

**UkrAm Study of Thyroid Cancer and Other Thyroid Diseases in Ukraine
Following the Chernobyl Accident**

Progress Report for Quarter Beginning 1 September and Ending 30 November 2000

Project Manager

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I. Executive Summary

For the reported period, the main efforts of the Project staff were directed towards completing Project cohort formation. With the help of Narodychi Raion Passport Bureau, Zhytomyr Oblast Department of Health, and Tax Administration of Zhytomyr oblast, the address of 309 potential cohort members have been additionally established. Invitation letters have been sent out to 1212 subjects for screening examination by stationary team, and 1415 invitations have been sent out to potential cohort members for screening by mobile teams.

In addition, invitation letters with suggested date of examination have been sent out to 2236 potential cohort members. For the reported period, 538 cohort members, or 24% of the number of the persons invited, have come to stationary team.

As a result of the work performed, in September-November 2000 1976 cohort members went through primary medical screening examination, including 421 persons from selection 1 and 1555 persons from selection 2. 1258 cohort members have been examined by mobile medical teams, 718 cohort members by stationary team. Thus, as of December 1, 2000 the cohort of Project subjects consisted of 12695 members.

Diffuse goiter has been revealed in 319 persons examined; nodular goiter has been diagnosed in 64 cohort members. All of them have been referred to fine-needle aspiration biopsy (FNA). FNA has been performed in 42 patients. 22 patients have not presented themselves to additional examination to the Clinic. According to FNA data, in three patients cytological changes corresponded to those of papillary thyroid carcinoma. In one of these patients, the diagnosis of thyroid cancer has been confirmed by postoperative histological study. All the patients with cytological changes in thyroid nodule tissue with suspicion of carcinoma have been invited for hospitalization at the Clinic of the Institute. In one (female) patient a thyroid adenoma has been diagnosed; in one (male) patient a follicular thyroid carcinoma has been diagnosed.

For the reported period, final medical conclusions have been completed and sent out to 560 cohort members.

During the reported period, the following tests have been performed by the Central Laboratory: TSH in 4121 persons; antiTPO in 4317 subjects; ABTG in 814 persons; thyroglobulin in 4647 patients; calcium** in 1390 persons.

For the reported period, the Data Coordination Center has prepared and transmitted 5000 complete sets of forms of screening examination of cohort members to the Data Processing Center of the University of Illinois.

The Management and Heads of structural subdivisions of the Project have participated in a Meeting in Minsk (September 11-14) devoted to clinical issues of Project implementation, and in a Trinational Meeting in Bethesda.

Professor Mykola Tronko, Director of the Ukraine-U.S. Project has presented a poster reflecting the results of Project implementation at the 12th International Thyroid Congress in Kyoto (Japan).

II. Report on Tasks

3. Trace subjects to determine current address

3.3 Trace subjects for current address

In the current quarter, information on current place of residence of cohort members has been obtained from the following data sources:

Name of the data source used (Selection 1)	Number of cohort members in the list that has been processed	Established and current address in one of the 3 study oblasts (exact address)	Live in Ukraine (outside the 3 oblasts)	Emigrated	Temporarily absent	Died	Not found	Double records
Passport office of Narodichi Raion	491	82	39	3	0	0	361	0
Zhytomyr oblast health department		70*						
Taxation administration of Zhytomyr oblast	1579	157	0	0	0	0	1422	0

*This number has been obtained from the list of persons who lived in Narodychi and Ovruch raion of Zhytomyr oblast in 1986 and moved to other raions of Zhytomyr oblast.

Address search of Selection 2 cohort members using data of the Department for emergency situations and civil protection of the population of Zhytomyr Oblast State Administration, in the Department of social protection of the population of Zhytomyr Oblast State Administration, in the Military enlistment Office in the Department of Education of Zhytomyr Oblast State Administration has been performed.

3.4 Trace subjects who did not respond to invitation for current address

In the current quarter, local medical staff in Project raions have invited for screening those subjects who did not answer to invitation by mail. Information on changes in current address of cohort members was being collected.

4. Enroll and maintain participation of subjects in the study

4.2 Send out initial invitation with information brochure

In the current quarter initial invitations for Selection 2 cohort members with information brochure have been sent.

Invitations has been sent to other then study raions of Kyiv and Zhytomyr oblast and to the city of Kyiv:

Zhytomyr oblast – 386 invitations;

Kyiv oblast - 545 invitations;

City of Kyiv – 281 invitations with information brochure. Total number of initial invitations for examination by fixed center sent during the reported period - 1212.

Initial invitations with information brochure were handed to cohort members living in study raions invited for screening by mobile teams:

Ripky raion of Chernihiv oblast – 300 invitations;

Chernihiv raion of Chernihiv oblast – 515 invitations;

Kozelets raion of Chernihiv oblast – 200 invitations;

Chernihiv city – 400 invitations

5. Conduct initial screening examination of subjects

5.4 Sent invitation letters to schedule appointments for examination

In the current quarter proposed appointment dates for examinations by fixed center were sent with all mailed correspondence. Total number of letters with fixed appointments dates sent – 2236.

Appointment date has been suggested to 1212 persons who have not been contacted earlier (see 4.2).

Invitation letters to schedule appointments were sent also to 1024 cohort members contacted by mail earlier. These letters were sent to raions of Kyiv and Zhytomyr oblast where live cohort members resettled from study raions if, due to a small number of cohort members dwelling in a certain area, the visit of mobile teams is not possible.

377 such letters where sent to the raions of Kyiv oblast and 647 – to the raions of Zhytomir oblast.

We ask in our letter to confirm an appointment date by the telephone or discuss another, more convenient date.

For the reported period 538 cohort members (24% out of the number invited by mail) came

for examination by fixed screening center.

It has been organized bringing for examination by fixed center of 183 cohort members living in Kozelets raion of Chernihiv oblast. For this group of study subjects examination date has been assigned by local medical staff.

For the study raions the schedule of examinations by mobile team was fixed by medical staff based on the results of personal contacts with cohort members.

During the reported period it has been arranged visits to screening by mobile teams of 1277 cohort members living in study raions.

5.5. To perform screening examinations

From September 1 to December 1, 2000 primary examination of 1976 cohort members has been performed. In 319 persons examined a diffuse goiter, and in 64 patients a nodular goiter have been revealed (all of them have been referred for FNA of thyroid nodules). 42 patients have undergone FNA (22 patients did not come to the clinic for additional examination). According to FNA data, in 3 patients cytological changes corresponded to a thyroid carcinoma. In one of these patients (male) () the diagnosis of thyroid cancer has been confirmed by histological study after surgery. All patients with cytological signs of thyroid carcinoma have been invited for hospitalization at Institute's Clinic. In one (female) patient cytological changes in the nodule corresponded to an adenoma of microfollicular structure (); post-operative histological study has established the diagnosis of follicular thyroid adenoma. In one patient (male) cytological changes nodule corresponded to a nodule of microfollicular structure . This patient has been operated in September 2000. Post-operative diagnosis: follicular thyroid carcinoma. In 22 patients a lymphadenopathy non associated with thyroid pathology has been revealed in the process of screening.

Operational difficulties in the process of work: no difficulties.

5.5.1. To perform screening examinations (dosimetry interview)

Results of the work. The results of the work performed cover the period from the 1/09/2000 to 30/11/2000 (Table 5.5.1 and Table 5.5.2.)

In the current quarter, there was a small number of cohort members from Selection 1 (one subject), and Selection 2 (3 subjects), who have been screened but did not go through dosimetry interview.

In the current quarter, there were some cohort members from Selection 2 (4 subjects), and Selection 1 (one subject) who have been invited to screening, went through dosimetry interview, but have not been included in the list of screened cohort members, that has been provided to the

Dosimetry Group by the Data Coordinating Center (DCC). Conclusions concerning these subjects will be drawn after discussion with DCC and Epidemiology Group.

Operation difficulties encountered in the process of work. In the current quarter, the interviewer did not always have at his (her) disposal patients' identification codes printed out on labels. That is why the interviewer was obliged to put down using a pen the identification codes in Dosimetry Interview Forms, what might lead to errors in the code.

Table 5.5.1. Place of screening performance for those cohort members who went through dosimetry interview in the first cycle of screening

	Selection I (Number of records = 20,071)			Selection II (Number of records = 14,021)			Total (Number of records = 34,092)		
	Total number		Chang- es after pre- vious quarter	Total number		Chang- es after pre- vious quarter	Total number		Chang- es after pre- vious quarter
	#	%		#	%		#	%	
Total of subjects who went through dosimetry interview	8106	100.0	422	4494	100.0	1555	12600	100.0	1977
1. In Fixed Center in Kyiv	2136	26.4	277	1216	27.1	441	3352	26.6	718
2. In Mobile Team	5970	73.6	145	3278	72.9	1114	9248	73.4	1259

Table 5.5. 2. Status of screening activity for those cohort members who have been examined in the first cycle of screening

	Selection I (Number of records = 20,071)		Selection II (Number of records = 14,021)			Total (Number of records = 34,092)			
	Total number		Total number		Total number		Chang- ges after pre- vious quarter		
	#	%	#	%	#	%	#		
Total of subjects who went through screening examinations	8233	100.0	423	4502	100.0	1558	12713	100.0	1981
Subjects who did not go through dosimetry interview	105	1.3	1	8	0.2	3	113	0.9	4
Subjects missing in DCC register but who went through screening and dosimetry interview	22	0.3	1	17	0.4	4	39	0.3	5

5.6 Notify subjects of final screening results

For the reported period, local medical staff of study raions received for further distribution the following number of final medical conclusions:

	Raion	Number of final medical conclusions
1	Ivankiv raion	94
2	Kozelets raion	333
3	Ripky raion	123
4	Chernihiv raion	456
5	Town of Chernihiv	99
6	Other raions	14
	Total	1119

6. Conduct second screening of subjects

6.1 Review screening process and data collection forms, and revise as necessary

Plans of measures have been worked out, concerning invitation to dosimetry interview, in the process of repeat screening, of the mothers of those subjects who were aged 10 and less at the time of the accident. Besides, the plan states the organization measures necessary to perform dosimetry interview according to new Forms in the second cycle of screening, with calculation of approximate costs connected with mothers' invitation to interview and interview performance according to new Forms.

Operation difficulties encountered in the process of work. The management of the Project and Epidemiology Group, pointing out increasing costs and a more complex organization of investigations due to introduction of new Forms, suggest a detailed cost-benefit analysis in order to ground the necessity of introducing new Forms.

7. Determine which subjects have developed thyroid cancer or other thyroid diseases

7.2 Conduct FNA on appropriate subjects and refer appropriate subjects for surgery

Aspiration biopsy - 42 (38 informative ones)

A thyroid carcinoma has been reported in one boy born in 1982, and in one girl born in 1983.

A boy evacuated from Polisia raion (ID [redacted], exposure dose 3.2 Gy, group "C") has been operated twice (in 1990 and 1992). During the first operation (right-side hemithyroidectomy) a papillary carcinoma of 20 mm in size, solid variant (T2N1M0), and during the second operation (final thyroidectomy) a left-side medullary carcinoma of 15 mm in size with dominant alveolar-solid structure (T4N0M0) have been diagnosed. Presence of a medullary carcinoma was confirmed by a positive immunohistochemical reaction with antibodies to calcitonin.

A girl from Ovruch raion of Zhytomyr oblast (ID [redacted], exposure dose 2.4 Gy, group "C") has been operated in 1997; a partially encapsulated papillary carcinoma of 15 mm, having a dominant follicular structure with presence of metastases to regional lymph nodes on the side of the lesion (T2N1M0) has been established.

Among cases of benign thyroid pathology there were one oxyphilic-cell follicular adenoma of microfollicular-solid structure measuring 25 mm, removed in 1999 in a girl born in 1985 from Chernihiv raion of Chernihiv oblast (ID [redacted] exposure dose 12.9 Gy, group "C"); one necrotized nodular goiter measuring 15 mm, removed in 1996 in a girl born in 1984 from Chernihiv raion of Chernihiv oblast (ID [redacted] exposure dose 0.76 Gy, group "B"); and one diffuse toxic goiter (Graves' disease) of microfollicular structure with areas of papillary hyperplasia, removed in 1993 in a girl born in 1984, also from Chernihiv raion of Chernihiv oblast (ID [redacted], exposure dose 0.08 Gy, group "A").

In all the five cases surgery was performed at the Institute of Endocrinology. Histological specimens have been prepared from archival paraffin blocks and analysed; material has been selected for the morphologic data bank of the Ukraine-US Project; appropriate Pathology Forms have been filled in (Russian and English versions).

It should be stressed that for the reported period 3 more cohort members went through screening examination, who had been previously operated for thyroid pathology (one case of thyroid carcinoma, two cases of benign pathology). For the present, no histological material is available from these patients, no additional morphologic verification has been performed; therefore, these cases have not been included in Table 6.

7.5 Complete laboratory tests for subjects examined

I. The following blood tests have been performed:

I. TSH: 4121 persons,

among which:

normal level (0.4-4.0 mU/l): 3841 (93.2 %);

below the normal level: 42 (1.0 %);
above the normal level: 238 (5.8 %),
among which:
 above the normal level (4,1-5,0 mU/l): 107 (2.6 %);
 above the normal level (5,1-10,0 mU/l): 119 (2.9 %);
 over 10,0 mU/l: 12 (0,3 %).

2. Anti TPO: 4317 persons,

among which:

normal level (0-60 U/ml): 4028 (93.3 %);
above the normal level: 289 (6.7 %),
among which:
 above the normal level (61-100 U/ml): 66 (1.5 %);
 above the normal level (101-200 U/ml): 60 (1.4 %);
 above the normal level (201-500 U/ml): 43 (1.0 %);
 above the normal level (501-1000 U/ml): 25 (0.6 %);
 over 1000 U/ml: 95 (2.2 %).

3. ABTG: 814 persons

among which:

normal level (0-60 U/l): 765 (93.9 %);
above the normal level: 49 (6.1 %),
among which:
 above the normal level (61-100 U/l): 21 (2.6 %);
 above the normal level (101-200 U/l): 15 (1.8 %);
 above the normal level (201-500 U/l): 6 (0.8 %);
 above the normal level (501-1000 U/l): 3 (0.4 %);
 over 1000 U/l: 4 (0.5 %).

4. Thyroglobulin: 4647 persons,

among which:

normal level (2,0-70 ng/ml): 4354 (93.7 %);
below the normal level: 126 (2.7 %)
above the normal level (71-200 ng/ml): 167 (3.6 %),

5. Ca⁺⁺: 1390 persons,

among which:

normal level (1,05-1,35 mmol/l): 1277 (85.7 %);

below the normal level: 5 (0.3 %);

above the normal level: 108 (7.2 %);

The Ca⁺⁺ analyser was not operating for a long time.

For the reported period, urinary iodine excretion tests have been performed in 350 subjects who were children and adolescents at the time of the Chernobyl accident, are living in Ovruch raion of Zhytomyr oblast, Chernihiv and Ripky raions of Chernihiv oblast, and Ivankiv raion of Kyiv oblast, and went through screening examination according to the Ukraine-US Project. Urinary iodine excretion was determined using cerium-arsenite method according to R. Gutekunst technique modified by A.D. Dunn.

The distribution of subjects examined and frequency of the results of urinary iodine excretion according to iodine deficiency degree are given in the Table 7.5.1.

Table 7.5.1. Distribution of the results of urinary iodine excretion tests (%) in screened subjects from controlled raions according to iodine deficiency degree

Raion	Number of tests	Distribution of samples (%)			
		< 20 µg/l (%)	20-50 µg/l (%)	50-100 µg/l (%)	> 100 µg/l (%)
Ivankiv	13	9.29	28.32	39.82	22.57
Chernihiv	168	42.03	38.1	17.87	1.93
Ripky	92	4.5	23.4	41.4	30.63
Ovruch	77	20.34	35.07	31.34	13.25

The distribution of subjects examined and frequency of the results of urinary iodine excretion according to iodine deficiency degree are given in the Table.

The results obtained show a considerable difference in iodine deficiency degree from one raion to another. 42% of the subjects examined in Chernihiv raion had a urinary iodine excretion level less than 20 µg/l, i.e. within the range of marked iodine deficiency. At the same time, in Ripky raion this indicator made up only 4.5%. There were also significant differences in the frequency of the results according to other gradations of iodine deficiency, as well as in those intervals which pointed out a normal iodine supply among the population of raions under study. The frequency of normal excretion was noted in study subjects from 1.93 to 30.63% (Table). Summing up the results of excretion frequency for different subdivisions enables to determine the dominant range of values, and to draw preliminary conclusions on iodine deficiency degree.

Thus, the results obtained point out a severe degree of iodine deficiency in Chernihiv raion of Chernihiv oblast, a moderate degree in Ovruch raion of Zhytomyr oblast, and a mild degree of

deficiency in Ivankiv raion of Kyiv oblast and Ripky raion of Chernihiv oblast.

7.6 Complete final endocrine summary for each subject

According to the results of examination, in the current quarter 560 final endocrinological conclusions have been prepared. The Forms have been transferred to DCC for sending out the results of examination to the patients. Out of them 364 conclusions have been sent to patients with revealed thyroid pathology.

Operational difficulties in the process of work: no difficulties.

7.9 Conduct expert reviews of thyroid pathology for subjects who had surgery

Histological preparations from 6 cases of papillary carcinoma, one case of minimally invasive follicular carcinoma, and 7 cases of benign thyroid pathology have been presented at the regular meeting of the International Panel of experts-pathologists (Nagasaki, Japan, October 15-17, 2000) for additional verification.

The diagnosis of papillary carcinoma was confirmed in all cases; it has been decided to determine the minimally invasive follicular carcinoma at this stage as FT UMP, but to revise this case at the next meeting with participation of American experts-pathologists.

The benign character of pathology was confirmed in all the 7 cases, but it has been suggested to qualify the multinodular oxyphilic-cell adenomatous goiter as numerous follicular adenomas, and the nodular adenomatous goiter as a follicular adenoma.

The diagnoses of 5 cases which have been operated before the beginning of screening, had been previously confirmed at the meeting in Milan in August 1999.

8. Develop data management system, and key enter data collected for the study

8.3 To enter information from Data Collection Forms into the database

Data entry from Aspiration Biopsy Form and Cytologic Conclusion Form has been performed. 32 and 60 Forms, respectively, have been entered for the reported period, as well as 11 Hospitalization Forms.

Data have been entered on those patients who need to repeat blood collection in order to specify their diagnosis. Data on subjects referred to FNA have been entered as well.

The following number of sets of Forms have been prepared and transferred to the Data Processing Center of the University of Illinois (Institute of Pediatrics, Obstetrics and Gynecology):

Date of transfer	Number
01.09.2000	200
20.09.2000	600
02.10.2000	900
11.10.2000	1400
06.11.2000	780
13.11.2000	95
15.11.2000	25
22.11.2000	1000
Total	5000

Every set of Forms for each of subjects was packed in an individual envelope, marked, and registered in the database.

Final conclusions and copies of blood tests have been prepared for sending out to patients in the raions under study. The number of conclusions sent out and distribution by raions are presented in the Table of **Subtask 5.6**.

It has been started data scanning and transfer into digital format of USI images from paper into the database, for patients who have USI data only on thermopaper. Those patients with results of thermoprint who have pathology according to USI data have been sampled from the database and archives.

8.4 Conduct routine batch edits of data base (DB)

For the reported period, input of the following data and correction of corresponding tables of the database has been performed:

- Correction of the passport file of the cohort based on lists of search (verification of identification information, date of birth, verification of address and status of cohort members). The data on the results of tracing of cohort members have been processed and entered into DB: search in Passport Bureaux of Narodychi raion; Oblast Department of Health of Zhytomyr oblast; Fiscal Administration of Zhytomyr oblast. The number of data processed and distribution according to the results of search are given in the Table of **Subtask 3.3**.
- Lists to be sent out and labels on envelopes with addresses for patients' invitation to screening have been prepared (see **Subtask 4.2**). Appointments for examination by stationary team have also been made on the phone. All information on invitations by mail and data on the results of contacts on the phone were entered into the database of contacts.

- Correction of the file of database of contacts. Data input on contacts with cohort subjects from postcards, lists, dynamics of patients' invitation has been performed. Data input based on the results of patients' invitation by local medical staff for mobile team. A total of 4327 contacts with patients (2381 by medical staff, 130 phone calls, 1816 invitations by mail) have been entered and added to the database. The distribution of results of contacts are presented in Table 2).
- Correction of the file of persons examined based on registration logs of stationary and mobile teams (the distribution of the subjects examined according to the place of screening is given in Table 4).
- Correction of the database of registration information on the status and location of Forms. Correction of the passport file of DB of cohort subjects based on Screening Forms. Passport data (date of birth, address) have been verified and entered from the Forms for 3988 cohort members. Data input from registration logs of blood and urine collection was being performed (distribution according to the completeness of getting through all screening stations is presented in Table 5).
- A total of 1090 sets of Forms (Screening questionnaires with results of hormonal tests) have been prepared and delivered to team leaders in order to make final conclusion.

9. Calculate estimate of dose and uncertainty for each study subject

9.1. Determine the appropriate methods for calculating I-131 dose.

9.1.1. Develop and field test dosimetry questionnaire.

Results of work. Russian versions of three Dosimetry Questionnaire Forms and two Instruction Forms for interviewers, common for Ukraine and Belarus, have been prepared: 1) questionnaire for those subjects who were born before 1977 (or for those who were born in 1977 and later but have come to the interview without their mother); 2) questionnaire for parents of those subjects who were born in 1977 and later; 3) questionnaire for mothers who have been feeding their children with breast milk; 4) main instructions for interviewers; 5) instructions with specification of questions. The versions have been agreed at the Trinational Meeting in Bethesda (November 2000), the amendments after approval have been introduced into the questionnaire. The next stage of the work is final agreement of questionnaires at the Trinational Meeting in Kyiv in December 2000, and testing of questionnaires in field.

Operation difficulties encountered in the process of work. No difficulties.

9.1.2 Derive the thyroid dose rates from the direct thyroid measurements.

Results of the work. Model measurements using age caesium phantoms of human body

have been performed. The purpose of measurements was to estimate caesium contribution, that is contained by the body, into the signal registered on thyroid level in iodine window of the spectrometer. The measurements have been made using UR-1-1 and NÉ-350 spectrometers. The spectrometers of this type were used in late stages of thyromonitoring in 1986. Calibration factors for ^{137}Cs and ^{131}I have been obtained in the process of measuring in ^{131}I window (365 ± 50 keV), in the geometry of thyroid gland measurement. A correlation of sensitivity of these devices to isotopes ^{137}Cs , ^{134}Cs and ^{131}I has been calculated..

Operation difficulties encountered in the process of work. No difficulties.

9.1.8 If feasible, develop an independent dosimetry method based on environmental transfer processes.

Results of the work. A verification has been made of the developed dosimetry model of I-131 and Cs-137 content in the links of nutrition chain (grass, milk) based on available data from direct measurements of I-131 and Cs-137 activity in the objects of environment. Information from database ENVIR_IOD.mdb has been used as a basic one.

Operation difficulties encountered in the process of work. It would be desirable to continue searching information on the results of direct measurements of I-131 and Cs-137 activity in the objects of environment, which have been performed in May-June 1986 in North regions of Ukraine.

9.1.10 Document: (1) the history of direct thyroid measurements

Results of the work. Creation of electronic copies of primary dosimetry records has been continued. For the reported quarter, electronic forms of 302 sheets of primary records have been made.

Documentation for DSU 2-1 spectrometer that had been used for thyromonitoring in 1986, has been found. The copies of the documents found have been added to the archives of device documentation, established in Dosimetry Group.

Operation difficulties encountered in the process of work. Till now, funding has not been obtained for purchasing a scanner with rapid interface which would significantly speed up the work. Funds for acquiring archiving devices (CD-Writer type disk drive) for storage of graphic files and other electronic data of the Project have not been obtained either.

9.1.11 Estimate thyroid dose from I-131, as well as uncertainty, for each study subject.

Results of the work. Programs have been developed to prepare information on individual behavior, available in questionnaires, to dose calculations. Questionnaire information stored in DB has been transformed, using the programs developed, into a matrix form of parametrized behavior for each of the days of iodine period of the accident, suitable for being entered into the program unit in the process of dose calculation.

Operation difficulties encountered in the process of work. No difficulties.

III. Work Planned for the Next Two Quarters

1. To complete screening medical examination of potential cohort members. To complete formation of the cohort of Project subjects.
2. To continue input of screening examination results into the Project database.
3. To perform a thorough medical examination at the Clinic of the Institute of Endocrinology of those cohort members in which abnormalities in thyroid status have been revealed in the process of screening.
4. To complete preparation for performance of second screening of the cohort of Project subjects:
 - To complete introduction of changes in the Operation Manual for Project implementation.
 - To print screening examination Forms.
 - To held a joint Meeting of Project executive staff and Heads of Oblast Departments of Health of Kyiv, Chernihiv, Zhytomyr Oblast and Kyiv City State Administrations, and Head Physicians of the raions of these oblasts, controlled in the framework of the Project, in order to review the results of forming the cohort of Project subjects, and discuss the tasks of second screening performance.
 - To held a joint Meeting of Project executive staff from the Ukrainian and American sides in order to review the results of forming the cohort of Project subjects, and discuss the tasks of second screening performance.
 - To organize a training for Project staff in view of the second medical screening examination of the cohort of Project subjects.
 - To held a joint Meeting of Epidemiology Group staff and contact persons of controlled raions, dealing with the issues of second screening of cohort members.

Table 1. Tracing of the Cohort

	Selection I (Records Selected = 20,071)			Selection II (Records Selected = 14,021)			Total (# of Records = 34,092)		
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter
	#	%		#	%		#	%	
Duplicate Record Found	1513		60	146		79	1659		139
Total Subjects	18558	100,0	-60	13875	100,0	-79	32433	100,0	-139
1. Address Found	12682	68,3	-146	8784	63,3	3212	21466	66,2	3066
1.1 Address in the Study Oblasts	11463	61,8	-136	8421	60,7	3116	19884	61,3	2980
1.1.1 Subject is Temporarily Absent	307	1,7	-2	190	1,4	83	497	1,5	81
1.2 Address Outside Study Oblasts, Same Country	1219	6,6	-10	363	2,6	96	1582	4,9	86
2. Emigrated to Another Country	442	2,4	0	189	1,4	40	631	1,9	40
3. Not Found	5295	28,5	69	4813	34,7	-3361	10108	31,2	-3292
4. Ineligible	13	0,1	13	1	0,0	1	14	0,0	14
5. Deceased	126	0,7	4	88	0,6	29	214	0,7	33

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Selection I - the first 20,000 subjects who were originally selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Address Found - a current address has been found using at least one of the tracing sources

Temporarily Absent - subject is in the military, prison, school, hospital, or on vacation and is temporarily away from his/her permanent address

Address Outside Study Oblasts, Same Country - Includes those whose oblast of residence is known, but full address unknown and those for whom full address is known but it is outside the study oblasts

Not Found - a current address or vital status was unknown by all of the tracing sources (includes subjects known to be living in study oblasts, but full address is unknown)

Ineligible - subjects age at time of accident was determined to be out of the range

Table 2. Results of Contacts with Subjects for Screening Cycle 1 (Baseline Screening Examination Only)**

	Selection I (Records Selected = 20,071)			Selection II (Records Selected = 14,021)			Total (# of Records = 34,092)		
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter
	#	%	#	#	%	#	#	%	#
Address Found in Study Oblasts	11463		-136	8421		3116	19884		2980
Invitation Sent/Subject Contacted	18598		2679	7703		4922	26 301		7 601
1. First Invitation	13032	100,0	2215	6828	100,0	4398	19860	100,0	6613
1.1 Accepted	5054	38,8	2164	4932	72,2	3131	9986	50,3	5295
1.2 Refused	240	1,8	-33	82	1,2	73	322	1,6	40
1.3 Did Not Respond	6703	51,4	156	952	13,9	740	7655	38,5	896
1.4 Incorrect Address	887	6,8	-123	691	10,1	324	1578	7,9	201
1.5 Temporarily Absent	105	0,8	8	112	1,6	71	217	1,1	79
1.6 Other	43	0,3	43	59	0,9	59	102	0,5	102
2. Subsequent Invitation/Contact	5566	100,0	464	875	100,0	524	6441	100,0	988
2.1 Accepted	1792	32,2	-160	549	62,7	331	2341	36,3	171
2.2 Refused	168	3,0	-22	14	1,6	12	182	2,8	-10
2.3 Did not respond	2658	47,8	613	134	15,3	26	2792	43,3	639
2.4 Incorrect address	745	13,4	-29	141	16,1	127	886	13,8	98
2.5 Temporarily Absent	162	2,9	21	30	3,4	21	192	3,0	42
2.6 Other	41	0,7	41	7	0,8	7	48	0,7	48

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Selection I - the first 19,000 subjects who were selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Temporarily Absent - subject is in the military, prison, school, hospital, or on vacation and is temporarily away from his/her permanent address

Subsequent Invitation - an invitation was previously sent to a subject and they refused, didn't respond, or the address was incorrect;

a second or subsequent invitation was sent, possibly with additional information or corrected address (this should be the total number of subjects to whom at least one additional invitation has been sent)

** A separate table should be prepared for the second screening examination

Table 3. Results of Previous Contact with Subjects Who Were Screened in Screening Cycle 1 (Baseline Examination Only)

	Selection I (Records Selected = 20,071)			Selection II (Records Selected = 14,021)			Total (# of Records = 34,092)		
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter*
	#	%		#	%		#	%	
Total Who Came to Screening Examination	8205	100.0	439	4490	100.0	1559	12695	100.0	1998
1. Accepted Invitation	2602	31,7	308	2215	49,3	1690	4817	37,9	1998
2. Refused Invitation	34	0,4	-66	2	0,0	-22	36	0,3	-88
3. Did Not Respond	2882	35,1	597	312	6,9	-264	3194	25,2	333
4. Other	2687	32,7	-400	1961	43,7	155	4648	36,6	-245

* Out of this number 22 persons were examined earlier, but were added to the database in current quarter

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Selection I - the first 19,000 subjects who were selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Table 4. Place of Screening for Subjects Who Were Screened in Screening Cycle 1 (Baseline Examination Only)

	Selection I (Records Selected =20,071)		Selection II (Records Selected = 14,021)			Total (# of Records = 34,092)			
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter*
	#	%		#	%		#	%	
Total Who Came to Screening Examination	8205	100.0	439	4490	100.0	1559	12695	100.0	1998
1. Examined at Fixed Center in Kiev	2158	26,3	279	1214	27,0	442	3372	26,6	721
2. Examined by Mobile Team	6047	73,7	160	3276	73,0	1117	9323	73,4	1277

* Out of this number 22 persons were examined earlier, but were added to the database in current quarter

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Selection I - the first 19,000 subjects who were selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Table 5. Status of Screening Activities for Subjects Who Were Screened in Screening Cycle 1 (Baseline Examination Only)

	Selection I (Records Selected = 20,071)			Selection II (Records Selected = 14,021)			Total (# of Records = 34,092)		
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter*
	#	%		#	%		#	%	
Total Who Came to Screening Examination	8205	100,0	439	4490	100,0	1559	12695	100,0	1998
1. Subject had Complete Screening Examination	7829	95,4	424	4315	96	1474	12144	95,7	1898
2. Subject Missed Only One Station	338	4,1	13	166	3,7	81	504	4,0	94
2.1 Subject Missed Blood Draw Only	30	0,4	2	6	0,1	0	36	0,3	2
2.2 Subject Missed Urine Collection Only	204	2,5	11	153	3,4	78	357	2,8	89
2.3 Subject Missed Dosimetry Interview Only	99	1,2	0	6	0,1	2	105	0,8	2
2.4 Subject Missed Only One Other Station	5	0,1	0	1	0,0	1	6	0,0	1
3 Subject Missed More than One Station	38	0,5	2	9	0,2	4	47	0,4	6
4. Subject participated in Exit Interview									

* Out of this number 22 persons were examined earlier, but were added to the database in current quarter

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Selection I - the first 19,000 subjects who were selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Table 6. Preliminary Results of Screening Examination for Subjects Who Were Screened in Screening Cycle 1 (Baseline Examination Only - from the preliminary endocrine summary completed on the day of the examination)

	Selection I (Records Selected = 20,071)			Selection II (Records Selected = 14,021)			Total (# of Records = 34,092)		
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter
	#	%	#	#	%	#	%	#	
Total Who Came to Screening Examination		100.0			100.0		12695	100.0	1976
1. No Thyroid Abnormalities (Follow in 2 Years)							10725	84,48	1582
2. Diffuse Goiter							1624	12,79	319
3. Nodular Goiter							269	2,12	64
3.1 At least 1 nodule > 10 mm							90	0,71	12
3.2 At least 1 nodule > 5 mm but none > 10 mm							179	1,41	52
4. Lymphadenopathy							22	0,17	22
5. Thyroiditis (Yes or Suspicion)							40	0,32	5
6. Thyroid Function Disturbance (Yes or Suspicion)							-	-	-
7. Parathyroid Disturbance (Yes or Suspicion)							-	-	-
8. Other Thyroid or Neck Pathology (Yes or Suspicion)							1	0,01	1
9. History of Thyroid Surgery Prior to Screening							5	0,04	3
9.1 Thyroid Cancer	4		2				4	0,03	2
9.2 Thyroid Adenoma	1		1				1	0,01	1
10. History of Other Thyroid Diagnosis Prior to Screening	1		-	2		2	3	0,02	2
11. Insufficient Information to Complete Preliminary Summary							6	0,05	

Definitions:

Selection I - the first 20,000 subjects who were selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Total Subjects Screened - total number of subjects who came to the first screening examination

History of thyroid surgery prior to screening - subject had thyroid surgery before coming to the first screening examination

Table 7. Fine Needle Aspiration Results from Screening Cycle 1 (Baseline Examination Only)

	Cumulative Total		Change Since Previous Quarter
	#	%	#
1. Subject referred for FNA	269	100.0	64
1.1 Subject was screened at Kiev Fixed Center	50	18,59	14
1.2 Subject was screened by Mobile Team	219	81,41	50
1.1a. Subject has NOT undergone FNA	84	31,23	22
1.1a.1 Subject was screened at Kiev Fixed Center	-	-	-
1.1a.2 Subject was screened by Mobile Team	84	31,23	22
1.1b. Subject HAS undergone FNA	185	68,77	42
1.1b.1 FNA positive or suspicious for cancer	22	8,18	3
1.1b.2 FNA not suspicious for cancer	121	44,98	35
1.1b.3 Sample(s) Inadequate for Diagnosis	42	15,61	4

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Table 8. Laboratory Tests Processed

	Cumulative Total		Change Since Previous Quarter
	#	%	#
1. Blood Samples Received	12588	100.0	1962
1.1 Blood Samples Processed for TSH	11075	87,9	4121
1.1.1 Blood Samples Processed for Free T4			
1.2 Blood Samples Processed for anti TPO	11076	87,9	4317
1.2.1 Blood Samples Processed for anti Tg	814	6,5	814
1.3 Blood Samples Processed for Tg	10362	82,3	4647
1.4 Blood Samples Processed for Ca⁺⁺	10401	89,8	1390
1.4.1 Blood Samples Processed for PTH	171	1,4	0
2. Urine Samples Received	12283	100.0	1899
2.1 Urine Samples Processed	4350	35.4	350

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Samples Received - the number of subjects for whom samples have been received by the laboratory

Samples Processed - the number of subjects for whom each specific laboratory analyses has been completed

Table 9. Final Endocrine Summary Results *

	Selection I			Selection II			Total		
	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter	Cumulative Total		Change Since Previous Quarter
	#	%	#	#	%	#	#	%	#
Total Subjects Screened							12695		1976
Final Endocrine Summary Report Completed		100.0			100.0		6035	100.0	560
1. No thyroid abnormality (Follow in 2 years)							4386	72,68	196
2. Thyroid abnormality (ICD-9 Code)							1649	27,32	364
2.1 Malignant neoplasm of thyroid gland (193)	18		2	2		-	20	0,33	2
2.2 Benign neoplasm of thyroid gland (226)	8		2	1		-	8	0,13	2
2.3 Simple and unspecified goiter (240)							1212	20,08	309
2.4 Nontoxic nodular goiter (241)							61	1,01	19
2.4.1 Uninodular (241.0)							52	0,86	19
2.4.2 Multinodular (241.1)							9	0,15	-
2.5 Thyrotoxicosis with or without goiter (242)							2	0,03	-
2.5.1 Toxic diffuse goiter (242.0)							2	0,03	-
2.5.2 Toxic uninodular goiter (242.1)							-	-	-
2.5.3 Toxic multinodular goiter (242.2)							-	-	-
2.5.4 Thyrotoxicosis without goiter (242.4 - 242.9)							-	-	-
2.6 Hypothyroidism (244)							267	4,43	-
2.7 Other Thyroid Disorders (237.4,245, 246)							79	1,31	32
2.7.1 Autoimmune thyroiditis (245.2)							79	1,31	32
3. Hyperparathyroidism (252.0)							-	-	-
4. Hypercalcemia (275.42)							10	0,17	-
Subject Has Been Notified of Examination Results									

Definitions:

Selection I - the first 20,000 subjects who were selected from the dose files

Selection II - the remaining subjects in the dose files who were selected at the April 2000

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Total Subjects Screened - total of the number of subjects who came to the first screening examination

Final Endocrine Summary/Pathology Completed - the total number of subjects for whom the final endocrine summary report has been completed, and Hospitalization Form (if applicable) and Pathology Form (if applicable) have been completed

- Results from final endocrine summary after all laboratory testing is complete and pathology reports obtained (for subjects with FNA/surgery) - Do not include thyroid abnormalities or malignancies diagnosed prior to the first screening

Table 10. Data Management

	Cumulative Total		Change Since Previous Quarter *
	#	%	#
Total Subjects Screened	12695	100.0	1998
Screening Forms Key Entered	9003	70.92	5003
Dosimetry Questionnaires Key Entered	12600	99.25	2025
Urine Processing Forms Key Entered	3320	26.15	443
Blood Processing Forms Key Entered	7934	62.50	3933
Final Endocrine Summary Forms Key Entered	6971	54.91	2982
FNA Results Forms Key Entered	103	0.8	60
Pathology Forms Key Entered	0	0	0

* Out of this number 22 persons were examined earlier, but were added to the database in current quarter

Definitions:

Cumulative Total - the cumulative total up to the ending date on the title page of this report

Current Quarter - total number for this quarter beginning and ending with the dates on the front page of this report

Total Subjects Screened - total of the numbers reported for Fixed Center and Mobile Teams for Selections I and II from Table 3

Screening Forms Key Entered - total number of subjects for whom all forms filled out on the day of screening (from registration through preliminary endocrine summary) have been key-entered