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ABBREVIATIONS

AAS	Atomic Absorption Spectrometer
ACT	Asian countries in transition
ADB	Asian Development Bank
AIC	American Ingredients Company
CAR	Central Asian Republics
CARK	Central Asian Republics and Kazakhstan
CDC	Center for Disease Control and Prevention
FF	Flour fortification
FSU	Former Soviet Union
HPLC	High Performance Liquid Chromatography
ID	Iron deficiency
IDA	Iron deficiency anemia
IDD	Iodine deficiency disorders
IDPAS	Iron Deficiency Project Advisory Service
INF	International Nutrition Foundation
JFPR	Japan Fund for Poverty Reduction
KAN	Kazakh Academy of Nutrition
MoH	Ministry of Health
MOST	The USAID Micronutrient Program
RCAO	Regional Coordination and Administration Office
RDI	Recommended Dietary Intake
SES	Sanitary and Epidemiological Station
SI	Salt Iodization
UNICEF	United Nations Children’s Fund
UNICEF CARK	Regional Office of United Nations Children’s Fund for CARK
UNU	United Nations University
USI	Universal Salt Iodization
WHO	World Health Organization
WFF	Wheat Flour Fortification

SUMMARY

1. The ADB approved for grant assistance, under the JFPR, a regional project¹ for five ACT², in April 2001. On 26 September 2001, the Government of Japan approved financing for the supplementary proposal for Azerbaijan to be included in the previously approved JFPR Project. On 15 June 2002, the Contract No. COCS/02-474 “Contract for consultant’s services between Asian Development Bank and Kazakh Academy of Nutrition, Kazakhstan” in the framework of JFPR 9005-KAZ Program “Improving nutrition for poor women and children in Asian countries in transition” was signed. In accordance with ADB amendment of the contract, on 18 March 2004, the following was decided: (1) To revise the contract completion date from 31 December 2003 to 30 June 2004; (2) To include the submission of the first quarterly report for 2004 in the new TOR. In September 2004 the contract completion date was changed from 30 June 2004 to 31 December 2004.

The activities of KAN had started much earlier, namely in January 2001, when Gary Gleason visited KAN after his trip in the region. Then Joseph Hunt also visited Almaty and KAN assisted him in organizing and conducting the first ADB meeting (21-22 March 2001, Almaty, Kazakhstan) with the representatives of the salt industry, millers, bakeries and sanitary-epidemiology services. Joseph Hunt and Gary Gleason oriented KAN on the provision of the preparatory work concerning activities on substantiation of the composition of the vitamin-mineral premix for wheat flour fortification and organization of Almaty Roundtable. That is why the activities of KAN on implementation of JFPR 9005 Program in six countries (Azerbaijan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan and Uzbekistan) for the period from January 2001 to May 2002 were summarized in KAN’s **Inception Report**, that was submitted in August 2002.

Then the **Quarterly Report I**, which covered the activities of KAN on the implementation of JFPR 9005 Program for the period from June 2002 to September 2002, was submitted in October 2002.

The **Mid-Term Report**, that covers the activities of KAN on the implementation of JFPR 9005 Program for the period from January 2001 to the end December 2002, was submitted in January 2003.

The **Quarterly Report II** covers the activities of KAN on implementation of JFPR 9005 Program for the period from January 2003 to March 2003.

The First Quarterly Report for 2004 covers the activities of KAN on the implementation of JFPR 9005 Program for the period from January 2004 to the end of March 2004.

In accordance with the Contract COCS/02-474: a Baseline report for the Sentinel study is to be submitted by the end of November 2002, and a Final Report is to be submitted by the end of December 2002. However, the fieldwork for the first round of the Sentinel Study was conducted in December 2002 – April 2003, and **the Report on the First Round of the Sentinel Study** was submitted in November 2003. The fieldwork for the second round of the

¹ JFPR 9005 - Improving Nutrition for Poor Mothers and Children in Asian Countries in Transition for \$6 million, approved on 26 April 2001.

² Republic of Kazakhstan, Kyrgyz Republic, Mongolia, Republic of Tajikistan, and the Republic of Uzbekistan.

Sentinel Study was conducted in May-August 2004, and **the Final Report on the Sentinel Study** was submitted in November 2004.

The **Final Report** covers the activities of KAN on the implementation of JFPR 9005 Program for the period from January 2001 to the end of December 2004.

2. The negative consequences of the transition period for these republics, alongside with the certain specificity, are characterized by the generation of many problems. They are shown in the essential aggravation of health and nutrition status of population, wide spreading of alimentary-related diseases connected to deficiency of micronutrients, in particular, IDA, IDD, and multi-vitamin deficiencies. The specified micronutrient deficiencies are one of the basic reasons of the high infant and maternal mortality rate, retardation in physical and mental development, impairment of brain development, growth and the immune function of children, especially among the poor parts of the population, as well as a deterioration of social-economic parameters and increase of poverty level. The World Bank estimates that the economic cost of micronutrient malnutrition in developing countries is, at least a 5 percent loss of the gross domestic product.³
3. The JFPR-9005 Project is designed to address the malnutrition crisis that prevails within these transitional economies and particularly targets poor women in reproductive age and children. The Project aims at improving the nutrition status, and physical and mental capacity of the poor by means of USI and WFF with vitamin-mineral complex. The National Programs of six involved countries, elaborated within the framework of the realization of the specified International JFPR 9005 Program, take into consideration the specificity of the countries connected to social-economic, demographic and health, legislative, food, financial, organizational, administrative and other features. The Regional Project of KAN, prepared within the framework of the realization of the specified International JFPR 9005 Program, takes into account mainly those issues, which are general for all the countries covered by the project. These issues are listed in the JFPR 9005 Project Terms of Reference by KAN (**see annex 1, Inception Report**).
4. KAN has performed all the activities that were planned for the reporting period (January 2001-December 2004) in accordance with the “The Terms of Reference”, Contract No. COCS/02-474 “Contract for consultant’s services between Asian Development Bank and Kazakh Academy of Nutrition, Kazakhstan”, and appropriate Contract Variations.
5. Wheat flour fortification of first and supreme grades with the premix KAP Complex #1 (includes iron, zinc, thiamin, riboflavin, folic acid and niacin) has already started, 580,758 metric tones of fortified flour have been produced⁴, which allows supplying around 10% of the annual flour requirement, and 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 has been made since the Almaty Forum in October 2001. At the beginning of the Project period, IDA and IDD was highly prevalent among women and children in these countries, wheat flour was not fortified by iron and other micronutrients, and less than 30% of the households in the area were adequately using iodized salt. The iodized salt production in

³ World Bank 1994. *Enriching Lives: Overcoming Vitamin and Mineral Malnutrition in Developing Countries*. Development in Practice Series.

⁴ P. Ranum “Issues Paper on Flour Fortification”, 2004.

the 15-month period from January 2003 to March 2004 was 209 MT iodized salt, and it was sufficient to supply 53% of the total population with iodized salt in the area⁵, as estimated on the bases on a global salt user rate of 5kg/capita/year.

6. The success of the ADB/JFPR funded projects Improving Nutrition for Poor Women and Children in central Asia, has depended upon several factors related to the projects overall communication and social mobilization strategy. These include: effective policy and regulatory advocacy; generation of additional resources; creation of new alliances; motivation and training of different governmental and non-governmental cadres on new concepts and rationales for better micronutrient nutrition; and community communication (promotion of in changes in behavior resulting in sustained consumer demand for iodized salt and fortified flour).⁶
7. In many countries of the region the nutrition status of many women and children continues to be poor with negative health consequences for children, families and constraining economic and social development: IDD in pregnancy permanently damages the learning capacity of children; IDA causes serious damage, through poorer pregnancy outcomes, permanent impairment of cognition in young children, poor performance in school, reduced work capacity among adults, and increased mortality from infectious diseases and increased risk of heavy metal poisoning in contaminated environments; Zinc deficiency is associated with lower immunity to infectious disease, slower child growth; Folic acid deficiency in pregnant women contributes to congenital abnormalities of the central nervous system of the newborn and is an independent risk factor for coronary heart disease. The key B-vitamins, thiamin, riboflavin, and niacin are removed from wheat during flour milling along with most iron and folic acid, which contributes to micronutrient malnutrition among populations who consume large amounts of bread and other flour-based foods. Given the seriousness of the health effects of these micronutrient deficiencies, they must be eliminated, as they are a public health problem.⁷
8. The Final Report is prepared in accordance with the implementation of appropriate points (written in bold capital letters) of the Terms of Reference by KAN (determined by Contract No. COCS/02-474) during the reporting period.

⁵ F. Van der Haar “Issues Paper on Salt Iodization”, 2004.

⁶ G. Gleason Issues Paper on Critical Review of the Communication Strategy of JFPR9005: Beyond Creation of Consumer Demand for Iodized Salt and Flour Fortification in Central Asia, 2004.

⁷ ALMATY FORUM 2004. Towards Sustainable Food Fortification in Central Asia, Mongolia and Azerbaijan, Recommendations.

TECHNICAL/PROJECT COMPONENTS

(i) TO PROVIDE REGIONAL LEADERSHIP REGARDING NUTRITION ASSESSMENT AND TECHNICAL MONITORING AND EVALUATION OF THE PROJECT

This is one of the key issues of the Project and its realization (and the realization of other sections as well) was conducted taking into consideration the suggestions and recommendations of International consultants (Prof. Nevin Scrimshaw, Senior Advisor, Food and Nutrition Program UNU; Gary Gleason, Program Director, IDPAS; Peter Ranum, Micronutrient Fortification Consultant to UNICEF and ADB; Fritz van der Haar, IDD and USI Consultant to UNICEF; Pan Varghese – Salt Consultant to ADB) and the specialists of ADB (Joseph M. Hunt, Rie Hiraoka), RAO (Rustam Muzafarov) and UNICEF (Philippe Heffinck, Juan Agilar, Simon Strachan, Nune Mangasaryan, John Egbuta).

KAN is a Regional Research Center on Nutrition for CARK in the FSU and has its Branches in CAR, and provided regional leadership regarding Research Programs on Nutrition. That is why KAN’s Team (Turegeldy Sharmanov, Shamil Tazhibayev, Mussa Aijanov, Yuri Syniavsky, Feruza Ospanova, Akkumis Salkhanova and Zhanara Tolysbayeva) has information on Research Centers and laboratories, their capacities, and on appropriate researches and the results of surveys on nutrition in the region as well.

The nutritional status of different groups of population and the level of nutrients intake have been changing since the dissolution of the FSU, and needs to be assessed in CAR, Azerbaijan and Mongolia as well. The national representative nutrition survey after the dissolution of the FSU was conducted only in Kazakhstan, 1996.

The leadership role of KAN regarding nutrition assessment and technical monitoring and evaluation of the project is related to the following activities of KAN:

- (1) Review of worldwide results of micronutrient intervention trials, focusing on the impact of iron, zinc, and B-vitamin group fortification program on the health benefits with emphasis on identifying critical gaps in the current knowledge that might impede the implementation of interventions program in the Region.
- (2) Preparation of analysis of the flour milling situation in Kazakhstan for the last 10 years period. This work was done together with Evgeny Gann (President of Millers and Bakeries Unit of Kazakhstan).
- (3) Development of criteria, guidelines and models for wheat flour enrichment mix taking into consideration (as adopted by Kazakhstan and other countries in the Region):
 - the WHO’s RDI for micronutrients, adjusted to age and sex population groups;
 - country-wide data on prevalence of vitamin-mineral deficiencies;

- per capita consumption of the food vehicle to be fortified;
 - current dietary habits of the population and bioavailability of the nutrients added (overall diets and meal composition);
 - extent of processing, transit, storage and losses of the micronutrients in the process of food preparation;
 - ensuring the taste acceptable color, solubility, and particle size of the enriched flour,;
 - reasonability of additional cost of the fortification for the consumer;
 - analytical property of the method for measuring, controlling and/or enforcing the levels of essential nutrients added to wheat flour.
- (4) The vitamin-mineral premix for fortification of wheat flour in Azerbaijan, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, and Uzbekistan was elaborated. This work was realized by KAN’s Team (T. Sharmanov, M. Aijanov, Y. Sinyavsky, I. Zhoy) in collaboration with ADB consultants (N. Scrinshaw, G. Gleason, P. Ranum).
- (5) Elaboration of standards for fortified flour by premix “KAP Komplex #1”. This work was done in collaboration with Peter Ranum.
- (6) Gathering and analyzing existing data on nutrition, especially on IDA, IDD and goiter prevalence in the region in collaboration with country specialists (**see annex 2, Inception Report**). Some new baseline data have been collected in the participating countries after submission of Inception report, and these new data are presented in the Midterm report (**see annex 1, Mid-Term Report**).
- (7) The salt and flour situation analysis in the region was prepared in collaboration with international consultants and country specialists (**see annex 3, Inception Report**). The salt situation in countries has changed and these changes are presented in the Midterm report as well (**see annex 1, Mid-Term Report**).
- (8) KAN, in collaboration with country teams, carried out two rounds of the Sentinel Study in all six countries. The fieldwork for the first round of the Sentinel Study was conducted in December 2002 – April 2003, and **the Report on the First Round of the Sentinel Study** was submitted in November 2003. Baseline data on hemoglobin level in capillary blood samples, ferritin level in blood serum, folic acid level in blood plasma, and iodine level in urine samples among children of 2-12 years in pilot regions in all six countries were collected during the First Round of the Sentinel Study before a wide range of food fortification started. The technical monitoring and evaluation indicators for the Project are developed in collaboration with international consultants and country specialists (**see Inception Report, and see section ii, Mid-Term Report**).
- The fieldwork for the second round of the Sentinel Study was conducted 12 or more months after starting a wide range food fortification, in May-August 2004, and **the Final Report on the Sentinel Study** was submitted in November 2004. The same children and women living in the same households, which were sampled in the first round of the Sentinel Study, were observed in the second round of it, and the same indicators were analyzed.
- (9) Some laboratory analysis of premix, fortified flour and blood samples for the six involved countries were conducted during the first step of implementation of the program (**see: The**

report on the results of micronutrients analysis in fortified and non-fortified wheat flour samples and in the Premix KAP Complex #1 in the six countries involved in JFPR Project, and the Final Report on the Sentinel Study).

- (10) Assistance to specialists from the participating countries on conducting the nutrition assessment, technical monitoring and evaluation of the project were provided.
- (11) KAN’s specialists participated in the preparation and then served as moderators and presented reports at all mini-roundtables/workshops conducted, including:
 - Regional Roundtable, 8-12 October 2001, Almaty, Kazakhstan (**see also section VI, Mid-Term Report**): rendering assistance in organizing the Regional Roundtable, including participation in high-level negotiations with the representatives of involved countries, ADB and UNICEF, presentation reports on IDA, IDD and Premix for flour fortification.
 - The Roundtable on Communication Strategy for Food Fortification, 5-7 March 2002, Bishkek, Kyrgyz Republic (**see section V, Mid-Term Report**). KAN’s specialists presented reports, served as moderators, and participated in the elaboration of Regional Communication Strategy for Food Fortification.
 - The Workshop «Food fortification: regulation/standards, quality assurance control», 18-21 June 2002, Tashkent, Uzbekistan. KAN’s specialists elaborated the Key questions for preparation of the Country Report for the Workshop, reviewed country reports, participated in the preparation of Summary remarks for Country reports, follow-up actions after Tashkent workshop, plan of action and recommendations on salt iodization and wheat flour fortification (**see section VI, Mid-Term Report**).
 - Astana-Almaty workshop on “Flour fortification and midterm evaluation of JFPR Project” October 1-4, 2002, Astana-Almaty, Kazakhstan. They elaborated the Key questions for the preparation of Country Report for the Workshops, reviewed country reports, participated in the preparation of Summary remarks for Country reports, follow-up actions after Workshop, plan of action and Recommendations on food fortification. (**see section VI as well, Mid-Term Report**).
 - Almaty Regional Forum, “Towards Sustainable Food Fortification in Central Asia and Mongolia” 2-3 September 2004. This is the second regional round-table with participation of Ministers/Vice Ministers, ADB and UNICEF, and representatives from all countries participating in the JFPR 9005 Project.
 - Almaty Regional training workshop “To improve the monitoring and evaluation of micronutrient fortification of salt and flour in CARK, Azerbaijan and Mongolia”, 11-20 October 2004. The workshop was organized and conducted jointly with CDC, UNICEF, ADB, MOST, Emory University and KAN, and more than 50 specialists from Azerbaijan, Afganistan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan and Uzbekistan were trained.
- (12) Advice was giving during all the mini-roundtables/workshops and help reach consensus statements on appropriate standards for premixes, regulation, trade, quality assurance, capacity building for nutrition surveillance, communications and the research-based evidence for sustaining and expanding food fortification (**see section VI, Mid-Term Report**).

- (13) KAN's specialists jointly with the country team elaborated:
- A draft of the Law of the Republic of Kazakhstan "Prevention of Iron Deficiency Disorders" (see **annexes 2 and 3**, English and Russian versions, **Mid-Term Report**). Comments on the draft of law were received from International Consultant (see **annexes 4 and 5**, English and Russian versions, **Mid-Term Report**). The Law was adopted in the first quarter of 2003. The Law prohibits the production, distribution, importing and exporting of non-iodized salt.
 - A draft of the Law of the Republic of Kazakhstan "A Law on the quality and safety of Food Products" (see **annex 6**, Russian version, **Mid-Term Report**), and this document, which was adopted by the Parliament in April 2004. The Law includes issues on quality and safety of food products and food fortification as well. The Law includes assets on mandatory fortification of wheat flour of first and supreme grades produced in Kazakhstan. At the moment, the appropriate subordinate legislation which are necessary for implementation the Law into practice is being elaborated.
- (14) Preparation of the Terms of Reference on IDD/USI for the participating countries.
- (15) Participation in the elaboration of Kazakhstan's Country communication plan of activities.
- (16) Participation in the Kazakhstan's Country Workshop on Communication (1-6 July 2002, Astana):
- Presenting a report on IDA and IDD situation in country.
 - Participation as moderators in Technical Working Groups sessions on development of the implementation plan of communication activity on the all levels.
 - Participation in the elaboration of recommendations and Country communication plan of activities in collaboration with the country team and specialists from UNICEF CARK.
- (17) Participation in the realization of Kazakhstan's Country communication plan of activities:
- Searching PR-companies in Kazakhstan to take part in the tender on selection of the best company to realize the national communication plan;
 - Conducting Technical Meeting on selection of the PR company, which will carry out wide scale campaign on IDD and IDA through all the Republic of Kazakhstan (September 2002);
 - Organization and conduction, together with Country Project office and UNICEF Kazakhstan, of Technical Meetings on consideration and adjustment of informational educational communicational materials on IDA (poster, leaflets for population, producers, politicians, mass media, pregnant women, booklet, brochure, commix for schoolchildren, video-spot), developed by the Kazakh Academy of Nutrition; and on review of realization of communication campaign;
 - Discussion and participation in the official launch of the communication campaign on prevention of micronutrients deficiency (IDD and IDA) through fortified food products;
 - Participation and discussion in the Technical Meeting on consideration of further actions for the Communication Campaign on the prevention of micronutrient deficiency disorders

- (18) Writing the comments for Midterm Reports of all six involved countries (**see annexes 7 and 8, Mid-Term Report**).
- (19) The Technical Specifications for the vitamin-mineral premix “KAP Komplex # 1” developed by M.Aijanov and Y.Sinyavskiy under the direction of T.Sharmanov and with assistance of N.Scrimshaw, G.Gleason, P.Ranum, I. Zhoy were approved by Gosstandard of Kazakhstan in 2001, March 1, as Official Documents under No. TU 70 00 RK 39309831-JSC-025-2002.
- (20) The Technical Specifications for wheat flour fortified by the premix “KAP Komplex # 1” developed by M.Aijanov and Y.Sinyavskiy were approved by Gosstandard of Kazakhstan in 2001, March 1, as Official Document under No. TU 70 00 RK 39309831-JSC-026-2002.
- (21) The Technological Descriptions and Compounding for the wheat flour fortified by premix “KAP Komplex # 1” developed by Y.Sinyavskiy and M.Aijanov were approved by Sharmanov T.Sh., President of KAN, in 2002, October 28.
- (22) The Technical Specifications for the bread and bakery products fortified by the premix “KAP Komplex № 1” developed by M.Aijanov and Y.Sinyavskiy were approved by Gosstandard of Kazakhstan in 2002, September 18, as Official Document under No. TU 70 00 RK 39309831-JSC-028-2002.
- (23) The Technological Descriptions for bread and bakery products fortified by premix “KAP Komplex # 1” developed by Y.Sinyavskiy and M.Aijanov and Compounding for the bread and bakery products fortified by premix “KAP Komplex # 1” developed by Y.Sinyavskiy were approved by Sharmanov T.Sh., the President of KAN, in 2002, September 21 (**see Quarterly Report II, 2003**, File name: BreadFromFFTechSpec-nRus.doc).
- (24) The technical Specifications for the vitamin-mineral premix “KAP Komplex # 1” as well as Technical Specifications, Technological Description and Compounding both for the wheat flour fortified by premix “KAP Komplex” and the bread and bakery products fortified by the premix “KAP Komplex # 1” were distributed to all participating countries in order to facilitate the adoption of the similar document in countries *via* KAN and RCAO.
- (25) Modification # 1 of the Technical Specifications for the vitamin-mineral premix “KAP Komplex №1” (TU 70 00 RK 39309831-JSC-025-2002) developed by M.Aijanov and Y.Sinyavskiy under the direction of T.Sharmanov and with assistance of N.Scrimshaw, G.Gleason, P.Ranum, I. Zhoy were approved by Gosstandard of Kazakhstan in 2003, March 14 (**see Quarterly Report II, 2003**, File name: PremixModif-nTechSpec-nRus.doc).
- (26) Modification # 1 of the Technical Specifications for wheat flour fortified by vitamin-mineral premix “KAP Komplex № 1” (TU 70 00 RK 39309831-JSC-026-2002) developed by M.Aijanov and Y.Sinyavskiy were approved by Gosstandard of Kazakhstan in 2003, March 14 (**see Quarterly Report II, 2003**, File name: FFModif-nTechSpec-nRus.doc).
- (27) Modification # 2 of the Technical Specifications for vitamin-mineral premix “KAP Komplex № 1” (TU 70 00 RK 39309831-JSC-025-2002) developed by M.Aijanov and Y.Sinyavskiy under the direction of T.Sharmanov and with assistance of N.Scrimshaw, G.Gleason, P.Ranum, I. Zhoy were approved by Gosstandard of Kazakhstan in 2004, February 11.

- (28) Modification # 2 of the Technical Specifications for wheat flour fortified by vitamin-mineral premix “KAP Komplex № 1” (TU 70 00 RK 39309831-JSC-026-2002) developed by Y.Sinyavskiy and M.Aijanov were approved by Gosstandard of Kazakhstan in 2004, February 11.
- (29) DBF files of modifications # 1 and # 2 of the Technical Specifications for both vitamin-mineral premix “KAP Komplex № 1” (TU 70 00 RK 39309831-JSC-025-2002) and wheat flour fortified by vitamin-mineral premix “KAP Komplex № 1” (TU 70 00 RK 39309831-JSC-026-2002) approved by Gosstandard of Kazakhstan were disseminated to the Minister of Health of all participating countries of JFPR Project accompanied with a cover letter of academician Sharmanov T.Sh. via KAN and RCAO.
- (30) Participation in the realization of Kazakhstan’s Country communication plan of activities:
- Participation in the Technical Counsel of Expert Group in the framework of the realization of the communication campaign for prevention of micronutrient deficiency disorders (6-7 February 2003, Almaty, Kazakhstan) on consideration, evaluation of informational educational communicational materials on IDA (poster, leaflets for population, producers, politicians, mass media, pregnant women, booklet, brochure, commix for schoolchildren, video-spot) developed by KAN.
 - Discussion and participation in the official launch of the communication campaign on prevention of IDD through fortified food products (iodized salt).
- (31) Trip to Bishkek, Kyrgyz Republic, 2002, November 21-22 (see **Aijanov’s report**, file name: Aijanov ReportApr04):
- Report on composition of premix; iron types and issues; premix formulation; packaging and storage; handling and shelf life; quality control assurance and quality control iron used spot-test.
 - Visiting together with Artur Bujuklanov, and Alexander Shefner (consultant UNICEF) “Bishkekmellcombinat” with the intention of checking the correctness of the flour fortification process, and the regularity in which spot-tests were carried out.
- (32) Trip to Astana, Kazakhstan, 2003, February 15 (see **Aijanov’s report**, file name: Aijanov ReportApr04):
- Participation in the Meeting of Kazakhstan Coordination Council of JFPR/ADB Project, and giving explanation to key persons from Government, Parliament, Confederation of NGO, Ministry of Health, Agricultural Ministry, Union of Millers and Bakers, UNICEF, ADB, RCAO, and KAN about:
 - The scientific base of micronutrient selection for premix “KAP
 - KAP Complex # 1”;
 - dose-effect and safety of zinc, iron and folic acid;
 - preliminary results of chemical analysis of fortified flour.
- (33) Trip to Bishkek, Kyrgyz Republic, 2003, February 22 (see **Aijanov’s report**, file name Aijanov ReportApr04):

- Mussa Aijanov was invited by Artur Bujuklanov to take part in the conference “Anaemia in highlands” and help destroy the myth of the dangers of the use of fortified flour by the population with high risk of haemochromatosis and/or thalassemia in the highlands because academician Mirrachimov M., Director of Cardiology and Therapy Center of Kyrgyz Republic, addressed an open letter to the Ministry of Health of the Kyrgyz Republic suggesting that they stop the production of fortified flour and do not purchase vitamin-mineral premix “KAP Komplex № 1” in order to avoid evaluated risk of cardio-vascular diseases and cancer. Aijanov’s arguments were the following: (1) people with thalassemia minor are not at risk of iron overload and are not at any greater risk of complications from iron in the diet than any one else in the general population, and (2) persons with idiopathic haemochromatosis have reduced protective inhibition of iron absorption and may develop iron overload, especially if taking frequent iron tablets for long periods, but no cases of idiopathic haemochromatosis were registered in the Kyrgyz Republic (*based on personal communications with both professor Raimzhanov A.R., Director of the National Center of Haematology, and academician Kudayarov D.K., Director of the Research Institute of Obstetrics and Pediatrics*). Although Professor Mirrachimov M. did not participate in this conference, all (300) participants presented by local hematologists, gynecologists, obstetricians, pediatrics, and scientists met Mussa’ arguments with approval.
 - A letter-assurance to Mr. Mamytov M., Minister of Health of the Kyrgyz Republic, from academician Sharmanov T.Sh. about the fact that there is no reason to believe that flour fortification will have any significant adverse impact on those individuals suffering from thalassemia was passed through Artur Bujuklanov.
- (34) Country visits to Chimkent, Sayram Rayon of Chimkent Oblast, and Kyzylorda Oblast by M.Aijanov, F.Ospanova, and N.Karsybekova in 2003, February 24 to 28, for discussion with local Government, NGO, physicians, and mass media about the ways and approaches to forward WFF and SI in the pilot regions (**see annexes, Quarterly Report II, 2003**, file name TripRepCommun-nKaz03Eng.doc).
- (35) Trip to Ulaanbaatar, Mongolia by M. Aijanov and Y.Sinyavskiy in 2003, March 18-21 for consultation on WFF and take part in two training workshops (**see Aijanov’s report**, file name Aijanov ReportApr04).
- (36) Trip to Baku, Azerbaijan by M.Aijanov, F.Ospanova, A.Salhanova, and Y.Sinyavskiy in 2003, March 28 to April 1 for consultation mission on WFF and SI and participation in two training workshops for physicians, NGO, public organizations, and mass media on IDA and IDD prevention and for assistance on the development of the plans of action of the communication activity in pilot regions (**see annexes, Quarterly Report II, 2003**, file name TripRepCommun-nAzer03Eng.doc and **Aijanov’s report**, file name Aijanov ReportApr04).
- (37) Country visits to Uzbekistan and Azerbaijan with consulting mission on IDD/USI (**see annexes, Quarterly Report II, 2003**, file names TripRepCommun-nUzb03Eng.doc; TripRepCommun-nAzer03Eng.doc). The following activities were conducted:
- Meeting with main JFPR Project stakeholders, and discussing the issues on USI advocacy.

- Discussing and helping with the elaboration of the draft legislation on IDD/USI in Uzbekistan with CPO.
 - Meeting with Country Team for IDD program and discussing the issues on Universal Salt Iodization development.
 - Meeting with NGOs and Project Communication team, and discussing the issues on Universal Salt Iodization development.
 - Meeting with salt producers and discussing the needs of salt iodization equipment and supplies, and internal production monitoring.
 - Making comments and recommendations on the printing of IEC materials and video-spot, developed in Azerbaijan for their publication and distribution among population.
- (38) Country visits to Tajikistan and Mongolia with providing assistance and review of work in the frame of “Improvement of poor mothers and children in Asian countries in transition”. The aims of the assistance mission were the following (**see annexes, Quarterly Report II, 2003**, file name TripRepCommun-nTaj03Eng.doc and file name TripRepCommun-nMon03Eng.doc):
- The issues of food fortification advocacy were discussed with the main JFPR Project stakeholders.
 - Visiting a pilot area aimag Bayan-Ulgii in Mongolia, and conducting training seminar on IDD, USI and communication for trainers in Kazakh language in the frame of “Improvement of poor mothers and children in Asian countries in transition”. Mainly Kazakh people live in aimag Bayan-Ulgii.
- (39) Trip to **Kansas City**, USA, 2003, May 4 to 17, by Sh.Tazhibayev and M.Aijanov (**see annexes, Quarterly Report II, 2003**, file name TripRepUSA03Eng.doc).
- (40) Trip to Dushanbe, Tajikistan by M.Aijanov and Y.Sinyavskiy in 2003, June 1 to 5 (**see Aijanov’s report**, file name Aijanov ReportApr04).
- (41) Discussion between Mr. Ryan Simmons, manager of the AIC, and KAN’ teams (T.Sharmanov, Sh.Tazhibayev, Y.Sinyavskiy, and M.Aijanov) about the expediency and possibility of production of vitamin-mineral premix “KAP Komplex № 1” in Kazakhstan jointly with AIC (**see annexes, Quarterly Report II, 2003**, file name TripRepUSA03Eng.doc and **Aijanov’s report**, file name Aijanov ReportApr04).
- (42) Participation in the Bishkek seminar for Association of Salt Producers and SES/Gosstandart workers (2-3 October 2003), and making a presentation named “Iodine Deficiency Disorders and Universal Salt Iodization situation in region”.
- (43) Participation in a telecast of Kyrgyz TV “Pyramid” on food fortification and the role of KAN in the Project implementation, June 2004.
- (44) KAN’s specialists jointly with the specialists of the National Institute for Research on Food and Nutrition, Italy, and Tajikistan’s Ministry of Health conducted a National Micronutrient Status Survey in Tajikistan, 2003, and the Final Report of the survey was submitted in 2004.
- (45) Trip to Tokyo, Japan by M.Aijanov in 2004, January 15 to 22 to take part in the First Asian Network Symposium on Nutrition “Optimizing Maternal and Child Nutrition for the

Prevention of Chronic Diseases” and present report “Prevention and control of maternal and child anemia in Kazakhstan: Priorities and action steps” with covering of flour fortification issue supported by JFPR.

- (46) Participation and facilitation in the National Seminar “Perfection of communication campaign on JFPR 9005 Project “Improving Nutrition for Poor Mothers and Children in ACT”, conducted by the Confederation of Nongovernmental Organization of Kazakhstan (29-30 January, 2004, Almaty, Kazakhstan):
- Presentation of the Project website, answers to questions on the website.
- (47) Participation and facilitation in the national Workshop on “Quality Assurance and Control of Fortified Wheat Flour”, organized by Kazakhstan CPO of JFPR 9005 in KAN, Almaty, 2004, February 26-27:
- The reports of Sh.Tazhibayev “Quantitative analytical data on quality wheat flour fortification in six countries”, M.Aijanov “Scientific base of the development vitamin-mineral premix “KAP Komplex # 1”, and Y.Sinyavskiy “Internal quality control of flour fortification” were presented and discussed;
 - Semi-quantitative spot-test were demonstrated to millers, SES, Gosstandard and other participants;
 - Presentation of Methodical Recommendations (Manual) “Monitoring of Internal and External Quality Control of Fortified Flour” (Russian version) edited by M.Aijanov, Y.Sinyavskiy, Sh.Tazhibayev, N.Karsybekova, I.Zhoy, and others under the direction of T.Sharmanov and was published by Kazakhstan CPO of JFPR 9005 (see **annex, The First Quarterly Report for 2004**, File name WFFAnalMethRec04.doc).
- (48) Writing the comments and recommendation on the scenario of the TV spot on IDA problem for CPO Azerbaijan by Mussa Aijanov and Akkumis Salkhanova.
- (49) Trip to Azerbaijan for consultation mission on communication activities, which are reflected in trip report (see **annex, The First Quarterly Report for 2004**, File name SalkhanovaTripReportAz04.doc)
- (50) Second Mission of M.Aijanov in Baku and Nakhchevan, Azerbaijan, March 29-April 3, 2004, for consultation on IDA and WFF activities (see **annex, The First Quarterly Report for 2004**, File name MussaTripRepAzerMarch04.doc). The following activities were done during the visit to Azerbaijan:
- Facilitation of training workshops for flour millers and inspection agencies (SES, Gosstandard, Customs laboratory technicians) in Baku and Nakhchevan.
 - Provision of training for laboratory technicians on how to use spot-tests at both workshops and mills’ laboratory.
 - Visits to mills and provision of consultancy on both wheat flour fortification issues and quality assurance and control of fortified flour.
 - Visits to agencies with new spectrophotometers purchased by JFPR, supported and related to the implementation of these equipments for quantitative determination of iron in the flour.

- Discussion with JFPR Project stakeholders on the issues on strengthening the implementation of quality assurance and quality control of flour fortification in mills.
- (51) Preparation of a list of "Estimated amount of Chemicals that are needed for spectrophotometric measurement of iodine level in urine" (see **annex, The First Quarterly Report for 2004**, File name ReagentsForUI.doc), which was distributed to all six country teams.
- (52) Preparation of a list of "Equipment, chemicals and materials needed for internal and external quality control of fortified flour" (see **annex, The First Quarterly Report for 2004**, File name Chemicals&MaterialsForFlourAnalysis04.doc), which was distributed to all six country teams.
- (53) Trip to Kyzylorda, Kazakhstan by M.Aijanov in 2004, September 7 to 9 to take part in the International Conference "Child Health for a Sustainable Future Focused on the Central Asian Republics" supported by the Ministry of Health of Kazakhstan, KAN, JICA, Juntedo University School of Medicine (Japan) and others.
- (54) Increasing the technical capacity of KAN regarding its provision by necessary modern equipment and training of personnel. UNICEF has already provided to KAN by HPLC what is needed for determination of the levels of folic acid and vitamins of B-group, and by AAS what is needed for determination of the levels of microelements. Prof. Nevin Scrimshaw organized a training meeting for KAN's specialist A.Akkulov to Tufts University, USA, for analysis of folic acid in blood samples, and micronutrients in flour samples in 2003.

(ii) TO DEVELOP TECHNICAL MONITORING AND EVALUATION INDICATORS FOR THE PROJECT

The issues of developing technical monitoring and evaluation indicators for the project were discussed during Almaty Round-table, October 2001 with participation of international experts and consultants (Nevin Scrimshaw, Gary Gleason, Peter Ranum, Fritz van der Haar), specialists of ADB, UNICEF and KAN, and representatives from the involved countries. The below listed indicators reflect the consensus achieved during this Round-table, and some approaches that usually are used for monitoring and evaluation.

For monitoring of premix for wheat flour fortification and pooled flour samples, the following analysis will be conducted by KAN.

Monitoring of premix for wheat flour fortification

The levels of all the six fortificants used (iron, zinc, thiamin, riboflavin, niacin and folic acid) are determined in the premix in KAN's laboratory (see **The report on the results of micronutrients analysis in fortified and not fortified wheat flour samples and in the Premix KAP Complex #1 in six countries involved in JFPR Project**, the file name is FlourAnalysisDec04Eng).

Monitoring of pooled flour samples:

The levels of all the six fortificants used (iron, zinc, thiamin, riboflavin, niacin and folic acid) are determined in 156 samples of fortified flour and the premix in KAN’s laboratory, and in 87 samples – in the laboratory of AIC (see **The report on the results of micronutrients analysis in fortified and non fortified wheat flour samples and in the Premix KAP Complex #1 in the six countries involved in JFPR Project**, File name is FlourAnalysisDec04Eng).

The main objective of the project is to increase iodine and iron intake in order to control iodine and iron deficiency and IDD and IDA among population.

Because food fortification (wheat flour and salt) is usually a universal program, it is not possible to use an experimental design that compares control (that does not receive fortified food) and intervention (receive fortified food) groups. Consequently, the design must compare indicators before and after fortification is implemented. This design requires conducting a baseline survey before starting the food fortification program and 2-3 yearly surveys (at least one survey) after starting a wide range implementation of the food fortification program and after the baseline survey. The period between surveys will depend on the type of evaluation or impact measured.

An individual-level biochemical variable or variables need to be collected. The same representative sampling frames and survey methods must be used both times, with the most vulnerable groups being adequately represented in the sample. The post intervention survey should be done at the same time of the year as the baseline survey in order to minimize seasonal factors that may change iron/iodine status, which could complicate the interpretation of results.

It must be noted that salt iodization and wheat flour fortification is a country-wide program for all six countries involved. This means that, ideally, the baseline survey and yearly surveys after the implementation of the food fortification program should be national-representative surveys. It might be important because the premix for flour fortification includes not only iron, but other five micronutrients (zinc, thiamin, riboflavin and niacin) as well, and no National representative nutrition survey was conducted in the involved countries during the last decade (except for Kazakhstan). However, it was decided during Almaty Round-table that these surveys due to the limitation of funding would be restricted, in the framework of the Sentinel Study, only to 40 households in pilot regions from each of the six participating countries.

Evaluation indicators for IDA and wheat flour fortification

There is no single test to diagnose ID or IDA. As a primary indicator, blood hemoglobin (Hb) is not an adequate proxy indicator for iron status in developing countries where infections, including inflammation, might be common. This means that a combination of various biochemical indicators of iron status such as Hb, serum’s ferritin, erythrocyte protoporphyrin, transferrin saturation (that requires measuring serum iron and total iron-binding capacity), and transferrin receptors must be used. Serum’s ferritin and sometimes erythrocyte protoporphyrin concentrations rise when infection is present while transferrin saturation falls; thus, a result in the normal range does not necessarily mean iron sufficiency. Unlike the other iron status indicators, transferrin receptors do not alter with infection. To overcome the individual limitations of each test, WHO has indicated that ID exists where two out of three tests are abnormal. Ideally, erythrocyte protoporphyrin and transferrin receptors should be included in these tests. Serum ferritin is the best indicator of iron stores when infections or inflammations are absent. An acute phase marker such as C-reactive protein can be used to monitor infection and inflammation.

When evaluating the wheat flour fortification program, the criterion is the reduction in the prevalence of low Hb or hematocrit levels, plus an improvement of at least two iron status indicators, among the population consuming fortified flour. The cutoff points to define anemia are shown in Table 1 and those for other indicators of iron status in Table 2. Only the levels of (1) Hb and (2) ferritin from these lists were used as evaluation indicators for IDA in accordance with the consensus of experts (see sections xi and xiv, Mid-Term Report).

Some existing data on IDA prevalence (see annex 2, Inception Report) and flour situation analysis in the region (see annex 3, Inception Report) was used as baseline data for evaluation of IDA as well.

Table 1.
Hemoglobin (g/dL) and hematocrit (%) cutoffs used to define anemia in people living at sea level⁸

Age or sex group	Hb (g/dL) below:	Hematocrit (%) below:
Children 6 months to 5 years old	11.0	33
Children 5-11 years old	11.5	34
Children 12-13 years old	12.0	36
Non-pregnant women	12.0	36
Pregnant women	11.0	33
<i>Severe anemia</i>	7.0	-
<i>Very severe anemia</i>	4.0	-
Men	13.0	39

Table 2.
Iron status indicators⁹

Indicators	Iron status			
	Anemia	Iron deficiency	Iron depletion	Normal iron
Serum ferritin (µg/L)	< 12	< 18	< 24	100±60
Serum iron (µg/L)	< 40	< 60	< 115	115±50
Erythrocyte protoporphyrin (µg/L)	>200	>80	>80	30
Transferrin saturation (%)	< 10	< 15	< 302	35±15
Transferrin receptor (µg/L)		>8.5		

⁸ WHO/UNICEF/UNU (1997). Indicators and strategies for iron deficiency anemia programs // Based on a WHO Report 1994.

⁹ WHO. Indicators and strategies for iron deficiency anemia programs // WHO. – Geneva. – 1994.

Evaluation indicators for IDD and SI

Usually a median concentration of iodine in urine samples and goiter prevalence among schoolchildren are used as evaluation indicators to determine the severity of IDD (Tables 3 and 4). These indicators, with exception of goiter prevalence, were used as evaluation indicators for IDA in accordance with the consensus of experts (see sections xi and xiv, Mid-Term Report).

Some existing data on IDD prevalence (see annex 2, Inception Report) and salt situation analysis in the region (see annex 3, Inception Report) was used as a baseline data for evaluation of IDD as well.

Table 3

Evaluation indicators to determine the severity of IDD

Indicators	Degree of severity of IDD			
	Absence of IDD	Slight	Moderate	Severe
Prevalence of goiter (%) among schoolchildren (by palpation or USI)	<5%	5-19,9%	20-29,9%	=>30%
Median concentration of iodine in urine samples (µg/L)	=>100	50-99	20-49	<20

Table 4

Evaluation indicators for IDD prevention and SI program

Indicator	Level that corresponds to normal intake of iodine by the population
Median concentration of iodine in urine samples (µg/L)	100-300
Percent of urine samples with concentration of iodine <100 µg/L	<50%
Percent of urine samples with concentration of iodine <50 µg/L	<20%
Salt iodization: percent of households that consume iodized salt	>90% ¹⁰

¹⁰ In accordance with the JFPR-9005 Program, percent of households that consume iodized salt should be not less than 66%.

KAN’s team prepared a Questionnaire (Russian version) for collection of information about the prevalence of IDD and production of iodized salt in countries.

The methodical recommendations “Iodized salt in Kazakhstan: quality control and monitoring” for SES specialists, salt producers and importer’s workers and other stakeholders on USI/IDD have been developed and published.

A model of salt monitoring and testing in Kazakhstan was elaborated in collaboration with SES specialists and the country team.

The training seminar was conducted for SES specialists, salt producer’s laboratory workers and stakeholders on USI/IDD with technical support by UNICEF in collaboration with the country team (11-12 December 2003).

A questionnaire about the production of iodized salt was developed in order to prepare the country’s Final-reports (requested by the CPO of Kazakhstan) (see **annex, The First Quarterly Report for 2004**, File name FeruzaQuest-reUSI04Rus.doc)

(iii) LIAISING AMONG THE PARTICIPATING COUNTRIES REGARDING METHODS OF EVALUATING PROJECT IMPACT AND WITH ON-GOING OR PLANNED SURVEYS/STUDIES ON IDD AND IDA

- (1) KAN liaised among all the participating countries regarding methods of evaluating project impact and with on-going or planned surveys/studies on IDD and IDA. The evaluation of the project impact was conducted in collaboration with institutions from participating countries. Most of the Sentinel Study was conducted by the specialists from the participating countries, and KAN was responsible for standardizing and assuring the quality control of the studies, providing assistance and guidance in setting up the standard studies, and determining the level of folic acid in blood samples from countries. The Country Teams are responsible for conducting the fieldwork, testing blood samples for hemoglobin and ferritin levels, and urine samples for iodine at National Laboratories, and sending collected blood plasma samples to KAN for folic acid analysis. The institutes and the specialists responsible for these studies were determined for CARK countries (Kazakhstan, Kyrgyz Republic, Tajikistan and Uzbekistan), Mongolia, and Azerbaijan (see **Final Report for Sentinel Study**).
- (2) The Midterm countries reports on the JFPR 9005 project were reviewed and appropriate comments and suggestions on equipping the laboratory for iodine monitoring in countries, and planning researches on IDD in the Kyrgyz Republic were prepared.
- (3) Comments and recommendations to the ADB project JFPR 9005-Kyrgyzstan “Improving Nutrition for Poor Mothers and Children in Asian Countries in Transition”, and Sub-Project Monitoring Iodine Deficiencies Diseases in the pilot Regions (Oblasts), were prepared.
- (4) Rendering assistance and facilitation in conducting the seminar “Prevention of IDD and IDA. Fortified food” for mass media in collaboration with UNICEF (Almaty, 19-20 February, 2004).

- Preparation and presentation of "Prevalence IDD and SI" for seminar. (**see annex, The First Quarterly Report for 2004**, File name FeruzaIDD&USI04Rus.ppt)
 - Conducting the training on using salt iodine spot tests and demonstration for representative of the mass media.
- (5) Training the participants of the Kazakhstan's National Training Seminar "Monitoring, external and internal quality control of fortified flour" for the specialists of SES and flour mills (Almaty, 26-27 February, 2004) on the methods of:
- Using AAS and demonstrating the iron and zinc determination in fortified flour for the specialists of SES, and flour producers.
 - Using HPLC and demonstrating the measurement of thiamin, riboflavin, niacin and folic acid levels in fortified flour for the specialists of SES, and flour mills.
- (6) Methodical recommendations (Manual) on "Monitoring, and external and internal quality control of fortified flour" were prepared and issued (**see annex, The First Quarterly Report for 2004**, File name WFFAnalMethRec04.doc). The Methodical recommendations include a detailed description of the methods of analysis of all six micronutrients (iron, zinc, thiamin, riboflavin, niacin and folate, which are included in the composition of the premix "KAP Komplex #1, and are used for flour fortification in all the six countries), and can be used for monitoring, and for external and internal quality control of fortified flour in all six countries.
- (iv) TO SHAPE THE REGIONAL COMMUNICATION STRATEGY THROUGH PRE- AND PILOT TESTS IN THE COUNTRY NETWORK AND CONTRIBUTE TO AND MAINTAIN THE WEB-SITE**

The Communication Plan of KAN on regional level in the framework of ADB Project JFPR 9005 "Improving of Nutrition for Poor Mothers and Children in Asian Countries in Transition" was developed taking into consideration the suggestions and advice given by Gary Gleason and Fatima Djadoeva (International communication consultant of UNICEF) (**see annex 4, Inception Report**). The Communication Plan of KAN was presented, discussed and approved at the Roundtable on Communication Strategy for Food Fortification, 5-7 March 2002, Bishkek, Kyrgyz Republic.

The Communication Plan of KAN includes the realization of the following activities:

- (1) Creation of database through collection of information on project topics from countries, about:
- IDD and IDA problems in these countries;
 - activity on prevention of IDD and IDA;
 - salt and flour production, producers' problems, legislation, achievements in the production of qualitative fortified products, experience exchange between the participating countries; overview of literature on project topics from international and regional sources. Translation of literature from English into Russian was seen as necessary, and so was supplying the participating countries with the necessary literature through Internet.

- (2) Preparation of materials for website and constant information maintenance and updating. Materials on the website will be presented in English and Russian.
 - (3) Creation of an electronic information bulletin based on the data regularly received from participating countries and its dissemination through Internet.
 - (4) Collaboration with the mass media: Preparation of materials for periodical publications, radio and TV programs, and its recommendation for the participating countries.
 - (5) Development of logo.
 - (6) Development of methodical recommendations and IEC materials on IDD and IDA problem and their prevention for medical personnel, medical schools and institutes, as well as for the population in collaboration with other participants of the KAN regional project and recommendation of these materials to the participating countries.
 - (7) Conducting of evaluation of the effectiveness of the regional communicative work:
 - elaboration of questionnaire;
 - conducting interviews with web-site users;
 - data receipt and evaluation.
 - (8) Participation in the elaboration and realization of Kazakhstan’s Country communication plan of activities.
 - (9) The TV message by KAN’s specialists in Kazakh language on the positive role of fortified food products for the health was shown by a local TV of Bayan-Ulgii aimag, Mongolia.
 - (10) Regarding the Web-site, the KAN’s team performed the following activities:
 - Collection and writing of materials in Russian and English for the Web-site
 - Work in collaboration with Web-designers in RCAO to discuss and insert the recommendations on design of the Web-page
 - Preparation of the 1st draft of the regional Page of the Web-site
 - Correspondence with Country Project Offices to collect information for countries Web-pages
 - Preparation of the 1st draft of the Web-site
 - Collection and edition of materials from each involved country for the country-page according to the structure of the Web-site;
 - Placement of texts and images in the Web-site and updating information on the Project Web-site.
- (v) TO COLLECT EXISTING AND NEW COMMUNICATION MATERIALS AND STRATEGIES AND HELP TO ASSURE THAT THEY ARE DOCUMENTED, CATALOGUED AND DISTRIBUTED TO ALL THE COUNTRIES AND OTHER AUDIENCES**

The following activities have been performed for the realization of the Communication Plan of KAN:

1. Assistance to Ian Gill, Simon Ingram, Dean Johnson (BBC’ team) in the realization of the video shooting for the creation of a TV film about the prevalence of IDD disorders in the high risk area such as Taraz City (Zhambyl Oblast, the South Kazakhstan). This work was carried out in July 27-30 assisted by Patricia Light (UNICEF) under the direction of Gary Gleason (ADB Consultant).
2. Participation in the Regional Roundtable, 8-12 October 2001, Almaty, Kazakhstan (**see also section vi, Mid-Term Report**):
 - Preparation of the presentation for work of IV Technical Working Group (11 October, 2001) “Testing and Implementing the Regional Communication Plan of Sustained Production and Consumption of Fortified Foods” in collaboration with the international communication consultant of ADB Garry Gleason (**see attachment for Inception Report**);
 - participation in the sessions of the Technical Working Groups;
 - collection of abstracts of the Regional Roundtable;
 - translation of abstracts of the Regional Roundtable (into Russian and English).
3. Creation of regional databases on IDA and IDD problems.
4. Elaboration of a leaflet on prevention of IDD for mothers (in Russian).
5. Elaboration of leaflet on prevention of IDD for the population (in Russian).
6. The following articles were prepared (in Russian):
 - “Hidden Hunger – the Threat for Humanity”; and
 - “Solving the Micronutrient Deficiency Problem”.
7. Creation of posters for children and mothers on IDA and IDD prevention and their recommendation for the country communication teams, which should conduct a testing of the posters in order to adjust them to their country (in Russian).
8. Elaboration of a questionnaire on IDA for women in collaboration with the international consultant of UNICEF Fatima Djadoeva (in Russian).
9. Elaboration of a questionnaire on IDD for women (in Russian).
10. The Meeting on IDA and IDD to prepare for the midterm review of the Program between Government of Kazakhstan and UNICEF was organized at KAN, June 2002.
11. Participation in the Roundtable on Communication Strategy for Food Fortification, 5-7 March, 2002, Bishkek, Kyrgyz Republic:
 - rendering assistance in preparation and conducting Roundtable;
 - preparing and presenting the report “Regional communication plan of KAN in the framework of JFPR-9005 Project”;
 - preparing and presenting the report on “Communication resources of KAN”;

- helping in the work of Country Groups;
 - working in the technical groups on organizational communication;
 - discussing and distributing the Technical Specifications for both the premix “KAP Komplex” and the wheat flour fortified by this premix approved by Gosstandard of Kazakhstan among the participating countries to develop a framework for proposing harmonized regional and international trade standards and guidelines for fortified foods;
 - reporting about (1) relations and differences among brand, trademark and trade symbol, and (2) the economic role of brands under the market economical conditions and the brand protection situation in developed countries;
 - taking part in the discussion about the logo for fortified food products;
 - drawing up a report (minutes) of the Roundtable on Communication Strategy for Food Fortification in Bishkek and sending it to Garry Gleason, international consultant of ADB on Communication.
12. Participation in the Kazakhstan’s Country Workshop on Communication (1-6 July 2002, Astana), and:
- Presentation of a report on IDA and IDD situation in country.
 - Participation as moderators in the Technical Working Groups sessions on the development of the implementation plan of the communication activity on all levels.
 - Participation in the elaboration of recommendations and Country communication plan of activities in collaboration with the country team and specialists of UNICEF CARK.
13. Translation of questionnaires on the study of awareness of the population of IDD and IDA problems and their prevention into English and their distribution to the participating countries for adaptation (see **annex, Quarterly Report 1**).
14. Elaboration of the scenario concept for a video spot on IDA prevention in collaboration with UNICEF consultant Fatima Djatdueva and recommending it to all participating countries.
15. Development of several communication materials on IDD (for the population and schoolchildren) in Russian, and their distribution to all participating countries, ADB, RAO UNICEF and KAN (see **annex, Quarterly Report 1**):
- Leaflet on IDD “What I must know about iodine deficiency”
 - Leaflet “Iodized salt: Truth and fallacies
 - Leaflet “10 reasons to use iodized salt”
 - Leaflet for schoolchildren
16. Translation of the following materials from English into Russian and their dissemination to the participating countries, ADB, RAO UNICEF and KAN (see **annex, Quarterly Report 1**):
- UNGASS on Children. Begin the Follow-up Now. Reduce the prevalence of anaemia, including iron deficiency, by 30 percent by 2010.
 - Iodine. Note to communicators.

- Iron. Note to communicators.
17. Provision of constant correspondence with the participating countries, sending them IEC materials, exchange of experience, and receiving feedback information and materials.
 18. Searching PR-companies in Kazakhstan to take part in the tender on selection of the best company for realization of the national communication plan.
 19. Participation in the conduction of the tender on selection of the PR company who will carry out wide scale campaigns on IDD and IDA throughout the country.
 20. Participation in the development and implementation of rational approaches for formation of progressive public opinion on consumption of iodized salt and products from fortified flour
 - Development and implementation of communication materials with further publication in Kazakhstan:
 - text for commix for children on IDD (**see annex 10, Mid-Term Report**)
 - leaflet for the population “10 reasons to use iodized salt” (**see annex 11, Mid-Term Report**)
 - text of the leaflet for future mothers on IDA (**see annex 12, Mid-Term Report**)
 - text of the leaflet for schoolchildren on IDA (**see annex 13, Mid-Term Report**)
 - Active participation in the development of IEC materials on IDD (posters, leaflets for politicians, producers, mass media, brochures) together with the Kazakhstan Communication team.
 21. Further communication materials on IDD prevention were elaborated at KAN participation:
 - video- and audio spot,
 - poster and booklet for the population,
 - booklet for pregnant women,
 - leaflet for producers, politicians, mass-media,
 - booklet and brochure, commix for schoolchildren,
 - methodical recommendations for health workers and teachers.
 22. Distribution of samples of these materials to all countries; constant correspondence with the participating countries, exchange of experience, and receiving feedback information and materials.
 23. Meeting with the mass media in Shymkent and Kyzylorda pilot areas (Kazakhstan) and informing on the issues of USI.
 24. Sharing the adequate messages in Kazakh language on the positive role of fortified food by the local branch of Republic TV programs of Kazakhstan and local TV programs.
 25. During the visit of KAN’s specialists to Azerbaijan, all participants of the two-day workshop for mass-media, nongovernmental and public organizations on IDA and IDD prevention were provided with the following information: “Key facts on IDA and IDD”, “10 reasons to consume fortified flour and iodized salt”, “Myths and truth about fortified food” and others

prepared by KAN’s Regional communication team (see **annexes, The First Quarterly Report for 2004**, File names 10reasons.doc, Key_facts_IDD&IDA.doc, Myths&truth_Ffood.doc).

26. Publication of the the paper “The Kazakhstan Project for IDD Elimination” with the Specialist on IDD/USI Feruza Ospanova on IDD Newsletter (volume 20, Number 1, February 2004) (see **annex, The First Quarterly Report for 2004**, File name IDD_newsletter.doc.)
27. The article “The Kazakhstan Project for IDD Elimination” was published on IDD Newsletter, Vol. 20, No. 1, February 2004.

(vi) TO ADVISE DURING ALL THE MINI-ROUNDTABLES/WORKSHOPS AND HELP REACH CONSENSUS STATEMENTS ON APPROPRIATE STANDARDS FOR PREMIXES, REGULATION, TRADE, QUALITY ASSURANCE, CAPACITY BUILDING FOR NUTRITION SURVEILLANCE, COMMUNICATIONS AND THE RESEARCH-BASED EVIDENCE FOR SUSTAINING AND EXPANDING FOOD FORTIFICATION

The following mini-roundtables/workshops/meetings were prepared and conducted with the participation of KAN’s specialists during the reporting period:

1. Assistance to Joseph Hunt (ADB’ expert) in organizing the first consultation meeting (Almaty, KAN, March 21-22) with local SES, Gosstandard, millers, bakeries, salt producers, and some key persons, to explain the importance of wheat flour fortification and salt iodization in Kazakhstan and other CARK countries.
2. Participation in the elaboration and preparation of materials and recommendations (with international consultant of UNICEF Fritz Van Der Haar) to carry out the workshop on conducting a Salt Situation Analysis (SSA) in the participating countries, 2001.
3. Participation in the conduction of a one-day workshop on SSA conducting as a moderator with international consultant Fritz Van Der Haar, 2001.
4. Rendering assistance in conducting preparatory work for the creation of a video film about the prevalence of IDD disorders in Taraz (one of the cities in the South of Kazakhstan) by BBC team (Ian Gill, Simon Ingram, Dean Johnson) for the Regional Roundtable, 27-30 July 2001.
5. Rendering assistance to Peter Ranum in conducting the Workshop “Flour Milling Situation Analysis in the Region”, that was supported by UNICEF. Familiarization with technical conditions and readiness of mills for wheat flour fortification by visiting with Peter Ranum and E.Gann one very modern mill factory in Chemolgan (Almaty District (18-20 Sep. 2001).
6. Rendering assistance in the organization of and participation in Regional Roundtable, 8-12 October 2001, Almaty, Kazakhstan (see also section v, **Mid-Term Report**):
 - Rendering assistance in the organization of the Regional Roundtable, including participation in high-level negotiations with the representatives of involved countries, ADB and UNICEF.

- Adjusting, with international consultant of UNICEF Fritz Van Der Haar, the strategy priorities on USI/IDD and preparing the recommendations for the Round Table (the report on Situation Analysis in the region and recommendations of the Round Table)
 - Preparing and presenting a report named "If not us ... who? If not now ... when?"
 - Preparing and presenting the report "Justifying and explaining the flour fortification mix developed for six countries";
 - Organization and preparation of demonstrative samples of bread products using fortified flour by mix type "K2" in the Bakery Company "Almaty Nan" to taste the organoleptic properties of bread by participants and key groups;
 - Demonstrations of the potentiality of Spot Test in the qualitative determinations of iron by comparison of the intensity of the red color in fortified and natural (non-fortified) flour.
7. Participation in the Roundtable on Communication Strategy for Food Fortification, 5-7 March 2002, Bishkek, Kyrgyz Republic (**see section v, Mid-Term Report**).
- Distribution of copies of the Technical Specifications for both the premix "KAP Komplex" and the fortified wheat flour by it, approved by Gosstandard of Kazakhstan among the participating countries to create a framework for preparation of harmonized regional and international trade standards and guidelines for fortified foods.\
 - Reporting and discussion on the following:
 - relations and differences among brands, trademarks and trade symbols;
 - the economic role of brands under the market economical conditions and the brand protection situation in developed countries.
 - Taking part in the discussion of issues related with the development of an universal Logo for fortified wheat flour and iodized salt for the Region.
 - Taking part in the discussion about the follow-up actions after Workshop.
 - Realization of Bishkek Meeting Resolution:
 - Distribution of 150 g samples of the "KAP Komplex" to each participating country of the JFPR 9005 Project for qualitative analysis of iron in wheat flour and to evaluate the quality control of fortification.
 - Rendering consultative activities to introduce clarity into the shelf-life of the fortified flour by premix "KAP Komplex".
 - Taking part in tender (open Bidden Doc.) for Fidders and Premix.
 - Preparation and dissemination of a questionnaire among all participating countries of the JFPR 9005 Project in order to prepare a complete regional situation analysis on "Fortification of wheat flour fortification: low and regulation acts, quality control, quality assurance, and monitoring the quality control".
8. Key questions for preparation of the Country Report for the Workshop «Food fortification: regulation/standards, quality assurance control», 18-21 June 2002, Tashkent, Uzbekistan were

elaborated (see **annex, Quarterly Report 1**, file name: QuestionnaireTashSemJune02 Rus.doc) and distributed to all participating countries.

9. Three specialists of KAN (Musa Aijanov, Feruza Ospanova and Shamil Tazhibayev) participated in the Tashkent’s workshop on «Food fortification: regulation/standards, quality assurance control», 18-21 June 2002, Tashkent, Uzbekistan, and:
 - Served as moderators/facilitators.
 - Presented the following reports at the Workshop «Food fortification: regulation/standards, quality assurance control»:
 - On regulation/standards, quality assurance control of fortified wheat flour. Flour Fortification – Why Quality Assurance is so important.
 - Food Fortification Regulations and Standards in Central Asia – Regional Overview.
 - On Sentinel Study in the framework of JFPR-9905 Project.
 - Reviewed the Country reports and participated in the preparation of Summary remarks for the Country reports on «Food fortification: regulation/standards, quality assurance control».
 - Participated in the discussion and accepted the resolution “Wheat Flour Fortification Joint Action Plans and Recommendations TWG/WFF”.
 - Participated in the preparation of the following materials after the Workshop «Food fortification: regulation/standards, quality assurance control» (see **annex, Quarterly Report 1**):
 - Follow-up actions after Tashkent workshop.
 - Joint action plan and recommendations on salt iodization.
 - Joint action plan and recommendations on wheat flour fortification.
 - Realized the Tashkent Workshop Resolution:
 - They prepared and disseminated among all participating countries of the JFPR 9005 Project the “General Principles for the Addition of Essential Nutrients to Foods” CAC/GL 09-1987 (amended 1989, 1991) in order to:
 - ◆ provide guidance to those responsible for developing guidelines and legal texts pertaining to the addition of essential nutrients to foods;
 - ◆ establish a uniform set of principles for the rational addition of essential nutrients to foods;
 - ◆ maintain or improve the overall nutritional quality of foods;
 - ◆ prevent the indiscriminate addition of essential nutrients to foods therefore decreasing the risk of health hazard due to essential nutrient excesses, deficits or imbalances. This will also help to prevent practices which may mislead or deceive the customer;

- ◆ facilitate acceptance in international trade of foods which contain added essential nutrients.
- They prepared and disseminated among all participating countries, RCAO, ADB (Manila), UNICEF CARC, the Scientific Report “Micronutrient Fortification of Wheat Flour: Current Practices, Research, and Opportunities”, which include:
 - ◆ Specification of the KAP Komplex # 1 and Calculation of Standards for Fortified Wheat Flour (prepared together with Peter Ranum);
 - ◆ Fortification Basics (micronutrient content of wheat and wheat flour, micronutrient stability, legislation, impact on public health);
 - ◆ The Usefulness of Elemental Electrolytic Iron for Wheat Flour Fortification in the Region;
 - ◆ Determining Fortification Levels (the prevalence of IDA in the Region; the average amount of wheat flour consumed; the bioavailability of added iron, the current dietary habits of the population; the dietary as well as the flour itself ingredients affecting absorption and bioavailability iron; RNI for iron of the high-risk target groups and the determination of the amount of iron to be added; dose-response assessment);
 - ◆ To what extent can the diet support adequate iron nutrition and to what extent can the wheat flour fortified by iron support no risk of adverse health effects?
 - ◆ Micronutrient toxicity considerations (toxicity considerations of iron, hazard identification, adverse effects – cardiovascular disease, cancer; deficiency and toxicity of zinc);
 - ◆ Guidance on high intakes of thiamin, riboflavin, niacin, folate;
 - ◆ To what extent can elementary electrolytic iron be entrapped by magnet used to remove trap metals from incoming flour?
 - ◆ The fortification cost.
- Reprinted and disseminated among all participating countries the Codex Alimentarius, vol. 7. “Cereals, pulses, legumes and derived products and vegetable proteins” // FAO/WHO. – 1994.
- Proposed Regional Recommended Nutrient Intake (RNI).
- Prepared the list of equipment for flour fortification and reagents for HPLC analysis of ingredients of fortified flour and sent it for concordance with Manila and RCAO.
- Prepared the list of reagents for spectrophotometer analysis of iron and zinc in fortified flour and sent for concordance with Manila and RCAO.
- Prepared and approved more precise definitions to Technical Specifications for both “KAP Komplex # 1” and Fortified Flour with “KAP Komplex # 1” according to request from Mongolia and Uzbekistan to exclude some misprints and inaccuracies in the method of determination of vitamin B1, B3 .

- Familiarization visit to one mill in Chemolgan (near Almaty) for better understanding of the technical properties of the mill industry in Kazakhstan. This visit was paid by Peter Ranum, E. Gann, and M.Aijanov.
 - Discussed with KAN’s Steering Committee some versions of the LOGO offered by Kazakh artists and designers. All participating countries took part in the discussion of these version of LOGO. After the tender and pretest conducted by the Kazakh Press Club with support of UNICEF, my own version LOGO was picked out as a universal LOGO. Its design and methodological recommendations for use (English and Russian versions) were developed by “Joltay Design Studio”.
10. Participation in the organization and conduction of the Meeting on IDA and IDD as part of the preparation for the midterm review for the Agreement between the Government of Kazakhstan and UNICEF (June 2002).
11. Participated in the Kazakhstan Country Workshop on Communication (1-6 July 2002, Astana), and:
- Presented a report on the IDA and IDD situation in country.
 - Participated as moderators/facilitators in the Technical Working Groups sessions on the development of the implementation of the plan of communication activity on the all levels.
 - Participated in the elaboration of recommendations and Country communication plan of activities in collaboration with the country team and specialists of UNICEF CARK.
12. One specialist of KAN (Yuriy Siniavsky) participated in the Astana country workshop on “Flour fortification and mid-term evaluation of JFPR Project”, end of September, 2002, Astana, Kazakhstan, and:
- Served as moderator/facilitator.
 - Presented a report named “Flour fortification. Medical aspects and worldwide experience”.
13. Three specialists of KAN (Toregeldy Sharmanov, Shamil Tazhibayev, and Mussa Aijanov) participated in the Astana-Almaty regional workshop on “Flour fortification and mid-term evaluation of JFPR Project”, October 1-4, 2002, Astana-Almaty, Kazakhstan, and:
- Served as moderator/facilitator.
 - Presented the following reports at the Workshop:
 - (1) Fortification premix: levels to add minimum standards; formulations; the upper limit intake of fortificants and their toxicity considerations; the stability and bioavailability of micronutrients; the shelf life;
 - (2) Development of standards for the fortified wheat flour and their compatibility with standards in the other countries;
 - (3) Wheat flour fortification: Quality assurance and quality control.

- Presentation of LOGO: CD-disk and methodological recommendations for use (English and Russian versions), printed by “Joltay Design Studio”, was disseminated among all participating countries, ADB (Manila), RCAF, and UNICEF.
14. Participation in the preparation of the following materials after the Workshop “Flour fortification and mid-term evaluation of JFPR Project” (see **annex 14, Mid-Term Report**):
- Description of discussions on some aspects of wheat flour fortification, composition and doses of ingredients of KAP Komplex, as well as about characteristics of new equipment (feeders and kits to them).
 - Joint action plan and recommendations on wheat flour fortification.
15. In response to the inquiry made by Professor Anna Ferro-Luzzi (Head, WHO CC for Nutrition; e-mail: afl@inran.it), Mussa Aijanov prepared the scientific based information relative to the current national regulations for folate fortification in Kazakhstan. This information was necessary for preparing an overview of the dietary intake of folate in the European countries for EURO-WHO:

A. General information

- Folate – or folic acid – is a B vitamin essential to everyone’s health. Folic acid has been shown to be effective in preventing neural-tube birth defects, combating anemia, and may be effective in the prevention of heart disease. Folic acid is necessary to aid the maturation of red blood cells and deficiency of this vitamin can cause megaloblastic anaemia.
- Folic acid is found in many foods, including cereals. Dark green, yellow and orange fruit and vegetables along with dried beans are good sources of folate. In animal and plant foods, folate is easily destroyed while cooking, since it is labile to moderate heat. Only during baking the losses of folate is about 30%.
- Folate at a nutrient density of 150-200 µg per 4.2 MJ (1000 kcal.) is sufficient to prevent folate deficiency in all members, including women in childbearing age¹¹. In the new USA’ RDA (2001) and FAO/WHO’ RNI for Asian region the level intake of folate was set at 400 µg per day for adults and 600 µg per day for pregnant and lactating women (see: table 1).

Table 1. Recommended intake of folate (µg) by FAO/WHO, UK, USA

	FAO/WHO 1998 ¹	UK 1991	USA		Folate densities/1000kcal ²
			1989	2001	
Male: 0-6 mon	80	50	25	65	-
7-12 mon	80	50	35	80	-
1-3 yr	160	70	50	150	185-245
4-6	200	100	75	200	255-340
7-10	330	150	100	200	300-390

¹¹ Preparation and use of food-based dietary guidelines / WHO Technical Report Series 880. - Report of a joint FAO/WHO Consultation. - Geneva. - 1998.

	FAO/ WHO 1998 ¹	UK 1991	USA		Folate densities/1000kcal ²
			1989	2001	
11-14	400	200	150	400	330-440
15-18	400	200	200	400	410-550
19-50	400	200	200	400	405-540
51-60	400	200	200	400	390-520
60+	400	200	200	400	330-440
Female: 0-6 mon	80	50	25	65	-
7-12 mon	80	50	35	80	-
1-3 yr	160	70	50	150	175-230
4-6	200	100	75	200	230-310
7-10	330	150	100	200	260-350
11-14	400	200	150	400	275-370
15-18	400	200	180	400	315-420
19-50	400	200	180	400	315-420
51-60	400	200	180	400	315-420
60+	400	200	180	400	285-380
Pregnant	600	300	400	600	-
Lactating	500	260	270	600	-

*) These age-adjusted nutrient densities were calculated by using of FAO/WHO' aggregate refers to total diet and those are 150-200 µg for folate. If intake is sufficient to meet energy needs, the diet will also meet the needs of all members except possibly infants under 2 years of age and pregnant and lactating women.

B. Folate intake and calculation of shortfall to be made up by fortification

- National-wide nutrition surveys have shown that in Kazakhstan a dietary folate intake (median) by a male adult was 143 µg per day and by female adult was 108 µg per day. The total folate content of national food supplies is strongly associated with total energy content: folate density for both male adult and adult women was only 75 µg per 1000 kcal. This intake is very low, especially when compared with the RDA of USA and RDI of FAO/WHO (see table 1). More than 50% of the adolescents and adults did not consume even two-thirds of the RDA of folate. It is necessary both to modify people's food habits and to fortify wheat flour as a vehicle by folate in order to ensure an adequate folate and hence iron and other nutrient intake.
- Calculation the amount of folate requirements (µg) for 1 kg wheat flour:
 - a) Shortfall to be made up by fortification = (RNI – Median intake of folate per male and female adults or 275 µg = 400 µg – 125 [(143 + 108) : 2] µg
 - b) Amount of folate requirements (µg) for 1 kg wheat flour, taking into consideration that the average daily intake of wheat flour in Kazakhstan is 260 g/day per capita, by use the next equation with one unknown quantity:

$$\text{flour } 260 \text{ g} \text{ ----- } 275 \text{ } \mu\text{g folate}$$

flour 1000g ----- X µg folate

X = 1058 µg folate per 1 kg flour (or 1,058 ppm)

- c) This amount of folate requirements (1,058 mg for 1 kg wheat flour) can be increased to 1.5 ppm because 30% of folate will be lost during baking. Additionally there will be the losses of folate during storage of wheat flour, especially in rural areas where flour is preserved for a very long time (3 months and more).
- There is no statutory regulation for the fortification of any foods by folic acid. The minimum standard for fortified wheat flour (1.5 ppm) approved by the Gosstandard of Kazakhstan since 2002, March 1.

C. General information about JFPR 9005 Project on wheat flour fortification by KAP Komplex

- Since April 2001, the ADB has been approved for grant assistance under the JFPR a regional project "Improving Nutrition for Poor Mothers and Children in Asian Countries". The purpose of this project is the control of micronutrient malnutrition, notably iodine-deficiency disorders, iron-deficiency anaemia, and multivitamin deficiencies, first of all folate deficiency, by development and implementation of food fortification in six countries (Azerbaijan, Kyrgyzstan, Kazakhstan, Mongolia, Tajikistan and Uzbekistan). Both CARK UNICEF and KAN are partners of this project.
- KAN with assistance of ADB consultants (Nevin Scrimshaw, Garry Gleason, Peter Ranum) formulated the "KAP Komplex #1". It is a premix that includes six micronutrients (thiamin, riboflavin, niacin, folic acid, iron, and zinc). The premix is manufactured and delivered by AIC for all six countries.
- Since the beginning of October 2002, Kazakhstan has carried out pilot investigation in two mills on working off the technical and medical aspects of wheat flour fortification. During pilot studies, the folate content in samples of the fortified flour will be determined several times by using the HPLC method in the Kazakh Academy of Nutrition and American Ingredients Company in Kansas City simultaneously.
- The efficacy and effectiveness of flour fortification will be included in the biochemical measurements to determine serum folate levels. Deficient folate status will define as levels <3,0 ng/dl and marginal folate status as levels between 3 and 6 ng/dl.

D. Guidance on high intake

- Although high folate intakes may lead to reduced zinc absorption, the Panel ¹² considered the danger of high intakes of folate to be slight and did not set an upper level of intake.
- Expert Consultation ^{13,14} has recommended the following upper limit (UL) of the safe ranges of population mean intakes of folate (Table 2).

¹² Dietary Reference Values for Food Energy and Nutrients for the United Kingdom // London: HMSO. – 1991.

¹³ FAO/WHO Requirements of Vitamin A, Iron, Folate and Vitamin B12 // FAO Food and Nutrition Series No. 23 // Rome: FAO. – 1988. – P. 33-50.

¹⁴ Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Cooper, Iodine, Iron, Manganese, Molibdenum, Nickel, Silicon, Vanadium, and Zinc // NY. – 2001.

Table 2
Upper limits of the safe ranges of population mean intakes of folate *

Ages	µg/day
0-6 months	ND
7-12 months	ND
1-3 years	300
4-8 years	400
9-13 years	600
14-18 years	800
≥ 19 years including for pregnancy and for lactation	1000

*) UL values have been established for broader age groups for nutrients for which adequate data was available.

16. Participation in workshops on elaboration of the implementation plan of Kazakhstan’s strategy on reproductive health (WHO, September 2002).
17. Participation in the “National Conference on micronutrient deficiency prevention”, Baku, 24-26 March 2003, and presentation of the results of the Sentinel Study (**see annexes, Quarterly Report II, 2003**, file name TripRepBakuMarch03.doc).
18. Participation in the National Seminar on issues of communication of the JFPR 9005 Project “Improving Nutrition for Poor Mothers and Children in ACT”, conducted by the Confederation of Nongovernmental Organizations of Kazakhstan (3 March 2003, Astana, Kazakhstan):
 - A report on communication approaches was presented and materials on IDD were elaborated.
 - Participated as moderators in the Technical Working Groups sessions on the development of the implementation plan for NGOs.
19. Participation in the Workshop on Strengthening Strategies for Elimination of Micronutrient Malnutrition in CARK (24-28 March 2003, Almaty, Kazakhstan).
20. Participation in conducting a workshop on food fortification (31 March 2003, Baku, Azerbaijan).
21. Participation in the Regional Workshop on Policies on Food Fortification and Monitoring and Evaluation (April 2003, Bishkek, Kyrgyzstan):
 - Presented a report named “Advertising Fortified Food Products (based on Kazakhstan case)”.
 - Conducting a Thematic Discussion on JFPR Project Web-Site Development.
 - Drawing up the minutes of the workshop.

22. Participation in the training workshop on iodized salt monitoring in the pilot region of Kazakhstan 25-26 September 2003, South-Kazakhstan oblast, Kazakhstan).
23. Participation in the National Seminar on executing the Law of the Republic of Tajikistan “On Salt iodization” (21-22 October 2003, Dushanbe, Tajikistan).
24. Participation in the National Seminar “Perfection of communication campaign on JFPR 9005 Project “Improving Nutrition for Poor Mothers and Children in ACT”, conducted by the Confederation of Nongovernmental Organizations of Kazakhstan (29-30 January, 2004, Almaty, Kazakhstan):
 - The Project web-site was presented and questions about it were answered.
25. Participation in the Tajikistan National Conference on Micronutrient deficiencies in Tajikistan, 22-23 January 2004 (**see annex, The First Quarterly Report for 2004**, File name ShamilTripRepDushanbeJan04.doc), and the following presentations were made:
 - Micronutrient deficiencies in Central Asia, and the Summary of the first Round of the Sentinel Study (**see annex, The First Quarterly Report for 2004**, File name ShamilSSFirstRound04Rus.ppt)
 - Vitamin A Deficiency in Central Asia (**see annex, The First Quarterly Report for 2004**, File name ShamilVitACARK03ShortEng.ppt)
 - The Results of Surveys on IDA and IDD in Kazakhstan (**see annexes, The First Quarterly Report for 2004**, File names: LeilyaIDAKazPilot04Eng.ppt; ZhanarIDDKaz04Eng.ppt)
26. Participation in the Kazakhstan National Training Seminar “Coverage of IDA and IDD prevention” for the mass media (Almaty, 19-20 February, 2004):
 - participation in two work meetings of the organizational-technical group to discuss the seminar program;
 - elaboration of questionnaires on iodine deficiency and iron deficiency problem for testing the mass media representatives (**see annex, The First Quarterly Report for 2004**, File name massmedia_ques.doc);
 - presentation of the Project web-site, Kazakhstan country pages;
 - training on the fast determination of iodine in the salt for mass media representatives,
 - testing mass media representatives on IDA and IDD problem.
27. Facilitation and conducting of Kazakhstan National Training Seminar “Monitoring, external and internal quality control of fortified flour” for the specialists of SES and flour mills (Almaty, 26-27 February, 2004). More than 50 specialists from all the oblasts in Kazakhstan participated in that seminar. All the KAN’s consultants (T.Sharmanov, Sh.Tazhibayev, Y.Synyavsky, M.Aijanov, F.Ospanova, A,Salkhanova and Zh.Tolysbayeva) and some other KAN’s specialists participated in the seminar as lecturers, facilitators and trainers on fortified flour quality control issues.
 - Preparing and giving a presentation named “The results of fortified flour analysis in KAN’s laboratory” for the seminar. (**see annex, The First Quarterly Report for 2004**, File name ShamilFlourKazFeb04Rus.ppt)

- Preparing and giving the presentation "Atomic absorption method. Determination of iron and zinc in fortified flour" for the seminar. (see **annex, The First Quarterly Report for 2004**, File name FeruzaAAAMethodIronZinc04Rus.ppt)
- 28. Participation in the Almaty Regional Forum, "Towards Sustainable Food Fortification in Central Asia and Mongolia" 2-3 September 2004. This is the second regional round table with participation of the Ministers/Vice Ministers, ADB and UNICEF, and the representatives from all participating countries in the JFPR 9005 Project. Four KAN's specialists (T.Sharmanov, Sh.Tazhibayev, M.Aijanov, and F.Ospanova) made presentations in the Forum.
- 29. Participation in the Almaty Regional training workshop "To improve the monitoring and evaluation of micronutrient fortification of salt and flour in CARK, Azerbaijan and Mongolia", 11-20 October 2004. The workshop was organized and conducted jointly with CDC, UNICEF, ADB, MOST, Emory University and KAN, and more than 50 specialists from Azerbaijan, Afganistan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan and Uzbekistan were trained. Four KAN's specialists (T. Sharmanov, Sh.Tazhibayev, M.Aijanov, and F.Ospanova) served as experts-lecturers and facilitators in the workshop.
- 30. Sh.Tazhibayev, supported by INF, participated in IVACG (International vitamin A consultative Group), INACG (International anemia consultative Group) and IZINCG (International zinc consultative Group) Meetings in Lima, Peru, 15-19 November 2004, and made a poster presentation "Iron deficiency anemia prevention and control program in Kazakhstan".

(vii) TO SUPPORT REQUESTS FOR LITERATURE SEARCHES

- (1) Reviewing the worldwide results of micronutrient intervention trials, focusing on the impact of iodine, iron, zinc, and B-vitamin group fortification program on the health benefits with emphasis on identifying critical gaps in the current knowledge that might impede the implementation of interventions program in the Region.
- (2) Search and collection of information, materials and web links on the micronutrient problem, placement of this information on the Project web-site.

(viii) TO TEST SELECTED PREMIXES FOR FLOWER FORTIFICATION

- (1) The samples of premix for flower fortification were tested for the levels of fortificants (iron, zinc, thiamin, riboflavin, folic acid and niacin) in KAN's laboratory, and the results were submitted in 2004 (see **The report on the results of micronutrients analysis in fortified and not fortified wheat flour samples and in the Premix KAP Complex #1 in six countries involved in JFPR Project**).

(ix) TO FACILITATE AND SUPERVISE SALT AND FLOWER FORTIFICATION TECHNOLOGY

KAN’s Team in accordance with this section conducted the following activities:

1. Substantiation of the composition of the vitamin-mineral premix for fortification of wheat flour developed for Azerbaijan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, and Uzbekistan.
 - Reviewing the worldwide results of micronutrient intervention trials, focusing on the impact of iron, zinc, and B-vitamin group fortification program on the health benefits with emphasis on identifying critical gaps in the current knowledge that might impede the implementation of interventions program in the Region.
 - Developing criteria, guidelines and models for the wheat flour enrichment mix adopted in Kazakhstan and other countries in the Region taking into account:
 - a) essential micronutrient RDAs for population groups;
 - b) prevalence of the deficiencies;
 - c) per capita consumption of the food vehicle to be fortified, current dietary habits of the population and bioavailability of nutrients added (overall diets and meal composition);
 - d) micronutrient stability and interactions;
 - e) ensuring the safety of the taste of the enriched flour, acceptability of color, solubility, and particle size;
 - f) physiological availability of nutrients added from food, reasonability of addition cost of the fortification for the consumer;
 - g) adequacy of methods of measuring, controlling and/or enforcing the levels of essential nutrients added to flour.

Almaty Roundtable, October 2001, adopted the composition of the premix.

2. Collaboration with ADB consultants (Nevin Scrimshaw, Gary Gleason and Peter Ranum) in the development of the wheat flour fortification guidelines for the Region.
3. Elaboration of standards for fortified flour by premix “KAP Kompleks”.
4. Development of Technical Specifications for:
 - the premix “KAP Kompleks” and
 - the wheat flour fortified by this premix.

These Technical Specifications were approved by Kazakhstan’s Gosstandard, 1 March 2001, and distributed among all the participating countries for facilitation of their approval at all the other National levels.

5. Rendering consultative assistance to introduce clarity into shelf-life of the fortified flour by premix “KAP Kompleks”.
6. Elaboration of a questionnaire for all participating countries of the JFPR 9005 Project for facilitating the preparation of complete regional situation analysis on “Fortification of wheat

- flour and salt iodization: law and regulation acts, quality control, quality assurance, and monitoring”.
7. Participation in the preparation of the report on SSA and flour milling situation in the region (see **annex 3, Inception Report**).
 8. Conducting and writing SSA in Kazakhstan with visiting to “Araltuz”, “Pavlodarsalt”, “Taraz-Tuz” salt industries (Statement of salt production is reflected in the country report on SSA).
 9. Technical rules (specifications) for premix and for flour fortified by KAP Komplex, that were elaborated by KAN, are adopted and approved by Kazakhstan’s Gosstandard and SES, and registered by Kazakhstan’s Registration System. They were discussed during the Tashkent workshop and adopted by the representatives of all the participating countries (see **annex, Quarterly Report 1**). Later these technical documents were adapted to all participating countries and then adopted and approved by appropriate Government institutions in these countries.
 10. The following activities were provided by KAN taking into consideration the discussions during the Tashkent workshop, and requests and suggestions received from the participating countries (see **annex, Quarterly Report 1**):
 - Activities on perfection of technical rules (specifications) for premix and fortified flour were conducted, and the developed materials with updated version of technical specifications were disseminated to all participating countries, ADB, RCAO, UNICEF and KAN.
 - A report (23 pages) on the basics of fortification, standards for fortified flour, safety of doses of vitamins and microelements used in the premix, possibilities of development of side effects after using fortified food products elaborated (see **annex, Quarterly Report 1**) is prepared. The report is distributed to all participating countries, ADB, RCAO, UNICEF and KAN.
 - Some versions of the specifications and price-lists for equipment for measurement of vitamins in flour samples and premix (some of them were oriented to use of expensive HPLC methods, and others were oriented to use of cheap calorimetric and routine methods) were prepared (see **annex, Quarterly Report 1**). These materials were disseminated to all participating countries, ADB, RCAO, and KAN.
 - The electronic version of “Codex Alimentarius – Codex Standard for Wheat Flour” has been disseminated to all participating countries, ADB, RCAO, UNICEF and KAN (see **annex, Quarterly Report 1**).
 - A version of the Recommended Nutrient and Calorie Intake for all participating countries of JFPR Project is prepared. These materials and the same comparison data (on Recommended Nutrient and Calorie Intake) of WHO, USA, Great Britain and Russia were disseminated to all participating countries, ADB, RCAO, UNICEF and KAN (see **annex, Quarterly Report 1**).
 11. Fifteen models of LOGO for fortified food products were elaborated in collaboration with designers, and these drafts were disseminated to all participating countries, ADB, RCAO,

- UNICEF and KAN for evaluation and selection of two or three suitable samples for development.
12. The preliminary selected LOGO for fortified food products by KAN’s team and UNICEF were pre-tested by Kazakhstan Press Club that was chosen as PR-company on the tender base. One of most suitable models was recommended for the publication.
 13. KAN, together with Joltai Design Studio, Kazakhstan (E-mail: info@joltai.kz) that was recognized as winner of the tender of preparation of methodological recommendations on how to use the sign of the standard “Healthy Food” (LOGO). This special issue was adopted by the six participating countries of JFPR 9005 Project with its SD-version, and was published by Joltai Design Studio under financial support of UNICEF Office in Kazakhstan.
 14. Special colored versions of the LOGO for fortified food products were published in Russian and English (with additional SD-version), and was presented on Astana-Almaty workshop on the “Flour fortification and mid-term evaluation of JFPR Project” October 1-4, 2002, Astana-Almaty, Kazakhstan. Representatives from each of the six participating countries of the JFPR Project received one copy of this last version of the LOGO and an additional SD-version of it in Russian. One copy of these materials (methodological recommendations for use of the sign of the standard “Healthy Food” (LOGO) and its SD-version in English were handed to Rie Hiraoka.
 15. Before the Astana-Almaty workshop on “Flour fortification and mid-term evaluation of JFPR Project” October 1-4, 2002, Astana-Almaty (Kazakhstan), an electronic version of the Technical Specifications for bread baked from fortified wheat flour by KAP Kompleks prepared by KAN was disseminated to all participating countries via RCAO (see **annex 15, Mid-Term Report**).
 16. The Technical Specifications for both fortified wheat flour and bread baked from fortified wheat flour by KAP Kompleks, that was elaborated by KAN taking into consideration the resolution of Astana-Almaty workshop on “Flour fortification and mid-term evaluation of the JFPR Project” October 1-4, 2002, Astana-Almaty (Kazakhstan) regarding the use of two different fortification standards (150 g premix add to 1 MT supreme flour and 120 g premix add to 1 MT first grade flour) were distributed to each country by Rustam Musafarov during CARK MCH Forum Annual Meeting, Ashgabad, November 2002 (see **annexes 16 and 17, Mid-Term Report**).
 17. Permanent e-mail correspondence between KAN’s team and International Experts (Nevin Scrimshaw, Garry Gleason, Peter Ranum and Frits van der Haar) on a variety issues of the Project (technical, medical and biological aspects of food fortification, safety of fortified food products, research design including some aspects of sampling procedures, methods of analysis of food products and blood samples etc.) took place during all the reporting period, and KAN’s team received all the appropriate assistance, suggestions and advise.
 18. Permanent e-mail correspondence between KAN’s team and Country Teams and Coordinators on different aspects of the current steps of the Project took place during all the reporting period, and it is important to underline that mutual understanding was achieved concerning all the discussed issues.
 19. Country visits were paid to Kazakhstan, Uzbekistan and Azerbaijan with consultative mission. The aim of the consultative mission was:

- To meet SES and Gosstandart representative and discuss the needs of the technical document of iodine level in salt and market monitoring IS.

20. Preparation of information about technology of iodization, salt iodization techniques, salt quality and refining technology for Suzak-Tuz requested by the CPO of Kazakhstan, (see **annex, The First Quarterly Report for 2004**, File name FeruzaUSITechnology04Rus.doc)

(x) TO CARRY OUT ANALYSES OF COMPOSITE FLOUR SAMPLES FROM EACH PARTICIPATING COUNTRY FOR LEVEL OF FORTIFICANTS

(1) The levels of all the six fortificants used (iron, zinc, thiamin, riboflavin, niacin and folic acid) were determined in 156 samples of fortified flour and the premix in KAN's laboratory, and in 87 samples – in the laboratory of AIC (see **The report on the results of micronutrients analysis in fortified and not fortified wheat flour samples and in the Premix KAP Complex #1 in six countries involved in JFPR Project**, File name is FlourAnalysisDec04Eng). Iron and zinc were analyzed in KAN's by AAS method, and thiamin, riboflavin, niacin and folic acid were analyzed by HPLC method. All of these micronutrients were analyzed by HPLC method in AIC's laboratory.

(xi) TO CONTRIBUTE TO LABORATORY ASSESSMENT FOR IDD AND IDA

The following activities were performed by KAN's Team during the reporting period:

1. Information/instruction (Russian version) about the use of Salt iodine Spot Tests has been prepared and distributed to the SES (Sanitary Epidemiological Station) and all the participating countries. These tests are used for maintenance of monitoring at the levels of salt distribution and sale.
2. Instruction on selection of urine sample and description of the method for determination of iodine in urine samples has been prepared and distributed to all participating countries.
3. List of equipment, reagents and other items with prices needed for the specific methods of measurement of urinary iodine and salt iodine levels is prepared for RAO.
4. As it was mentioned above, some laboratory analyses of premix and fortified flour (measurement of the levels of iron, zinc, folic acid, thiamin, riboflavin and niacin), and blood samples (measurement of folic acid in plasma, and ferritin level in blood serum) were conducted in KAN's laboratory.
5. All the needed assistance on laboratory assessment for IDD and IDA is being provided for the specialists from participated countries. A detailed list of equipment, reagents and other items with prices needed for the specific methods were prepared and distributed to all the countries (see **annexes, The First Quarterly Report for 2004**, File name Chemicals&MaterialsForFlourAnalysis04.doc and ReagentsForUI.doc).

(xii) TO CONTRIBUTE TO TRAINING IN RELEVANT FIELDS

1. The specialists of the KAN Team served as facilitators in all the conducted Roundtables/Seminars/Workshops, and provided all needed assistance on training the specialists from the participating countries in relevant fields.
2. Mussa Aijanov was invited to Bishkek (Kyrgyz Republic) and Astana (Kazakhstan) where he participated in Country Seminars (made reports for millers, SAS, and other key persons about KAP Komplex and flour fortification), visited mills and discussed with key persons how to enhance the mothers’ motivation to buy fortified flour preferably.
3. The Regional communication team was invited to attend the Astana National Seminar on issues of communication of JFPR 9005 Project “Improving Nutrition for Poor Mothers and Children in ACT”, conducted by the Confederation of Nongovernmental Organization of Kazakhstan (3 March 2003), provide all needed assistance and discuss the future communication work of NGOs of Kazakhstan with population.
4. During the visit of KAN specialists to Azerbaijan, the one-day workshop on issues on food fortification was conducted. Salkhanova Akkumis conducted the work on the technical communication group on preparation of the draft of the implementation of the plan on further communication activity in county.
5. Participation in the training workshop on iodized salt monitoring in the pilot region of Kazakhstan (25-26 September 2003, South-Kazakhstan oblast, Kazakhstan). Tolysbayeva Zhanar presented a report of the first stage of the pilot study in Kazakhstan about the awareness of the population of iodine deficiency problem and IDD prevention through iodized salt. She also told seminar participants about fast iodine determination in salt with test-kits and work with local population.
6. Country Teams for Sentinel study in all the six participating countries were trained by Shamil Tazhibayev on preparation and execution of field work (**see annexes 18-19, and sections i and xiv, Mid-Term Report, and Final Report for Sentinel Study**).
7. The Regional communication team participated in the National Training Seminar (Almaty, 19-20 February, 2004) “Coverage of IDA and IDD prevention” for the mass media, where KAN’s specialists were trainers. The communication team, as well as members of the organizational-technical group discussed the seminar program in two work meetings. Aimed at evaluating the digestion of obtained materials by mass media representatives, the communication team elaborated the questionnaires on iodine deficiency and iron deficiency problems and carried out the testing. In addition, the training on fast iodine determination in the salt was conducted on the seminar.
8. During the visit of KAN’s regional communication specialist Akkumis Salkhanova to Azerbaijan (21-27 March 2004), the two-day workshop for the mass-media, nongovernmental and public organizations on IDA and IDD prevention was conducted. Akkumis Salkhanova participated as moderator, presented communication work principles, planned the work of NGOs’ in pilot regions and experience of public awareness work, conducting in other participating countries. She also prepared for NGOs the form for action plan development (**see annexes, The First Quarterly Report for 2004**, File name Com_principles.ppt., Kz_Com_str_ru.ppt., Trip_Report_Az_04.doc).

9. The CPO, supported by the Ministry of Health and Kazakh Academy of Nutrition, in cooperation with the Chair of nutrition of Azerbaijan National University, conducted the Workshop "Flour fortification: quality assurance and monitoring the quality of fortified wheat flour" (Baku and Nakhchevan, Azerbaijan, March 29-April 3, 2004) for millers, inspectors of SES, Gosstandard, Quarantine Service, and NGOs). Mussa Aijanov (KAN's specialist on IDA/WFF) during his visit to Azerbaijan provided training for laboratory technicians on the use of spot-test both at workshops and mills' laboratories.
10. The participants (more than 50 specialists from SES and flour mills) of the Kazakhstan National Training Seminar "Monitoring, external and internal quality control of fortified flour" for the specialists (Almaty, 26-27 February, 2004) were trained by KAN's specialists on the issues of external and internal quality control of fortified flour, and micronutrients analysis at KAN's laboratories.
11. Participation in the Almaty Regional training workshop "To improve the monitoring and evaluation of micronutrient fortification of salt and flour in CARK, Azerbaijan and Mongolia", 11-20 October 2004. The workshop was organized and conducted jointly with CDC, UNICEF, ADB, MOST, Emory University and KAN, and more than 50 specialists from Azerbaijan, Afganistan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan and Uzbekistan were trained. Four KAN's specialists (T.Sharmanov, Sh.Tazhibayev, M.Aijanov, and F.Ospanova) served as experts-lecturers and facilitators in the workshop.

(xiii) TO CO-AUTHOR WITH SPONSORS THE REGIONAL STRATEGIC PLAN (2005-2006) FOR ACHIEVING UNIVERSAL SALT AND FLOUR FORTIFICATION IN THE PARTICIPATING COUNTRIES

1. The operational experience of KAN's Team and the results of analysis of all the data that were collected in the framework of the JFPR-9005 Project contributed for outlining and preparing the Regional Strategic Plan (2005-2006) for achieving sustainable universal salt and flour fortification in the participating countries in collaboration with sponsors.

(xiv) TO CONDUCT SENTINEL STUDIES IN ORDER TO EVALUATE THE IDD AND IDA LEVELS BEFORE AND AFTER THE PROJECT INTERVENTIONS IN COLLABORATION WITH EACH PARTICIPATING COUNTRY. THE FIRST BLOOD SAMPLING WILL BE CONDUCTED BEFORE A WIDE SCALE PRODUCTION OF FORTIFIED FLOUR STARTS, AND THE SECOND BLOOD SAMPLING WILL BE CONDUCTED 12 MONTHS AFTER THE FIRST BLOOD SAMPLING

1. The necessity to conduct the Sentinel Study was discussed and approved at the Almaty Roundtable, October 2001. Nevin Scrimshaw outlined the draft of the Proposal for Sentinel Study (see **annex 5, Inception Report**). Both planned rounds of the Sentinel Study were conducted in all the six participating countries, and the results of the study are presented and

discussed (see **Report for the first round of the Sentinel Study, and Final report for sentinel study**).

(xv) TO WRITE THE FINAL REPORT BASED ON THE STUDIES AND DISSEMINATE THE RESULTS

1. The final report based on the studies has been prepared and the results disseminated in accordance with the Project’s terms and timeline.
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RECOMMENDATIONS

The following recommendations concerning the activities of KAN for the further successful implementation of the Project “Improving Nutrition of Poor Mothers and Children in Asian Countries in Transition” were adopted by the ALMATY FORUM, September 2004 “Towards Sustainable Food Fortification in Central Asia, Mongolia and Azerbaijan”:

1. To complete a third round of the Sentinel Study in each country to confirm the impact once fortification is adequately reaching the target population. Additional funding should be obtained for national micronutrient surveys.
2. The use of the “Healthy Foods” logo should be regulated in terms of quality of the products on which it should be used. KAN and UNICEF in cooperation with the salt and flour producers and governments agencies will develop appropriate guidelines
3. The Kazakh Academy of Nutrition (KAN) will develop better harmonization guidelines for fortified flour and methods of assuring quality in the region.
4. KAN will develop new premix formulas for special purposes such as local commercial production of fortified infant cereals, dilute premixes for small mills, premix formulas for application at bakeries, and ones that use the more bioavailable ferrous sulfate as the iron source in bakery flour and pasta.
5. Workshop(s) on flour fortification quality assurance and control will be conducted with assistance from the Centers for Disease Control and Prevention.
6. Flourmills should be encouraged to periodically send samples of fortified flour to the KAN for analysis of their compliance with the recommended levels of micronutrients and KAN should provide feedback to national authorities in all countries on a timely manner.
7. To establish regulations to allow multiple premixes for additional special uses, with support of the KAN and premix manufactures.
8. Development agencies and projects, including the JFPR Project, UNICEF and international NGOs, working with communication groups of the country projects, supported by KAN, will organize and share all materials used for orientation and education of professionals in

education, health, and other areas by JFPR9005 and others, and share findings and recommendations among the countries and at regional levels.

9. The KAN will develop an overall model and provide technical guidance for all countries supporting the implementation of the sentinel studies and, at an appropriate time, country wide surveys to determine the national effectiveness of universal salt iodination and widespread use of fortified wheat flour on the health of the populations. Surveys on USI need to be completed before the end of 2005 in order to allow monitoring of country achievements of the targets set in the US Special Session on Children (“A World Fit for Children).
10. There should be operational linkage of the project efforts with National Nutrition Surveys and other relevant population surveys.