

## Belarus

The salt company 'Mozyr' in Belarus was one of the larger salt enterprises established during the Soviet period (1). At the time that Belarus became independent, the output of Mozyr was less than one-sixth of the national needs and the salt quality was poor, however. Nowadays, MozyrSalt has technology for the production of vacuum-dried edible salt, using facilities developed with support and grants from UNICEF and the European Community (2), the factory meets ISO quality standards and the production potential is several times greater than the national requirement. MozyrSalt exports sizable amounts of iodized salt to the Russian Federation, the Baltic States, and Eastern European and other countries. The company 'BelarusKaliy' produces iodized salt as a by-product of fertilizer manufacturing and sells it only in local markets. In 2003, both companies produced  $\pm 65,000$  MT of iodized salt, more than 50% for export. They obtain the potassium iodate fortificant from Russia.

At the international symposium on IDD elimination with special reference to the former USSR, held in Tashkent, Uzbekistan, 18-22 November 1991 (3), researchers of the Medical Academy of Belarus shared data of extensive goiter prevalence in many areas of the Republic. Their research indicated that low iodine consumption from the common diet and drinking water were underlying factors in the variation of goiter prevalence among the various regions. The publication also mentions that the former approach of prophylaxis through iodizing salt and distributing 'anti-strumin' (potassium iodide) tablets had been abandoned.

A massive survey conducted in 1997-1999 and supported by WHO and UNICEF found a national median UI among school-age children of  $44 \mu\text{g/L}$  and a goiter prevalence by ultrasound of 17.2%, ranging up to 25% in various locations. The authorities at that time felt that the consequences of iodine deficiency were particularly acute in view of the recent meltdown of the nuclear reactor in Chernobyl. Since at that time massive distribution of potassium iodide tablets was ongoing, also public awareness became connected to the issue of iodine needs, although many housewives continued using non-iodized salt from a widely held belief that iodized salt would affect the preservation and taste of food.

Food regulations issued by the Senior Sanitary Physician of Belarus in 2000 specified that edible iodized salt (for food industry and consumers) should contain  $40 \pm 15$  mg iodine/kg as potassium iodate. In April 2001, the Belarussian Government adopted a resolution stating that the use of iodized salt is mandatory in catering and the food manufacturing industry, except seafood and ocean fish processing. Also, iodized table salt was ordered to be available in all the consumer retail outlets. An advocacy campaign through the major media, health facilities and education institutions was another aspect in the national strategy.

Thus, the mandatory use of iodized salt in the food industry of Belarus is the key important tactic of the USI strategy for raising the iodine intake of the population. Since bread is a central item in the common diet of the population, major emphasis in advocacy, communications (4), monitoring and research (5) has been put on the bakery industry. At a bread consumption of 200-300g/d, the use of iodized salt by the bread bakeries would provide 40-70% of the daily iodine needs of the average Belarussian person. Between 2001 and 2005, much effort was directed to overcoming widespread concerns and reluctance among the bread bakeries and canning industries, due to cost and product quality considerations. Food

research in 2003-2004 showed that on average, the content of different kinds of breads sampled in the regions of Belarus contained 25µg iodine/kg, an increase of 15-20µg/kg above the breads baked with common salt. The estimated share of bread bakeries in Belarus that are using iodized salt is 90% (5). Taking these factors in consideration, the use of iodized salt in the bread bakeries of Belarus would raise the typical iodine consumption in the population by 30-60µg/day.

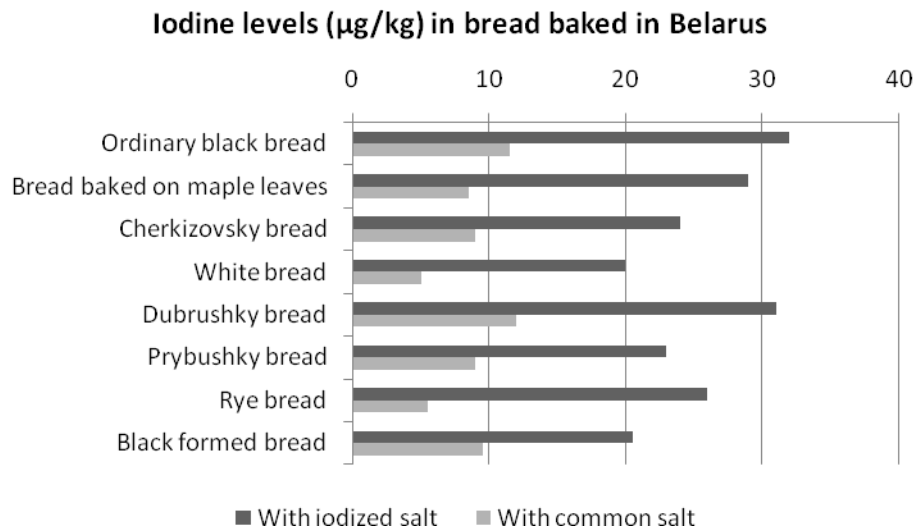


Figure 1: Iodine content in bread baked with and without iodized salt, Belarus



Figure 2: Examples of promotional materials, Belarus (Postcard, left; Billboard, right)

Inspections of food products are conducted by officers of the MOH's Center for Hygiene, Epidemiology and Public Health, and the Ministry of Trade. All the prescribed recipes for bread baking, meat products and some brands of bottled water and dairy products include iodized salt as ingredient. Also 'iodcasein' (in sour-milk products) and 'iodis-concentrate' (in bottled water, egg production and some dairy items)

are being used although the segment of these products is not significant in the overall dietary iodine supply. Resistance remains present in the cheese industry, due to a publication of the Russian Research Institute for Cheese and Butter Production, which contends that iodized salt influences the taste and color of cheese.

From the late 1990s onward, in the wake of the Chernobyl meltdown, much effort has been invested in training, advocacy, publicity and communications to promote salt iodization. The Government of Belarus conducted workshops for health professionals, distributed information brochures and pamphlets among newspapers and magazines and to the press, provided training to teachers, and raised awareness among the public. A follow-up assessment in 2003 reported that 74% of the public was aware of the problem and 87% had noticed the advertising of iodized salt. Less well-informed respondents included those with lower education levels, especially in rural areas.

Following the adoption of the program in 2001, much information is being collected at regular intervals of the use of iodized salt among the consumers and in the food industry (6). For example, retail studies show that the share of iodized consumer salt has jumped from 36% in 2001 to 75% in 2008. There are rural areas where the share of iodized salt in the retail outlets has remained very low, however, which is attributed to the persistent belief of the side-effects of iodized salt in pickling and food preservation. That the advocacy at high decision-making level has not been able to change some attitudes is attested by the fact that a draft proposal for banning the import of non-iodized salt has been rejected repeatedly in the Ministry of Health.

Township/village	N	UI Concentration in µg/L			Goiter %	Iodized salt %
		<50	<100µg/L	Median		
Volkovysk	139	0.7	5.7	189	15.8	89.9
Pervomaiskii	105	0.0	6.7	207	16.2	98.1
Pinsk	106	6.6	22.6	170	8.5	88.7
Krovoshein	96	3.1	27.0	166	26.0	95.8
Oktyabrskii	107	1.9	6.6	188	12.1	92.5
Myshanka	107	2.8	10.3	164	10.3	94.4
Osipovich	101	2.0	11.9	222	17.8	97.0
Gorki	107	3.7	15.8	175	5.6	94.4
Dubrovno	101	2.0	11.9	186	3.0	98.0
Braslav	101	1.0	15.9	198	6.9	91.1
Pogost	106	1.9	15.1	157	7.5	95.3
Myadel	128	6.3	20.6	189	21.9	94.5
<b>Total</b>	<b>1,304</b>	<b>2.7</b>	<b>14.0</b>	<b>179</b>	<b>12.8</b>	<b>93.6</b>

Table 1: Iodine nutrition situation among 10-14y old children, Belarus, 2006

A follow-up iodine survey was conducted in 2006 under coordination of the Belarus Medical Academy among 1,304 school children aged 10-14y, selected from 12 areas on basis of the results of the previous national survey. As illustrated in Table 1, the findings offer evidence that iodine deficiency had been overcome in the population of Belarus. 94% of the households were using iodized salt (level not

specified) and goiter was prevalent among 12.8% of the children. In view of the high iodized salt use and the optimum UI levels, the goiter prevalence is probably a remainder of the iodine deficiency burden documented previously.

In conclusion, serious iodine deficiency of the past in Belarus has been overcome through a national strategy that combines the mandatory use of iodized salt in the food manufacturing industries with the promotion of iodized salt in the households and careful, continuous monitoring of the iodine supplies through food enterprises, canteens, markets and households. The experience demonstrates success in reaching optimum iodine nutrition by a model that ensures fortification of common foods in a situation of conflicting opinions about the enactment of mandatory iodization of the salt supplies and a persistent public belief that the use of iodized salt affects the home-based preservation of food. The major national salt company Mozyrsalt has attained high standards of production, earning it an ISO9001 certification, which benefits its customers not only in Belarus but also in Russia, the Baltic States and other countries of the former Soviet area.

Participation of national officers in UNICEF-supported regional meetings:

- International Symposium on IDD, with special reference to the former USSR. UNICEF, WHO & ICCIDD, Tashkent, 18-22 November 2001. See: Gerasimov G, Gutekunst R, editors. IDD in the former USSR. *IDD Newsletter* **8(1)**: 3
- Conference on Elimination of Iodine Deficiency Disorders (IDD) in Central Eastern Europe, the Commonwealth of Independent States, and Baltic States, 3-6 September 1997, Munich, Germany
- Regional Salt Producers' Meeting, 29 September – 1 October, 1999 Kiev, Ukraine
- RUB salt producers meetings, Moscow (GCC Commission)
- Workshop on Strengthening Strategies for the Elimination of Micronutrient Malnutrition. Ankara, Turkey, 13-17 September 2004
- Workshop on Strengthening of Laboratory Capacity and Iodine Status Assessments for Monitoring of Sustained IDD Elimination through USI in the CEE/CIS Region. Istanbul, Turkey, 18-19 May 2006

References/important documents

1. <http://www.mozyrsalt.com/node.phtml?index=1> (Accessed 14 January 2010)
2. Sivuha S, Lyashkevich A, 2006. Progress against IDD in Belarus. *IDD Newsletter* **23(2)**: 14-18
3. Kholodova A, Federova LP, 2002. Epidemiology of endemic goiter in Belarus. In: Gerasimov G, Gutekunst R, editors. IDD in the former USSR. *IDD Newsletter* **8(1)**: 3
4. UNICEF, 2004. IDD prevention campaign – Belarus experience 2001-2004. Presentation at the Workshop on Strengthening Strategies for the Elimination of Micronutrient Malnutrition, Ankara, Turkey, 13-17 September 2004
5. Gerasimov G, 2009. Increasing iodine intakes in populations through the use of iodized salt in bread baking. *IDD Newsletter* **33(3)**: 9-12
6. Kolomiets ND, Kamyshnikov VS, Petrenko SV, Okeanov AE, Leushev BU, Korytko SS, Gomolko NN, 2007. Belarus MNDD 2006 survey executive summary. Internal UNICEF document