



The Iodine Deficiency Elimination Program in Belarus

Review and Mission Report

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Purpose of the mission

The purpose of this visit was to assist UNICEF and government of Belarus with updating information and preparation of end-of-year round up status and recommendations for IDD/USI program in Belarus by undergoing an informal program review. The review was done using the Iodized Salt Program Assessment Tool (ISPAT)¹ which includes a number of checklists to help understand each program component, and determine areas of strength and weakness.

Specifically, the scope of work included:

- Updating information on status of IDD/USI program in Belarus working closely with UNICEF and Ministry of Health counterparts to complete a review of the IDD program;
- Meetings with salt producers and review of the current salt situation analysis;
- Providing technical inputs in IEC materials developed with assistance of UNICEF in Belarus;
- Prepare end-of-year status round up and recommendations for IDD/USI program in Belarus for 2003.

The trip consisted of a series of meetings and a visit to key salt producer – Mozyr Salt Plant. Following an initial briefing with UNICEF, several meetings were held with the Deputy Minister of Health Dr. V.Kluchonovich, Chief Physician of the Republican Center for Hygiene and Epidemiology Dr. V.Filonov, Deputy Directors of Food Safety Center Dr. N.Kolomiets and Institute of Radiation Medicine and Endocrinology Dr. T.Mokhort, and others.

The report is organized according to the structure outlined in the ISPAT document:

- a) Reviewing issues in iodized salt production;
- b) Reviewing issues in program implementation, including advocacy, legislation and regulation, monitoring, laboratory capacity, IEC, and overall implementation; and
- c) Reviewing issues related to measuring coverage and impact.

For each area, there is discussion on the documents reviewed, persons met, facilities visited, and observations.

Introduction and background

In spite earlier history of endemic goiter prevention in Belarus, dating to 1950s-1970s, iodine deficiency in Belarus was recognized as a serious public health problem only after Chernobyl nuclear accident of 1986. Subsequent surveys aimed primarily on evaluation of post-radiation thyroid diseases revealed mild to moderate IDD in this country. In 1996-1998, a national IDD assessment was carried out in Belarus with support of WHO International Thyroid Program

¹ Assessing Country Progress in Universal Salt Iodization Programs. Iodized salt Program Assessment Tool (ISPAT), Published by Micronutrient Initiative, 1999, ISBN 1-894217-06-3

(ITP). Assessment covered 11,562 school children in 30 rural and urban settings in all districts of Belarus and revealed nationwide appearance of iodine deficiency. IDD is also officially perceived as a serious nationwide problem by the Ministry of Health, policy makers and leaders in health and nutrition in this country. The survey conducted by UNICEF in 2001 showed that 50-70% of respondents preferred iodized salt, but precise data on household consumption of iodized salt are lacking.

There are two salt producers in Belarus both producing iodized salt with the capacity to fully cover national demand in iodized salt. The use of iodized salt is compulsory only for food industry and public catering while trade of noniodized salt in retail shops is not prohibited. Ministry of Health has recently developed National Plan of Action for IDD Elimination. Monitoring system tracks production and supply of iodized salt, while biological monitoring is also in place.



Fig. 1 Map of Belarus

Population: 10,3 million; Population below 15 years – 17.3%, Birth Rate – 9.9 per 1000; Life expectancy at birth – 68,3 years, Infant mortality – 14.1 per 1000; Literacy – 98%; GDP per cap - \$8,200

The Ministry of Health, in cooperation with UNICEF, developed the strategy of the elimination of iodine deficiency. This document was discussed and approved by the participants of the National conference “Elimination of Iodine Deficiency Disorders through Universal Salt Iodisation” (June 2000).

Following the discussion of the IDD national policy and strategy, the decree of the Council of Ministers on IDD prevention was adopted on 6 April 2001 and is effective from 1 May 2001. This decree provides for the mandatory use of iodized salt in food industry, public catering

and mandatory availability of iodized salt in trade outlets. However, the trade of non-iodized salt was not prohibited.

A. Iodized Salt Production

There are two salt producers in Belarus: «**Mozyr Salt Plant**» (“Mozyrsol”) in Gomel region and «**Belaruskaliy**» in Soligorsk, Minsk region. «Belaruskaliy» specializes mainly on production of potassium fertilizers and produce some amount of rock salt for food industry and retail market. Rock salt (iodized and non-iodized) is also supplied from Ukraine by “Artemsol” salt plant.

Before the mission, questionnaires were sent to both salt producers, and I have also visited Mozyrsol during the mission.

1. Joint Stock Company «Mozyrsol»

Mozyrsol is the main producer of high quality vacuum table salt (sort «Extra») in the European part of the CIS. Besides supplying domestic market, the geographical market of Mozyrsol is west, north, and center of Russia, Ukraine, Baltic States, some countries of Central Europe. Mozyrsol was built in 1982 with modern production technology. For example, all evaporation tanks and centrifuges are made from titanium and are still in excellent condition after 20 years of work.

1.1. GENERAL INFORMATION

Director: Litvin Mikhail Nikolevich

Chief Engineer: Brovko Vitaly Pavlovich

Affiliation: Joint Stock Company (80% of stocks belong to the Government and 20% - to employees)

Location and full address: Belarus, 247760, Gomel region, Mozyr, JSC «Mozyrsol»

Main consumers:

57% - retail trade

38% - food industry

3.1 - other branches of industry (chemical)

1.9% - agriculture

1.2. PRODUCTION CAPACITY AND AMOUNT OF PRODUCTION (TOTAL AND IODIZED SALT)

Iodized salt production on Mozyrsol is in operation. Technology process includes all standard phases for **vacuum salt production**: solution mining, brine purification, vacuum evaporation, drying and packaging. The projected annual production capacity (for all salt) is **360,000 tones**; the projected **annual capacity for iodized salt - 288,000 tones (80% of total production)**. This is a marked increase over 1999 figure, when production capacity for

iodized salt was 100,000 tonnes². Actual production of salt, edible salt and iodized salt is presented in Table 1.

Table 1. Salt production by «Mozyrsol» (tonnes) in 1997-2002

YEARS	Actual production of salt	Actual production of food grade salt (% of total production)	Actual production of iodized salt (% of food grade salt production)
1997*	243,000	239,000 (98.4%)	29,360 (12.3%)
1998*	299,000	294,000 (98.3%)	49,625 (16.9%)
1999*	279,228	275,000 (98.5%)	38,081 (14%)
2000	260,505	260,023 (99.9%)	33,532 (12.9%)
2001	263,867	263,479 (99.9%)	41,577 (15.8%)
2002**	249,415	249,415 (100%)	45,728 (18.3%)

* - Data from: Salt Situation Analysis in Russia, Ukraine and Belarus. Report to UNICEF by G.Gerasimov, 1999

** - Data for 11 months

1.3. SALT IODIZATION TECHNOLOGY

Wet mixing iodization technology is used on the plant. Currently there are 3 iodization units on the salt plant, including one new one (of German production) recently supplied in the framework of EU funded TACIS project. Iodization of edible salt is voluntary according to requests from the consumers. Only potassium iodate (KIO₃) at the level of 40±15 ppm is used for iodization of edible salt for the domestic market as well as for supplies to Russia and Ukraine.



Picture 1. One of iodization units used on Mozyr Salt Plant

The main supplier of iodate is Urals Chemical Reagents Plant (Verkhnya Pyshma, Russia). The price of iodate is US\$ 18.5 for 1 kg (almost 2 times less than in 1999). The enterprise has

² Salt Situation Analysis in Russia, Ukraine and Belarus. Report to UNICEF by G.Gerasimov, 1999.

a stock of fortificant for at least 23 months of iodized salt production and experiences no problems with its purchase.

1.4. INFORMATION ON QUALITY ASSURANCE

In 2002 the enterprise received the International Quality Certificate, and system of production quality assurance meets the requirements of the Standard ISO 9002-96. Written descriptions (manuals, guidelines) for quality control of iodized salt were developed by the plant in cooperation with Research Institute and Government agencies. Iodization facility is supervised by a production manager, the quality of salt is tested by the laboratory with qualified personnel in charge of continuous iodized salt testing by titration (Picture 2). Record books of the laboratory show that iodized salt samples are systematically taken during production runs and tested for iodine. Results of quality control are used for adjusting salt iodization process. Internal and external quality control of titration method exists.



Picture 2. Control laboratory and equipment for measurement of iodine in salt

2. State Owned Enterprise «Belaruskaliy»

“Belaruskaliy” a big enterprise (with 19,500 employees) producing potassium fertilizers. In the past few years “Belaruskaliy” developed production of rock salt as a byproduct of potassium salts. The quality of this rock salt is rather low (compared with high quality vacuum salt) but it is significantly cheaper. “Belaruskaliy” supplies edible salt (for retail trade and food industry) mainly to domestic market.

2.1. GENERAL INFORMATION

Director: Bashura Andrey Nikolaevich

Head of Marketing Department: Potapchik Konstantin Stanislavovich.

Affiliation: State owned enterprise

Location and full address: Belarus, 223710, Minsk region, Soligorsk, Korzha, 5
E-mail: pks@kali.belpak.minsk.by

Main consumers:

- 40% - retail trade
- 12% - food industry
- 38 - other branches of industry (chemical)
- 10% - agriculture

2.2. PRODUCTION CAPACITY AND AMOUNT OF PRODUCTION (TOTAL AND IODIZED SALT)

Iodized salt production on “Belaruskaliy” is in operation. The enterprise extracts rock salt by an underground mining on 1 mine. Extracting of salt is done by machinery (with mining combines). The projected annual production capacity for technical (non-edible) salt is **625,000 tones**; for food grade salt – **130,000 tones**. Projected annual capacity for **iodized salt** is **130,000 tones** (100% of food grade salt production). Actual production of salt, edible salt and iodized salt is presented in Table 1.

Table 2. Salt production by «“Belaruskaliy”» (tones) in 2000 -2002

YEARS	Actual production of all salt	Actual production of food grade salt	Actual production of iodized salt (% of food grade salt production)
2000	346,282	49,183	2,970 (6%)
2001	329,021	36,624	5,038 (13.7%)
2002	397,674	35,510	6,283 (17.7%)

2.3. SALT IODIZATION TECHNOLOGY

Wet mixing iodization technology is used on the plant. Iodization of edible salt is voluntary according to requests from the consumers. Only potassium iodate (KIO₃) at the level of 40+/- 15 ppm is used for iodization of edible salt.

The main supplier of iodate is Urals Chemical Reagents Plant (Verkhnya Pyshma, Russia). The price of iodate is US\$ 18.5 for 1 kg. In 2002 “Belaruskaliy” spent 736,000 Russian Rubles (US\$ 23 thousand) for purchase of iodate. The enterprise has a stock of fortificant for 6 months of iodized salt production and experiences no problems with its purchase.

2.4. INFORMATION ON QUALITY ASSURANCE

Written descriptions (manuals, guidelines) for quality control of iodized salt were developed by the plant. Iodization facility is supervised by a production manager, the quality of salt is tested by the laboratory with qualified personnel in charge of continuous iodized salt testing (by titration). Iodized salt samples are systematically taken during production runs and tested for iodine. Results of quality control are used for adjusting salt iodization process. Internal and external quality control of titration method exists.

3. Iodized Salt Packaging and Labeling

Packaging of salt on both salt plants is regulated by CIS Standard GOST 13830-97 and Belarus Technical Requirements.

In 2002, on **Mozyrsol**, 58 thousand tones of salt, or 23.4% of total production, is packaged in small-sized (1 kg and below) packages (up from 23,920 tones or 8% of total salt production in 1999). On “**Belaruskaliy**”, 2,096 tones of salt, or 6% of edible salt production is packaged in small sized containers.

On both plants machine method is used for packaging of iodized salt in polyethylene (heat sealed) packages. All bags has clear product name «Iodized salt»; other information printed on the label of small-sized packages include: origin of production (producers name and address), date of manufacturing, type of fortificant used (KIO₃) and its amount (40+/-15 mg/kg), shelf-life, logo of the producer. Logo of National IDD program does not exist yet. Salt producers are using attractive design and short information messages on small-sized salt packages. Iodized salt is also packaged in bulk-size containers (sewn 30-50 kg polypropylene bags), which have special labels with product name «Iodized Salt», information about producer, manufacturing date, type of fortificant used (KIO₃) and its amount (40+/-15 mg/kg), shelf-life and information about storage of iodized salt.

New packaging line has been recently supplied to Mozyrsol as part of TACIS project to improve production and quality of iodized salt (picture 3).



Picture 3. New packaging line for 1 kg paper bags on Mozyrsol

4. Transport and Storage of Iodized Salt

Iodized salt is usually delivered within the Belarus by rail or by trucks. While transportation, iodized salt is protected from weather and direct sunlight. Stocks of iodized salt on both

production sites are kept in well protected conditions (elevated from the floor, well-ventilated and protected against rain and direct sunlight).

5. Pricing of Iodized Salt

Iodized salt is more expensive than non-iodized one; the price difference is extra 6-10% (depending on packaging) on both salt plants. For example, in December 2002, 1 metric ton of salt grade “Extra” in 1 kg poly bags was traded by **Mozyrsol** for 66,120 Belarus rubles, while iodized salt – for 72,760 Belarus rubles (10,000 Belarus rubles equals to US\$ 5.1). From the point of view of the producer, iodized salt is affordable for the majority (more than 80%) of consumers. On the domestic market the price of iodized salt is regulated by the Ministry of Trade.

6. Data on Iodized Salt Inspection and Enforcement of Legal Requirements.

The following authorities have the right for inspection on the producer’s level: Standard Committee and Regional Centers for Hygiene and Epidemiology of the Ministry of Health. Each organization have their own plan of inspections, samples of iodized salt are taken for control according to instructions. All inspections are free of charge. Results of inspections are used for IDD program monitoring.

7. Supply and Distribution of Iodized Salt

The minimal potential requirement of 10 million Belarus population in iodized salt is **35 – 45 thousand tones** (assuming consumption of 10-12 g of salt per capita per day). The Belarus salt industry has a potential to cover all these requirements and supply significant amount of iodized salt for export. Belarus salt industry is capable for producing of 418 thousand tones of iodized salt, while this production capacity is used only for 10-15%. Less that half of current production of iodized salt from **Mozyrsol** is supplied to the domestic market, while significant amount is exported to 12 countries of CIS, the Baltics and Central Europe (Table 3)

The total supply of all salt from **Mozyrsol** to Belarus consumers during 11 months of 2002 was 82,129 tones, iodized salt – **20,161 tones** (25% of all supplies). It is not clear what amount of salt has been delivered to the retail market and to food industry. The management of **Mozyrsol** complained me that supplies of salt to domestic market in 2002 was 25,000 tones less that in 2001 due to lack of payments from trade organizations of the Ministry of Trade that currently owes **Mozyrsol** 1 billion Belarus Rubles. This shortage in supply was compensated by import of 20,000 tones of rock salt from Ukraine.

“**Belaruskaliy**” supplied additional **6,283** tones of iodized salt, mainly in bulk containers (30 kg bags) for food industry, public catering, bakeries.

Thus, current supply of iodized salt to the domestic market is still below minimal potential requirement. Roughly, 28 thousand tones of iodized salt have been supplied to Belarus market in 2002 by domestic producers, a significant increase of over 1999 figure.

Table 3. Supplies of iodized salt by Mozyrsol to regions of Belarus and for export

COUNTRIES AND REGIONS	AMOUNT OF SUPPLY (tons)
REPUBLIC OF BELARUS, including:	20,161
Gomel region	5,247
Minsk region	4,101
Mogilev region	2,307
Brest region	3,429
Grodno region	2,067
Vitebsk region	3,010
RUSSIA	16,467
UKRAINE	418
KAZAKHSTAN	148
KYRGYZSTAN	48
MOLDOVA	62
HUNGARY	3658
BULGARIA	4476
ESTONIA	12
SLOVAKIA	248
ROMANIA	120
LITHUANIA	186
LATVIA	223
TOTAL	46,227

Import of iodized salt has also increased. According to information from Ukraine salt producer's association "Ukrsil"³, during first 8 months of 2002, **2,785** tones of iodized salt were supplied to Belarus (174% increase over 2001 figure). It means, that in 2002 Ukraine salt producer could have supplied up to **4 thousand** tones of iodized salt.

It may be assumed that in 2002 total supply of iodized salt to Belarus market reached 32 thousand tones, less than minimal potential requirement, but significantly more than in 1999. In some regions, supplies of iodized salt may markedly improve iodine nutrition.

B. Program Implementation

1. POLICY AND ADVOCACY

Awareness of the importance of salt iodization is high within the government. The Deputy Minister of Health, Chief State Sanitary Physician Dr. Valery Kluchenovich is fully briefed,

³ Salt Situation Analysis in Ukraine. Report to UNICEF by V.Ermakov and S.Galushko (G.Geraismov, ed.), Kiev, 2002

and committed to the program. There appears to be clear recognition of the critical importance of iodine nutrition for the intellectual development of children on the part of the Ministries of Health and Education. A number of national advocacy events were jointly conducted over past 2-3 years by UNICEF, Ministry of Health and salt producers with relevant high level and professional representation of UNICEF Regional and Area Offices, CIS Secretariat, Cabinet of Ministers, Parliament, President's Administration, Ministries of Education, Trade, Foreign Affairs, Social Welfare, Academy of Sciences, Government Committees on Youth Affairs, Standardization, Chernobyl, Associations of food producers, NGOs and the media.

The process of preparation to these advocacy events included discussions and meetings with policy makers and key ministries and industry officials that, in fact, led to the creation of the national alliance. Representatives of the Ministry of Health and salt producers participated in regional (Kiev, 1999) and International (Salt2000 Symposium, The Hague) meetings advocating for USI as key method of IDD elimination. Future advocacy events are included in the national IDD plan.

Program implementation is done under the authority of the Republican Center for Food Safety and Quality (Food Center) in partnership with Research Institute of Radiation Medicine and Endocrinology, Republican Center for Hygiene and Epidemiology, Regional Centers for Hygiene and Epidemiology. The Food Center has oriented territorial staff of Regional Centers of Hygiene and Epidemiology who have responsibility for inspection and sample testing, as well as program promotion. The Food Center has also initiated discussions with the food industry to increase use of iodized salt and promoted government decree that set for mandatory use of iodized salt for food processing (see below). This has resulted in iodized salt being used by the baking and other branches of food industry. The Food Center is currently working with the legislative authorities to strengthen food laws supporting salt iodization.

In November 2002 the Policy Paper entitled: "Strategy for Elimination of Iodine Deficiency Disorders in Belarus (2003-2005)" was approved by the Republican Meeting "Prevention of Iodine Deficiency Disorders in Belarus" held in Minsk (**Annex 1**). This document will be further adopted as an official Policy Paper of the Ministry of Health and, in fact, becomes a National Plan of Action (NPA) for IDD Elimination.

This document has a goal of IDD elimination by the year 2005 through several steps, including strengthening of legislative framework and regulations; increasing of iodized salt production and improvement of its quality, introduction of USI, knowledge promotion and training of specialists, constant monitoring of iodized salt quality and of iodine nutrition, and improvement of medical services for treatment of IDD.

The current NPA is supported by the government, UNICEF and other agencies (TACIS). The current budget of the Ministry of Health includes support for laboratory activities and inspection of iodized salt quality at the regional level. UNICEF supports a wide range of activities, including advocacy, communication and monitoring.

There is an established multisectoral national IDD working group that includes salt producers. This group has regular meetings and assisted with promotion of policies favourable to salt

iodization. The last meeting of this informal working group resulted in approving of National Policy (Strategy) Paper on IDD Elimination.

2. LEGISLATION AND REGULATION

Issues of IDD prevention are regulated by Council of Ministers Decree N464 “On Prevention of IDD” effective May 1, 2001.

<p style="text-align:center">Council of Ministers Republic of Belarus Decree 6 April 2001 # 484 city of Minsk</p> <p style="text-align:center">ON PREVENTION OF IODINE DEFICIENCY DISORDERS</p> <p>In order to prevent iodine deficiency disorders the Council of Ministers of the Republic of Belarus DECREES:</p> <ol style="list-style-type: none">1. Establish that legal entities and individual entrepreneurs shall use solely iodised salt in food processing (with the exception of ocean fishes and seafood).2. The Ministry of Trade and Belaruisian Co-operative Union shall ensure control over permanent availability of iodised salt in retail outlets.3. Control over the implementation of this Regulation shall be laid upon the Ministry of Health.4. This decree comes into force on 1 May 2001. <p>Prime Minister Republic of Belarus</p> <p style="text-align:right">V. Ermoshin</p>
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This Decree set for mandatory use of iodized salt for food industry and for catering, while sale of non-iodized salt in retail outlets is not prohibited. At the same time, it is mandatory for all retail facilities to have iodized salt on sale.

Issues of salt iodization are also regulated by the Ordinance N11 (March, 2000) of the Chief State Sanitary Physician “On Prevention of IDD”. This ordinance provides for mandatory use of potassium iodate at the level of 40+/-15 ppm for salt iodisation. Implementation of this document helped improving quality control and increasing the shelf life of iodized salt. Corresponding changes were introduced in the normative and technological documentation on salt iodisation.

The new Food Safety Law is being currently drafted with presentation to Parliament expected early 2003. The Law would give significant powers to the Ministry of Health for issuing directives regarding food fortification. Ministry of Health will have an authority to provide general guidelines for food fortification and for sanctions in the event that a business is not in compliance with Food Law. Existing Law on Sanitation and Epidemiology defines the authority, roles and responsibilities of Centers for Hygiene and Epidemiology for food sampling and testing. Under new Law, the Ministry of Health can issue a directive that provides the specifications for a given fortification effort.

Procedural documents (under the Law on Sanitation and Epidemiology) exist that cover food inspections. There are laboratory procedure documents covering the recommendations for lab

analysis. In 2002 Food Center has developed and implemented official laboratory guideline (STB GOST R 51575-2000) for testing of iodine in salt.

Thus, the current regulatory environment covers all aspects of licensing, inspection, enforcement, and sanctions; it also covers acceptable levels of iodine in salt, the use of fortificants, packaging requirements, labelling, and other aspects of salt iodization. However, the current regulation does not include prohibition of sale of non-iodized salt, and this is felt to be a sensitive issue due to the consumers concern about iodized salt use for canning and pickling. The current inspection system is functioning, with samples collected from each region on the production level and in retail outlets, and tested by titration. The staff capacity for these inspections is quite adequate, samples are processed within a reasonable timeframe on regional and district levels, there were no laboratory difficulties described, and no limitations in reagents.

3. PROGRAM MONITORING

There is a system in place for iodized salt monitoring, and this is done through the regional and Republican Centers for Hygiene and Epidemiology. Salt samples are routinely collected as part of food sanitation inspection, from retail shops and open markets, canteens and other catering facilities. Laboratory analysis is done locally using titration, and data are recorded and summarized. The Republican Center receives information on the number of samples analyzed, and the number not meeting standard. Moreover, the amount of iodized salt sale (in relation to total salt sale) is tracked by every region of Belarus.

In 2001, 13,810 tones of iodized salt (35.5% of total salt sale) were sold in Belarus. During that year 3,669 samples of salt were tested and only in 92 of them (2.5%) iodine content was not within the standard limits.

At the time of my visit, end-of-the-year information for 2002 was not available. However, preliminary data provided by the Food Center show the increase of both sale and quality of iodized salt.

During first 3 months of 2002 sales of iodized salt (5,064 tones) increased to 53.5% of total salt sale and sustained on that level thereafter. In January-July 2002, 1434 samples of salt were tested and only in 17 (1.1%) of them iodine content was not adequate. However, there were significant differences in sales of iodized salt across the regions of Belarus. The proportion of iodized salt sale to total salt sales was:

- 75% in city of Minsk
- 34% in Minsk region
- 52% in Vitebsk region
- 63% in Gomel region
- 44% in Grodno region
- 34% in Mogilev region

Generally, sales of iodized salt were higher in urban sites versus rural regions, and in areas affected by Chernobyl nuclear disaster where population is more aware of benefits of iodized salt.

There is not currently a routine system to monitor household iodized salt coverage. However, there have been several recent surveys that have included information on household preferences without direct testing of iodized salt in the spot.

Thus, there is a good system in place in Belarus for monitoring the iodine content of salt both on the production and at the retail levels, and these data are used for corrective action. There have been difficulties collecting some information, including the volume of salt (iodized and common) imported to the country and the total amount of iodized salt entering the food industry.

4. LABORATORY CAPACITY

Salt testing is done under the jurisdiction of Regional Centers for Hygiene and Epidemiology. Laboratories at the Republican Center for Hygiene and Epidemiology and of Republican Food Center serve as a reference labs and are responsible for training at the regional level. All these laboratories are well equipped and well staffed, with the capacity to do a wide range of food analyses. On the production level salt is tested by producer's laboratory; external control is a responsibility of territorial Centers for Hygiene and Epidemiology.

Monitoring of salt is done by the regional and district Centers of Hygiene and Epidemiology. All regional (oblast) and most of district (rayon) Centers have laboratories with titration capacity, and collect samples from retail shops and catering facilities. Samples are not collected at the household level. Each laboratory maintains a register of samples, and records the date, source, type of analysis, and for iodized salt, the content of iodine. The inspection officer is informed of samples that do not meet standard, and corrective action is taken (usually, fines are imposed).

Urinary iodine analysis is performed in the laboratory of Institute of Radiation Medicine and Epidemiology that has necessary equipment and the qualified staff. Laboratory measurements of iodine in foods fortified with iodized salt (and with other substances) is performed by the laboratory of Food Center.

I was informed that as a part of overall restructuring of national health system, Institute of Radiation Medicine and Endocrinology and Food Center are closed in early 2003 and their functions will be taken by other institutions. These may significantly affect present system of IDD monitoring.

5. INFORMATION, EDUCATION and COMMUNICATION (IEC)

Recently, with UNICEF assistance, an IEC strategy has been developed for a mass media campaign designed to improve awareness of the importance of IDD, and to improve demand for iodized salt. Within the framework of the social mobilization campaign on the benefits of iodized salt and IDD prevention, radio and TV spots, press-conferences and round-table discussions, posters, booklets, fliers and other communication tools were used to improve awareness. The target audience is general public, predominantly women and children. UNICEF assisted with production of a quality cartoon TV spot that was broadcasted for several months free of charge by national and regional TV channels and received excellent

recognition. The McDonalds outlets in Belarus joined UNICEF led communication campaign and switched to use of iodized salt.

Two information booklets “Magic salt for your health” and “Iodine deficiency and its prevention” (6,000 copies), the leaflet “Why we choose iodized salt” and a poster (10,000 copies) were developed and printed with UNICEF support and widely distributed through the network of health promotion centers.

With UNICEF assistance, surveys of consumer preferences towards iodized salt were performed in 2002. In Vitebsk region majority (81%) of the respondents (1,450 persons were interviewed) consume iodized salt either constantly, or on regular basis. Out of 11% of respondents who do not use iodized salt, the majority “prefer common salt”, or are “unaware of iodized salt”.

Currently there is no industry marketing plan for promotion of iodized salt, although salt producers are working on local brand recognition. For example, driven by consumer demand for rock salt, Mozyrsol started production of special brand of iodized salt “Belarusskaya”, a mixture of less pure local rock salt (supplied by Belaruskaliy) and pure vacuum salt. Labelling of iodized salt includes some information of iodized salt benefits and recommended amount of its consumption (5-6 g).

There is not currently a defined logo for iodized salt but salt producers are interested in its creation and use.

In addition, there has been significant orientation and awareness building campaign among ministry staff, medical staff, and others, as part of program advocacy. Workshops for primary health physicians, obstetricians, endocrinologists, pediatricians on IDD prevention were conducted in different regions with more than 400 participants involved in training activities.

More information is needed on the strength of consumer conviction that iodized salt impairs canning and pickling, and on the relative importance of the (limited) price differential for the consumer preference. Further information is also needed on the degree to which IDD is covered in school curricula, and the degree to which the Ministry of Education has been involved with the IDD program.

There has been some work with the Ministry of Agriculture on the importance of iodized salt for livestock use and it is anticipated that regulation on mandatory use of iodized salt for livestock breeding will be passed by 2005. While this is promoted, significant amount of meat, milk and milk products, eggs and poultry is produced by rural population on their small land plots, and there is limited government control or influence on rural population salt purchasing patterns. There is not likely to be much impact on the human population of use of iodized salt for livestock breeding, since non-iodized salt remains available on retail market and could be used for both human and animal consumption.

6. PROGRAM IMPLEMENTATION

There is a clear National Plan of Action (Strategy Paper) for IDD Elimination, which has been specifically developed with input from multiple sectors. The plan is detailed, and outlines

some activities to increase iodized salt use. The current plan calls for achieving USI and IDD elimination by 2005. Primary responsibility for the program rest with the Ministry of Health, and there has been good communication with other agencies and salt producers on the specifics of the National Plan.

With the implementation of the first phase of the Plan (mandatory use of iodized salt by food industry and catering facilities, mandatory availability of iodized salt in retail outlets), sales of iodized salt have increased from 35% in 2001 to 50% in 2002. National salt producers developed full capacity to cover all nations' requirements in iodized salt.

Capacity building has been done, and more is planned with the continuation of the mass media campaign. There are some specific training needs, including strengthening epidemiologic (data analysis) capacity.

C. Measuring Progress

1. COVERAGE ESTIMATION and IMPACT ASSESSMENT

Coverage estimate on household level (using iodized salt testing kits) has never been performed in Belarus. Data on sales of iodized salt by regions and nationwide could serve as an indirect index of iodized salt consumption by population. From these data, one can estimate that up to 50% of Belarus households use iodized salt, more in urban settings and in areas (particularly of Gomel region) affected by Chernobyl. Household surveys are included in NPA for end of the project period.

A nationwide study of 11,562 children and adolescents from 30 schools throughout the country took place from 1995-98. The median urinary iodine was 44.5 mcg/L, by region – Minsk – 38.1; Gomel – 79.8; Brest – 27.4; Vitebsk – 40.3; Mogilev – 49.0; Grodno – 47.0 mcg/L. Goiter prevalence by palpation was 33.4%, by ultrasonography – 17.2%⁴.

Several regional surveys were performed after 1998 as part of ongoing impact monitoring, but results were never published. Dr. T.Mokhort reported that 191 schoolchildren were surveyed in Braslav, Vitebsk region; median urinary iodine for this group was 76.3 mcg/L and goiter prevalence by ultrasonography – 6.9 to 19.8%, showing persistence of mild iodine deficiency. However, most recent survey of schoolchildren in Minsk (2002) showed adequate iodine nutrition with median urinary iodine 178-207 mcg/L. (It should be noted that in Minsk the highest percentage of iodized salt sale were recorded – 75%).

Conclusions and Recommendations

The IDD elimination program in Belarus has gained momentum very rapidly, especially over past 2-3 years. There is strong support to the program within the Ministry of Health, and good cooperation from other government agencies. Salt producers are well oriented and made significant efforts over past years to increase production and quality of iodized salt. They have

⁴ICCIDD Database available at www.iccidd.org

built capacity to fully cover national requirements in iodized salt and to export it to neighbouring countries. NPA calls for IDD elimination by 2005.

Production and supplies of iodized salt are increasing and currently up to 50% of all salt sold through retail outlets is iodized. In 2002 overall supplies of iodized salt (local production plus import) to Belarus market reached 32 thousand tones (or 3.2 kg per capita per year), significantly more than in 1999. Current regulation mandates the use of iodized salt for food procession (except fish) and for public catering, but information on the amount of iodized salt entering food industry is lacking.

There is a good regulatory environment for inspection and steps are being taken to strengthen this environment. Laboratory capacity for salt analysis exists on regional (oblast) and district (rayon) levels, and samples are being collected and analyzed. System for impact measurement (biological monitoring) is also in place and functioning. However, information on household iodized consumption is lacking.

A number of activities have been initiated that are likely to have a significant impact on improving use of iodized salt, including continuation of an awareness and demand creation campaign and strengthening of existing legislation and regulation leading to adoption of USI.

It is safe to assume that Belarus is only few steps away from reaching the goal of IDD elimination with the adoption of full scale USI that includes iodization of all salt for human consumption.

However, there are some recommendations that may help strengthening the program.

A. Iodized salt production and supply

Efforts of salt producers to increase the supply of iodized salt are successful and should be continued.

- Salt Situation Analysis (SSA) with simple questionnaire used for preparation of this report should be performed on annual basis, complementing ongoing product monitoring.
- The idea of iodized salt logo creation should be further explored (see below).
- To better define consumer's choices, focus group discussions with consumers are recommended to clarify preferences for non-iodized salt for canning and pickling, the relative importance of price difference, attention to labelling and salt purchase patterns.

B. Program implementation

Advocacy efforts within the government have been successful and should be continued.

- It would be valuable to capitalize on the increased program momentum by creation of **National Alliance for Sustained IDD Elimination**. This Alliance could include all members of existing working group (representatives of government agencies, health and

nutrition institutes, salt producers, food industry, etc.) and have more frequent meetings for the next 2 years to underscore the importance of IDD elimination program and to facilitate policy decisions.

- It is very important to continue lobbying for implementation of USI, including iodization of all salt in retail trade. Ministry of Health plans to pass a government decree forbidding importation of non-iodized salt for human consumption; in the future, this should be complemented by limitation and prohibition of local production of non-iodized salt, but this remains a difficult political issue.
- The IEC campaign appears well designed. It may be useful to add some elements to this campaign:
 - A component of the campaign to target retailers and others in the salt trade (this has been already considered for 2003).
 - Publishing more information on ongoing program and progress achieved in national and international medical and nutrition scientific journals. Specifically, Belarus has a unique experience of large scale use of iodized salt in food industry. This poses significant difficulty in other countries and Belarus experience may be convincing. IDD Newsletter is specifically requesting human interest stories from countries, and Belarus could provide this. Other ways of information sharing, including internet, should be considered.
 - The development and testing of a logo to be used for iodized salt packages, on all printed material concerning iodized salt, and in TV spots—in order to provide consumers with an easily recognized image of the appropriate salt to use. This could be potentially achieved in collaboration with Russian and Ukraine salt producers since salt market in these countries is rather common and development of separate logos for each country may not be feasible, and even confusing.
- With this in mind, it is important to invite on the next Advocacy Event in Belarus representatives from Russia and Ukraine to share experience and set up a foundation for future collaboration.
- Regional UNICEF Office is planning to conduct several training workshops on the basics of micronutrient programs (supported by Centers for Disease Control, CDC, Atlanta, USA). The first workshop for CARK countries is planned for March 2003 in Almaty, Kazakhstan. Taking into account progress achieved in Belarus, this country could host the next Workshop.
- In the future, a review of school curricula may be useful, and some revisions needed to ensure that IDD is adequately covered.

C. Assessment of iodized salt use and program impact

- Since coverage estimate for iodized salt on household level (using direct testing of salt) has never been performed in Belarus, it is highly advisable to conduct such studies. They may provide with data for the advocacy and for further program monitoring. Coverage studies may be incorporated into ongoing projects conducted by various partners. UNICEF may provide for these assessments salt testing kits.
- System for monitoring of food industry use of iodized salt should be created. This should fit into existing statistical reporting system without creation of additional bureaucratic burden.

- With urinary iodine recently assessed, there appears to be no immediate need for assessing this again until there is evidence of improvement in household iodized salt use. If such studies are conducted with other projects, it is important to supplement them with assessment of household use of iodized salt. It should be noted that goiter prevalence might *not* be a useful indicator, since goiters may not return to normal in countries that have had endemic iodine deficiency.

D. Comments on use of ISPAT for program assessment

ISPAT was developed several years ago, and was field tested in Malawi and several other countries. In 2002 ISPAT was used for informal program reviews in Moldova and Bulgaria by Dr. R.Houston (one of leading designers of this tool). The organizational structure of ISPAT was useful and allowed some compartmentalization of information collection for this report. ISPAT was useful in providing an organizational structure for the elements of the program, and to allow review of each element. For each structural element of the program, the checklist questions were useful. In some instances they were even too comprehensive, and some were not relevant to this program.

ISPAT could be applied more widely in overall program reviews, especially for internal program review carried out by national program teams. For this, it is advisable to translate it into Russian language. Short training on application of ISPAT for national program officers and UNICEF program staff may be needed.

ISPAT could also be used to facilitate external reviews, specifically for Partnership Reviews of Adequate Iodine Nutrition in countries that are reaching the goal of IDD elimination.

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Annex 1.

STRATEGY FOR ELIMINATION OF IODINE DEFICIENCY DISORDERS IN BELARUS, (2003-2005)

(Approved by the Republican Meeting “Prevention of Iodine Deficiency Disorders in Belarus”), Minsk, November 2002

Alarming situation in the Republic of Belarus substantiates to the need for urgent measures to be taken to eliminate Iodine Deficiency Disorders (IDD). The measures should be aimed at prevention and reduction of iodine deficiency with the purpose of eliminating its negative impact on the state of people’s health. The objectives of the government’s strategy can be summarised as follows:

1. Recognition of universal salt iodization (USI) as a priority measure for the elimination of iodine deficiency.
2. Establishment of the efficient monitoring system for the evaluation of the programme activities and for timely adjustments.
3. Establishment of the system for continuous supply of the relevant medical products for prevention, diagnosis and treatment of IDD.
4. International co-operation with UNICEF, WHO and other organizations that put an objective of rapid and sustainable elimination of iodine deficiency on the global level.
5. Production of foods enriched with iodine.

The strategy shall include six stages:

Stage 1. Development and improving of the relevant legislative framework and regulations;

Stage 2. Increase of iodised salt production and improvement of its quality;

Stage 3. Introduction of universal salt iodization;

Stage 4. Knowledge promotion and training of specialists;

Stage 5. Constant hygienic monitoring;

Stage 6. Monitoring of iodine nutrition and improvement of medical services.

Stage I. *Development and improvement of legislative framework and regulations.*

Ministries of Health and of Trade shall initiate development and adoption by the Council of Ministers of the Republic of Belarus (in 2003) of a Resolution prohibiting importation of non-iodized salt. Ministry of Agriculture should develop and adopt by 2005 a Resolution on mandatory use of iodized salt for stocks breeding.

Stage 2. *Increasing of iodised salt production.*

There are two producers of iodised salt in the country: Joint Stock Company “MozyrSalt” and Production Amalgamation “Belaruskaliy”. Those companies can fully satisfy the needs of the domestic market of iodized salt.

Stage 3. *Introduction of universal salt iodization.*

Future steps will involve:

- More stringent control over the implementation of the Government Decree N484, April 6 2001 “On Prevention of Iodine Deficiency Disorders”
- Control over the directors of shops and shopping centres who are personally responsible for ensuring proper storage of salt with the view to avoid losses of iodine and close monitoring over expiration dates.
- Monitoring of the use of iodised salt in catering, especially in children facilities
- Further increase of the use of iodized salt by the food industry
- Implementation of iodized salt use for stock breeding.

Stage 4. *Knowledge promotion and training of specialists.*

Mass media should ensure coverage of the problems associated with IDD. The following activities are recommended:

- Providing of population with the detailed information on IDD, their origin and prevention;
- Raising awareness on the need to use iodised salt and explanation to the households the advantages of the salt iodised with potassium iodate;
- Production of public service announcements for TV and radio; publication of the posters, leaflets and brochures;
- Promotion activities involving schoolchildren, students, adult population, pregnant women and breast-feeding mothers.

Training of personnel is viewed as a key element for implementing activities under iodine deficiency elimination programme. Training of staff should be carried out within the existing system of training.

Basic training shall be ensured in medical universities and colleges of the country. Postgraduate training should be conducted in the Belarus Institute for Advance Medical Training of Physicians and in the School for Qualification Upgrading of Nurses. Postgraduate training on iodine deficiency disorders prevention and treatment shall ensure the upgrading of qualification of endocrinologists, gynaecologists, hygienists, paediatricians, general practitioners, epidemiologists, and nurses. Postgraduate training also includes special training for laboratory doctors, functional doctors and laboratory nurses.

Stage 5. *Hygienic monitoring.*

Ministry of Health shall:

- Continue monitoring of iodised salt quality, including studies of iodine concentration in produced salt and salt on sale within the whole period of shelf life as well as monitoring of storage conditions, summary and analysis of the data received.
- Conduct knowledge, attitude and practice (KAP) and household surveys on the use of iodized salt by population after implementation of measures planned for 2003-2005.

Stage 6. *Medical aspects and iodine nutrition monitoring*

The medical aspects of the programme shall include:

- enlarged activities on early diagnosing and rational treatment of thyroid disorders;

- establishment of the system for thyroid pathologies recording (the Register “Thyroid Gland”) to ensure dynamic supervision and rational management decisions;
- strengthening of the programme for congenital hypothyroidism screening;
- Full-fledged supply of medicines and equipment to the relevant medical facilities.

Monitoring iodine availability will be based on the level of iodine excretion with urine and size of thyroid gland in different regions of the country taking into account the age and assessment of health status of urban and rural population. The efficiency of IDD prevention and treatment will be evaluated through the study of medical records.

The objective of the programme will be met when:

- Proportion of households using properly iodised salt will reach 90%;
- Overall rate of endemic goitre (diagnosed through palpation) will be less than 5%;
- Proportion of urine samples with iodine concentration below 100 mcg/l will be less than 50%, and proportion of urine samples with iodine concentration below 50 mcg/l will be less than 20%.