CONTENTS

CONTENTS

SOLIDARY INTERACTION OF MOTHER AND TEACHERS IN UPBRINGING OF THE GIRL

Belgibaeva G.K., Beysenbekova G.B., Moldabayeve R.A.

*Karaganda State University named after Academician E.A. Buketov, Karaganda,
e-mail: gulchi09@mail.ru, rosa_ros68@mail.ru*

In this article questions of interaction of public and family education are considered in the history of a pedagogical science. The author considers a current state of family pedagogics and need of increase of a priority role of interaction of teachers with a family in education of girls.

Keywords: upbringing, family, family education, public education, national pedagogics

It doesn't raise doubts recognition of a prioritic role of a family in formation of the identity of the child. A great deal depends on a modern family with its tendencies of development and features of family education, its interaction with social institutes of education (kindergarten, school and etc.). Introduction of a new subject «Ethics and psychology of family life», «interaction of kindergarten and family» of pedagogical faculty to the curriculum became far not the casual phenomenon in this regard, though this category as family education is eternal and it is represented as not so simple matter.

Sharp criticism of Ushinsky K.D. worldly conception about upbringing as a simple matter, which doesn't demand special preparation, hasn't lost an urgency even today. The Russian classic carried similar views on house upbringing of children to the area of pedagogical ignorance.

Unfortunately, long time was preferred to public education, and the family was considered as an inevitable step, but not main and not solving in formation of the personality. Though in the history of pedagogics there are set of proofs of other points of view: the indisputable priority of family upbringing was mentioned in works of outstanding thinkers of the past.

Two branches of education in a family and public institutions developed in ancient times. They disappear with their roots in history of mankind at the beginning of its existence. There are a lot of common peculiarities in them. It was reflected, first of all, in the statement of different tasks of upbringing. So, problems of upbringing in the conditions of a family and public educational institutions, being concrete – historical, depending on features of human life in society at a certain stage of its development, differ, according to many scientists, a ratio of emotional and rational components: in a family the first prevails, in public upbringing – the second.

Differences are observed in aims, principles, in the content of public and family upbringing. In the first case the purpose is the social order of society for final «model» of the pupil, and in a family there is the specific goal:' what she wants to grow up the child taking into account his abilities and specific features.

The content of upbringing also differs a little. At school it has scientific and state base, it is formulated for concrete educational institution, differentiated on age categories. In a family, as a rule, it doesn't exist, and the content of upbringing depends on a number of reasons (valuable orientations, an ethnic origin, unity of a family and etc.).

There is also a difference in methods of upbringing – in choice, in content, therefore, and by efficiency of impact on the child.

According to Kulikova T.A. in family methods of upbringing there is no stamp of premeditation peculiar to educational institutions. But more natural essences, treatment to the child are observed who already has the life experience, interests and habits [1]

In due time Pestalozzi noted that the family teaches life by means of lively, vitally necessary things, instead of the thought-up business, educates by the definite matter, instead of a word.

Each family forms the methods of upbringing which are often optimum, but sometimes wrong.

As it was mentioned above, one can make a conclusion that public upbringing, in comparison with family one, differs much in scientific validity, regularity, purposefulness, and informal character is inherent in family education. It is stood on personal contacts, love, trust, the relative relations, sated with emotionality.

Public education is carried out by society, the state and the organizations. The relations in this system are defined by functions of the teacher, and his relationship with the child is more reserved, than between the child and members of the family in the conditions of house upbringing.

Thus, the modern pedagogical science allocates a number of principal differences between family and public upbringing and calls the reasons of less study of family upbringing:

– many years in the state policy in the country focused mainly on public upbringing

that in its turn, depreciated the role of family as social institute;

– lack of an interdisciplinary, comprehensive approach to studying

family functions;

– family education is object of «the increased complexity» for scientific research because life of a separate family represents secret, without the right of intervention of strangers, including researchers.

In our opinion, it is necessary to add to above stated: ignoring national and priority of international , and also the most important task put by the authoritative state on formation of a uniform community – the Soviet people. It led, finally, to withdrawal pains of traditional foundations of upbringing and large-scale leveling of values, to drowsiness primordial, national, traditional that always defined coordinates of ethnos in poliethnic space, making Kazakh-Kazakh, the Yakut-Yakut, Russian-Russian etc.

So for today there was a need to return «to own place» and to make everything in order that family upbringing revives its progressive traditions. In this context solidary interaction of a family and society acts as one of important conditions of the solution of this problem.

Such solidarity will allow to reach harmony and will provide advisable interaction, a mutual supplement of two defining directions of upbringing,coordination of parents and teachers in actions and views on the basis of a community of interests and the purposes.

The history of «family upbringing» grows from roots of national pedagogics. In the research of national pedagogics, professor S.A. Uzakbayeva proves the following definition: «The national pedagogics is a set of knowledge, abilities, skills of the people in the field of upbringing and education on the basis of which certain customs and the traditions are formed promoting to transfer this knowledge, skills from generation to generation in an oral form, through national creativity» [2].

Thus, its way, customs, holidays, ceremonies are focused on an everyday life of the person: to be able to live among people, to glorify oneself and a name of the ancestors with his labour and piety. And in means of national pedagogics (fairy tales, proverbs, games, legends) the main principles and bases of family life are encoded:

«if you want to keep the nation, bring up the daughter if you want to keep a gender, bring up the son»;

«I speak to you, the daughter, but listen you, the daughter-in-law»;

«the root of all problems of society is covered in a children's cradle»;

«till five years the child hold on position of the khan, till fifteen years – on position of the slave, and after fifteen years – on position of the equal friend»), and etc.

And so in family pedagogics of the people its ideals, the purposes and educational tools are reflected. It allows to form the best lines of national character in children and to prepare them for independent worthy life.

Historical experience of house and family upbringing is assembled in works of country teachers Volkov G.N., Bestuzhev – Lada I.V., Petrova T.N. However, Bestuzhev Lada I.V. warn excessive absolutization and attempts to restore traditional family upbringing as it is more possible in modern conditions. He considers that many values were transformed during centuries ,became another one. Therefore it is necessary to refuse from some negative lines (superstition, prejudices, despotism in the treatment of children and etc.) [1].

The national family pedagogics developed, cooperating with religion. Moreover, both of them ennobled the main universal values in humanbeing, in which a family occupies very important role, and the main categories of ethics: the good, the evil ,happiness, etc. Muslim doctrinal statements appreciate love, fidelity, care of parents, patience, etc.

The family is a small world, small society. The family and school – two public institutes which are at the beginning of our future, but whether school and a family always have mutual understanding, a step and patience to hear and understand each other? [3].

The problem of a family, marriage, the marriage and family relations were also object of close attention of philosophers, scientific researchers in different eras and the people: Platno, in its dialogues «Feast», «State». Aristotle to «Policy», I. Kant considered that «the person is angry by nature, the good is given him as a result of upbringing, and here the important role belongs to school, but nevertheless the family should become primary ethical cell». And also problem of a family and house upbringing drew attention of the progressive Russian public that was reflected in Belinsky's creativity In.G., Herzen A.I., Pisarev D.P., Dobrolyubov N.A., etc. Authors criticized negative lines of family upbringing, such as suppression of the identity of the child, ignoring of its mental features, corporal punishments and at the same time suggested to improve upbringing of children to a family, to develop their activity and independence.

In the second half of the 19th, beginning of the 20th problems of family upbringing already took an important place in works of known teachers: Ushinsky K.D., Lesgaft P.F., Kaptereva P.F. and etc. Classics of pedagogics considered necessary to study a family as the natural vital environment of the child, house

upbringing – a foremost duty of parents, parents should know age and psyhological features of their children, and special preparation is necessary here, first of all, mother's. The reasons of low level of family upbringing were seen in absence of preparation.

Researchers of the prerevolutionary period in Russia considered a family as a source of formation of national feelings in children, ideals and national values of family upbringing. Kapterev P.F. called such values as religion, work, works of national folklore (the fairy tale, a song). Authors noted that the religion fastens a family spiritually in a single whole, labour unites everyone psychologically, rallying in an everyday life; the folklore going from time immemorial, influences on feelings and the imagination of the child and forms his national individuality.

In modern conditions there were enough works shining different aspects of family upbringing: characteristics of a modern family (Arnautov E.P., Markova T.A.), problems of psychology of a family, tactics of house upbringing (Kovalev St., Petrovsky A.V.), ways of increasing of pedagogical culture of parents.

Modern family upbringing is based on principles of humanistic pedagogics:

– creativity – free development of ability of children;

– humanity – personality recognition as absolute value;

– the democratism based on establishment of the spiritual, equal in rights relation between adults and children;

– civilization, based on understanding of the place «I'm» in the public and state system;

– the retrospektive, allowing to carry out upbringing on traditions of national pedagogics;

– priorities of universal ethical standards and values [5].

Today, when modern families are developed in conditions of qualitative and inconsistent public situation. Process of interaction of a family and school should be directed on active inclusion of parents in teaching and educational process, in extracurricular leisure activities, cooperation with children and teachers.

Efficiency of educational work at school in many respects depends on ability of the teacher to find a common language with parents, relying on their help and support through a number of out-of-class actions: «Creative family», «traditions of a family» and etc.

The family and school put the general main problem – education comprehensively, harmoniously developed person capable to adapt successfully in the difficult social environment and to realize oneself in professional, civil and family aspects.

Thus, interaction of a family and school is an integral part in upbringing of younger generation as the future of our state depends on him. We urge to give particular attention to upbringing of girls, future mothers,as the Kazakh proverb says: «Upbringing of girls – Upbringing of nation».

References

1. Dzhambinova T.N. Upbringing of girls in Kalmyk national pedagogics // Candidate of pedagogical sciences. – Cheboksary, 2004.

2. Kozhakhmetova K.Zh. Kazakh ethnopedagogics: methodology, theory, practice. – Almaty: «Gylym», 1998

3. Syrymbetov's L.C. Kazakh female gymnasium: ethnopedagogical model of tender education. – Almaty: «Bilim», 2006.

4. Azarov Yu.P., Pedagogika of the family relations. M.: «Knowledge», 1997.

5. Ospanova. B.A.Organization of a pedagogical family support // Materials of republican scientific and practical conference: A condition and prospects of development of an education system in the Republic of Kazakhstan. –Karaganda, 2006.

DEVELOPMENT OF UNIVERSAL EDUCATIONAL SKILLS
OF PUPILS IN THE FORMING OF PHYSICAL CONCEPTS

Krutova I.A., Zhukova N.V.

Astrakhan State University, Astrakhan, e-mail: irinkrutova@yandex.ru, unndinn@hotmail.com

In article the problem solving method of universal educational skills formation of pupils at a physics lesson are described. Special attention is given to the acquisition process of the elements of physical knowledges, the activity on recognition and simulation of certain situations are to be carried out on the basis of them. Recognition of the situations corresponding to some concept or scientific fact is carried out in strict compliance with the system of the necessary features, included into the concept. Method proposed of organizing pupils' activity for new knowledge acquisition with reference to the theory of step by step mental actions forming which promote development of their universal educational actions.

The current stage of the society development is characterized by considerable changes in the ideas of the goals of education and ways of their accomplishing. Considering the result of education not as a sum of domain knowledge, but as a system of skills, allowing acting in any situation, sets new reference points for contemporary school-level education that must create the conditions for the development of universal educational actions. Universal educational actions are understood herein as a complex of the ways of pupils' actions, providing independent acquisition of new knowledge, forming the skills, including the organization of the process. The universal character of the educational actions lies in their being meta-subject, so they must be formed while studying different school subjects.

Among universal educational actions it is necessary to form particularly the cognitive universal actions, namely, general educational (independent distinguishing and forming of a cognitive goal; structuring of the knowledge; choosing the most efficient ways to solve a problem depending on the particular conditions, etc.) and logical (analysis aiming to distinguish features, choosing the bases and criteria for comparison and classification of objects, identification of the concept, making chain of logic reasoning, etc.).

The process of knowledge acquisition always means that pupils perform certain educational actions. That is why while planning the acquisition of any knowledge it is necessary to define within which activity (in which skills) the pupils must use it, what the purpose of acquiring it is. Besides, a teacher must be sure that pupils have mastered the whole system of actions comprising the skill of studying required in this case [7].

The present methods of teaching certain school subjects do not involve teaching pupils how they should draw up their activity programme on the basis of the knowledge that must be acquired.

Every pupil masters this activity, and consequently acquires the knowledge, spontaneously. At the same time a teacher can and must control the acquisition of the knowledge by controlling the forming of those types of activity which are to be carried out on the basis of this knowledge.

Each element of the physical knowledge is connected with two types of activity: on recognition and on simulation of certain situations. The programme of these types of activity is based on the content of the corresponding knowledge [1].

The following elements can be distinguished among the physical knowledge: concepts, laws, scientific facts, theories. Concepts are divided into concepts of physical objects, physical phenomena and physical magnitudes.

Pupils must acquire the elements of physical knowledge by carrying out certain activities, connected with recognition and reproduction of them in certain situations. This implies that to organize such an activity, problems-exercises are required, the tasks of them must specify the goals which make the pupil carry out the activity on recognition or simulation of certain situations. The problems-exercises are solved with reference to some physical knowledge that enables the pupils to understand the essence and digest the content of the new knowledge as contrasted with the complex problems, where the whole attention is paid to the physical content and so the aim is not achieved. However, the problem books recommended to the pupils contain a few problems-exercises, so teachers have to write them themselves.

To acquire some physical knowledge a pupil must carry out the same activity in different situations, the following requirements to be satisfied:

1) the situations must be interesting to the pupils, physical knowledge must be applied in solving important problems;

2) the number of the situations must be about 8–10. This is in full compliance with the data of

psychological researches saying that to master an activity one must perform it at least 8 times;

3) the situations must be of three types:

a) have the features of the concept they are brought to;

b) not have some of the features, c) have some indefinite features;

4) the situations can be described verbally, presented in the form of drawings, graphs or tables;

5) the situations must be arranged in such a way that the situations which differ from each other were in the beginning, followed by more similar ones;

6) situations in which pupils can carry out the activity with the real objects are quite valuable.

For example, when a teacher gives pupils the task «to reproduce the diffusion phenomenon, choosing the necessary objects», the following sets of objects are offered:

a) a glass of water; strawberry syrup;

b) a bottle of perfume;

c) an aluminum spoon, a glass of hot water;

d) a glass of water, potassium permanganate, a glass stick etc.

The peculiarity of all the mentioned exercises is that the programme of the activity on achieving the goal, that was stated in the requirements of the problem, is elaborated on the basis of the knowledge, which is stated in the goal.

Activity on recognition in logics is called concept identification. This activity has a very strict logic scheme explained by the content of the notion «concept identification»: concept identification means defining if the situation (object, phenomenon) involves all the features stated in the definition of the concept.

For this reason, it is required:

1) to name the concept to be identified in the given situation;

2) to give the definition of the concept;

3) to define the features of the concept;

4) to name the first feature;

5) to define if the situation possesses the feature;

6) to name the second feature;

7) to define if the given situation possesses the feature;

…

n) to formulate the conclusion.

There is a logical rule of drawing conclusions: the situation only suits the given concept in case it possesses the whole system of the necessary and sufficient features, included into the concept [7]. If it lacks at least one of them, it cannot belong to this concept. If it is impossible to define if the situation has or lacks some feature, the answer remains uncertain even in case all other features are present: it cannot be stated if the situation belongs to the concept or not.

Recognition of the situations corresponding to some concept (or scientific fact) or another is carried out in strict compliance with this logic scheme. In addition, the method of analyzing the situations while identifying if they possess the features of the concept is determined by the content of the certain concept.

Example. The task is «to identify if there is a phenomenon of electrostatic charging of bodies in certain situations».
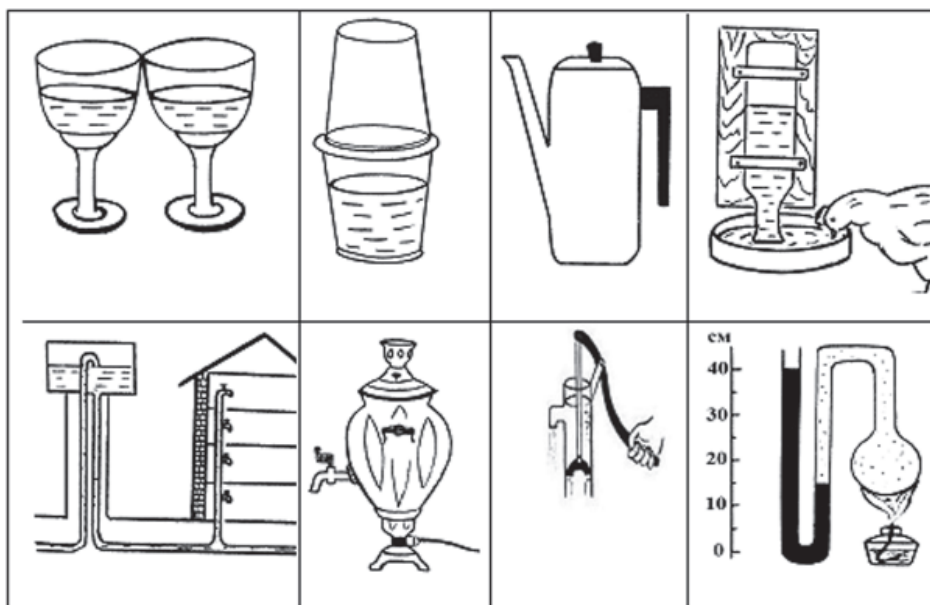
To fulfill this task it is required:

1) to name the concept to be identified in the given situation: electrostatic charging of bodies;

2) to give the definition of the concept: electrostatic charging of bodies is a phenomenon, implying that if two bodies are in contact

or rubbing each other, they both acquire the ability of attracting other bodies;

3) to define the features of electrostatic charging of bodies: I – involvement of two bodies, II – the two bodies are in contact or rubbing together; III – the two bodies acquire the ability of attracting other bodies;

4) to name the first feature: two bodies must be involved;

5) to define if there are two bodies in the situation;

6) to name the second feature: the two bodies are in contact or rubbing together;

7) to define if the two bodies are in contact or rubbing together;

8) to name the third feature: acquisition by the two bodies the ability of attracting other bodies;

9) to define if the two bodies acquired the ability of attracting other bodies;

10) to formulate the conclusion.

This example illustrates that an action on recognition has two elements: logical one (general logical scheme of the activity) and conceptual one (way of analyzing certain situations to define if they have the features stated in the concept).

To know the structure, functions and basic features of the action allows to model the most rational types of cognitive activity and to select requirements to them in the end of the study course. The theory of step by step mental actions forming distinguishes five stages in the process of acquiring crucially new actions [2].

It is rational to start teaching any new activity with setting a problem that requires this activity. Thus, a motivation stage is first organized; at this stage it becomes necessary for the pupils to recognize or simulate a certain situation.

The next stage is drawing up a scheme of the approximate basis of actions. For this purpose it is required to set the system of necessary and satisfying features, which characterize certain phenomena, and show how one should define the presence or lack of the chosen system of characteristics and make the appropriate conclusion. Then pupils should elaborate the way of solving a particular task in a generalized form. This stage provides preliminary insight into the activity, understanding of its logic, but to master this activity one must carry it out independently for several times leaning upon the acquired knowledge.

Then the stage of performing the activity in the material form follows. Beside the way of performing the exercise pupils must be provided with the system of tasks where this activity must be carried out. It is advisable that in the situations 1 and 2 there should be an opportunity to carry out the activity manually, applying certain objects and equipment. In that case the pupils will remember not only the features of the concept and the logical rule of the concept identification, but will be able to apply them both, i.e. they will master one of the logical methods of work with the concept. At this stage it is important to control not only the final result of the activity, but to observe the correct implementation of each action. At this stage the simultaneous work of all the pupils is organized. Each of them performs the actions and shows the result to the teacher.

The next stage is the stage of verbal actions. The new character of their work is explained to the pupils – in pairs, where one of them is a pupil and the other is a teacher. The exercise is done in the context of 3–4 situations with the action being performed in a form of speaking aloud without any materialization tools.

When pupils master the activity in this form they should be allowed to work individually without leaning upon the way of the exercise performing and without reasoning aloud, i.e. they are taken to the stage of argument to themselves. This stage is characterized by the pupils' commenting the whole process, like in the previous stage, but to themselves, silently. The pupils should perform the exercise in the context of the situations 5 and 6, saying to themselves not only the name of the action, but the way of its being carried out. The control is effected on the basis of the final result. This is a transitive stage to the last one – the stage of the mental actions. In this final stage the activity is being generalized, shortened and automatized. Exercise in the context of situations 7 and 8 can be treated as a control one. The pupils can be asked to do it very quickly.

To manage the pupils' cognitive activity on acquisition of physical knowledge we have elaborated a new didactical tool, which presents tasks on application of knowledge, at least 8 certain situations are selected for each task and ways of fulfilling the tasks are defined in a generalized sense. It is called «Physics workbook» and is designed for acquisition of principal physical notions, laws and scientific facts by pupils [6]. The title of the handbook underlines that pupils use it at the lessons, but it does not substitute a Physics copybook, where the pupil takes notes while acquiring new physical knowledge, implementing practical work [3, 4, 5]. The pupil carries out some different activities in it: draws up a programme for the tasks fulfilling in a generalized way, trains many times in its

implementing while recognizing or simulating certain situations, solving problems-exercises, explaining phenomena.

Situations of the tasks are interesting to the pupils, for they allow them to apply the knowledge of Physics in tackling practical problems. Computer lends invaluable support in elaboration of such didactical tools, for it helps to form a bank of problems-exercises in all the topics of the school-time Physics course. This facilitates the preparatory work of a Physics teacher, as there is a possibility of immediate access to didactical tools, enabling to organize the process of acquisition of physical knowledge.

The method described of organizing pupils' activity in the stage of application of the knowledge allows pupils not only to acquire some new knowledge at a lesson without any particular overlearning, but to develop their universal educational actions.

References

1. Anofrikova S.V. Alphabet teaching activities, illustrated examples of physics teachers. Part 1. Develop lessons. – M.: Moscow State Pedagogical University, 2001. – 236 p.

2. Galperin P.Ya. Introduction in Psychology. – M.: Book house «University», 1999. – 332 p.

3. Krutova I.A. Base tendencies of using computer in the process of «creation» and acquisition of concepts on physical phenomena among pupils // Fundamental research. – 2007. – № 7. – P. 63–65.

4. Krutova I.A. Formation of cognitive competence among secondary school children to the study of physical phenomena // Geology, Geography and Global Energy. – 2006. – № 8. – P. 184–187.

5. Stefanova G.P., Krutova I.A. Use of computing technology in the forming of cognitive activity of pupils in physics teaching // Bulletin of Vyatka State Humanities University. – 2011. – № 4–1. – P. 160–164.

6. Stefanova G.P., Krutova I.A. Physics: workbook for grade 7: Manual. – Astrakhan: Publishing house «Astrakhan University», 2011. – 130 p.

7. Talyzina N.F. Managing the process of knowledge acquisition. – M.: Moscow State University, 1984. – 344 p.

Materials of Conferences

PRACTICE-ORIENTED ACTIVITIES AS A BASIS FOR CREATION OF SAFE LIVING OF STUDENTS WITH DEPRIVATION OF VIEW AT THE MEDICAL COLLEGE

Kolyvanova L.A.

State educational institution of secondary professional education «Kinel-Cherkassy medical College», Kinel-Cherkassy, e-mail: larisaleksandr@yandex.ru

The main aim to form a safe ability to live for the students with a disability of view under the conditions of training in medical college was the help in development and realization of personal possibilities of an individual as subject of safe ability to live. According to K.N. Gozhenko, a medical work training of the invalid is a stage of personal and professional development of students with dysopia, finding of feeling of identity and integrity, professional self-determination, development of values, volition, independence and responsibility [1].

According to A.V. Suvorov, «any work of soul and especially its lonely work is an essential condition of development of such ability, as a reflexion. Work of soul for the blind and hyposeeing supposes a transformation of a reality into actuality. We learn to react responsible to actuality and through it to reality, we study to reflect and to communicate in general while working over transformation of a reality into a validity, creating and using a validity, living in it which is created not by us, but other people and independent of us [3].

The important role in communication of students with disabilities is made by the educational process directed on interaction with the others without any «barrier». V.D. Semenov notices that educational cooperation or pedagogical communication is a harmony of spiritual and organizing in interaction and relations of people» [2], where students with dysopsia learn to answer first of all for themselves, their actions and a safe life.

The actuality of life safety of ability of people with disabilities is caused by following circumstances:

– due to new security threats in various spheres of living, the level of knowledge of the people about them, especially concerning a personal security of invalids, are considerably in arrears of modern requirements;

– level of their general culture in sphere of safety of living is low cause to the absence of the developed system of continuous education in this area;

– the programs of education of people with disabilities are absent in many professionally-educational authorities, the qualified teachers of disciplines of «Safety of living» are absent and that seriously affects quality of education of students-invalids;

– while of preparation of the person of safe behaviour the age and psychophysiological features influencing a teaching material, acquisition of special knowledge, skills of safe living are not always considered.

The main aim of our research was working out and realization of creation of culture of safe living in professional education of students with disabilities, revealing and check of pedagogical conditions of its effective functioning in medical college where the object of research was pedagogical process of educational authority.

Our long-term research included the analysis of the general educational process in college and teaching of a discipline «Safety of living» where theoretical parts alternated with the practice oriented activity in determined succession. This support a deepening of knowledge in sphere of professional work of invalids with sight disability through self-determination, self-knowledge, self-improvement, motivation strengthening to safe living.

Introduction of the developed theoretical statements and conditions of realization of model of formation of safe living into educational process of trained invalids was hold in state budget educational authority of secondary professional education «Kinel-Cherkassk medical college», which carry out vocational training of students with dysopia, profession 060502 «Medical massage». Students with dysopia and teachers participated in this experiment.

The creation by teachers of conditions where the students with dysopia could had possibility to reveal and realise the interest to knowledge as its habitual and realised requirement necessary for self-actualisation, self-development and self-realisation was a base of practice oriented activity.

The program of preparation of medical workers provides a big volume of activities of students-invalids in fitness-facilities, therapeutic exercises, where was made a process of strengthening of their physical health, restoration of the lost physical capacities promoting development of professional skills and rehabilitation in society.

The practice oriented technologies of training of students with dysopia combined variants of individual and group work, solved education and informative, communicatively developing, socially oriented activity. They made an interrelation of a discipline «Safety living» with the main general profession disciplines: «Anatomy and human physiology with bases of topographical anatomy», «Hygiene and ecology of the person», «Psychology», «Bases of a nursing care and infectious safety», «Neurology bases»; «Bases of surgery with traumatology»; «Therapy bases». The practice oriented technologies of training of students with disabilities included:

– a practical training of the basic subjects where practical approvement of the received knowledge, skills training not demanding the obligatory visual control (imposing of bandages, time stop of bleedings, transport immobilizations at fractures, elements of care of children of younger age);

– technological practical training made on a base of central region hospital of Kinel-Cherkassy where students could receive the knowledge palpatory and formed skills on one of general professional disciplines;

– Role and business games on which there was a discussion of problems of physical inability and ways of their realisation, playing concrete situations;

– Work in fitness-facilities, centers of therapeutic exercises;

– Excursions in Samara State Medical University and Samara medical institute «Reavis», including traditional lessons-excursions in an anatomic museum, joint scientifically-practical conferences, seminars, practical training;

– Excursions in regional and regional libraries for blind for the purpose of reception of the necessary information for the further professional self-education and self-development.

The important part in realization of the practice-oriented activity of students with disability was a participation in socially significant actions («Day of health», «Fresh wind», «No to drugs», «I choose health», «Day of the medical worker», «Day of invalids», «Day of protection of children», «Day of youth», volunteerism activity of students of II and III courses on bases of GBOU school № 1, 2 «OZ» Kinel-Cherkassy, aimed at propagation of a healthy way of life, drugs prevention, STIs (infections, sexually transmitted) and AIDS among teenagers; participation in annual regional and Russian competitions of professional skill by certain types of massage (I a course – classical massage, II a course – segmentary, III a course – nonconventional, children's and Spa-MASSAGE); participation in working out of social projects and programs on rehabilitation, adaptation and integration of invalids into a society), promoting to their interaction with environment without any «Barrier».

As a result of research and proceeding from the practice-oriented technologies in educational process of students with dysopia the basic components of their vocational training have been defined:

– Intergrative, developing professional consciousness and the positive self-concept formed in integrative unit of knowledge, practical activities habit;

– Adaptable, allowing to take the first step to construct of the professional self-concept, to adapt the acquired knowledge and abilities for a reality;

– Educating, giving possibilities to check up theoretical knowledge in practice, and also to the further self-education and competence increase;

– Developing, realizing abilities trained, causing success of their professional work;

– Diagnostic, motivating to an estimation of the received theoretical knowledge and practical abilities, diagnostics of their sufficiency, depth and durability thanks to which there is a professional self-education of invalids.

Thereupon, application of the practice-oriented technologies within the limits of educational process of preparation of the future experts gives the chance to students with dysopia to participate in the labour activity, being a necessary condition of formation of safety living of physically challenged people.

To define a development of dynamics of interests of students to «Safety of living» a questioning of students-invalids has bee made, under its results the factor of their interest Ki taking on values from -1 (total absence of the interest) to +1 (the highest interest):

$$K_i = \frac{A \cdot (+1) + B \cdot (0) + C \cdot (-1)}{N},$$

where A – number of trained, considered a studying of safety life as interesting; B – number of trained, indifferently to studying of this discipline; C – number of trained, considered the studying as uninteresting; N – total number of trained students.

We have the following results of the comparative analysis of studying with dysopia to a discipline «Safety living»: prior to our experiment were low (+0,14) and averages (+0,31; 0,39) and after the experiment they were average (+0,37) and high (0,60; 0,77). At the end of an academic year we proposed to the students who have considered a studying of discipline «Safety living» as interesting, to fill in the questionnaire «What heightened your interest to this subject?».

Answers of respondents were as follows: 70,1 % of students have paid attention to necessity of knowledge about safety living for the purpose of sociolabor rehabilitation in a society and safe orientation in space; 24,2 % of students have noted necessity of use of a practical training on discipline as a main factor of increase of their interest; 5,7 % of trained marked an importance of carrying out of trainings and discussions of the subject.

The received results reflected tendencies of socialisation of the person of students with dysopia, development of their of safe behaviour in environment and proved the efficiency of a technique of formation of safety living among invalids. As have shown results of the comparative analysis of levels of forming to safety living of students with disabilities, at an ascertaining investigation phase they were low 21,7 % while in forming experiment they have made 78,3 %.

Thus, the effective realization in vocational training of students with disabilities of the practice-foriented activity within the limits of a course «Safety living», its integration with others general professional disciplines was a necessary condition of development of safety living among the trained.

References

1. Gozhenko K.N. Psychological support of personal development of students with disabilities in medical college: cand. diss. – Stavropol, 2003.

2. Semenov V.D. Keep it real. – M.: Publishing house «Knowledge», 1989. – 80 p.

3. Suvorov A.V. Lonely soul work as the basic form of self-development of the person.

EXPO-2017 AS AN AREA FOR SOLUTION OF CURRENT PROBLEMS OF SCIENCE AND EDUCATION

Syzdykova E.Z., Abilov D.K.

Karaganda State University named after academician E.A. Buketov, Karaganda, e-mail: add1401@mail.ru

More often world scientific community and businessmen are interested in the issues of medicine, oil and gas sphere, international tourism development, and renewable energy sources also attract their attention. Country puts high hopes that EXPO-2017 will show good results in the sphere of development of solar and wind energy that is already applied in many countries.

The topic of EXPO-2017 is «Energy of the Future» in Kazakhstan and it is determined by the urgency of change for the new ecologically clean and self renewal kinds of energy. The given exhibition will strengthen cooperation between different participating countries, as well as it will produce brand new concepts relating to extension and strengthening of international links.

152nd General Assembly of International Exhibitions Bureau elected in secret ballot Kazakhstan as host of EXPO-2017 exhibition on November 22, 2012.

The exhibition topic of «Energy of the Future» is global for innovations all over the world, since all the countries faced the problem of energy saving and many of them are ready to the implementation of alternative sources (such as solar energy, wind energy, hydro-power and etc.).

The results of exhibition have long-term nature rather than up-to-the-minute one. It allows to save and optimize technological progress, to lift restrictions in the business possibilities, as well as such results will be appreciated by many future generations.

Steering committee on the preparation and realization of EXPO-2017 as Executive Board of State Commission includes 8 working headquarters on the main directions of the organization and holding of the exhibition. The Ministry of Education and Science is responsible for the staffing. Ministry of Industry and New Technologies is an actuating element on the development of harnessing of renewable resources, attraction of investments and development of tourism. Ministry of Transport and Communications fulfills the obligations corresponding to its development profile. As for the created «Astana EXPO-2017» «National company» JSC, it will focus in 2013 on the formation of goals and preparatory processes. The main task of the created company is the design and construction of infrastructure and facilities on the territory of the exhibition. Ministry of Economic Development and Trade was appointed to assure activity on the overall coordination of work and cooperation with regions. Ministry of Cultural Affairs and Information is responsible for information support and community outreach. Akimat of the capital of the Republic of Kazakhstan deals with infrastructure development and city project construction. By means of Ministry of Foreign Affairs of the Republic of Kazakhstan the staff office on work with international participants of EXPO-2017 acts. It deals with diplomatic and custom issues, problem of Visa support and permission for the participating countries of the exhibition.

In addition, Steering committee on the preparation and realization of EXPO-2017 includes national adviser office, Directorate for the construction of object in Astana city LLP and the Fund for EXPO 2017 under the corporate fund «Nurly Astana» under the Akimat of Astana city [1].

The exhibition EXPO-2017 will last 3 months from the June, 10 till September, 10 2017. It is assumed to have the representatives of 100 countries and about 10 international organizations. The number of visitors is assumed to be more than 5 million men.

EXPO-2017 will grant new step in the development of small and medium business of the capital and neighboring regions primarily in the infrastructure, hotel industry and inner tourism, as well as it will promote the development of science-based engineering thought and open discussion of future Kazakh energetics.

The given exhibition will allow to invite significant volume of private investments to the construction of exhibitory objects and infrastructure of the capital, to create tens of thousands of work position for their maintenance, to develop inner tourism, to increase affluence of international visitors to the country and to mobilize economic and social resources of Kazakhstan. The exhibition will introduce the multinational culture, ancient history, art, traditions and hospitality of the Kazakh people to the world, it will raise recognisability and tourist attraction of Kazakhstan in world community.

The topics of exhibition EXPO 2017 «Energy of the future» touches upon the most urgent question of all world community that is development of renewable energy resources, and it is oriented to find path for quality changes in energetics, including first of all, development of alternative energy sources and new ways of its transportation. It is

planned to present for example the project promoting energy saving and decrease of enterprises' dependence on syndicated source under restrictions of electric power deficit.

There is an introduction of the following notions such as «performance contract» and «energy service company» to the legislative act among suggestions that enable to implement energy-saving technologies in the region of community facilities. World practice of use of performance contract work in the housing and utilities infrastructure system proved the ability to reduce the expenditure of energy supply consumers and budgetary funds on the building maintenance, as well as the provision of payment collection increase.

The given suggestions are attractive for the highly developed countries that have high technologies and high living standard because there is high energy consumption in such countries.

Foremost scientists work at practical implementation of vaporous ideas to be presented at the exhibition. All concepts to be presented on this grand specialized international exposition will have great cognitive and training effect for all visitors and participants [2].

EXPO-2017 is not only the great opportunity for the whole world to make a contribution to the development of global technical interaction and to uphold the position in the world, but also the possibility for the current problems solution.

References

1. Alibekova R. National plan designated objectives for preparations // Kazakhstan truth, 18.01.2013.

2. Kyzyrov K. Energy of future is a hope of the planet // Kazakhstan truth, 24.11.2012.

ECOLOGICAL EVALUATION OF HEAVY METALS IN PLANT COMMUNITY OF GOVERNMENTAL NATIONAL NATURAL PARK *«BURABAI»*

Bekenova K.

Warsaw University of Technology, Warsaw, Poland, e-mail: Hunday_88@mail.ru

The paper presents results of a study of heavy metals in plant community of the State National Natural Park (SSPE) «Burabai». It is established that the heavy metals content in plant community SNNP «Burabai» does not exceed the maximum permissible concentration.

Active human activities are constantly causing some damage to the environment. Waste of economic activity pollutes air basin, water sources and soil. All this causes environmental problems [5, 8].

The main sources of contamination of soils and plants are the major cities, towns with their industrial emissions and waste production, irregular use of the agricultural production of various agrochemicals, as well as all the modern means of transportation (air, rail, sea and road). Among the many environmental pollutants heavy metals (HM) is considered to be the most dangerous – they conditionally include chemical elements with atomic mass greater than 50, with the properties of metals or metalloids.[5, 2, 3, 7].

Automotive pollution is one of the most dangerous, providing a hard impact on the roadside ecosystem. In the exhaust gas there detected more than 200 different substances, among which only five are non-toxic. Pollution of soils in the largest quantities of lead, cadmium and zinc is connected with the work of road transport [1, 2, 3, 3, 4, 8].

The purpose of the study is an environmental assessment of heavy metals in the soil Governmental National Park *«Burabai»*.

The scientific novelty of this work are the first time there did determination of heavy metals in the soil – a group of plants roadside and it increasing flow of tourists, respectively, and vehicles, enhances human pressure on the ecosystem of the resort. Of particular concern to the risk taken by the pollution of protected areas with heavy metals, particularly lead.

In a fine place of the northern region of Kazakhstan in Akmolinsky region the State national natural park «Burabay» is located. It is organized on August 12, 2000 by the Government resolution. Burabay is known to the world as geographical point with seldom meeting nature. Burabay is the low mountain district a part of small peaks of Kazakhs [9, 10].

At the present stage the total area of national park is 83510 hectares of the land from which 47,4 thousand hectares of the area are covered with the wood. The National park is nature protection public institution, it is included into system at Administration of the President of the Republic of Kazakhstan and especially protected natural territory of republican value [9, 10].

Main objectives of National park «Burabay»:

– research and preservation of integrity of the ecosystem, etalon and especially natural complexes and objects, historical and cultural monuments, and also other objects;

– restoration of the destroyed natural and cultural and historical complexes and objects [9, 10].

Samples of the soil plants were taken in the summer of 2011 on a bypass road of a resort zone from the following points: sanatorium «Shchuchinsk», exhibition platform, platform of Abylay khan, station Kayyk, market Bereke, sanatorium «Baldauren», Okzhetpes. As the biggest autostream on a resort zone passes on this route.

Soil. Determination of a mass fraction of concentration of cadmium, lead, zinc and copper by means of an inverse voltaperometric method.

– It is certified according to State obligatory standard 8.563-96.

– Certification was carried out by theoretical and experimental results of a technique of performance of researches.

Samples of the soil were taken from the chosen seven points. In this picture it is shown lead concentration in soil samples of SNNP «Burabay».

Indicators of lead in the contents of the soil

Results of research of the soil showed that lead didn't exceed MPC. Its most large quantity was noticed in places of the main flow of tourists in sanatorium «Baldauren» (0,088 mg/kg), on a market Bereke in the settlement Burabay (0,048 mg/kg), at station Kayyk (0,037 mg/kg).

Indicator of zinc in the contents of the soil

Zinc. The most admissible quantity of zinc makes 1 mg/kg from the weight of a body. Zinc in the form of salts and organic compounds

is contained in all types of food. Its share in composition of natural waters doesn't exceed 0,05 mg/l. The high concentration of zinc salts in the contents of natural water leads to organism poisoning.

On the following picture the share of zinc concentration in the soil is given. Samples of the soil were taken from two sides of the road of the chosen seven points at distance of 5 and 100 meters.

The concentrationsof lead in the soil of GNNP "Burabay"

Pb mg/kg; MPC=32 mg/kg	1	2	3	4	5	6	7
from the road edge 5m	0,0053	0,0014	0,02	0,033	0,0026	0,0031	0,037
from the road edge 100m	0,029	0	0	0,037	0,048	0,088	0

Fig. 1. Indicator of lead in the contents of the soil of SNNP «Burabay», 2011, MPC = 32 mg/kg:
1 – sanatorium «Shchuchinsk»; 2 – an exhibition platform; 3 – a platform of Abylay khan;
4 – station Kayyk; 5 – market Bereke; 6 – sanatorium «Baldauren»;
7 – area of the mountain Okzhetpes

The concetrations of zink in the soil of GNNP "Burabay"

Zn mg/kg; MPC=23 mg/kg	1	2	3	4	5	6	7
from the road edge 5 m	0,021	0,124	0,029	0,0025	0,21	0,0029	0,42
from the road edge 100 m	0,038	0,13	0,63	0,9	1,23	0,39	0,13

Fig. 2. The share of zinc concentration in the contents of the soil
of SNNP «Burabay», 2011, MPC = 23 mg/kg:
1 – sanatorium «Shchuchinsk»; 2 – an exhibition platform; 3 – a platform of Abylay khan;
4 – station Kayyk; 5 – market Bereke; 6 – sanatorium «Baldauren»;
7 – area of the mountain Okzhetpes

In all taken soil samples research results in all researched zinc samples zinc was found however MPC of zinc wasn't exceeded. The high concentration of zinc was revealed around a market «Bereke» (1,23 mg/kg) in 100 meters, around station Kayyk (0,9) in 100 m, around a platform of Abylay khan (0,63) in 100 meters. At distance of 5 meters from the road the high concentration of zinc was found near the mountain Okzhetpes (0,42 mg/kg) and the market «Bereke» (0,21).

Cuprum and cadmium indicator in the soil

Cuprum. In small quantity is found in zinc concentrate also can overcome long distances by means of air and water. Salts of copper belong to the II class of danger. Poisoning properties of cuprum in comparison with other elements are a little investigated.

On the following scheme concentration of copper is shown.

By results of research of samples of the soil it was revealed that concentration

of copper doesn't exceed MPC and its concentration is revealed only in two points: exhibition platform (0,0051 mg/kg) and mountain area Okzhetpes (0,0065 mg/kg).

The concentrations of cuprum in the soil of GNNP "Burabay"

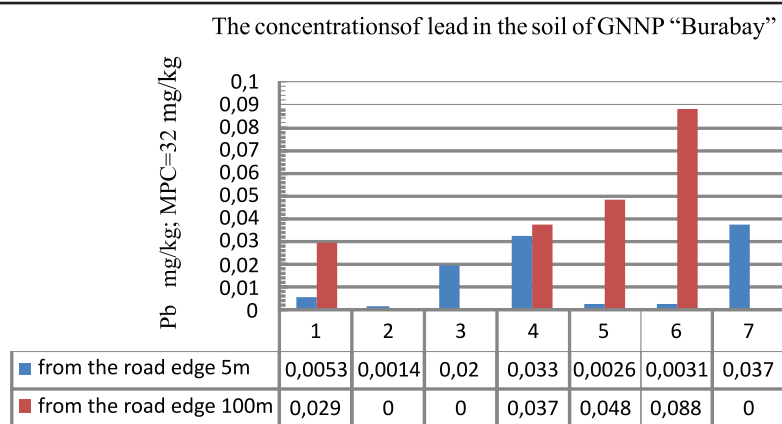| Cu mg/kg; MPC=3,0mg/kg	1	2	3	4	5	6	7
■ from the road edge 5 m	0	0	0	0	0	0	0
■ from the road edge 100 m	0	0,0051	0	0	0	0	0,0065
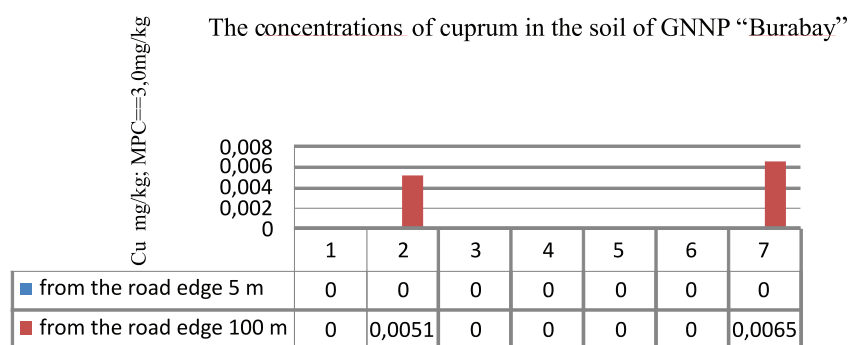
Fig. 3. Indicator of cuprum in the contents of the soil of SNNP «Burabay», 2011, MPC = 3,0 mg/kg:
1 – sanatorium «Shchuchinsk»; 2 – an exhibition platform; 3 – a platform of Abylay khan;
4 – station Kayyk; 5 – market Bereke; 6 – sanatorium «Baldauren»;
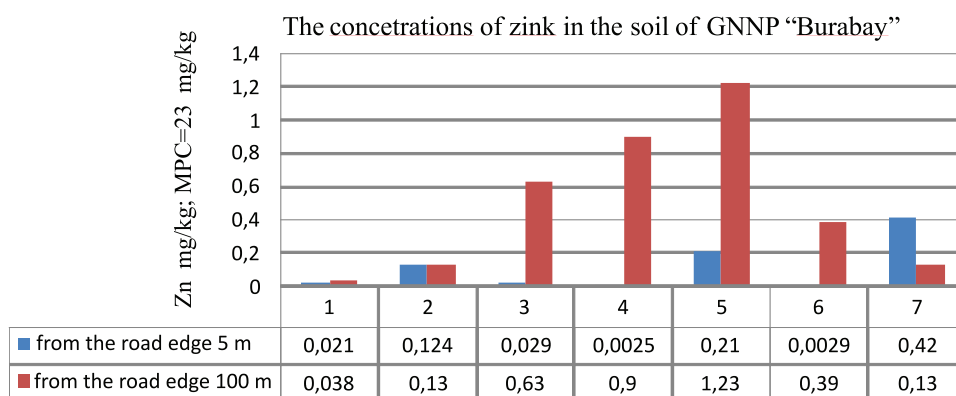7 – area of the mountain Okzhetpes

The concentrations of cadmium in the soil of GNNP "Burabay"

Cd. mg/kg; MPC = 2mg/kg	1	2	3	4	5	6	7
■ from the road edge 5 m	0	0	0	0	0	0	0
■ from the road edge 5 m	0	0	0	0	0	0	0
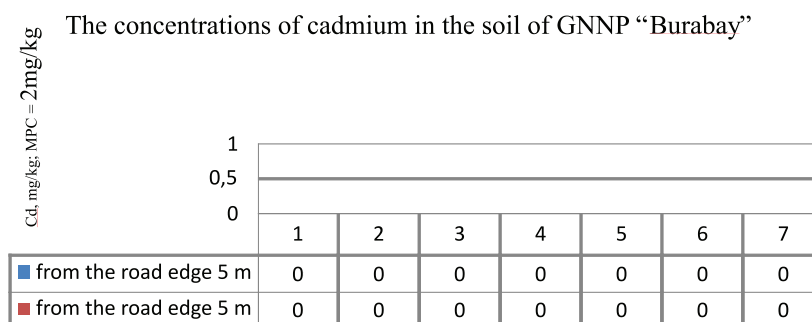
Fig. 4. Indicator of cuprum in the contents of the soil of SNNP «Burabay», 2011, MPC = 2 mg/kg.
Cadmium. It is compared to a time bomb. Cadmium in a human body gathers in kidneys,
and causes illness

By results of research cadmium wasn't found in the contents of the soil.

Indicators of heavy metals in contents of grassy plant. The general indicators of heavy metals in the contents of the grassy plants of SNNP «Burabay» can be seen on the following table (Table 1). From the table it is possible to notice high concentration of zinc in all points.

Samples of grassy plants were taken from the «Golden Ring» highway of SNNP «Burabay» at distance of 5 and 100 meters from the road from the chosen points.

Lead indicator in contents of grassy plants. At research on lead concentration in the contents of samples of plants it was revealed that lead doesn't exceed MPC. MPC = 0,5 mg/kg. By results of research high concentration of lead was revealed around sanatorium «Shchuchinsk» – 0,031 mg/kg, around an exhibition platform – 0,029 mg/kg.

Zinc indicator in grassy plants. As a result of research concentration of zinc doesn't exceed MPC. MPC = 10,0 mg/kg. The maximum indicator of zinc was found in 5 m from an exhibition platform – 0,041 mg/kg and in 100 m – 0,029 mg/kg, station Kayyk – 0,031 mg/kg, the area of sanatorium Shchuchinsk – 0,031 mg/kg.

Cadmium and copper indicator in the contents of grassy plants. Cadmium in the contents of grassy plants was found only in one of the chosen seven points the region of the Exhibition platform 0,018 mg/kg.

By results of research of grassy plants the maximum indicator of copper was found at distance of 5 m from the Exhibition platform – 0,0024 mg/kg and near the mountain Okzhetpes – 0,0002 mg/kg.

**Indicator of heavy metals
in the contents of tree leaves**

Indicator of heavy metals in the contents of tree leaves (Table 2). Samples of tree leaves were taken from the chosen points. By results of research of tree leaves lead concentration

doesn't exceed MPC. MPC = 0,5 mg/kg. Big share of lead was revealed in places of a big flow of tourists, its high rate was noticed around a platform of Abylay khan (0,0079 mg/kg), the Exhibition platform (0,0071 mg/kg), around station Kayyk (0,0064 mg/kg). At a mountain foot Okzhetpes contents of lead was equal to an indicator 0.

Table 1

The general indicators of heavy metals in the contents
of the grassy plants of SNNP «Burabay»

Num-ber	Points of herb selection	Pb (lead) mg/kg		Zn (zink) mg/kg		Cu (cubrium) mg/kg		Cd (cadmium) mg/kg	
		Within 5 meters	Within 100 meters	Within 5 meters	Within 100 meters	Within 100 meters	Within 100 meters	Within 100 meters	Within 100 meters
	MPC	0,5 mg/kg		10,0 mg/kg		5,00 mg/kg		0,03 mg/kg	
1	Sanatorium «Schuchinsk»	0,00	0,027	0,0028	0,031	0,00	0,00	0,00	0,00
2	Observation site	0,014	0,047	0,041	0,029	0,0024	0,00	0,00	0,018
3	Ablai khan circus	0,016	0,0028	0,012	0,018	0,00	0,00	0,00	0,00
4	Boat station	0,00066	0,023	0,00039	0,031	0,00	0,00	0,00	0,00
5	Bereke market	0,0044	0,0053	0,012	0,0042	0,00	0,00	0,00	0,00
6	Sanatorium «Baldauren»	0,0038	0,0024	0,0051	0,0061	0,00	0,001	0,00	0,00
7	The bottom of Okzhetpes mountain	0,0023	0,0035	0,0036	0,0048	0,00021	0,0002	0,00	0,00

Table 2

The general indicators of heavy metals
in the contents of the tree leaves of SNNP «Burabay»

Num-ber	Names of the selection points of tree leaves	Pb (lead) mg/kg		Zn (zink) mg/kg		Cu (cubrium) mg/kg		Cd (cadmium) mg/kg	
		5 meters from road-way	100 meters from road-way	5 meters from roadway	100 meters from road-way	100 meters from roadway	100 meters from roadway	100 meters from road-way	100 meters from roadway
	MPC	0,5 mg/kg		50,0 mg/kg		10,0 mg/kg		0,10 mg/kg	
1	Sanatorium «Schuchinsk»	0,00	0,027	2	0,021	0,00	0,0002	0,00	0,00
2	Observation site	0,014	0,047	0,0081	0,0033	0,00032	0,00	0,00	0,018
3	Ablai khan circus	0,016	0,0028	0,016	0,012	0,0002	0,0029	0,00	0,00
4	Boat station	0,00066	0,023	0,019	0,016	0,00	0,00	0,00	0,00
5	Bereke market	0,0044	0,0053	0,0032	0,0047	0,00	0,003	0,00	0,00
6	Sanatorium «Baldauren»	0,0038	0,0024	0,023	0,096	0,00	0,091	0,00	0,00
7	The bottom of Okzhetpes mountain	0,0023	0	0,0024	0,056	0,00054	0,00027	0,00	0,00

Results of zinc research in the contents of tree leaves showed that MPC of this metal doesn't exceed. MPC = 10,0 mg/kg. Its high concentration is found around sanatorium Sh-chuchinsk (2 mg/kg) and sanatorium Baldau-ren (0,069 mg/kg).

At research of tree leaves results showed that copper doesn't exceed MPC. MPC = 5,00 mg/kg.

High concentration of copper is found around sanatorium Baldauren (0,091 mg/kg).

By results of research of concentration of cadmium in the contents of tree leaves in all taken samples of tree leaves cadmium isn't found.

On the investigated and especially protected territory there is not acceptable further increase in the concentrations of HM, and particularly of lead, in soils. The danger also consists in their slow coming out from the soil. Thus, the period of the semiremoval of lead in soil lysimeters, according to V.A. Chernikov, 200 is in the range of 740–8900 years.

Therefore it is necessary to monitor the state of the environment on concentrarions heavy metals and should be limited movement of the vehicle on the resort area and, in general, in this protected natural area.

References

1. Vedin OT Zinc in crops roadside ecosystems. – M., 1994. – P. 97–101.

2. Butkovskiy P.O. Motor transport pollution and entomo-fauna // Agrochemicals. – 1990. – № 4. – P. 31–33.

3. Gluhovskij A.B., Malyuga N.G., Kotljarov N.S. Effect of fertilization on the content of heavy metals in the soil. – Krasnodar, 1994. – P. 40.

4. Report on the lead pollution of the environment of the Russian Federation and its impact on the health of the population : a document of the State Committee for Environmental Protection // Spec . issue of the newspaper «Green World». – 1997. – № 5. – P. 4–16.

5. Ermakov V. Biogeochemical evolution of taxa and correction of pollution of the biosphere habitats of organisms // heavy metals , radionuclides and elements and elements in the environment Biophilia : Materials II Intern. Nauchn. Pract. Conf. – Families, 2002. – P. 7–23.

6. Kabbata-Pendias A. Trace elements in soils and plants / A. Kabbata-Pendias , H. Pendias. – Verlag, 1989. – P. 147.

7. Chernykh H.A. Ecotoxicological aspects of soil contamination with heavy metals text / H.A. Blacks, N.C. Milaschenko, V.F. Ladonin. – M.: Agrokonsalt, 1999. – 176 p.

8. Stivenson F.J. Formaition constants of Cu complexes with humic and fuivic acids / S.A. Stivenson, M.S. Krastanow Andarany // Geoderma. – 1979. – Vol. 9, № 2. – P. 28–32.

9. Trishechkin A.A. «Burabai. Burabaj. Sinegorye». – Astana: 2002-2010. – P. 20–56.

10. Encyclopedia «Kokshetau». – Kokshetau, 2009. – P. 50.

Materials of Conferences

THE IDEAS B. I. VERNADSKIY IN CONTENTS OF SOCIAL-ECOLOGICAL EDUCATION OF STUDENT YOUTH

Shilova V.S.

NIU «Belgorod stats university», Belgorod, e-mail: shilova@bsu.edu.ru

Scientific heritage of Vladimit Ivanovich Vernardskiy, an outstanding scientist and thinker, creator of Study of biosphere and noosphere, new branches of science, enlightener in the area of natural science, and social activist, has found its reflection in works of scientists of the XX century and has not lost its urgency so far [5].

At the same time, there is a number of problems that is linked to ideas of V.I. Vernardskiy of biosphere as an area of interaction between planetary and spatial forces and living substance, while the latter transforms the environment actively. One of these problems that have been pointed out by V.I. Vernardskiy in his time, is global and powerful impact upon biosphere done by humanity that neglects its laws and despoils natural riches in a predatory fashion [1].

Ways of solving this problem are different as well as levels of its study: global (general-human), regional, local, state, social and personal, theoretical and practical. Regardless of the level, mandatory education of people in terms of biosphere and interaction with nature becomes a necessary condition in this case.

This goal can be achieved by a separate branch of social education – general training and ecological education in particular. By the date or domestic pedagogy has achieved some remarkable results in this area: basics of nature-preserving activity are set among school students (I.S. Matrusov), the essence, structure, principles, and conditions of ecological education of school students have been established within school subjects (I.D. Zverev, A.N. Zakhlebniy, N.M. Mamedov, I.T. Suravegina, etc.), separate direction of training school students in the field of environment are being developed [2, 3, 4].

The first line. The nature of Earth and its formation in time and space «The cradle of humanity» [6].

Ideas of V.I. Vernardskiy.

– Earth is a celestial object, a planet of Solar system; a part of spatial environment. A number of layers are outlined in earth crust, and they are distributed in a concentric way...

– Biosphere is the only inhabited area of earth crust.

The second line. Outlining human from nature and his formation in time and space.Formation of historical space.

Ideas of V.I. Vernardskiy.

– Human is not a random, independent from the environment (biosphere and noosphere), and free natural phenomenon. He represents an inevitable expression of a big natural process that has been continuing legislatively during at least two billion years.

The third line. Geological and historical time.

Ideas of V.I. Vernardskiy.

– There have been no signs of abiogenesis during all geological periods. Evolution of kinds, a sharp alteration of natural bodies that transits to the evolution process of the whole biosphere has been observed during the flow of geological time.

– Historical process is a natural phenomenon of huge geological significance.

The forth line. Establishment of cultural environment. Material and spiritual values that reflect processes of cognition and vital activity of humanity in time and space.

Ideas of V.I. Vernardskiy.

– Evolution of biosphere has led to creation of a new geological force – scientific ideas of social humanity.

– Under the impact of scientific idea and human labour biosphere transits to a new evolutionary condition – noosphere.

The fifth line. Animpact of society upon natural environment. Preservation and reproduction of natural human inhabitant.

Ideas of V.I. Vernardskiy.

– Humanity is single…, its life has become undividable, single regardless of all its diversity. An event that takes place in a certain place of the planet has its significant of slight consequences all over the Earth surface.

– A human has realized for the first time that he is a citizen of his planet and should think and act not only in terms of a separate person or a family, etc., but also in a planetary aspect of life – biosphere. A human alter is inevitably, legislatively, continuously.

– The history of humanity cannot be separated and studied independently from its «environment» as well as life of any human person.

Realization of the outlined content lines and, therefore, these and other ideas of V.I. Vernardskiyis carried out within the developed by us training courses for school students and students. For example, school student course of selection

«Nature and ancient civilizations» (5–6 classes), Training-methodic discipline course for students «Social-ecological education of school students». Mastering contents of these courses will provide for establishing optimal relations with nature in present and future [8, 9].

References

1. Vernardskiy V.I. Biosphere and noosphere. – M.: Airis-press, 2012.

2. Zverev I.D., Suravegina I.T. Ecological education of school students, Monograph. – M., 183.

3. Mamedov N.M. Culture, ecology, education. – M., 1996.

4. Matrusov I.S. Scholl and preservation of nature. – M., 1996.

5. The world of philosophy in 2 volumes. – M., 1991.

6. Shilova V.S. Social-ecological education of school students: theory and practice. Monograph. – M.: Belgorod, 1999.

7. Shilova V.S. Social-ecological education of school students: theory and practice. Monograph. – M.: Belgorod, 2006.

8. ShilovaV.S. Nature and ancient civilizations (form 5–6). Training-methodical textbook. – Belgorod, 2008.

9. Shilova V.S. Pedagogic basics of social-ecological education of school children. Textbook for students, Edition 3. – Belgorod, 2011.

Short Reports

THE PE(A)RLITE SULPHUR– CONTAINING WASTE PRODUCTS EFFECTS UPON THE LEAD INFLOW INTO PLANTS

Akbasova A.D., Uysimbaeva Z., Sainova G.A., Sunakbaeva D.K., Abdimutalip N.

The International Kazakh-Turkish University after K.A. Yasavy, Turkestan, e-mail: ecolog_kz@mail.ru

Every year, there is the further intensity increase of the soil environment pollution with the heavy metals, so the efficient economic – environmentally method search and development, having provided the access to the clean crop production, is the actual and urgent challenge for the agro-industrial complex. The certain practical – scientifically interest on this challenge decision is presented itself the geochemical barriers' creation in the soil system, in order to be inhibited the translocation process of the heavy metals in the plants.

Among the heavy metals, the lead by its occurrence, the biological hazards, and its ability to be included into the trophic and the food chains, is practically occupied one of the priority places and their areas. Having proceeded into the soil system, it may be inflowed and be the part of the exchangeable cations' composition, to be formed a number of the soluble and insoluble compounds. To be reduced the lead toxicity and the other heavy metals, having influxed into the soil system, the inactivation with the sorption properties using and their converting methods into the insoluble forms is one from the promising ways.

The main purpose of the current research – is the using possibility study of the non-toxic seepage and its filtration of the sulphuric acid production waste for the lead binding in the soil and its prevention further entering into the plants, with the examples of the potatoes, the corn, and the clover. So, the lead has already been included into the grey soils, in the 150 and 500 mg/kg concentrations, in the acetate form. The filtration waste products of the sulfuric acid CPS – U plant (e.g. the Kyzylorda Region, Kazakhstan), having presented itself the mixture, which is comprised the pe(a)rlite, the gypsum, the hydrated lime and also the various sulfur – containing salts, with the ratio of the components 1:1:1:0,05, respectively, has already been introduced into the 5 and 10% doses from the soil mass weight.

Thus, the special experiments have been conduced in the areas of the Botanic Garden of the Kazakh – Turkish University after Kh.A. Yasavy. The average content of the organic matter in this grey soil – is 1,0–1,3%, the average content of the available mobile phosphorous by Chirikov – is 67,8 mg/kg, the pH of the soil solution before any withdrawal making – is 5,1–5,4. And the special experiments repeatability – is the 4-fold.

So, the lead available mobile forms have been removed from the arable soil top level by the ammoniac – acetately buffer solution with the $pH = 4,8$, the vegetable and the plant material has been subjected by the dry ashing, then the lead definition has been performed with the atomic adsorption method using.

In the Tables 1–2 the obtained experimental results have already been presented here.

Table 1

The Pв Immobilization Coefficients Values, when Incorporated the Filtration Seepage and Filtration Waste (FW) and the Individual Components, Having Entered into its Composition

Soil	The introduced sorbates into soil	The immobilization coefficient Pв, %
Grey Soil	Gypsum	32
Grey Soil	Pe(a)rlite	40
Grey Soil	Gypsum + pe(a)rlite + slaked lime + thiosulfate and calcium polysulfide (5%)	96
Grey Soil	Gypsum	34
Grey Soil	Pe(a)rlite	41
Grey Soil	Gypsum + pe(a)rlite + slaked lime + thiosulfate and calcium polysulfide (10%)	99

As, it is followed from the experimental data, having shown in the Table 2, the lead number, which is being entered into the plants, is not exceeded the sanitary and hygienic standard level of 0,5 mg/kg in the food products at the geochemical barrier creation (e.g. The Sanitary and Epidemiological Rules and Regulations. The SanPinR 2.3.2.1078-01), and the maximum regulatory level (MRL) of the lead content in the plants, having used for the feed purposes, is equal to 5 mg/kg. (e.g. The Provisional maximum regulatory level of the chemical elements in the feed of the farm animals № 123-41281-87, dated from 15.07.87).

The Pв Content in Soils and Plants without Making
and with the Filtration Waste (FW) Introduction, mg/kg

Object	Without FW introduction				With FW introduction and Pв in plants	
	Pв in soils		Pв in plants			
	grey soil	grey soil	grey soil	grey soil	grey soil (5%)	grey soil (10%)
Corn (grain)	150,2	500,3	10,4	15,3	0.08	0,24
Potatoes (tuber)	150,1	498,9	11,4	22,7	0,09	0,33
Clover (plant tops)	150,3	501,0	15,6	24.2	1,8	Not be found

Thus, the introduction into the lead – contaminated soils of the filtration waste (FW) of the sulfuric acid production, having presented itself the mixture of the pe(a)rlite, the gypsum, the slaked lime, and the sulfur – containing salts, can be eliminated the undesirable lead effects upon the plants and, moreover, to be got the environmental friendly production.

THE INNOVATIONS IN KAZAKHSTAN'S ECONOMY: ANALYTICAL INSTRUMENT MAKING DEVELOPMENT PROSPECTS

[1]Zhumagulov B.T., [1]Tuleshov A.K., [2]Dosmukhamedov N.K., [3]Lezin A.N.

[1]The National Engineering Academy of the Republic of Kazakhstan;
[2]The Kazakhsky National Technical University after K.E. Saptaev;
[3]SPL «AspapGEO», e-mail: nurdos@bk.ru

The perspective directions of the analytical instrument making development of the mining and smelting branch of Kazakhstan have been presented in the paper. The data on the operation of the domestic x-ray fluorescence (XRF) appliances of the analytical express control in the enterprises of the mining and metallurgical branch have also been given. The negative factors, having constrained the active introduction of the domestic developments in the production industry have also been shown in the paper.

At the present stage of the development, the Mining and Smelting Complex (MSC), as one of the basic branches and the domestic economy engine, essentially, is acted the legislator in the conducting of the innovation and the external economic policy of the Republic. That is why, it must be formulated the quite clear understanding, that the level of the industrial development of the State is determined not so much by their resource possibilities potential and the sizes of the manufacturing products with the low level of the technological conversion, as the degree of the development of the science intensive, high – tech, advanced, in terms of the technology, industries.

Especially, the analytical instrument making has been become the principal key aspect of the new type of the innovation development in the field of the high – tech, which is based on the development of the high-precision X-ray fluorescence (XRF) analytical appliances for the basic sectors of the economy of Kazakhstan.

Today, no one doubts, that the development of the express, X-ray fluorescent (XRF) methods for the elemental composition control of the various materials is one of the basic directions and its trends of the modern analytical chemistry. The extensive development and the analytical control appliances application have been provided the operational information to be obtained, at the ores quality assessing, at the prospecting and the exploring of the ore fields for the calculation of the deposit reserves, the exercising control, and the technological processes control of the ore raw material processing and the environmental monitoring [1–3]. Certainly, that the mining enterprises and companies equipping of MSC of Kazakhstan by the given appliances and corresponding devices could be provided the multiplicative effect for the solution of their many key challenges.

So, the large achievements and the major advances in the field of the nuclear electronics, solid state physics, computer technology, having observed in the recent times, have also been allowed to be achieved the considerable and significant progress in the instrumental part of the method [1, 2]. The following distribution is received by the various modifications of the X-ray fluorescence (XRF) appliances, having solved the large – range of the analytical challenges, that are faced the key domestic industries, including the mining and metallurgical industries.

So, the active practical introduction and its further implementation of the energy-dispersive (EDXRF) appliances and its devices of the various modifications (e.g. the stationary and portable handheld ones) have been begun since the mid 90-es of the last century. The devices, having produced in the most developed and advanced countries throughout the world, and having entered into the top ten most competitive countries, have been the most common and promising devices, are widely used in the various fields of industry.

These are the devices of such famous and well – known foreign firms and companies, as «Bruker», «Philips and «Spectro Analytical» (Germany), «Oxford Instruments» (Great Britain), «PANalytical» (the Netherland), «Niton», «Innov-X Sistems» (the USA) and the others.

To the analogous devices, having been produced by the former Soviet Union (CIS), it is quite possible to be referred the well – known Russian – made production devices – JSC «The Institute of the Physical and Technical Problems» (Dubna city), SPA «Burevestnik» (Saint – Petersburg), «the Institute for Roentgen Optics» (Moscow city) and several others.

In enumerate number of the well – known development, it cannot be ignored by attention the energy – dispersive X-ray fluorescence (XRF) appliances of the domestic production – X-ray fluorescence (XRF) laboratory appliance – XLA-21 (e.g. РЛП-21 – stationary) and the X-ray fluorescence (XRF) portable appliance – ХРА-12 (e.g. РПП-12), having developed by SPL «AspapGEO», which are successfully competed in the global market with the above – stated foreign firms and their companies.

The wide-scale functional possibilities and their comprehensive features of the already developed devices are allowed to be solved the specific analytical challenges, which are the priority for the mining enterprises of the MSC. The successful use of the XPA-12 (e.g. РПП-12) device for the core samples testing, stone samples and pieces of ores in the natural bedding, in situ, we consider rather principal and fundamental from the point of view the primary raw materials resource-saving and the efficiency rise of the production, as a whole. For example, using only 15 devices of the XPA-12 (e.g. РПП-12) type, only in pits of the underground mines of the Production Association «Zhezkazgantzvetmet» SPL «Kazakhmys Corporation» the rapid testing are made more than 200,000 linear meters, per annual, underground mine workings.

In its turn, the clear understanding of the analytical challenges, having faced the mining enterprises and companies of the MSC Republic, the Kazakh developers have been allowed to be created their modern domestic appliances, which by the technical specifications are on par, and for some, even are superior to their foreign counterparts [2–4]. These already developed devices are provided their high level sensitivity, selectivity, precision and accuracy of the testing. The low cost (e.g. for 30% lower, than their foreign counterparts), easy of maintenance, the complete range of services provision for the operating personnel training, and the qualitative customer service have considerably increased and also improved the developed devices' competitiveness to the foreign counterparts. Their significant advantage over the imported devices is that they are adapted to address the specific challengers' solutions, having faced by the mining companies of the MSC. So, since 90-es, at the mining enterprises of the MSC of the Republic, more than one hundred of the various modifications and their different versions of the stationary XLA-21 (e.g. РЛП-21), together with the portable XPA-12 (e.g. РПП-12) devices of SPL «AspapGEO» have been introduced. All these appliances are run smoothly, and they are successfully used at the advanced enterprises of the Republic – SPL «Kazakhmys Corporation», SPL «Kaztzink», AO «Zhayremsky ГОК», AO «ТНК «Kazchrom», SPL «Shalkiya-Tzink» and SPL «Kazakhmys Corporation».

Along with this, the XLA-21 (e.g. РЛП-21) appliance and its various modifications more, than 10 years (e.g. 120 months) are successfully used to be analyzed and to be sorted the jewelry products in a number of the State bodies and agencies – the Customs Committee of Republic of Kazakhstan, the State vault of the National Bank of the Republic and the others, which is the statement of the high reliability of the developed appliances.

So, the Kazakh scientists and the scholars have already made the great contribution to the theoretical justification of the method, the development of analyses method, the rationale for the new sources of the primary radiation, which are made up the fundamental method for the new modifications of the X-ray fluorescence (XRF) appliances of the analytical control. One should not forget that the first fully automated technique of the X-ray fluorescence energy-dispersive multi-element analysis, having approved by the Scientific Council of the analytical methods of the All-Union Institute of the Mineral Resources (SCAM AUIMR), has been designed and developed precisely by the Kazakh scientists and scholars.

At the modern stage of the Kazakh scientists' and scholars' achievement on the development and the implementation into the production the X-ray fluorescence (XRF) energy – dispersive appliances of the domestic production are deservedly recognized by the wide range of the scientists, the scholars, and they are considered the significant success, having achieved in the field of high technologies under the harsh conditions, the competitive market economy relations.

The achievements are not simply just the statement of the facts, but the confirmation of the depth, the continuity of the systematic ongoing scientific research in the field of the high technologies for the development and the further modernization of the domestic X-ray fluorescence (XRF) appliances [4].

Today, the research and development works to be created the new modifications of the appliances, which have the high–tech solutions (e.g. the «know-how») and, moreover, have principally, the new, powerful, methodological–programmatically software, are being continued by the scientists and the scholars. The new modifications of the appliances, which successfully can be used not only in the mining–metallurgical branch of industry, but and in the chemical, uranium and other industries, are developed and prepared for the testing by the authors. All these achievements are implied to be spoken on the considerable leading and the substantial forestall competition with the Western firms and their companies of the advanced and developed countries of the world in the field of the high technologies.

However, the further development of the initiated directions is required the support, from the state's side in addressing a number of challenges, on which we would like to be emphasized.

Firstly, despite of the high price, the complexity of the maintenance, the lack of the skilled maintenance personnel, and also as well as the consequent circumstances, the questions of the staff's training and service, the domestic enterprises are continued to be equipped by the Western instruments and their appliances, having provided the enormous sums of money. The surprising results are presented and

conducted the public and State procurements and purchases (e.g. the tenders). The repeated experience of the participation in them is showed, that, at the equal specifications, despite of the number of the advantages of the domestic appliances (e.g. the price, service maintenance, specific challenges' solution of the enterprise) the customers, for some reason, are preferred the Western appliances and their devices.

Secondly, the enterprises equipment by the modern analytical appliances and the corresponding devices, this is undoubtedly the positive thing, because of the links in the quality control of the raw materials and the resulting products are derived the old and high-cost methods of the chemical analysis. But, for all this, it is necessary to be focused the attention on the fact, that the acquired at the high price, the Western appliances and the devices are not used to the full rate. This is due to the fact, that despite of their potential multi-functionality and versatility, they are not fully adapted to the analytical challenges' solution, having faced our enterprises: there is not clear understanding in the formulation and decision of the analytical challenges, having faced the domestic enterprises at the Western manufactures. The well-known foreign and overseas developments-oriented the portable appliances and the corresponding devices, mainly, for sorting metal alloys are not fully designed to be met the challenges solution, having faced the MSC. In addition, the foreign and overseas appliances and the devices are not designed and the tough operating conditions, with the respect to the conditions of our enterprises. Overwhelming majority of the acquired Western appliances and the devices, in case of their failure, are much costly to be recovered. That is why, in the considered aspect, it is seemed to us quite reasonable and optimal solution, when the equipment of the industrial enterprises of the MSC by the analytical appliances and the corresponding devices, will be carried out by their own, the domestic developments with all the outbound positive effects for them (e.g. the low price, the appliances adaptation to be addressed for the specific analytical challenges' solution, the service maintenance, the personnel's training, etc.). Such approach would be created the substantial, efficient prerequisites and conditions for the further development of the innovation directions in the field of the high technologies.

Thirdly, at the advanced technologies' introduction, we must be prepared to be addressed for a number of the related challenges' solution, which may be given the negative effect. So, the Western technologies, as a rule, are tended to be based and built at the highest technical level with the sufficient automatization and with the minimal involvement of the working staff. The significant decrease in the number of the working people will be created the certain social tensions, under our conditions. Therefore, we should consider the measures for the preparation of the non-working specialties, but the engineers and the highly-qualified and skilled experts, specialists and the professionals.

At the same time, we believe, that the development of innovation direction new type – is the domestic analytical instrument making creation, it will be the powerful impetus for the organization of the large-scale high-end training specialists, by bringing and involving them to the scientific and research work, having performed at the junction of the quite different and various sciences. It is clear and evidently, that the greatest synergistic effect, for all this, can be reached, in the case of the close cooperation between the scientists and the developers, having worked in the field of the high – tech, with the Higher Education Institutions, for example, by the creative scientific groups or the scientific and research centers creation at the Universities.

As the gained positive experience, it can be given the example of Scientific and Research Center creation of the «Innovation Technologies in the Mining and Metallurgical Industry» (SRC «INTEMMI»), through the joint cooperation of the Kazakhsky National Technical University after K.E. Saptaev (KazNTU) with the SPL «The Scientific Center after E.A. Onaev» and SPL «AspapGEO».

So, the main objective of the SRC «INTEMMI» – is the innovation projects development and their further implementation into the mining and metallurgical industry. The Scientific and Research Center is designed to be involved and engaged the most talented and the advanced part of the students in the scientific activities, having connected with the scientific and research work in the field of the high technologies.

Thus, along with the main task, the SRC «INTEMMI» is striving to be taken their active participation in the preparation of the wide – profile specialists and the generalists, who will, certainly, will contribute the new class formation of the scientists and the scholars of the new formation, able to think creatively, to generate the new ideas and to respond flexibly to address the challenges' solution of the intensive and high technologies.

References

1. Dosmukhamedov N.K., Lezin A.N. The Development of Analytical Control Domestic Appliances for Mining and Metallurgical Complex Enterprises in Kazakhstan // The Mining Journal of Kazakhstan. – 2011. – № 10. – P. 28–35.

2. Dosmukhamedov N.K., Lezin A.N., Badenko A.M., Tokenov N.M.,"The Ways to Improve the Mining Operations Safety: the New Contactless Technology of the Ores Testing // The Mining Journal of Kazakhstan. – 2012. – № 9. – P. 31–37.

3. Zhumagulov B.T., Tuleshov A.K., Drakunov Yu.M. Computer Modeling and Control System for X-ray Radiometrical Well-Logging Unit // World Congress on Engineering (IAENG-WCE-2010). – London, 2010. – P. 900–906.

4. Dosmukhamedov N., Lezin A., Tokenov N. Ecoanalytics in Mining Metallurgy // Internationaler Kongress Fachmesse EURO-ECO. – Hannover, (Germany), 29–30, November, 2012. – P. 44–45.

FINANCING OF HUMAN CAPITAL AS A FACTOR OF DEVELOPMENT OF INNOVATION ECONOMY OF THE REPUBLIC OF KAZAKHSTAN

Kuchukova N.

Eurasian National University named after L.N. Gumilyov, Astana, e-mail: nkuchukova@mail.ru

Problem statement. Basic conditions for the free development of the market economy are created today in Kazakhstan. Kazakhstan's economy has become one of the rapidly developing in the world. Economic growth of Kazakhstan is essentially related to the development of the extractive industries. Other sectors including financial, manufacturing, agriculture, construction, transport and communications are developing over the last years. However Kazakhstan's economy is mostly developing extensively and enterprises of Kazakhstan are indicative of a high level of energy costs and low productivity. Kazakhstan has now entered into the phase of industrial economy development. However in a global economy the country faces the challenge of development of new, competitive industries, production of which will be in demand in foreign markets. This cannot be achieved without the development of innovations and new technologies, without transition to a post-industrial society, which aims to boost productivity growth and efficiency in all areas of human activity. In this connection, Kazakhstan's key competitive advantage in the global market must be highly qualified mobile human capital, capable to ensure the development and implementation of innovations and new technologies in production. However human capital development cannot happen without investment of financial resources of the state. According to international experts, 1 dollar invested in preschool education, gives a profit of 7 dollars, which is twice the return on investment in secondary education and 4 times higher than the vocational education.

Keywords: human capital, innovation economy, republic of Kazakhstan

Meanwhile education in Kazakhstan continues to be regarded as a social sphere, where investment policy takes place only in connection with a solution to this or another problem (construction of schools, hospitals, etc.). But the approach to education as a principal factor in the formation of human capital, which in turn becomes a crucial economic resource for development requires a serious revision of investment policy of the country in this field. Solution of tasks of Kazakh society announced by the President of the country in the strategy «Kazakhstan-2050» are directly and immediately linked to education, human capital, investment in this area.

Analysis of recent studies and publications

Unfortunately the problem of financing of human capital are poorly studied in the economics literature.

The term «human capital» first appeared in the 1980's, in the works of Nobel Prize winners T. Schultz and G. Becker. The concept of human capital in the modern form has been influenced by the works of such eminent economists as G. Becker, T. Schultz, B. Weisbrod (Washington University), J. Mintzer (Columbian University), L. Thurow (Massachusetts Institute of Technology), W. Bowen, M. Fisher, J. Vejzi (Cambridge and Oxford Universities), M. Blaug, S. Bowles, E. Ben-Porat, M. Woodhall, E. Denison, S. Daisy, J. Kendrick, B. Kicker, R. Layard, F. Mahlup [1].

Significant contribution to the study of innovation was made by N.D. Kondratyev, who along with I. Shumpeter is considered to be the founder of the theory of technological modes, also S.Y. Glazyev, G.G. Malinetskyi, D.S. Lvov, V.Y. Dementyev, B.N. Kuzyk, V.I. Mayewskyi, G.I. Mikerin, R.M. Nizhegorodtsev, S.Y. Rumyantseva.

Innovative development is a type of development that is the result of intellectual activity, characterized by introduction of achievements of science and technology into production and in all other areas of human activity and leads eventually to economy growth by means of new products emerging on the market, improving existing technologies, efficient use of resources.

Rethinking the role of human capital as the main factor in the development of society, economy and nation as a whole, leads to the formation of a new ideology and strategy of development of the economic system that best fits into the process of formation and development of the new economy, knowledge economy, innovation, determining knowledge and intelligence that become major resource of society development [2].

The greatest value is not only the volume of accumulated human capital, but also the ability to obtain quickly if necessary the required knowledge in a specific situation that is in harmony with the tendency of continuous education and acquisition of new knowledge [3].

Innovation economics (economics of knowledge, intellectual economics) – is the type of economics based on innovation flow, constant technological improvement, production and export of high-tech products with a high added value and technologies themselves. From the definition it becomes clear that the main factors of creating an effective innovation economy are a systematic approach in the implementation process and a dominant role of human capital [4].

Man is the source of innovative ideas, the bearer of knowledge, allowing to ensure a firm

or a state such competitive advantages that can surpass the efficiency of material factors. It's no coincidence that education as one of the elements of human capital is a fundamental factor in development of innovative economy.

At present the country's competitiveness is defined not so much by tangible assets, but by qualification of people, in other words, human capital as well as the sources of its formation and results of use. Therefore, the new factors of economic growth include:

– the quality of human capital in the economy;

– quantity of investment in education and healthcare;

– the degree of development of fundamental and applied research;

– information support of economy;

– level of education in the country;

– the level of scientific and technological progress in the country.

Awareness of these facts is especially important for Kazakhstan where economy growth occurs mainly in extensive way, through involvement of additional raw material resources. However to ensure stable and intense development of Kazakhstan's economy, it is necessary to shift to knowledge-based industries, create favorable conditions for scientific and technical progress, emergence of innovative products on the market and development of new modern methods of production. All this is impossible without the involvement of highly qualified human capital, which will contribute to innovation development [5].

The main objectives of the study are the analysis of financing human capital in Kazakhstan as a factor of development of innovative economy of the county and drawing up recommendations for its improvement.

The main results of the study

In the period of globalization quality and potential of human resources become one of the fundamental criteria for the competitiveness of the state. Whereas the quality of human resources depends directly on the level of education system development in the country. Kazakhstan today is giving priority attention to this issue.

The country adopted a State Program for the Development of Education of the Republic of Kazakhstan for YY 2011–2020 and the Program for the Development of Innovation and Promoting Technological Modernization in the Republic of Kazakhstan for YY2010–2014. Successful implementation of these programs and building the foundations for «knowledge economy» can be determined by an index of knowledge economy in 2015 and 2020, i.e. the special methodology developed by the World Bank in 2004. This methodology includes a set of 109 structural quality indicators combined into four main groups.

The first is the index of economic and institutional regime. This is the index that evaluates the conditions of development of economy and society as a whole, economic and legal environment, business development, society's ability to create new knowledge. Second – education index, i.e. population education level and its sustainable skills to create, disseminate and use knowledge. The third group – innovation index is the level of development of the national innovation system. The fourth is an index of information and communication technologies, evaluating the level of development of information and communication infrastructure, which facilitates the dissemination and processing of information.

This methodology offers two combined indexes: The Knowledge Economy Index (KEI), which characterizes the country's level of development towards a knowledge economy and The Knowledge Index (KI), which assesses a country's capacity to create, adopt and disseminate the knowledge. According to this index, the highest position is held by Denmark and Sweden. The United States occupied the sixth place ranking, Japan holds the fourteenth place.

Kazakhstan has not yet succeeded in innovative construction and is ranked 83 out of a possible 141 in the rating of innovative states, beating in CIS only Azerbaijan (89), Kyrgyzstan (109) and Uzbekistan (127) [6, p. 21].

Knowledge to the greater extend is put in the forefront when generating competitive advantage of a country. The comparative advantages of countries are now less determined by the wealth of natural resources or cheap labor and more by technological innovation and competitive application of knowledge or both in combination. The future belongs to countries that are the most productive in use of information, knowledge and innovative technologies.

Education is a crucial component of human capital. Knowledge possessed by a man characterizes individual's ability to growth and development. Capacity for building human capital depend also on the effective work of the healthcare system, ensuring equal access to a high quality healthcare diversity.

Our analysis of dynamics of social expenditures of the State budget of the Republic of Kazakhstan for YY2007-2011 (Table 1) showed positive trends in social sphere financing.

First, social expenditures of the State have grown at a faster rate than GDP. In particular, over the past five years, the growth rate of social spending increased more than twofold, reaching 213,7% and exceeded GDP growth by 1,2% (212,5%), which is an evidence of priority ranking of social sphere in Kazakhstan.

Social Expenditures of the State budget of the Republic
of Kazakhstan for YY 2007-2011*(bln KZT)

Item	2007	2008	2009	2010	2011	2011 in % to 2007
Education Spending	455,4	572,4	660,9	755,3	986,8	216,6
In percentage to GDP	3,54	3,57	3,89	3,46	3,61	+0,07
Healthcare Spending	299,4	363,2	450,9	551,3	626,3	209,2
In percentage to GDP	2,33	2,26	2,65	2,53	2,29	–0,04
Social welfare and social care spending	502,4	622,0	758,3	905,3	1 133,6	225,6
In percentage to GDP	3,91	3,87	4,46	4,15	4,15	+0,24
Culture, Sport, Tourism and Information Space	122,2	163,9	173,6	227,6	201,6	165,0
In percentage to GDP	0,95	1,02	1,02	1,04	0,74	–0,21
Total Social Spending	1 379,4	1 721,5	2 043,7	2 439,5	2 948,3	213,7
In percentage to GDP	10,7	10,7	12,0	11,2	10,79	+0,5
GDP	12 849,8	16 052,9	17 007,6	21 815,5	27 300,6	212,5
GDP per capita (USD)	6 771,6	8 513,5	7164,8	9 070,0	10 843,3	160,1
Average pension benefits (inclusive of base payment) (tenge)	13823	18470	22853	27531	35727	258,5

N o t e : * – compiled by the author based on several years' data of the RoK Ministry of Finance and RoK Statistics Agency.

It is encouraging to note that over the last years the budget expense on education in Kazakhstan rapidly increased – 216,6%, healthcare – 209,2%, social welfare and social aid – 225,6%.

Secondly, over the past five years there has been a trend of State budget social expenditures growth in percentage to GDP. Thus state social expenditures to GDP have slightly increased from 10,7% in 2007 to 10,79% in 2011, including education – from 3,54% in 2007 to 3,61% in 2011, social welfare and social aid from 3,91 to 4,31%. The Government is doing a lot for development of education and healthcare, State programs for development of these industries have been adopted, their material and technical base is upgrading, salaries of teachers and doctors are increasing, budget expenditures for development of education and healthcare are increasing. All of this undoubtedly contributes to further development and improvement of human capital quality.

This is a very important strategic task as Main Indicators currently determining the rating of States are life expectancy, GDP per capita (purchasing power parity) and literacy. All these parameters are increasing over the last years in Kazakhstan. For example, life expectancy in 2012 in Kazakhstan rose to 70 years [7, p. 2].

The country's GDP per capita for 20 years has increased more than 15 times: from less than 700 dollars in 1991 to 11 000 dollars in 2011, equaling to performance of a number of States of Central and Eastern Europe [7, p. 12] and in 2012 it exceeded 12 000 USD, literacy of the population is rising [8, p. 2]. State ranking also takes into account such factors as human freedom, dignity and opportunity to participate in public life.

In spite of significant absolute growth of state social spending in the amount of 1,6 trillion tenge over the analyzed period (more than twice), social spending in Kazakhstan (education, healthcare, social welfare, social aid, culture, sport, tourism and information space) are still inadequate as a percentage to GDP and amounted to 10,79% in 2011 to GDP. Unfortunately this figure falls behind 2–3 times from the world average index. The level of expenditures to social sphere in countries such as Netherlands, Sweden, Denmark, Germany, France, Italy amounts to 26–35% of GDP.

The Dakar Forum called Governments of all countries to ensure appropriation of not less than 6% of GDP for education needs. Kazakhstan has not reached this target yet, although the volume of spending for education from the State budget over the past twelve years according to the Ministry of Finance of the Republic of Kazakhstan increased by nearly 12 times – from 85,4 billion tenge in 2000 to 986,8 billion tenge in 2011 and in 2012 – exceeded 1 trillion tenge.

Task to bring the level of funding for education from the State budget to 5% of GDP

of the country in 2009 was set back in 2007 RPP «Otan» program directives. However this level has not been achieved as a result of the negative impact of the global financial and economic crisis in August 2007 and in virtue of continuing adverse external factors caused by instability in the world economy, the eurozone debt crisis and social tension created in this respect in the world community. Now Eurozone countries have to cut their social spending in order to reduce state budget deficits and pay off their debts.

All of these factors have certainly an influence to other countries to develop more cautious and balanced policy on increasing government spending and budget deficits in order to prevent in the long term the onset of the debt crisis.

The Republic of Kazakhstan is no exception, therefore state expenditures on education in relation to GDP in the last 5 years remain within 3,5–3,6% to GDP (Table 1).

It is to be recalled that in 1990 Kazakhstan's expenditures on education reached 8,2% from GDP, in 1995 – 4,5% in 2003 – 3,3%, in 2004 – 3,5%, in 2007– 3,54%, in 2010 – 3,46%, in 2011 – 3,61%.

Currently nearly 80% of education budget of all levels is spent on wages. The funding of such items as maintenance of schools, purchase of training equipment and materials, complete overhaul, replacement of school buildings that are beyond repair and new construction is still insufficient. As a result 2% of schools are forced to study in two or three shifts.

As the world and domestic practices show, inadequate financing and low status of teachers in society contribute to poor-quality education. The average monthly wage in Kazakhstan in the education sector in 2011 reached 59,2 thousand tenge or 65.8% compared to the average wage in the republic in the amount of 89,9 thousand tenge [9, p. 82, 83].

The appropriation from the republican budget per student in 2000 accounted for 31,7 thousand tenge, in 2004 – 119 thousand tenge (880 USD), currently – an average of 1500 USD up to 2000 USD.

In Europe training costs per student are 10–15 thousand USD. Harvard University (USA) education per student costs the State 28–30 thousand USD. As we can see, Kazakhstan still lags significantly behind developed countries in this regard.

With regards to the financing of healthcare, there was a similar requirement of RPP «Otan» to bring the level of funding for healthcare costs in Kazakhstan by 2009 up to 4% of GDP, unfortunately it has not been fulfilled yet. Over the past five years, this rate varies between 2,33–2,65% to GDP. No doubt it did not happen because of the world financial and economic crisis, which has had a negative impact on development of national economy, as the Government budget had to rescue the banking system of the country in the first place, which has been burdened by external debts. For banks to continue lending to the real sector of economy, the State budget allocated substantial sums to support the construction industry, small and medium enterprises, agricultural sector and other industries. Such state financial support from the National Fund and the State budget of the country during the years of the crisis amounted to about 10% of GDP.

Despite these difficulties, over the past 20 years healthcare funding in Kazakhstan has increased in absolute terms more than 10 times, allowing its system development in all directions. Only in 2005–2010 within the State Programme for Reforming and Development of Healthcare, the sector has received significant financial resources. Funding has increased over the years by 4,3 times – up to 566,9 billion tenge (3,8 billion dollars), which allowed to strengthen the material and technical base of medicine and to build about 500 new healthcare facilities. Healthcare spending is not just a budget cost, it is an investment that generates economic returns.

According to the Ministry of Healthcare of the Republic of Kazakhstan over the last 5 years mortality from cardiovascular diseases has dropped by a quarter and deaths from cancer for the last 6 years – by 18% from traumas by 26%. 40 new TB hospitals were commissioned, as a result starting from 2004 the death rate from tuberculosis has dropped 2 times [10, p. 3].

A necessary condition of the innovation economy establishment is modernization of education system, becoming one of the most fundamental conditions for dynamic economic growth and social development of society, welfare and security of the country.

Main directions in education in the medium term will focus on the implementation of strategic objectives set in the State Program for Development of Education of the Republic of Kazakhstan for YY2011-2020 and «Balapan» Program for YY2010-2014 (Table 2).

At the present stage education and training have a key role to play in enhancing the competitiveness of Kazakhstan's economy because they are an important tool, which can improve the quality and organization of labor, its productivity, incomes of citizens, promote the integration in world labor market, it is therefore very important to accord high priority to adequate financing and effective use of budget funds foreseen for education.

Table 2

Forecast for Priority Social Expenditures of the Republican
Budget for YY 2012-2014 *(bln.tenge)

Item	2012 **	2013	2014
Republican budget costs – total:	6016,5	5504,8	5884,1
Social payments	1128,4	1246,8	1362,6
Education Development State Program, out of which:	84,4	86,8	103,7
Introduction of o-learning system in secondary education and technical vocational institutions	15,9	19,4	29,6
Improving the system of remuneration of teaching staff	17,3	28,1	43,1
«Balapan» program	25,9	23,5	22,7
Education facilities construction (budget investment projects)	46,6	29,9	25,5
Introduction of 3-tier system of staff development at AEO «Nazarbayev Intellectual Schools»	11,2	33,5	36,2
JSC Holding «Kasipkor»	12,9	0,4	0,4
«Bolashak» Program	16,9	16,9	16,4
Expenses of AEO «Nazarbayev University»	56,4	47,6	41,6
State Program of Healthcare Development «Salamatty Kazakhstan»	63,7	73,6	75,6
Healthcare facilities construction	32,4	36,6	21,2
Fitting out local healthcare institutions	10,5	4,6	4,6
Employment Program 2020	62,4	71,6	71,9
Modernization Program for housing and public utilities	24,7	37,6	32,7
Housing construction program	121,9	52,3	40,0
«Ak Bulak» Program	96,3	67,7	73,5
«Accessible Housing-2020» Program	38,0		

N o t e s : * – compiled by the author based on data of the RoK Ministry of Finance;
** – forecast amended in February 2012.

Policy documents of the Government of the Republic of Kazakhstan and the Message to People of Kazakhstan from January 27, 2012 indicate the main directions for education modernization: updated content of vocational and technical education, providing a new level of university education and research, preparation of master's and doctoral PhD, forming a new innovative model of higher education institution based on market demands at Nazarbayev university.

The goal was set to make a full transition to 12-year model of learning by 2020. For this at least 200 schools will be built by 2015 at the cost of Republican budget and the same number at the cost of local budgets. By 2015, 50 % of education institutions will use electronic learning and by 2020 the number will increase to 90 %.

By 2020 the proportion of Higher Education Institutions that passed an independent national accreditation by international standards will reach 30 %. There would be an increase up to 5 % among Higher Education Institutions engaged in innovation activities and implementing research results into production. At least two higher education institutions will be noted in the ranking of the world's best universities.

Moreover there was a task according to which the industry of Kazakhstan will work with scientific institutions with regards to necessary requests from industrialists and they will work together on a specific result. Research and development of scientists are there to be in demand in production and really work for the economy and make an impact. In this regard the new law of the Republic of Kazakhstan «On Science» was adopted in 2011, it envisages a new model for domestic science management. National Research Councils have already been formed, they take the final decisions on the implementation of research projects.

A National Center of State scientific and technical expertise has been established. Both local and foreign scientists are engaged at all levels of decision-making on financing of scientific researches. Funding of science is certainly a very important aspect for its development. It is encouraging to note that the funds allocated from the State budget for science are increasing and will continue to do so. For example, in

2010 total funding of science was 24,2 billion, in 2012 it increased more than twice and exceeded 54,5 billion tenge [11, p. 2].

Implementation of tasks set forth in the Message will bring Kazakh education and science to the level of advanced international standards, capable to meet the needs of economic and social modernization.

However the analysis showed that the proportion of total expenditures of RoK State budget as a percentage to GDP is decreasing over the last years, which indicates a decrease in the ability of the State to significantly increase the funding for human capital development. For instance in 2005 it amounted to 30,3 %, whereas in 2011 it dropped to 20,4 %. In developed countries the proportion of the State budget expenditures to GDP is in the range of 35 to 50 %.

For example, Europe to achieve its goal-to build a knowledge economy by 2010, adopted the Lisbon strategy where the stakes were made particularly on developing innovations and increasing of education level and professional qualifications. In terms of knowledge economy establishment it always has to be understood that fundamental science must be supported by a State since private institutions cannot afford it.

Asset Issekeshev Deputy Prime Minister, Minister of Industry and New Technologies of Kazakhstan shared official statistics on May 24, 2013 at VIII Innovation Congress which was held as a part of V1 Astana Economic Forum: from 2009 in Kazakhstan the costs of enterprises on technological innovation rose to two billion dollars, the amount of innovative products – up to 2,5 billion and GDP share up to 1,3 %. The productivity in manufacturing industry has increased by a third – up to 51 thousand dollars per worker and the share of innovatively active enterprises increased from 4 up to 7,6 % [6, p. 23].

The analysis show that in recent years there were positive developments in Kazakhstan, but at a slow rate, given the fact that by 2014 the first five years of industrialization program will come to an end.

Conclusions

The share of RoK State budget expenditures as a percentage to GDP should increase gradually, which will create opportunities to increase State spending for human capital development and will transform the resource economy in the knowledge economy. Another effect would be that the increase in state spending will have a positive impact on the improvement of effective demand, thus stimulating economic growth. Thus there should be a correct identification of priorities for spending immense funds, increasing the efficiency and effectiveness of their use, including human capital development.

Along with this, State budget should be focused on nationwide projects, productive from a long-term perspective, such as economic diversification and infrastructure development.

It should be borne in mind that the modernization of economy of Kazakhstan, transition to the innovation way of development are possible under the following conditions. Firstly, it is the establishment of the business and economic environment. To build a new economy there is a need in innovative business, while nowadays in Kazakhstan it is of an intermediate trade nature. Secondly, it is necessary to build education systems focused on innovation. Today in the world there are universities of the new generation, the so-called entrepreneurial. Kazakhstan needs to create universities that combine educational and research functions. So far Nazarbayev University can answer this criteria. Thirdly, it is necessary to create an efficient innovation infrastructure, which envisages conditions for business innovation. Technological parks, business incubators have been established in Kazakhstan, but they do not fully fulfill their functions yet, confined to space renting only. Implementation of defined conditions will ensure the establishment of the basis for innovation economy in Kazakhstan.

Increase in funding of state costs on human capital development can be achieved through replenishment of profitable budget sources, primarily through rapid diversification and modernization of the national economy, increasing productivity, efficiency and productivity of labor, reduction of energy consumption as a result of introduction of new technologies and innovation in all its sectors.

References

1. Brooking E. Intellectual Capital: Key to Success in New Millennium. (Management Theory and Practical Training). – SPb et al: Sain Petersburg, 2001.

2. Vasilyev Y.P. Innovative Activities Development in the USA or How to Double GDP. – M.: CJSC Publishing House «Economica», 2005.

3. Gaponenko A.L. (ed.) Economics Based on Knowledge. – RAGS Publishing House, 2006.

4. Dubyanskaya G.Y. Development Economy Based on Knowledge: Ideological and Conceptual Basis. – M.: MAKS Press, 2005.

5. Kechamaikin V.N., Yegina N.A. World Tendencies of Technical and Economical Development. Global Market of Technologies. Concepts of National Innovation Systems. – M., 2006.

6. Expert Kazakhstana. – 2013. – № 22. – P. 21.

7. Kazakhstanskaya // Pravda, January 6. – 2012. – P. 12.

8. «Kazakhstan-2050» Strategy: New Policy of an Established State // Kazakhstanskaya Pravda, December 15. – 2012. – P. 2,4.

9. Statistical Values, № 1, 2012., RoK Statistics Agency: Astana, 2012, P. 82 and 83.

10. Kazakhstanskaya // Pravda, January 1. – 2012. – P. 3.

11. Panorama № 49, December 16, 2011. – P. 3.

Materials of Conferences

**ETHICS OF BUSINESS COMMUNICATION
IN MODERN MANAGEMENT**

Alibaeva G.M., Steblyakova A.A., Uvakasova G.T.

*ATU KazNTU named after K.I. Satpayev, Almaty,
e-mail: info@academy.kz, tanalma@mail.ru*

Society is a historically evolving set of relationships, between people down in the course of their life activities, and the people are in constant motion, and the society in the developing. Today , one of the important mechanism of social and economic certificates is social mobility and social responsibility.

First the theory of social mobility was developed and entered in the scientific revolution by famous Russian sociologist who spent most creative life in USA (Sovokin P.A.)

Social mobility primarily determined by the cultural environment with the developing of society and output, infrastructures qualitative change in the individual social group, collective, family and the state!

So that would be civilized society, especially in the Graduate school of Kazakhstan are extremely important goals and targets for further form education primarily related in the democratization learning and teaching process deepening and improvement of modern position specialized in teaching courses as well as support for the creative initiative of the student in the walls of «Almamater» that correspond to modern civilization as youth policy and the accelerated industrial and innovative development , on the basis of information managment-2020 and other promising programs.

In terms of acceleration and "WTP" taking in the account a number of international standards and low and regulations, for instant TS and in order to successfully promote government programs. The sides need to borrow in the system education in Kazakhstan and Russian and also the experienced arrangements of engineers and other specialist. For example in Germany showing the fastest professional mobility qualitatively affected by today's economy the country and the European Union.

Then if we talk about a «green» economy in Astana, the monument «Baiterek» laid the first stone multifunctional complex premium «Talan towers», this building is not only beautify the capital, but will be the first sign of construction on the latest «green» technologies , given in respect that the climat of northern Kazakhstan. The construction of this complex will be completed in 2016, before the opening Expo – 2017.

take into account the huge potential of Russia, Kazakhstan, Belarus and other CIS countries and the border states paramount to determine the locators in the economy mechanism and social change is primarily the development of industry and economic relations which requires that a regional economy of Kazakhstan had a «scheme of distribution productive forces», then the creation of new industry and together with other states Hubs and innovative nature of joint ventures for example in aviation ground transportation in agriculture, in building etc.

It is known that in «Expo-2017» will be held in Kazakhstan, so today should promptly recommend to the close cooperation with Russian companies such as JSC «Russian navigation technologies»,which in Russian itself. The dealer network is represented more than 40 regions of the territory and the enterprise for more than 10 years in the market, generates the navigation market, more than 1000 customers in different industries, 85.000 vehicles equipped with auto tracker, products certified.

The company itself has experience building large hubs for managing land transport and have more than 7.000 units of transport and production of such as organization techniques. Pay great attention to human resources and demand, their training and economy incentives work with its another contemporary remuneration.

Other company SUE «Ekotechprom» in Moscow , Russia. Production equipment and software replying monitoring – GLONA SS in business administration in such an important area as utilities will access the impact that performers on the following:

– reduction in operating costs of transport 20–25 %;

– clean city, district, zone;

– no, overflow containers for garbage in the yards;

– lack of ice on the side walk and the roadway in the winter off-road areas and pits;

– Reduce the risks f accidents on the roads;

– Control of speed of technological special equipment (fuel trucks, etc).

Productive talk in terms of cooperation were between Kazakhstan and Uzbekistan.

So, the leaders of these states:

Nursultan Nazarbaev and Islam Karimov signed a new strategic partnership agreement. This event allows you to take charge in situation in the region.And this can consider a major breakthrough. Uzbekistan in 2012 has adopted a new concept of foreign policy in which as the priorities indentified in the direction of motion of central Asia and building relationships with partners on the terms of a bilateral agreements.

Peace, will contribute to deeper introgression process . And in the current context of economic development enterprise company itself can enter the world market.

They can apply poly variant forms of management when the company is formed is the form of the economic mechanics which to a large extent reveals the creative hence scientific intellectual potential

personalities team and this collective intelligence provides a higher level of productivity.

one of the principles of the law of «time-saving» appears in the right to choose the means of production and undoubtedly contributes to saving sources. Forms and methods of changing the nature of, in the words of the classics of the «combination» of people which means that the organization that is the heart of management.

Really separate itself manages a violinist and orchestra needs a conductor that management do. Concluded that management is associated with social processes, it comes down to your main content to the ordering of social relations.

Unfortunately one of the main causes of the structural crisis, in the country. The stumbling block is the work while it is rewarded enough in today, conditions and payment of social package in not planned and is not forecasted in the process of drawing up management projects. But these factors are close to the unitary accelerating scientific and technical progress, and categories such as modernization, industrialization innovation should significantly improve the quality of life in Kazakhstan people from other countries.

Why high requirements for professionals to managers to senior executives.

– To be able to determine the important priority and sequence tasks, allocate of this important.

– Not to entrust the most significant slave crucial questions whose solutions depends the future of the company to solve these problems by yourself.

– Not to engage in small and minor things that should convey trust and performers.

– Act only with the framework of a possible real achievable avoid too risky adventurous act.

– Be demanding in relation to subordinates and to himself , avoid responsibility and lack of discipline.

– To act quickly and decisively in cases where hesitates is lost.

– To be able to play back down in situations when it is inevitable.

Glossary of leader «leader» (from the English master) – a man who is behind him, motivated and able to operate at the same time is a definite place in the organization. And for the success of the economic development of the society it is essential to expand the circle of people who can be leaders enterprise nears.

The ability to manage staff a complex science and high art. Formal and informal relationships influence the success of business. There is a prevailing condition postulate according to which in the field of modern management based on the principle of human relations.

The relationship between people and the head of team requires the ability to clarity personal values.

There is a wide choice so Required by managers as a goal of the work and their own goals.

Considerable importance for the formation of the image of the modern businessman and future

professionals students basic human qualified teacher for example and their behavior as a mentor create an calm image, confident manager creates and maintains an atmosphere   of stability trust and mutual support in collective.

The way of originality and unconventional thinking appeal to theorist and practitioner's great to educate the younger generation.

In the past studying in graduate school at Moscow state University Faculty of Economics is one of the authors made a presentation to the problematic group of behaviorism while political economists as that went from the behavioral aspect of the theory report has been approved by experts, professors of Moscow State University. And today, the psychological aspects are highly relevant in the knowledge of new management techniques. Then it is quite obvious Friedrich Engels can be said had been a great friend of Karl Marx.

At the time of his employment when he was studying Russian economic literature in particular on the community.

Friedrich E. was the owner of a factory owner practitioner but he only materially but also morally supporting the family K.G Marx's. He graciously with him and really worked on the light output of nearly all the volumes of «Capital speaking» of Marx, he stressed: all the original thoughts, all our doctrine belongs to Marx. I have nothing much opened. When Lavrov Asked «When did you see volume of Capital?». And it should be noted that the third volume it as a synthesis of the first two and is called: The process of production and circulation of capital, Engels gave a huge volume of manuscripts and invited to read at least one line.

Lavrov said: «I could not make out the handwriting was not legible». «You do not understand now said Engels, as I have difficulty in establishing a single text».

Thus learn to hear the voice of nature and history then push the boundaries of his own life into the depth and breath of the past and future and feel the connection times. And the business world and the attractiveness of the company to realize methodological sciences. Management and marketing is a progressive form of business. According to the Constitution of the Republic of Kazakhstan in paragraph 4 of article 26 reads «Everyone has the right to the freedom of entrepreneurs hip free use of his property for any lawful business».

Modern approach to decision-making and as President IAIN National Academy of Sciences of Kazakhstan Doctor of technical Sciences eminent scientist in the field of theory of management system of engineering Cybernetic S A.A Ashimov: Adopted in the implementation of the state program «Information Kazakhstan 2020» that allows you to further expand the information space, the improvement of information and communication technologies as a condition for the transition and organic entry into the world information, space impact on

ethics and public opinion and the authority has built on the power of the personal qualities of a aman of his professionalism and leadership skills. An example of the power or influence of a charismatic performer determined with Accessories respect opposed to the impersonal official influence tradition, charismatic influence tradition charismatic influence entirely personal.

References

1. Ivancevich Dzh.M., Lobanov A.A. the managing of human resoures.– M: Delovaya, literature, 2003.

2. Falmer P.M. Encyclopedia of modern managing. – M.: vsp, 2003.

3. Sheinov V.P. How to manage others? How to manage yourself (art manager) 4-th volume-special literature S.P.B, special literature 2005.

4. 4korickyi E.B. and others «soviet management thought the 20s», «short directory name». – M., 1992.

5. Lapusta M.G. Enterprising, publish copyright –infra. – M., 2008.

MANAGEMENT IN RURAL AREAS ON THE BASIS OF APPLICATION OF THE PROGRAM-TARGET METHOD

Pavlov A.Y., Malyuk L.I.

Penza state technological university, Penza, e-mail: crsk@mail.ru

In the «Concept of Socio-Economic Development of the Russian Federation for the period until 2020» and «Concept of sustainable development in rural areas of the Russian Federation for the period until 2020» approved by the Government of the Russian Federation at the end of 2008 we can see that «sustainable development of rural areas, improving life of the rural population» referred to the main objectives of the agrarian policy.

However, the implementation of this program activities and territorial development management is impossible without a clear understanding about the subject-matter of the concept of «rural area», which goes under the radar. It should be emphasized that in the current federal legislation of Russian Federation this term is not fixed, there is no clear quantitative distinction between urban and rural areas. In sociology and geography, word «rural» includes a habitable area outside the cities with all natural environment and resources, rural population and a variety of fruits of the previous work of people.

The definition of «rural area» is given in the documents of the Organization for Economic Cooperation and Development (OECD). It means as follows: the rural area comprises people, territory and resources of public landscape and small towns outside the immediate scope of the economic activity of large urban centers [1]. That is, «rural area» means above all an area of human activity, and less the field of economic activity or administrative boundaries. In fact every part of Russian territory is divided by the boundaries of the Federation and further by the boundaries of municipalities which since 2006 are defined as rural and urban areas under the Federal law «On general principles of organization of local government in Russian Federation». On the basis of this law and the definitions we can give the following interpretation of the concept of «rural area» – a geographically defined area which geographically belongs to the countryside and appears as an unit of administrative division in the form of rural settlement and intra-settlement areas.

In the 90 years researchers of «Rosinforma-groteh» proposed a technique for separation of rural areas depending on the distance from population centers (100 km remote or more, medium-remote – from 51 to 100 km, suburban area located in 50 km) and types of natural building (with minimum necessary and optimum natural potential) [2].

In the European Union in use is the systematization in statistics – the Nomenclature Of Units For Territorial Statistics (NUTS), where they use administrative units for an accounting, which are classified according to several levels of subordination. Table shows the criteria used in the different countries of the world to assign a territory to the rural area.

From there as a basis for the classification in all the countries we use the social aspect of the territory development: the number of people, their density, the patterns of population related to the urban center. However, in order to improve the management efficiency of the territory in the Russian context it is appropriate to use different criteria from of typification giving extra «push» for the development of rural municipalities. In particular, it may be indicators of the three major economic systems in rural areas: production, infrastructure and tourism based on the number of residents. The whole criteria selected from each of the complex will make possible to take into account the specifics of a particular area and to distribute them by type of socio-economic development. [3]

These measures are very important in the development of long-term policy documents developed by federal authorities in designated areas, including sections relating to the countryside. The deficiency of clear concepts of rural areas makes it impossible to exercise control in the deficiency of the object. For this reason it is important not only to consolidate the concept in federal law, but also make a list of criteria for classifying communities to the urban or rural. At the moment in Russia criteria which are similar to the OECD standards have not been established. Herewit, if we apply the OECD indicators to Russia, the vast number of administrative areas can be classified as rural.

The allocation of such «grassroots» economic regions in the situation of giving them considerable power to territory management is a priority task for the regional economic policy of Russia in the situation of federal subsidies reducing.

The main criteria for attribution the territories to the rural areas in OECD*

Criteria to be applied	Countries
Constantly building area with a concentration of population less than 1 thous and a population density less than 400 people for 1 km^2	Canada
Areas with a low population density and scattered population	Finland
Areas with a population less than 2 thous. people	Greece
Areas related to agriculture with a low population and structure density	Italy
Places with a population less than 2,5 thous. people. or other areas which are not included to the number of urbanized one.	USA

*S o u r c e : Trends In Rural Policy Making And Institutional Frameworks, OECD, 1999.

Since the beginning of reform in 90s directive planning transformed into the state regulation of the economy with the using of special-purpose programme, a the basic management methods of municipal formations of the RF subjects have undergone significant changes in the direction of empowering municipalities on the implementation of various government programs. However, the increasing the total number of these programs is accompanied by a reduction of actual financing from the federal budget in case of scarce nature of the most local budgets (the share in the financing of programs is 15–25 %), which puts at threat the possibility of achieving the plan figures, which are distributed to the following groups:

1) cost figures: to determine the number of resources required for the production of a specific product, service or program;

2) figures of public services: they characterize the direct result of government measures aimed at meeting the needs of individuals and businesses inside the territory;

3) impact figures: they describe the result of the public services assignment for the recipient and determine the degree of achievement of the objective in providing public services.

But in spite of numerous studies regarding to the territorial development planning, there is still no construction algorithm of dedicated programm's definition that take into account specific features of the countryside. In this regard among the features of the programs of agrarian and economic development can be identified:

– commitment to the final result;

– simultaneously consideration of programs as an instrument of agricultural and economic development and as an integrated subject to control the necessary financial, material, technical, labor and other resources;

– organization of management, monitoring and control of the implementation of programs based on integrated indicators inside of these territories.

From there the development of program measures should be based primarily on the characteristics of the territory defined by the results obtained by the procedure of resources.

As follows from the analysis of the socio-economic situation of rural areas on the basis of the presented algorithm are the following promising directions for dedicated programs of territories development in the target:

– organizational and legal: the development of local government and its financial support, regulation of agrarian relations and forms of ownership, improving the legal framework and institutional structures;

– socio-demographic: providing rural employment, improving health care system and quality of life, the development of public utilities, roads and modern means of communication;

– diversification of production and economic structures: a machine-technological support for production, development of eco-efficient farming systems, the development of modern industrial infrastructure and agriculture;

– creation of the modern basis of information necessary to make grounded decision, for public awareness, reflection and control (monitoring) changes over the socio-economic situation in rural areas.

So, better management of rural areas in Russia, based on the use of program-target method due to the need to determine legally the list of types of areas that can be classified as rural, as well as full use of individual characteristics and resource capacity of the rural areas.

References

1. Agrarian policy in the countries of the European Union: a Collection of information materials Translation E.S. Balabanovsky. – N. Novgorod: Izd. Yu.A. Nikolaev, 2002. – 120 p.

2. Petrikov A. Problems and perspectives for the sustainable development of rural areas, Role and place of the agro-industrial complex in the doubling of the gross domestic product of Russia: Materials of the first all-Russian, Congress of agricultural economists. – M., 2005. – P. 92–103.

3. Palatkin I.V., Pavlov A.Yu., Atyukova O.K. Methodical approaches to the differentiation of rural areas in terms of their development, Agro-industrial complex: economy, management: Theoretical and applied economic journal. – M.: Izd. VNIISH, 2008. – № 5. – P. 40–43.

THE ESSENCE OF CORPORATION
IN THE MODERN LAW OF KAZAKHSTAN

Kizdarbekova A.S., Aliyeva L.R., Turganbaeva Z.

RSE on the basis of the right of economic management «Academician E.A. Buketov Karaganda State University of the Ministry of Education and Science of the Republic of Kazakhstan», Karaganda, e-mail: alua76@mail.ru

The concept of corporation in the legislation of Kazakhstan, legal literature is considered in work. The history of formation of this category of corporation since the Roman period is analyzed. The signs characterizing corporation in the legislation of the certain countries, during the different periods of formation of this concept are considered. The main signs are revealed to which member nature of participation in association of persons and capitals; absence of corporate responsibility on debts of participants, absence of responsibility of participants on corporation debts is referred. The purpose of activity directed on receiving net income is carried to number of signs. On the basis of these signs corporation definition is formulated.

Frequent use recently of the term «corporation» and derivative terms from it – «corporate law», «corporate relations», «corporate acts» – induced jurists to address again to research of concept and essence of corporation as subject of the civil relations. This interest is caused also by that, despite wide spread occurrence, the term «corporation» not usual to Kazakhstan legislation unlike the legislation of foreign countries where it is actively applied or at definition of the legal entity, or at the characteristic of his various organizational and legal forms.

Research objective is revelation of features of corporation as legal entity and definition of its signs, allowing formulating definition of this concept.

Material and research methods. The essence of corporation concept relating to the Kazakhstan legislation is investigated in work. Application of historical method and method of the comparative and legal analysis of using of corporation term in the legislation of the various countries, since the Roman period, allowed formulating more precisely characteristics of corporation and its definition.

The concept «corporation» was known in Ancient Rome. So, I.B. Novitsky and I.S. Peretersky write that in Rome «in the most ancient times there were … private corporations: the unions with the religious purposes (sodalitates, collegia sodalicia), trade unions of handicraftsmen (faborum, pistorum) … all these associations possessed property means» [1, 115]. Authors point out that corporations possessed the general property which was considered by the ancient law «on the beginnings of partnership, societas i.e. as the property belonging to each of its participants in a certain share …» [1, 116].

In legal literature by the Roman law corporations as a rule are considered in aspect of the arising doctrine about the legal entity and characteristics with which corporations in the further development are allocated get classical characteristics of the legal entity. Nevertheless, the Roman lawyers of later period recognized existence of the following features of corporations:

– corporation can be considered in the sphere of private law as the individual (D. 50.16.16);

– legal existence of corporation doesn't stop and isn't broken by an exit of certain members from structure of association (D.3.4.7.2);

– property of corporation is segregated from property of its members, besides it not in common to all members of corporation belonging property, but corporation property, as whole, as special subject of the rights: that the corporation has to – its members shouldn't; that somebody owe corporations – don't owe its members (D.3.4.7.1);

– corporation as the legal entity enters into regulations with other persons by means of the individuals authorized on that in accordance with the established procedure [1, 116].

Apparently, the Roman lawyers recognized independence of corporation. The corporation wasn't simple contractual association as each of its participants could leave its structure and the corporation thus didn't stop though in source it is called as association. Respectively, this was association which got the status independent of its participants. Interest in the analysis of the Roman Corporation causes the instruction that its participants don't incur responsibility for debts of corporation, and the corporation doesn't incur responsibility for debts of the participants too. Now such feature is characteristic for such legal entities as Limited Responsibility Partnership (item 1 of Art. 77 of Civil Code), Joint Stock Company (item 1 of Art. 85 of Civil Code), public associations (p.3 item 1 of Art. 106 of Civil Code), religious associations (item 10 of Art. 109 of Civil Code), alliances in the form of association (union) (item 4, item 5 of Art. 110 of Civil Code).

One more important point is that in sources in relation to the Roman corporations is pointed to presence of members, i.e. the corporation is member association and on rudiments of bodies as the corporation enters into legal relations with other persons by means of the individuals authorized on that in accordance with the established procedure.

Thus, apparently, the corporation of that time can be defined as the association based on membership possessing organizational and property independence which participants are not liable for debts on association, as well as, association is not liable for debts of the participants.

To look at corporation from more accurate positions it is, already, possible to tell how on the established subject of civil relations, further development of the doctrine about legal entities the German scientists allowed. So, at the end of the XIX century O. Girke, proving regulations about concept and essence of the legal entity, offered the conception about «allied persons (personalities)», distinguishing from them the state, corporations and institutes.

The allied personality, according to the concept of O. Girke, is the ability of the human union recognized by legal order as whole, other than the sum of the connected individuals, to be the subject of the rights and duties [2, 11]. To its features along with capacity and capability, he referred compound character of the person which unity is carried out in a public organism which though is called since ancient times because of its organic structure as «body», with «head», «members», «organs» but as social formation differs in the internal being from natural formation.

«Its compound parts are an essence of the person and therefore the internal vital relations which simply don't enter into legal area, in the allied person are capable to legal norming and are erected in degree of the legal relations» [2, 12]. The allied person, emphasizes Girke, has the device, and «conditions of acquisition and the termination of qualities of the member and body, the assumptions under which the volition and function of bodies is a volition and function of the allied person, the mutual rights and duties of members and whole, as well as members among themselves» [2, 12] are defined by legal norms.

As corporation (as variety of the allied person) O. Girke understood the real collective person who is the communication, which carriers are an essence the individuals connected among themselves [3, 97-98] is.

Thus, O. Girke, as well as earlier Roman lawyers, specified that the corporation is the union, i.e. the association based on membership. On the basis of existence of the right of membership in the modern legislation it is possible to allocate such legal entities, as economic partnerships, joint-stock company, production and consumer cooperatives, public associations, alliances and unions.

At the end of the XIX century other German jurist Bernattsik developed this doctrine and marked out feature which, on his opinion, was inherent only to corporations. This feature was the common purpose which was put before themselves by participants of corporation: it admitted by the law as obligatory that meant renunciation of certain individuals from this purpose. The purpose which has found will by means of which it in the long view will be constantly carried out, began own life. The purpose of creation and activity of corporation was carried out not only for the purposes of certain participants, but even contrary to them [2, 13]. Thus, existence of own will was considered as a sign of corporation. And the will of corporation is the will of all her members connected at its creation which realization was assigned to bodies of corporation which, working in its interests, expressed the will of corporation sometimes opposed to will of its certain participants. Proceeding from it, those legal entities which will was expressed in the constitutive act – the unitary enterprises didn't treat corporations.

During the pre-revolutionary period the main classification of legal entities was their division into connection of persons (corporations) and into establishments. In G.F. Shershenevich's works such definition meets: «The legal entity represents connection of persons, corporation as British speak when it consists of some number of people who are uniting for achievement of common purpose and independently managing common affairs. Individuals form in connection a special subject of law, other than them: they are only members of connection… The connections of persons having private character can … be subdivided into societies and partnership companies» [4, 120]. He refers to societies «connections of several persons which, without having a problem of receiving for it profit on maintaining any enterprise, chose a subject of the cumulative activity definite purpose» [4, 120]. In this case the non-profit organization functioning under the terms of membership as it is a question of cumulative activity of several persons means. In the modern law there are public associations, consumer cooperatives and associations (unions). Partnership Company, in turn is connection of several persons who put a problem of the joint activity extraction for itself profits. Further G.F. Shershenevich specifically specifies – Partnership companies full, partnership in commendam, joint-stock, stock and labor

artels [4, 121]. In the modern law there are economic partnership, joint-stock company and production cooperative.

Establishment, in turn, represented the legal entity when property of the united individuals intended for achievement of the known purpose. The subject of this property with the special purpose which didn't depend on personal interests of the subjects which have allocated part of the property was created. Such establishments could be public and private, considering purpose of property. Establishment serves to interests of many persons, but these persons are not his members and not subjects of the rights making property of establishment [4, 121].

Thus, we see that pre-revolutionary scientists-jurists as well as the German civilists, recognized association of the persons connected by a common purpose, based on membership as corporation. The association answering to above signs, created for the purpose of receiving profit and without that, i.e. commercial and noncommercial associations was considered as corporation. The term «corporation» was used as generic term.

The concept of corporation in the common law has the own nature, other than that which developed within continental system.

So, in the USA concept «corporation» covers the widest range of legal entities. Depending on the pursued purposes corporations can be public, quasi-public, entrepreneurial (private, business of profit-making) and not entrepreneurial (non-profit):

1) public corporations are the governmental and municipal bodies;

2) quasi-public corporations are the corporations, serving to the general needs of the population (corporations in the field of population supply by gas, water, electricity, railway corporations);

3) entrepreneurial corporations are the corporations operating for the purpose of receiving profit [5, 909–925; 6, 36–40].

In fact and to the contents entrepreneurial corporations represent the commercial organizations in the form of joint-stock companies. It should be noted that in the USA jurisprudence legalized the opened and closed corporations.

O.N.Syroyedova notes that lines of any American entrepreneurial corporation are, first, limited liability of participants of corporation on its debts; secondly, free carve-out of shares by participants of corporation (the closed corporations are an exception); thirdly, existence of the centralized management when administrative functions carry out the corporations isolated from participants bodies; fourthly, «eternal existence» of corporation that means its independence of structure of participants of corporation [7, 21]. Features of the status of the closed corporation are that the number of equity holders in them is limited, the public capital stock subscription is forbidden and freedom of a transfer of stock is limited.

In turn, not entrepreneurial corporations in the USA are understood as corporations which don't pursue the aim of receiving profit (the religious organizations, schools, charity foundations).

Thus, in the USA the concept «corporation» covers practically all types of legal entities to which the following signs are peculiar:

– limited liability of participants on corporation debts;

– existence of the management isolated from participants;

– independence of structure of participants;

– created in entrepreneurial and not entrepreneurial purposes.

In England the corporation has the own legal personality independent of members of corporation. O.A. Makarova allocates its following distinctive features:

– limited liability of participants according to company obligations;

– the centralized management exercised by persons, other than members of the company;

– permanence of activity of the company irrespective of leaving of its members [8].

As a whole it should be noted that, judging by signs, to concept of corporation both of the USA, and of England approach equally, except for the creation purpose, but neither in England, nor in the USA, according to the legislation, associations don't treat number of corporations as an organizational and legal form of implementation of entrepreneurial activity [9].

In the law of many foreign countries concept «corporation» has the accurate legal contents it is the self-organized legal entity which founders at the same time are its participants acting together and on an equal legislative basis. Establishment – the legal entity formed by the external founder, keeping the apartness and individually operating legal entity as the unitary institution, not having any independent participants [10, 330] is opposed to it. In Kazakhstan as still Yu.G. Basin quite recently specified, such accurate differentiation is lost [10, 330].

Really, Kazakhstan law doesn't provide such view or an organizational and legal form of the legal entity as corporation. The term «corporation» and many other concepts, derivatives from it now are a subject of scientific discussions. It is possible to allocate conditionally three points of view in a look that during the modern period it is necessary to understand as corporation.

According to one of them, only joint-stock companies are corporations [11, 27].

So, F.S. Karagusov writes that «it is necessary to share concept of «corporation» and a subject of corporate law. In particular, for identification of subject of regulation by norms of corporate law by the most expedient is to understand corporation as joint-stock company … the corporate legislation has to regulate … questions of creation and activity of joint-stock companies, demanding use of this corporate form only when conducting large entrepreneurship and leaving beyond the limits regulation of various forms of economic associations, including associations (societies) with limited liability» [11, 26–28].

F.S. Karagusov allocates the following signs of corporation:

– it is created for the purpose of receiving profit;

– is a form of large entrepreneurship;

– in legal status governing bodies and members are allocated;

– the circle of participants isn't limited [11, 16–18].

Analyzing these signs it is possible to come to such conclusions. For the purpose of receiving profit according to the current legislation only the commercial organizations, among which joint-stock companies, economic partnerships, production cooperatives and the state enterprises are created. Subjects of large business, according to item 8 of Art. 6 of Law of the RK about private enterprise the legal entities carrying out private enterprise and answering to one or two of the following criteria are capable to be: the average annual number of workers more than two hundred fifty people or a total cost of assets in a year over the three hundred-twenty-five-thousand fold monthly calculation index established by the law about the republican budget. The main legal form of functioning of modern large business, the joint-stock company which attracts the capital at the expense of issuance and placement of shares serves. At the same time, to subjects of large business are capable to expand and separate associations, for example, the limited liability branch associations of the national companies being payers of excess profits duty, unlike full and special partnerships which are created and functioning in the conditions of small and medium business.

Both joint – stock companies and limited responsibility partnerships are the member organizations. It also gives the grounds for existence of other point of view according to which along with joint-stock companies to corporations carry also the limited responsibility partnerships. So, S.I. Klimkin considers that the legal status of the limited responsibility partnerships as most popular form of conducting business activity in the Republic of Kazakhstan

as much as possible came nearer to legal status of joint-stock companies [12], especially in connection with amendments in the legislation from May 16, 2003 and July 8, 2005 owing to which restrictions of the maximum number of participants of LRP were eliminated.

Thus, under the signs of corporation formulated by S.F. Karagusov, falls not only joint-stock company, but also the limited responsibility partnerships.

According to the third point of view other forms of the commercial and non-profit organizations operating on the basis of association of the capitals [13] belong to corporations along with joint-stock companies. In this definition the fact of pooling of capitals is defining sign of corporation.

It should be noted that in economy of the enterprise businessmen associations share on associations of persons and association of the capitals depending on nature of association and degree of responsibility of participants according to its obligations. Associations of persons are based on personal participation of their members in firm business management. Members of such enterprise unite not only monetary and other means, but also own activity in the apposition of these means [14]. Each participant of such enterprise has the right to business management, proxyship and management. Association of the capitals assumes addition only the capitals, but not activity of investors: the management and operational control of the enterprise is exercised by specially created bodies. Responsibility according to obligations of association of the capitals is born by the enterprise, and participants are thus exempted from the risk resulting economic activity.

Thus, it is necessary to consider as associations of persons the associations which members directly participate in its activity and bear a joint liability according to its obligations as it occurs, for example, in full partnerships. In capital associations members participate in the annex of the capital to reproduction process, the management of such association carries out special body. Besides, unlike associations of persons associations of the capitals independently bear responsibility according to the obligations.

On the strength of it, to associations of persons from among commercial legal entities it is possible to carry full partnership, special partnership, production cooperative, to associations of the capitals – joint-stock companies, limited responsibility partnerships and additional liability partnerships.

In turn non-profit organizations aren't constant, professional participants of civil turn. Their performance as independent legal entities is caused by need of material security

of their primary, main activity which hasn't been connected with participation in the property relations. In this regard the phrase «capital association» use concerning noncommercial legal entities is dissonant, opposite to a being of the non-profit organizations which purpose of activity isn't connected with receiving profit.

Summarizing the above, it is possible to define corporation as follows. This association of persons based on membership and their capitals in the form of the commercial legal entity which doesn't bear responsibility for debts of the participants and which participants don't answer on its debts.

References

1. Roman private law: The textbook / Under the editorship of I.B. Novitsky, I.S. Peretersky. – M.: Lawyer, 1996. – P. 115.

2. Mogilevsky S.D., Samoilov I.A. Corporations in Russia: Legal status and activity foundations. – M.: Business, 2007. – P. 11.

3. Suvorov N.S. About legal entities under the Roman law. – M., 2000. – P. 97 – 98.

4. Shershenevich G.F. Course of civil law. – Tula: Autograph, 2001. – P. 120.

5. Bernam U. Legal system of the USA. – M, 2006. – P. 909–925.

6. Makkeri Joseph, Vermulen Eric. Research of extra corporate forms of business. – M., 2007. – P. 36–40.

7. Syroyedova O.N. Joint-stock law of the USA and Russia (the comparative analysis). – M., 1996. – P. 21.

8. Makarova O.A. Corporate law. – M.: Volters Kluver, 2005. – 420 p.

9. Grishenko A.I. Morales K. Corporations in Russia and foreign law orders: concept and essence. – Electronic resource, 2009.

10. Basin Yu.G. Commercial corporate relations and legal responsibility. – In book: Civil legislation Articles. Comments. Practice. – Selectas / Under the editorship of A.G. Didenko. – Almaty: Rarity, 2008. – P. 330.

11. Karagusov F.S. Bases of corporate law and corporate legislation of the Republic of Kazakhstan. The second added edition. – Almaty: Bastau, 2011. – P. 27.

12. Klimkin S.I. Corporations and corporate law in Kazakhstan: What include these concepts//http://www.zakon.kz/4465785-korporacii-i-korporativnoe-pravo-v.html (date of address 27.05.13).

13. Belyh V.S. General (fundamental questions) questions of improvement of the joint-stock legislation. – Lawyer. – 2009. – № 12. – P. 60.

14. Safronov N. A. Enterprise economy//http://www.bibliotekar.ru/economika-predpriyatiya/index.htm (date of address 27.05.13).

VACCINAL PREVENTION AS A PROBLEM OF MEDICALIZATION IN PEDIATRICS

Mullaeva L.D.

Republican Specialized Scientific-Practical Medical Center of Pediatrics the Ministry of Health of the Republic of Uzbekistan, Tashkent, e-mail: lofazu@yandex.ru

The problem of the reasonableness, the volume and efficiency of medical intervention in the child's body, in this case, preventive vaccines acquires in the ratio of benefits and risks particular importance. Sociological survey on matters safety of the vaccine has revealed some problems: insufficient knowledge of parents and insufficient work of with the mass media about the security measures at carrying out preventive vaccinations, on the part of medical personnel insufficient skills on prevention of post-vaccination reactions and complications.

Keywords: vaccinology, infection prevention, child

Vaccination remains a powerful and highly effective method of influencing on child health at the population level [1, 4]. However, there are several problems associated with the contradictions in the understanding and perception of the problems of immunization by the participants in the process of vaccination [8]. Experience shows that the use of standardized approaches to vaccination (the only acceptable option for implementation massive uptake) cause hidden and explicit counteraction among the participants of the process.

Doctors and parents – the main social agents of infection prevention, managed by means of specific protection of children. If among them there is no effective interaction in this matter, doctors are forced to resort to additional medical impacts that harm the health of the child, and parents could to refuse to carrying out immunization, which is also insecure. Only competent distribution of roles and scientifically based interaction strategy can make their efforts of effective [2, 5]. The medicalisation of childhood is associated with increased risks in connection to the fact that the first minutes of life the child is under the supervision of a physician, regardless on whether he is sick or healthy, he passes obligatory immunoprophylaxis, which is also the medical intervention in a healthy body[6]. In addition, with respect of child as agents of medicalisation take part not only doctors, but also parents. Another risk factor is unpredictability the effects of certain medical interventions in children, therefore and possible pathology in adult life [9].

Materials and methods of research

To evaluate the «distribution of strength» of supporters and opponents of the immunization method there was used questionnaire by a specially developed and approved inquiry form, as well as observation method for assessing skills on vaccination and counseling of parents**.** In the questionnaire are reflected the questions evaluating the level of professional knowledge the health worker about immunization and the attitude to the problems of vaccination. Conducting this research has provided for the implementation of the rules of randomization (randomness) when forming of groups and comprehensive study of the problem. In the course of the analysis of data obtained from the questionnaires parents was paid particular attention to those aspects of the knowledge of parents, who are directly reflected the estimate of their awareness about immunization and the quality of counseling children in introducing preventive vaccination. For a detailed the analyses were the questions that reflect the quality of the specific prevention with an estimate of risks and benefits of vaccination. The basis of probative statistic was a factor analysis – for highlighting common factors.

Target groups of research:

● Parents of children aged 2 months to 6 years (were surveyed 102 people – answered 100% of the mothers of children attending clinics).

● General practitioners and pediatricians, responsible for vaccination ($n = 52$).

● Nurses working in primary care and conducting vaccination ($n = 52$).

Results of research and their discussion

Given that most of the selected item on the questionnaire, reflecting the attitude of parents towards immunization and quality of services, knowledge of medical personnel in the vaccinal prevention, not performed by participants of this process, the decision was made to identify the most significant of them. A survey of parents of children receiving vaccinations revealed that attitude to vaccination in 22 (21,6%) of the parents surveyed – negative, and in 37 (36,2%) – alert (alertness of the population to vaccines production in developing countries, mainly to the DTP vaccine). From the point of view of parents assessment the quality of health of the child by medical personnel for vaccination in 19,6% of cases was low, i.e. examination of the child was not performed in full. However, 66,6% of parents rated the quality inspection before the vaccination of children as average, 13,8% – as high. 71,6% of respondents appreciated the professionalism local doctor performing the vaccination, as satisfactory, 28,4% – as unsatisfactory. Almost all parents of vaccinated children appreciated the professionalism of nurse-vaccinator as satisfactory (93,1%). Parents in 62,7% of cases said, that doctors were informed in detail about the care of their child during the vaccination at home, 19,6% – have found a lack of detailed information, and the remaining 17,7% were undecided. Most parents (60,8%) said, that the doctor told about the possible side effects when

administered vaccinations only when he asked the appropriate question. For more details about the possible kinds of postvaccinal pathology were not informed 40 respondents (39,2%). However, almost all interviewed parents of vaccinated children (94,1%) were notified of the action taken in the development of adverse events following immunization. According to the survey 77,5% of respondents prefer to vaccinate children in the clinic in the community, 22,5% – in a private institution, justifying this choice of vaccines. Source of information on vaccination and preventive measures of post-vaccination reactions (PVR), and complications (PVC) in 74,5% of health workers were maternity hospitals and clinics, 25,5% of parents received information from other sources (neighbors, relatives, the media (media). At the end of the survey to parents of children receiving immunizations, was asked about the measures to improve the efficiency and safety of vaccinal prevention. In most cases, the responses to this question were several, but the most frequently encountered wishes parents an individual approach of vaccination to every children.

When analyzing the results of the interview medical personnel on the vaccine revealed the following facts. Knowledge about «special groups» or «at risk» for the development of the PVR and PVC was not sufficient at 60,6% of the surveyed doctors , only 39,4% knew which children are at risk with the vaccination. In 100% of medical personnel was concerned about the safety of immunization (this includes injecting vaccines). However, knowledge of monitoring vaccine PVR and PVC were inadequate at 69,2% of the surveyed physicians. In 52,9% of cases the health workers did not have enough knowledge about the main of clinical manifestations of PVR and PVC and their differential diagnosis, which is essential in the diagnosis and identification of a causative factor the development of AEFI. Assessing the knowledge of the rehabilitation activities to children who have suffered a PVR, and further tactics of their vaccination, it was determined that the majority of physicians surveyed (72,1%) had no idea of the the further tactics to carried over PVC. Interesting results gave a survey of physicians on measures to increase the effectiveness and the safety of the vaccination, all in all, which gave few answers. 100% of physicians believed that the key to the prevention of PVR and PVC are the hygienic and sanitary of measures in storage and the introduction vaccines. Only a third of respondents said that quality professional training for medical the personnel is an integral part in improving the safety of vaccinal prevention. Thus, 14,4% of the physicians were considered that immunization with vaccine of production of developed countries will increase safety of immunization.

Discussion

Vaccination is evaluated by the key participants the implementation of the national immunization program as positive in its results in the manifestation of medicalisation of Pediatrics. Negative and cautious attitude towards vaccination in 57,8% of recipients at context of high levels awareness about the importance of immunization of children (97,1%) and confidence in the medico prophylactic institution (90,2%), is a reflection obvious and latent reserves to improve situation for the successful solution of problems in implementation of the national immunization program. Further expansion of the immunization program should be implemented taking into account existing of errors in provision of organizational aspects. The above data are in favor working with population by a systematic informing about the importance of vaccination in order to form an adequate idea of the maximum benefit with minimum risks in the prevention of infectious diseases representing a significant threat to the life and health of the child in the future. Well-defined, substantiated regulation of the indications for of individualization when vaccinating of children contingent of risk on AEFI (as excessive reactions and poor response to vaccination) is a measure of the optimization of the risks and benefits. The systematic improvement of quality indicators realization of AEFI, work with the population with the media are an effective measure of the of confrontation the formation of motion of anti vaccination

Conclusions

1. According the data of the social survey of parents were revealed insufficient knowledge their and insufficient work of with the media about the security measures during the vaccination, absence or shortage of which is directly related with the quality of rendering of specific preventive to children.

2. As a result of interviews with medical personnel on matters vaccine safety revealed insufficient knowledge about the «special groups» of children in the plan of vaccination, skills on measures of prevention of post-vaccination reactions and complications, and the knowledge of monitoring vaccine safety and PVC

References

1. Vaccine Prevention / S.M. Harith, E.A. Lakotkina, N.A. Ozeretskovsky et al. / Guidelines. St. Petersburg, 2004. – P. 22.

2. The differential diagnosis post-vaccination complications / S.M. Harith, E.A. Lakotkina, T.V. Chernyaeva, O.L. Voronina, E.P. Nacharova // Difficult Patient. – M., 2006. – T.4, № 2. – P. 17–22.

3. Lavrentyev O.E. Social interaction of pediatricians and parents in the prevention and treatment of viral respiratory infections in children / Author. dis. MD. – Volgograd, 2011 – P. 20.

4. Melikeya T. rheumatic complications and postvaccinal reactions in children. / Author's abstract. Dissertation. MD. – Tbilisi, 2006 – P. 14.

5. Mikhailov O.N. Medicalization of childhood: sociological survey / Author. dis. MD – Volgograd, 2008. – P. 24.

6. Mikhailov O.N. Risks of of medicalization in pediatrics. – Volgograd. 2007 – 1.5 p.

7. About the vaccines over the last 15 years, the efficacy and safety their application / L.K. Chernova, A.S. Simahodsky, S.M. Harith, O.L. Voronina // Almanac «Infectious diseases-2006» (the 125th anniversary Hospital. Botkin.) – St. Petersburg., 2007. – P. 198–201.

8. The basic principles and tactics in preparation children for vaccination // D.I. Makhmudova, G.M. Halilova, D.A. Tursunova, G.B. Utepova, L.M. Nigmatova. – Methodological Guide, 2005. – 23 p.

INTRODUCTION OF INNOVATIVE LEARNING METHODS AT TRAINING PEDIATRICIANS

Tukbekova B.T., Dyusenova S.B., Kizatova S.T., Bogdanovic G.V.

Karaganda State Medical University, Karaganda, e-mail: sbolatovna63@mail.ru

Invention of a national Kazakhstan model of education directed to solving the problem of providing future pediatrician graduated from medical university with work on modern economic conditions; and solving the problem of efficiency of the doctor's knowledge, and the problem of adapting their professional qualification on fast changing economic and geopolitical conditions to new requirements and conditions of time. The class on the Team-Based Learning method (TBL) and Case-Based Learning (CBL) has been held by us. These innovative methods have helped to improve skills to analyze problems and look for alternatives, and improve skills of solving certain problems. This helps to form communication, thoughts, self-esteem, to control own activity, ability for team working, being an expert.

Invention of a national Kazakhstan model of education directed to solving the problem of providing future pediatrician graduated from medical university with work on modern economic conditions; and solving the problem of efficiency of the doctor's knowledge, and the problem of adapting their professional qualification on fast changing economic and geopolitical conditions to new requirements and conditions of time.

Forming of future expert happens in the medical university. This is hard process founded on studying methods on which efficiency is based the qualification of future expert.

Interactive model is oriented to understanding of given information. This process is based on interaction of teacher and student.

Process suggests active position of student and his creative understanding of given information.

Nowadays, modern educational technology is introduced. Modern education must be in accordance to requirements of reality and international standard.

Interactive methods of studying include: problem lectures, presentation, discussion, case study, group work, method of brainstorming, mini research, business games, role games, method blitz of polls, method of questioning and etc.

One of the effective studying methods which is used at the Department of childhood diseases number 2 are problem lectures.

Lecture is similar to discussion, teaching simulates the research process (At first there are some key statements based on the topic of the lecture, the lecture is based on self-made analyze and summarize of material by students). This method helps to make students be interested and involved into the process of students learning. Contradiction of scientific understanding can be seen by posing the problem. Studying problem and studying situation are basic parts of problem learning. Students are given situation and exercise which is problem before starting to learn certain topic. Stimulating solving the problem by students helps to avoid contradictions among lector and students. This is effective method because some problems can be posed by students. Main success of this method is independent decision of problematic questions by students. Organization of this learning is enough hard process requiring preparation of lector. This method can be introduced in the structure of ready lectures and seminars additionally at first time.

Another effective method of interactive learning is Team-Based learning. Team-Based learning as one of innovative learning methods in the medical university let students improve skills of working in team, communicative and leader skills. The Main point is situation or conditions which choice influent on the result. There are more than one right solution. This method make students find solution by themselves and explain it. Team-Based learning method let make the correct solution at indefinite conditions, make the plan to get the correct solution, improve skills of observing the problem, make the plan of work, use theoretical knowledge in practice, pay attention to other specialists opinion.

This method helps to improve skills of analyzing the problem, to observe alternatives, to improve skills of solving the problems. The common technology of work based on this method is developed.

1. Before starting lectures the teacher
– determines main and additional materials;
– creates scenario.

Student must get the case and the list of recommended literature and prepare to the lesson.

2. In time of the lessons the teacher
– organizes preliminary discussion of the case;
– shares group for subgroups;
– leads of situation which is discussed.
Student
– asks question;

– offers solutions;

– makes the solution;

– makes written report about work.

We had lesson on Team-Based learning method.

The group of 10 people was shared for two subgroups. Method of lesson included individual test (10 min – 10%), team test (10 min – 20%), analysis test – 5 min, clinical case (TBL) (40 min – 30%), repetition of topic in the form of lecture 15 min, practical skills – (5 min – 20%), demonstration of movie for the practical skills – 5 min, final group test (10 min – 20%). Result was showed to students. Students give answers orally at the end of lessons. They marked advantages of Team-Based learning method. Main principles of organization of interactive learning method include following points.

– find the topic of the lesson;

– organization of the studying area comfortable for the dialog;

– motivation of students and teachers to cooperative work while learning;

– creation of special situations making students to integrate their efforts for solving the problem;

– making and accepting the rules of students and teacher cooperation;

– support the communication by using welcoming intonation, ability to ask constructive questions;

– optimal system of marks and results of cooperative work;

– improving of group and personal skills of analyze and self analyze.

Thus interactive learning as a form of educational process can be the factor which makes educational process cooperation optimal.

Finally we can say that the purpose of learning is not only gathering of information, knowledge and skills, but also preparation of the student as an object of his education at interactive learning.

References

1. Teleuov M., Dosmagambetova R., Molotov-Luchansky V. Innovative technologies at education process and marking of learning achievements of Karaganda state medical university students: monograph. – Karaganda, 2010. – 118 p.

AN IMPACT OF BETA-PHENYLGLUTAMIC ACID HYDROCHLORIDE (A COMPOUND OF RGPU-135, NEUROGLUTAME) IN VARIOUS DOSES UPON COGNITIVE FUNCTIONS OF ANIMALS

Tyurenkov I.N., Bagmetova V.V., Chernysheva Y.V., Merkushenkova O.V.

Volgograd State Medical University, Volgograd, e-mail: vvbagmetova@gmail.com

Hydrochloric of beta-phenylglutamine acid (RGPU-135, glutarone) in its wide range of doses from 13 to 130 mg/kg increases latent period of the first entrance to a dark cell within the test «conditional reaction of passive avoidance» among animals. At the same time it repeats the reflex after 14 days of its producing and decreases latent period of diving within the «test of extrapolative escape», this skill reproduces after 24 hours and 14 days of training – nootropic characteristics are displayed. Nootropic effect of RGPU-135 compound is mostly expressed in doses of 26 and 52 mg/kg – the solution expresses its basic pharmacological activity, and it can be studied as an additional positive characteristic of a new agent of antidepressant, anxiolytic, and neuroprotective effect that is based on RGPU-135 compound.

Hydrochloride of beta-phenylgutamine acid (a compound of RGPU-135, glutarone) has a wide range of psychotropic effects [1, 5, 6] and also a low toxicity and potentially high medical safety [2, 3]. Pharmacologists of Volgograd state medical university are developing a new unique psychotropic substance that possesses antidepressant, anxiolytic, and neuroprotective effect at the base of RGPU-135 compound. Apart from well-expressed antidepressant and anxiolytic effects we can outline nootropic component among psychotropic effects of RGPU-135 [5], and it distinguishes the solution positively from the majority of known effective antidepressants and anxiolytics. Thus, many antidepressants express anticholinergic properties of various intensities, and one of their clinic expressions can lead to disturbance of memory and ability to concentrate. Anxiolytics, especially those of benzodiazinic line, combine anxiolytic and sedative effect, and the latter impacts cognitive functions negatively due to general non-specific oppression of central nervous system. Therefore, a presence of nootropic effect within the action range of a potential agent of antidepressant and anxiolytic effect can be considered a positive characteristic that possibly could increase life quality of patients in case such medication was introduced into clinical practice. However, dose ranges, in which basic and additional pharmacological properties of medications are expressed, do not coincide quite often, so, at the stage of pre-clinical research of RGPU-135 compound, comparing dose intervals in which its nootropic effect is expressed with experimentally-proved efficient dose of 26 mg/kg [5], has been considered urgent.

Research goals – studying an impact of beta-phenylgutamine acid hydrochloride in different doses upon cognitive functions of animals.

Materials and methods of research

Experiments have been carried out on outbred male rats (180–220 g) that have been contained in standard vivarium conditions. The research has been carried out according to the Order of Ministry of Healthcare and Social Development of Russian Federation № 708N dated 23.08.2010 «On asserting rules of laboratory practice», GOST R-53434-2009 «Principles of appropriate laboratory practice», rules of European convention on protection of vertebrate animals that are used for experimental and other scientific purposes(1986). Study of RGPU-135 impact upon cognitive functions of animals has been carried out with usage of 6 doses, selected according to the data of their acute toxicity [2, 3] and results of earlier researches [5]. All used doses were multiple to the experimentally-proved therapeutic dose – 26 mg/kg that forms $1/300$ of LD_{50} [5]: 13 mg/kg is dose more than two times smaller than therapeutically-effective one, is close to $1/700$ of LD_{50} [5]; 52 mg/kg is a two times bigger dose than therapeutically-effective one, it closes to $1/200$ of LD_{50}; 78 mg/kg is three times bigger dose than therapeutically-effective one, it closes to $1/100$ of LD_{50}; 130 mg/kg is five times bigger dose than therapeutically-effective one, it closes to $1/70$ of LD_{50}; 650 mg/kg is twenty-five times bigger dose than therapeutically-effective one, it closes to $1/10$ of LD_{50} (it has been studied as subtoxic).

An impact of beta-phenylgutamine acid hydrochloride of various doses upon cognitive functions of animals was studied in a test «conditional reaction of passive avoidance» [4] and the «test of extrapolative escape» [4] with checking of a reflex preservation in 25 hours and 14 days after training. RGPU-135 compound has been dissolved in 2 % amylaceous slime, solutions have been prepared ex tempore and introduced to animals once endogastrically (through probe) one hour before training according to the mentioned tests. A control group of animals has been formed as well, 2 % amylaceous slime has been introduced to them in equal volume. Statistical processing of the results: ranging unifactorial analysis of Kruskal-Wallis, criterion of Newman-Keuls, exact criterion of Fisher.

Results of research and their discussion

Hydrochloride of beta-phenylgutamine acid has expressed nootropic properties in a wide range of doses from 13 to 130 mg/kg.

It provided for mastering conditional reflex of passive avoidance among animals that expressed in an increase of latent period (LP) of the first entrance into a dark cell with reproducing the reflex on day 14 after the training in comparison to the results of control animals (Table 1). In doses of 26 and 52 mg/kg RGPU-135 compound has led to statistically-significant alterations in this indication and thus expressed maximal nootropic effect.

Table 1

An impact of beta-phenylglutamine acid hydrochloride in various doses upon producing and mastering a reflex in test «conditional reaction of passive avoidance»

Animal group	LP of entering a dark cell, M ± m			Number of animals entered (N/n)		
	Training	Reproduction in 24 hr	Reproduction in 14 days	Training	Reproduction in 24 hr	Reproduction in 14 days
Control	45,13 ± 5,24	162,50 ± 17,50	98,00 ± 31,01	8/8	1/8	4/8
RGPU-135 – 13 mg/kg	53,00 ± 4,65	180,00 ± 0,00	157,75 ± 12,08	8/8	0/8	3/8
RGPU-135 – 26 mg/kg	42,75 ± 4,45	180,00 ± 0,00	171,28 ± 5,68*	8/8	0/8	2/8
RGPU-135 – 52 mg/kg	58,38 ± 4,19	180,00 ± 0,00	167,75 ± 8,71*	8/8	0/8	2/8
RGPU-135 – 78 mg/kg	55,00 ± 4,39	180,00 ± 0,00	151,75 ± 14,08	8/8	0/8	3/8
RGPU-135 – 130 mg/kg	64,25 ± 6,43	180,00 ± 0,00	143,00 ± 20,85	8/8	0/8	3/8
RGPU-135 – 650 mg/kg	73,38 ± 6,76*	179,38 ± 0,63	108,13 ± 18,02	8/8	1/8	4/8

N o t e s : N/n is number of animals in a group (N) that have visited a dark cell of total number of animals in a group (n); * – $p < 0,05$ in comparison to the control group of animals (ranging unifactorial analysis of Kruskal-Wallis, criterion of Newman-Keuls, exact criterion of Fisher).

In the test of «extrapolative escape» beta-phenylglutamine acid hydrochloride has also improved training ability and memory among animals in dose interval from 13 to 130 mg/kg. The improvement reflected in decrease in LP of diving at stages of reflex reproduction in 24 hours and 14 days after the training (Table 2). While using RGPU-153 in doses 26, and less in 52 mg/kg, this effect has been statistically-significant. While introducing subtoxic dose of glutarone of 650 mg/kg to animals, a disturbance in ability to master a skill of extrapolative escape – a statistically-significant increase in LP of diving has been registered at the training stage and at the stage of checking skill preservation in 24 hours and 14 days after training.

Table 2

An impact of beta-phenylglutamine acid hydrochloride in various doses upon producing and mastering a reflex in test «extrapolative escape»

Animal group	Diving LP, M ± m		
	Training	Reproduction in 24 hr	Reproduction in 14 days
Control	49,75 ± 3,27	32,75 ± 2,14	25,50 ± 1,89
RGPU-135 – 13 mg/kg	40,75 ± 5,45	29,63 ± 2,76	22,38 ± 1,60
RGPU-135 – 26 mg/kg	38,75 ± 7,31	24,38 ± 1,66*	17,00 ± 1,10**
RGPU-135 – 52 mg/kg	42,50 ± 5,97	25,88 ± 2,31*	19,88 ± 1,52*
RGPU-135 – 78 mg/kg	43,88 ± 5,57	31,13 ± 2,52	22,00 ± 1,21
RGPU-135 – 130 mg/kg	46,00 ± 3,97	34,75 ± 2,46	27,50 ± 2,63
RGPU-135 – 650 mg/kg	62,50 ± 4,36*	45,50 ± 4,12*	38,88 ± 3,77**

N o t e s : * – $p < 0,05$; ** – $p < 0,01$ in comparison to the control group of animals (ranging unifactorial analysis of Kruskal-Wallis, criterion of Newman-Keuls, exact criterion of Fisher).

Thus, RGPU-135 compound provides for improvement in mastering a conditional reflex of passive avoidance and the skill of extrapolative escape among animals when used in a wide range of doses from 13 to 130 mg/kg that proves the solution's nootropic properties. We should outline that nootropic effect of this compound is mostly expressed in doses of 26 and 52 mg/kg, in which its antidepressive and anxiolytic effect is mostly displayed [1, 5, 6]. Disturbance in training ability and memory in the «test of extrapolative escape» among animals that received subtoxic dose of RGPU compound 650 mg-kg can be a consequence of its toxic impact in this dose, as earlier researches show that clinic of intoxication with this compound goes with oppression of central nervous system.

Conclusion

Hydrochloride of beta-phenylglutamine acid (a compound of RGPU-135, glutarone) in a wide range of doses from 13 to 130 mg/kg (statistically-significant in doses of 26 and 52 mg/kg) increases LP of the first entrance into a dark cell among animals in a test «conditional reaction of passive avoidance», the reflex preserves in 14 days after training, and decrease LP of diving in the «test of extrapolative escape», the skill is reproduced in 24 hours and 14 days after training, thus displaying its nootropic properties. Nootropic effect of RGPU-135 is displayed in doses that provide for its main pharmacologic properties – antidepressant and anxiolytic activity. This property of a new medication of antidepressantm anxiolytic, and neuroprotective effect that is developed on the foundation of RGPU-135 should be considered as an additional effect that could increase life quality of patients in case of introducing this preparation into clinical practice.

References

1. Bagmetova V.V., Chernysheva Yu.V., Merkushenkova O.V. i dr. Sravnitel'naja ocenka antidepressivnyh svojstv gidrohlorida β-fenilglutaminovoj kisloty (RGPU-135, glutaron) // Jeksperimental'naja i klinicheskaja farmakologija. – T. 76. – № 3. – 2013. – P. 7–9.

2. Bugaeva L.I., Tyurenkov I.N., Bagmetova V.V. i dr. Izuchenie ostroj toksichnosti gidrohlorida β–fenilglutaminovoj kisloty pri odnokratnom vnutribrjushinnom vvedenii // Vestnik Volgogradskogo gosudarstvennogo medicinskogo universiteta – 2012. – № 3 (43). – P. 30–33.

3. Bugaeva L.I., Tyurenkov I.N., Bagmetova V.V. i dr. Ostraja toksichnost' substancii gidrohlorida β-fenilglutaminovoj kisloty pri odnokratnom vnutrizheludochnom vvedenii mysham i krysam // Vestnik Volgogradskogo gosudarstvennogo medicinskogo universiteta. – 2012. – № 4. – P. 34–37.

4. Rukovodstvo po provedeniju doklinicheskih issledovanij lekarstvennyh sredstv. Chast' pervaja. – M.: Grif i K, 2012. – 944 p.

5. Sredstvo, obladajushhee antidepressantnym, anksioliticheskim, nejroprotektornym i immunostimulirujushhim dejstviem / Petrov V.I., Tyurenkov I.N., Bagmetova V.V., Samotrueva M.A., Berestovitskaya V.M., Vasilieva O.S., Ostroglyadov E.S. // patent na izobretenie RUS 2429834, 23.07.2010

6. Tyurenkov I.N., Bagmetova V.V., Chernysheva Yu.V. i dr. Sravnenie psihotropnyh svojstv glutaminovoj kisloty i ee novogo proizvodnogo – gidrohlorida beta-fenilglutaminovoj kisloty (RGPU-135, glutarona) // Fundamental'nye issledovanija. – 2013. – № 3 – 1. – P. 167–172.

METHODS OF INFLUENCE ON RECIPIENT IN POLITICAL TEXTS

Sirivlja M.A.

Kostanai branch of Cheljabinsk state university», Kostanai, e-mail: sima-al1@yandex.ru

The article investigates the manipulative potential of the speech concepts of Russian political discourse. The topicality of this study is determined by the need to identify the intensity of the manipulative influence in political communication, ways of speech manipulation by the consciousness of society, which can contribute to a critical approach to political statements in the media. Pre-election slogans of the Russian, Ukrainian, Belarusian, American political discourse are the object of this paper. An effective way to influence is the reliance on basic human needs: physiological, emotional, social. Reliance on the leading motives enhances the credibility and effectiveness of political text. The leading motives form hierarchy of needs and values. Support on the basic needs of the people in speech allows to control its consciousness, emotions, behavior and aims; is embodied the management of attitude of the person to the candidate or party. Especially effective thing is the manipulation of needs reflected in political slogans. The predominant needs expressed in the political texts are physiological needs, the need for self-preservation, the need for love, the need for respect, the need for self-affirmation.

As the process of development and establishment of a scientific paradigm that is described by the cognitive approach and formed of transition towards a deep knowledge and stud of objective-cognitive activity, processes of perception and thinking that are represented in our mind takes place nowadays, ideas and concepts of oral manipulating in modern cognitive science are described by new setting-cognitive principles that are typical for the cognitive direction.

Basic concepts of the essence of manipulation in politic communication, its fundamental ideas in cognitive science are studied in works of a number of Russian and foreign scientists (N.D. Arutyunova, V.N. Bazylev, A.N. Baranov, Y.N. Karaulov, E. Kassirer, E.S. Kubrjakova, A.P. Chudinov, E. Bern, P. Bourdieu, I.L. Derkacheva, E.L. Dotsenko, S. Kara-Murza, D. Myers, P. Ekman, R. Bart, K.H. Kalandarov, E.I. Chubukova, and others).

Urgency of the topic of this research is defined by a necessity to set a level of suggestive influence in a politic discussion, determine means and methods or oral influence upon the mind of language speakers that will allow politically-active citizens to define motives of political acts and form a critical approach towards political claims in mass media.

Claims of Russian politicians and pre-election slogans of Russian, Ukrainian, Belorussian, American political discourse served as an object of the research.

The subject of the research is forming a mechanism of manipulative model within political narrative through the hierarchy of needs.

Texts of political discourse served as materials of the research. During the work more than 500 manipulative concepts located in more than 200 texts have been analysed. The studied texts bear a propagandistic nature as they are characterized by an influencing direction that consists of forming a definite level of perception of information among their audience.

The objective of studying methods of influencing a recipient in political texts is to analyse a suggestive potential of political communication.

To study a level of influencing direction of a political discourse we have facilitated the descriptive-analytical method and its means: observation, interpretation, classification. As suggestion we see a process of influencing a recipient's mind, his feelings, and will that is linked to a decrease in conscious analyticity and criticality under the impact of the received information [4, p. 218]. «The objective of a democratic society is to provide an opportunity for all its members to form a readiness to act on purpose. Within the environment of the same language, readiness for such a powerful sensual perception depends on the influence of literature upon a certain social group and a certain person» [1, p. 95]. The same can be said regarding an impact of any text generally, as every text contains an informative and an influential component. In the language of politics, the method of playing motives is the most widespread method of achieving a manipulative effect.

This method consists of an implacability of psychological influence upon a recipient via activation of his basic needs. Applying to inner motives of people's acts allows one to control mind, feelings, behavior reactions, and life settings of a speaker/listener, defines a person's attitude towards a presented candidate of a party. Authors of political texts determine basic needs of a person, and with these needs an influence upon their electorate becomes the most efficient. In this case, an implied conclusion of the manipulation is a selection of a corresponding party or a candidate for a political position. Generally, application to basic motives to act consists of the structure that has

been introduced by A.N. Leontiyev [2, p. 273]: Need – Motive – Acts – Result. Realization of an unsatisfied need forms a motive that defines a direction of acts, aimed to achieve a suggested result. In other words, a motive serves as a stimulus to carry out certain actions through realizing needs.

In a great variety of motives of acts an author of a political text basically applies to only one of them that proves to be the most influential in a certain context. A manipulator's objective is that «in case of cognitive dissonance a person should select … a suggested solution» [5, p. 37].

The process of influence upon the electorate mind obtains its greatest efficiency if the a message points to dissatisfaction of a certain need in order to encourage it to act. Therefore, in orders set a sensual motive of a political act, a copyrighter of political texts should orient fluently in the hierarchy of needs and values.

Resting upon the hierarchy of needs, introduced by A. Maslow [3, p. 111], we will study how this tactic is realized in political texts:

Physiological needs (hunger, thirst). Their most important feature is that in case one of them is unsatisfied, it becomes prior, and the whole activity of a person is submitted to it. For example: «*Do not dream. They don't share. By all means, come to the election and vote for any party, but not for the* «*Unite Russia*». – the slogan of the opposition before the election for the State Duma of 2011 is supplied with a place with red caviar on it and a bear paw print the caviar (the bear is symbol of the «Unite Russia»). Applying to the fear of hunger served as a basis of pre-election anti-slogan at the background of portrait of G. Zyuganov: «*Buy your food for the last time!*» – slogan of democrats in the presidential campaign of 1996.

Need for self-preservation (meaning health, physical and economic safety). Primarily this need is actualized in political texts of pre-election campaigns. For example, in certain cases representatives of the state tend to dissociate with campaigns ad products that use official ideology of campaigns and products: «*The first vice-premier Sergey Ivanov has advised citizens of Russia not to trust commercials with the word «nana». As S. Ivanov has reported at the meeting of governmental council of nanotechnologies, recently, advertising products with usage of the word «nano» had started on television: anti-corrosion materials called «nanozinc», perfumery product «nanocream». According to the first vice-premier, «cunning merchants and advertisers have took the popular word into operation and, in fact, started to fool citizens*» (Rus Business Consulting, 18.12.2007); opponents of president V. Putin play with an occasional origin of his second

name that is similar to the verb «*drown*» (potonut'), claiming that the country goes to the bottom with V. Putin: «*What has happened to Russia? It has drowned*». «*Leaders of orange lepra*». (With the manes of Nemtsov, Kasparov, Navalniy, Sobchak) – the slogan warns people that the listed political activists are not to be trusted as they are linked to ambiguous reformations in Ukraine. «*A big country votes. For life, for people. Participation in the election is your chance to influence the country's policy. Come and vote!*» – Slogans of the Central election commission of the election of deputies of the State Duma of Russian Federation of December 4th 2011 that underline the necessity of an independent election of political representatives for preservation of life foundations.

Need for love (including affection towards someone, spiritual closeness, self-identification with someone) is displayed only in case the first two levels of needs are satisfied (as well as the following ones). It is usually realized in political advertisement as pictures of happy spouses, children, whose prosperity is determined by their choice. Voting for a candidate who is announced in such political advertisement, a person tends to receive same emotions, be confine about his future. A man projects this picture on himself and wants to be happy and prosperous, etc. Usually, a picture is supplied with the corresponding slogans. For example, the slogan of the march of millions in May 2012 claimed: «*Putin loves everyone!*»; «*A happy man – a happy country*», – claim patriots of Russia.

Need for respect (realized in the sense of own dignity, prestige, social approval). It is majorly displayed in need for a high self-estimation that includes confidence of one's own powers, independence, professional mastership and success, sufficient life level (sense of inside, sense of one' own self) or need for a high reputation, professional prestige, a good name (sense of outside, from the position of social surroundings). For example: «*Together we are Belarus! A state for the people. Belarus is the country where one wants to live!*» – pre-election slogans of A. Lukashenko, candidate for the president of Belarus, modern president, 2010. «*Strong Belarus is for free people. The time has come to give Belarus back to the people!*» – pre-election slogans of A. Sannikov, candidate for the president of Belarus, coordinator of the civil campaign «European Belarus». The need for respect in slogans of V. Zhirinovskiy and LDPR is expressed through appellation to national self-consciousness: «*For Russia! For the Russian! For LDPR! Together with Russian nation! With the nation of right! God is with us!*» The need for respect is also reflected in beliefs into the

significance of each voter in pre-election slogans of Barak Obama: *«**The power of one voice.** If one voice can change A ROOM than it can change A CITY. If it can change a city than it can change A STATE. If it can change a state than it can change A NATION. If it can change a nation than it can change THE WORLD».*

The need for self-assertion (displays in self-realization, self-expression, creation of one's own, unique image, style). For example, within a speech in 2012 V. Putin underlines: *«It is extremely important for us to define the right priorities, efficiently enable factors that will provide for a stable innovative growth in a long-term perspective, increase competitiveness of Russia»;* in his pre-election speech of 2008 D. Medvedev claims: *«Our objective is organize not several large enterprises in Russia – that would not be an ambitious objective, but a complete community – nanotechnological sector. All business directions should be represented in it – private and state enterprises, up to transnational companies».* In their speeches Political leaders underline the significance of political actions, promising an efficient and fruitful development of a state. *«A great leader to the great country! A worthy future to the great country!»* Pre-election slogan of Vladimir Putin of 2012 expresses the need to confirm a uniqueness of his political program. An urge for self-assertion is expressed in promise to close up with European states in slogans of V. Yuschenko at the elections of 2010 *«For the European choice! For prosperous Ukraine! Let Ulkaine be!»*

Conclusion

Thus, political texts, especially political advertisement always consider basic human needs that are applied to by politicians. An author of a political text tends to outline basic needs of a recipient that exist in mind of the majority, and forms a new one. Then he suggests one of the possible means of satisfying this need that will be linked to buying an advertised product. The nature of this tactic is actualizing a need and putting one sensual motive of choice and further presentation of it within a certain advertising text.

References

1. Kotljarova T.J. Axiological and typological aspects of the concept of «artistic text» / Bulletin Kostanai State Pedagogical Institute. – 2008. – nn.1. – P. 91–96.

2. Leontiev A.A. Psychology of Communication. – 2nd ed., – M.: The meaning, 1997. – 365 p.

3. Maslow A. Motivation and Personality. – M.: Peter, 2011. – 352 p.

4. Sirivlya M.A. Newspaper perifrastika: facts and the first explanation: Monograph. – Kostanay: Kostanai CSU, 2010. – 220 p.

5. Shostak M.I. The effect of suggestion // Reporter: professionalism and ethics. – M.: RIP-holding, 2003. – P. 50–75.

THE MINE CONTRACTILE MELTING MATERIAL BALANCE: THE SILICON DIOXIDE CONTENT ANALYSIS IN SLAGS

Dosmukhamedov N.K.

The Kazakh National Technical University after K.I. Satpaev, Almaty, e-mail: nurdos@bk.ru.

The silicon dioxide content in the initial furnace charge and slags, on the basis of the developed element material balance of mine contractile melting calculation has been analyzed in this paper. It has also been shown, that at the furnace charge preparation, it is necessary to be taken into account the silicon dioxide content, having brought up with all the components of the furnace charge. It has been established, that the structure representation of the furnace charge contractile melting (CM), as the single component within the total initial furnace charge composition is presented not correct. At the calculation of the process material balance, it is necessary to be withdrawn the copper – zinc ore and the quartz gumboil flux from the furnace charge composition (CM) and to be presented them to the separate component in the general furnace charge composition.

For the lead enterprises, the industrial products, recycled materials, and slags, which are characterized by the high level content of the heavy non – ferrous and other valuable components, their growth is caused the particular troubling [1]. The active measures are taken on the further processing them, for the additional extraction the non – ferrous metals from them at a number of the enterprises of the lead industry. Thus, at the Ust – Kamenogorsk Metallurgical Complex (UK MC) SPL «Kazzinc», the processing of almost all the industrial products and the recycled materials is carried out in the process of the mine contractile melting, which «has been squeezed» in the main technological process flow.

The initial furnace charge of the melting is presented itself the complex conglomerate mixture, having consisted of the various industrial products and the recycled materials, each of which, along with the non – ferrous metals, is concentrated, in itself, the high level content of the harmful substances. The main objective of the process – is the recovery non – ferrous metals in the target products: copper – in the matte, and the lead – in the lead bullion. It is quite obvious, that at such furnace charge processing, to be achieved the high performance of the technological indicators is impossible, as it is evidenced by the process indicator (e.g. the practice data). The copper extraction in the matte is made up only 83 %, and the lead – barely is reached up to the level 60 %. The low lead extraction is, due to its large losses with the matte. Then, the obtained mattes in the processing process are characterized by the high level of the lead, arsenic, and antimony content, which are reached up to 25, 4 and 1 %, respectively. The dust content of the obtained gases is in two times higher, than the analogous indicator of the agglomerating firing. The dust, having obtained at the melting, is characterized by the high level content of the non – ferrous metals, %: Pb – 20; Cu – 6–7; Zn – up to 10. The process is characterized by the consider-able and significant yield of the impurities and the slags (e.g. up to 50 % by the weight of the loaded furnace charge).

The low technological and economical performance of the process indicators are showed the fact, that the decision has been taken in the production of the industrial products, recycled materials and impurities and slags is not sufficiently efficient, from the point of view, of the very essence, and it is required, either its further improvement, or its making the other one, the more optimal solution.

The whole range of the challenges, concerning the technological essence of the process, is ultimately expressed in the expanded, element – wise material balance of the process, in which all the initially raw materials and the obtained products of the melting must be presented. It is quite impossible to be made the reasoned balance of the non – ferrous metals, and to be analyzed the impact of the various factors the technological parameters of the process, without the development and the production of the expanded balance sheet, having traced all the base metals behavior, including the iron, slag – forming and sulphur.

From the theory and practice of the mine melting copper – bearing lead raw material it is well – known, that one of the main factors, having determined the non – ferrous metals transition (e.g. the copper, lead) in the impurities and slags, are their contain in the matte, they are contained in the matte, the silicon dioxide content in the matte, the matte metallization, and the temperature. However, the assessment conduction of the indicated factors of the impact on the performance of the technological parameters of the process is associated with the considerable difficulties. They are determined, first of all, by the lack of the factory data. Thus, the analytical determination of the matte metallization virtually is not determined at the UK MC SPL «Kazzinc». The measurements of the temperature of the slag bath furnace are produced rare, it is periodically determined only

in the production of the slag from the furnace. In the removable slag analyses, the copper content is not determined; it is usually analyzed considerably much less frequently.

The melting conducting temperature of any pyro-metallurgical process is determined by the slag composition, which is set to be loaded by the required amount of the quartz gumboil flux. On the other hand, the flow of the quartz gumboil flux is largely depended on the overall yield of the slag at the melting. This challenge is of the fundamental significance for the process of the mine contractile melting, where the silicon dioxide content in the initial furnace charge and the slags is largely determined the final technological parameters of the process.

The aim of the present work – is the analysis conducting of the silicon dioxide content in the initial furnace charge and the slags, on the basis of the large – scale building of the material balance of the mine contractile melting process.

Materials and methods of research

The challenge solution has been carried out, on the basis of the statistical analysis of the industry data on the composition of the initial furnace charge and the resulting melting products – matte, slag and dust. On the analysis the results have already been adopted, having obtained during the initial furnace charge processing of the constant composition.

The average chemical compositions of the initial furnace charge components and the mine contractile melting products, having produced at the SPL «Kazzinc», have been given in the Table 1.

Table 1

The Composition of the Initial Furnace Charge and Resulting Products of the Mine Contractile Melting Process

The Title	The Chemical composition, % mass.								
	Cu	Pb	Zn	Fe	S	SiO_2	CaO	As	Sb
Initial furnace charge:									
Copper slips	10–20	40–60	4–7	4–7	1–2	2–4	1–3	4,0	ut 2,5
Converter slag	3–5	ut 34	ut 4,5	10–15		15–18		2–2,5	ut 2,0
CM furnace charge:									
– alkaline melts	0,02	ut 25	9–11	–		–		0,2–0,4	0,4–0,6
– poor mattes of mine reduction smelting	10–18	15–20	10–12	15–20	7–9	–	2–4	ut 1,5	ut 1,0
– fluxing ore				2–4*		60–75			
– copper – zinc ore	2–4	0,37	3–4	20–26	28–32	12–17	9–15		
Furnace charge of average composition	**8–10**	**25–40**	**4–6**	**7–10**	**5–8**	**7–10**		**1,17**	**0,57**
The melting products:									
– matte mine of contractile melting	16–35	18–30	3–8	12–24	18–22	–		ut 4,5	ut 1,8
– zinc – bearing slags	≤0,8	≤ 1,7	8–12*	24–33*		24–28	18–22	ut 1,0	0,2–0,3
– lead bullion	2–5	92–95						≤ 1,0	0,9–1,3
– dust	3–7	7–9	4–7					8–10	2–4

N o t e . * the metal oxides.

The carried out researches methodology has been come to be analyzed the initial furnace charge composition structure and its optimization, by means of the expanded material balance conducting of the process. At the making calculations, the results of the mineralogical studies on the modes of occurrence of the metals in the initial and final products of the mine contractile melting have been taken into account [2, 3].

The initial furnace charge of the mine contractile melting structure in practice is presented, in the form of the Fig. 1 – as the sum of the converter slag, copper slips and furnace charge contractile melting (CM).

At the making calculations, the products compositions, having presented by the chemical analysis results of the factory practice, have been used. At the mass balance calculating, the average composition of the initial furnace charge, having adopted in practice, which was contained, %: 12,1 Cu; 30,25 Pb; 4,83 Zn; 9,5 Fe; 2,51 As; 0,78 Sb; 8,0 S; 10,5 SiO_2; 7,31 CaO, had been accepted.

The copper – zinc ore composition has been the following, %: 2,4 Cu; 3,7 Zn; 26,6 Fe; 31,2 S; 15,5 SiO_2; 14 CaO. The quartz gumboil flux composition, %: 71,8 SiO_2, 3,0 Fe; 3,6 CaO.

During the period under review, the number of converter slag and copper slips, having entered into the furnace charge composition, had not been changed, and was remained constant.

The Order of Calculations and Discussion of Results

The adopted approach to the CM furnace charge composition (Fig. 1) is presented very simplified, and it is not quite correct. The CM

furnace charge structure is much more complex, and it is presented the mixture, having consisted of the poor copper – lead mattes, produced after the mine smelting reduction of the agglomerate, copper – zinc and fluxing ore, and also the small amount of the alkaline melts, cakes and other recycled materials of the lead production. The composition presentation of such complex mixture conglomerate in the general initial furnace charge of the single component, in the form of CM furnace charge, is greatly complicated the expanded element material balance conduction.
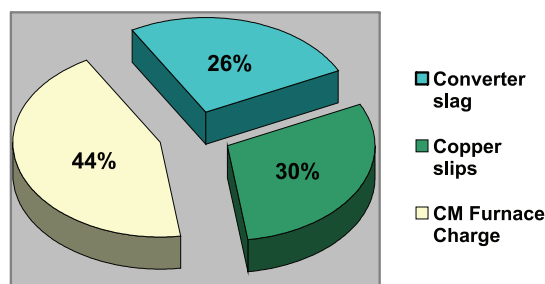

Fig. 1. The Composition Structure of the Initial Furnace Charge of Mine Contractile Melting

At the average composition of the initial furnace charge calculation, along with amount of the silicon dioxide, having introduced with the quartz gumboil flux, it is necessary to be accounted also the silicon dioxide amount, which is introduced with the other constituents of the furnace charge (e.g. the converter slag, copper – lead mattes, copper – zinc ore, etc.). The initial furnace charge structure presentation, in the form of fig. 1, does not allow such assessment conduction.

We, moreover, note that in the earlier works, having conducted by us, the material balance of the mine contractile melting has already been carried out. The calculations provided have been concerned to the balances refining of the non – ferrous metals, arsenic, and antimony and the study of their distribution among the initial furnace components and the melting products. So, the material balanced have been borne the selective character, and they have been served exclusively only for the prognostic assessment of the copper and lead distribution among the melting products.

The data on the non – ferrous finding forms and their quantitative relations in the components of the initial furnace charge and the melting products, as well as the data on the element composition of the initial furnace charge and the melting products have been used in the work for the expanded material balance calculation of the process.

Thus, the material balance of the mine contractile melting, having calculated with due regard for the compositions and outputs of the initial and resulting melts products (e.g. the factory practice data), has been presented in the Table 2.

**The Material Balance
of Mine Contractile Melting Process**

The results obtained on the melts products yield and the non – ferrous metals distribution have been commented in details in the papers [2–5], so that the further analysis and discussion of the results, having presented by the material balance is, mainly, devoted to the silicon dioxide content in the initial furnace charge and slag.

So, it is easy to be seen, that the slag yield is made up 36 tons, with the total discrepancy, which is equal to – 9,47 t.

The non -ferrous metals and the iron number recalculation in the slags on their oxides (with due regard for the forms of their presence in the slags), and taken into account the aluminum oxide content in the final slags (e.g. the chemical analysis data of the industrial slags), is allowed to be adjusted the value of the residual balance up to 6,39 t.

In result of the made calculations, it has been revealed, that the silicon dioxide quantity, having bound in the form of the chemical compounds (e.g. silicates, ferrites) is made up 8,2 t. from its total quantity in the slag (e.g. 9,8 t). Consequently, 1,6 t. of the silicon dioxide in the slag is in the free form, and it is not taken its participation in the slag – making process. If we take the value of the residual balance (e.g. 6,39 t) for the uncountable free silicon dioxide, in the slag we will get total 16,2 t silicon dioxide, from which ~8 t s in the free form.

This is indicated the fact, that there is the significant cost overruns of the quarts gumboil flux in the process of the mine contractile melting. Then, as it is seen from the material balance, the amount of the charge supplied from

the source of the initial furnace charge of the silicon dioxide, which is equal to 10,5 t, it is much lower than its amount in the slag. The resulting divergence is the indication something is wrong with the balance with the silicon dioxide, and it is requires its clarification.

The Material Balance of Mine Contractile Melting Process

Title		Cu	Pb	Zn	Fe	As	Sb	S	SiO$_2$	CaO	Rest	Total:
Charged:												
Averaged comp. of furnace charge	Quantity, tons	12,1	30,25	4,83	9,5	2,51	0,78	8,0	10,5	7,31	14,22	100
Resulted:												
Lead bullion	I	0,73	20,8			0,13	0,2	0,06				22,0
	II	5,2	94,6			0,6	0,92	0,3				
	III	6,0	68,8			5,2	25,6	1,6				
Matte	I	10,24	7,8	1,02	4,2	0,63	0,11	4,3	0,54	-	1,16	30,0
	II	34,1	25,9	3,4	14,0	2,1	0,37	14,3	1,8			
	III	84,6	25,8	21,1	44,2	25,1	14,1	53,8	5,1			
Slag	I	0,2	0,64	2,81	5,1	0,07	0,04	0,72	9,8	7,15	9,47	36,0
	II	0,47	1,79	7,8	14,2	0,2	0,1	2,2	27,2	19,9		
	III	1,6	2,1	58,2	53,7	2,8	5,1	9,0	93,4	97,8		
Dust	I	0,93	1,01	0,8	0,2	1,68	0,43	3,04	0,16	0,16	3,59	12
	II	7,75	8,4	6,7	1,56	14,0	3,6	25,3	1,34	1,34		
	III	7,8	3,3	16,7	2,1	66,9	55,1	35,6	1,5	2,2		
Total:	Quantity, tons	12,1	30,25	4,83	9,5	2,51	0,78	8,0	10,5	7,31	14,22	100

N o t e s : I – ---I – Quantity, tons; II – composition, %; III – distribution, %.

On the basis of the factory practice data, the number to be added to the initial furnace charge of the quartz gumboil flux and the copper – zinc ore have been identified by their share in their total furnace charge, having allowed to be carried out for more detailed calculation on the silicon dioxide distribution among the melting products. At the carried out further calculations, we have already adopted the corrected composition of the initial furnace charge, which is presented in Fig. 2.
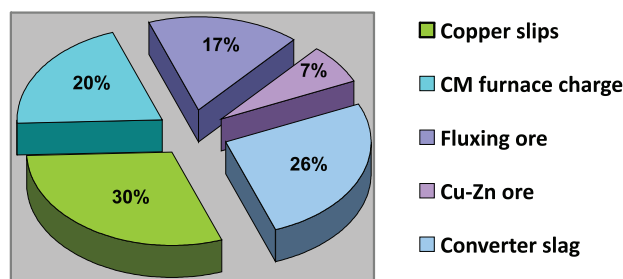
Fig. 2. The Structure of Initial Furnace Charge of Mine Contractile Melting

In the light of the presented structure, the calculated amount of the silicon dioxide, having come from the initial furnace charge in the process, is made up 17,7 t.

This value is agreed well with the calculated total amount of the silicon dioxide in the slag, having calculated by the results of the material balance of the factory practice (e,g. 16,2 t). This is proved the correctness of the assumptions, put forward by us on the free silicon dioxide presence in the slag. Having taken into account, that the necessary amount of the silicon dioxide, involved in the melting process, is made up only 8,2 t, it is easy to be

calculated, for our case, the amount of the free silicon dioxide in the slake – is 9,5 t.

The amount of the silicon dioxide, having come with the quartz gumboil flux, is made up 12,1 t. Consequently, in the composition of the initial furnace charge, it can be significantly reduced the proportion of the quartz gumboil flux. According to the calculations, with the quartz gumboil flux, it is necessary to be added only 2,6 t,. silicon dioxide or at the recalculation for the quartz gumboil flux – about 4 t gumboil flux. Having observed in practice, the significant cost overruns quartz gumboil flux (e.g. 13 t.) certainly is increased the yield of the final slag, and it is increased the energy consumption in the oven. The established optimal flow rate of the quartz gumboil flux will be allowed to be reduced the slag yield for 25 % and it will be considerably improved the technological parameters of the whole process.

References

1. Dosmukhamedov N.K. The Processing of Industrial Products, Recycled Materials and Slags. – «Industry of Kazakhstan». – 2006. – № 8. – P. 38–41.

2. Dosmukhamedov N.K. On the Theory and Practice of Recycling Industrial Products and Recycling Materials of the Lead Production // The Proceedings of the International Conference «The Future Developments of Science and Technology». – The Prague, 2009. – November, 7–15. – P. 3–18.

3. Dosmukhamedov N.K. The Investigation of Copper and Related Metals Behavior at Processing of Copper-Bearing Lead Raw Materials // The Non-Ferrous Metals. – 2006. – № 3. – P. 30–33.

4. Dosmukhamedov N.K., Baiysbekov Sh.B., Kalmykambekov A.O. Furnace Charge Composition Influence on Copper, Lead and Impurities Distribution at the Mine Contractile Melting // The KazNTU Bulletin after K.I. Satpaev. – 2006. – № 2(52). – P. 70–74.

5. Dosmukhamedov N.K., Dauletbekov T.S., Satimova E.G. The Quantitative Analysis of Copper, Lead and Arsenic in the Products of the Mine Contractile Melting // The Proceedings of the 1-st International Conference «The Scientific Progress on the Millenniums». – The Prague, 2010. – P. 54–58.

LOWER THE ECONOMIC LOSSES IN ELECTRIC NETWORKS

Semenov A.S.

North-Eastern Federal University named after M.K. Ammosov, pulpit of Electrification and automatization mining industry, Mirny, Sakha, e-mail: sash-alex@yandex.ru

This article is dedicated to the reduction of economic (commercial) losses in electric networks, which may occur when power accounting system errors, failures of meters and measuring current and voltage transformers, billing retailing companies because of inaccurate data about subscribers, errors in determining the calculated (sealers) coefficients measuring complex fielding errors in the payment accounts, the demand for payment, payment due by the due date or the long term and bad debts and unpaid bills, electricity theft.

In the face of rising energy intensity of the national economy and strengthen state energy policy becomes important reduction in the so-called commercial losses in electric networks, which are one of the most significant energy saving potentials.

One of the most powerful components of the commercial losses of electricity theft are acquiring in recent years rampant. The largest number of thefts and kidnaps the largest volumes of electricity takes place in the domestic sector. The reasons for this are, on the one hand, the constant increase in electricity tariffs, while increasing the volume of consumption and reduced ability to pay, and on the other hand – the relative affordability and ease of implementation of a particular method of theft of electricity, inadequate design of metering devices, the primary and secondary circuits their switching, poor technical condition of current transformers (CTs) and voltage transformers (VTs), the lack of a legal framework to prosecute thieves electricity and so on. Curb the rise in electricity prices in the near future for a number of objective reasons not possible. Because of the structure of domestic electricity consumers can not affect the cost of electricity or the wholesale or the retail markets. In this case, due to the decline in industrial production has increased (in percentage terms) the share of electricity consumption in the domestic and small sectors.

A significant increase in power consumption in the residential sector causes significant congestion in the supply of district lines and transformer stations, which, in turn, contributes to (or threat of) accidents in electrical and fraught with undesirable consequences (fire, electric shock and etc.). When electricity theft is not considered part of the power that results in exceeding the maximum permissible load and, consequently, to network overload and disable automatic safety features consumers.

Many industrial enterprises also cannot cope with the increase in tariffs and moving into the category of non-payers, and some of them get in the way of electricity theft. Thus, there are massive defaults energy supply organizations from both the public and from the industrial sector. With this guide power supply companies generally believe that electricity prices in the domestic sector are too low (favorable). In this connection no longer any doubt as to further increase in electricity tariffs, which will cause a corresponding increase in its theft.

At present, there was another significant factor that encourages electricity consumers voluntarily connect to the grid without the permission of joining power and, therefore, without issuing the contract for technological connection to electric networks and energy supply contract: a significant increase in the amount of payment for the connection of power.

In accordance with the Federal Law on electricity for connection to the grid fee is charged only once. The amount of this fee is set by the federal executive authority. In this case, the inclusion of the service fee for the transfer of electrical energy is not allowed. Recently, the fee for connection to electric power grids supplying organizations has increased dramatically. Obviously, not every consumer of electricity in a position to pay a huge sum, and we can only guess what their number has to be connected to the grid illegally without the permission of the power supplier for connection to electric without signing her contract for technological connection and contract supply. Continuous growth in electricity tariffs leads to a decrease in the effectiveness of energy conservation measures, increasing the number of defaulters to the mass theft of electricity.

There is a downside to the problem: the growth of the scale theft of electricity, in turn, affects the increase of tariffs. In this method of theft of electricity is constantly being improved. As they appear to identify new and more sophisticated and covert ways are often not amenable to detection and prevention. The problem of reducing commercial losses became so important, that was under the control of the Government of the Russian Federation, who has commissioned the Ministry of Industry and

Energy of the Russian Federation in the three months to develop and approve the method for determining the normative and actual losses in electric networks. Loss ratios should be established by the authorized federal executive body in accordance with this procedure.

According to these recommendations Methodical loss calculations and optimization of electrical networks should be carried out using appropriate software systems. A special section is devoted to activities to reduce energy losses. The Concept strategy of RAO «EES of Russia» for 2008–2013 «5 + 5» states that the main measures to reduce commercial losses are:

– timely audit work [1];
– control checks of end users;
– improvement of commercial and process accounting on the basis of automated control systems, accounting and control of a power and automated process control of a power;
– automation and the introduction of information technology.

In applying the principles of accounting systems lies the need to identify commercial losses of electricity, and the development and monitoring of the balance of power and the power of individual nodes of electrical networks. How to reduce commercial losses of electricity are actively engaged professionals in the field. Based on the results of these studies have identified the following components of commercial losses [2]:

– loss due to system error of electricity due to an accuracy of measuring instruments and complex unspecified, conditions of work, defects metering and measurement of current and potential;
– loss billing retailing companies because of inaccurate data about subscribers, errors in determining the settlement (of counting) of the coefficients measuring complex fielding errors in the payment of accounts;
– loss in reclaiming payment, due to the payment by the due date or the long term and bad debts and unpaid bills. The presence of an unacceptably high number of defaulters was

for power sales organizations are already commonplace;

– loss due to theft of electricity.

The share of the latter component – the theft of electricity – enough high commercial losses. Favorable conditions for the theft of electricity created by the following factors: lack of proper state controlled a commercial supply of electricity, the constant increase in electricity tariffs, availability and ease of technical implementation methods of theft of electricity (installation of switchgear front of metered electricity, the possibility of deliberate understatement of the calculated active power losses in the Installation of commercial meter on the side of low voltage transformers subscriber, access to the schemes of primary and secondary wiring of meters, etc.). It should be another negative factor: the unauthorized load is connected to the grid reduces the level of stress and other factors can degrade the quality of electric power. This leads to an additional loss associated with a reduction in equipment performance, deterioration in the quality of products, marriage, and in some cases – to the failure of some instruments that are sensitive to power quality deviations from the standardized values.

In addition, the theft of electricity saving and distort the statistics leads to increased imbalance between generated and supplied electricity. At present, an increasing number of power supply companies faced with significant imbalances in excess of the allowable values. Calculate, analyze and compare with the actual imbalance tolerance contribute to real quantifiable business losses in electric networks and allow you to control the reliability of electricity in all parts of the electricity system. All components of the balance sheet, except for energy losses in power transformers, meters shall be measured in the design and technical accounting.

In accordance with the standard instructions for electricity metering in energy production, transmission and distribution of the value of the actual imbalance in power networks should be determined by the formula [3]:

$$NB_F = \frac{W_P - W_O - W_{ON} - W_{HN} - W_{IU} - \Delta W_{TR}}{W_P} \cdot 100\%,$$

where W_P – the delivery of electric power substation on the bus; W_Q – supply of electricity; W_{ON} – consumption of electricity for their own needs; W_{HN} – consumption of electricity for household needs substation; W_{IU} – consumption of electricity for industrial use; W_{TR} – the loss of electricity in power transformers substation.

For additional unreported growth imbalance causes an increase in the actual component W_O in the formula due to theft of elec-

tricity deliveries, and reporting data on energy saving in these cases are too low, respectively, the share of unrecorded commercial losses. Determining the actual unbalance regional electricity power grids of electrical networks in general possible if the calculated technical losses in networks of all voltage classes, including network and 0,4 kV.

In accordance with the requirements of these types of instruction value of the actual

imbalance must not exceed the permissible unbalance NB_D ($NB_F \leq NB_D$), is determined using the following formula:

$$NB_D = \pm\sqrt{\sum_{i=1}^{m} \delta_{pi}^2 \cdot d_{oi}^2 + \frac{\delta_{p3}^2}{n_3} \cdot d_3^2 + \frac{\delta_{p1}^2}{n_1} \cdot d_1^2},$$

where m – total number of metering points, securing the largest inflow and out flow of electricity to large consumers of electricity separately; δ_{pi} – accuracy of measuring complex terms of electricity; d_{oi} – the share of electricity accounted point calculation; δ_{p3} – accuracy of measuring complex three-phase consumers (below 750 kV·A)); δ_{p1} – accuracy of measuring complex single-phase consumer; n_3 – the number of metering points three-phase loads (other than those recorded in m), for which the total energy of the relative permit d_3; n_1 – the number of metering points of single-phase consumers (except recorded in number), for which the total energy is a relative pass d_1.

If there is no methodology for assessing the economic impact of electricity theft, which is not possible to develop because of the lack of complete and reliable statistics on the facts of her theft, there is no reliable basis for even a rough estimate of actual damages from theft of electric energy a qualitative analysis alone, even a significant number of cases of theft of electricity (which is unknown until now and is unlikely to be known exactly and in the future), for the solution of the problem, of course, is not enough [4].

References

1. Bilyukin P.V., Kuznetsov N.M. Energy audit and energy efficiency / XL Science week STU // Proceedings of the international scientific and practical conference. Part XXI. – St. Petersburg.: Publishing house of the polytechnic university press, 2011. – 74 p.

2. Kozhevnikov A.V., Kornenko S.M., Makarov V.S., Ryzhkov V.G. Express – assessment of energy saving potential municipality (region) // Energy security and energy efficiency. – 2011. – № 4. – P. 9–15.

3. Kuznetsov N.M. Energy consumption and conservation in Northwest Russia // In.: Schools of the Moscow state mining university: In 2. – M.: Publishing house Moscow state mining university, 2008. – Vol. 2. – P. 428–432.

4. Kuznetsov N.M., Bebikhov Yu.V., Samsonov A.V., Egorov A.N., Semenov A.S. Quality of electric energy mining industry: monograph. – M.: Publishing house of the Russian academy of natural sciences, 2012. – 68 p.

Materials of Conferences

ABOUT THE PROJECT THE COMPUTER MODELLING OF VORTEX SHAFT OUTLET

Belgibayev B.A., Bukessova A.M.

Scientific-Research Institute of Mathematics and Mechanics of the Kazakh National University named after Al-Farabi, Almaty, e-mail: aidabam@mail.ru

The report presents the stages of development of a computer system for monitoring the technical condition of the sluices with enhanced three-dimensional visualization of the actual and estimated flow patterns the data for which was obtained using 3D laser scanner and deterministic simulation based on the equations of the Rossby.

Analysis of the literature and patent research shows that at the present stage of development of hydraulic engineering there are no counterparts to vortex shaft outletof the Medey mud dam.

The reference scheme of key parameters of the Medey dam vortex shaft outlet designed by Kazakhstan's scientific school of hydraulics enables to improve them greatly and set the stage for the creation at the present stage of development of computer tomographyof innovative software products like hydraulic engineering design of hydraulic structures.

It is known that the flow of water in the vortex shaft outlet can be described by the Navier-Stokes equations. These equations are non-linear, two-phase flow (water + stones), the complexity of the boundary conditions for the pressure on the concrete walls of the shaft associated with the occurrence of the effect of «cavitation» lead to the mathematical problems of computational modeling of the flow on the inner surface of the shaft, which requires advanced search approaches to solving these problems.

The known experimental data allows to create a semi-empirical mathematical models based on the search for self-similarity in the vortex shaft outlet flow, taking into account the surface roughness of the shaft, turbulence, hydraulic effects due to the unique construction of the dam vortex shaft outlet swirlers Medey [1].

The further development of the theoretical foundations of technical hydrodynamics of vortex shaft outlet and the creation of innovative software products and calculate the control parameters in the vortex shaft outlet is an important task of modern technical hydrodynamics [2].

Medey mudflow dam originally had 90-meter high ridge, the capacity of the mudflow storage reservoir was 6 million cubic meters, however, as shown, the mudslide in 1973 had a volume of about 5 million cubic meters, and because the water in-takes of dam vortex shaft outlet were blocked by the mud at critical moments of the disaster, the reservoir started to overflow so that there were only five meters left to the crest of the dam. Emergency vortex shaft outlet of the first line of the dam are on the left side of the dam, the total length of the tunnel is 540 meters from the cross-sectional area of 16 square meters, inlet tunnel are of square section, vertical vortex shaft outlet is of a cylindrical shape with a diameter of 3,5 meters.

Tangential swirl have a unique design developed and experimentally investigated by S.M. Slisskiy and T.H. Akhmetov [3]. The capacity of the vortex shaft outlet is 30 cubic meters per second.

After the catastrophic mudslide in 1973 there were redundant facilities constructed in the second line of the dam vortex shaft outlet having the total length of the tunnel of 460 meters, the sectional area of inlet tunnel, the diameter of the shaft and vane selected similarly to the first line.The feature of the second line is the water intakes which are constructed from the bottom to the crest of mudflow dam.

Currently the Medey mud dam is reliable shield of the city of Almaty against formidable forces of nature, the capacity of mudflow storage reservoir is 12,6 million cubic meters as well as the seismic resistance of up to 10 on the Richter scale (Fig. 1).

It should be noted that all the experimental data obtained in the laboratory by the personnel of hydraulic structures of Kazakh Energy Research Institute led by Professor T.K. Akhmetov, were collected using Plexiglas models of all sizes, working on a «clean» water.

The left vortex shaft outlet runs in performance mode with a difference of 20 meters for the passage of the flow of the river Small Almaty, the construction can described as reliable and normally operated for nearly 40 years of operation. After the commissioning of the Medey dam vortex shaft outlet no hydraulic studies of facilities and modes of flow in the shaft were performed.

Considering the relevance and practical utility of monitoring the Medey dam vortex shaft outlet, there was organized a research team on the basis of Research Institute of Mathematics and Mechanics of the Al-Farabi Kazakh National University to carry out the funded research project «Computer modeling of the vortex shaft outlet» (162/SF grant of Ministry of Environmental Protection for 2013-2015), which requires to create adequate mathematical and computer models of the operating modes of the dam vortex shaft outlet Medey based on 3D laser scanning using advanced capabilities of computers for animation and rendering processes in the vortex shaft outlet of the Medey dam.

Fig. 1. Medeo mud dam and spillway structures

Earlier work [4] allowed on the basis of Rossby equations to calculate and build,using graphic tools like Turbo Pascal, 3D Max, MatLab 6.5, three-dimensional flow patterns in the structural elements of the vortex shaft outlet of the dam Medey and Bes-Tube waterworks.

For example, in order to build drop structures of Bes -Tyube hydroengineering complex there was a graphical interface designed which allowed to interactively calculate and construct a three-dimensional picture of the flow in a spiral swirl, the data received was practically applied and implemented in the form of a part of hydraulic structures of Bes –Tyube hydroengineering complex (Fig. 2).
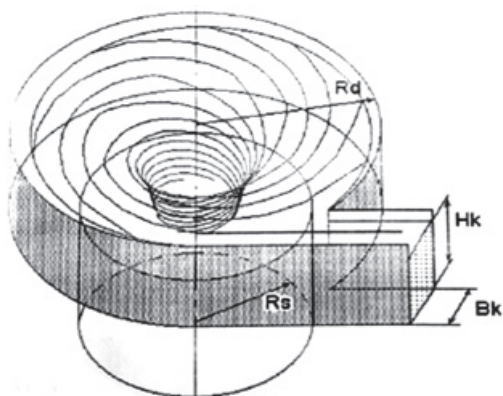

Fig. 2. The flow pattern in the spiral swirl

The promising direction in the development of three-dimensional graphical visualization in the Republic of Kazakhstan is the use of FlowVision software system (Russia), the scope of which also applies to the modeling and visualization of three-dimensional computer graphics techniques of fluid flows in hydraulic structures with the definition of the drag coefficients for the effects of roughness. Model problem is the calculation and visualization technology FlowVision [5] hydraulic processes of torus-shaped swirl (Fig. 3).

The widespread use of this software system in Kazakhstan is hampered by lack of license for community use of Flow Vision software system without limiting the number of points on the supercomputers of the Republic of Kazakhstan on loan. In the first phase, the acquisition of Flow Vision software is performed in accordance with a special program of the TASIS for the students «Study student». Participation in this program will allow the International Academy of Business to receive four free 2-month licenses software package for Flow Vision without limiting the number of points for projects within the student's scientific research of students and undergraduates of the International Academy of Business, however, according to the rules of the TASIS, the rights to publish material in the press were handed over to them. Currently, within the implementation of these projects are carried out numerical experiments with simulated roughness turbulence.

Thus, the mathematical and software base in the field of visualization and animation of hydraulic processes in the hydraulic structures, which allows in combination with 3D laser scanning to conductat the modern level the comprehensive monitoring work of hydraulic structures of the Republic of Kazakhstan using methods of non-destructive quality control of concrete pavement dams, hydraulic processes in the dams, sluices, vortex shaft outlet, predict and evaluate the terms of trouble-free operation of hydraulic structures, there by increasing the safety of hydraulic engineering of hydraulic structuresin case of emergencies.
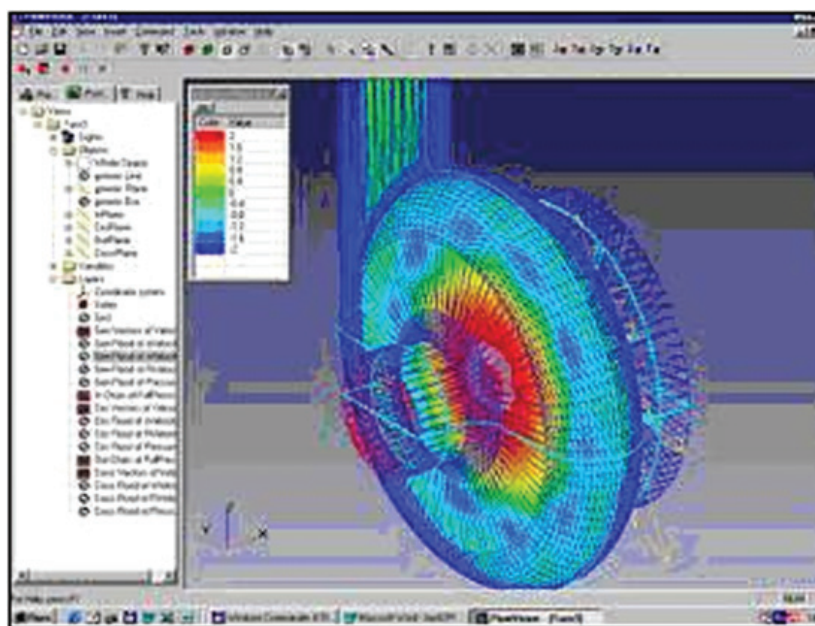
Fig. 3. The flow pattern in the torus-shaped swirl

References

1. Akhmetov T.K., Kvasov A.I., Saduov R.G. There search of vortex shaft outlet of Medey mud dam. The book: The problems of hydroelectric engineering and waterworks. – Almaty: Science, 1976. issue.13. – P. 185–192.

2. Belgibaev B.A., Rakhimzhanova G.B. Computer animation of the vortex flow of a viscous fluid in the space // The book: Proceedings of the International Conference of Young Scientists – the 10th anniversary of Kazakhstan's independence, Ch.Z. – Almaty, Kazakh National Technical University, 2001. – P. 599–602.

3. Slisskiy S.M., Kuznetsov E.B., Akhmetov T.K. Multilevel vortex shaft outlet // Hydraulic Engineering. – 1980. – № 9. – P. 10–12.

4. Belgibayev B.A., Dairbaev A.M., Ramazanov E.T., Korzhaspaev A.E. The design scheme of computer modeling of the spillways of the Medey dam // Information-communication technology: education, science and innovation: Proceedings of the III-rd International Scientific-Practical Conference. – Almaty, International Information Technologies University, 2013. – P. 503–506.

5. http://www.tasis.com.ru/software/flowvision.

THE SECURITY OF SPILLWAY STRUCTURES OF MEDEY MUD DAM

Bukessova A.M., Belgibayev B.A.

Scientific-Research Institute of Mathematics and Mechanics of the Kazakh National University named after Al-Farabi, Almaty, e-mail: aidabam@mail.ru

Analysis of emergencies on hydraulic structures of RK shows that the contingency operation of spillways causes the erosion of dam. Some measures to improve dam safety monitoring systems, including those based on the new automated control system of technological process of hydraulic structures (ACSTP HS) with the features of animated and visualized computer simulation of operation modes of spillways that are created on the basis of laser robotic total station TOPCON GPT 3100N.

At the beginning of 90's there were more than 650 significant hydraulic structures. The total water volume of the biggest conservation reservoir equals to 80 billion cubic meters which is used for producing electricity, water supply and irrigation. At present time these structures has been used for 30–40 years.

The restructuring of ownership on the hydraulic structures has led to the fact that almost half of the hydraulic structures of the Republic of Kazakhstan is privately owned or unwonted. Oversight and monitoring function in the regions of the mudflow is performed by services SE «Kazmudflowprotection of Emergency Ministry», the rest of the region is under state monitoring in the line of hydraulic inventory of the Republic of Kazakhstan (Fig. 1).
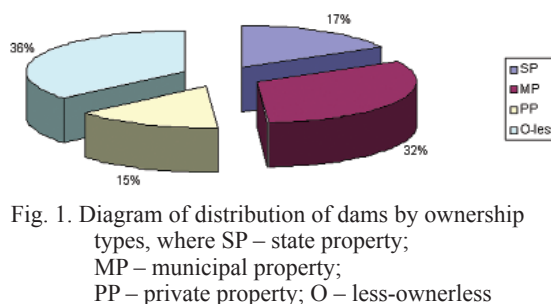

Fig. 1. Diagram of distribution of dams by ownership types, where SP – state property; MP – municipal property; PP – private property; O – less-ownerless

The problems of the aging hydraulic structures were keenly discussed at a training workshop on the organization of the International Training Centre for the safety of hydraulic structures on the basis of the Kazakh Research Institute of Water Resources (February 11–15, 2013, city of Taraz, Kazakhstan). A number of important decisions were included to the resolution of the workshop:

1. Accelerate the development and adoption of the Law on dam safety in the Republic of Kazakhstan;

2. Ask the Committee for Water Resources of Ministry of Environmental Protection to speed up the preparatory and organizational work on Kazakhstan's accession to the International Commission on Large Dams;

3. Request the Executive Committee of the International Fund for saving the Aral Sea (Mr. Ibatullin S.R.) to apply to the UNECE to provide financial support for the purchase of instruments and equipment for the laboratories of the Training Center of Taraz.

At the same time, on March 11, 2010 due to the breakout of private dams in the village of Kyzylagash there occurred one of the most devastating floods in the history of modern Kazakhstan. On the night of March 12, 2011 above the village Kyzylagash in Aksu district of Almaty region the flood claimed 40 lives, destroyed 70 % of the villages, 146 households were demolished completely, 251 house destroyed, 42 in need of repair. The total number of the affected population was equal to 3,767 people (in the villages Kyzylagash – 2240, Aktogan – 562, Koltaban – 296, Eginsu – 626 and at the junction Kumtobe – 43). According to preliminary data, in order to recover damages in the village Kyzylagash caused by flooding 7,2 billion is required, 6,2 billion tenge of which will go to the construction of 686 new housing units in four locations (Kyzylagash, Eginsu, Alazhide, Aktogan). All families will receive 500 thousand tenge for each victim paid from the regional budget. Each member of the family affected by the floods (who lost their homes, livestock and other property), the Kazakh government has paid compensation in the amount of 121 thousand tenge. The cause of the accident is the same: heavy rainfall and poor performance of the spillway gate.

The poor state of the stock of hydraulic structures in Kazakhstan actualizes work to improve monitoring techniques of hydraulic structures, one of those is the use of computer simulation based on the three-dimensional laser scanner with GPS, on the basis of these data the computer models of the state of the hydraulic structures is made.

Analysis of Emergency Situations of hydraulic structures in Kazakhstan shows that the most common cause of accidents on the hydraulic structures of the Republic of Kazakhstan is associated with the level of monitoring of the state of the dam and spillway.

The emergency situation in 1973 at Medey dam spillways occurred due to the unplanned work since the capacity of the mudflow storage reservoir is 6 million cubic meters, and approximate volume of the mudslide in 1973 was 5 000 000 cubic meters, therefore of mudflow mass flunked the entrance of the upper water intake of the first line of the dam spillways of Medey [1]. Due to the lack of water discharge into the river Small Almaty, mudflow storage reservoir started to overflow and there were only five meters left to the crest of the dam. The problem was eliminated only through the organization of drainage of water over the crest of the dam by means of construction of a temporary culvert with mobile pump performance.

After the catastrophic mudslide in 1973 in order to improve the safety of the dam spillways of Medey in the second phase of the dam there were built spillway redundant facilities, the total length of the tunnel which is 460 meters. Sectional area of the inlet tunnel 16 square meters, vertical shaft spillway has a diameter of 3,5 meters with a tangential swirl design by Slisskiy S.M., Akhmetov T.K. A distinctive feature of the second line are the high capacity of mudflow storage reservoir (12.6 million cubic meters) and new water intakes that are located on the bottom of mudflow storage reservoir to the crest of the dam (Fig. 2). It should be noted that after the construction and commissioning of the dam Medey, hydraulic studies of the dam were not conducted [2].

In 1999, a similar situation occurred during outbreak at the Small Ulba (East Kazakhstan region, Maloulbinsk Leninogorsk reservoir cascade), in 2010 in the village of Samara (East Kazakhstan region, Kokpekti district), in 2011 in village of Balkashino (Akmola region). The total damage is more than 10 billion. In all these situations, the root cause of the emergency was the off-design work of spillways due to heavy floods. All of the above reservoir recovered, but the monitoring system was expanded only in means of video surveillance.

The development of adequate computer models of spillways is relevant and practically important research [3], therefore, based on the «Research Institute of Mathematics and Mechanics» of the Kazakh National University after Al-Farabi there is a research work № 162/SF3 of Ministry of Environmental Protection «Computer simulation of the spillway» being performed which is funded by state budgetary, thematic work plan of this research requires the following activities:

1. Analysis of the technical documentation of the spillway, conducting workshops for the research group to study the characteristics of the design and hydrodynamics in the shaft spillway, studying and testing specifications and features of the software laser robotic total station Topcon GPT 3100N [4].

2. Identification of the main indicators of quality of the spillway of the dam of Medey as hydraulic structure.

3. Development of a computer model of three-dimensional visualization modes of hydraulic structures.

4. Development of a mathematical model of the system in real-time alerts about modes of the spillway.

5. Construction of mathematical models to predict emergency situation.

6. Trial operation of the subsystem of automated workstation (AWS) «capacity of the spillway».

7. Development of guidelines for the implementation and operation of the AWS «spillway» with its hardware and software adaptations to existing automated control systems of technological processes of hydraulic systems and video surveillance.
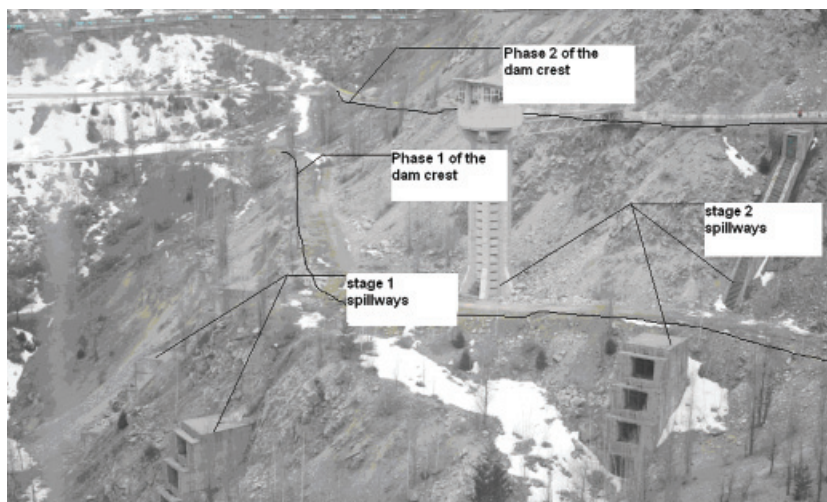

Fig. 2. Medeo mudflow dam and spillway structures of 1st and 2nd line

These studies are planned for the period from April 2013 to December 2015. The results will be introduced to the units of Emergency Ministry and Ministry of Environmental Protection.

In conclusion, on the basis of the developed automated workstations «spillway» there can be performed an on-line computer monitoring of dams and spillways of hydraulic structures of Kazakhstan, additionally there is an of opportunity of expansion of security of unified management, analysis, and operational guidance to the mudflow dams and drainage structures of the Republic of Kazakhstan .

References

1. Slisskiy S.M., Kuznetsov E.B., Akhmetov T.K. Multilevel vortex shaft outlet // Hydraulic Engineering. – 1980. – № 9. – P. 10–12.

2. Kvasov A.I. Mudslides and their effects on structures. – Almaty: Nauka, 1987. – 132 p.

3. Belgibayev B.A., Dairbaev A.M.-M., Ramazanov E.T., Korzhaspaev A.E. Design scheme of computer modeling of the spillways of the dam Medey // ICT: education, science and innovation: Papers of the III International scientific-practical conference. – Almaty: IITU, 2013. – P. 503–506.

4. Belgibayev B.A., Dairbaev A.M.-M., Ramazanov E.T., Korzhaspaev A.E. The examination of technical condition of spillway of «Medey» dam with the possibility of 3d laser scanning // ICT: education, science and innovation: Papers of the III International scientific-practical conference. – Almaty: IITU, 2013. – P. 380–383.

Short Reports

MODEL A LOW POWER
THE WIND GENERATOR SETUP

Semenov A.S.

*North-Eastern Federal University
named after M.K. Ammosov, pulpit of Electrification
and automatization mining industry, Mirny, Sakha,
e-mail: sash-alex@yandex.ru*

In this short report we create a model of a low power wind generator setup using MatLab programs based on stepper motor. The substantiation of creating a model, built a model, the results obtained by the rectified voltage at the output of the generator.

In the coming decades, the residents of the planet Earth expects shortage of energy resources. Market volatility extraction and processing of oil and gas, led the search for alternative energy sources, particularly wind power. Scientists around the world have been searching for the inexhaustible sources of energy. Wind energy – one of the most promising areas of energy, providing a source of energy makes up for mankind. Wind turbines use wind energy by converting it into an electrical current. This area of energy systems using a wind turbine to solve a lot of problems for the effective energy supply remote from urban communications suburban houses, villages and farms. Wind turbines can gain independence and autonomy of the local energy suppliers.

The use of wind turbines is very economical, and in contrast to other methods of obtaining energy requires no resources and natural materials. Wind turbines produce cheap electricity, and in the presence of constant wind – a fully autonomous. In addition, the use of wind turbines do not cause any harm to the natural environment and ecology.

Wind turbines are the power plants, which include: in fact, wind generator, batteries, inverter, charge controller, wind wheel with blades. To meet the needs of a small country house, if the average wind speed is consistently exceed 4 m/s, it is enough wind turbine capacity of about 1 kW, which will provide electricity to the basic need for electricity: lighting, telephone, television, radio and other low-power devices. To ensure high performance electrical energy wind generator, it should be placed on the sublime and the open, fan cooled stable air flow.

As an example of a wind generator setup assemble a mathematical model based on the low-power turbine stepper motor using MatLab [1]. To create the model wind generator setup will use two sources of power (simulated stepper motor), the rectifying diodes, capacitors, voltage regulators (resistor). First collect the rectifier. For each phase of the stepper motor (it is four-phase) will be used for the diode 2, i.e. a total of 8 diodes. The output voltage is stabilized by means of a capacitor of 1000 uF and voltage regulator (resistor with a resistance of 50 ohms). The assembled model is shown in the Fig. 1.
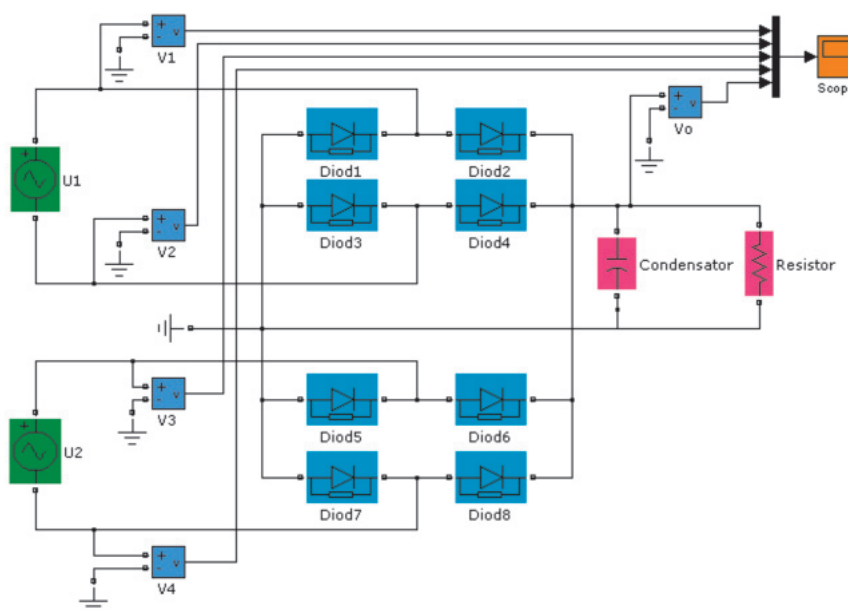

Fig. 1. Mathematical model of a low-power wind generator setup on the basis of the steppermotor in the program MATLAB
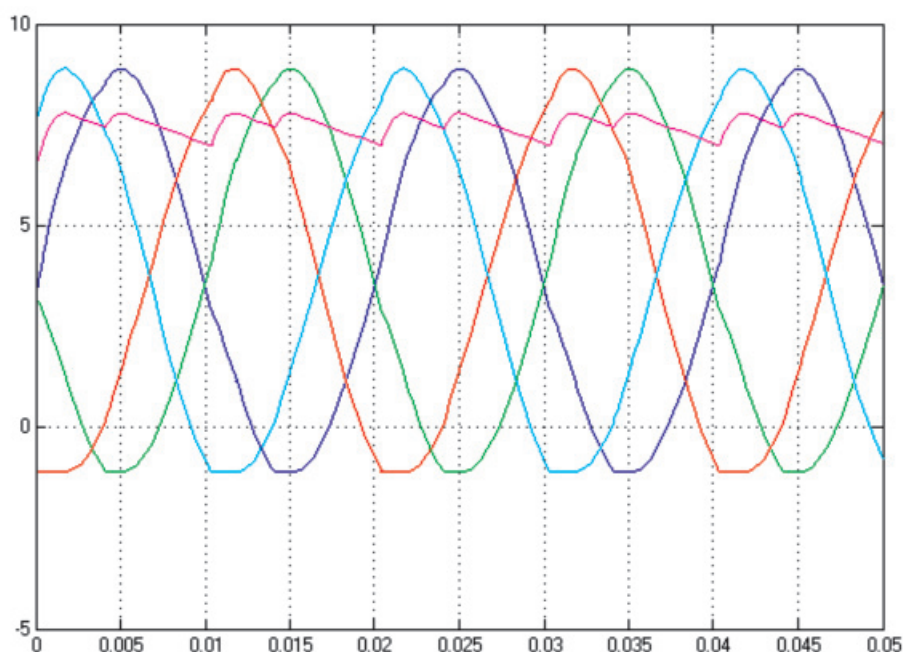
Fig. 2. Results of modeling wind generator installation

With voltage meter V1...V4 graphics get a sine wave four phases of the motor. Vo voltage meter shows the shape and magnitude of the voltage generated by the wind turbine. It is about 7 volts. Graphics are shown in the fig. 2 [2].

This model of the wind generator set can be used in practice only for low-power electrical appliances. But when replacing the stepper motor to the induction and increasing the size of the wind turbine blades, it is possible to get the power up to 1 kW, and the output voltage of 220–380 V [3].

References

1. Semenov A.S., Rushkin E.I. Model of a low power wind generator setup / Erel-2011 // Proceedings of the conference of young scientists. / [Br. Ed.: I.I. Khristophorov et al.] – Yakutsk: Univ. Ltd. «Tsumori Press», 2011. – Volume 1. – P. 140–143.

2. Semenov A.S., Shipulin V.S., Rushkin E.I. Simulation modes of micro hydro and wind generator setup / Modern research in the field of energy conservation and energy efficiency // Fri. Scientific. Art. Materials I Intern. Scientific. – Pract. Conf. / Editorial Board.: A. Filonovich (Ed.). [Et al.]. – Kursk: South-West. State. University Press, 2012. – P. 102–107.

3. Semenov A.S., Shipulin V.S., Rushkin E.I., Savvinov P.V., Eremeeva R.E. Prospects for the use of renewable energy sources in the Republic of Sakha (Yakutia) // Alternative Energy and Ecology. – 2013. – № 03 (121). – P. 138–142.

Materials of Conferences

REGRESSION MODEL OF ADDICTION THE ENVIRONMENT AND HEALTH OF ADULT IN URBAN AREAS OF KAZAKHSTAN

[1]Alshynbekova G., [2]Musina A., [1]Tebenova K., [1]Akhmetova N., [1]Dakhbay B., [1]Tusupbekova G., [1]Rakhmetova A.

[1]E.A. Buketov Karaganda State University, Karaganda;
[2]The National Centre of Hygiene and Occupational Diseases of the Ministry of Health of the Republic of Kazakhstan, Karaganda, e-mail: gulnaz_gak@mail.ru

Regression models of based functional state of the adult contingent on environmental factors urbanized territory of the Republic of Kazakhstan are presented in the article. High sensitivity to the metal content in the air, in the water and climatic factors (including the seasonality of the year) is showed.

Environmental factors play a significant role in the health of the population as a whole and especially in different age groups as separate groups and categories of people have different sensitivity to adverse factors and the role of the same factors varies significantly. Structural and functional changes with age are degenerative in nature and toxic substances found in the environment and in the workplace, would be more dangerous for the elderly, and the sensitivity to the effects of carcinogens may also vary with age [1].

Increased sensitivity to chemical agents are trying to explain age-related changes in pharmacokinetics and pharmacodynamics. For example, the skin absorption of chemicals increases with age. Physiological changes, such as reduced blood flow to the kidneys and liver of elderly people may lead to changes in the distribution and excretion of chemicals.

In the urban environment to the major risk factors for the health of the population, most researchers include chemical pollutants entering the storage medium – air swimming pool, snow, soil [2]. The priority pollutants often noted heavy metals, dioxins, polynuclear aromatics, chemical carcinogens (asbestos, nickel, benzene, arsenic, radon, carbon black, etc.) [3]. And air pollution is often a leading indicator of trouble hygienic areas [4, 5].

The aim of this study is to assess the impact of environmental factors in urban areas on the health of the adult contingent of the Republic of Kazakhstan.

Materials and methods. The study involved in the scientific and technical program of the *Ministry of Health of the Republic of Kazakhstan* on the theme: «The influence of environmental factors on the health of the population in urban areas» (2010–2012). 3982 people were surveyed of 6 Kazakhstan regions, with developed industries (ferrous and non-ferrous metallurgy, phosphoric Province, uranium, oil and gas regions of the Republic of Kazakhstan). Contingent divide by gender: men – 1954 (the average age of $39,2 \pm 0,47$ years) and women – 2,028 people (the average age of $41,5 \pm 0,24$ years). Statistical Database included indicators of the cardiovascular system and settlement of biological age. To establish the link between environmental parameters and integral indicators donosological condition of the body was a correlation analysis. Statistical processing was carried out using statistical methods package «Statistica», version 5.5. We conducted a regression analysis with the calculation of the regression coefficients (R). There has been a model of the level of statistical significance $p < 0,05$ and the coefficient of determination (R_2) greater than 70 %. Normality of distribution was determined by the residual histogram.

Results and discussion. Construction of the model and calculation of dependency indicators CSS showed that meteorological factors to the environment and are sensitive indicators of PARS IN entire sample surveyed adults, especially PARS to the parameters of the wind direction ($R = 0,85$, $R_2 = 0,72$) and the index ID to the state of humidity in the warm season ($R = 0,67$, $R_2 = 0,46$).

Gender feature to show more sensitivity to the predictor integral index of homeostasis (AP $R = 0,62$, $R_2 = 0,38$) to the sympathetic activity in the circuit structure of the regulation of heart rate in men during the cold season (MI $R = 0,63$, $R_2 = 0,39$) for enhancing and changing the direction of the wind (ID $R = 0,59$, $R_2 = 0,35$).

Assessment of the dependence of the rate of aging adult contingent of meteorological factors showed that there is great sensitivity in men. Thus, aging is much faster when they change the amount of moisture in the cold season ($R = 0,63$, $R_2 = 0,39$) and the change in wind direction ($R = 0,73$, $R_2 = 0,53$).

Score predictor sensitivity metal content of suspended dust revealed that it is more sensitive to the circulatory system (ID) and the integral index homeostasis (AP) in women 3 to substances such as lead (Pb), manganese (Mn) and copper Cu). As can be seen, lead (Pb) manifests itself more in the cold period of the year in 55 % of the surveyed sample ($R = 0,74$), and copper (Cu) mainly in the warm season, more than 86 % of the sample ($R = 0,73$).

Sensitivity to harmful substances contained in the soil, we have found according to, for both men and women. They showed for the integrated indicators CCC (PARS, IN), the integral index of homeostasis (AP) as well as to the terms of the rate of aging (TC).

The men figure PARS was sensitive to such substances as manganese (Mn, $R = 0,83$, $R_2 = 0,69$), in

the warm period to nitrates (R = 0,99, R_2 = 0,99), the cold period to Hg (R = 0,83, R_2 = 0,69).

The indicator of homeostasis (AP) was predictive of the sensitivity of the warm period to xylene (R = 0,92, R2 = 0,84), and sympathetic heart rate circuit responsive to the content of toluene (R = 0,61, R_2 = 0,37) more than in the cold season.

Aging Temp more responsive to 6 elements be it to cadmium (R = 0,97, R_2 = 0,94), zinc (R = 0,79, R2 = 0,64), cobalt (R = 0,97, R2 = 0,94) selenium (R = 0,97, R_2 = 0,94) and xylene (R = 0,77, R2 = 0,59).

In relation to the sensitivity of women to the content of harmful substances in the soil we have revealed the dependence of regression models to the 3 indicators to the index of this activity of regulatory systems (PARS), a combined indicator of homeostasis (AP) and the rate of aging (TC).

This was five substances, among them carcinogenic substances actions lead (R = 0,77, R_2 = 0,59), nickel (R = 0,96, R_2 = 0,92); nekantserogeny substance: zinc (R = 0,75, R_2 = 0,56), Hg (R = 0,86, R_2 = 0,74). It should be noted that the dependence of these substances have both warm and cold periods in the year.

Depending on the water regression were detected only in the indicators and PARS ID, as shown in Table was the third material, including nitrates (R = 0,98, R_2 = 0,96), selenium (R = 0,64, R_2 = 0,41) and Ti (R = 0,69, R_2 = 0,48).

On the content of substances in the air sensitive were all integral factors in both men and women, which confirm the priority of this factor in the adverse effect of exposure.

In the warm season it was dust (R = 0,66, R_2 = 0,43) and phenol (R = 0,76, R_2 = 0,57), which responds PARS component and an integral component homeostasis (AP) , but it responds to the content of other substances, such as cobalt (R = 0,58, R_2 = 0,34).

Both men and women were equally sensitive to the content of SO_2 in the cold season, which dependence manifested in 76 % of the sample (R_2 = 0,57).

As part of air pollutants, namely cobalt showed sensitivity index «rate of aging» in women, and this was expressed in the warm season.

Thus, depending on the functional state of the identified adult contingent living in urban areas of Kazakhstan with the levels and concentrations of pollutants in ambient factors indicative of their adverse effects this is greatly reduced by their adaptive capacity. The low level of plasticity of the body, namely the intensity of the central circuits in conjunction with the adverse effects of heavy metals on the generative system of the body greatly accelerates the rate of aging, especially in the female population.

References

1. Revitch B. Location of environmental factors among the external causes of death among the population of Russia // Hygiene and sanitation. – 2006. – № 5. – P. 95–98.

2. Stepanova N. The possibility of using snow-chemical shooting practice of Sanitary and Epidemiological Inspectorate // Human health and the environment. – 2003. – № 1 (118). – P. 31–34.

3. Grebnyak N., Fedorenko A., Yakimova A. and other atmospheric pollution as a risk factor for the health of the child and adolescent population // Hygiene and sanitation. – 2002. – № 2. – P. 21–23.

4. Pinigin M. Hygiene problems of air and solutions in the near future // Hygiene and sanitation. – 2000. – № 1. – P. 3–8.

5. Beketov A. Assessment of risk to human health from urban air pollution // Health Officer. – 2010. – № 6. – P. 40–41.

ISOLATION AND STUDY OF LACTIC ACID BACTERIA CULTURES, YEAST OF NATURAL COOKING KUMIS STARTER FOR THE GOAT'S MILK

Tapeshova S.Z., Tokabasova A.K., Atalikhova G.B.

Atyrau state University by Kh. Dosmukhamedova, Atyrau, e-mail: shatun_t_87@inbox.ru, tokabasova67@mail.ru

This article describes the microflora kumys made from fermented mare's milk and goat's milk. Isolated strains of lactic acid bacteria aerobic 3 – 1Sh; 2Sh; 3Sh; 4 anaerobic – 4Sh; 5Sh; 6Sh; 7Sh; 2-yeast culture-1Shd, 2Shd. In these cultures studied morphological, physiological, cultural and antagonistic properties on Bacillus mezentericus is defined acid-forming activity in the mare's milk Made a starter for kumys cultures of lactic acid bacteria and yeast in the ratio of 1:1:1 (bacillus, cocci, yeasts). Selected cultures to increase the collection of microorganisms and their use as starter cultures.

People use the milk for about 6 thousand years and lactic drinks in person`s life are particularly important. Since ancient times people widely use goat`s, cow`s, mare`s, camel`s milk. There are process of mixed fermentation in the most of lactic products – in lactic and alcohol.

Nomadic people (Kazakh, Kyrgyz, Mongols, Bashkirs, Tatars) since ancient times prepared kumis from mare`s milk.

In some nations kumis called differently: for example, the Arab people called the kumis as «al-laban-arramaki», and the Turkish people called it as «kumis».

Kumis – it is the dairy drink, which has leaven in mare`s milk, makes from lactic acid bacteries and yeast. The method of preparing kumis were well-known for ancient Scythian. In V th century to our era Herodotus wrote «the Scythian make the kumis from mare`s milk». The Scythians fermented mare's milk in wooden vessels. According to Herodotus – the recipe of the drink Scythians kept secret. The first written mention of the preparation kumis,

its taste and effects on the body appeared in 1253 after a trip to the land of William Rubrikosa Tatars. According to some historians kumis appeared in Asia, in particular in the steppe part. It is believed that the first mare began to ferment in Mongolia. We also want to notice the importance of kumis as a remedy, used since ancient times to treat colds Kazakhs drank mare's milk, cook in it kazi (horse meat sausage. For children and elderly kumis prepared with raisins.

The preparation technology kumis is relevant because currently used industrial and home methods (the use of pure cultures, that is, stable way to ferment and home use of wild yeast). This technology has a number of disadvantages and advantages. They are: acidity organoleptic characteristics, consistency and antagonist activity. These crops are the necessary facilities as starter cultures for kumis.

The aim of the present work was to prepare kumis from goat's milk, study and the selection of strains of mesophilic aerobic and anaerobic lactic acid and yeasts grown at $t = 37°C$, Determination of antagonistic properties of selected cultures of lactic acid bacteria and yeast.

The study involved two samples of different types of milk: goat`s and mare`s milk after morning milking, cooked in the village Ganyushkino Kurmangazy district of Atyrau region. In these samples determined organoleptic properties of milk (taste, smell and texture, acidity, according to Turner), in accordance with state standards.

To achieve the goal, this study identified several problems :

1. Samples of fermenting mare's milk for cooking kumis (at home).

2. The resulting kumis used for further fermentation of goat milk.

3. Distinguish from the natural yeast, lactic acid bacteria and yeast dilution method.

4. To explore and identify morphological, physiological properties in these aerobic and anaerobic lactic acid bacteria and yeast.

5. Use the method of cultivation and sowing in the liquid medium to obtain pure cultures.

6. Determination of the activity of acid and determination by Turner.

7. Cooked mare from goat's milk and its use as a natural leaven for making kumis on mare's milk.

8. Determination of the antagonistic properties of selected lactic acid bacteria and yeast using holes with respect to the strain Bacillus mezentericus

9. Formulating the compositions using cultures of lactic acid bacteria and yeast.

The composite products, presented from a natural leaven kumis prepared from goat's milk (kumis 50 ml + goat`s milk 50 ml) placrd in the thermostat for 24 hours at 37°C Received one-day dairy products mixed acidity Turner 32°T, organoleptic properties of the consistency and smell – it's a loose clot, with the smell of mare`s milk. Cultures of lactic acid bacteria are allocated to the dense medium

Bogdanov at $t = 37°C$. A yeast stood on solid medium (Sabur). On the growth of lactic acid bacteria and yeast was judged by the appearance of colonies grown on nutrient medium. Of yeast on the goat milk were identified 9 cultures of lactic acid bacteria, including 3 types – aerobic strains, 4 – anaerobic strains, 2 types – yeast strains. All strains were grown in liquid medium: cultures of lactic acid bacteria, sowed in the hydraulically milk, plated on hydrolysed milk, 2 culture of yeast on the peptone – to the yeast environment with glucose. 2 – Culture of yeast peptone – yeast medium with glucose.

All cultures were determined by catalysis, all catalyses negative, not able to form catalyses. All the strains studied the morphology of the Gram method. The morphological features were identified as culture. It named as: 3 culture: cocci (1Sh, 3Sh, 6Sh), 4 culture bacillus (2Sh, 4Sh, 5Sh, 7 Sh), including Gram strain 5 (1Sh, 2Sh, 4Sh, 5Sh, 7Sh) – gram-positive (D +), Culture 2 – (3Sh; 6Sh) – Gram-negative (G-). Morphological characteristics were examined in yeast, they are oval in shape.

In these selected 9 – antagonistic activity of cultures was determined by the holes in the medium IPA in relation to the test culture of Bacillus mezentericus. As a result, the ability of antagonistic found in isolated cultures, inhibit the growth of Bacillus mezentericus.

The results are shown in Table 1.

Table 1

The antagonistic activity of lactic acid bacteria grown on milk hydrolyzate with respect to Bacillus mesentericus

Aerobic strains of lactic acid bacteria	Growth areas (mm)
Control	0 mm
1Sh (cocci)	11 ± 0,3
2Sh (bacillus)	7 ± 02
3Sh (cocci)	7 ± 02
Anaerobic strains of lactic acid bacteria	Growth areas (mm)
The control	0 mm
4Sh	15 ± 0,6
5Sh	11 ± 0,4
6Sh	7 ± 0,2
7Sh	11 ± 0,3

From the Table 1, in aerobic cultures maximum visible area 1Sh (2 mm), minimum area 1,5–1 mm (2m; 3Sh). In anaerobic cultures maximum zone of 2–3 mm (4Sh; 6Sh), minimum zone 1–1,5 mm (5Sh; 7Sh).

From Table 2, the maximum visible area (1,5 mm 1Shd), the minimum area of 1 mm (2Shd). We selected nine aerobic and anaerobic lactic acid bacteria cultures, yeasts studied acidity plated on mare's milk at different times. The main property

of lactic acid bacteria and yeast are the ability to accumulate lactic acid. This feature is very important from a practical point of view for kumis. Studied the dynamics of acid on the clock in the first days of growth. Data are presented in Table 3

Table 2

The antagonistic activity in isolated yeast grown peptone-yeast on glucose medium with respect to Bacillus mezentericus

Yeast	Growth areas (mm)
Control	0 mm
1Shd	6 ± 0,3
2Shd	5 ± 0,2

Table 3 shows that within 3 hours strains produce high acidity, of them – 1Sh, 2m, (°T 10–12); low acidity form – 3Sh (9°T). During 24 hours given cultures distinguished on the acidity: 1Sh, 2Sh (49–48°T) have the highest acidity, the medium acidity – 3Sh (40°T). Within 24 hours, the cultures are different in acidity, have a higher acidity – 1Sh, 2m, (49–48°T), medium acidity – 3Sh (40°T). With the active acidity of the sample used fresh mare's milk for 4-anaerobic cultures. The table shows, for 3 hours strains – 4Sh; 5Sh form a low acidity (10–12°T). The average acidity 6Sh, 7Sh, (13–13°T). Within 24 hours, strain showed high acidity – 6Sh; 7Sh, (55–57°T). The average acidity – 4SH; 5SH (40–45°T To determine the acidity of all crops grown on the mare's milk.

Table 3

The dynamics of acid in isolated cultures of lactic acid bacteria during 24 hours (night) and 3 (hours)

Aerobic strains	3 hours	Acidity, °T	24 hours	Acidity, °T
Control	-	-	-	-
1Sh (cocci)	+ +	10 ± 1,4	+ + +	49 ± 3,7
2Sh (cocci)	+ +	12 ± 2,8	+ + +	48 ± 3,6
3Sh (cocci)	+	9 ± 1,0	+ +	40 ± 3,5
Anaerobic strains	3 hours	acidity, °T	24 hours	acidity, °T
Control	–	–	–	–
4Sh (cocci)	+	10 ± 1,4	+ +	40 ± 3,5
5Sh (bacillus)	+	12 ± 2,8	+ +	45 ± 3,5
6Sh (bacillus)	+ +	13 ± 3,0	+ + +	55 ± 3,8
7Sh (bacillus)	+ +	13 ± 3,0	+ + +	57 ± 4,0

Table 4

The dynamics of acid selected yeast

Yeast	3 hours	Acidity, °T	24 hours	AScidity, °T
Control	-	-	-	-
1Shd	+	10 ± 1,1	+ +	34 ± 3,0
2Shd	+	9 ± 1,0	+ +	36 ± 3,1

Table 4 shows that within 3 hours of the yeast form a low acidity – 1Shd; 2Shd (10–9°T). Within 24 hours the cultures differ in acidity. 1Shd; 2Shd – have an average acidity (34–36°T). To determine the acidity of all yeasts grown on mare's milk. Thus, accumulation of the active acidity observed in culture – 1Shd lactic acid bacteria

After determining the antagonistic properties, acidity, according to Turner, we were compositions of ferments, taking 2 ml of the liquid medium from each culture and 8 ml of mare's milk. Composition ferments in the following ratio – (1:1:1) – 5Sh (anaerobic culture) – bacillus, 1Sh (aerobic culture) – the cocci, 1Shd – yeast in the milk of mares. For growing cultures of lactic acid bacteria and yeast in the mare's milk for 24 hours using a thermostat at $t = 37°C$.

Received the daily lactic products of the mixed type we studied and determined the acidity by tern-er, the organoleptic properties. The acidity of the mixture composed – 20°T. After the determination of acidity, all the crops on the test-tube 10 ml were mixed and all cultures in test tubes with 10 ml were mixed and were a mixture of 30 ml. This mixture is added to 70 ml of mare's milk and put in an oven for overnight at $t = 37°C$. A night again identified by their acidity Turner organoleptic properties. Cooked milk product had on the bottom of the dish is not dense precipitate on the surface of the formation of gas bubbles. According to Turner, the acidity was 47°T. The resulting blend – 100 ml once again stirred with 200 ml of fermented mare's milk. The total weight of 300 ml placed in a thermostat at the second day at $t = 37°C$. After the second day again determined by their acidity Turner organoleptic properties. Acidity as Turner – 110°T. This mixture was used as starter cultures in the ratio (1:2), that is,

made of fermented sourdough and milk. To increase the quantity of ferment you can use the goat's milk. To increase the weight of the starter, you can use goat's milk.

Conclusion

1. It has been sampled fermented mare's milk and goat's Atyrau region, studied organoleptic characteristics and acidity by Turner.

2. Of natural leaven allocated 9 – active cultures were isolated 4 – anaerobic, 3 – aerobic cultures of lactic acid bacteria, yeast culture 2.

3. To isolate and study the cultures of lactic acid bacteria and yeast culture media were used Bogdanov, Sabur, hydrolysed milk, yeast peptone-glucose medium.

4. In these selected 9 – cultures are defined and studied morphological, cultural antagonistic traits.

6. Identified strong acidifiers active lactic acid bacteria – 1Sh; 2Sh; 6Sh; 7Sh, and one yeast culture-1Shd.

7. Constituents of the compositions for the preparation of kumis in the ratio of 1:2 (sourdough and milk)

References

1. Cherepanova B., Khasenov A. Kumis and shubat. – Alma-Ata: 1971 – 188 p. 20–47., P. 60.

2. Shigayeva M.Kh., Ospanova M.Sh. The microflora of the national dairy drinks. – Alma-Ata, science 1983. – 152 p., 56–78 p.

3. Ospanova M.Sh. Antibiotic properties of yeast selected from kumis // dairy industry. – 1981. – № 10. – P. 2–28.

4. Kvasnikov G.I., Nesterenko A.O. Lactic acid bacteria and how to use them // Edition, science. – M., 1975. – P. 1–384.

5. Netrusova A.I. Workshop on microbiology. – M.: Edition. Academy, 2005. – 608 p., P. 145–150.

Materials of Conferences

THE ROLE OF THE INSTITUTE OF PETROLEUM GUBKIN IN TRAINING NATIONAL

Berdyguzhin L.B.

Atyrau State University im. H. Dosmuhamedova, Atyrau, e-mail: berdyguzhin@mail.ru

The article discusses the history of the preparation of national engineers Kazakhstan's oil industry in the 1930s. In 1930 the development of industry in Kazakhstan demanded software in the first place specialists mining and dobyvatelnyh complexes.

Therefore, the higher technical schools in the central cities of the USSR began to produce a large number of Kazakh students with specialties in mining engineering, metallurgical engineer, engineer, geologist, etc.

At the general meeting of the Academy of Sciences of the USSR, held in November 1935, was to take long-term plan of the «Big Emba». Invaluable assistance in the preparation of the national Russian engineers in the development of Kazakhstan's oil industry.

In the 1930s, the young people of Kazakhstan began receiving oil specialty in higher educational institutions of the USSR.

Speaking of oil workers, we chose to lead as an example of the view of Petroleum engineers father Federal oil, known academician, rector of the Moscow Mining Academy Gubkin.

"The main type of engineer who prepare now and have to cook in our opinion the higher technical schools to serve the needs of our industry is a specialist engineer in any particular branch of technology and industry, thoroughly studied as a theory, practice and economics of production in their field, so and basic general engineering and theoretical science, which industry data are based or forming short, it must be a full-fledged specialist engineer a particular industry with a broad scientific and technical training.

The engineer must have a certain set of special skills and knowledge of a broad scientific and theoretical basis.

The curriculum of the school is to be built so that these two points he needed to be provided in the most favorable ratio [5, p. 27].

Invaluable assistance in the preparation of the national Russian engineers in the development of Kazakhstan's oil industry.

One of the first graduates of the Moscow Institute of Oil was Naren Orynbayuly Imashev (1908–1972).

N.Imashev was born in 1908 in the village of number 13 Temir district of Aktobe region. After graduating in 1925, the seven-year school in Temir, in 1926–1929 he studied at the Workers'. After graduation, the talented young man enters 1930 in Moscow Mining Academy. At that time the Academy has been expanded and divided into 6 individual institutions. By his own request, he was left in the Petroleum Institute, and in 1934 received a mining engineer and geologist. For many years he worked in the fishery Bayshonas geologist, chief geologist at the Kazakhstan oil mill. For works in the discovery of oil and gas fields in the Mangistau peninsula awarded April 20, 1966 Lenin Prize [4, p. 113].

The man, whose name will forever remain in the history of Kazakhstan's oil industry, a graduate of the Moscow Institute of Oil – Zholdaskali Ahmetuly Dosmukhambetov (1916-1977).

J.A. Dosmukhambetov was born on September 15, 1916 in rural Rakos Makat district Guriev region. He studied in the years 1932–1934 in Gurievsk Petroleum College, and in 1940 graduated from the Moscow Oil Institute named after IM Gubkin. Received a degree in mining engineering and geology. He started his career in Emba.

He worked in the years 1940–1942 as chief geologist Bayshoonas enterprises, in 1942–1943 years as deputy chief geologist combine «Embaneft», in the years 1943–1947 Bayshonas director of the company, in the years 1947–1950 manage the trust «Kaznefterazvedka». After graduating from the academy in 1953 in Moscow was the chief geologist «Kazakhstanneft», and in the years 1957–1971 he worked successfully manage in recent years, has returned to the position of Chief Geologist.

So from 1940 Zholdaskali Ahmetuly all their strength and capabilities directed at the development of the oil industry, has made every effort to develop the science of geology, the aim of introduction of new technologies in production, up to the last days of persistently worked on the oil field, and geology. He was one of the first supporters of the use of seismic methods in reconnoitering oil fields and layers.

In the 1950–1960 years, twice elected to the Supreme Soviet of Kazakhstan, and in the years put scientific, industrial, economic and social problems of the area (then Mangistau Guriev and were part of the same area) on the agenda, what could draw the attention of the government [2, p. 139–141].

Next graduate of the Moscow Oil Institute Kuzembay Baspaev, who came on production in 1938. In his theses to the Kazakh engineers wrote: «I was born in 1910 in Bozashy (Mangistau) In that year the family moved to Makati City. In Dossor attended the four-year school. Then the student was admitted to the workshop. In 1928, he entered the Orenburg technical school, in 1929, was admitted to the 1st course faculty. In 1931, graduating, he worked in the Komsomol committee Dossor,

followed by the presentation of the Kazakhstan government in 1932, he entered the Moscow Institute of Nonferrous Metals. After several petitions in 1934, Kazakhstan's Embassy in Moscow helped to transfer to the Petroleum Institute. In the years 1935–1937 was an intern at the Baku plant where gained experience of Azerbaijani oil. So, after graduating from school in March 1938, returned in Makati engineer. He worked there until 1942, then went to the front. Since then I have terrible disabled group II. After all, I worked in the Ministry of Public Utilities, the Polytechnic Institute in Alma-Ata on the cargo engineering plant. Though he entered the graduate school of the Kazakhstan Academy of Sciences to conduct research in the field of oil, for health reasons had to interrupt his studies» [3, p. 86].

Another graduate of the Moscow Oil Institute Isenov Mukhambet (1909–1993) is not only a petroleum engineer, who made a great contribution to the development of the area, but also a skilled organizer and statesman [6, p. 216].

He was born in November 1909 in the village of Dossor of Atyrau region. In 1937 he graduated from the Moscow Gubkin Oil Institute. He started his career in 1918 working in a fish factory. Then he engaged in cattle breeding, in 1925 to unlearn Orenbugskom faculty work. After he worked as service engineer heavy industry of People's Commissars of the USSR, then the head of the department.

In 1941 he was accepted as a volunteer in the ranks of the defenders of the Fatherland, was the platoon commander and November 25, 1941 at Moscow the first time participated in the battle. There was a regiment commander, deputy commander of the division. But in 1943, the decision of the State Committee of the USSR was relieved of his military duties, and is connected to the work in the specialty.

In 1943–1947 he served on the committee of the USSR oil. In 1947 he was transferred to positions in the Central Committee of the Communist Party of Kazakhstan, at the Council of People's Commissars of Kazakhstan, at the Council of Trade Unions of Kazakhstan.

In 1963 he was the second secretary of the Communist Party of the West Kazakhstan region, in 1964, the first secretary of the Communist Party of Guriev area.

Bergalou Kalkan Bergaliuly (1893–1970) Mining Engineer, graduates of the Moscow Institute of Oil (1933). Before World War II was an oil worker at the field Dossor, Makati City. In the years 1942–1952 he headed the industry Communist Party of Kazakhstan, Head of Technical Security «Embaneft».

Among the first of Petroleum Engineers and are bright people of Kazakhstan science.

One of them, who graduated in 1938 from the Moscow Institute of Oil, Tarybay Shaukenbaev academic economist (1913–1985) [1, p. 3].

So 1930 positively characterized not only the development of the oil region, but in the formation of national engineering personnel.

References

1. Bekmahanov E. useful work on the economics of the oil industry in Kazakhstan // Kazakhstan's true. – 1960. – May 10. – 4 p.

2. Kaspy: oil and kultura.Fotokniga. – Almaty, 2011. – 192 p.

3. Muktar A.K. Istoriya Kazakh oil. – Atyrau, 2004. – 188 p.

4. Nursultanova L.N. Neftyanaya industry of Kazakhstan in the years of the Great Patriotic War (1941–1945). – Almaty, 2010. – 256 p.

5. Otzyvy leaders of industry, science and technology / ed. I.I. Hodorovskogo. – Moscow-Leningrad, 1928. – 178 p.

6. Cherdabaev R.T. Neft: Yesterday, Today, and Tomorrow. – Almaty, 2009. – 352 p.

Materials of Conferences

MODERN PARADIGM OF THE KAZAKHSTAN SCIENCE OF LITERATURE

Abdullina L.I.

Ust-Kamenogorsk, e-mail: Abdullinal@yandex.ru

Alongside with other humanities, modern Kazakh philology is forming new cultural anthropology in the context of the nationwide idea. Responding to the challenges of the new era, the literature of sovereign Kazakhstan is based on the experience and traditions of literature and history of the past. The process of qualitative updating art systems in the last decade of XX – beginning of the XXI is mainly owe to the release of a set of regulatory framework. In addition, the nation's cultural heritage, folk art traditions, stories and images remain a plentiful source of inspiration.

One of the founders of Kazakh folklore studies, S.A. Kaskabassov, was the first to identify and carry out the classificatory and typological research of verbal prose and Kazakh mythology. The works of folklorists of Bashkiria, Tatarstan, Turkmenistan, Kyrgyzstan and Uzbekistan confirmed the established laws of historical development of folklore prose from the archaic forms to highly artistic works.

The publication of academic collection of animals' fairy-tales in Russian, the «Kozy-Korpesh and Bayan Sulu», national lyric epos, unique folklore texts collected by local historians-researchers, XVII–XIX centuries' works of zhiraus was text work. The book of Kaskabassov «Gold Mine» is a peculiar cultural writing in which the scientific comment helps to value folklore monuments as a «source of intellectual culture». Pondering on the «international» nature of folklore story leads the philologist to the conclusion about the specifics of Kazakh plot, in particular, «optimistic love concept in Kazakh romance epos».

Folklore, verbal individual poetry, written literature, art of music, poetry of zhiraus, work of Bey-Sheshens, – here is an incomplete list of issues and aspects that determined the development of Kazakh folklore studies. Author's rhetoric in the characteristic of spiritual power of his nation is based on the high authority of the poet, when eloquence has been considered the highest level of art. Analysis of the zhiraus' works reveals their priestly character and functions of the public service. In addition, the poetry of professional akyns has freed literature from ideology and made its «contribution to democracy», the poetry has come into the yurt of ordinary members of the society, to common folk.

Folklore and myths in Kazakhstan philology are considered to be the most important image and style basis of national literature. The genetic invariance of folklore texts stimulates ceaseless renewal by means of author's interpretations and metaphorically «folded» idea-formulae. The investigation of the national specificity of Kazakh folklore is parallel to the studies of the Slavic folklore in Kazakhstan, to its collection, systematization and publishing. The folklore and ethnography integration during folklore expeditions contributed invaluable material for scientific observations and conclusions about the modern state of verbal traditions, of Slavic folklore in the multiethnic Kazakhstan, of the influence of transformation processes, of genre «extinction» etc.

Much research is being conducted at the junction of folklore and old Russian, Byzantine and Turkic literature. The interest of the Kazakhstan science to the investigation of individual aspects of old Russian literature revived in the second part of the XX century after the publication of the «Old Russian Literature» reading book, in which literary monuments were accompanied by historical and philological commentaries.

The appearance of Olzhas Suleimenov's book «AZ-i-IA» enhanced medieval history study. His marginal postmodernist research is an attempt to dispel the praising and the heroic view on Prince Igor and his Polovtsian March. The issue of «unseen turkisms» in the Old Russian literature monuments and in Slavic grammar as relevant for Kazakhstan philology in the aspect of Turkic-Slavic connections context was continued by the author in his book «Crossing Parallels».

Abai study takes a special place in Kazakhstan philology. M. Auezov, a national literature classic, became the pioneer in studying Abai akyn heritage. His epic novel «Abai Zholy» (Abai's Way) is a sort of generalized fiction view of the centuries-old people's history. The poetic presentation of Abai's biography, introduced by Auezov, was developed by Z.A. Akhmetov Scientific School. The significance of the national poet who opened all the doors to all the writers of the «Great Steppe», makes the description of the development of Abai as a poet a scientific commentary. The text of Z.A. Akhmetov's book is a «doubled level» anthropology. In his epic novel «Abai Zholy» M. Auezov recreated the biography of the great akyn not as a real person but as a character made by a lyrical poet: «We can see a «secondary» person, who is recreated and understood by another person».

Akhmetov is identified as interpreter of Auezov's understanding of Abai's creative personality. He acts as a reader and a recipient. Fiction «doubled level» anthropology is shown in the attempt of Kazakhstan literature study classic to work his own way up to scientist by reading of Abai's precepts and Mukhtar Auezov's spiritual heritage interpretation.

The18th century Russian literature was not thoroughly studied in Kazakhstan as it was very specific and hard-to-get. For the first time in the studies of the late 20th century oriental and Central Asia motives were shown in Russian poetry and prose of the period. Kazakhstan philologists' research is devoted to the following issues: making lyric song in poetry more literary-like, typological compatibility and similarity between certain classic and folklore genres, and principles of character representation.

In translation theory adequate free translation is seen by Kazakhstan research workers from the point of view of M.L. Gasparov, with the use of statistic methods and techniques of formal and functional thesaurus compiling. Numerous research works of A.L. Zhovtis were devoted to studying specificity of the poetic style, meter patterns of Russian poets and three-century development of Russian poetry.

Research of history of the Russian literature of the classical XIX century is in the focus of Kazakhstan philologists. Works of Russian classical writers are traditionally studied in several aspects: poetic manner and literary style; genre peculiarities; moral and aesthetic ideas of the author and his influence on classical Kazakh writers and development of the Kazakh novel.

In monographs of Kazakhstan scholars the way Kazakh classical writers took much of the genre, making imagery of the text, psychological insight, touching upon moral issues of Russian classical literature is considered. The school focuses much on A.S. Pushkin's works. Kazakhstan Pushkin studies was developed by N.A. Rayevsky in his works «When paintings will talk» and «The Portraits Have Talked».

The current dramatic development of history and culture has made description and observation of different forms of an artist's self-determination the focus of literary studies. A literary work, aimed at the dialogue both with the mass reader and professionals, gets a «double code» of the literary text. A striking change of the genre repertoire takes place because of the author's position in his dialogue with his literary character and the reader in the form of the direct address to the reader or as an aesthetic experiment model.

Poets and writers speak from literary rostrums acting as memoirists, essayists and publishers; they participate in open debates in periodicals, literary miscellanies and journals. Improvisation, characteristic of the Kazakh people, a special value of «word» is considered to be an ethnic peculiarity of Kazakhstan literature. The founder of Kazakhstan poetry, Abai, whose poems and songs were known to the whole steppe and were transferred like via the Internet from one aul to another, in the end of his life wrote the famous «Book of Words» which is often considered to be the greatest of his books. The genre created by Abai is the address of akyn to his people.

Being one of the main lines of contemporary Kazakhstan literature, form-making strategies of literature make a word material, creating a selfidentification model of the author's personality. Responding to this peculiarity of the literary text, philology does «revision» of its scientific tools. Thus, literary anthropology technique developed by the Kazakhstan philologist V.V. Savelyeva has proved to be a universal one.

V.V. Savelyeva's works in interrelation of the literary world and literary anthropology aroused interest in secondary and higher educational institutions of the Kazakhstan cities of Almaty, Ust-Kamenogorsk, Astana, Taraz, Chimkent, Petropavlovsk, etc.; Russia (Moscow, Orenburg, Chelabinsk, Omsk, Barnaul, Orel, etc.), Poland, Canada. Being an interdisciplinary science, human anthropology (cultural, linguistic, psychological, legal, historical, etc.) is actively used in modern research. However, literary anthropology is not systematically mentioned in textbooks.

The future of further research in this field is based on the necessity of developing general literary anthropology both in art history and theory of literature. In the post-modernism, post- and neo-realism period anthropological research in literature and culture is still relevant and further development of terminology for studying image of a person in art is of great importance.

The new trend in Kazakhstan literary studies is research of poetry and prose within Central Asia literary process.

The methodology is based on continuation of the technique of integral analysis of image semantics, symbols and myth poetic meaning of poetic texts. The systemic and thematic as well as structural studies of nature in the poetic reality have let S.D. Abisheva determine typological similarities not only within Russian poetry, but also between Russian and Kazakh poetry.

Traditionally, novel as a genre is paid particular attention, and both theory and history of the classical Russian novel as well as marginal novels are studied.

Whereas the Russian prose of the first half of the XIX century became classical, the poetry and prose of the second half of the XIX century – the beginning of the XX century requires literary criticism and theoretical and historical research. The narration analysis includes methodology and techniques of psychoanalytical interpretation of the literary text. The chronotype issues, peculiarities of arrangement of time and space in literary texts give a possibility to reveal some typological aesthetic similarities in the development of the world literary prose.

The latest literature approaches let one determine specific features of postmodernism prose, explain peculiarities of the author's position representation and the readers' comprehension problems.

A priority of Kazakhstan philology is research in regional historical and literary process and

literary regional studies. In the world the borders of which are constantly changing, mobility is an essential feature of any person's life. Globalization makes a person think of his attitude to the place where he was born and lives. Consequently, there is an interest of literary studies to studying the «territory» phenomenon, focused on the nature of the literary text, its spatio-temporal characteristics. Literary-regional studies should start with the notion «regionalism» as an outlook cultural value including maintaining and developing lifestyle, culture, language, nature, self-awareness of the region. In the third millennium the maintenance of polycultural dialogue is, probably, the most important of human priority and, simultaneously, an indispensable component of the state policy of our Republic. Kazakhstan, located to live in both Europe and Asia is a country uniting dozens cultures with unique traditions and customs.

In search for new aesthetic paradigm modern Kazakh literature, on the one hand, is striving to continue the dialogue of Eastern and Western cultures, on the other hand, it is trying to maintain its ethnic uniqueness.

Rich mythological imagery, conceptual multidimensionality, deep psychological insight, genre and inter-genre experiments – these and other characteristics are typical of modern literary Kazakh prose.

Literary-aesthetic inventions, good genre and stylistic «findings» enhance work at defining and scientific explanation of the «new paradigm» in history and modern theory and methodology of Kazakh literature and art. According to the well-known philologist A.S. Ismakova, « it has become evident that one cannot continually include more and more new names, literary works, facts of not only quantitatively but also qualitatively different potential». In modern Kazakh prose the genre and style modification issues form a very important branch of Kazakhstan philology.

Research of the features of modern literary situation in Kazakhstan is based on the identification, creative comprehension and analysis of the main trends of the modern Kazakh prose, the most productive prose genres, the style of the most striking of them, the study of interrelation of tradition and innovation, etc. Anuar Alimzhanov, Rollan Seyssenbaev, Kanat Kabrakhmanov, Auyezhan Kodar, Dyusenbek Nakipov, Hassen Adibaev, Aslan Zhaksylykov and other writers think and write professionally in the Kazakh and Russian languages. Theirs books represent Kazakh literature of independence (1991–2010 yrs) in which there is a variety of ideas and themes, search of original compositional, genre and stylistic, ideological and thematic decisions related to the world and global order problems.

Modern literature is well represented in Kazakhstan publishing projects of Bakhytzhan Kanapyanov (Director of the «Zhibek Zholy» Kazakhstan Publishing House), Rolan Seyssenbaev (President of the International Abay House in London).

University science, focused on the specificity of higher education and student audience, does research of the comparative studies process. This study analyzes interdependence, interrelation and mutual contribution of Russian and Kazakh literature. And the study of Russian literature as an individual macrocosm units polylingual continuum of sovereign Kazakhstan and promotes humanistic priorities and the development of modern scientific conception.

Owing to bilingualism of the majority of Kazakhstan authors the development of multiculturalism of modern Kazakhstan literature helps meet challenges of the time: ethnic images reflecting ethnic self-determination in the light of universal values in the changed world.

COMMON FEATURES OF RUSSIAN AND BRITISH PLACE-NAMES

Khvesko T.V.

Tyumen State University, Tyumen,
e-mail: khvesko@inbox.ru

We study formation, development, scientific and folk interpretatations of original and borrowed topographical onyms in diachrony. Place-name is a universal phenomenon in Indo-European languages. Linguistic creativeness as manifestation of speaker individuality is reflected in hybrid formings. Creative transformations of toponyms appear at definite levels of linguistic analysis: morphonological, lexical, semantic and structural.

In the British Place-names the following morphological processes take place:

hybridization, e.g.:

Silverstone ← Sewulf's + ton; Yelverton ← Ella's+ ford + ton; Glamorgan ← glan + more + geni; Godmanchester ← Lat.Godmund+cestre;

reduction*:*

Fotheringhay ← forth + here + ing + eg; Grantchester ← Grant + set; GlenAffric←glen+a+the+break;

doublication:

Torpenhow Hill ← tor + pen + how + Hill;

adaptation:

*Conis**brough***; Glaston***bury***; Gold's + pie (E) ← by (ON).*

Such modifications as *stone → ton, borough → burg, chester → set* cause the loss of primary meaning and appearance of naive folk interpretation of the new form, e.g. *Brownsea Island → Brunkeseye*, where the final component *E eye ← OE ieg*. Folk interpretation of *Brownsee* is considered: *brown + sea*.

In the Russian Place-names the following morphological processes take place:

reduction: *Semivragi, Prechistenka, Sukhodol, Sivtsev Vrajek, Kholmogory, Kitai-gorod, Spaszaulki, Zamoskvorechie, Novgorod;*

adaptation: *Pinega, Onega, Ladoga, Vetluga, Sviyaga, Volga, Vichegda, Vologda, Nerekhta;*

rotation: *final component ga/da (*means *water)* is observed in the North while in the centre of Russia *va/ma: Neva, Sosva, Narva, Proshva, Kama, Chukhloma, Kostroma, Bogulma, Yakhloma;*

hybridization: *Belozero, Churozero, Ustozero, Orenburg, Omsk, Tomsk.*

According to the typological investigations of the languages it is noted that morphological and lexical dynamics is characteristic for the Russian onyms while structural changes prevail in the English onyms. Semantical transformations (conversions) are observed in the system of onyms as well, where secondary nomination units are products of cognitive dynamics.

Though the description of Place-names in Germanic written sources appeared 600 years earlier than in Slovenic, there are common features in both languages. Comparative analysis of Indo-European roots shows that changes in toponymic patterns are mainly caused by the morphological dynamics. Many old Place-names have undergone some degree of reduction in the long period since they were first coined. Place-names form very large and diverse groups of onyms, representing **description** of some topographical objects either natural or man-made, which were then transferred to the settlement, probably at a very early date, e.g.

Bourton-in-the-Water;   Bourton-upon-Trent; Bourton-in-the-Hill; Black Bourton; Burton Constable; Clayton-le Moors; Clayton-le-Dale; Clayton-le-Wools;

object quality: *Bradwell-on-Sea, Belcoo; Cromarty; Hugh Town; Kyle of Lochalsh; Langholm; Huntington; Leeds Castle; Gidea Park; Chidwell*;

historical occasions: *Brentwood (burnt wood); Fotheringhay (forth + here + ing + hay); Barnstaple, Dunstaple (staple); Brittas Bay (briotas); Beaconsfield, Dunkery Beacon, Brecon Beacons.*

The names for rivers and streams, springs and lakes, fords and roads, marshes and moots, hills and valleys, woods and clearings, and various other landscape features are also the names of inhabited places: *Sherborne, Fulbrook, Bakewell, Tranmere, Oxford, Breamore, Stodmarsh, Swindon, Goodwood, Bromsgrove, Bexley, and Hatfield* – all have second elements that denote topographical features.

The Glossaries provide a selection of the meanings found for some of these topographical elements and give an idea of the great range and variety of this vocabulary. From the structural point of view, most English Place-names are compounds, that is they consist of two elements, the first of which usually qualifies the second. The first element in such compounds may be a noun, an adjective, a river-name, a personal name, or a tribal name. Typical examples of compound Place-names formed during the Old English period are:

Daventry, Coventry, Oswestry (Dafaʼs tree, Cofaʼs tree), dar/der: Derwent, Daren't, Dart, Darly, Darvel (celtic: deruenta → dar/der); beith (Gaelic: beither → E birch): Dalbeattie; ash: Knotty Ash, Bramhall, Bramton, Bromley, Bromsgrove, Bromyard; Juniper Green, Creydon, Beeston, Farnham, Glastonbury.

However some Place-Names consist of one element only, at least to begin with: examples include names like *Combe (ʻthe valleyʼ), Hale, Lea, Stoke, Stowe, Thorpe, Worth, and Wyke.*

Less common are names consisting of three elements such as *Claverton (ʼburdock ford farmsteadʼ), Redmarley, Woodmansterne, and Wotherton*; in most of these the third element has probably been added later to an already existing compound.

So comparative analysis of Russian and British onyms from the structural point of view shows linguistic creativeness of speech patterns. The creativeness is manifested in such morphological processes as reduction, doublication, hybridization and adaptation. Universal models characteristic for both languages are shown.

References

1. Cassagne Jean-Marie; Korsak, Marida. Le noms de lieux du Tarn.– Editions sud Quest, 2008. – 319 p.

2. Mills A. David. Oxford Dictionary of British Place-Names.– Oxford University Press, 2003. – 513 p.

3. Dorward David. Scotland's Place-Names. – Glasgow: Bell and Bain Ltd., 2001.– 160 p.

4. Delahunty, Andrew. Oxford Dictionary of Nicknames. – Oxford University Press, 2006. – 229 p.

5. Cresswell, Julia. Dictionary of First Names. – Chambers Harrap Publishers Edinburgh: Ltd. 2009. – 468 p.

6. Mills, David. Dictionary of London Place Names. – Oxford University Press, 2004.

Materials of Conferences

ON SOME GEOMETRIC ASPECT OF INTERPRETING HOMOGENEOUS COORDINATES

Vertinskaya N.D.

Usole-Siberian, e-mail: stevia@mail.ru

As known, synthetic geometry is a foundation of explorations in analytic geometry. It is proved by sayings of G. Kantor [1]: «…for a long time complications arose at the way of introducing complex values, before their geometric presentation with points and ranges on a plane has been found»; and F. Klein [2]: «…historical emergence of the idea of irrational values has its roots in geometric intuition», etc.

In his work, F. Klein specifies: «...two types of geometry are outlined: synthetic geometry…and… analytic geometry… A third type can be studied besides these two, ..it is a generalization of the first two types». It is known that one of synthetic geometries is called descriptive geometry that studies methods of displaying spatial forms onto a plane.

The display process includes:
– an original;
– display apparatus;
– a model (an image);
– model bearer.

Any spatial objects serve as an original, a point is the simplest one of them, it is explicitly defined by three coordinates with regularity ∞^3 (a point on a plane has regularity ∞^2, a point on a curve (straight) has regularity ∞^1) [4].

Curved (straight) lines or surfaces (planes) can serve as projecting apparatus.

A model (image) of a point will be represented by a point while projecting with a curved (straight) line or a curve (straight) while projecting with a surface (plane).

A surface (plane) or a curved (straight) line can serve as a bearer of the model.

To express the provided information, we will take a point as an original, in other words:

A point is the original

An original is a point

cluster (S) or clusters of straights are the display apparatus

a point or points are the model

a plane is the model bearer.

Besides, a necessary requirement while projecting a space point that has regularity is that its model has the same regularity ∞^3.

Clusters of straights (S_1) and (S_2) are the projecting apparatus, and plane P is the model bearer. Space point A is projected form the center of S_1 to the point A_1 on the plane P (Fig. 1) that has regularity ∞^2, and all points of the beam SA_1 are projected into the point A_1. In order to meet the projection

requirement, we take another projection center S_2, and points S_1 and S_2 will define the straight in the space, and it will cross the plane P in point F_0 that is constant for this projections apparatus and will discharge beam of straights (F_0) on the plane P. Then, A_1 will discharge the straight from the beam of straights (F_0), and onto it we will project the point A from the center S_2 into the point A_2 with regularity ∞^1. As a result, we will have a model of point A on the plane P – a couple of points A_1 and A_2, in other words, the model regularity will equal

$$\left.\begin{array}{l} A_1 - \infty^2 \\ A_2 - \infty^1 \end{array}\right\} = \infty^3,$$ and here we can see that regularities of the original and the received model are equal.
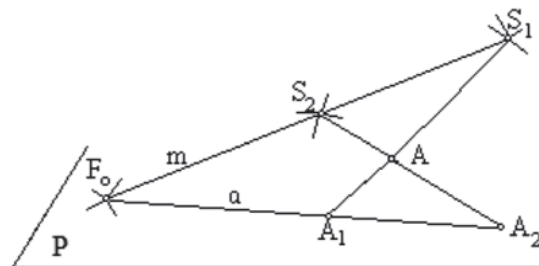

Fig. 1

If a body will serve as an original, it will separate into cut-offs as a beam (m). The cut-offs will model from projection centers (S_1) and (S_2) in the beam of straights (F_0) on the plane P.

Thus, descriptive geometry solves two problems: a direct problem – receiving a model of an original via projection apparatus according to the given original; and an indirect problem – receiving an original via projection apparatus according to a given model. The direct problem of descriptive geometry is called modeling, and the indirect problem is called constructing.

Let us explain the process of modeling and constructing, using Fig. 1.

We model point A via projection apparatus with two beams of straights аппаратом (S_1) and (S_2) onto the surface P. Projection centers S_1 and S_2 will define the line m in space, and it will cross the plane P in point F_0 that defines the beam of straights (F_0) on the plane P. Modeling space point A is carried out in the plane $\Delta(A, m)$. Point A from the center S_1 is projected into the point A_1 that defines, for example, the straight a from the beam of straights (F_0). On it we will project the point A from the center S_2 into the point A_2. As a result, model of the point A is represented by the couple of points A_1 and A_2.

Construction of the space point A is carried out if the point model that is a couple of points A_1 and A_2 on the plane P and projection apparatus, for example, couple of beams of straights (S_1) and (S_2) in space, is given. As earlier, projection centers S_1 and S_2 will define the straight m in space, and it will cross the plane P in the point F_0 that defines the beam of straight bearers of space points (F_0). The given points A_1 and A_1 lie on one of the straights of the beam of straights (F_0), they can lie on the straight a, for example. Crossing straights a and m define the plane $\Sigma(a, m)$ – the plane of constructing the point A. Beams of projecting the point A_1 from the projection center S_1 and the point A_2 from the center S_1 that lie in the plane $\Sigma(a, m)$ will cross in one point A. Therefore, we can see that the original can be constructed having two model projections.

On the plane P projections of space points will come in to types that we will explain in Fig. 2, 2'.
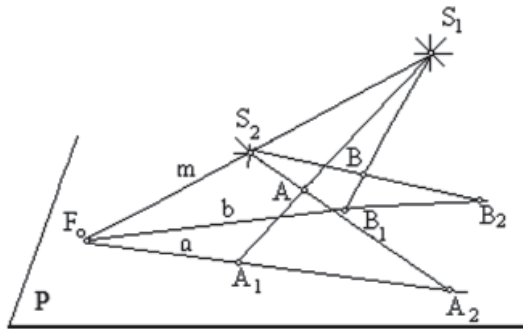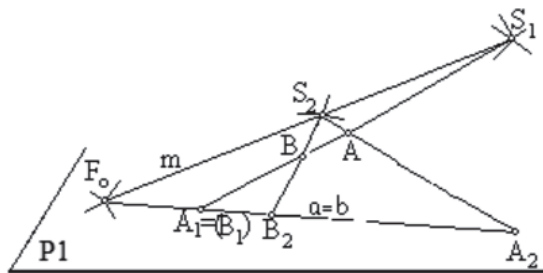

Fig. 2

Fig. 2'

We model two points A and B from centers S_1 and S_2 on the plane P. Points A and B will discharge two planes from the beam of planes (m), and these planes will cross the plane P along straights a and b of the beam of straights (F_0) (Fig. 2). From the projection center points A and B are projected correspondingly by the pair of points A_1 and A_2 on the straight на a and B_1 and B_2 on the straight b. A specific case of placing spatial points A and B is possible. These points can be located on one beam of straight cluster (S_1) or (S_2). In this case points A and B will belong to one plane of the beam of planes (m), and this plane will be by two crossing straights m and $(AB)()$. This plane will cross place P along the straight $a = b$ of the beam of straights (F_0) (Fig. 2). Points A and B from the projection center S_1 will project into the concurred projections $A_1 = (B_1)$, such point on a projection plane are called rival [5, 6]. Projections of points A and B from the projection center S_2 project onto the plane P into two different points A_2 and B_2 of the straight line $a = b$.

Emergence of a problem

Let us study implementation of descriptive geometry methods in order to solve some problems of analytic geometry. To do it, let us examine affine coordinates on a plane.

The simplest coordinate system on a straight can be imagined, if we set a starting point on it, point O, a unit with coordinate 1, and positive or negative spacings x from point O (Fig. 3).

On the plane or in space we will take two or three coordinate straights x, y or x, y, z with a mutual point O and random angles that are formed between these straights. Angles that are formed between axis equal 90°. Affine straight is unlimited in both directions, but we will never achieve any point that lies on the opposite direction on it.
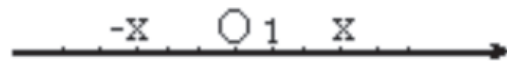

Fig. 3

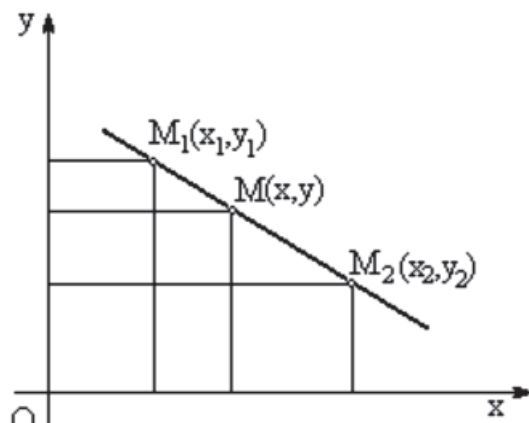Fig. 4

The special feature of an affine plane is that parallel straights do not cross on it.

On the affine straight let us study the division of the section $M_1 M_2$ by the straight point M in this relation of m/n, where   and   are random numbers (Fig. 4). Coordinates of the point $M(x, y)$ accord-

ing to the coordinates of points $M(x_1, y_1)$ and $M(x_2, y_3)$ are produced in textbooks on analytic geometry [7, 8, 9], where $x = \dfrac{nx_1 + mx_2}{m + n}$; $y = \dfrac{ny_1 + my_2}{m + n}$ for the point M that lies inside the section and $(m/n) > 0$, if point M will lie outside of the section, $(m/n) < 0$. If $m/n = 1$, point M with coordinates $x = \dfrac{x_1 + x_2}{2}$ and $y = \dfrac{y_1 + y_2}{2}$ will divide the section M_1M_2 in halves. If $m/n = -1$, coordinates of the point M' will be $x = \infty$ and $y = \infty$, such points are called unlimitedly remote, and are not studied in affine geometry. These unlimitedly remote points have been introduced into geometry as nonintrinsic elements.

Thus, a nonintrinsic point is produced on a straight, and nonintrinsic is produced on a plane, and nonintrinsic is produced in space. Therefore, each straight obtains a nonintrinsic point that is represented on a closed line (Fig. 5). Now parallel straights have obtained a mutual nonintrinsic point. Producing nonintrinsic points on a straight allowed us to simplify many suggestions, for example, two straights cross on a plane now. Therefore, it is claimed that, while moving in any direction, along a straight we can return to an initial point through the unlimited one. Such straight has been called projective straight, and plane – projective plane, and space – projective space. Studying the problem of

dividing the section of the straight M_1M_2 in relation to m/n on the projective straight, point $M_\infty(\infty)$ in now legalized, and we can suggest that it divides the section $M_1M_\infty M_2$ in relation $m/n = -1$.

Besides, nonintrinsic geometric images cannot be set with affine coordinates. Therefore, a new definition of coordinates is introduced. It is set for the straight so that each point on the straight has not one, but two corresponding coordinates x_1 and x_2, we have a redundancy of coordinates for a straight [3]. Moreover, a multiplicity of value systems will be set in correspondence to a single point on a straight, they will be represented as $(\rho x, \rho y)$, for example, point $x - 1$. I in the Fig. 6 where ρ is random but not equal to zero number, x_1, x_2 obtain any values except for their simultaneous equality to zero. In this case we receive a specific single point on a straight, and in case $x_2 = 0$ and $x_1 = \lambda$ we receive a nonintrinsic or unlimited point. Thus produces coordinates are called **homogeneous coordinates**.

Rival points

Let us study the coordinate $x = \dfrac{x_1}{x_2}$, on axis Ox more carefully, where x_1 and x_2 alter from 0 to ∞ and, it is necessary to consider that while x_1 grows and x_2 remains constant, x grows, and if x_1 remains constant, and x_2 grows, x decreases. Let us place variables x, x_1, x_2 on straights, x – on a horizontal straight, and variables x_1 and x_2 on parallel straights with an inverse count from the center of axis.
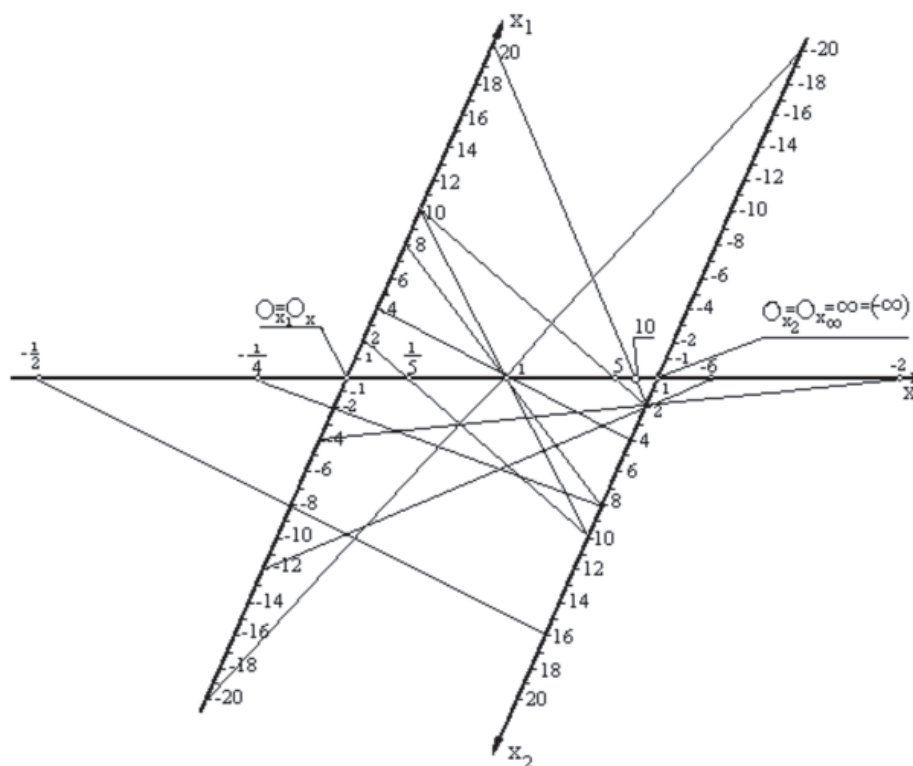

Fig. 5

Let us place the point on infinity within the limits of our sight, it will be the point of crossing between axis Ox_2 and Ox, then we will examine the behavior x in this case.

Therefore, we can add a theorem to the claim by G. Kantor on that the point ∞ is the only one on a projective straight [3]: **Two point of space ∞ and $-\infty$ project into rival point on a projective straight.**

Let us study alterations of on the axis (Fig. 5), it decreases from ∞ to 0, and further to $-\infty$. Therefore, the highest valuedecreases down to the smallest value ∞ on a digital axis. However, $-\infty$ cannot transfer toand backwards. In the Fig. 6 we can see that ∞ closes with the point $O_{x_2} = O_x$ on the right, and point $-\infty$ – on its left, and these points coincide with the point $O_{x_2} = O_x$. In other words, projection of points ∞ and $-\infty$on a projective straight are **rival points** (it can be observed in Fig. 2' with points $A_1 = (B_1)$. Therefore, an original of the projective straight will be represented as a broken spatial curve.

If now values of x increase from $x = 0$ to ∞ in point $O_{x_2} = O_x$, values of will decrease to the left of zero in point O_{x_1} down to $-\infty$ in point $O_{x_2} = O_x$.

In case straights (2, –2), (–3, 3), (10, –10) etc. are parallel to the axis and are straight of beam of straights $M_\infty(-1)$ point $x = -1$ will be located in the infinity.

Thus, it is obvious that there is no point $x = \dfrac{0}{0}$ on axis Ox.

According to the provided information, we can see that, in order to construct pint on a projective straight, one has to escape to a plane. Two planes are required to construct points on a plane where two axis – Ox and Oy operate, in other words, $x = \dfrac{x_1}{x_3}$ and $y = \dfrac{x_2}{x_3}$ require two planes, and their crossing line will care Ox_3 and axis Ox and Oy will be parallel to it.

Since the studied projective straight is a model of a spatial object, we cannot construct it, as a projective straight has only one projection. Each point of an original of a projective straight projects into one point on the model, and only two points $-\infty$ and $-\infty$ project into rival points. There are several spatial lines, and one projection of them represents a closed line with two rival points, for example, a wind of a helical cylindrical line, if ∞ and $-\infty$have been placed at the end and the beginning of the wind while projecting it by a beam of straights with their center in a nonintrinsic point (Fig. 6), or a wind of cone helical line that is projected by a beam of straights from point S that coincides with the cone vertex (Fig. 7). A wind of a helical line that is placed on an unilocular hyperboloid will have a similar projection.
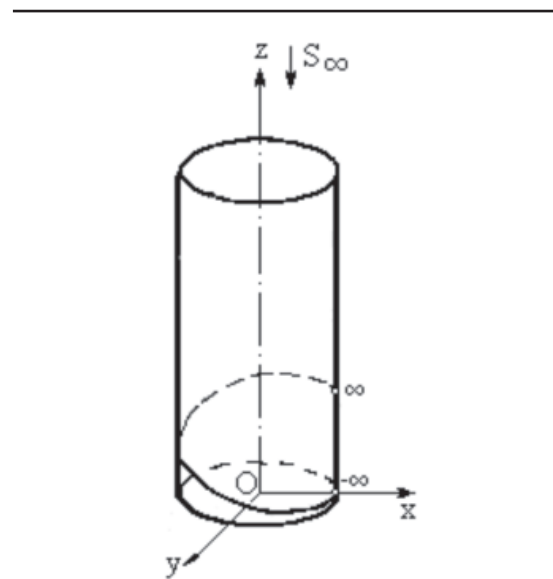
Fig. 6
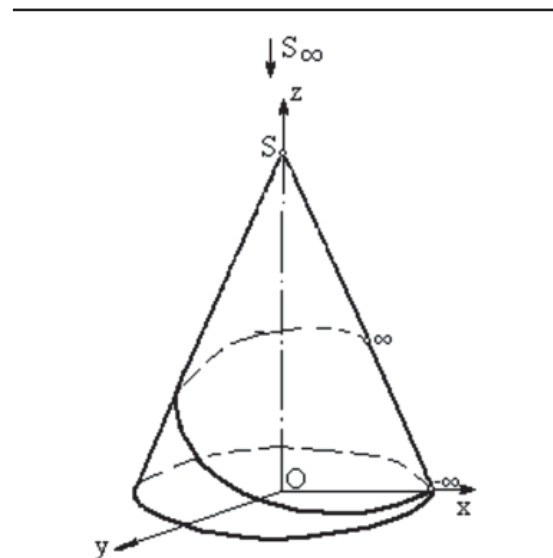
Fig. 7

Resume

Thus, we have geometrically proved that:

1) projections of spatial points ∞ and $-\infty$are rival point on a projective line;

2) x_1 and $x_2$cannot equal zero simultaneously, as there is no such point on axis Ox;

3) There is no point $x = \dfrac{x_1}{x_2}$ on an affine straight in homogeneous if $x_1 = -x_2$ or $-x_1 = x_2$.This point exists on a projective straight in point $\hat{M}_\infty(-1)$.

Therefore, using methods of descriptive geometry, one can describe an original of a projective straight:

a) An original of a projective straight can be located on: a cone surface with its vertex in point S_1 and a directing projective straight, if a projec-

tive apparatus will consist of two beams of straights with intrinsic centers S_1 and S_2. Each point of an original will lie on one forming line of a conic surface, points ∞ and $-\infty$ will lie on the same forming line of a conic surface.

b) An original of a projective straight can lie on a cylindrical surface with a directing projective straight and projection apparatus that consists of two beams of straights with centers S_1^∞ and S_2^∞ in nonintrinsic points.

References

1. Kantor G. A study of multiplicities. – 1914. – 189 p.

2. Klein F. Elementary mathematics from the position of the higher mathematics. – T.I. – M., Science, 1987. – 431 p. – V.II – M., Science, 1987. – 416 p.

3. Klein F. Higher geometry. – M., 1939. – 399 p.

4. Vertinskaya N.D. Mathematical modeling according to constructive descriptive geometry. – Irkutsk, 1992. – 130 p.

5. Vertinskaya N.D. Mathematic modeling of multi-factor and multi-parameter processes in multi-component systems according to constructive geometry V.I of lecture course. – Irkutsk, 2009. – 229 p.

6. Vertinskaya N.D. Mathematic modeling of multi-factor and multi-parameter processes in multi-component systems Irkutsk. – Irkutsk state technical university, 2009. – 229 p.

7. Klein F. Non-euclidean geometry. – Moscow-Leningrad, USSR, 1936. – 355 p.

8. Andreyev A. Analytic geometry. – M., 1905. – 610 p.

9. Aleksandrov P.S. Lectures on analytic geometry. – M., 1968. – 911 p.

THE DISTRIBUTED CALCULATORS MODEL FOR MOLECULAR-DYNAMIC SIMULATION OF STRONG INTERACTION SYSTEMS

[1,2]Voronova L.I., [1]Trunov A.S., [1,2]Voronov V.I.

[1]*Russian State University for the Humanities, Moscow;*
[2]*National Research University Higher School of Economics, Moscow, e-mail: voronova.lilia@ya.ru*

The model of distributed calculators makes it possible a parallel calculation of the correlated N-particle system with a complex multi-particle interaction (long-range ionic and short-range repulsive, two- and three-particle covalent interactions) with MPI and CUDA technologies. The computational model is based on the mathematical model of heterogeneous descriptors developed by the authors, that allows shift the focus from the describing the physical interactions in the system to the description of data flow between the descriptors. The results of computer experiments, which compare the time of the simulation on the cluster of 16 calculators and GPU NVIDIA are given. The model of distributed calculators was being tested with the software package of RIS «MD-SLAG-MELT»[1].

Nowadays, computer modeling (CM) is widely used in various fields of modern science. In particular, in physical chemistry we can study the properties and structure of materials and their relationships.

Molecular-dynamic (MD), Monte-Carlo and quantum-chemical methods are applied there and allow to define different sets of properties. The molecular-dynamics method allows to define the whole complex of properties (structural, thermodynamic, transport) and to investigate the interrelations of nanostructure and physical-chemical properties [1–5].

The size of the simulated system for MD modeling is extremely important. A significant increase in the size of the system provides the practical relevance of the results. The calculation of the systems with 10^5–10^7 particles requires a large amount of time and computer resources and it makes impossible carrying out CM without high-performance computing [6, 7]. To solve this problem, the authors have developed a model of distributed calculators based on distributed computing methods for correlated N-particle system [8–10].

Physical phenomena that are adequately described by the classical and quasiclassical theory can be simulated (using *models of particles)* by molecular dynamics method. The term «*model of particles*» is the general one for a class of computing models in which the discrete description of the physical phenomena includes cooperating particles. Each modeling particle has a set of constant and variable attributes.

In this case molecular-dynamic simulation represents the numerical solution of the Cauchy's boundary task, which means that the initial system state in a bounded region of space (calculation area) is specified at the time $t = 0$ and the boundary conditions are reserved on it. Modeling is tracking the time evolution of this configuration. The main part of calculation is the cycle on a time step in which the state of physical system changes on time for a small step Δt.

The current condition of the physical system is defined by the attributes of the final ensemble of particles, and the evolution of the system is defined by the interaction laws of these particles. The most of the molecular-dynamics systems relates to the class of long-range potentials, or considering only short-range covalent interactions.

The subject of this work is an investigation of the polymerizing systems with multi-particle interactions which means uniting some types of interactions – two-particle contribution (long-range ionic and short-range repulsive) and multi-particle ones (two and three-particle covalent interactions). The description of this class of models is given in Table 1 [10].

The ionic model is a part of ionic-covalent model though for modeling ionic connections it can be used only independently. In the ionic model (IM) potential functions are built for the ion system. The

IM includes models of short-range repulsive and long-range Coulomb interaction. The last one is calculated by the Ewald method or the fast multipole method.

The ionic-covalent model is more realistic to describe the interactions in the polymerizing systems. The model is based on the polymer theory of the slags, which suggests the presence of small non-destructive structural groups (elementary structure groups – ESG), which form the structural grid in the polymerizing melts.

Table 1

The interparticle interaction models are used in the information research system «MD-Slag-Melt» [10]

The Ionic model (IM)	
The Short-range model	The Long-range model
The Ionic-covalent model (ICM)	
– ICM of ESG (elementary structure group)	
– ICM of BI (bridge bonds)	
– ICME (environmental effect)	
The techniques covered net of covalent bonds	

The ICM unites the ionic model, the models of two- and three-particle covalent interaction in the elementary structure groups, the three-particle covalent interaction for bridge bonds, the environmental effects for the network forming atoms-oxygen bounds inside the ESG from the nearest neighbors outside ESG.

The features of the above mentioned physicochemical models require the development of a mathematical model that allows realizing high-performance computing for correlated systems with complex interactions containing 10^5–10^7 particles.

For solution the authors have developed a model of heterogeneous descriptors for distributed MD simulation of the correlated system of N-particles.

The basic elements of the model are the object and the descriptor, which provide the possibility of calculations distribution without detail specification of all interactions between the particles

We define *an object* as a set of particles descriptions and relations between them for the system in the initial state, which is built by specific rules and provides the possibility of the system decomposition for distributing and parallel calculations.

The objects are initialized by means of heterogeneous descriptors which contain polytypic elements of the description of the allocated object which is necessary for the distribution of calculations.

Thus, the system is a set of the objects characterized by heterogeneous descriptors the calculation of which can be distributed on separate calculators, combining results on a certain scheme.

On the basis of physicochemical models and the analysis of the program code of a local MD application, the authors have constructed a set of descriptors allowing to share the application code into independent blocks between calculators. The descriptors can be divided into two classes: one-particle descriptors and aggregators (two – and three-particle descriptors).

Both classes of descriptors include the possibility of parallel computing on different calculators.

However, if the one-particle descriptors can be distributed on the calculators independently, then the aggregators (containing the elements describing the cross relations of different orders between one-particle descriptors and/or aggregators) are «dependant» on the one-particle descriptor. The aggregators are computed on the same computer with a «parental» one-particle descriptor.

The notation of local molecular-dynamic model in model of descriptors for distribution MD simulating is given in Table 2.

Thus, the set of objects and their relationship between them are devided into different types of subset according to heterogeneous descriptor.

More detailed characteristic of descriptors elements are given below.

{D1(i)} – the class of one-particle descriptors assuming distribution. It is expedient to divide this descriptor into two subset.

{D1s(i)} – a subset of the descriptors, containing constant scalar attributes of particles. Here D1s(i) = <I, σ q, m, tip,>, where i – particle number, tip – particle type, m – weight, q – charge, σ – rigid sphere radius.

{D1v(i)} – a subset of the descriptors containing variable vector attributes of particles. Here

$$D1v\left(i\right)=\left\langle i,\ \overline{r},\ \overline{v},\ \overline{a},\overline{F}\right\rangle,$$

where $\overline{r}$ – radius vector; $\overline{v}$ – speed; $\overline{a}$ – acceleration; $\overline{F}$ – full force effecting on an i-particle at a given timestep.

{D∑(i)} – the class of heterogeneous descriptors providing creation of different orders relations between descriptors of different types. Some elements of the descriptors in the class are the storage, so these descriptors are called aggregators.

Three types of subset aggregators are defined by the authors.

1. {D∑2(i)} – a subset of the two-particle aggregators containing scalar and vector elements. They provide the calculation of cross relations, on the basis of one-particle descriptors, and also contain

scalar and vector stores. The aggregators depend on one-particle descriptors (called «brunches»). Data for calculation are received from «parental»

descriptor. The aggregator realizes consequent calculation of all pair relations between fixed i- object and others to form storages.

Distributed descriptor model of molecular-dynamic modeling N-particle correlation system

Classes of descriptors and different types of descriptors in the class	Type of descriptors	Type of elements	distribution
$D1(i)$	one-particle :	attributes of particles :	independent
$D1s(i) = \langle i, tip, m, q, \sigma \rangle$	scalar	constant	
$D1v(i) = \langle i, \overline{r}, \overline{v}, \overline{a}, \overline{F} \rangle,$	vector	variable	
$D\sum(i)$	aggregators :	cross relationship between descriptors	depends on «parental» descriptor
$D\sum 2(i) = \langle i, j, \overline{f2}, \Sigma\overline{f2}, \varphi2, \Sigma\varphi2... \rangle$	two-particle	{D1(i)}∩{D1(j)}	
$D\sum 3(i) = \langle i, j, k, \overline{f3}, \Sigma\overline{f3}, \varphi3, \Sigma\varphi3 \rangle$	three-particle	{D1(i)}∩{D1(j)} {D1(k)}	
$D(Property) = \langle T, P, E, C, \gamma_V, \alpha_P \beta_T, \chi_a, msd_a, \eta, \xi, l \rangle$	multi-particle (macroscopic properties)	{D1(i)}∩ D∑2(i)∩ D∑3(i)	not distributed

Here

$$D\sum 2(i) = \langle i, j, \overline{f2}, \Sigma\overline{f2}, \varphi2, \Sigma\varphi2... \rangle,$$

where i, j – particles numbers; $\overline{f2}$ – force acting between i and j particles; $\varphi2$ – two-particle potential; $\Sigma\overline{f2}$ – the vector storage including different types of contributions to two-particle force effecting on an i-particle; $\Sigma\varphi2$ – the scalar storage containing values of different power contributions to total two-particle energy.

2. {D∑3(i)} – a subset of three-particle aggregators which build third order cross relations on the basis of one-particle descriptors. Each aggregator contains the variable vector and scalar elements which are calculated on special algorithms, providing formation of limited selections of particles (elementary groups) from all range of numbers. The aggregators calculate the relations between triplets of particles within these selections. Like two-particle aggregators it contains scalar and vector stores being brunches in relation to a pair of one-partial descriptors.

Here

$$D\sum 3(i) = \langle i, j, k, \overline{f3}, \Sigma\overline{f3}, \varphi3, \Sigma\varphi3 \rangle,$$

where i, j, k – triplets of particles from elementary groups; $\overline{f3}$ – three-particle interaction; $\varphi3$ – three-particle potential; $\Sigma\overline{f3}$ – the vector storage including different types of contributions to the three- particle force acting on an i-particle; $\Sigma\varphi3$ – the scalar storage containing values of different power contributions to total three- particle energy.

3. {D(Property)} – aggregators subset containing elements, describing macroscopic properties of

the system, based on two- particle and three- particle aggregators. Here

$$D(Property) = \langle T, P, E, C, \gamma_V, \alpha_P, \beta_T, \chi_a, msd_a, \eta, \xi, l \rangle,$$

where α – type of particles; T – temperature; P – pressure; the C – heat capacity; E – energy; γ_V – coefficient of thermal pressure; α_P – coefficient of thermal expansion, β_T – isothermal compressibility; χ_a – velocity autocorrelation function; msd_a – mean square displacement; D_a – diffusion coefficient; η, ξ, l – viscosity factor, coefficient of conductivity and thermal conductivity. These aggregators cannot be distributed.

The method of heterogeneous descriptors make it possible to transfer the accent from physical interactional in the system to information description of data flows redistribution between descriptors and use this approach to form computing model of redistributed calculation on the bases of heterogeneous descriptors.

The model of distributed calculators is based on a master-slave methodology. The master controls the slaves, separates a set of particles into subsets which are transferred to the slaves for calculation. The master receives data from the slaves and processes the results. The slaves calculate the N-particle system on the CPU or the GPU, using MPI and CUDA technologies.

The model of distributed calculators is given in Fig. 1.

The model assumes the implementation of distributed computing a heterogeneous computing environment. The calculators have different performance and type, such as the GPU and CPU [11].

On the first step of modeling the all set of particles is transmitted to every calculator. The master generates a subset of particles that will be

transferred to the calculators for processing. At run time of work, each slave receives data from the master about the calculated subset of the particle. The slave provides interactions calculation describ-

ing descriptors $D\sum2(i)$ и $D\sum3(i)$, associated with the i particle, according to a given scheme. When each slave completes the calculation, it passes the results to master which gathers and processes data.

The process of preparing the data on the master calculator

Master calculator

Set of particles divided into subsets

| 1 | 2 | ••• | N |

Data processing

transfer MPI messages

calculator 1   calculator 2   •••   calculator N

The slaves is calculated the N-particle system on the CPU or the GPU, using MPI and CUDA technologies.

| 1 | 2 | ••• | N |

Combining subsets and calculation of macroscopic properties

Master calculator

Process performed at the master calculator

Fig. 1. The model of distributed calculators using the CUDA and MPI technologies

The most pressing is to ensure parallel calculation of objects characterized by the descriptors $D\sum2(i)$, since the implementation of this part simulation has the largest computing time (a quadratic dependence on the number of particles N^2). Flowchart of the calculators work based on the model of heterogeneous descriptors is given in Fig. 2.

Getting calculator subset of particles

Calculator 1

$i, \overline{r_\iota}, \overline{v_\iota}, \overline{a_\iota}, \overline{F}_i$

$i, j, \overline{f2}, \varphi2, \dots$

$i, j, k, \overline{f3}, \varphi3\dots$

Calculator 2

$i, \overline{r_\iota}, \overline{v_\iota}, \overline{a_\iota}, \overline{F}_i$

$i, j, \overline{f2}, \varphi2, \dots$

$i, j, k, \overline{f3}, \varphi3\dots$

•••

Calculator N

$i, \overline{r_\iota}, \overline{v_\iota}, \overline{a_\iota}, \overline{F}_i$

$i, j, \overline{f2}, \varphi2, \dots$

$i, j, k, \boldsymbol{f3}, \varphi3\dots$

Passing values subsets of the particles to the master for the calculation of macroscopic properties

Fig. 2. Flowchart of the calculators work based on the model of heterogeneous descriptors

The formal description of parallel calculation correlated N-particle system using CUDA and MPI, is given in Fig. 3 and 4 in the form of pseudo-code.

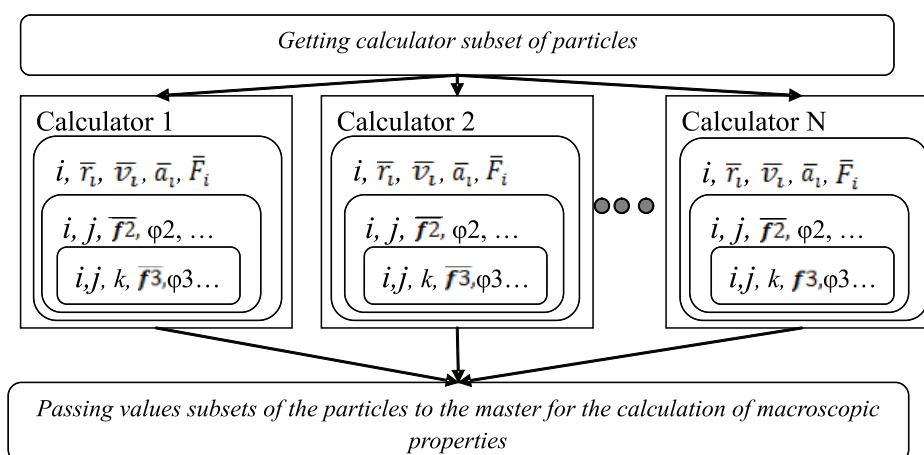To make parallel calculation of correlated N-particle system using the technology MPI calculators are placed in communication field of MPI_COMM_WORLD. Each calculator is given a unique number, stored in the variable *rank*. Data on the calculators quantity are stored in a variable *size*.

MPI_BCAST function (a variable containing the information of the quantity of descriptors in a subset, quantity of values containing in the variable, variable type, transmitter, communication area, error number) sends to each calculator the number of descriptors for further combining. The calculators independently determine their own subset of the descriptors, using variables StrSml and FshSml. The variables correspond to the start and final value of the subset descriptors and set computing field for calculator.

```
If  rank = master then              Definition of power subsets for each
    Call function: subset_range(interval)   calculator
End if
Вызов функции: MPI_BCAST(interval, 1, MPI_INTEGER, 0, MPI_COMM_WORLD, ierr)
StrSml = (rank*interval)+1          Definition of its range for the calculation of
FshSml = (rank+1)*interval          each calculator

Do i = StrSml, FshSml              Calculation  D? 2(i), D? 3(i), {Dlv(i)}
    Do j = 1,n
      Call subroutine: lng-rng_ion    long-range ionic and short-range
      Call subroutine: shrt-rng_rplsv  repulsive interactions

      Call subroutine: 2prt_cvl       two and three-particle covalent
      Call subroutine: 3prt_cvl       interactions
    end do
  end do

Call function MPI_GATHER (full_force_buf (StrSml: FshSml), interval,
    MPI_DOUBLE_PRECISION, full_force, interval, MPI_DOUBLE_PRECISION, 0,
    MPI_COMM_WORLD, ierr)
```
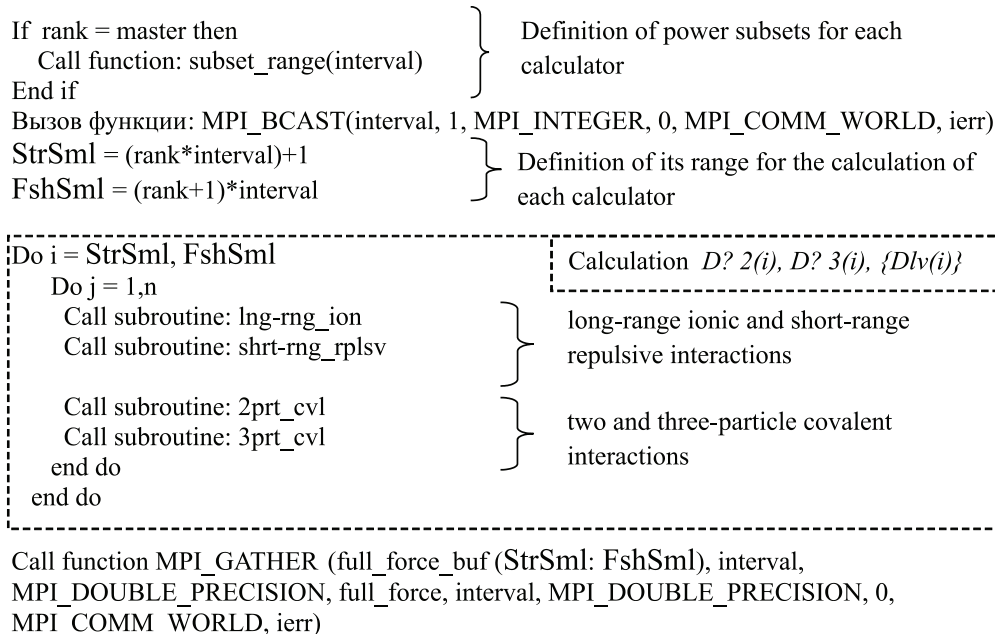
Fig. 3. Pseudocode parallel calculation of correlated N-particle system with MPI technology

After completion of computing calculators call the function MPI_GATHER (new values of elements of a subset descriptors *{Dlv(i)}*, number of values, data type, variable for the gather subsets of descriptors on the master, variable contains number of descriptor elements, variable type, communication area, error number) that sends a subset of the one-particle descriptors *{Dlv(i)}* to the master for their combining.

The calculation of the correlated N-particle system at CUDA is divided into two parts. In sequential part there are set of variables(memory GPU). In the GPU memory values of the elements of one-particle descriptors are placed. The subsets of descriptors distributed between processor threads and when the parallel calculation is completed the new values of the elements *{Dlv(i)}* are combined in RAM on the master.

Descriptions are distributed between threads in parallel part. Then each thread conducts its independent calculation and stores the data in memory GPU.

To estimate the efficiency of the distributed calculators model a number of experiments are carried out. The spared time for modeling using MPI and CUDA technologies are compared. Descriptors are filled with test values of the elements. For the model using MPI technology organized cluster containing 16 calculators. Testing of the model using CUDA technology was carried out on the processor GForce GTS 450. The results of computer simulations to model distributed calculators are given in Table 3.

According to the results of the simulation the least time is observed at the calculation of the system GPU GTS 450. At the calculation using MPI technology it is not possible to achieve the acceleration equal to the number of processors because frequent calls to slow speed RAM. In the code on the GPU provides accommodation of variables in a quick shared and constant memory, which reduces the simulation time.

The model of heterogeneous descriptors allows to create a computing model, which is used MPI and CUDA technology for GPU and CPU and allows to obtain experimental results of practical value.

Sequential part
Call subroutine: cpu_descriprion ()
 real, device, allocatable :: d1v_d   // *Declaring variables in GPU memory*
 d1v_d = d1v   // *Copy {D1v(i)} in GPU memory*
Call subroutine: gpu_lng-rng_ion <<<N/1024,1024>>>
Call subroutine: gpu _shrt-rng_rplsv <<<N/1024,1024>>>
Call subroutine: gpu _2prt_cvl <<<N/1024,1024>>>
Call subroutine: gpu _3prt_cvl <<<N/1024,1024>>>
d1v = d1v_d   // *Copy new values {D1v(i)} in CPU memory*
 end subroutine

Parallel part

```
subroutine gpu_lng-rng_ion ()
i=(blockidx%x-1)*blockdim%x+threadidx%x
If  i <= N then
Do j = 1,n
…………………
Calculation  D? 2(i),{Dlv(i)}
……………………
 end do
end subroutine
```

Fig. 4. Pseudocode parallel calculation of correlated N-particle system with CUDA technology

The results of computer simulations to model distributed calculators

Number particle	Local version	MPI			CUDA
	$P = 1$	$P = 2$	$P = 8$	$P = 16$	$P = 1$
	Calculation time in seconds				
50176	7,6	5,91	3,72	2,31	0,14
250880	180,4	131,93	88,45	54,68	3,53
401408	548,2	421,64	282,47	156,34	9,11

The model of distributed calculators was being tested win the software package of RIS «MD-SLAG-MELT» [1], [12].

Reference

1. Brown W.M., Kohlmeyer A., Plimpton S.J., Tharrington A.N. Implementing molecular dynamics on hybrid high performance computers – Particle-particle particle-mesh // Computer Physics Communications. – Vol. 183(3). – 2012. – P. 449–459.

2. Harvey M.J., De Fabritiis G. An implementation of the smooth particle mesh Ewald method on GPU hardware // Journal of Chemical Theory and Computation. – Vol. 5 (9). – 2009. – P. 2371–2377.

3. Jha P.K., Sknepnek, R., Guerrero-García, G.I., Olvera De La Cruz, M. A graphics processing unit implementation of coulomb interaction in molecular dynamics // Journal of Chemical Theory and Computation. – Vol. 6(10). – 2010. – P. 3058–3065.

4. Le Grand S., Götz A.W., Walker R.C. SPFP: Speed without compromise – A mixed precision model for GPU accelerated molecular dynamics simulations // Computer Physics Communications. – Vol. 184(2). – 2013. – P. 374–380.

5. Peter, E., Pande, V.S. Efficient nonbonded interactions for molecular dynamics on a graphics processing unit // Journal of Computational Chemistry Vol. 31(6). – 2010. – P. 1268–1272.

6. Research-Information System (RIS) «MD-SLAG-MELT»: http://www.nano-md-simulation.com.

7. Voronova L.I., Grigorieva M.A. Information model of physical-chemical melt properties developing for the research complex MD_SLAGMELT"// Interbranch information service. – 2011. – № 2. – P. 30–36.

8. Voronova L.I., Grigorieva M.A., Voronov V.I. Nanostructure computer modeling methods development for multicomponent slag melts // Fundamental researches. – 2011. – № 8 (part 3). – P. 617–622. http://www.rae.ru/fs/?section = content&op = show_article&article_id = 7981162.

9. Voronova L.I.,.Grigorjeva M.A., Voronov V.I., Trunov A.S. Computer simulation of the polymerizable oxide melts nanostructure using the descriptor-graph model // Materials Science and Metallurgy Engineering. – 2013. – № 1. – P. 1–12. DOI:10.12691/msme-1-1-1 http://pubs.sciepub.com/msme/1/1/1/#12.

10. Voronova L.I., Grigorjeva M.A., Voronov V.I., Trunov A.S. The program complex «MD-SLAG-MELT» modeling nanostructure and properties of multicomponent melts // Melts. – 2013. – № 2. – P. 1–14.

11. Voronova L.I., Trunov A.S. The parallel algorithm optimization for distributed molecular-dynamic modeling system // Interindustry information service (IIS). – 2011. – № 3. – P. 1–12. http://infogoz.vimi.ru/Izdanie/MIC_03_11.htm#chaper1.

12. Voronova L.I., Trunov A.S. Subsystem of distributed molecular dynamics simulation information research system «MD-SLAG-MELT». – Certificate of state registration of computer program № 2012615017, 5.06.2012.

COMPUTER MODELLING OF THERMAL PROCESSES OF ANY DESIGNS OF RADIO-ELECTRONIC MEANS

Shalumov M.A.

The Russian Academy of National Economy and Public Service under the President of the Russian Federation (Vladimir Chapter), Vladimir;
«Scientific research institute» ASONIKA» Ltd., Kovrov, e-mail: ALS140965@mail.ru

At construction of models of thermal processes (MTP) blocks of radio-electronic means (REM) it is necessary to consider all possible kinds of thermal interactions and all possible variants of cooling [1–8]. Calculation for following variants of cooling is provided:

– designs with natural air cooling;

– the designs maintained in vacuum;

– designs with compulsory air cooling (having blown air between printing knots of the block);

– designs with punching;

– designs with a heat-conducting path.

Operating mode of blocks REM can be stationary (not dependent on time) and non-stationary (thermal processes depend on time), therefore at construction MTP it is necessary to consider both variants.

For construction MTP we will consider that the volume of each elementary volume (cube) has identical temperature.

Following kinds of heat exchange are thus considered:

– thermal interaction by means of a conduction between the cubes belonging to one element of a design;

– thermal interaction by means of contact heat exchange between the cubes belonging to different elements of a design;

– return of heat from the cubes which are boundary elements of air in apertures of punching, in environment by means of radiation;

– heat return between the cubes of air which are in the block, by means of radiation;

– return of heat from the cubes adjoining on environment, in environment by means of radiation;

– return of heat from the cubes adjoining on air inside, in this air by means of radiation;

– return of heat from the cubes which are extreme elements outside of the case, in environment by means of обдува (compelled convection);

– return of heat from the cubes which are boundary elements of air in apertures of punching, in environment by means of ventilation (compelled convection);

– return of heat from the cubes which are extreme elements in the case, in air in the case by means of ventilation (compelled convection);

– return of heat of cubes of air which is in the case, among themselves by means of ventilation (compelled convection);

– thermal interaction of the cubes adjoining on the heat-removing basis, by contact heat exchange;

– return of heat from the cubes which are extreme elements outside of the case, in environment by means of natural convection;

– return of heat from the cubes which are boundary elements of air in apertures of punching, in environment by means of natural convection;

– return of heat from the cubes which are extreme elements in the case, in air in the case by means of natural convection;

– return of heat of cubes of air which is in the case, among themselves by means of natural convection.

Scheme of algorithm of the automated synthesis of models of thermal processes of any designs REM is developed for a stationary mode. We will consider algorithm in detail.

Block 1. Constant ambient temperature is set.

Block 2. The cycle on axes X in which the design is looked through on length with the step equal to the party of a cube is set.

Block 3. The cycle on axis Y in which the design is looked through on depth with the step equal to the party of a cube is set.

Block 4. The cycle on axis Z in which the design is looked through on height with the step equal to the party of a cube is set.

Block 5. A conduction between elements of one firm body. The cubes belonging to one element of a design, co-operate among themselves a conduction.

Block 6. Contact heat exchange between adjoining elements of different firm bodies. The Cubes belonging to different elements of a design, co-operate among themselves by means of contact heat exchange.

Block 7. Radiation: a design with air outside of the block. Boundary cubes of a design co-operate with air outside radiation. If cubes are boundary elements of air in punching apertures they also co-operate with air outside radiation.

Block 8. Radiation: a design with air in the block. Extreme cubes in a design co-operate with cubes of air adjoining on them inside radiation.

Block 9. Radiation: air with air in the block. Cubes of air in the block co-operate among themselves radiation.

Block 10. Check on presence of natural cooling. In case natural cooling is available, blocks 11–13 (convection) are carried out.

Block 11. Convection: elements of a design with air outside of the block. Boundary cubes from block outer side co-operate with air outside convection. If cubes are boundary elements of air in punching apertures they also co-operate with air outside convection.

Block 12. Convection: a design with air in the block. Extreme cubes on an internal surface of a design co-operate with air cubes inside convection.

Block 13. Convection: air with air in the block. Cubes of air in the block co-operate among themselves convection.

Block 14. Check on presence compelled convection. In case compelled convection blocks 15–16 (compelled convection) are available, carried out.

Block 15. Compelled convection (at ventilation outside of the block). Boundary cubes co-operate with air outside ventilation. If cubes are boundary elements of air in punching apertures they also co-operate with air outside of compelled convection.

Block 16. Compelled convection (at ventilation in the block). Cubes in the block, designs belonging to a blown element and being on a surface of this element, co-operate with air inside with the help ventilation. Cubes of air in the block co-operate among themselves compelled convection.

Block 17. Check on presence of the heat-removing basis. In case the heat-removing blocks 18–19 (contact heat exchange) are available, carried out.

Block 18. Contact heat exchange between an element of a design and adjoining to it heat-removing the basis.

Block 19. A source of constant temperature. The temperature of the heat-removing basis is set.

Block 20. Possibility of the task of a source of constant capacity for the given element of a design. Capacity of a thermal emission of all element of a design shares on quantity of cubes into which this element is broken.

Block 21. Possibility of the task of a source of constant temperature for the given element of a design. To each cube into which the design element is divided, the source of constant temperature, value of this temperature to equally temperature of an element of a design is connected.

Scheme of algorithm of the automated synthesis of models of thermal processes of any designs REM is developed for a non-stationary mode. We will consider algorithm in detail.

Block 1. Possibility of the task of ambient temperature, time-dependent. It is set by means of function or the table.

Block 2. The cycle on axes X in which the design is looked through on length with the step equal to the party of a cube is set.

Block 3. The cycle on axis Y in which the design is looked through on depth with the step equal to the party of a cube is set.

Block 4. The cycle on axis Z in which the design is looked through on height with the step equal to the party of a cube is set.

Block 5. Possibility of the task for the given element of a design of a power source, time-dependent. It is set by means of function or the table. Capacity of a thermal emission of all element of a design shares on quantity of cubes into which this element is broken.

Block 6. Possibility of the task for the given element of a design of a source of temperature, time-dependent. It is set by means of function or the table. To each cube into which the design element is divided, the source of temperature, time-dependent is connected.

Block 7. Possibility of the task for the given element of a design of a calculated thermal capacity.

Let's consider more in detail possibility of the task of capacity or temperature, time-dependent. So, there are two variants: the values set by function; the values set by the table.

4 variants of functions are supported: pulse, sinusoidal, sawtooth, difficult.

Also there is a possibility to set dependence of capacity or temperature from time by means of the table. Such table contains two columns, in one of which time moment, and in other – value of temperature or capacity is underlined.

References

1. Shalumov A.S., Kofanov J.N., Kulikov O.E, Travkin D.N., Solovev D.B., Pershin O. E. Dynamic modelling of difficult radio-electronic systems // Dynamics of difficult systems. – 2011. – № 3. – P. 51-59.

2. Semenenko A.N., Shalumov M.A, Malov A.V., Kulikov O.E. Working out of a technique of identification of thermal parametres, methods of cooling and modelling of thermal processes in radio-electronic means of any design//Dynamics of difficult systems. – 2012. – № 3. – P. 106–110.

3. Shalumov M.A. Modelling of thermal processes in blocks of any design//Dynamics of difficult systems. – 2012. – № 4. – P. 62–64.

4. Shalumov A.S., Tikhomirov M.V., Shalumov M.A. Application at designing and in formation of the automated system of maintenance of reliability and quality of equipment ASONIKA//Modern high technologies. – 2012. – № 10. – P. 53–57.

5. Shalumov A.S., Tikhomirov M.V., Shalumov M.A. An automated system for ensuring the reliability and the quality of the equipment (ASONIKA) // European journal of natural history. – 2012. – № 5. – P. 31–34.

6. Shalumov A.S., Kofanov J.N., Uvajsov S.U., Shalumov M. A, etc. Automated system ASONIKA for modelling of physical processes in radio-electronic means taking into account external influences / Under the editorship of A.S. Shalumova. – M.: Radio engineering, 2013. – 424 p.

7. Urjupin I.S., Shalumov A.S. Working of a technique of preparation of the data to calculations in program complex ASONIKA // мDynamics of difficult systems. – 2012. – № 4. – P. 65–70.

8. Urjupin I.S., Shalumov A.S. Working of a technique of increase of reliability of bearing designs of radio-electronic equipment at a design stage // Dynamics of difficult systems. – 2012. – № 2. – P. 92–100.

Materials of Conferences

THE STUDENTS' – ORPHANS' RESPIRATORY SYSTEM FUNCTIONAL STATE, AS THE PSYCHOSOMATIC PREDISPOSITION MAKER

Davydova N.O., Cheremushnikova I.I.

FSHUA ARPA «The Orenburg State University (OSU)», Orenburg, e-mail: DavydovaNatalia2010@yandex.ru

The psychosomatics frequent manifestations – these are the respiratory system diseases, but the first stress – the respiratory rate and pulse rate change are the induced reaction. The purpose of the study – is the prenosological diagnostics of the students' respiratory system functional disorders, as the marker formation of the psychosomatic diseases, having taken into account the students' social characteristics. The students' two groups have been examined (e.g. 148 students – orphans and 148 persons, who are not orphans). The respiratory system state and the propensity to the psychosomatic diseases have been assessed. The flows decrease at the level of 25 and 75 % the exhaled lung volume (MVR25 and MVR75) and the high – speed performance at the students – orphans, having indicated the patency violation of the peripheral tracts. The stress load has been appeared to be higher at all the young men, than that of the young girls; moreover, the stress had been significantly higher in the group of the young men, who were not the orphans. The spirometry and the psychometry can become the formation diagnostics by the basic method of the psychosomatic diseases at the students.

The part of the somatic pathology is being formed against the background of the stress factors, and it is the psychosomatic diseases manifestation. The lungs, under the actions conditions upon the human body of the environmental factors, as the «frontier» human organ, they are taken the significant role in the human body adaptation. The increased contribution of the respiratory system in the homeostatic responses is also associated with this system participation to be maintained the thermal balance [2]. Furthermore, the most common and frequent manifestations of the psychosomatic medicine – these are the respiratory system diseases, but the first stress – the respiratory rate and pulse rate change are the induced reaction [1, 5, 9].

The КПО indicators analysis of the expiratory forced vital capacity of the lungs is allowed to be revealed the following: the bronchial conduction violation, these violations severity rate, and as well as the level of the lesion. The initial part of the flow – volume curve is characterized by the central respiratory tracts patency. The indicators' decline of the FEV1 (e.g. the forced expiratory volume per 1 sec.), PEF (e.g. the peak expiratory flow), and MVR25 (e.g. the maximum volume rate at the level of the FVCL 25 % exhalation) with the curve's good reproducibility is indicated on the large bronchi' patency violation. The flows' reducing at the level 50 and 75 % of the exhaled lung volume (e.g. MVR50 and MVR 75) and their high – speed indicators' performance (e.g. the average velocity in the site of FVCL 25–50 % and 75–85 % – OC25 – 50 % and COC75 – 85 %) is characteristic for the patency violation of the peripheral respiratory tracts. Thus, the total obstruction is characterized by all the parameters' decrease, the area site decrease under the curve, the expiratory time increase, but in the severe cases – and the FVCL value decrease [2].

The main purpose and the basic tasks of the study are the following: to be tested the hypothesis on the combined use possibility of the spirometry and the psychometry, in order to be prevented the psychosomatic diseases' and disorders' formation at the students. To be selected and matched the individual medical and psychological techniques of the prenosological psychosomatics diagnosis, having taken into account the students' social characteristics.

So, the special orphan group has been allocated and separated – 148 students from the different courses and the faculties of the OSU and the special control group by the case – control type, who are not the orphans, – 148 students from the different courses and the faculties of the OSU. Thus, the study and the assessment of the respiratory system state and their propensities to the psychosomatic diseases have been performed in the both groups. So, the spirometry has been performed at the АПК «Spiro – Spectrum» of the «Neusoft» Company with the use of the «Quiet Breathing/LVC» special tests (e.g. it is measured the lungs vital capacity, the inspiratory reserve volume, and the respiratory volume), «the Forced expiratory volume» (e.g. 25 respiratory parameters: the volume, high – speed, temporary and relative ones) and «the Maximum lungs ventilation» (e.g. it is specified the maximum amount of the lungs ventilation volume, in recalculation terms of per one minute and the respiratory rate) [7]. So, the psycho-testing has been conducted with the life events scale using (e.g. G.E. Anderson) [3] in the «NC – Psychotest» computer center (e.g. «Neurosoft» Ltd., Russia, Ivanovo). This scale is designed to be measured the student- and the college-aged individuals' the stress load, as the basis of the psychosomatic diseases' formation. They are determined the degrees of the emergency risk of the disease, they are predicted the depression onset. To be measured the stress level, it is necessary to be noted those events in the scale, that have been occurred during the year (e.g. 12 months). The scale is consisted of the 45 items, having described the most common life events that are associated with the high level emotional stress (e.g. the stress

factors). The scale's each items is rated in the points on the scale, which are being summarized up, in the future.

All the data have been processed by the variation statistics methods with the use of «Statistica for Windows 6.0» и «StatPlus Professional», «Version 2009» for Windows software packages of the application programs. Then, the normality checking of the quantitative traits by criterion of the Shapiro-Wilk test, Kolmogorov-Smirnov/Lilliforca, D'Agostina kurtosis had been rejected, in this connection, it was found, that the quantitative traits are not followed to the normal distribution. To be compared the both independent samples, it has been used the non-parametric U-criterion Mann – Whitney (e.g. Mann-Whitney U test), and also the Kolmogorov – Smirnov test, and also the Wald – Wolfowitz series test [6].

At the young girls of the first group, the middle – group values of the MVR25 exh., MVR75 exh., and COC25-75 exh. have been made up 67,7; 71,5; 87,2% by proper, having suggested on the bronchial patency worsening, at the level of the medium and the small bronchi. At the young men of the second group, it has been observed the bronchial patency reduction, only at the level of the medium bronchi (e.g. MVR50 inh. – 81,7%). So, the MPV increase (e.g. for 17,7%) and the BR reduction have been observed only at the young men of the second group. The volume indicators dynamics at the young men: the significant differences by the groups have been on the indicators, as FEV1/ MEFV and FEV1 with the predominance in the second group, and FEV1/LVC, LVC inh. and MEFV, which have been higher at the young men – orphaned. As for the first group of the young girls, then, the volume indicators have been lower, than those of the second group of the young girls, and they have been statistically significant – FEV1/LVC and LVC inh. (e.g. p = 0,0003 and 0,0001, respectively).

At the data analysis, the average values КПО MEFV, as at the young men, well as at the young girls, have been appeared to be higher in the second group. Especially, it is concerned the high – speed parameters: MVR25, MVR50, and MVR75, and at that, the difference has been become more significant, at the level of the turbulent and the laminar flows (e.g. MVR25, and MVR75). The COC 25 – 75exh. specific features, peculiarities, and their characteristics have been significantly higher, at the both, as at the young men, well as at the young girls in the first group, which is quite typical for the patency violation of the peripheral respiratory airways.

By the scale of Anderson, the differences by the groups at the young girls have been appeared to be quite unreliable. In the first group, the stress load level has been equal to – 461,76 points, and in the second one – 448,97 points. However, the level itself of the stress load has been appeared to be high, by the score assessment. At the young men, the stress load has been appeared to be higher, than at the young girls, and at that in the second group of the young men the stress has been significantly higher (e.g. p = 0,0054), than in the first one.

Conclusions

1. The stress load has been appeared to be high for all the students. At the young people, the stress load has been appeared to be higher, that at the young girls, especially, in the group of the young men, who are not the orphans.

2. At the students – orphans the flows decrease is observed at the level 25 and 75% of the exhaled lung volume (MVR25 and MVR75) and the high – speed indicators (e.g. the average velocity on the site is 25 – 75% MEFV – COC25 – COC75%), which is quite typical for the patency violation of the peripheral respiratory tracts.

3. The data analysis of the students' spirometry and the psychometry can be the basic method of the psychosomatic disorders and violation formation preventing at the students.

References

1. Davydova N.O. The Differentiated Approach to Diagnostics and Correction of Children'-Orphans' Individual Health // The International Symposium «The Active Aging and Life Quality». The Proceedings of the Conference. Mauritius Island, 19–30, November 2011. – M.: Publisher: The National Association of Rehabilitation Medicine Specialists, 2012. – P. 37–40.

2. Dubiley V.V., Dubiley P.V., Kuchkin S.N. The Physiology and Pathology of the Respiratory System at Athletes. – K.: Publishing House of the Kazan University Press, 1991. – P. 143.

3. Mantrova E.N. The Methodological Guide on Psycho-Physiological and Psychological Diagnostics. – Ivanovo: «Neurosoft» Ltd. Company, 2008. – P. 216.

4. The Peculiarities of Morbidity Students – Teenagers in the Process of Adaptation to Learning in the Higher Education Institution // Pediatrics. – 2012. – Vol. 91. – № 5. – P. 142–145.

5. Petrenko V.F. The Fundamentals of Psychosomatic Medicine: The Textbook. – M.: The Publishing House of the Moscow State University (MSU) Press, 1997. – P. 400.

6. Rebrova O.Yu. The Statistical Analysis of the Medical Data. The Package Use of Application Programs STATISTICA. – M.: Media Sphere, 2006. – P. 312.

7. The Instruction Manual «Spiro – Specrum» (the Computer Spirometer for Violation Diagnosis of Pulmonary Ventilation Capacity), «Neurosoft», Ivanovo, 2009. – P. 99.

8. Sevryukova G.A. The Adaptive Changes of the Functional Status and Students' Performance in the Learning Process // The Hygiene and Sanitation. – 2006. – № 1. – P. 72–74.

9. Cheremushnikova I.I. The Aggressive Behaviors' Reduction, as One of the Forms of the Primary Prevention of the Socially – Conditioned Diseases // The International Symposium «The Active Aging and Life Quality». The Proceedings of the Conference (Mauritius Island, 19–30, November 2011. – M.: Publisher: The National Association of Rehabilitation Medicine Specialists, 2012. – P. 79–82.

Short Reports

GLOBALIZATION: NATIONAL AND MASS CULTURE

Madrakhimova F.R.

Pulpits Social Philosophy of faculty Philosophy of National University of Uzbekistan, Tashkent, e-mail: fmr88@mail.ru

In this article are shown problems of the arising the mass culture and some standpoint about her shaping. As well as, preventions of the threat under mask "mass culture" in development of the national culture and development of the consciousness youth.

At present «mass culture» as one of the type ideology threats is often got in television, in mass media and in scientific journal. The Ithaca, what appeared the given culture and from consists what her true purposes? As is well known in scientific literature «mass culture», appeared in medium XX age, as notion of the bourgeois culture. As well as, mass culture use as production and consumptions of the modern culture. This culture produces for mass culture standardized that is to say alike product. Together with this mass culture studied as especial product modern urbanization public industry, which is intended for public consumption and mass culture, as well as study not as public reason, but as culture to trade industry.

The process turns out to be in the field of mass culture globalization, which allows sooner coexistence, than collision global and local. Here cost (stand) to note three moments. First, we have found that this coexistence most clearly reveals itself in model of the consumption, which keep the miscellaneous a layer populations, differing friend from friend by their own political preferences, economic status and (or) level well-being. This means that, in spite of observable, but other once, possible, and more significant differences between these layer, in that as to their choice of the newspapers, journal and television channel, differences these disappear, when speech calls at about them, but consumption. In other words if choice of the newspaper or channel, still depends on political or cultural orientation of the representatives of one or another social group, that essential increase the models of the consumption have caused for itself «McDonald society».

Secondly, cultural globalization can in ditto time be considered and as process of the creation suiting platforms for activity of the traditions, not only as political or economic motion, but also as motion cultural, with their own driving power and theoretical buildings. Thereby, Islam identity as a result globalization anymore presents itself conservative «I», not amenable no change. Opposite, we saw that representatives of the Islam have begun to use such notions, as mode, music, art and tourism, saw as well as appearance consumer Islam identity, who representatives behave in the same way, either as all in condition of the economy, integrated in frames of the trade culture: use the technological achievements and understand the symbolic power of the money. In this sense of the representatives of the social group, oriented on Islam, are such carrier of the new culture of the consumption, either as representatives of that layers, which keep one or another mundane ideology: they pertain to this culture not as to nobody irritate, penetrating with West, but as to base of its social status and authorities.

Third, cultural globalization in given context is considered as positive element for activity local artistic tradition, cultural object and symbol, creating, thereby, cultural life, which differs the pluralism, greater democratic and variety. Globalization means the end to hegemonies of the mundane culture, which strives to creation and conservation to uniform cultural life, forming platform, on which secondary and fallen silent cultural forms and objects can once again spring back to life and become market goods. In ditto time globalization essential image assists the manifestation a difference due to reinforcement of attention to traditions, local condition, exactly in the same way globalization local leads to appearance pluralism multicultural to life's – a necessary condition to democratizations in society. Coming from stated and made by us descriptions different influence cultural globalization on life in society, we come to output that form of the interaction global and local – sooner coexistence, than collision.

For mass culture typical anti modern and anti vanguard. If modernism and vanguard strive to complicated technology letter, that mass culture handles at most idle time, perfected preceding culture by technology. If in modernism and vanguard dominates installation on new as the main condition of their existence, that mass culture traditional and conservative. She is oriented on average language semiotic rate (the notion of the realism), on simple pragmatics since she address to enormous reader's, spectator and listener to auditoriums.

The presentations changed In XX age qualitative about time and space, changed within the framework of scientific picture of the world not only, but within the framework of picture human as a whole first of all. The History of this age has confirmed its general in trend of the global problems: forming the economic systems of the world scale (the world market, international banks, transcontinental monopolies); formation to global information network, allowing attach whole world to deals of the separate countries; arising the ecological problems, decision which possible only effort whole mankind; the wars XX age become world, they cover the groups of ten

folk and state, at scales of the deleting the person reach the unprecedented range.

For mass culture typical anti modern and anti vanguard. If modernism and vanguard strive to complicated technology letter, that mass culture handles at most idle time, perfected preceding culture by technology. If in modernism and vanguard dominates installation on new as the main condition of their existence, that mass culture traditional and conservative. She is oriented on average language semiotic rate (the notion of the realism), on simple pragmatics since she address to enormous reader's, spectator and listener to auditoriums (sr. pragmatic, shock malfunction, appearing under inadequate perception of the text of the mass culture thinned actor thinking – an extreme experience).

Possible say so that mass culture appeared in XX age not only due to development of the technology, led to such enormous amount of the sources to information, but also due to development and fortification political democracy. The Known that the most developed is a mass culture in the most developed democratic society – in America with its Hollywood, this symbol powerful mass culture. But it is important and opposite – that in totalitarian society mass culture practically is absent, is absent the fission of the culture on mass and elite. The Whole culture is declared mass and indeed whole culture is elite. This sounds paradoxical, but this so.

We knew that ancient nations divided on close nearby countries with the general cultural and custom. This, certainly, was a mass process. For instance, and custom, and traditions developed on mass structure of the culture. But this developed the passive image. Then, with XIX–XX ages, as a result of developments of the technology, appearances multiple acting on brain of the readers detective novel and best seller mass culture from period of the formation has altered by sawing at period of

the development. Coming from standpoint of present time as a result of developments to information and technology existed the more active development of these processes. Now except custom and tradition has begun to exist other processes. And in effect, these cultural processes changed in culture in quote. Having Used this process some mercenary political power, have put (delivered) itself purpose to introduce these cultures in consciousness of the people and turn the world in standard position. Its real dangerous consequences consist of the following: wrong forms the cultural reason to personalities; destroys the national culture; general humanity cultural value puts under doubts; a removal from national moral; in the first place puts its advantage; a spiritual reason and human moral brings forth on the byplay; with contempt pertains to old and new generation; unknowing and not strove; strived to hear its national essence; forms the personalities, which with wit do not look at life and puts itself as bases light life. Considering brought above opinions, possible judge about that that since year base mass culture became to consist of negative characteristic more than positive. If earlier existed the public adjustment to national mentality and public rapprochement then in recent process occurs inverse. Once so, that at present need of time is a creation national-spiritual centre, which capable to strive with spiritual threat and raise spiritual immunity our youth.

References

1. Smith A. Nations and Nationalism in a Global Era. – Cambridge, 1995.

2. Ortega-y-Gasset Y. Der Aufstand der Massen. – Berlin, 1929.

3. Sholte J. Rethinkind Globalizition. – London, 2000. –P. 14.

4. Fromm E. The anatomy of Human Destructiveness. – P. 219.