Kazakhstan

Prior to Independence in 1991, Kazakhstan was a Republic of the USSR. The Soviet historical record offers ample evidence (1) that following a period of quick success in the control of goiter and cretinism during the 1960s, iodine deficiency made a comeback during the 1980s after the central oversight was abandoned and changes in iodine supply and biological status were no longer monitored for central review and decision-making. Emerging in 1991 as a sovereign nation, Kazakhstan started building its own human, administrative and industrial basis for economic development. A Law "On Prevention of Iodine Deficiency Disorders", enacted in November 2003, bans the sale and trade of non-iodized salt, specifies the exclusive use of KIO_3 at 40±15mg iodine per kg salt, and lays down the requirements for packaging and labeling. The national law on IDD prevention has been anchored in a comprehensive set of Decrees and Declarations by the President and Government of Kazakhstan, aimed to promote a healthy population as the basis for national development (2).

The domestic salt producers are AralTuz (80-85% of domestic human consumption), SuzakTuz (±10%) and PavlodarSol (<10%). They conduct regular qualitative checks of production, complemented by quantitative measurements in the company's laboratory. The salt enterprises and traders are united in a National Association of Salt Producers, which represents their interests and reports on production and supply data. Inspections in wholesale and retail markets and mass catering are conducted by Sanitary-Epidemiological Services (SES) under authority of MOH and the results are summarized in obligatory quarterly reports to the Chief Health Inspector. Salt imports, which constitute approx. 15-20 percent of the total food-grade salt, are subject to a mandatory Certificate of Conformity issued by the exporting country's food authority and inspected by the Kazakh Customs, accountable to the Technical Regulation and Metrology Department of the Ministry of Trade and Industry. Prior to release of their products, the domestic companies must operate under the same rule (2).

Two landmark events, both during 2001, are especially noteworthy for their influence on the national IDD elimination effort, namely the Minsk agreement (3) and the Almaty Forum on Food Fortification (4). The Minsk agreement among the Heads of State and Government of the CIS countries expressed the political will for coordinated policy and collaboration in setting uniform national standards for iodization in the salt industry, as well as for inspection of salt quality requirements by the national SES authorities. The Almaty Forum was a summit gathering of multi-sector national delegations from Central Asia and Mongolia who pledged to work together with support of the Asian Development Bank (ADB) and UNICEF on program development and agreements on the rules of engagement for joint collaborative public-private-civic actions to tackle vitamin and mineral deficiencies in their populations by food fortification.

UNICEF started assisting the salt industry (AralTuz) from 1996 onward with technology and KIO_3 in the effort to boost the capacity of iodized salt supplies, but the impact on the markets and consumption in the population was limited: The DHS in 1999, carried out by the Kazakh Academy of Nutrition, showed that less than 30% of the households was using iodized salt (5) and iodine nutrition measurements among reproductive-age women indicated that iodine deficiency was widespread in the population (Table 1).

Region	% Households		UI Concentration in Women of Reproductive Age (µg/L)			
	Iodate only	All iodized salt	Median	% below 20	% below 50	% below 100
North	30.5	34.0	77	12.5	34.1	60.7
East	12.7	21.6	72	7.8	26.8	65.4
South	20.9	24.5	79	7.9	32.6	59.0
West	21.8	25.5	76	4.7	29.9	61.2
Central	43.0	48.2	157	0.5	4.7	25.7
Almaty city	4.2	24.2	97	3.7	18.4	52.2
Total	**23.5**	**29.0**	**95**	**6**	**24**	**53**

Table 1: Use of iodized salt in the households and UI concentrations in women of reproductive age, 1999

Following the Almaty Forum in 2001, the ADB-managed project funded by the Japan Fund for Poverty Reduction (JFPR) for two consecutive periods (6) supported AralTuz and PavlodarSol with iodization and packaging equipment and KIO_3 against one-third reimbursement of costs, which were fully paid back by the industries. During 2005, AralTuz invested in five additional automatic packing machines and new iodization sprayers. The AralTuz production of iodized salt for domestic use was ±65,000 MT in 2006. Initially, the iodized salt production by PavlodarSol remained low and of insufficient quality; only by the end of 2006 did the laboratory records of the Company show that proper salt iodization levels were attained. A new salt producer, SuzakTuz, emerged in 2005 in South Kazakhstan Oblast.

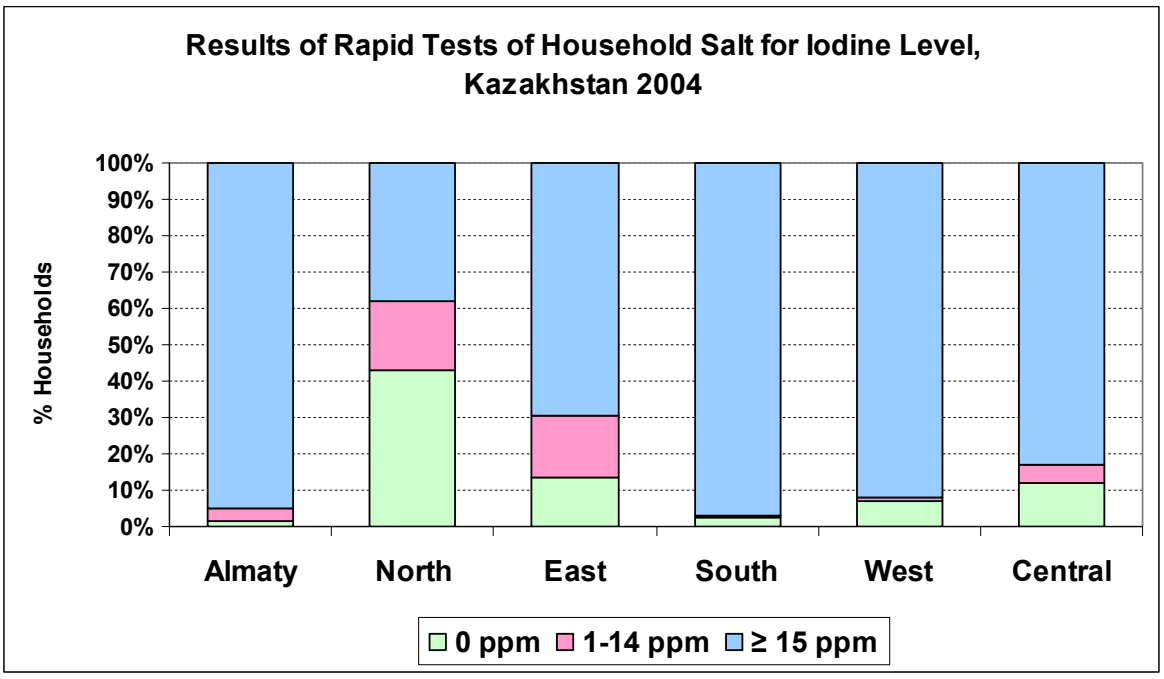

Figure 1: Use of Iodized Salt in Households by Region, Kazakhstan 2004

The domestic salt supply is matched with imports of ±15,000MT/y edible iodized salt from Russia (Iletskol and Tyretskii Solerudnik) and Ukraine (Artemsol). The Kazakh salt companies purchase KIO_3 from a domestic chemical import firm L-Pharma, which sources it usually in the Crimea, Russian Federation (Verkhnyaia Pyshma). The production, import and export data indicate that the iodized salt supply for use by the households and the food manufacturing industries is currently sufficient.

The improvements in iodized salt supply became apparent in a survey by Kazakh Academy of Nutrition during 2004 (7), using the same design of the DHS in 1999. Distinct patterns of iodized salt adequacy and use were apparent in the different regions (Figure 1) related to the supply sources: The prevalence of adequately iodized salt in the households in Northern and Eastern Kazakhstan, serviced by PavlodarSol and imports from Russian Siberia, was significantly lagging behind the progress in the remainder of the country. The purchase by consumers of loose edible salt was still common at that time, and 45% of the households were found to either purchase or store their salt without packaging. Branded salt (i.e., salt purchased and stored in its package) generally appeared to be better and more frequently well iodized than unpackaged salt (7).

The collaborative efforts, stimulated by the continued support from ADB and UNICEF, accelerated during the time of the 1st JFPR project in 2001-2004. High-level oversight of fortification policy became vested in an Interdepartmental Coordination Council on Food Fortification, headed by the Minister of Health and with membership of the two Chambers of Parliament, various Government Departments, the NGO and scientific communities, industry (salt and flour) associations and supportive agencies. The Committee of State SES, headed by the Chief Health Inspector, was made ultimately accountable for technical progress. Data on the production, import, export and supplies of iodized salt became included in the official State Statistical reporting by the Ministry of Health and the National Agency on Statistics.

During 2003-2006, knowledge of the dangers of IDD and the benefits of USI was progressively inserted in the awareness training systems. Technical and methodical learning has been inserted in the basic and ongoing curriculums of the primary health care staff, institutions of academic learning and secondary schools. A comprehensive communications campaign was carried out during 2002-2006 with technical and funding support from ADB and UNICEF, using a multitude of media, materials and channels and with participation of a wide array of national stakeholders orchestrated by the Kazakh Academy of Nutrition. The communications efforts played a significant part in the quick achievement of an uncommonly high awareness and acceptance level among broad layers of the population that iodine deficiency is a significant threat to the intellectual performance of children and that the regular use of iodized salt is an effective remedy for its prevention. The systematic inclusion of civic society in the delivery of the communications drive “at the doorstep” of the population, the keen attention to ensuring that salt industry and its sales agents remain well-informed, the inclusion of food inspection and control bodies of SES and Customs in a series of training workshops, as well as the planned targeting of key politicians with specific information and advocacy were important elements in the communications effort.

Practically all the necessary financing of costs associated with USI and IDD elimination have currently been incorporated in the ongoing expenditures of the private and public organizations involved. The salt producers and traders assimilate the costs of iodization, reflecting it in the price of the product to their

customers. The costs for inspections by SES and Customs authorities are carried in the annual State budgets of the respective agencies, as is the official reporting on national statistics. Research and surveys related to the iodine nutrition situation in the population are requested on a periodic tender basis by the Ministry of Health, with the Kazakh Academy of Nutrition among the contenders. It should be noted that by end 2008, the budget of the Ministry of Health still had an item for iodine supplement entitlements for pregnant women despite Kazakhstan's own evidence that the USI strategy alone is sufficient to ensure adequate dietary iodine supplies in the population.

Starting in 2005, the Committee of State SES under the MOH has been building a national database to consolidate and track key performance indicators of USI for IDD elimination. The obligatory quarterly reports by the Republican SES of the salt iodine inspections, in combination with reports of the Customs Committee on iodized salt imports and the Committee on Technical Regulation and Metrology on the Certificates of Conformity are entered. These data are combined and verified against information supplied by the Salt Producers Association to reflect the complete iodized salt supply situation. During 2006, the Ministry of Health introduced a report form for cases diagnosed in the clinics and hospitals with hypothyroidism or thyrotoxicosis with and without goiter. This data system is under review for being replaced in the future with newborn TSH data from a new national system of newborn screening for congenital developmental disabilities that is currently being introduced. MOH also recognizes the additional need for continuous surveillance of the iodine consumption, connected to iodine nutrition status indicators in pregnant women but a scheme for collecting these data is yet to be developed.

The MICS survey in Spring 2006 (8) tested salt in more than 14,000 households, distributed over 625 clusters which were selected proportionate to population size in the 16 Provinces (Oblasts) and Cities of Kazakhstan. Only 0.3% of the tests showed that no iodine had been added in the household salt and overall, 92.0% of the salt tests were recorded as ≥15ppm. The lowest rate (68.3%) of adequately iodized salt use was noted in Pavlodar Oblast; only 3 other Oblasts score below 90%.

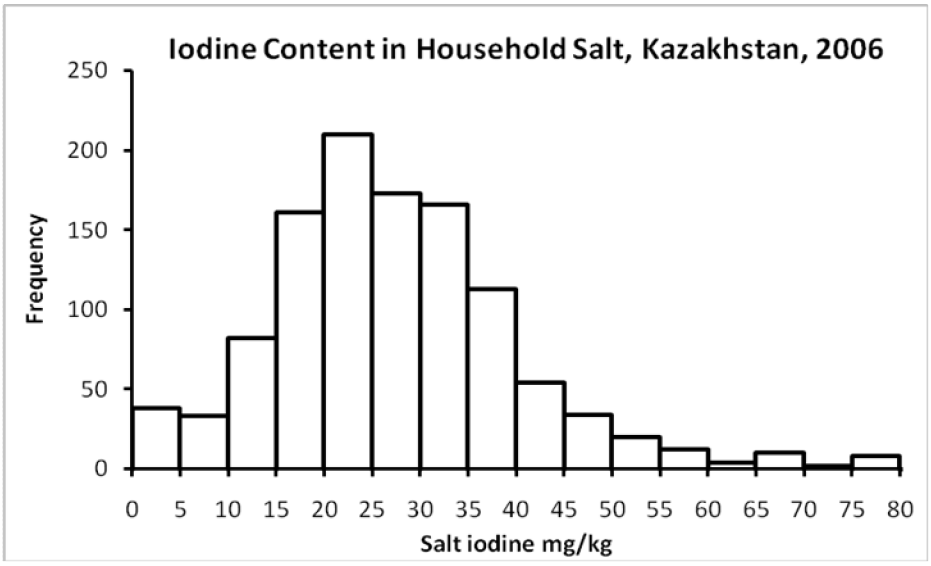

Figure 2: Histogram of iodine content in household salt, Kazakhstan 2006

The MICS was immediately followed by a National Micronutrient Survey (NMS), which used the same design and sampling framework as the MICS and measured salt iodine, food consumption frequencies, blood hemoglobin and urinary iodine in a systematic sub-sample of 5,000 women of reproductive age. The iodine content in household salt (Figure 2) was somewhat skewed to high values and the histogram had a small but discernable shoulder below 10mg/kg. The median salt iodine content was 25.6mg/kg. The majority (90 percent) of salt iodine contents varied from 6.2 to 48.1mg/kg and 86.9% of the households were using salt with 15mg iodine/kg and above. Also the histogram of the UI values of the reproductive-aged women was skewed (Figure 3). The median UI concentration was 249.5µg/L. Of all the UIC measurements, 52.1% were encompassed in the range of 100–300µg/L. UIC <100µg/L was found in 13.6% of women, UIC <50µg/L was found in 5.1%, and 1.8% of the UI in women was <20µg/L.

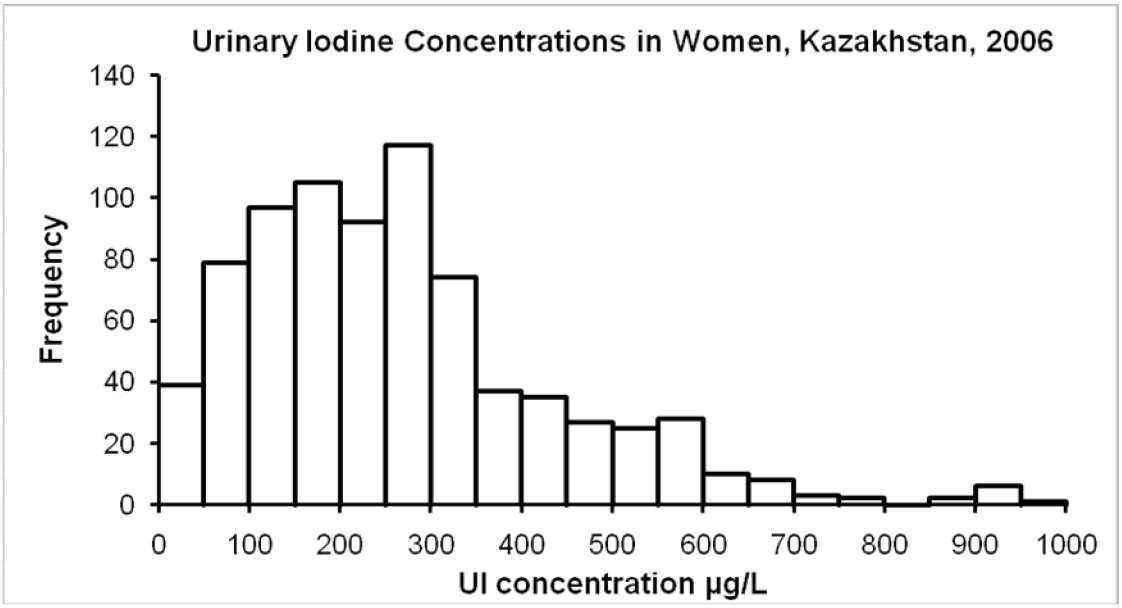

Figure 3: UI concentrations in women of reproductive age, Kazakhstan 2006

Figure 4 offers an analysis of the changes over time in the iodized salt supply in the households based on the data of salt iodine by the rapid test kit from the three national surveys. From 1999 to 2004 (dashed lines), the salt iodine levels were assessed in terms of all iodized salt while from 2004 to 2006 (solid lines), the surveys were assessing specifically for adequately iodized salt – i.e., the salt that tested visually ≥15ppm. From 1999 to 2004, the use of iodized salt by all Kazakh households rose from 29 to 89%, and in the period from 2004 to 2006, the coverage of households using adequately iodized salt increased from 83 to 92%. Notably, the reduction in household user rates in Almaty City and Southern region from 2004 to 2006 were offset by sizable increases in the Northern and Eastern regions over the same time.

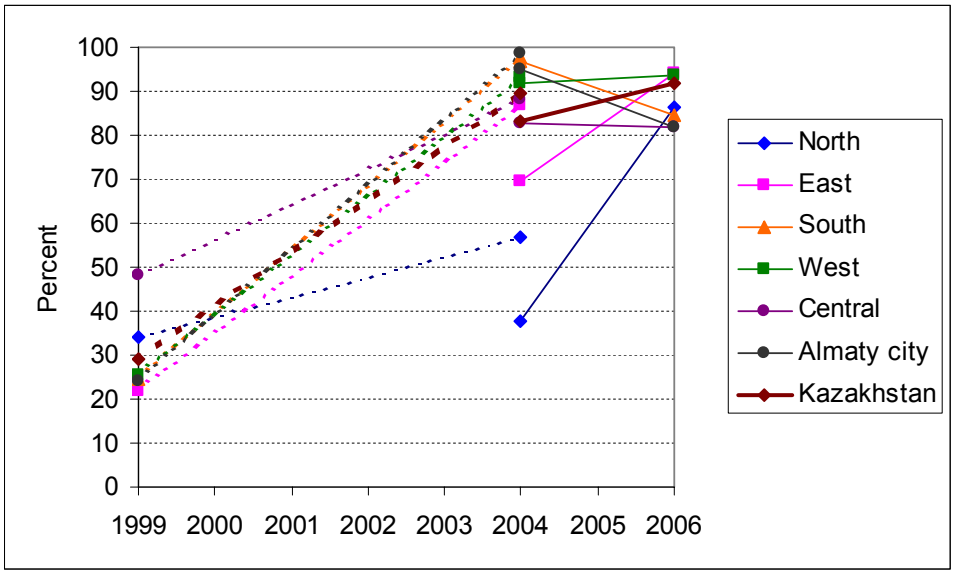

Figure 4: Changes in the use of iodized salt in the households of Kazakhstan, 1999-2006

The sizable increases that took place in iodine content of the household salt in Kazakhstan were accompanied by significant improvements in the UI concentration among women of reproductive age. The overall median UI concentration in women increased from 95 to 250 µg/L, accompanied by a decrease in the percentage of UI values <100µg/L from 53% in 1999 to 14% in 2006 (Figure 5).

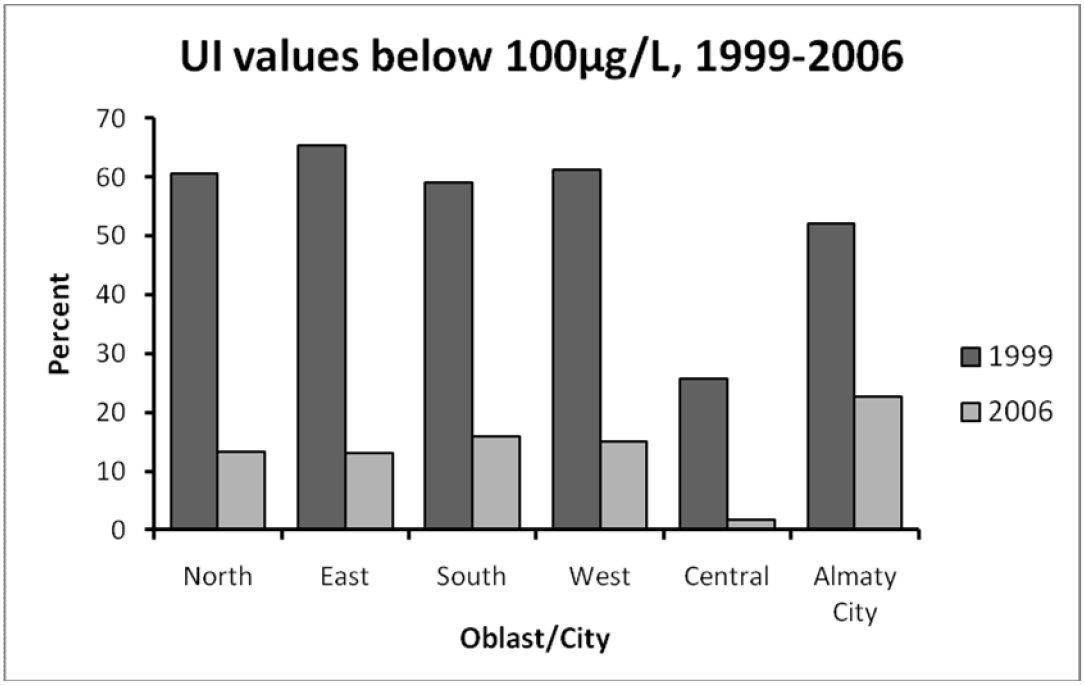

Figure 5: Reduction of low UI values (<100µg/L) in reproductive-aged women in Kazakhstan

The goal of Universal Salt Iodization (USI) was achieved in Kazakhstan by 2006 thanks to a series of joint collaborative steps taken by national organizations with support of international agencies. Evidence from a population-representative country-wide household survey in 2006 showed 92% of the Kazakh population using adequately iodized salt. During the National Micronutrient Survey 3 months later, the median urinary iodine concentration among women of reproductive age was 250µg/L as compared to 95µg/L in 1999. Further in-depth data analysis of the National Micronutrient Survey revealed that the use of adequately iodized salt (≥15mg iodine/kg) in the households across Oblasts was closely ($p<0.01$) correlated with the proportion of urinary iodine concentrations ≥100µg/L in the women living in these households (Figure 6), thus offering an affirmation that the USI strategy is the underlying factor that drives the alleviation of iodine deficiency in the population of Kazakhstan.

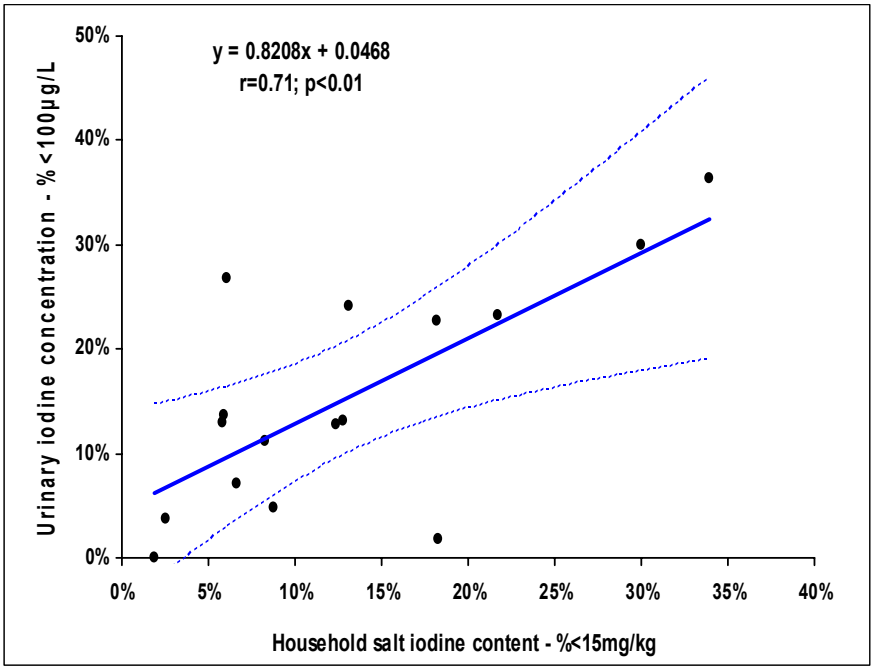

Figure 6: Relationship between the Proportions of Low Iodine Content in Household Salt and Low Urinary Iodine Concentration in Women of Reproductive Age, Kazakhstan 2006

The case of Kazakhstan illustrates the importance of various factors that together stimulate the achievement of quick success. The principal law is crystal clear, and it translated the evident highest level political will into the demand for national action. Continued close collaboration among concerned leaders – captains of salt industry, high officials of government, respected national scientists, expert communicators, civic society leaders and so on- formed a strong basis on which other actions thrived, while the international collaboration and generous donor funding offered strong catalytic support. Partly for historical reasons, but also because of the persistent leadership, advocacy and testimony by the President of the Kazakh Academy of Nutrition, IDD was widely perceived in Kazakhstan as a nutrition problem that affects the entire nation and required a dietary solution that benefits all. The national salt producer AralTuz was among the early supporters of the national USI strategy. It has sufficient supply capacity to realize a sizable amount of salt, part of which is also exported to neighboring Kyrgyzstan.

When the salt for consumption became understood as the key vehicle to convey a critical need to the population, the Ministry of Trade & Industry lent additional support by listing food-grade salt among the consumer goods for which a Certificate of Conformity was compulsory for any productive industry with customers in Kazakhstan. The results of transparent salt quality inspections by SES in the sales channels and markets, followed by enforcement when needed, are consolidated and analyzed for actions to address any default in the universal quality supplies.

In November 2007, the Ministry of Health of Kazakhstan lodged a request for acknowledgment of USI achievement with the global Network for Sustained Elimination of Iodine Deficiency, and experts of the Network Board have reviewed the dossier, submitted by MOH, concluding that the evidence is sound.

Principally, USI in Kazakhstan is made permanent by the joint assurance of proper iodine levels in the national edible salt supplies from ongoing QA by the producers and inspections by the food agency SES. The domestic salt production continues covering 91% of the total consumption needs in Kazakhstan, and official data for 2006-2008 report that the net import of iodized salt is 13-15,000MT/y, mainly from Russia. The SES report for 2008 indicates that more than 98% of the 10,800 inspections of edible salt in the supply channels for food industry and consumers was properly iodized (9).

Participation of national officers in UNICEF-supported regional and international meetings:

- Joint Workshop on the Elimination of Iodine Deficiency Disorders, Ashgabad, Turkmenistan, Economic Cooperation Organization, UNICEF, WHO, June 1994
- Almaty Forum, 2001: Launch of the JFPR project “Improving nutrition of poor mothers and children in Asian countries in transition”. Almaty, Kazakhstan, October 2001 (Asian Development Bank and UNICEF)
- Mini-Round Table on fortification standards, regulation, quality assurance and control. Tashkent, Uzbekistan, June 2002 (Asian Development Bank and UNICEF)
- Workshop on Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK. Almaty, March 2003 (UNICEF, CDC and Asian Development Bank)
- Regional Workshop for Salt Producers of Central Asia and Mongolia. Bishkek, Kyrgyzstan, July 2004 (Asian Development Bank and UNICEF)
- Almaty Forum, 2004: Sustainable Food Fortification in Central Asia and Mongolia. Almaty, Kazakhstan, September 2004 (Asian Development Bank and UNICEF)
- Training workshop to improve the monitoring and evaluation of micronutrient fortification of salt and flour in Central Asia Republics and Kazakhstan (CARK). Almaty, Kazakhstan, October 2004 (UNICEF, Asian Development Bank, CDC and MOST)
- Second Regional Conference of Salt Producers of Central Asia and Mongolia. Tashkent, Uzbekistan, November 2005 (Asian Development Bank and UNICEF)
- Almaty Forum, 2007: Towards Sustainable Food Fortification in Central Asia and Mongolia. Almaty, Kazakhstan, October 2007 (Asian Development Bank and UNICEF)

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