efforts to eliminate iodine deficiency but only a few are close to reaching this goal by the year 2005. How can Turkmenistan's

experience help other nations to combat iodine deficiency? What are lessons learned?

First and foremost, the Turkmenistan success is the result of a strong political will as expressed by the government's President's Decree in 1996, "On salt Iodization and Flour Fortification with Iron". This became a legal instrument for achieving universal salt iodization. This Decree also established a National Commission on Salt Iodization and Flour Fortification, chaired by a Deputy Prime-Minister with other high level representatives of government agencies for health, industry, trade and standards. This multi-agency committee is responsible for implementation and regular oversight on the national program for elimination of iodine deficiency.

Second, another important component of this success is the continuous support of national efforts by UNICEF, the international agency that pledged to support elimination of iodine deficiency worldwide. Funds provided by Kiwanis International, US Agency for International Development and other donors provided the necessary assistance to improve the technology of salt iodization, train the professionals, improve monitoring system and to communicate messages through media on the benefits of iodized salt to an entire population. ICCIDD also provided significant support to the national program of elimination of iodine deficiency in Turkmenistan.

Among other factors, Turkmenistan has only one salt producer but it meets its complete domestic needs. Turkmenistan also has its own producer of potassium iodate to satisfy the entire domestic needs for iodine fortification. It has sustained a centralized system of distribution and trade for salt, not to mention that iodized salt is supplied to its entire population free of charge. Thus, the production cost of iodized salt is low and every one in the whole country has access to iodized salt.

Sustainability of good iodine nutrition depends on constant production of good iodized salt. In early 1990s, production of iodized salt in Turkmenistan was terminated and iodine deficiency returned. A national program named, "The Strategy of economical, political and cultural development of Turkmenistan for the period up to 2020" has sustained the political will to eliminate iodine deficiency and to secure a constant supply of free iodized salt to its populace. The existing system is adequate to monitor the iodine nutrition in the population to prevent return of iodine deficiency in Turkmenistan.

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UNICEF Regional Director Congratulates Turkmenistan on Universal Salt Iodization, 01 November 2004

Ashgabat, Turkmenistan, 1 November 2004—UNICEF Regional Director Maria Calivis arrived in Turkmenistan today to congratulate the government on the country's achievement of universal salt iodization (USI).

She presented Turkmenistan with an award on behalf of UNICEF, the World Health Organization (WHO) and the International Council for Control of Iodine Deficiency Disorders (ICCID) in recognition of this achievement.

Commenting on the award, Calivis, who is UNICEF Regional Director for Central and Eastern Europe, the Commonwealth of Independent States and the Baltics, said:

“USI is the most effective way to protect children from iodine deficiency—the world's leading cause of preventable mental retardation and brain damage. So this award is a major milestone for Turkmenistan. This is the first country in Central Asia—and only the fourth country worldwide—to reach this target.

“I congratulate the government for its efforts on USI. Such investment in children is an investment in the future, and is to be commended.”

Turkmenistan's USI campaign began more than a

decade ago, with the President playing a key role in pushing for optimum iodine nutrition, including a 1996 decree enforcing the use of iodized salt country-wide. UNICEF, which this year celebrates ten years of work in Turkmenistan, has supported government efforts by conducting surveys and providing technical assistance, while the US government has donated more than \$200,000 to the USI programme.

Calivis will meet other government and international officials during her four-day visit to the country. She will also travel to Dashoguz velayat (region) to visit joint Government-UNICEF projects. She will be joined by Mr. Mahboob Shareef, UNICEF Representative in Turkmenistan. ■

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Perhaps the readers have noticed that the format of the IDD Newsletters is changing since the May 2004 issue suggesting an experiment of new editorial policy. Each of the recent issues has a lead paper from a different partner of the Global Network for the Sustained Elimination of Iodine Deficiency. Each issue shows a concentration of papers from a different region of the world. The August 2004 issue has several papers from South East Asia. The November 2004 issue contains papers on countries in Central Asia, Baltic and Russia. Also in order to broaden our readership, we are adding a few papers in each issue in English as well as in the second major language of the region. For instance the recent Lima Consensus was pub-

lished in English and in Spanish in the May 2004 issue of the Newsletter. Other papers will have their English and French versions in the upcoming February 2005 issue of the IDD Newsletter in which Africa is the focus.

When the papers are grouped by region it becomes easier to understand, to evaluate and to compare the needs, the successes and disappointments of the countries. We hope the readers approve these changes. More important the future contributors will consider submitting their papers in English and in the second language of the region. ■

—Ed.

CHRONOLOGY OF THE SUCCESS OF TURKMENISTAN

YEARS	EVENTS
1991–1993	After dissolution of Soviet Union in 1991, production of iodised salt in Turkmenistan ceased due to breakdown of economic ties within the former state and lack of some necessary equipment, reagents and supplies.
1994	The Decree of Turkmenistan President 1656 (14.02.1994) “On Supply of Salt to the Population of Turkmenistan free of charge” allowed each Turkmenistan citizen to receive 400 g of salt every month free of charge through the network of community shops.
1994	UNICEF opened its office in Turkmenistan and other countries of Central Asia and in Kazakhstan.
1994	In March 1994 first survey of iodine deficiency was conducted with support of UNICEF and ICCIDD. Dr. G. Gerasimov of ICCIDD in collaboration with national specialists conducted survey in Ashgabat and Dashgowuz. The medium urinary iodine (UI) level in Ashgabat was 75 mcg/l and in Dashgovuz, 37 mcg/l, while the goiter prevalence in schoolchildren was 20% in Ashgabat and 64% in Dashgovuz. The data which confirmed mild to moderate iodine deficiency in Turkmenistan served as the baseline data for future surveys and also led to the political decision of IDD elimination.
1994	Turkmenistan government hosted a meeting of ECO/UNICEF/WHO (15–16 June, 1994) at ministerial level on iodine deficiency disorders (IDD). The consensus recommendations called for urgent efforts to ensure universal salt iodization (USI) and IDD elimination.
1996	President of Turkmenistan, S. Nyazov, (28.04.1996) adopted the Decree 2626 “On salt iodization and flour fortification with iron” that required all edible salt be iodized. This Decree became the legal framework for elimination of iodine deficiency through USI.
1996	The Ministry of Health and other government agencies approved the use of potassium iodate (KIO ₃) for salt iodization at the level of 23±11 mg/kg. The production of potassium iodate in the Khazar Chemical Plant resumed. UNICEF provided “Guvlyduz” salt plant with the necessary equipment to launch the production of iodized salt.
1997	UNICEF provided support to strengthen the laboratory capacity of national institutions to monitor iodised salt and biological monitoring. Laboratory for urinary iodine (UI) determinations was organized in Maternal and Children’s Health Center named after Gurbansolan-enghe (MCH Center) of the Ministry of Health.
1999	Training workshop for IDD monitoring was conducted in MCH Center with UNICEF and ICCIDD support. The training course included performing a small scale IDD survey in Ashgabat. This survey showed 90% of the salt from households was iodised. However the UI levels in schoolchildren showed persistence of mild iodine deficiency.

2000	Salt iodization capacity of the “Gulyduz” salt plant was improved and its management reported 100% iodization of salt for human consumption. The Turkmenistan government constructed a new factory for iodization and packaging of edible salt.
2000	A Demographic Health Survey (DHS) was performed in Turkmenistan with support of UNICEF and US Agency for International Development (USAID). This survey showed that 78% of the salt samples had an iodine content of at least 15 mg/kg. Other salt samples had insufficient amount of iodine. The UI assays showed iodine deficiency in the population, especially in the remote regions of Turkmenistan.
2002	UNICEF consultants, G. Gerasimov and F. van der Haar both of ICCIDD, visited Turkmenistan and recommended increasing the level of salt iodization to that of the internationally accepted normative. The Ministry of Health, in agreement with the State Standard Service and State Consortium (January 2003), responded with increasing the level of salt iodization from 23±11.5 mg/kg to the internationally recommended level of 40±15 mg/kg. Also the State Customs forbade import of non-iodized salt.
2002	A resolution of Ministry of Health and Medical Industry of Turkmenistan 61 (6.05.2002) “On constant laboratory control and monitoring of iodized salt quality” was adopted. In response the State Sanitary Epidemiological Inspection (SEI) strengthened the laboratory oversight and monitoring of iodized salt. With UNICEF support all provincial (velajat) SEI were equipped with laboratories for quantitative iodine measurement in salt by titration and personnel training in this technology.
2003	Resolution of Khalk Maskhatly 35 (14.08.2003) extended the mandate of Turkmenistan President decree “On free supply of Turkmenistan population with electricity, natural gas, water and edible salt” up to 2020. The decree expanded the mandate to distribute iodized salt free of charge to the population until 2020.
2003	The Turkmenistan President adopted Decree 6351 (22.08.2003) “On Exemption of salt plant “Guvlyduz” from taxes”. By exempting the salt producer from all taxes and duties, the Turkmenistan government ensured continuous production of iodized salt and its free distribution. In 2003 “Guvlyduz” salt plant supplied 32,200 tones of iodised salt for domestic needs, or more than 5 kg per person per year.
2003	In a high level International Meeting for the Sustained Elimination of Iodine Deficiency Disorders in Beijing (15–17 October 2003), attended by 27 countries and 10 international agencies and organizations, Dr. Annamurad Orazov, the head of State Sanitary Epidemiological Inspection of the Ministry of Health, announced that Turkmenistan reached USI and is close to elimination of iodine deficiency among its population.
2003	The Ministry of Health requested UNICEF assistance to conduct a national survey of iodine nutrition. With the support of UNICEF consultant and ICCIDD Regional Coordinator, G. Gerasimov, the MCH Center Director, Ch. Nazarov, designed a 30 cluster representative survey of iodine nutrition.

2004	UNICEF supplied new equipment for UI laboratory to the MCH Center and conducted training for national specialists with the support of UNICEF consultant and ICCIDD Director, L. Ivanova.
2004	The National monitoring representative survey was conducted in January–March 2004 in 30 randomly selected schools in all velajats of Turkmenistan: 879 schoolchildren were surveyed by specialists of MCH Center. In addition, 900 salt samples were tested for iodine by specialists from local SEIs. Normal iodine nutrition in the population was confirmed by urinary iodine determination, documenting the median urinary iodine value to be 170 mcg/l, compared with the optimal range of 100 to 300 mcg/l. There was only a minimal discrepancy in the status of iodine nutrition between the different velajats of Turkmenistan with the highest median urinary iodine level of 232 mcg/l in Balkan velajat, close to iodized salt production site and the Caspian Sea, and with the lowest level of 156 mcg/l in Dashoguz velajat.
2004	Turkmenistan government prepared an Official Report on the Achievement of Elimination of Iodine Deficiency in Turkmenistan through Universal Salt Iodization. This report requested external assessment of its national program of elimination of iodine deficiency. It was submitted to UNICEF, WHO and ICCIDD.
2004	C. Pandav and L. Locatelli-Rossi, both ICCIDD Directors, visited Turkmenistan on behalf of the Network for sustainable elimination of IDD to provide independent assessment of the history and current status of the National Iodine Deficiency Disorders Elimination Program in Turkmenistan and the ongoing national efforts towards optimum iodine nutrition with special emphasis on universal salt iodization and to sustainability. After careful review, both experts recommended that a Certificate should be given to the Government of Turkmenistan for achieving optimal iodine nutrition through USI and Sustaining Elimination of IDD
November 2004	UNICEF Regional Director Maria Calivis arrived in Turkmenistan to congratulate the government on the country's achievement of USI. She presented Turkmenistan with an award on behalf of UNICEF, the World Health Organization (WHO) and the International Council for Control of Iodine Deficiency Disorders (ICCIDD) in recognition of this achievement. ■

Iodine Deficiency Disorders in the Urban Areas of Tashkent, Uzbekistan

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Iodine deficiency not only causes endemic goiter and cretinism but also a wide spectrum of other disorders like deaf mutism, mental and physical retardation and various degrees of neuromotor dysfunction, commonly known as IDD.¹ Uzbekistan has been an iodine deficient region and more than 50 % of its population have goiter.²

In 1998, the goiter prevalence rates in Tashkent, the capital of Uzbekistan, were 64.9% and 53.4% among the children and adults respectively.² According to the WHO classification, an area is classified as severely iodine deficient if more than 30% of its population suffer from goiter.^{3,4} Thus, on the basis of goiter prevalence, Tashkent has been identified as one of the endemic areas of severe iodine deficiency.

Considering that there were no recent data available for Tashkent, a city with 2.5 million inhabitants, the present study was conducted with the objectives to assess the 1998 prevalence of IDD and again 5 years after the 1998 preliminary survey in Tashkent and its suburban areas by estimating the iodine content of consumer salt in this population.

Subjects and Methods

The study was conducted in Tashkent and its suburban areas. Schoolchildren 6 to 12 years old in two secondary schools from each of the four zones: East, West, North, and South were selected for study. They were identified from school records for inclusion in the study. The children were selected because of their high vulnerability to IDD, their representing all children of this age group in the community and their easy accessibility.⁴ Also a comparative study was carried out in each zone among adults 20 to 40 years old to assess the impact of IDD on them. All participants were briefed about iodine deficiency and the tests to be undertaken for the study. 2,430 children and 231 adults were examined for IDD. This survey was carried out and sponsored by Merck KgA Co (Germany).

The clinical examination of goiter was done by digital palpation by an expert endocrinologist from the Institute of Endocrinology of Uzbekistan. The

goiter size was graded according to the criteria of WHO/UNICEF/ICCIDD.⁴ The sum of the percentages of goiter grade I and grade II was used to indicate the total goiter rate (TGR) in the study population.

Spot urine samples were collected from nearly 12% of the subjects. Each urine sample was collected in a wide mouth, screw capped plastic bottle. The urine iodine was determined by the wet digestion method⁵ at the Laboratory of Thyroid Pathophysiology at the Institute of Endocrinology in Tashkent. The results were expressed as mcg of iodine/dL of urine.

The salt iodine content was measured on 30 salt samples from each zone. The salt samples were collected from the households of the children in the study. Each subject was asked to bring about 10 g of salt being used from home. The iodine content of salt was measured by the standard iodometric titration method⁶ at the Laboratory of Thyroid Pathophysiology at the Institute of Endocrinology in Tashkent.

Results

A total of 2,430 schoolchildren and 231 adults were included in this study. The total goiter prevalence rate was found to be 49.6% among children and 41.6% among adults in 2003. The prevalence of goiter was found to be higher among females as compared to male adults but the gender difference was not statistically significant.

Urine samples were collected for determination of the median iodine content in urine. 41% of the children studied had median urinary iodine <20.0 mcg/dL; 8.3% had 20.0–49.9 mcg/dL; 14.2% had 50.0–99.9; and 65.6% had >100.0 mcg/dL. The median urinary iodine level of all subjects was 59.4 mcg/dL.

Analysis of 190 salt samples revealed that uniodised salt was consumed by 21.6 % of the households. 11.6% of the salt samples had less iodine than the recommended level of 15 ppm of iodine and only 66.8% of the households were consuming salt with iodine content 15–55 ppm.

Discussion

A region is classified as endemic for iodine deficiency if more than 5% of school children (6–12 years) suffer from goiter.⁴ The present study found a total goiter prevalence rate of 49.6% and 41.6% among children and adults respectively. The earlier data from our National IDD Survey in 1998² showed the goiter prevalence rates of 64.9% and 53.4% among the children and adults respectively in Uzbekistan. Despite slight improvement in the goiter prevalence rates the difference is not statistically significant. The lack of improvement in the iodine nutrition in Uzbekistan may be attributed to inadequate iodised salt since the data showed only 51% of the population had access to iodized salt. Similarly prevalence of iodine deficiency can be seen in the greater Tashkent region. In our opinion the lack of progress is largely due to the lack of a strong salt iodization program in the Uzbekistan national IDD program.

According to WHO⁴ recommendations median urinary iodine is the index to assess iodine deficiency in a population. The normal value must be more than 100 mcg/dL. In the present study the population median urinary iodine value among the children was 59.4 mcg/L indicating iodine deficiency. A lack of improvement observed by the present study confirms

the result of a pilot survey carried out by UNICEF (School Day Action) conducted in 2003 measuring the salt iodine in the households of Uzbekistan during one day. The study found that nearly 51% of the Tashkent population was using iodized salt, but data varied from region to region.

In conclusion, our present study found little decline in goiter prevalence and little improvement in the median urinary iodine values. Despite the appearance of adequately iodized salt in the markets only 66.8% of the population consumed iodized salt. Our study confirmed that the endemic IDD is still far from eliminated in the metropolitan area of Tashkent and in need of more aggressive implementation of the salt iodization program. ■

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2004 Report on Activities in the Region of Eastern Europe and Central Asia

BY GREGORY GERASIMOV, M.D., ICCIDD DIRECTOR AND REGIONAL COORDINATOR

Executive summary

ICCIDD is playing an important role in the Region to reach the 2005 goal in collaboration with UNICEF, WHO and national partners. Main achievements of ICCIDD in the Region in 2004 include:

1. Elimination of iodine deficiency in Turkmenistan: ICCIDD (G.Gerasimov, L.Ivanova) provided technical assistance to national assessment of iodine deficiency in early 2004 (epidemiological design, laboratory and epidemiological training, support to

analyzing of data and report writing). On request from UNICEF and WHO regional offices, ICCIDD provided a team for independent verification (C.Pandav, L.Locatelli-Rossi), and prepared final report. Turkmenistan became the first country in the Region (and fourth—globally) where elimination of iodine deficiency has been internationally verified.

2. Capacity building in countries of Eastern Europe and the Caucasus. ICCIDD (G.Gerasimov) assisted in organization and two other ICCIDD directors (F. van der Haar and L. Ivanova) participated as facil-

- itators in UNICEF sponsored workshop “Strengthening Strategies for the Elimination of Micronutrient Malnutrition” (Ankara, Turkey, 13–17 September, 2004) for 8 countries in the Region (Russia, Ukraine, Belarus, Moldova, Armenia, Azerbaijan, Georgia and Bulgaria). ICCIDD developed special resource CD ROM for the participants of the workshop with important sources in English and Russian and donated them CD with a book “Towards the Global Elimination of Brain Damage Due to Iodine Deficiency”.
3. **Progress evaluation in Armenia and Azerbaijan.** On request of UNICEF and national government ICCIDD is assisting in preparation to national survey of iodine deficiency in Armenia that is planned for 2005 as well as progress evaluation leading to possible verification of optimum iodine nutrition. On UNICEF request in October 2004 I have conducted evaluation of national IDD elimination program in Azerbaijan. This country made significant progress and is close to reaching the 2005 goal.
 4. In **Russia** ICCIDD is cooperating with Public Coordination Council for IDD Elimination and UNICEF. The main challenge is to ensure adoption of legislation on USI that was re-submitted in the Russian parliament in 2004. ICCIDD participated in Round table discussion in Parliament that supported the concept of legislation and ICCIDD Regional Coordinator was appointed into the Working group under Parliament Health Committee.
 5. ICCIDD provided substantial assistance to IDD elimination program in another “problem” country — **Ukraine**. On UNICEF request, ICCIDD (G. Gerasimov) in collaboration with national partners conducted cost-benefit analysis of IDD elimination in Ukraine (using “Profiles” model). ICCIDD directors (G. Gerasimov and L. Ivanova) participated in special IDD workshop within Second National Bioethical Congress (October, 2004) and made presentations. Resolution of this Congress called for introduction of USI in Ukraine. Starting from October 2004 ICCIDD Director L. Ivanova took 12 months assignment in UNICEF office in Ukraine as nutritional adviser responsible for IDD elimination program.
 6. Former ICCIDD Director J. Egbuta is currently working as an area nutritional adviser with UNICEF office for **Central Asia Republic and Kazakhstan (CARK)**. Several ICCIDD Directors (F.

van der Haar, L. Locatelli-Rossi) participated in monitoring workshop for countries in this area that was sponsored by UNICEF and CDC.

7. ICCIDD is maintaining the regional web-site by constantly updating it with sources in Russian and English languages. Translation of selected chapters from the book “Towards the Global Elimination of Brain Damage Due to Iodine Deficiency” into Russian is currently in process. They will be posted on the web-site and published in 2005.
8. As a result of coordinated activities, the proportion of households consuming iodized salt in countries of the Region increased from 26% (2001) to 48% (2003).

Introduction

With the World Fit for Children 2005 goal (sustainable elimination of iodine deficiency through USI) looming ahead, there is still a long way to go for countries of Eastern Europe and Central Asia (EE&CA).

Currently, less than 50% of the households in the region use iodized salt. Unfortunately this means that millions of new born children are not protected from the consequences of iodine deficiency. Most of these children are born in Russia (1 million/year; 29% iodized salt use) and Ukraine (260,000/year; 31% iodized salt use), most populous countries in the region (144 and 48 million, respectively).

Recently, UNICEF and ICCIDD made a projection of the national situations *vis a vis* the progress towards the 2005 goal in each country.

- Currently, USI (>90% of households using iodized salt) has been achieved in 2 countries (Turkmenistan and Armenia). In Turkmenistan all criteria for sustainable elimination of iodine deficiency have been met, as confirmed by an external assessment team.
- In another 3 countries, elimination of iodine deficiency by end of 2005 is quite realistic (Kazakhstan, Georgia, Azerbaijan). Significant progress has been achieved in these countries over last few years and currently 80–90% of households use iodized salt.
- The time-frame in the remaining countries to achieve the goal (Kyrgyzstan, Uzbekistan, Tajikistan, Belarus, Moldova) is projected to last into 2006–2007, while in Russia and Ukraine perhaps longer time may be required, depending on the political will to legislate USI.

This report provides update of ICCIDD activities in the Region and progress achieved in IDD elimination in 2004.

Elimination of iodine deficiency in Turkmenistan

In 2004 ICCIDD played a key role in verification of progress towards optimum iodine nutrition in Turkmenistan. It should be noted that ICCIDD provided support to this country from the initial assessment of iodine nutrition in 1994 up to external evaluation of optimum iodine nutrition that has been reached in this country through the effective program of universal salt iodization (USI).

Starting from 1994 Turkmenistan government is working towards prevention and elimination of iodine deficiency in close cooperation with ICCIDD and UNICEF. First epidemiological IDD survey in Turkmenistan was performed with ICCIDD support in 1994 and showed mild and moderate level of iodine deficiency. Medial urinary iodine (UI) level of schoolchildren in Ashgabat was 75 mcg/l and 37 mcg/l in Dashgovuz city while goiter prevalence in schoolchildren was 20% in Ashgabat and 64% in Dashgovuz. Based on these data, President of Turkmenistan in 1996 passed a Decree and established universal mandatory iodization of all salt for human consumption with potassium iodate. Epidemiological IDD surveys were carried out in Turkmenistan in 1990 and 2000 and showed that in spite of USI in place median UI remained below 100 mcg/l, indicating the persistence of iodine deficiency. Based on ICCIDD and UNICEF recommendations, the Ministry of Health in 2002 passed a Resolution to increase level of salt iodization from 23+/-11 to 40+/-15 ppm from January 1, 2003. This increase of iodine content in salt helped to optimize iodine nutrition and subsequently eliminate iodine deficiency.

National Representative Survey of Iodine Nutrition in Turkmenistan

In November 2003 at invitation of government of Turkmenistan and UNICEF I have visited this country (this was my 6th visit to this country beginning from 1994). The purpose of this visit was to assist the government in preparation to partnership evaluation of IDD elimination program; to formulate the requirements for country verification as achieved USI; to design and work on the population based IDD/USI survey, including teaching the local staff for sampling and interviewing methods, analysis of data, report writing. During this mission a detailed plan for representative survey has been developed.

Based on these recommendations in January–March 2004 a national epidemiological representative 30 cluster school-based survey of 879 schoolchildren aged 8–10 was carried out covering all administrative districts of the country (velajat). Dr. Ludmila Ivanova, ICCIDD Director, visited Turkmenistan in January 2004 and assisted in establishment of national laboratory for urinary iodine (UI) determination. She also provided external quality control of UI assessment.

Results of the survey confirmed adequate level of iodine nutrition of Turkmenistan population on the entire territory of the country. This was achieved by universal availability of quality iodized salt that was found in 100% of the surveyed households. Median urinary iodine level (170 mcg/l) for the national sample was in the safe range (100–300 mcg/l) recommended by WHO, UNICEF and ICCIDD, and proportion of samples with iodine levels below 100 and 50 mcg/l were significantly below recommended thresholds.

In April 2004 I visited Turkmenistan again to assist government of Turkmenistan and UNICEF in preparation of final report of the survey and request for external evaluation of progress in reaching the goal of elimina-

Indicators	Goal	Turkmenistan Results (2004)
Urinary Iodine Levels:		
Median (mcg/l)	100–300	170
Proportion of samples below 100 mcg/l	<50%	13.3%
Proportion of samples below 50 mcg/l	<20%	4.6%
Salt Iodization:		
Proportion of households consuming quality iodized salt	>90%	100%

Table 1. Goals and indicators of elimination of iodine deficiency in Turkmenistan

tion of iodine deficiency. Reports and other documents related to Turkmenistan assessment were prepared.

Based on the survey report, the government of Turkmenistan requested external verification of progress in reaching the goal of elimination of iodine deficiency in this country. This request was sent through UNICEF office in Turkmenistan to WHO, UNICEF, ICCIDD and Network for Sustainable Elimination of Iodine Deficiency.

ICCIDD Evaluation Mission (4–15 October 2004)

The following procedure was suggested by the Network for Sustainable IDD elimination for evaluation of progress in optimum iodine nutrition for the region:

- Country requests for external assessment to WHO, UNICEF and ICCIDD,
- Focal points of WHO, UNICEF and ICCIDD discuss and suggest consultants to the country (maximum 2) and timeline,
- Funding, available in UNICEF HQ, will be made available directly to the country UNICEF office, country office hires consultants and assessment is carried out,
- Positive outcome is confirmed with a letter from WHO and UNICEF Regional Directors and ICCIDD Chair to the country leadership.

In consultations with A. Timmer (UNICEF) and A. Robertson (WHO) it was agreed that ICCIDD will take a lead in the evaluation process. Two ICCIDD Directors (**Chandrakant S Pandav** and **Lorenzo Locatelli-Rossi**) were appointed to conduct independent evaluation. The objectives of their mission were to provide independent assessment of:

- i) The history and present situation of National iodine Deficiency Disorders Elimination Program in Turkmenistan
- ii) The ongoing national efforts towards optimum iodine nutrition with special emphasis on universal salt iodization
- iii) The Progress made in elimination of Iodine Deficiency Disorders in Turkmenistan with special attention to sustainability

The evaluation team considered the following components of the program:

- i) Program policy and Management
- ii) Salt Iodization
- iii) Health Information and Education
- iv) Monitoring and Quality Assurance

Due attention was also given to the role of International collaboration and experience exchange. Information was collected by interviewing existing stakeholders at their respective place of work, field visits to Guvlyduz Salt Plant, State Sanitary Epidemiology Service, visits to shops and markets. In addition, all the relevant existing reports and documents were also reviewed.

The Evaluation Mission concluded in their report that Turkmenistan “has achieved the goal of elimination of iodine deficiency among its population. Adequate level of iodine nutrition was achieved through effective program of universal salt iodization and amount of households consuming quality iodized salt reached 100%”.

Reaching the Goal

UNICEF Regional Director Maria Calivis began her first visit to Turkmenistan on November 2, 2004 when she met H.E. Mr Ovezgely Ataev, Chairman of the Medjlis (Parliament), to congratulate the Government of Turkmenistan on achieving universal salt iodization (USI). Ms Calivis presented Mr Ataev with an award on behalf of UNICEF, the World Health Organisation (WHO) and the International Council for Control of Iodine Deficiency Disorders (ICCIDD) in recognition of the Government’s success. Commenting on the award, M. Calivis, said: “USI is the most effective way to protect children from iodine deficiency—the world’s leading cause of preventable mental retardation and brain damage. So this award is a major milestone for Turkmenistan. This is the first country in Central Asia to reach this target. I congratulate the government for its efforts on USI. Such investment in children is an investment in the future, and is to be commended.”

Capacity Building Workshop for Countries of Eastern Europe and the Caucasus “Strengthening Strategies for the Elimination of Micronutrient Malnutrition” (Ankara, Turkey, 13–17 September, 2004)

In 2004 ICCIDD played a major role in preparation and conducting of the capacity building workshop for country teams from Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Moldova, Russia and Ukraine. National teams consisted of National coordinator (program manager), participant with communication skills (NGO, media, UNICEF staff), participant from government food control/inspection authority, participant

from salt industry (head of salt association where it exists, or managing person from main salt producer or supplier), participant from flour millers/bakeries associations or major flour producer, UNICEF staff member overseeing IDD elimination program. Several national ICCIDD focal points were among the workshop participants

The aim of the workshop was to strengthen the capacity of participants to support current and planned national efforts for the elimination of micronutrient malnutrition with particular focus on iodine and iron and salt/flour fortification. The workshop also emphasized approaches and actions that could strengthen the development of national ownership and sustainability of micronutrient elimination policies, including support to creation of national alliances.

UNICEF Regional Office contracted me to manage the workshop (communication with national partners and country UNICEF Offices, selection of participants, development of the agenda, etc.). Two other ICCIDD Directors (F. van der Haar and L. Ivanova) participated in the workshop as facilitators.

The workshop helped to bring participants to a similar level of understanding about the goals and strategies to combat micronutrient malnutrition and the programmed efforts and activities required for reaching sustained success in its elimination with specific emphasis on IDD and salt iodization. Working in group sessions with facilitators, participants were able to identify country specific weaknesses in current strategy/activities and agree on programmatic follow up actions with specified roles and responsibilities and timelines for achievement. They were also able to strengthen the use of effective and strategic communication in USI and other micronutrient programs. The workshop was successful in strengthening participants' strategic planning skills, for better recognition of the strengths and weaknesses of existing plans. It helped to increase national ownership and oversight to ensure the achievement of the goal of elimination of iodine deficiency. Each country group either represented existing national IDD/USI Committee or Alliance (Azerbaijan, Armenia, Bulgaria and Russia) or a nucleus for creation of such alliance/coalition in future.

For this workshop and future meetings ICCIDD developed resource CD-ROM with most important information on iodine deficiency (with some papers on iron and vitamin A deficiency). It contains important resources (in English and Russian languages) on general aspects of micronutrients, background infor-

mation, assessment and monitoring, program communication, supplementation and fortification. ICCIDD sponsored production of 50 CDs for the participants and presented them also with free CD of the book "Towards the Global Elimination of Brain Damage due to Iodine Deficiency". 50 CDs were ordered and distributed among the participants of this workshop.

ICCIDD Satellite meeting to European Thyroid Association Congress (Istanbul, 18 September, 2004)

This meeting was organized by ICCIDD Regional Coordinator for West/Central Europe **Prof. Aldo Pinchera** with participation of national ICCIDD representatives in countries of the region. Initial plan to bring more national representatives from countries of Eastern Europe and the Caucasus was modified due to change of the venue of UNICEF training workshop. However, several ICCIDD focal points from EE&CA region were able to attend this Satellite meeting.

The meeting was addressed by **Prof. Jack Ling**, Chairman of ICCIDD, who spoke about global issues of IDD elimination and challenges ahead. Specifically, he mentioned the role of ICCIDD and national coalitions in sustaining elimination of iodine deficiency.

Prof. G. Gerasimov, ICCIDD Regional Coordinator for Eastern Europe and Central Asia, (also on behalf of **A. Timmer**, UNICEF) made an overview of progress in IDD control and elimination in the region of Central and Eastern Europe, the Commonwealth of Independent States and the Baltics. Over past 3 years countries in the region made significant progress in elimination of IDD. The proportion of households consuming iodized salt increased from 26% in 2000 to 48% in 2003. Several countries in the region have reached optimal iodine nutrition and more will reach this goal by 2005–6.

Dr. E. Troshina, ICCIDD focal point in Russia, made an overview of current status of IDD control in this country. Recent (2003–2004) Thyromobil studies in 10 regions of the European Russia confirmed persistence of iodine deficiency in urban as well as in rural regions. Household consumption varied from 5 to 50% (25–30% on average). Legislation on universal salt iodization (USI) was tabled to the State Duma (Parliament) but its adoption needs serious attention and commitment on the part of the government.

The meeting was extremely important and successful in teaming up ICCIDD national representatives of West/Central and Eastern Europe, updating information on situation in the countries of these regions and in gearing progress towards sustainable optimal iodine nutrition. I have prepared and circulated short Report of this meeting.

Progress achieved in countries of the region in 2004

Russia

In 2004 ICCIDD activities in Russia were aimed at promotion of USI legislation and raising awareness among parliamentarians, government officials, health care providers, other professionals groups through the development of targeted advocacy, development and distribution of information, education and communication (EIC) materials and creation of coalition of most important stakeholders. ICCIDD also stimulated networking between interested partners (salt producers, main wholesalers, regional officials) in order to increase the proportion of households that consume iodized salt.

The bill “On IDD Prevention” was submitted to the Duma (Lower House of the Russian Parliament) in October 2003. According to the procedure, the bill was sent out for comments to all 89 regions of the Russian Federation (to governors and heads of local legislative assemblies), to the Council of Minister and relevant governmental agencies and institutions. The overwhelming majority of Russian regions (more than 65) supported the concept of draft Law. The Russian Academy of Medical Sciences and Endocrinology Research Center also supported the bill. However, the Council of Ministers objected the idea of legislation on USI because the law supposedly limits freedom of choice and free entrepreneurship. Safety of iodized salt was also questioned.

ICCIDD Regional Coordinator made presentation on the Round table discussion on IDD prevention sponsored by Duma Health Committee, Ministry of Health, Russian Academy of Medical Sciences and UNICEF to discuss the legislation. The meeting overwhelmingly supported the legislation

amid objections from some “experts” closely associated with producers of some nutritional supplements.

ICCIDD and other members of Public Coordination Council (PCC) for IDD Elimination continued advocacy for legislation on IDD elimination on different levels. I was appointed as member of the Working group under Duma Health Committee that made necessary amendments to the Bill. On the meeting in Kremlin with Minister of Health and Social Development and Chair of State Duma Health Committee President V. Putin supported the need for special law on IDD prevention. In current political environment this means a strong message to the government to support the bill and to the State Duma—to accelerate adoption of this law. While there is a growing political will to adopt legislation on IDD prevention through USI, further advocacy efforts are needed for expedited adoption of the legislation.

ICCIDD maintains very close relation with Russian salt producers and major salt dealers that have major stake in production, import and supply of iodized salt. ICCIDD participated in a working meeting of iodized salt producers and suppliers in Irkutsk (7 July 2004). The main objective of the meeting was to reinforce the commitment of salt producers and suppliers to saturate the Russian market with iodized salt, to secure their support for the adoption of federal law “On Prevention of IDD”. The meeting gathered 25 representatives from 5 (out of 6) main producers and several major suppliers of iodized salt from Russia and Ukraine. All of them are currently producing iodized salt and have enough capacities to iodize all salt for human consumption (i.e. retail trade and food industry).

All salt producers and suppliers supported the adoption of federal law “On Prevention of IDD”. In the Resolution of the meeting drafted with ICCIDD support they appealed to the President of the Russian Federation, the State Duma deputies, the Chairman of the Russian Government to facilitate adoption of this important legislation at the national level which would govern USI as a main method aimed at IDD elimination.

The overall increase of iodized salt supply in 2004 was 17%, the largest since 2000. However, this

1997	1998	2000	2001	2003	2004
25,000	100,000	131,000	136,000	133,500	157,000

Table 2. Supply production and import of iodized salt in the Russian Federation in 1997–2004 (tones)

amount still covers only 31.4% of potential demand of retail trade and food industry in Russia in iodized salt.

Plans for 2005

Recent political developments significantly increased the chance for adoption of legislation on IDD prevention through USI in Russia in 2005. If approved by both houses of the parliament and signed into law by the president, this legislation will enable supply of only iodized salt to the market and drastically improve iodine nutrition of population.

However, most likely the opposition forces to this legislation will increase their activity, including in the media, to discredit USI. It is of vital importance to continue advocacy for legislation that envisage mandatory iodization of major types and sorts of salt for human consumption. On the parallel track, monitoring system should be strengthened to track both supply and impact of iodized salt.

The main goal of 2005 activities is to reach the adoption of legislation on IDD prevention through USI by the State Duma and to continue efforts to increase availability and consumption of iodized salt. In the 2005 project it is important to consolidate support from the main stakeholders (Public Coordinating Council for IDD Elimination) and reach the critical mass for adoption of legislation on IDD prevention through effective advocacy and communication campaign

Ukraine

In 2004, ICCIDD, in collaboration with UNICEF and national partners conducted a USI cost-benefit analysis based on “Profiles” model.

Elimination of iodine deficiency in Ukraine offers the potential to increase economic productivity by 169.8 million hryvnas (US\$ 32 million) over the next five years, helps to booster the national economy by lowering health care costs and increasing the productivity of labour. Moreover, almost 40 thousand newborns will be saved from the consequences of iodine deficiency (mental retardation) due to iodine deficiency. However, if no measures are taken, the potential loss of future productivity could amount up to 651.7 million hryvnas (US\$ 122.3 million). Costs of salt iodization over next 5 years (11.9 million hryvnas) are considerably lower than expected benefits. The cost : benefit ratio of 1:14.2 is an extremely strong argument for the adoption of legislation on USI in Ukraine in 2004. Cost of an alternative method of iodine prophylaxis with iodine tablets could amount up to 2 billion hryvnas over next 5 years.

Thus, the “Profiles” assessment provided with economic justification to promote enacting mandatory legislation on USI. ICCIDD provided support to Ukrainian NGO in drafting legislation on USI. The draft law has been developed but its promotion was delayed due to heated political events in Ukraine in November–December, 2004.

In October 2004 ICCIDD directors (G. Gerasimov and L. Ivanova) participated in special IDD workshop within Second National Bioethical Congress and made presentations. Resolution of this Congress called for introduction of USI in Ukraine. However, discussion on the Congress revealed that medical community in Ukraine is not fully aware of negative consequences of iodine deficiency and of USI benefits. Safety of iodine and potassium iodate was questioned. ICCIDD (G.Gerasimov) prepared a

Year	Status Quo Losses*	Expected Productivity Gains*	Number of Newborns Saved from Mental Deficiency	Cost of IDD Elimination Through Salt Iodization*	Cost Benefit Ratio
2004	119.4	0.0	0.0	0.0	—
2005	124.9	15.7	3,677	1.2	1:13.0
2006	130.3	32.6	7,677	2,381	1:15.1
2007	135.8	50.9	11,999	3,586	1:14.1
2008	141.3	70.6	16,643	4,772	1:14.7
Total	651.7	169.8	39,995	11,939	1:14.2

* Millions UAH

Table 3. Summary Cost Benefit Analysis of 5 Year Universal Salt Iodization Program in Ukraine (conducted with ICCIDD support)

special overview “On safety of iodine and iodized salt” that was published in Russian medical journal and distributed on this and other meetings.

Starting from October 2004 ICIDD Director L. Ivanova took 12 months assignment in UNICEF office in Ukraine as nutritional adviser responsible for IDD elimination program.

Plans for 2005

Recent political changes in Ukraine could be beneficial for adoption of pending legislation on USI. However, this would require creation of national partnership (alliance) for elimination of iodine deficiency and further high level advocacy for legislation on USI. Communication campaign in support of USI should be conducted. ICCIDD will provide all necessary support to national program in Ukraine.

Azerbaijan

In October 2004 at invitation of UNICEF and government of Azerbaijan I visited this country to conduct external evaluation of national IDD elimination program. Over past 3 years Azerbaijan made a very significant progress in IDD elimination and has a real chance to reach the goal IDD elimination by end of 2005.

National Committee on Nutrition and Micronutrient (dealing with IDD elimination program) was organized with representatives from different government ministries, health organizations, NGOs, salt producers and other stakeholders. After introduction of legislation on USI (2002) several regulatory documents were developed and approved to facilitate process of salt iodization. As a result of very effective cooperation between the government, non-government organizations (NGOs), private sector, medical community, media and other partners, consumption of iodized salt by Azerbaijani population significantly increased. Recent community based survey (2004) showed that on average up to 85% of households use iodized salt a significant increase over the 2000–2002 figure (42–44%). However, there are significant problems with quality of locally produced iodized salt due to inadequate salt iodization techniques and lack of internal quality control on the production level.

Meetings with main stakeholders, including representatives of various government ministries (economical development, education, customs, standard, statistics, etc.), Deputy Minister of Health,

other MoH ministerial officials, salt producers, health and nutrition specialists, representatives of civic organizations, showed high level of commitment to attain the goal of virtual IDD elimination by 2005. Creation of National Coalition for Sustainable IDD Elimination composed of senior officers of public, private and civic sector organizations of various sectors could help to overcome existing problems and boost IDD elimination efforts.

However, successful elimination of iodine deficiency and enforcement of national legislation on IDD prevention requires better coordination between concerned government agencies, creation of rigorous quality control system on the production level, effective monitoring system to track production, import and distribution of iodized salt as well as its impact on health of the population. Mass media, civic groups and organizations (women and consumer’s NGO, schoolchildren and their families) should be better involved in advocating for elimination of iodine deficiency and in monitoring of iodized salt on the community level (schools, households). Based on results of the mission I have provided recommendation to UNICEF and Government of Azerbaijan which issues of advocacy and communication, improvement of iodized salt production and monitoring system.

Plans for 2005

ICCIDD will continue to support national program in Azerbaijan, including the Workshop on sustainability of national USI monitoring system. Regional ICCIDD communication consultant will provide support to strengthening of communication program. ICCIDD will help to identify a consultant (from Russia or Ukraine) to assist with improving of quality of iodized salt production. Upon delivery of equipment and supplies, ICCIDD will help with installation of laboratory for urinary iodine determination and provide training of local staff.

Armenia

In 2004 the government of Armenia adopted decree on USI. Eventually, Armenia de facto has USI from 1999, but this was not legislated. Government of Armenia with UNICEF and ICCIDD support is planning to conduct in 2005 national survey of iodine nutrition. In March 2005 I am planning to visit Armenia to launch the survey. ICCIDD will conduct Situation analysis of IDD elimination pro-

gram in Armenia, develop Field Manual for conducting assessment of iodine nutrition in Armenia, conduct training of field teams, assist in drafting final report of national assessment of iodine nutrition in Armenia with recommendations for further steps of the verification process.

Program initiatives

Regional website

In 2004 bilingual (Russian/English) ICCIDD Regional Web Site (www.webiodine.com) was updated with new information. This website continues to be an important source of information for specialists and general public in the region and received considerable recognition.

Information from the website was used for creation of bilingual Micronutrient Resource CD-ROM that was distributed on workshop and meetings.

Bulletin

ICCIDD continued to support annual Bulletin of Public Coordination Council for IDD elimination in Russia. Articles from IDD Newsletter were translated into Russian for the Bulletin. This Bulletin has wide circulation in Russia and elsewhere and is also posted on www.webiodine.com

Publications

Main publication in 2004 related to IDD/USI:

1. Chapters in the book "Towards the Global Elimination of Brain Damage Due to Iodine Deficiency" Oxford University Press, New Delhi, 2004
 - 4.1. – IDD in the Russian Federation (p.247–255)
 - 8.2. – IDD in Eastern Europe and Central Asia (p. 506–513)
2. G. Gerasimov On safety of iodine and potassium iodate. *Klin. Thyroidol.* 2004, N3, p.22–28 (In Russian)

New Translations

In 2004 ICCIDD Regional Office sponsored translation of selected chapters from the book "Towards the Global Elimination of Brain Damage Due to Iodine Deficiency" Oxford University Press, New Delhi, 2004. These translations will be posted on the regional website and also published in hard copies with support of UNICEF office in the Russian Federation. ■



INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS

THE INTERNATIONAL COUNCIL FOR CONTROL OF IODINE DEFICIENCY DISORDERS (ICCIDD) gratefully acknowledges the support of UNICEF for the IDD Newsletter.

ICCIDD is a nonprofit, nongovernmental organization dedicated to sustained optimal iodine nutrition and the elimination of iodine deficiency throughout the world. Its activities are supported by the international aid programs of Australia, Canada, Netherlands, USA, and also by funds from UNICEF, the World Bank and others.

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bulk by international agencies and by individual mailing. The Newsletter also appears on ICCIDD's website in both text files and PDF. 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 consult the website (www.iccidd.org) or contact Constance S. Pittman, M.D., the interim editor of the Newsletter, at cpittman@uab.edu or at Div. of Endocrinology and Metabolism, University of Alabama at Birmingham, University Station, Birmingham, AL 35294-0012, USA.

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