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SCIENTIFIC INTELLIGENCE REPORT

SOVIET RESEARCH ON RADIOLOGICAL SAFETY

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CENTRAL INTELLIGENCE AGENCY

OFFICE OF SCIENTIFIC INTELLIGENCE

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Scientific Intelligence Report

SOVIET RESEARCH ON RADIOLOGICAL SAFETY

NOTICE

The conclusions, judgments, and opinions contained in this finished intelligence report are based on extensive scientific intelligence research and represent the final and considered views of the Office of Scientific Intelligence.

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PREFACE

Research on radiological safety is important not only for the protection of persons working immediately with radiation and radioactive substances, but also for others who might either accidentally or by intent be exposed to radiation. In radiological safety, the primary objective is to prevent or minimize exposure of workers and scientists to radiation. Soviet practices in maintaining a radiological safety program have been very lax in the past, a factor which contributed to serious overexposures to radiation. Although the chief subject of this study is the research being carried out by the Soviets on radiological safety, the related topics of current safety practices, radiation disease therapy, and radiobiology are also reviewed.

Extensive background information, consisting of both classified and unclassified publications, has been used in this study. Information as of May 1959 has been included, but later material has been considered.

CONTENTS

	<i>Page</i>
PREFACE	iii
PROBLEM	1
CONCLUSIONS	1
SUMMARY	1
DISCUSSION	2
Introduction	2
Maximum Permissible Dose	3
Administrative Controls and Regulations for Work with Radiation	4
Protective and Detector Equipment	6
Dosimetry	7
Waste Disposal, Environmental Monitoring, and Fall-Out Radiation Disease	7
Accidental Overexposures	7
Soviet Objectives	8
Clinical Aspects	8
Prophylaxis of Radiation Injury	9
Treatment of Radiation Disease	11
Radiobiology	13
General	13
Radiogenetics	13
Mechanism of Action of Radiation	14
Radiosensitivity and the Central Nervous System	17
Immunological Response to Radiation	19

FIGURES

	<i>Following Page</i>
1. Side View of Protective Clothing Worn by Worker When Handling Radioactive Material at Moscow Physical In- stitute	6
2. Front View of Same Worker	6
3. SG-42 Gamma-Radiometer with a Scintillation Counter	6
4. Radiation Counter	6

SOVIET RESEARCH ON RADIOLOGICAL SAFETY

PROBLEM

To assess the status of Soviet research and practice bearing on radiological safety.

CONCLUSIONS

1. A large-scale, well-balanced program for radiological safety is evident in the Soviet Union at the present time. This program is based mainly on a close scrutiny of Western research, and investigations are directed along similar lines.

2. Many leading medical research institutes are engaged in full- or part-time research on various aspects of radiological safety, and several hundred scientists are connected with the program as research and administrative personnel. Control of radiological safety practices and related research is centralized in two major organizational segments of the Ministry of Health, USSR.

3. The qualitative level of Soviet radiobiological research related to radiological safety, although mediocre at first, has shown marked improvement since 1957, and is now more consistent with the level of U.S. studies on the mechanism of action of radiation, radiogenetics, and the prophylaxis and treatment

of radiation disease. The chief difference between Soviet and Western investigations is in the greater emphasis given by the Soviets to the effects of radiation on the central nervous system.

4. The Soviets now subscribe to the internationally recommended levels of radiation exposure, but Soviet safety practices with respect to regulations, dosimetry, monitoring, and radioactive waste disposal are less strict than those of the West. The Soviets have not permitted radiological safety practices to delay priority objectives of their atomic energy program.

5. Future lines of related radiobiological research will rely on the physical sciences to a greater extent. This change in emphasis should enhance investigations on the effects of radiation on sub-cellular particles, nucleic acids, macromolecules, immunogenesis, and cellular functions.

SUMMARY

The Soviets heretofore have not permitted overexposure to radiation to deter them from carrying out research and development in high-priority fields where radiation hazards exist. Nevertheless, in the past 4 years the Soviets have made great progress in raising the level of radiological safety and in pursu-

ing medical research supportive to this end. The Ministry of Health centrally controls Soviet radiological safety practices and related radiobiological investigations through its planning committee, through a Central Committee on Medical Radiology, and through the occupational disease research institutes. Cur-

rently, the Soviets are subscribing officially to the recommendations of the International Commission on Radiation Protection. They apparently are taking pains to enforce good work safety practices within the USSR although there is not yet available to the Soviets a smooth-working, highly trained cadre of health physics personnel. Several years will be required to attain the level of safety practices existing in the West. The Soviets are taking full advantage of openly published Western radiobiological research and are now emphasizing training in radiological safety.

Although the quantity of published Soviet radiobiological research began to increase rapidly in 1955-56, its quality was mediocre until 1957-58 when some progress was made in improving research quality and eliminating the research lag. This improvement, based partially on a close study of Western research, has produced a fairly well-balanced program of research along lines similar to those being pursued in other countries. In radiobiology, the Soviets have given up the attempt to restrict research to Pavlovian methodology and are making progress in other areas such as the mechanism of action of radiation. As recently as early 1958, the Soviets probably were 2 to 3 years behind the West in many of their studies on radiological safety and radiation effects. Currently, however, this is a much more difficult area to judge, and it is more likely that the Soviets now stand in the position of being well conversant with most Western radiobiological research and able to carry out work along similar lines with very little delay.

Published Soviet research on radiation shielding in the biological medical field has been relatively sparse and not particularly imaginative. Soviet equipment useful in radiological safety is often similar to or copied from Western equipment. It is usually not "con-

sumer-designed" but is adequate. The more recent trend has been to enforce stricter rules and regulations in radioactive areas and to follow Western practices as outlined at the Geneva conferences and in other published material. Increasing Soviet interest is being shown in research on dosimetry, shielding, monitoring programs, and waste disposal.

Biophysics has been relatively unimportant in the USSR until recent decisions of the scientific leaders emphasized the great need for a large number of personnel adequately trained in this subject. This is based on the realization of the future importance of biophysics to science. If this new emphasis properly integrates biophysics with present lines of research, the entire Soviet effort should improve greatly. In particular, the Soviets may be expected to increase their contributions in research on subcellular particles, nucleic acids, macromolecules and complexes, immunogenesis, and many cellular functions.

The Soviets have offered little new or useful research in radiation disease prophylaxis and treatment, and their work has been largely repetitive of Western research. More recent information indicates that relatively intense effort is being put into finding chemical compounds useful for prophylaxis against radiation disease although little progress has been made. The Soviets have insisted on the importance of the central nervous system in the pathogenesis of radiation injury, but much of their evidence has not been confirmed in the West. Nevertheless, they have succeeded in demonstrating that the central nervous system is more susceptible to the effects of radiation than was previously supposed. The importance of the central nervous system in the mediation, regulation, and repair of radiation damage cannot be fully assessed at this time, but Soviet data suggest the need for further study by Western investigators.

DISCUSSION

INTRODUCTION

The Soviets have benefited greatly from Western radiobiological research presented at

congresses and meetings. At these meetings, the Soviets themselves have presented little new worthwhile information either on re-

search or on radiological safety practices. The Soviets have participated increasingly in international conferences in this field, beginning with the first Geneva Conference on Peaceful Uses of Atomic Energy (1955), which served the useful purpose for the Soviets of emphasizing many of their research gaps. The year 1955 saw a marked upsurge in the quantity of Soviet research material in the fields of radiobiology and radiological safety; and during that year, at least two major Soviet conferences were held on these subjects, possibly to select material to present at Geneva. Taking advantage of Western criticism as well as Western information presented at Geneva in 1955, the Soviets embarked upon a major program of expansion of training of qualified personnel. The Soviets made relatively respectable presentations and contributions during 1958 at the International Radiation Research Congress held in Burlington and again at Geneva, although no significant new data was presented by them. In addition, they have continued their stress on the central nervous system effects of radiation.

An additional facet of Soviet participation at international meetings and UN affairs has been the marked penchant of the Soviets for relating their present actions to political objectives. Thus, many Soviet public statements at these and other meetings have been intended primarily for this effect, and, particularly in technical material, the Soviets have failed to substantiate many of their claims.¹⁻⁷

MAXIMUM PERMISSIBLE DOSE

Officially, the USSR subscribes to a policy of maximum permissible radiation exposure which is at least as low as that of the United States. This official attitude has always been promulgated by the Soviets. Yet, before 1958, the Soviets were quite lax in application of rigid radiation health standards in their nuclear energy research and operations. They relied on practices unacceptable to the West, and their provisions for personnel protection in one of their atomic power plants in 1956 were completely inadequate by U.S. standards. Furthermore, the past record of radiation exposure to personnel puts the Soviets in a very

unfavorable light when compared with the U.S. exposure records. Starting some time in 1958, the Soviets have made greater efforts to enforce rigid radiation health standards, and the present official Soviet attitude is that personnel protection is to be considered of paramount importance. This attitude is being enforced by placing health physics or radiation safety personnel (usually medical personnel) in charge of persons working directly with radiation. This change from former practice has resulted in many complaints by Soviet physicists, chemists, and other research workers, voiced particularly at the 1958 Geneva conference, to the effect that stringent radiation safety procedures were hampering the nuclear energy program. These regulations are no more stringent than those in effect in the United States, so it is unlikely that Soviet atomic energy development will be hindered. It seems probable that the Soviets are now making a real effort to comply with the recommendations of the International Commission on Radiation Protection (ICRP).

The thinking of the world scientific community has undergone a gradual evolution so that officially acceptable maximum permissible doses have been revised downward continually since about 1953. Currently, most available printed material on the maximum permissible dose still lists 0.3 roentgen (r) per week as the upper acceptable dose limit. Further, most radiological health units in the United States and in the USSR are still geared to work at the level of 0.3 r per week. Despite this, most Soviets in responsible positions realize, as do Western investigators, that the 1958 recommendations of the ICRP will eventually be accepted as the official dose limit for the countries involved in major uses of nuclear energy.

The latest ICRP recommendations may be summarized as follows: First, the idea of a weekly maximum permissible dose has been dropped in favor of the formula, $D = 5(N-18)$, where D is the tissue dose in rem,* and N is the age in years. For a person who is occupationally exposed at a constant rate from age 18 years, the formula implies a max-

* rem = roentgen equivalent mammalian.

imum weekly dose of 0.1 rem. The Commission recommended that this value of 0.1 rem per week be used as the maximum value for purposes of planning and design. Within the limitations of the above formula, an occupationally exposed person may accumulate the maximum permissible dose at a rate not in excess of 3 rem during any 13 consecutive weeks although this 3 rem may be received as a single dose. The Commission further recommended that an accidental high exposure of 25 rem or less occurring only once in a lifetime need not disqualify a person from continuing occupation in this field. Doses higher than 25 rem are to be regarded as potentially serious and referred to competent medical authorities for appropriate remedial action and recommendations on subsequent occupational employment. The Commission recommended that for planned emergency exposures* the individual should not receive doses higher than one half the accidental dose of 25 rem stipulated above and subject to the same qualifications. Women of reproductive age shall not be included in planned emergency exposure. All the above figures are for total body exposures and further recommendations are available for limited exposures of various portions of the body.

A group of biologists and geneticists within the Soviet Union is trying to have the official Soviet maximum permissible dose set as low as twice natural background. This is a practically unworkable suggestion from the standpoint of enforcement, measurement, and physical management. A further stipulation of the Soviets is that no pregnant woman is permitted to work where there is any chance of exposure to radiation.⁸⁻²⁸

Soviet listings of maximum permissible concentrations (MPC) of the various radioisotopes in the body, in water, and in air are essentially similar to those of the Western countries, with a few unimportant exceptions.

16 20-22 25

* Planned emergency exposure is a term used to denote the planning of action for potential or anticipated emergencies, with emphasis on designating persons who may have to be subjected to doses up to 25 rem.

ADMINISTRATIVE CONTROLS AND REGULATIONS FOR WORK WITH RADIATION

In the past, the Soviets have relied rather extensively on simple administrative and security control where there is a radiation hazard. This practice has often been noted by visitors to be rather inadequate. More recently, the Soviets are augmenting these procedures and following U.S. practices in this field.

The Soviets, despite their statements and avowals to the contrary, have had a history of poor control in radiological safety, as evidenced by statements of persons from other countries observing Soviet practices and by admissions of the Soviets themselves in their various meetings and self-criticism in publications. This poor safety record has been a result of their emphasis on priority development of the atomic energy industry and a lack of personnel trained in radiation hygiene procedures. The Soviets recognize this fully and in the past year have begun to take serious measures to overcome this handicap. This includes establishing departments of radiation hygiene in various medical institutes as well as the planning for a new institute called the Scientific Research Institute of Medical Radiology which is to be built in 1959 near Moscow. Another related facility is the new Institute of Radiation and Physico-Chemical Biology, Academy of Sciences, USSR, with V. A. Engelgardt as acting director. The first institute is in charge of all Soviet health physics, dosimetry training, and research planning for these fields. The second institute is to emphasize research on radiation genetics and the mechanism of action of radiation. Eventually the additions of training programs and increase in personnel will certainly be felt in the management and enforcement of safe radiation procedures. Apparently the primary responsibility for radiation safety codes of practice in the USSR rests with A. A. Letavet, head of the Scientific Research Institute for Labor Hygiene and Occupational Diseases, Ministry of Health, Moscow.¹⁴ In addition, F. G. Krotkov is in charge of the Central Committee on Medical Radiology of the Ministry of Health. This Central Committee is a powerful coun-

terpart of the U.S. National Commission on Radiation Protection (NCRP). This Committee, Letavet, and the Institutes mentioned are the chief arbiters of Soviet practice in radiological safety. Supportive research is conducted by a large number of investigators in many research institutes. (See appendices A and B.) ^{8 12 14 15 18 25 26 29-53}

An excellent summary of the Soviet current official position on radiological safety and on the necessary research to be done in this field has been given by F. G. Krotkov.⁵³

With the development of the atomic industry and the adaptation of radioactive elements into different branches of the national economy, science, engineering, medicine, and biology, the number of people subjected to a steady radiation grows from year to year. At the same time the radioactive contamination of the outer medium or environment can increase, as a result of which the population of large cities and of industrial centers and to a smaller extent of farm areas can be subjected to chronic radiation with small doses. Atomic and hydrogen bomb tests play a role in the variation of the natural background of radiation determined by cosmic radiation and the presence of radioactive elements in the earth's crust...

Recently local increases in the natural background have been observed. This circumstance cannot but cause a sense of alarm on the part of hygienists, inasmuch as an increase in the natural background is an immutable proof of radioactive contamination of the outer medium.

The danger of biological action of ionization of radiation is not only in somatic changes but also in genetic action... The problem of genetic norms of radiation is, in our days, truly a problem of world significance. Unfortunately, it is necessary to state that we do not possess faultless data for a strict scientific substantiation of genetically allowable doses for radiation. This is indicated by the report of a group of eminent specialists recently published by the World Health Organization...

It is difficult as yet to speak about the real extent of danger for humanity and its posterity from changes in the natural background... The experimental path for the solution of this problem is difficult and complex because it requires prolonged observations on a large number of laboratory animals with subsequent statistical processing of the resulting data. As regards the observations on people, a very long period of time is required for scientifically substantiated conclusions and generalization...

Protection against radioactive contamination of the outer medium assumes special hygienic significance. Inasmuch as the problem of the allowable concentrations of radioactive substances in the outer medium cannot be considered as finally solved it is necessary to strive that radioactive impurities from reactors and other objects of the atomic industry should not enter into the atmospheric air, water and soil. Radioactive wastes which unavoidably form in reactors and in establishments of the radiochemical industry should be collected, stored and removed in such a manner that there would be no contamination of the outer medium...

The task of the organs of sanitary control includes the fulfillment of sanitary control of the elimination, storage, and decontamination of radioactive wastes. As a result of the rather incomplete review of the state and prospects of the development of radiation hygiene of this new scientific discipline which was brought to light by the scientific progress of the times, one can separate as the primary tasks the following: 1) systematic observation of the state of the natural background and of its changes as a result of the radioactive contamination of the outer medium on account of the peaceful utilization of atomic energy and tests of nuclear weapons; 2) fulfillment of strict sanitary control of the entry of radioactive impurities into the atmospheric air, soil and water in order to detect the causes of the radioactive contamination of the outer medium and their elimination, if it is a matter of controllable sources of radioactivity; 3)

systematic investigations of foodstuffs, particularly milk and milk products, fish and canned fish, for the content of radioactive substances in general and radiostrontium (Sr^{90}) in particular; 4) participation of hygienists in the development of norms: i.e., in establishing allowable concentrations of radioactive substances in the air, water and foodstuffs; 5) solution of problems of deactivation of water in case of radioactive contamination of water reservoirs; 6) participation in the solution of the problem of elimination and decontamination of radioactive wastes, gaseous, liquid and solid; 7) participation in the development of legislation oriented toward the protection of the population from prolonged action of ionizing radiation as a result of the fallout of the radioactive precipitation, and radioactive contamination of the outer medium; 8) scientific practical solution of problems of utilization of radioactive isotopes in the solution of hygienic tasks.

The Main State Sanitary Inspection of the USSR; the Main Administration of the Militia of the Ministry of Internal Affairs of the USSR; the Division of Labor Protection of the All-Union Central Council of Trade Unions, USSR; and the Ministry of Health, USSR are all intimately concerned with standards for radiological safety.⁵³

The standards for arrangement, installation, and use of X-ray equipment in the USSR have been published by the Ministry of Health and are very similar to Western standards.¹⁵ For people working with isotopes and other types of radiation, the rules are quite similar to Western rules, one exception being that all persons working with radioactive substances must undergo special courses of training prescribed for protection against radiation; instruction is supposed to be repeated every six months. All new workers before being accepted must pass a medical examination which is repeated twice a year with a complete blood analysis each time. In addition, Soviet testing procedures here include a neurological examination as a routine part of the medical examination. The criteria of the blood examination are quite specific for an

acceptable return to work. These are: a minimum of 60 percent hemoglobin, 3.5 million red blood cells and 5,000 white cells per cubic millimeter. Also, the examination must not disclose disturbances of the endocrine system, or any neurological abnormalities.

Rules and regulations have also been published on levels of radiation for transportation of radioisotopes in the USSR, for working conditions with radioisotopes and for radioisotope laboratories, "hot" laboratories, industrial establishments and other institutes and research establishments using radiation. These standards are practically identical to those of the West.⁵³

PROTECTIVE AND DETECTOR EQUIPMENT

The Soviets have developed an excellent total-coverage plastic suit for persons entering highly contaminated areas. These ventilated suits, called pneumo-suit LG-1 or pneumo-suit LG-2, are useful for protection against widespread surface and atmospheric contamination. The suit consists of three basic parts: thin overalls of a special design, a light transparent helmet, and an air supply (a hose with either movable or stationary ventilator). A "Lepetok" respirator is provided for use in cases where only the respiratory passages need protection. This Lepetok portable respirator weighs only 10 grams and is said to be 99.9 percent effective. Western observers have felt that, in general, the Soviet devices, equipment, and techniques for handling isotopes and radiation, ventilation procedures and equipment, air lock devices, safety interlocks, alarm systems, dosimetry systems, and integrating dosimeters have only recently become available and are still relatively crude in comparison with similar Western items. Nevertheless, they seem to be readily available now and will lead to a relatively adequate protection effort. The Soviets have spent much time in devising good equipment for the removal of radioactive particles from laboratory and industrial environments as well as from atomic plant gaseous effluents. A healthy sign of Soviet progress in the field of radiological safety is the emphasis on inspection by their own personnel of the actual operating practices in all types



FIGURE 1. Side view of protective clothing worn by worker when handling radioactive material at Moscow Physical Institute.



FIGURE 2. Front view of same worker. Note helmet.

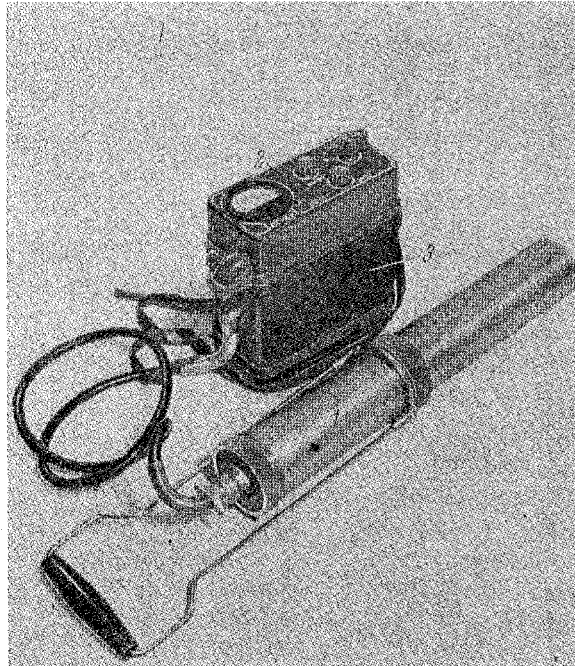


FIGURE 3. SG-42 Gamma-Radiometer with a Scintillation Counter:
1 — case with counter; 2 — control panel
3 — battery supply.

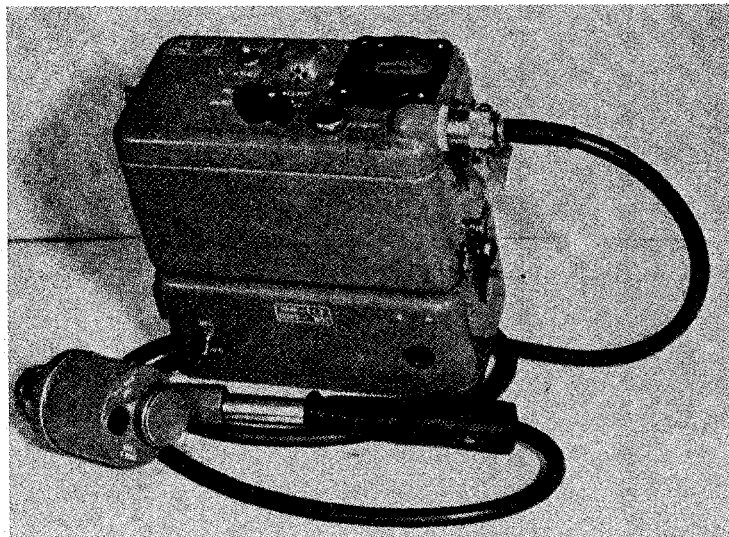


FIGURE 4. Radiation Counter.

of industrial and research establishments using radiation.

The Soviets now have large numbers of various types of instruments for detection, dosimetry, and irradiation. These will not be described in detail since descriptions are easily available and since they match or substitute for equivalent Western items. The instruments include integrating dosimeters, neutron detectors, alpha-beta-gamma dosimeters and detectors, pencil dosimeters, film badges, various types of X- and gamma-roentgenometers, and microroentgenometers, many types of X-ray equipment, cobalt irradiation equipment (so-called cobalt-bombs) and quite recently teletherapy units for cobalt-60, neutron sources, cyclotrons, betatrons, and other much more sophisticated equipment, the latter being most useful for purposes other than medical and radiation safety investigation. Although the Soviets occasionally import therapeutic radiation machines, they have adequate production of their own equipment, and supply machines to other Sov Bloc countries. This high production capability also applies to radioisotopes, which the Soviets freely export. The Soviets have generally followed the West in shielding research and practice. They are well aware of the current types of shielding involving concrete, lead and other metals, multiple interfaces or layers of metals, and boron-impregnated materials which are particularly useful for neutron protection. While they have published on future developments such as nuclear aircraft, their shielding research tends to be conventional, and no major developments seem to be underway at present.

84 56 57 59 71 72 80-82 86 87 93 96 100 101 106

DOSIMETRY

Only a very few of the top Soviet scientists are particularly capable in this aspect of radiological safety. Much of the published material, even as recently as 1958, still reflects some major misconceptions with respect to dosimetry. Only those persons who have a good physics background seem to have the complete grasp of the principles necessary for good dosimetry. However, one of the results of the 21st Party Congress has been the decision that physicists must contribute to biology

and provide adequate support in biophysics and especially in such fields as radiological physics which may lead to better practices in dosimetry. The better Soviet work on dosimetry has followed consistently the lead of Western scientists, particularly British and American. No new ideas have been advanced by the Soviets in this field.^{1 14 29 35 48 53-116}

WASTE DISPOSAL, ENVIRONMENTAL MONITORING, AND FALL-OUT

Despite the Soviet public over-emphasis on the dangers of waste disposal and fall-out expressed at the Pugwash Conferences, UN Meetings, and in the Soviet press and radio, most responsible Soviet scientists readily admit privately that the stand of the UN Scientific Committee on Radiation places fall-out and waste disposal in the proper perspective. Soviet published literature and participation at the various international scientific meetings reveal extensive research in the fields of waste disposal, methods of waste disposal, environmental monitoring of particulate and other effluents, aerial sampling techniques and the usual ground or soil, water, flora and fauna sampling techniques. Soviet data are now available on fall-out statistics for strontium-90 at many locations within the USSR, as well as on activities of isotopes in various soil, water, and biological samples. In addition, the Soviets indicate they are conducting relatively detailed studies of environmental radiation backgrounds, including fall-out, as well as contamination by atomic energy installations. Hydrobiological research is underway to evaluate concentrations of radioisotopes from waters and reservoirs by various food chains, plants, and microscopic aquatic organisms. Few data have been published by the Soviets on the higher food chains in such animals as sheep and cattle.^{24 76 117-181}

RADIATION DISEASE

Accidental Overexposures

An important part of the medical radiological safety effort has been and continues to be channeled into finding methods, usually chemical, for treating radiation disease, or for preventing the development of radiation dis-

ease after exposure to radiation. While the primary effort in radiological safety should be directed toward prevention of any exposure to radiation, the practical necessities require that the physician be prepared to treat persons exposed to various levels of radiation. The United States in initiating its atomic energy industry laid down various stringent practicable, working rules for handling radiation and radioactive materials. The consequence of this has been that since 1945 up through July 1956 there was a total of 16 radiation accidents in the United States in the atomic energy industry with 59 people overexposed, including two deaths. Since that time, there have been at least two accidents in which six people have been overexposed and one of these has died. For the period from 1 August 1945 to July 1956, the accident rate in the atomic industry was about half the general industry accident rate. For the 9 years ending 1 December 1955, of 200,000 employees, 99.4 percent received less than 5 rem per year (this 5 rem per year is the most recent — 1958 — level suggested by the ICRP as being a safe maximum permissible dose) and only 0.01 percent or 19 people out of the 200,000 received over 15 rem per year.¹⁸²

The above data contrast strongly with Soviet experience in the same field. Excluding estimates of thousands of probable casualties resulting from atomic disasters and accidents with atomic weapons which have occurred in the USSR, over one thousand cases of overexposure of Soviet workers have been reported in published Soviet literature through 1958. This figure (about 1,040) may include some duplication, since the Soviets are very careful to omit any reference to patients' identities, place of exposure, amount and type of exposure, total dose, type of radiation, and outcome of therapeutic procedures. The Soviets give only the types of therapy used and generally indicate that treatment was "successful." Apparently, since about 1957, such overexposures are no longer prevalent in the USSR. In fact, one Soviet physician traveling in the United States felt called upon to make just such a comment.^{14 182-198}

Soviet Objectives

Soviet objectives with respect to radiation disease are: to provide substances for the prevention and therapy of radiation injury; to study the pathogenesis of radiation sickness and to relate changes of immunological processes to pathogenesis; to determine the carcinogenic role of ionizing radiation in tumor development; to intensify work in radiation genetics and the biophysical aspects of radiation biology; and to apply radiobiology to an understanding of fundamental problems of living systems. Because the Soviets have tried so many therapeutic substances for radiation disease on an empirical basis, it is difficult to separate out therapeutic practices from actual clinical research on therapy and prophylaxis of radiation injury. For this reason, we shall consider clinical and laboratory research.

Clinical Aspects

It is well known that whole-body irradiation with X- or gamma-rays can cause radiation sickness and that this can occur in acute or chronic forms, depending upon exposure. Less emphasized are the facts that radiation disease can result from internal or external exposure to alpha or beta rays, from exposure of limited body areas to heavy doses of radiation, or from chronic exposure to lower doses of radiation. Further confusion exists from the failure to differentiate between somatic and genetic effects or to realize that each of these has a short- and a long-term component. The short-term somatic effect of radiation is that clinical entity known as radiation disease, which shows up in various forms depending upon dosage, dose rate and physical condition of the recipient. The short-term genetic effect may consist either of sterility or production of badly damaged but still viable germ cells. The long-term somatic effect may show up in any of several ways, one example being the production of leukemia or the production of a bone tumor from deposited isotopes such as strontium or radium. The long-term genetic effect may be the production of an hereditary deficiency or derangement which may lead either to damage or death in future genera-

tions. These are illustrations of the various possibilities and may help to clarify the various effects of radiation.

The Soviets have described a large number of clinical cases of radiation disease and thus have had sufficient experience with it and sufficient knowledge of Western literature on the subject that they are familiar with the general clinical picture, course and pathology of the disease. The Soviets usually classify radiation disease into four clinical stages: (1) increased functional activity, (2) a latent period in which the stimulation of the first stage is counteracted by, (3) the dystrophic (degenerative) processes, and (4) recovery. Soviet opinion remains divided on the utility of this classification. It seems characteristic of the Soviets that they consider the time between actual irradiation and onset of symptoms as a time in which the central nervous system is being stimulated to produce the subsequent pathological changes in various tissues.

One of the most publicized and characteristic aspects of Soviet work in this field is that of persistent emphasis on the central nervous system (CNS) effects of radiation. While some of the early work published by the Soviets lacked either necessary data or statistical significance, and while the Soviets even as recently as 1958 continued to make public some indefensible statements and claims concerning the role of the central nervous system in radiation disease, recent Soviet work seems to demonstrate conclusively that there are CNS effects at levels far below those widely quoted in Western literature in the past. Further support for this type of effect has been forthcoming from recent U.S. and Western research. It is interesting that during the last few years the tenor of many Russian papers dealing with this problem has changed. It apparently is no longer necessary to relate all physiological research to Pavlovian "nervism" and allusions to the latter are made much less frequently in connection with experiments with radiation pathology than heretofore. Nonetheless, much effort continues to be devoted to clarifying the role of the CNS in radiation disease.

As is true with most of their medical research, the best Soviet work has been done in Moscow, Leningrad, and Kiev in a few institutes such as the Institute of Biophysics of the Academy of Sciences, the Department of Biophysics of Moscow State University, the several institutes of roentgenology, radiology and oncology, the institutes of labor hygiene and occupational diseases, the oncological research institutes and institutes of hematology and blood transfusion. As a matter of fact, the latter type of institute has historically played a very important role in the Soviet clinical treatment program for those persons overexposed to radiation. These institutes, particularly the Moscow institute under A. A. Bagdasarov, were used as the central points for treatment of all Soviet cases of overexposure to radiation. One of the primary reasons for this centralization of treatment was the fact that this institute was the best equipped in the entire Soviet Union to provide the complex necessities required in treating radiation disease. In the last two years or so, there has been a gradual decentralization of treatment into other institutes which are properly equipped and supplied for such therapy. These institutes probably include a few of the military medical institutions.

Prophylaxis of Radiation Injury

Several attempts have been made to show a protective effect by giving less than lethal doses of radiation before irradiation with either lethal or sub-lethal doses. For example, the Soviets have given dogs doses of 3.3, 3.6, 6.6, and 7.3 millimicrocuries of cobalt-60 per kg. body weight. This pretreatment seemed to protect some dogs from absolute lethal doses of X-ray; the investigator postulated an immune reaction effect. This work is interesting and should be pursued further since the data must be considered preliminary. Other studies on the use of irradiation to protect against subsequent irradiation have given equivocal results. While several Soviet investigators have claimed a stimulating effect from low doses of radiation, the general tendency in the USSR and in the West is to consider that all radiation produces adverse effects and that there is no adaptation

to radiation. It is now recognized in the West that research of this type must be carried out under rather rigorously pre-determined conditions and the criteria for prophylactic effect must lend themselves to reproducible study. The Soviets have not yet reached this point in their published research on prophylactic agents and this inadequacy is compounded by their shortcomings in statistical control and analysis of experiments. Only in 1958 and 1959 have the Soviets evinced interest in the need for such control and for uniformly reproducible experiments. Thus, to a large extent the research discussed below is less meaningful than it should be, because the criteria of prophylactic effect are sometimes influenced by the investigator's failure to provide adequate control studies.¹⁹⁹⁻²⁰¹

For general body prophylactic protection against irradiation, the Soviets have investigated such ideas as the state of nutrition prior to irradiation, the general physical condition of the test subject, hypoxia, hypothermia and a long list of various chemical substances which have been tried, usually on an empirical basis. The pre-irradiation use of blood or blood products as well as shielding of various portions of the body have also been studied. Hypoxia produced by lowered barometric pressure, by chemicals such as cyanide or by shifting the composition of inhaled air, or by hypothermia, and even by natural hibernation, has been demonstrated to prolong the life span of irradiated animals if it occurs before irradiation. However, claims concerning the absolute protective effect, that is, a decrease in overall mortality rate, have been much less well-substantiated. These prophylactic techniques, if given after irradiation, almost uniformly worsen the radiation effect. Shielding of various portions of the body has often produced a good measure of protection against irradiation. This technique has shown that the body increases its production of erythropoietin which stimulates the production of red blood cells and may prevent post-irradiation anemia. So far, this technique has not proved particularly useful clinically in radiation disease. The use of blood or blood products such as packed erythrocytes, thrombocytes or white blood cells has been claimed

to produce beneficial results but the data are insufficient to substantiate this claim. Some Soviets have suggested that ethanol offers protection against radiation, however, others have found, as have Western investigators, that ethanol actually increases the ill effects of radiation. The general consensus of the Soviets is that some anesthetics and narcotics, if given before irradiation, may have some protective effect, particularly nembutal, amy-tal and ether. If given afterward, these agents did not offer protection or therapy, but seemed to worsen the damage. Soviet investigators indicate that hedonal, urethan, and phenamine probably do not offer a protective effect at any time. Morphine, nembutal and ether may provide some degree of prophylaxis. This effect is assumed to be at least partially an hypoxic one. Novocain has also been claimed to show a significant prophylactic action.

About eighty substances have been reported by the Soviets to have some prophylactic effect against irradiation. These are listed in appendix C. Of all these substances probably the most effective has been cysteineamine (also known in the USSR as mercamine, be-captan, or betamercaptoethylamine). However, certain Soviet studies have shown that quite possibly this compound produces tumors in mammals. Many other compounds have been tested and found to be unsatisfactory. Current Soviet testing, particularly under N. V. Luchnik and S. Ya. Arbuzov, represents a major screening program for compounds providing a protective effect. Luchnik and his co-workers seem to have reasonable and reproducible experimental techniques for determining the protective effect of compounds upon irradiation damage. Luchnik has suggested that his data show there are different mortality peaks which vary according to the radiation dose and which apparently reflect death from different causes. He believes that different protective agents which act on these separate causes of death may change the mortality peak. This is consistent with U.S. views regarding the three major types of radiation death: the gastrointestinal, the hematological, and the CNS deaths. Protection of the skin from radia-

tion damage has received considerable attention both here and in the USSR, because it is of such importance to the therapeutic uses of radiation. Some Soviets have claimed good skin protection with such agents as stickleback fat, decomposed butter, fish oils, vitamin-containing ointments, methionine ointment, naphthalan oil, plasters, Shostakovskiy balm, aloe emulsion, tezan emulsion, methylated derivatives of certain fatty acids, novocain block, and tissue therapy a la Filatov.* Their Ointment No. 2 is an aloe emulsion and the Ointment No. 4-U is methylated linolenic acid. Of these, the aloe and tezan emulsion offered some protection, the latter being somewhat better, especially if used repeatedly before every exposure to radiation. The newer work on methylated derivatives of fatty acids is promising but only preliminary.

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Soviet research on prophylaxis for internally deposited radioisotopes is practically nonexistent. Some attention has been directed toward the therapeutic removal of radioisotopes and toward good working rules and habits in preventing deposition of isotopes.

Treatment of Radiation Disease

Despite press and radio claims of successes in treating radiation disease, Soviet scientific descriptions of the treatments reveal that they follow Western suggestions for therapy, with more emphasis on blood transfusions. The Soviets, although emphasizing immediately practical therapeutic and prophylactic measures using chemical compounds, are aware that the long-term approach to a rational therapy or prevention of radiation disease is through detailed knowledge of the mechanism of action of radiation. Thus, the Soviets publish actively in both these fields and keep abreast of Western developments.

* Tissue therapy was originated in 1933 by Academician V. P. Filatov who died in 1956. Tissue therapy is based on the therapeutic application of tissue kept in a state of "survival." These are conditions of a delayed and lowered vitality. The idea of the therapeutic properties of these stored tissues suggested itself in Filatov's work on corneal opacities. The actual therapeutic value of this entire method has never been adequately documented.

Soviet work on the therapeutic removal of radioisotopes from the body has been relatively scanty and only recently have articles begun to be published on some of the newer methods of therapy such as chelating agents. The investigators responsible for most of this current activity are those in the Moscow Institute of Labor Hygiene and Occupational Diseases under A. A. Letavet, Ye. B. Kurl'yandskaya and Yu. I. Moskalev. Much of this material is repetitive of research that has appeared previously in the West. The compounds investigated include ethylenediaminetetracetic acid (EDTA), hydroxyapatite with disodium phosphate, hexametaphosphate (this compound is extremely toxic), sulfosalicylic acid, aurintricarboxylic acid euphylline (theophyllinethylenediamine), orthophenylenediamine, yatren (5-sulfonic-7-oxyquinoline), cincophen and some miscellaneous materials such as parathyroid hormone and liver extract. Some of the compounds mentioned recently in U.S. literature seem not to have been investigated as yet by the Soviets; these include rhodizonic acid, DTPA (diethylenetriamine pentaacetic acid) and BAETA (2, 2'-bis-[di-(carboxymethyl) amino-diethyl ether]).²³³⁻²⁴⁰

Other therapeutic measures against radiation disease include the following:

a) hygienic supportive measures such as rest, graded exercise, fresh air, high-quality and high-calorie diet, or if necessary, parenteral diet, and vitamins such as thiamine, riboflavin, pyridoxal, niacin, cobalamine, citrin, rutin, vitamins C and K, and paraaminobenzoic acid. Citrin and rutin (not considered vitamins in the West) are suggested by the Soviets as blood capillary strengthening "vitamins."

b) for replacement of blood loss or for anemia or other types of blood destruction the Soviets have investigated whole blood, blood serum, polyglukin, sinkol', polyvinylpyrrolidone, and parenteral solutions such as TsOLIPK-5, and LIPK-43, hydrolysin (L-103), aminopeptide-2, such blood products as red cell mass, white cell mass, and thrombocyte mass, hemoglobin preparations of various sorts, "colloidal infusion," bone marrow,

cobalt ion and calcium ion and properdin, as well as the cattle blood products BK-8, LSB, and ACS. The latter two have been withdrawn from production and distribution. The BK-8 is a product prepared by V. A. Belitser and K. I. Kotkova. Another Soviet study indicated that use of packed red cells or blood transfusions is not desirable, and in fact may be dangerous from the 5th through the 15th day of radiation disease. Other substances found useful for anemia include iron preparations, liver preparations, kampilon, anti-anemin, niacin, cobalamine, pyridoxal, vitamin C, folic acid, hepatocrin. Therapy for the leukocytopenia, or decrease in white cells, resulting from radiation disease, has been the subject of much Soviet study with various conflicting results. Some Soviets suggest that bone marrow stimulants such as pentoxyl, sodium nucleinate, metacyl, leucogen and tezan-25 are not useful after the irradiation. U.S. workers have not had good results with this type of agent. Others suggest that these agents should be used immediately, while most of the Soviets suggest that the agents should be used later when the marrow is able to respond to stimulation. In addition the Soviets have used liver preparations, vitamins, and the tissue therapy method of Filatov with such preserved tissues as skin, umbilical cord, and eye, and have claimed beneficial therapeutic effects not only for the leukocytopenia but also for the general body response.

c) control of infections and toxemias is accomplished by means of antibiotics, tissue therapy, properdin and, where necessary, antitoxins and vaccines. Some Soviets have suggested that penicillin, biomydin (chlortetracycline or aureomycin), levomycetin (D-chloramphenicol), streptomycin, and ekmoline (a triprotamine fish tissue extract) have useful properties in treating infections during the period of radiation disease. However, more recently some Soviets reported that biomydin may be toxic after irradiation and that streptomycin is probably the most useful single broad-spectrum antibiotic, with penicillin next best. U.S. data indicate that streptomycin is best, and that chlortetracycline and terramycin (oxytetracycline) are some-

what helpful particularly if given with streptomycin. Other U.S. data indicate that penicillin, neomycin, polymyxin and certain other antibiotics are not useful in radiation disease.

d) management of radiation-induced nausea and vomiting has been investigated using bromides, diphenhydramine, urotropin, cysteineamine, cysteineamine salicylate, cysteineamine chloride, menthol, valerian, novocain, camphor, sodium hyposulfite, dimedrol, caffeine, barbiturates, aminazine (chlorpromazine). Some Soviet data have suggested that anesthetics of various sorts, novocain, hypothermia, barbiturates, ethanol, and other narcotics and CNS depressants will aggravate radiation disease.

e) repair and prevention of skin damage has been attempted with aloe emulsions, stickleback oil, fish oils, vitamins, methionine ointment, tissue therapy, Shostakovskiy balm, novocain block, tezan-25 ointment, fibrin film, penicillin ointments, and ointments of the methyl esters of such fatty acids as oleic, linoleic, and linolenic, the latter preparations being called linol and linolen.* Apparently the most effective of these are the linolen ointment and the methionine ointment.

f) supportive therapeutic substances have included zymosan, yeast extracts, hormones, such as synesterol, diethylstilbestrol, somatotrophic hormone, adrenotropic hormone, calcium ion, calcium gluconate, sodium hyposulfate, sodium chlorophyllin, yeast, tissue therapy, calcium glycerophosphate, caffeine, amphetamine, phytin, phosphren, lipocerebrin, pantocrin (powdered reindeer horn), ginseng and ginseng extracts, extracts of Schizandra chinensis, plus hyaluronic acid-protein complexes prepared from the lens of the bovine eyeball. A few others have been suggested as having some therapeutic effect but this has not been shown adequately. These include metrazol, phenatine (benzedrine plus niacin), strychnine, adenosine triphosphate (ATP), cervical vagosympathetic novocain block, glycogen and insulin, casein, saccharose, and many parenteral solutions.^{8 27 189 195}
202 204 205 208 213-215 219 222-224 226-232 241-287

* Linolen is the methyl ester of linoleic acid and linol is a mixture of the methyl esters of oleic and linoleic acids.

General comments concerning the above research seem appropriate here. First, the Soviet tendency is to make invidious comparisons of their work with previous work published by scientists of other countries, particularly from the United States. This is especially true for those articles dealing with therapeutic management of patients who have received radiation either for treatment or from industrial overexposure. The second major point is the lack of any adequate standard of judgment concerning the therapeutic effect of many of the agents used. Quite often the primary and almost sole judgment as to whether or not an agent is effective in treating radiation disease is a simple statement to the effect that this substance was found to be effective or found to give a beneficial effect. Most of their judgments are qualitative in nature rather than objectively judged against some reasonably described and acceptable standard. This may result partially from the Soviet lack of background in statistical analysis. Finally, we ought at least to compare some of the methods and therapeutic agents used with those used in Western countries, including the United States. Those measures which are considered to provide a generalized improvement, e.g., adequate diet and fluids including the proper use of vitamins and food supplements, plus antibiotics, blood replacement where necessary, hormones, anti-nausea or anti-motion sickness drugs, and tranquilizers are all widely recognized as useful. One can take issue, however, with the Soviet use of some of their products such as BK-8, LSB, tissue therapy, pantocrine, ginseng, Schizandra chinensis, camphor and other similar proprietary measures. Investigators in the West have also used a large number of therapeutic agents, but have noted that dubious therapeutic agents which may harm even normal or healthy persons are even more questionable for treatment of radiation disease. There are signs that the Ministry of Health and its organizations are making attempts to combat the use of unproven and perhaps dangerous therapeutic agents. There has been a noticeable withdrawal from production of several therapeutic agents in the USSR. The

most recent example is LSB which was withdrawn from production in March 1959.

RADIOBIOLOGY

General

Supportive to the program of radiological safety in any country is basic research in associated areas of radiobiology. It is here that the mechanism of action of radiation is studied with the hope that eventually some rational adequate therapy might be developed for radiation disease. Radiobiology includes research on toxicology, absorption, excretion and forced excretion of many of the radioisotopes which have become important in recent years as a result of atomic energy developments. It also includes research directed toward understanding the extent and nature of background radiation, the extent of build-up of radiation or radioactive isotopes from uses of atomic energy, the potential genetic and somatic dangers of the gradual increase of radiation to the human population, and other topics of a like nature. Without adequate radiobiological research there could be no long-term program for progress in radiological safety. An area currently receiving attention and of major import to radiological safety is that of the relative biological effectiveness of various types of radiation. The Soviets are insistent that the central nervous system is extremely important in any body reaction to irradiation. While many of the claims advanced by the Soviets in this field are lacking in support and are presently questionable, it seems quite certain that there are definite central nervous effects from irradiation, perhaps more than was thought previously in the West.

Radiogenetics

Basic Soviet research in genetics received a major setback during the period of rigid Lysenkoism. However, since that time there has been a gradual resurgence of classically oriented geneticists in the USSR, primarily into the field of "radiation genetics," a Soviet euphemism for the study of modern genetics. During this resurgence of classical geneticists, Lysenko himself has retained his position as head of the Institute of Genetics with the

result that the classical geneticists have been required to work in other institutes, with major support for classical genetics most recently coming from biochemists and biophysicists. For example, the Institute of Biophysics, Academy of Sciences, has for the last three to four years supported the classical geneticist N. P. Dubinin and some of his followers. In addition, such people as V. A. Engel'gardt have been lending major support in the Academy of Sciences to various classical geneticists. One of these, Timofeyev-Resovskiy, has been working in the Institute of Biology, the Ural Affiliate of the Academy of Sciences in Sverdlovsk. Dubinin has supported work by other geneticists and has begun major research in the new "science city" near Novosibirsk where he was selected to head the new Institute of Cytology and Genetics. However, he has more recently been criticised by Pravda. Information presently indicates that he has been spending about half his time at that new location, the remainder of his time being spent at Sukhumi, the primate research colony, and in the Institute of Biophysics, Academy of Sciences, in Moscow. The most recent support for the "classical geneticists" in the USSR has come from the physicists who would like to see established an adequate physical basis for genetics research and for handling genetic information. Thus, it seems possible that, while Lysenko will retain his position at the Institute of Genetics, the basic research in genetics in the USSR will be conducted under the heading "radiation genetics" and will be of a more conventional nature.

The importance of genetics research in radiobiology has been emphasized by the recent discussions concerning the long-term hazards of fallout and the gradual increase in background radiation now occurring on the surface of the earth.* There is evidence

* There is presently no answer as to whether there is a threshold, that is, some point before which radiation has no effect on genetics, or a linear response to radiation, that is, all radiation in addition to the natural radiation background is harmful. Discovery of a definite threshold effect either in mice or in primates does not mean that such findings can be extrapolated directly to man. Nevertheless, in the absence of human data, such a discovery would be used as a tentative yardstick in estimating future hazard of fallout.

that the Soviets are now beginning a long-term primate genetic research program with low doses of radiation. One Soviet Geneva paper did present some data on primate genetics but the research was carried out with a small number (7) of monkeys, and the results are inconclusive. Other Soviet studies in radiation genetics are being carried out on microorganisms as well as on mammals. If sufficient priority is attached to the long-term primate genetic studies the Soviets may well regain some of the ground lost in the field of genetics.²⁴ 288-328

Mechanism of Action of Radiation

Research in this field supports the most important long-term possibilities for understanding the nature of radiation and its action upon the body, with the hope that a rational explanation of the action will lead to a rational method for therapy, or prevention of radiation disease. A good share of the work on mechanism of action on radiation is potentially useful for early detection tests of radiation damage. Thus, as research proceeds further toward actual delineation of the minute cellular or sub-cellular process occurring immediately after irradiation, the investigators acquire not only knowledge concerning the mechanism but also methods for early detection of changes induced by radiation. We shall consider two major aspects of the mechanism of action of radiation. First are the primary physical and biophysical processes involved in the absorption of energy from radiation or radioactive particles. Second are the subsequent tissue, cellular, chemical and other changes within the organism.

The initial absorption of energy by a living organism may be direct or indirect. The sequence of events and the direct and indirect effects are described in a 1958 report of the United Nations Scientific Committee on the Effects of Atomic Radiation.²⁴ The target theory, first proposed by Lea, served to focus initial early research attention on the primary process of ionization and a direct effect of radiation on the cell. The next major step was the recognition of the presence of an indirect effect in which the microstructures need not be hit directly by an ionizing particle.

These indirect effects are apparently mediated by the action of radiation on water, the primary solvent in biological systems. Additional indirect effects may result from the action of radiation on other chemicals within the cell. A further direct action of radiation, besides that of ionization of a "radiosensitive target," is that of excitation of the orbital electrons of substances within the cell.

No single mechanism can be the basis of action of all forms of radiation injury, since a cell is a highly organized system with a diverse constitution and structure among its parts. In any event, it should be recognized that the physical chemical processes developing as a result of the direct action of the ionizing radiation are the most important but only the initial link in the long chain of pathogenic mechanisms which lead to radiation disease. An important role is subsequently played by the response reactions of the organism. Soviet research in general recognizes the above concepts and subscribes to them.

More recent Soviet research has included investigations of the mechanism of action of some antimetabolic chemicals such as the chloroethylamines. Some Soviets consider that the mechanisms of action for these chemicals are similar or identical to that for radiation, while other Soviets and most Westerners consider that there are some distinct differences. Another interesting area of research started primarily by the Soviets and now arousing interest elsewhere is the study of electronic paramagnetic resonance of irradiated materials. While this research is in its early phases, it could lead to interesting discoveries as to the details of biophysical processes involved in energy absorption in tissues. Other Soviet research has included studies on cellular adaptation to irradiation (apparently there is none), studies of the oxidative production of toxins in tissues, and an interesting concept by V. A. Engel'gardt given at Geneva concerning a multiplying chain mechanism to explain the extensive effects of ionizing radiation from the small energy input.^{24 27 241 329-347}

One of the major facets of the Soviet research effort in radiobiology is the continued,

insistent emphasis upon the role of the central nervous system in producing actual radiation damage. Several years ago, the predominant Soviet attitude was that the central nervous system was responsible for the mediation of all radiation biological effects. Currently, the Soviets still emphasize that the central nervous system plays a dominant role in production of effects within the body but the real emphasis is on the nervous system's integrative role. Another claim by the Soviets has been that radiation in small doses will produce beneficial stimulation, that minute amounts of radiation may even be necessary for life. Most Soviets now recognize that such a claim arose from mistaken interpretations of stimulation produced by the action of low doses of radiation on microorganisms. They now realize that this reaction is a definite early sign of radiation damage, a sort of phasic response to stress and seems to support their claim of no threshold response to radiation. Soviet work on paramecia also has suggested that there is no threshold for radiation damage. In general, there is little good evidence one way or the other for a threshold effect. Theoretical consideration of the mechanism of action of radiation led one Soviet, A. V. Lebedinskiy, to suggest that the so-called "sigmoidal response curve" does not imply a threshold of response to radiation but rather demonstrates a summation of reparable and irreparable components of radiation injury. Since there is "always" an irreparable somatic component there is no such thing as a threshold, he concluded. A further portion of this assumption is that as a total dose increases the reparable fraction decreases. The evidence of a direct relationship between dose and damage at very low doses is still unsatisfactory. There has been considerable Western and Soviet research on the changes of macromolecules such as proteins, enzymes or nucleic acids after irradiation. Some Soviets have suggested that irradiation produces an immediate, non-specific shock reaction from protein denaturation, with specific suppression of functions of adaptation but maintenance of basic vital functions. The specific suppression of function is assumed to be hereditary, and is believed to be responsible for

the later effects of radiation. This research is interesting and may prove fruitful for a better understanding of how the actual tissue effects of biological damage from radiation are produced.

Other Soviet research is concerned with the possibility that the primary absorption of energy by the tissues occurs in macromolecules and that there is a direct effect from depolymerization of the macromolecules and an indirect effect from the resultant production of radiolysins. The evidence presented by the Soviets, like that of Western investigators, seems to show conclusively that nucleic acid metabolism, for instance, is affected by irradiation. The phosphorus turnover in nucleic acid is suppressed by irradiation of normal or tumorous tissue. The enzyme ribonuclease is inhibited and the conversion of ribonucleic acid (RNA) to deoxyribonucleic acid (DNA) is upset. The depolymerization of nucleic acids also seems to bear some direct relationship to the degree of radiosensitivity of tissue. Apparently some radioresistance of nucleic acids is related to the strength of the protein-nucleic acid bond. In normal tissue, this bond is quite strong and radioresistance is relatively high. In tumorous tissues, this bond is easily split and the tissue is therefore more sensitive to irradiation.

There are good Soviet data indicating the operation of humoral and toxic factors in irradiation leukopenia, red blood cell hemolysis and depression of mitosis in implanted tumor cells. The red cell hemolytic factor was thought to be an unsaturated fatty acid and it was suggested that the production of this factor was closely related to radiation injury. Although the results were tentative, the work on inhibition of mitosis seemed to indicate that irradiation of the head produced a reflex stimulation of adrenalin which provided the mitotic depression. Also receiving attention is the radiosensitivity of resting tissues as compared with that of mitotically active tissues. The fact that active tissues are more radiosensitive would seem to be related to cell division and the state of nucleoproteins but the exact mechanism is still not known. Soviet and Western work seems to indicate

rather conclusively that alteration of the phosphorylative processes, the oxidative metabolic processes, and high energy metabolism are affected by the irradiation process, but are not the source of the major part of the tissue damage resulting from irradiation. One major test that the Soviets are currently using for early detection of radiation damage involves the fluorescence of tissues within periods of a half hour or so after irradiation with doses as low as 25 r for mice. The group developing this technique patterned after earlier U.S. work, is that of M. N. Meysel'. This work has been done in microorganisms as well as in mammals and the finding of fluorescence (using an acridine dye) of irradiated tissues after about a half hour is relatively consistent and seems to arise from the degradation products of macromolecules such as DNA, RNA, or nucleoprotein complexes. There is also a Soviet report on the effects of radiation on nucleic acid metabolism and nucleic acid content of various tissues.

Although a good deal of emphasis in the past has been given by Soviet investigators to the study of whole-body reactions, that is, whole animal organisms as opposed to studies on isolated or model systems, a relatively recent trend has been the increasing use of models and isolated systems by the Soviets. Some of this work was summed up at Geneva by G. M. Frank, *et al.* Frank suggested that the study of radiation action phenomena may be accomplished with models first, and then with a gradually increasing approach to the total organism. He feels that a number of biological reactions hitherto considered peculiar to an entire organism can be reproduced *in vitro* in isolated tissues. An example is irradiation-induced diminution of elasticity of large blood vessels which he obtained when irradiating either the entire animal or an isolated blood vessel. Another method for study which he considers even more promising but also more difficult and requiring much better training in the physical sciences is the study of physical-chemical changes in the tissue of the entire living organism. Western investigators have found such approaches very useful in recent years.^{10 24 33 73 188 231 250 329 333-334 336-337 341 345 348-374}

Radiosensitivity and the Central Nervous System

Sensitivity of different types of tissue to radiation constitutes a topic on which there are major disagreements between Soviet and Western investigators. In the past the Soviets have made attempts to demonstrate that the central nervous system is the most radiosensitive of all tissues. Failing to present concrete, adequate data to support this thesis, the more recent Soviet trend is to implicate the central nervous system in the mediation of the radiation effect. The Soviets consistently emphasize the role of the central nervous system as an integrating unit in determining the locus and the extent of radiation reaction, as well as the nature and type of recovery. Two lines of research in which central nervous system effects are considered most important are studies on radiosensitivity of young organisms and research on the variation of radiation response with changes in the phylogenetic scale. The Soviets have suggested the use of physiological tests of smell, taste, balance, sight and touch for determining slight radiation damage. These suggestions follow naturally from the Soviet tendency to use reflex techniques in determining physiological status and from their bent for insisting on the greater sensitivity of functional tests as opposed to morphological tests. There is, however, not complete unanimity among the Soviets concerning the central nervous system's sensitivity to radiation. Many subscribe unquestioningly to the fact that the most sensitive tissues to radiation are those of the hemopoietic system, followed by those of the gastrointestinal tract. This parallels Western findings. An example of Soviet research on the CNS is contained in an article by A. M. Kuzin, of the Institute of Biophysics in Moscow, in the January 1958 issue of a U.S. journal. Kuzin emphasized CNS changes after irradiation (carried out at 50 to 100 r) and suggested that electroencephalographic changes were noted with 1 roentgen (an unfounded claim actually made on the basis of straight-line extrapolation). Further studies of CNS damage from irradiation dem-

onstrate conclusively that doses of the order of 50 r will produce definite measurable CNS reflex changes, but no coherent quantitative picture is yet available.

Other types of research on CNS response to radiation include studies on interoceptive reflexes, conditional reflexes, light-eye reflexes, and flexor reflexes. The Soviets suggest that reflex changes indicate damage in the diencephalon and reticular substance. So far as is known, no equivalent work is underway in the U.S. Interestingly enough, most of this research of the Soviets shows quite good work at levels of 100 r or greater but poor, inadequately controlled work at levels below this, with unjustified extrapolation from studies at the high dose levels to "expected" changes at very low dose levels. It is the unjustified extrapolation to which most Western investigators object strenuously. This point was particularly noticeable in the Soviet presentations at the latest Geneva Conference on Peaceful Uses of Atomic Energy. But it has also been true of many papers in the 1956-57, and -58 period. More recent Soviet works show more reserve about making unjustifiable conclusions, and instead, give good simple presentations of the data observed.

The Soviets have studied many patients irradiated therapeutically and have taken many EEG tracings. Their conclusions are that the initial EEG reaction to irradiation represents an increased cortical activity within about 10 minutes and a subsequent variable amount of cortical inhibition and later normalization of activity. A typical kind of conclusion or inference drawn by the Soviets is that the data indicate that during acute radiation disease, disturbances in the activity of the vitally important systems leading to lethal outcome, are caused by the disturbance of the regulatory function of the central nervous system.

The Soviets often use irradiation for therapy of conditions which they feel are a result of CNS changes but which Western clinicians consider essentially unrelated to the CNS. Thus, 30 patients with frostbite of fingers,

toes, wrists, hands, feet, and knee joints were treated with irradiation with what were called good results. The author concluded by saying that these results "proved both local and general favorable effects of X-ray therapy on disturbed blood circulation in injured tissue by alleviating blood vessel spasms, by improving trophic activities, and regulating fundamental nerve processes." This use of irradiation is, at best, ineffective. Other research involving CNS effects includes investigation of olfactory sensations, studies of the ultra-slow rhythms of the electrical potential of the brain, changes in the electrical resistance, capacitance, and impedance of the CNS, and morphological investigations of the central nervous system. Even in conditional reflex research it is notable that there is no unanimity among Soviet authors or investigators as to (i) whether irradiation produces an initial increase or decrease of a positive conditional response, (ii) the duration of such alterations in various animals and (iii) numerous other subtle phenomena. In the case of bioelectric phenomena, 500 to 1,000 r seems to have a distinctive effect on the bioelectric activity of the cerebral cortex and also on peripheral nerve action currents and the reactivity of internal receptors.

In summary, it is difficult to reach a definite conclusion as to any CNS radiation effect threshold that has been established experimentally by the Soviets. They have called attention to the fact that the central nervous system can be damaged by doses of radiation at lower levels than was previously supposed in the West. These results have also stimulated Western work along these lines, and in 1958 and 1959, a very small beginning was made in the U.S. toward research of a similar nature. An indication that even the Soviets are not completely convinced about very low dose changes in the CNS was given by Lebedinskiy when he said that contrary to material appearing in print and contrary to other claims by other Soviets, the CNS changes were used only experimentally, not in industry to detect radiation damage in persons potentially exposed to radiation. The following omissions are present in a substantial part of

the published reports: (1) Lack of statistical analysis of results; (2) inadequate discussion of instrumentation and dosimetry, particularly as to depth dose; (3) limited use of controls; (4) little information on the general conditions of animals after a given irradiation; (5) limited presentation of experimental data; (6) failure to report negative experiments. On the other hand, the Soviets have certainly obtained a number of results which, if confirmed, will be of the greatest theoretical and practical interest. Among the major findings are: (1) Evidence that there may be a pathologically increased afferent flow to the CNS contributing to early and late pathology and that treatment should be directed toward this phenomena. (2) Indications that functionally the CNS is very sensitive to radiation. Many of the findings reported above could be interpreted as resulting from small random disturbances in a variety of cortical networks and possibly all parts of the CNS, including peripheral receptors. The variability in quality of Soviet published work is much greater than in the United States. There is probably no single Soviet investigator who has not at one time or another published some work in which either the data or the conclusions are unacceptable by Western standards.²⁴ 195 202 231 245 272 285 339 344 364 375-401

Additional Soviet research on radiation effects on the body has been done in experimental animals. Clinical observations have been made on patients exposed to therapeutic radiation and to accidental radiation over-exposures. These include determining the effects of radiation and deposited radioisotopes in bone, for short-term and long-term exposures. Studies have also been done on the other systems of the body i.e., the cardiovascular system, the hemopoietic system, the endocrine system, as well as individual organs and tissues. Much of this work is similar to U.S. research. The publication and research effort has been expanding so rapidly in the last two to three years in the USSR that the Soviets are now in a position to begin making major contributions in this field and to initiate original lines of research.²⁴ 27 184 188 231 236 244 262 263 272 278 288 334 335 338 339 344 345 365 371 378 397 402-476

Immunological Response to Radiation

Another area in which radiation effects are very important is that of the immunological responses of the body. Although Soviet research lags substantially behind that of the United States, some Soviet findings are of interest. Irradiation and infection act synergistically in weakening body defenses. Apparently even under the stress of one insult the body tries to respond to the second, but in so doing loses ground against the initial insult. Another action of radiation is to suppress the body's natural defenses or immunity against many pathogenic organisms. A decrease in natural immunity often leads to autoinfection. This infection is undoubtedly a serious complication of radiation disease, but is not responsible for the major pathology of radiation disease as has been suggested by a few Soviet research workers. Some of the diseases which have been found to occur more readily after irradiation are: influenza, whooping cough, diphtheria, paratyphoid, leptospirosis, colon bacillus infections, and various anaerobic infections. One Soviet investigator suggested that the technique of lowering disease resistance by irradiation of animals be used as a laboratory procedure for infectious disease research. Another worker described an increase of natural immunity (measured by an increase in complement-fixing activity) after irradiation of rabbits with ultraviolet rays. This seems rather unusual and needs

further confirmation and study. In addition to depressing natural immunity, irradiation seems to increase body sensitivity to bacterial toxins. This may be one reason for the observations that infections are more severe in the presence of radiation disease. However, one Soviet investigator claims that irradiation has no effect on tetanus intoxication or the prophylactic and therapeutic actions of anti-tetanus serum. Other Soviet workers feel that autoinfection is overstressed, and that it is not really important in radiation disease. These investigators consider that the important basis for radiation diseases is the circulation of tissue disintegration products and a production of autoallergy. It is conceded, however, that the prevention of infectious disease is important after radiation sickness begins.

Most Soviet work on the interaction between irradiation and immunological responses demonstrates a decrease in immunity and a suppression of formation of antibodies, possibly through action of the central nervous system. A few Soviet investigators claim that ultraviolet, X- and gamma-irradiation in small doses provide stimulation of immunological processes. This needs confirmation and requires better control conditions than those provided. Soviet investigators feel that certain areas of study on the mechanism of action of radiation are susceptible to closer analysis using immunological techniques.

~~UNCLASSIFIED~~

APPENDIX A

RESEARCH INSTITUTES*

- A. Khar'kov Institute of Medical Radiology
Physicotechnical Division
M. N. D'yachenko
- B. Institute of Cytology and Genetics, Siberian Department, AS, USSR,
Novosibirsk
Director - N. P. Dubinin
(also at the Institute of Biophysics, AS, USSR, Moscow)
- C. Uzbek Scientific Research Institute of Blood Transfusion
Director - A. T. Astanov
S. D. Kalenova
V. I. Kalugina
G. S. Levin
Z. G. Teplyakova
A. Yu. Tilis
- D. Institute of Internal Medicine, AMS, USSR
Laboratory of Biophysics
Head - M. N. Fateyeva
N. I. Gorbarenko
V. S. Klimov
Ye. P. Stepanyan
- E. Institute of Clinical and Experimental Surgery, AS, Kazakh SSR, Alma-Ata
Director - A. N. Syzganov
S. B. Balmukhanov
- F. Institute of Physics, AS, USSR
Radiation Genetics Laboratory
M. A. Arseneva
G. G. Tinyakov
- G. Institute of Radiation Hygiene, Ministry of Health, RSFSR
Director - F. G. Krotkov
N. F. Galanin
Yu. S. Belle
A. N. Bragina
V. N. Gus'kova
V. M. Kupriyanova
L. R. Romanov
Ye. S. Romanova
E. P. Storozhenko
- H. Bashkir Medical Institute imeni 15th Anniversary of Komsomol, Ufa
Chair of Pharmacology
Head - D. N. Lazareva
R. N. Abdullina
A. Ya. Lagno

*The numbers are taken from "A Directory of Medical and Biological Research Institutes of the U.S.S.R.," U. S. Department of Health, Education, and Welfare, 1958. The letters are arbitrary.

- I. The 14th Medical School
Director - L. A. Bradman

- J. Military Medical Service
 - I. B. Beylin, Col.
 - V. M. Burmistrov, Major
 - N. V. Butomo, Major
 - V. I. Filatov, Major
 - L. A. Klyucharev, Lt. Col.
 - A. N. Kornilov, Capt.
 - L. S. Kreyin, Lt. Col.
 - S. D. Kustanovich, Major
 - I. A. Kuz'menko, Lt.
 - V. F. Layne, Major
 - M. K. Markaryan, Col.
 - N. I. Matuzov, Major
 - M. N. Nemkin, Lt. Col.
 - B. L. Polyak, Col.
 - Ya. G. Rubinshteyn, Lt. Col.
 - V. I. Samtsov, Lt. Col.
 - S. N. Sergenev, Major
 - N. I. Shcherbakov, Lt.
 - L. I. Shishlyannikova, Lt. Col.
 - G. M. Tsygankov, Col.
 - Ya. I. Veksler, Major
 - Ye. G. Zhuk, Lt. Col.

- K. Kuban Medical Institute imeni the Red Army, Krasnodar
Department of Pathologic Physiology
Director - I. A. Oyvin
T. S. Barkagan
Ye. Ye. Chebotarev

- L. Experimental Laboratory of the North-Caucasus Military District
Ya. I. Veksler (Rostov-on-the-Don)

- M. Ukrainian Scientific Research Sanitary Chemical Institute, Kiev
 - N. M. Binus
 - M. B. Gintsburg
 - Ye. M. Pandre

- N. Institute of Biophysics, AMS, USSR, Moscow
Director - A. V. Lebedinskiy
 - P. D. Gorizontov
 - B. M. Isayev
 - N. A. Kurshakov
 - M. N. Livanov
 - V. A. Sanotskiy

- O. Kazakh State Medical Institute imeni V. M. Molotov, Alma-Ata
Director - I. S. Koryakin
Chair of Roentgeno-Radiology
S. B. Balmukhanov

- P. Institute of Radiation and Physicochemical Biology, AS, USSR, Moscow
Director - V. A. Engel'gardt
- Q. Scientific Research Institute of Medical Radiology, AMS, USSR, Moscow area
Director - (not yet named--new institute)
(1) Laboratory of Biophysics
(2) Laboratory of Medical Physics
(3) Laboratory of Microbiology
(4) Laboratory of Genetics
(5) Laboratory of Radiobiology
- R. Odessa Pharmaceutical Institute
Director - A. G. Trotsenko
Chair of Biological Chemistry
V. A. Leshchinskiy
I. V. Savitskiy
- S. Leningrad State University
Chair of Human and Animal Physiology
M. N. Maslova
- 40 Astrakhan State Medical Institute imeni A. V. Lunacharskiy, Astrakhan,
RSFSR
Director - S. V. Zakharov
P. E. El'gort
N. P. Goncharenko
F. S. Karimova
I. V. Shvartser
T. A. Timofeyeva
(1) Department of Normal Physiology
Yu. N. Uspenskiy
(2) X-ray Department
K. G. Aslanov
- 57 Scientific Research Institute of Roentgenology, Radiology, and Oncology,
Ministry of Health, Azerbaydzhan, SSR
Director - M. M. Alikishibekov
I. T. Abasov
Sh. M. Beybutov
- 113 Kalinin State Medical Institute, Kalinin, RSFSR
Director - R. I. Gavrilov
K. P. Ivanov
S. Ye. Manoylov
- 124 Kazan' Institute for Advanced Training of Physicians imeni V. I. Lenin
Director - L. M. Rakhlin
Clinic of Nervous Diseases
Head - I. I. Rusetskiy
U. Sh. Akhmerov
- 155 Ukrainian Research Institute for Orthopedics and Traumatology imeni
M. I. Sitenko, Khar'kov, Ukrainian SSR
Director - N. P. Novachenko
A. A. Kravchenko

- 162 Institute of Biochemistry, AS, Ukrainian SSR, Kiev
Director - A. V. Palladin
O. P. Chepinoga
S. F. Epshteyn
I. Yu. Khilobok
M. A. Kolomyichenko
- 167 Institute of Physiology imeni A. A. Bogomolets, AS, Ukrainian SSR, Kiev
Former Director - A. F. Makarchenko
Present Director - A. M. Vorob'yev
N. M. Amdurskaya
A. I. Danilenko
R. Ye. Kavetskiy
R. D. Nikitenko
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1. Biophysics Laboratory (or Department)
Director - A. A. Gorodetskiy
Ye. Ye. Chebotarev
N. I. Kerova
O. A. Khomutovs'kiy
N. F. Lipkan
I. M. Shur'yan
N. D. Stetsenko
L. Ya. Zhoga
2. Laboratory of Circulatory and Respiratory Physiology
N. V. Il'chevich
V. A. Kozak
3. Laboratory of Endocrine Functions
T. K. Valuyeva
4. Laboratory of Morphology
Chief - A. I. Smirnova-Zamkova
T. N. Oleynikova
5. Laboratory of Compensatory and Defense Functions
Chief - R. Ye. Kavetskiy
Ye. M. Samundzhan
- 173 Scientific Research Institute of Neurosurgery, Ministry of Health,
USSR, Kiev
Director - A. I. Arutyunov
(1) Department of Pathomorphology
Chief - B. S. Khominskiy
I. A. Brodskaya
(2) Department of Roentgenology
Chief - Ya. I. Geynisman
I. P. Merkulova
- 175 Kiev Institute for Advanced Training of Physicians, Ministry of
Health, Ukrainian SSR
Director - I. P. Kal'chenko
O. A. Khomutovskiy

- 179 Kiev Institute of Labor Hygiene and Occupational Diseases, AMS, USSR,
Kiev
Director - L. I. Medved'
M. A. Khvoynitskaya
G. G. Lysina
V. A. Mislenko
- 182 Kiev Scientific Research Roentgeno-Radiological and Oncological
Institute, Ukrainian SSR
Director - I. T. Shevchenko
(1) Biochemical Laboratory
Head - N. M. Romanyuk
N. Ya. Dzyubko
(2) Laboratory of Experimental Cancer
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V. V. Markovich
(3) Laboratory of Radioactive Isotopes
Chief - R. Ye. Kavetskiy
Ye. P. Sidorik
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- 184 Kiev Medical Institute imeni A. A. Bogomolets, Kiev, Ukrainian SSR
Director - Ye. F. Shamray
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Chief - Ye. I. Chayka
V. G. Pinchuk
(2) Chair of Roentgenology and Radiology
Chief - N. F. Zarkevich
L. N. Triumfova
(3) Chair of Biochemistry
Chief - Ye. F. Shamray
L. N. Triumfova
- 216 Krasnoyarsk Medical Institute, RSFSR
Director - P. G. Podzolkov
Yu. M. Lubenskiy
I. A. Terskov
Chair of Hospital Surgery
Head - A. M. Dykhno
a. Laboratory of Biophysics
N. V. Gorbatyuk
- 225 Institute of Evolutionary Physiology imeni I. M. Sechenov, AS, USSR,
Leningrad
Former Director - The late L. A. Orbeli
Present Director - A. G. Ginetsinskiy
Z. I. Barbashova
Z. V. Denisova
Laboratory of Histophysiology
Chief - Ye. A. Moiseyev
M. S. Konstantinova

226 Institute of Physiology imeni I. P. Pavlov, AS, USSR, Leningrad
Director - K. M. Bykov (Deceased 1959)
Laboratory of Physiology and Pathology of Higher Nervous Activity
Chief - F. P. Mayorov
N. Ya. Lipatova
B. V. Pavlov

236 Central Scientific Research Roentgenological, Radiological and
Oncological Institute, Ministry of Health, USSR, Leningrad
Director - M. N. Pobedinskiy
Scientific Director - Yu. K. Kudritskiy

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V. F. Cherkasov
I. N. Davydova
I. V. Fedorova
L. A. Kachur
Ye. I. Komarov
O. G. Matveyev
A. Nevler
V. A. Petrov
A. B. Polezhayev
Ye. A. Prokudina
A. M. Rusanov
L. F. Semenov
I. V. Shiffer
K. B. Skvirskaya
S. V. Strutsovskaya
Ye. V. Utekhin

(1) Department of Radiosurgery

Head - K. N. Chochiya
A. I. Strashinin

(2) Department of Pathological Anatomy

Head - L. V. Funshteyn
E. I. Shcherban'
Laboratory of Pathological Anatomy
Director - L. V. Funshteyn
L. A. Cherkasskiy

(3) Department of Experimental and Pathological Morphology

Head - G. S. Strelin
L. A. Kashchenko
A. D. Pushnitsyna
Laboratory of Experimental Morphology
Director - G. S. Strelin
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- (6) Biochemistry Department
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A. M. Kononenko
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Ye. M. Semenova
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N. M. Andriyasheva
(2) Biochemical Laboratory
Head - A. D. Braun
Z. N. Zhakhova
- 241 Institute of Oncology, AMS, USSR, Leningrad
Director - A. I. Serebrov
(1) Gynecological Department
Head - A. I. Serebrov
M. B. Golubitskaya
(2) Laboratory of Experimental Oncology
Head - L. M. Shabad
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Ye. L. Prigozhina
I. G. Spasskaya
- 249 Leningrad Scientific Research Institute of Hematology and Blood
Transfusion
Directors - A. D. Belyakov and A. Ye. Kiselev
Scientific Director - A. N. Filatov
Biochemistry Laboratory
Former chief - N. N. Blokhin
I. S. Lukanova
L. S. Rotfel'd

- 250 Leningrad Scientific Research Institute of Labor Hygiene and Occupational Diseases, Ministry of Health, RSFSR, Leningrad
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I. D. Makulova
- 264 First Leningrad Medical Institute imeni I. P. Pavlov Ministry of Health, RSFSR
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Director - N. I. Blinov
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M. Ya. Kozlov
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A. G. Zemlyanov
(2) Third Surgical Clinic
Head - N. I. Blinov
S. S. Sokolov
V. I. Trubachev
V. N. Vorob'yev
A. G. Zemlyanov
(3) Pathology Department
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- 270 Leningrad State Scientific Research Institute of Eye Diseases imeni L. L. Girshman, Leningrad
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- 274 Leningrad State Pediatric Medical Institute, Ministry of Health, RSFSR, Leningrad
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I. I. Ivanov
M. M. Stepanova
(2) Department of Pharmacology
Chief - V. M. Karasik
A. M. Rusanov

- 278 Main Military Hospital imeni N. N. Burdenko, Ministry of Defense,
Leningrad
Former Director - I. N. Kurgannikov
Present Director - N. N. Nevskiy
P. V. Kinonov
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P. V. Simonov
A. A. Zhgun
(1) Radiotherapy Department
Head - A. N. Gamaleya
V. D. Arutyunov
(2) Experimental Laboratory
Head - A. A. Gyurdzhiyan
- 280 Military Medical Order of Lenin Academy imeni S. M. Kirov,
Leningrad
Director - P. P. Goncharov
Scientific Director - M. S. Maslov
Ye. G. Zhuk, Lt. Col., Medical Service
(1) Department of Pharmacology
(2) Chair of Normal Anatomy
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(3) Laboratory of Nutrition - A. N. Liberman
(4) Clinic of Military Field Surgery
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- 326 Institute of Animal Morphology imeni A. N. Severtsov, AS, USSR,
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V. Ya. Brodskiy
T. A. Detlaf
Z. N. Faleyeva
E. Ya Grayevskiy
A. F. Ivanitskaya (Ivanitsova)
M. M. Konstantinova
L. I. Korchak
A. A. Neyfakh
I. M. Shapiro
M. I. Sorokina
I. A. Suyetina
N. M. Tul'tseva
T. M. Turpayev
- 327 Institute of Biochemistry imeni A. N. Bakh, AS, USSR, Moscow
Director - A. I. Oparin
V. P. Blokhina
G. A. Deborin
A. G. Pasynskiy
N. M. Sisakyan
M. S. Volkova

328 Institute of Biophysics, AS, USSR, Moscow
Director - G. M. Frank

N. A. Aladzhalova
V. M. Alekseyeva
O. G. Arakelov
M. L. Belgovskiy
V. N. Benevolenskiy
A. V. Bibergal'
L. P. Breslavets
Ye. V. Budilova
N. P. Dubinin (see institute B)
L. Kh. Eydus
N. A. Gabelova
Ye. A. Ganassi
M. M. Gromakovskaya
Ye. A. Ivanitskaya
M. B. Kalamkarova
O. L. Kanavetz
L. P. Kayushin
L. L. Khamaide
V. V. Khvostova
N. V. Kondakova
M. M. Korotkov
B. K. Lemazhikhin
L. B. Levinson
Ya. A. Liberman
N. N. Livshits
Ya. V. Mamul'
U. Ya. Margulis
M. N. Meysel'
P. F. Minayev
G. V. Nizhnik
G. K. Otarova
N. V. Pankova
V. I. Plokhoy
Ye. G. Plyshevskaya
A. I. Polivoda
S. Ye. Rapoport
A. L. Shabadash
D. M. Shifrin
L. S. Shtern
V. N. Sidorov
A. A. Slepov
A. D. Snezhko
M. V. Sokolov
V. A. Sondak
N. B. Strazhevskaya
E. N. Tolkacheva
K. S. Trincher
K. I. Zhuravlev
S. R. Zubkova

(1) Radiobiology Laboratory

Head - A. M. Kuzin
E. N. Kolody
N. I. Shapiro

(2) Laboratory of the Biophysics of Radiation
Ya. L. Shekhtman
K. N. Yemel'yanov

331 Institute of Genetics, AS, USSR, Moscow

Director - T. D. Lysenko

I. Ye. Glushchenko

Kh. F. Kushner

N. N. Kuznetsova

M. D. Pomerantseva

K. S. Sukhov

Cytology Laboratory

O. P. Domareva

O. N. Kitayeva

I. A. Nechayev

N. I. Nuzhdin

O. N. Petrova

M. V. Volkovich

332 Institute of Higher Nervous Activity, AS, USSR, Moscow

Former Director - A. G. Ivanov-Smolenskiy

Present Director - V. S. Rusinov

Assistant Director - I. V. Strel'chuk

K. I. Pogodayev

(1) Radiobiology Laboratory

I. A. Piontkovskiy

(2) Laboratory of Vegetative Conditional Reflexes

Chief - A. A. Pavlovskaya

L. N. Khruleva

333 Institute of Microbiology, AS, USSR, Moscow

Director - A. A. Imshenetskiy

Deputy Director - N. D. Yerusalimskiy

A. M. Pasechnik

L. A. Seliverstova

(1) Division of Development and Variability of Microorganisms

Head - A. A. Imshenetskiy

(2) Division of Agricultural and Soil Microbiology

Head - Ye. N. Mishustin

(3) Division of Geomicrobiology

Head - S. I. Kuznetsov

V. A. Ekzertsev

L. D. Shturm

(4) Division of Taxonomy

Head - N. A. Krasil'nikov

(5) Division of Experimental Morphology and Cytology

Head - M. N. Meysel'

- 334 State Institute of Natural Sciences imeni P. F. Lesgraft, AS, USSR,
Moscow
Director - A. M. Samarin
M. A. Khenokh
E. M. Lapinskaya
- 357 All-Union Scientific Research Institute of Antibiotics, Ministry
of Health, USSR, Moscow
Director - M. A. Guberniyev
S. I. Alikhanyan
- 361 All-Union Institute of Experimental Endocrinology, Moscow
Director - Ye. A. Vasyukova
K. A. Tret'yakova
(1) Department of Morphology
Chief - Ye. I. Tarakanov
Ye. B. Pavlova
(2) Radiation Laboratory
Chief - D. E. Grodzenskiy
A. Ye. Rabkina
- 366 All-Union Scientific Research Institute of Medicinal and Aromatic
Plants, Ministry of Health, USSR, Moscow
Director - N. Ya. Itskov
Ya. A. Aleshkina
B. K. Rostotskiy
- 384 Moscow Central Institute for Advanced Training of Physicians,
Ministry of Health, USSR
Director - V. P. Lebedeva
N. A. Krayevskiy
N. N. Litvinov
R. I. Makarycheva
(1) Department of Radiation Disease
Chief - A. V. Kozlova
L. M. Omel'yanenko
(2) Chair of Radiation Hygiene
Chief - F. G. Krotkov
V. A. Arkayev
A. V. Terman
(3) Military Chair
V. A. Arkayev
(4) Second Department of Roentgenology and Radiology
Chief - Yu. N. Sokolov
L. N. Mushina-Udgodskaya
L. N. Udgodskaya
Yu. G. Yudin
(5) First Chair of Roentgenology and Radiology
Chief - S. A. Reynberg
(6) Chair of Medical Radiology
Chief - V. K. Modestov
S. Ye. Shnol'

392 Central Order of Lenin Institute of Hematology and Blood Transfusion,
Moscow, Ministry of Health, USSR

Director - A. A. Bagdasarov

G. M. Abdulayev
V. A. Agranenko
O. V. Aksenova
B. F. Beliyayeva
M. P. Bogoyavlenskaya
G. M. Boldysheva
N. Ye. Lagutina
N. V. Nikolayeva
R. I. Rodina
L. S. Rogacheva
Ye. V. Shamshina
L. L. Shepshelevich
M. G. Shitikova
S. B. Skopina
S. V. Skurkovich
F. R. Vinograd-Finkel'

1. Radiobiology Laboratory
Head - M. O. Raushenbakh
I. B. Gurevich

398 Moscow Scientific Research Institute of Sanitation and Hygiene imeni
F. F. Erisman, Ministry of Health, RSFSR

Director - A. Z. Belousov

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M. G. Durmish'yan
V. P. Godin
V. G. Golubev
S. I. Gorshkov
V. I. Kondror
G. A. Malov
Yu. V. Novikov
V. F. Oreshko
M. A. Pinigan
B. A. Polivoda
Ye. N. Ryumina
V. M. Zakharov
F. S. Zavel'skiy
L. V. Zhidkova

(1) Division of Radiology
S. I. Gorshkov
(2) Division of Hygiene
N. N. Khvostov

399 Central Institute of Traumatology and Orthopedics, Ministry of Health,
USSR, Moscow

Director - N. N. Priorov

Laboratory of Biochemistry

Chief - B. S. Kasavina

Ye. B. Spektor

- 406 Institute of Biological and Medical Chemistry, AMS, USSR, Moscow
Director - V. N. Orekhovich
T. Grunt
Ye. M. Kedrova
L. V. Orlova
V. P. Polyakov
V. M. Rodionov
V. D. Uspenskaya
O. G. Zamyatkina
1. Laboratory of Physiological Chemistry
N. K. Lebedeva
- 408 Institute of Epidemiology and Microbiology imeni N. F. Gamaleya,
AMS, USSR, Moscow
Former Director - G. V. Vygodchikov
Present Director - S. N. Muromtsev
Deputy Production Director - Stepanchenok
1. Department of Medical Microbiology
Chief - V. L. Troitskiy
A. P. Duplishcheva
M. A. Tumanyan
A. V. Izvekova
L. A. Zil'ber
V. A. Artamonova
- 410 Institute of Experimental and Clinical Oncology, AMS, USSR, Moscow
Director - N. N. Blokhin
- 414 Institute of Labor Hygiene and Occupational Diseases, AMS, USSR,
Moscow
Director - A. A. Letavet
A. S. Arkhipov
G. A. Avrunina
E. F. Baranova
N. L. Beloborodova
E. A. Bodrovaya
L. N. Burykina
N. K. Byalko
E. A. Drogichina
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I. N. Golovnikova
S. M. Gorodinskiy
Ye. D. Grishchenko
N. G. Gusev
N. I. Ivanov
M. A. Kazakevich
T. A. Kochetkova
E. B. Kurlyandskaya
V. S. Kushneva
M. S. Lapteva-Popova
T. B. Linevich
A. N. Marey

V. V. Nikitenko
V. G. Osipova
G. M. Parkhomenko
Ye. K. Red'kina
A. A. Rubanovskaya
M. N. Ryzhkova
A. O. Saytanov
Ye. A. Solov'yeva
V. I. Stepanova
N. Yu. Tarasenko
L. G. Tsenterova
V. F. Ushakova
N. V. Vershinin
N. I. Vinogradova
N. I. Volkova

- (1) Section of Labor Hygiene
Chief - L. K. Arkhipov
- (2) Clinic
 - a. Radiologic Section
Chief - M. N. Toleyva
 - b. X-Ray Diagnostic Section
Chief - K. P. Molokanov

422 Institute of Normal and Pathological Physiology, AMS, USSR, Moscow

Director - V. N. Chernigovskiy
Deputy (Scientific) Director - A. A. Volokov
(1) Laboratory of Infectious Pathology
Chief - A. Ya. Alimov
G. N. Kryzhanovskiy
(2) Laboratory of Radiobiology
Chief - N. N. Lebedev

423 Institute of Nutrition, AMS, USSR, Moscow

Director - O. P. Molchanova
Radiobiology Laboratory
Chief - G. P. Yeregin
Consultant - G. K. Shlygin
M. F. Nesterin

424 Institute of Obstetrics and Gynecology, Ministry of Health, RSFSR,
Moscow

Director - L. G. Stepanov
Laboratory of Pathomorphology
Chief - Ye. N. Petrova
M. N. Kuznetsova

427 Institute of Pediatrics, AMS, Moscow

Director - O. D. Sokolova-Ponomareva
(1) Radiobiology Laboratory
Head - L. A. Shparo
T. V. Fokina
T. D. Mirimova

(2) Department of Development of the Brain

Chief - B. N. Klosovskiy

Yu. I. Barashnev

Ye. N. Kosmarskaya

- 428 Institute of Pharmacology, Experimental Chemotherapy, and
Chemoprophylaxis, AMS, USSR, Moscow. (Also known as: Institute
of Pharmacology and Chemotherapy)
Director - V. V. Zakusov
G. Ya. Kivman
1. Laboratory of Specific Pharmacology
Head - V. V. Zakusov
G. S. Koroza
- 429 State Scientific Research Institute of Physiotherapy, Ministry
of Health, USSR, Moscow
Director - A. N. Obrosov
M. E. Manikov
Ye. I. Rozenblit
- 431 Scientific Research Institute of Psychiatry, Ministry of Health,
USSR, Moscow
Director - D. D. Fedotov
Department of Neurology
Chief - I. K. Zyuzin
T. S. Zaychkina
- 433 Institute of Therapy, AMS, USSR, Moscow
Director - A. L. Myasnikov
Ye. V. Erina
N. I. Gorbarenko
V. S. Klimov
V. Ye. Ostapkovich
E. P. Stepanyan
Biophysics Laboratory
Head - M. N. Fateyeva
Ye. A. Denisova
- 436 Moscow Oblast Scientific Research Clinical Institute imeni
M. F. Vladimirovskiy, Moscow, USSR
Director - P. M. Leonenko
Department of Pathomorphology
Chief - S. B. Vaynberg
Yu. G. Yudin
- 452 First Moscow Order of Lenin Medical Institute imeni I. M. Sechenov,
Moscow
Director - V. Kovanov
G. A. Avrunina
N. G. Darenskaya
M. P. Domshlak
Yu. G. Grigor'yev
M. N. Livanov

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| (1) Department of General Hygiene
V. Ya. Golikov
I. I. Gusarov | (3) Faculty Therapeutic Clinic
Chief, - V. N. Vinogradov
A. L. Syrkin |
| (2) Department of Skin and Venereal Diseases
Head - V. A. Rakhmanov
V. S. Minasov | |

454 Moscow Medical Stomatological Institute, Ministry of Health, RSFSR,
Moscow

Director - G. N. Beletskiy
Department of Roentgenology and Radiology
Director - N. A. Shekhter
N. A. Zhizhina

457 Moscow State University imeni M. V. Lomonosov
President - I. G. Petrovskiy

L. B. Levinson
N. V. Pankova
G. G. Polikarpov
N. I. Shapiro

- (1) Physiopathology Institute
O. V. Popov
- (2) Faculty of Agricultural Biology
E. G. Lomovskaya
Ye. I. Vorob'yeva
- (3) Department of Animal Biochemistry
Chairman - B. A. Kudriashov
A. V. Golubtsova
E. V. Moiseyenko
M. I. Safronova
- (4) Department of Biochemistry
G. V. Andreyenko
G. G. Bazaz'yan
M. V. Kirzon
M. G. Pshennikova
- (5) Department of Genetics
S. I. Isayev
- (6) Department of Biophysics
Chief - B. N. Tarusov
E. S. Elkhovska
K. D. Kalantarov
V. G. Khonazuk
V. I. Korogodin
Yu. A. Kriger
A. S. Molchalina
I. A. Motuzova
G. V. Sumarukov
- (7) Chair of Histology
N. V. Belitsina
Ye. S. Kirpichnikova
L. V. Ol'shevskaya

467 State Institute of Oncology imeni P. A. Gertsen, Moscow

Director - A. N. Novikov

- (1) Department of X-Ray Diagnosis
- (2) Department of Clinical and Experimental Anesthesiology
- (3) Department of Virology
- (4) Department of Histopathology
- (5) Division of Radiation Therapy
- (6) Department of Roentgenology

470 State Scientific Research Institute of Roentgenology and Radiology
imeni V. M. Molotov, Ministry of Health, RSFSR, Moscow

Director - I. G. Lagunova

V. V. Dmokhovskiy

K. M. Malenkova

V. S. Matov

D. S. Mitskevich

- (1) Organization and Methodology Section

Chief - V. P. Viktorin

A. V. Frolova

I. Ye. Pasyukova

T. S. Seletskaya

E. Ye. Troitskiy

- (2) Radiology Department

Chief - A. V. Kozlova

A. P. Belousov

M. Ya. Chaykovskaya

N. N. Garvey

I. S. Kas'yanov

A. A. Klimenko

N. P. Mordvinova

A. I. Morozov

A. Z. Nagrodskaya

O. S. Sergel'

A. V. Shubina

I. B. Tsybul'skiy

G. N. Yelapt'yeva

M. P. Yeleazarova

G. A. Zubovskiy

Ye. A. Zuykova

- (3) Roentgenotherapeutic Department

Chief - L. D. Podlyashchuk

A. I. Ruderman

V. B. Zayrat'yants

L. M. Sherman

- (4) Pathomorphological Department

Chief - B. N. Mogil'nitskiy

- (5) Department of Experimental Pathology

Chief - V. P. Shekhonin

V. B. Zayrat'yants

487 Odessa Scientific Research Institute of Dermatology and Venereal
Diseases imeni Ye. S. Glavche, Odessa, Ukrainian SSR

Director - S. I. Matuskov

Department of Dermatology

Chief - G. I. Glavche

A-18

1. Department of Dermatology
Chief - G. I. Ianda
A. M. Kharchenko
I. N. Vinokurov

- 494 Odessa Medical Institute, Ministry of Health, Ukrainian SSR
Director - A. N. Motenko
 - (1) Chair of Roentgenology and Radiology
Head - Ye. D. Dubovyy
D. Baldandozh
K. G. Tagibekov
 - (2) Chair of Pharmacology
Head - S. V. Tsyganov
 - (3) Propedeutic Surgical Clinic
Head - I. Ya. Deyneka
K. G. Tagibekov

- 498 Ukrainian Experimental Institute of Eye Diseases and Tissue
Therapy imeni V. P. Filatov, Odessa
Former Director - V. P. Filatov, deceased 1956
Present Director - N. A. Puchkovskaya
I. F. Kovalev

- 554 Biological Research Station imeni A. O. Kavalevskiy, AS, USSR,
Sevastopol', Crimea, RSFSR
Director - V. A. Vodyanitskiy
G. G. Polikarpov

- 561 Smolensk Medical Institute, Smolensk, RSFSR
Director - G. M. Starikov
V. A. Shkapina

- 571 Stalinabad Medical Institute imeni Abuali Ibn Sino (Avicenna),
Stalinabad, Tadzhik SSR
Director - Kh. D. Gadzhiyev
Kh. Kasymov

- 589 Institute of Experimental Pathology and Therapy, Sukhumi
Director - I. A. Utkin
Scientific Director - B. A. Lapin
 1. Laboratory of Radiology
L. F. Semenov

- 591 Institute of Biology, Ural Affiliate, AS, USSR, Sverdlovsk
Director - N. V. Timofeyev-Resovskiy
V. G. Kulikova
N. V. Luchnik
E. A. Timofeyeva-Resovskaya

- 596 Sverdlovsk Institute of Labor Hygiene and Occupational Diseases,
RSFSR
R. V. Bessarobova
T. I. Kazantseva
V. A. Mikhaylova
I. Ye. Okonishnikova
G. A. Prokopenko
A. A. Yudeles
1. Laboratory of Radiobiology
O. I. Komarova
- 666 Tomsk Medical Institute, RSFSR
Director - S. P. Khodkevich
(1) Chair of Surgery of the Sanitation Faculty
Head - K. N. Cherepnin
V. N. Agafonova
(2) Chair of Pathological Anatomy
Head - I. V. Toroptsev
N. V. Sokolova
- 702 Voronezh Roentgeno-Radiological and Oncological Institute, RSFSR
Director - M. P. Abakumov
I. I. Grigor'yev (Sochi)
- 720 Institute of Physiology, Armenian AS, Yerevan
Radiobiology Laboratory
T. T. Adunts
Ts. M. Avakyan
G. G. Demirchoglyan
A. B. Tsypin
V. A. Tumanyan
- 726 Scientific Research Institute of Blood Transfusion, Ministry of Health,
Armenian SSR
Director - R. O. Yeolyan
S. N. Allaverdyan
I. A. Yerzinkyan (Possibly in institute 729))
- 729 Scientific Research Institute of Roentgenology and Oncology,
Ministry of Health, Armenian SSR, Yerevan
Director - V. A. Fanardzhyan
R. K. Arutyunyan
A. G. Beglaryan
I. G. Demirchoglyan
K. A. Kyandaryan
M. A. Movsesyan
S. A. Papoyan
S. G. Shukutyán
I. A. Yerzinkyan (see institute 726)
A. A. Zagatskaya

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APPENDIX B

RESEARCH PERSONNEL

[The numbers are keyed to the institutes listed in appendix A.]

ABASOV, I. T. - 57	AVAKYAN, Ts. M. - 720	BLOKHINA, V. P. - 327
ABDULAYEV, G. M. - 392	AVRUNINA, G. A. - 414, 452	BOBKOV, A. I.
ABDULAYEV, M. D.	AYRAPETYANTS, M. G.	BOCHKAREV, V.
ABDULLINA, G. Z.	AZERBAIDZHAN, M. M. - 57	BODROVAYA, E. A. - 414
ABDULLINA, R. N. - H		BOGOMOLETS, O. A.
ABGAROV, V. I.		BOGOYAVLENSKAYA, M. P. - 392
ADUNTS, G. I.	BAGRAMYAN, E. R.	BOLDYSHEVA, G. M. - 392
ADUNTS, T. T. - 720	BAKHUSOV, N. K. - 250	BORISOV, Ye. V.
AGAFONOVA, V. N. - 666	BALABUKHA, V. S.	BORISOVA, I. G.
AGARKOV, F. T.	BALASHKO, Yu. G.	BOVIN, V. V.
AGLINTSEV, K. K.	BALASHOVA, A. N.	BRADMAN, L. A. - I
AGRAÑAT, V. Z.	BALDANDOZH, D. - 494	BRAGINA, A. N. - G
AGRANENKO, V. A. - 392	BALMUKHANOV, S. B. - E, O	BRAUN, A. D. - 240
AKHMEROV, N. Sh. - 124	BARAKINA, N. F.	BRESLAVETS, L. P. - 328
AKSENOVA, O. V. - 392	BARANOVA, E. F. - 414	BRODSKAYA, I. A. - 173
ALADZHALOVA, N. A. - 328	BARASHNEV, Yu. I. - 427	BRODSKIY, V. Ya. - 326
ALEKSANDROV, S. N. - 326	BARBASHOVA, Z. I. - 225	BRUMSHTEYN, V. N.
ALEKSANDROVA, M. F.	BARKAGAN, T. S. - K	BRYUKHANOV, O. A.
ALEKSANDROVSKAYA, M. M.	BAVRO, G. V.	BUDILOVA, Ye. V. - 328
ALEKSIYEVA, V. M. - 328	BAZAZ'YAN, G. G. - 457	BUDKO, L. M.
ALESHKINA, Ya. A. - 366	BEGLYAN, A. G. - 729	BUDNITSKAYA, Ye. V.
ALIKHANYAN, S. I. - 357	BELEN'KAYA, S. Ye.	BUKHTOYAROVA, Z. M.
ALLAVERDYAN, S. N. - 726	BELGOVSKIY, M. L. - 328	BURLAKOVA, E. V.
AMIRAGOVA, M. G.	BELITSINA, N. V. - 457	BURMISTROV, V. M. - J
AMOSOV, I. S.	BELITSKIY, A. S.	BURYKINA, L. N. - 414
ANDREYENKO, G. V. - 457	BELIYAYEVA, B. F. - 392	BUTOMO, N. V. - J
ANDREYEVA, O. S.	BELLE, Ya. S. - G	BUZINI, P. A. - 236
ANDREYEVA, Ye. I.	BELOBORODOVA, N. L. - 414	BYALKO, N. K. - 414
ANDRIYASHEVA, N. M. - 240	BELOUSOV, A. P. - 470	BYCHKOVSKAYA, I. B. - 236
AMDURSKAYA, N. M. - 167	BELOUSOV, A. Z. - 398	
ANTONOV, A. A. - 238	BELOUSOVA, O. I.	
ARAKELOV, O. G. - 328	BELYAYEVA, B. F. - 392	CHAREULI, Ye. I.
ARBUZOV, S. Ya.	BENEVOLENSKIY, V. N. - 328	CHAYKOVSKAYA, M. Ya. - 470
ARDASHNIKOV, S. N. - 241	BENTSIANOVA, V. M.	CHEBOTAREV, K. Ye.
ARKAYEV, V. A. - 384	BERKUTOV, A. N. - 280	CHEBOTAREV, Ye. Ye. - 10-167
ARKHIPOV, A. S. - 414	BERKUTOVA, I. D.	CHEPINOGA, O. P. - 162
ARKHIPOV, L. K. - 414	BESSAROBOVA, R. V. - 596	CHEREPNIN, K. N. - 666
ARLASHCHENKO, N. I.	BEYBUTOV, Sh. M. - 57	CHERKASOV, V. F. - 236
ARSEN'YEVA, M. A. - F	BEYLIN, I. B. - J	CHERKASSKIY, L. A. - 236
ARTAMONOVA, V. A. - 408	BIBERGAL', A. V. - 328	CHERNICHENKO, V. A.
ARTYUKHINA, N. I.	BINUS, N. M. - M	CHESNOKOVA, A. P.
ARUTYUNOV, V. D. - 278	BIRYUKOV, D. A. - 238	CHOCHIYA, K. N. - 236
ARUTYUNYAN, R. K. - 729	BLINOV, V. A.	CHUBAKOV, A. A.
ASLANOV, K. G. - 40	BLOKHIN, N. N. - 249, 410	CHUCHUKALO, A. I.
ASTAUROV, B. L. - 326	BLOKHINA, V. D.	CHZHU CHZHUN LIN - 280

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DANILENKO, A. I. - 167
DARENSKAYA, N. G. - 452
DAVIDOVA, I. N. - 236
DEBORIN, G. A. - 327
DEMBROVSKIY, M. A.
DEMIRCHOGLYAN, G. G. - 720
DEMIRCHOGLYAN, I. G. - 729
DENISOVA, Ye. A. - 225-433
DENISONOVA, Z. V. - 225
DETLAF, T. A. - 326
DEYNEKA, I. Ya. - 494
DMOKHOVSKIY, V. B. - 470
DOLIVA-DOBROVOL'SKAYA, L. B.
DOLIVO-DOBROVOLSKIY, L. B. - 398
DOLGACHEV, I. P.
DOMAREVA, O. P. - 331
DOMSHLAK, M. P. - 452
DROBKOV, A. A.
DROGICHINA, E. A. - 414
DRYZ'KO, G. F.
DUBININ, N. P. - B, 328
DUBOVYY, Ye. D. - 494
DUPLISHCHEVA, A. P. - 408
DURMISH'YAN, M. G. - 398
D'YACHENKO, M. N. - A
DYKHNO, A. M. - 216
DZANTIEV, V. G.
DZYUBKO, N. Ya. - 182

EKZERTSEV, V. Z. - 333
EL'GORT, P. E. - 40
ELKHOVSKAYA, E. S. - 457
EMANUEL', N. M.
ENGEL'GARDT, V. A. - P
EPSHTEYN, S. F. - 162
ERINA, Ye. V. - 433
ERLEKSOVA, E. V.
EYDUS, L. Kh. - 328

FALEYEVA, Z. N. - 326
FANARDZHIAN, V. A. - 729
FARBER, V. B.
FATEYEVA, M. N. - D, 433
FAYNSHTEYN, F. E.
FEDOROVA, I. V. - 236
FEDOROVA, T. A.
FEDYUSHIN, M. P.
FILATOV, V. I. - J
FILLIPPOVA, Yu. N.

FISHEVSKAYA, E. A.
FOKINA, T. V. - 427
FRADKIN, G. Ye.
FRANK, G. M. - 328
FROLOVA, A. V. - 470
FUNSHTEYN, L. V. - 236

GABELOVA, N. A. - 328
GALANIN, N. F.
GALKOVSKAYA, K. F. 236
GAL'TSOVA, R. D.
GAMALEYA, A. N. - 278
GAMBASHIDZE, G. M.
GANASSI, Ye. A. - 328
GARSIAHVILLI, K. T.
GARVEY, N. N. - 470
GEL'FON, I. A. - 414
GENIS, Ye. D.
GERSHENZON, S. M. - 351
GINSBURG, I. S.
GINTSBURG, M. B. - M
GLAKOVSKAYA, K. F. - 236
GLAZUNOV, I. S.
GLUSHCHENKO, I. Ye. - 331
GODIN, V. P. - 398
GOLDBERG, M. B.
GOL'DSHTEYN, L. M.
DOL'DSHTEYN, M. I.
GOLIKOV, G. T. - J, 280
GOLIKOV, V. Ya. - 452
GOLOVNIKOVA, I. N. - 414
GOLUBEV, V. G. - 398
GOLUBITSKAYA, M. B. - 241
GOLUBTSOVA, A. V. - 457
GONCHARENKO, N. P. - 40
GORBARENKO, N. I. - D, 433
GORBATYUK, N. V. - 216
GORBUNOVA, I. M.
GORIZONTOV, P. D. - N
GORODETSKAYA, S. F.
GORODETSKIY, A. A. - 167
GORODINSKIY, S. M. - 414
GORSHKOV, S. I. - 398
GRAFOV, A. A.
GRANIL'SHCHIKOV, V. P.
GRAYEVSKAYA, B. M. - 236
GRAYEVSKIY, E. Ya. - 326
GRIGOR'YEV, I. I. - 702
GRIGOR'YEV, Yu. G. - 452
GRIGORYANTS, A. N.

GRINYUK, N. A.
GRISHCHENKO, Ye. D. - 414
GRODZENSKIY, D. E. - 361
GROMAKOVSKAYA, M. M. - 328
GRUNT, T. - 406
GRUZINA, P. L.
GUREVICH, I. B. - 392
GUSAROV, I. I. - 452
GUSEV, N. G. - 414
GUSEV, V.
GUS'KOVA, V. N. - G
GYURDZHIYAN, A. A. - 278

IGNATIEV, A. I.
IL'CHEVICH, N. V. - 167
IL'YINA, L. I.
ISACHENKO, V. B. - 238
ISAYEV, B. M. - N
ISAYEV, S. I. - 457
ISTOMINA, A. G.
IVANITSKAYA, A. F. - 326
IVANITSKAYA, Ye. A. - 328
IVANITSKIY, A. M.
IVANOV, A. Ye.
IVANOV, I. I. - 274
IVANOV, K. P. - 113
IVANOV, N. I. - 414
IVANOVA, T. A.
IZERBINA, A. G.
IZVEKOVA, A. V. - 408

KABURNEYEVA, L. I.
KACHUR, L. A. - 236
KALAMKAROVA, M. B. - 328
KALANTAROV, K. D. - 457
KALASHNIKOV, B. P. - 270
KALENOVA, S. D. - C
KALINOVA, R. S.
KALUGIN, K. S.
KALUGINA, V. I. - C
KANAREVSKAYA, A. A.
KANAVETZ, O. L. - 328
KARAVAYEV, F. M.
KARELINA, Z. M.
KARIMOVA, F. S. - 40
KARPOVA, E. V. - 236
KASAVINA, B. S. - 399
KASHCHENKO, L. A. - 236
KAS'YANOV, I. S. - 470

KASYMOV, Kh. - 571
 KAULEN, D. R.
 KAVETSKIY, R. Ye. - 167-182
 KAYUSHIN, L. P. - 328
 KAZAKEVICH, M. A. - 414
 KAZANTSEVA, T. I. - 596
 KEDROVA, Ye. M. - 406
 KEIRIM-MARKUS, I. B.
 KEROVA, N. I. - 167
 KEYLINA, R. Ya. - 236
 KHALFEN, E. Sh.
 KHAMAIDE, L. L. - 328
 KHANIN, A. G.
 KHARCHENKO, A. M. - 487
 KHENOKH, M. A. - 334
 KHILOBOK, I. Yu. - 162
 KHOLIN, V. V. - 268
 KHOLNOYA, E. A.
 KHOMUTOVS'KIY, O. A. - 167-175
 KHONAZUK, V. G. - 457
 KHOZAK, L. Ye.
 KHROMOV, B. M.
 KHRULEVA, L. N. - 332
 KHVOSTOV, N. N. - 398
 KHVOSTOVA, V. V. - 328
 KHVOYNITSKAYA, M. A. - 179
 KINONOV, P. V. - 278
 KIRICHINSKIY, B. R.
 KIRPICHNIKOVA, Ye. S. - 457
 KIRZON, M. V. - 457
 KISELEV, P. N. - 236
 KISHKOVSKIY, A. N.
 KITAYEVA, O. N. - 331
 KIVMAN, G. Ya. - 428
 KLEMPARSKAYA, N. N.
 KLIMENKO, A. A. - 470
 KLIMENKO, O. S.
 KLIMOV, V. S. - D, 433
 KLIMOVA, A. Ya.
 KLIMOVA, Ye. N.
 KLOSOVSKIY, B. N. - 427
 KLYUCHAREV, I. A. - J
 KOCHETKOVA, T. A. - 414
 KOLEN'KO, A. B.
 KOLODY, E. N. - 328
 KOLOMYCHENKO, M. A. - 162
 KOMAROV, Ye. I. - 236
 KOMAROVA, O. I. - 596
 KOMETIANI, P. A.
 KONDAKOVA, N. V. - 328
 KONDRAT'YEVA, I. N.
 KONDRAT'YEVA, T. M. - 236
 KONDROR, V. I. - 398
 KONNOV, A. I.
 KONONENKO, A. M. - 236
 KONSTANTINOV, A. A.
 KONSTANTINOVA, M. M. - 326
 KONSTANTINOVA, M. S. - 225
 KONSTANTINOVA, V. V.
 KOPYLOVA, Ye. N.
 KORCHAK, L. I. - 326
 KORENEVSKIY, L. I.
 KORNILOV, A. N. - J.
 KOROGODIN, V. I. - 457
 KOROL', S. A.
 KOROTKOV, M. M. - 328
 KOROZA, G. S. - 428
 KOSMARSKAYA, Ye. N. 427
 KOVALEV, I. F. - 498
 KOVALEV, Ye. Ye.
 KOZAK, V. A. - 167
 KOZLOV, M. Ya. - 268
 KOZLOVA, A. V. - 384-470
 KOZLOVA, I. A.
 KOZNOVA, L. B.
 KRASIL'NIKOV, N. A. - 333
 KRASNOVA, A. I.
 KRASNYYKH, I. G.
 KRAVCHENKO, A. A. - 155
 KRAYEVSKIY, N. A. - 384
 KRESTINSKAYA, T. V. - 264
 KREYNIN, L. S. - J
 KRIGER, Yu. A. - 457
 KRISS, A. Ye. - 333
 KROTKOV, F. G. - G, 384
 KRUSHCHEV, V. G.
 KRYZHANOVSKIY, G. N. - 422
 KUDRIASHOV, B. A. - 457
 KUDRITSKIY, Yu. K. - 236
 KULESHOVA, V. A.
 KULIKOVA, G. G. - 591
 KUPRIYANOVA, V. M. - G
 KURLYANDSKAYA, E. B. - 414
 KURSANOV, A. L.
 KURSHAKOV, N. A. - N
 KUSHNER, Kh. F. - 331
 KUSHNEVA, V. S. - 414
 KUSTANOVICH, S. D. - J
 KUZIN, A. M. - 328
 KUZ'MENKO, I. A. - J
 KUZNETSOV, S. I. - 333
 KUZNETSOV, V. I.
 KUZNETSOVA, L. V.
 KUZNETSOVA, M. N. - 424
 KUZNETSOVA, N. N. - 331
 KVALASHVILI, A. A.
 KVASOVA, S. I.
 KYANDARYAN, K. A. - 729
 LAGNO, Z. Ya. - H
 LAGUNOVA, I. G. - 470
 LAGUTINA, N. Ye. - 392
 LAPINSKAYA, E. M. - 334
 LAPTEVA-POPOVA, M. S. - 414
 LARINA, M. A.
 LAYNE, V. F. - J
 LAZAREVA, D. N. - H
 LEBEDEV, N. N. - 422
 LEBEDEVA, G. D.
 LEBEDEVA, N. K. - 406
 LEBEDEVA, O. P.
 LEBEDINSKIY, A. V. - N
 LEBEKHOV, P. I.
 LEMAZHIKHIN, B. K. - 328
 LEMBERG, V. K.
 LESHCHINSKIY, V. A. - R
 LETAVET, A. A. - 414
 LEV, I. D. - 280
 LEVIN, G. S. - C
 LEVINSON, L. B. - 328-457
 LEVOCHKIN, F. G.
 LEYPUNSKIY, O. I.
 LIBENZON, R. Ye.
 LIBERMAN, A. N. - 280
 LIBERMAN, Ya. A. - 328
 LINEVICH, T. B. - 414
 LINKAN, I. F.
 LIPATOVA, N. Ya. - 226
 LIPKAN, N. F. - 167
 LITVINOV, N. N. - 384
 LIVANOV, M. N. - N, 238-452
 LIVSHITS, N. N. - 238
 LOMONOS, P. I.
 LOMOVSKAYA, E. G. - 457
 LOPATNIKOVA, Z. F.
 LUBENSKIY, Yu. M. - 216
 LUCHNIK, N. V. - 591
 LUGANOVA, I. S. - 249
 LUK'YANCHENKO, B. Ya.
 LUK'YANOV, G.
 L'VOVA, M.
 LYAPIN, Ye. N.
 LYSINA, G. G. - 179

~~UNCLASSIFIED~~

MAKARYCHEVA, R. I. - 384
 MAKULOVA, I. D. - 250
 MALENKOVA, K. M. - 470
 MALOV, G. A. - 398
 MAMAMTAVRISHVILI, D. G.
 MAMUL', Ya. V. - 328
 MANIKOV, M. E. - 429
 MANOYLOV, S. Ye. - 236-113
 MARCHUK, R. Ya.
 MAREY, A. N. - 414
 MARGULIS, U. Ya. - 328
 MARKARYAN, M. K. - J
 MARKOVICH, V. V. - 182
 MASLOVA, M. N. - S
 MATOV, V. S. - 470
 MATUZOV, N. I. - J
 MATVEYEV, O. G. - 236
 MAYOROV, F. P. - 226
 MAYZEROV, Ye. S.
 MEDNIK, M. R.
 MEL'NICHENKO, A. V.
 MERKULOV, A. I.
 MERKULOVA, I. P. - 173
 METER, I. D.
 MEYSEL, M. N. - 333-328
 MIKHAYLOVA, N. G.
 MIKHAYLOVA, V. A. - 596
 MIKHAYLOVICH, Boris
 MIKHAYLOVICH, S. M.
 MIKLASHEVSKIY, V. Ye.
 MINASOV, V. S. - 452
 MINAYEV, P. F. - 328
 MIRIMOVA, T. D. - 427
 MIR'SALIMOV, M. M.
 MISHUSTIN, Ye. N. - 333
 MITSLENKO, V. A. - 179
 MITSKEVICH, D. S. - 470
 MODESTOV, V. K.
 MOGIL'NITSKIY, B. N. - 470
 MOISEYENKO, E. V. - 457
 MOISEYEV, Ye. A.
 MOLCHALINA, A. S. - 457
 MOLOKANOV, K. P. - 414
 MORDVINOVA, N. P. - 470
 MORGUN, Ye. G.
 MOROZOV, A. I. - 470
 MOROZOV, B. B.
 MOSHARIV, A. I.
 MOSKALEV, Yu. I.
 MOTUZOVA, I. A. - 457
 MOVSESYAN, M. A. - 729
 MUSHINA-UDGODSKAYA, L. N. - 384
 MURAT, V. N.
 MYTAREVA, L. V. - 236
 NAGRODSKAYA, A. Z. - 470
 NAVASHIN, M. S.
 NAZARISHVILI, G. P.
 NAZAROV, V. A.
 NECHAYEV, I. A. - 331
 NEMKIN, M. N. - J
 NEMTSOVA, O. L.
 NESTERIN, M. F. - 423
 NEVLER, A. - 236
 NEVSKAYA, G. F.
 NEYFAKH, A. A. - 326
 NIKITENKO, R. D. - 167
 NIKITENKO, V. V. - 414
 NIKITINA, K. I. - 236
 NIKOLAYEVA, N. V. - 392
 NIZHNIK, G. V. - 328
 NOVIKOV, Yu. V. - 398
 NOVIKOVA, A. P.
 NUZHIDIN, N. I. - 331
 OGANESYAN, A. A. - 729
 OKONISHNIKOVA, I. Ye. - 596
 OKULOV, N. M. - 236
 OLEYNKOVA, T. N. - 167
 OL'SHEVSKAYA, L. V. - 457
 OMEL'YANENKO, L. M. - 384
 ORESHKO, V. F. - 398
 ORLOV, A. S. - 236
 ORLOVA, L. V. - 406
 OSIPOV, Ye.
 OSIPOVA, V. G. - 414
 OSTAPKOVICH, V. Ye. - 433
 OTAROVA, G. K. - 328
 OYVIN, I. A. - K
 PALLADIN, A. V. - 162
 PANDRE, Ye. M. - M
 PANKOVA, N. V. - 328-457
 PAPOYAN, S. A. - 729
 PARKHOMENKO, G. M. - 414
 PASECHNIK, A. M. - 333
 PASYNKOVA, I. Ye. - 470
 PASYNSKIY, A. G. - 327
 PAVLOV, B. V. - 226
 PAVLOVA, Ye. B. - 361
 PAVLOVSKAYA, T. Ye.
 PERUMOVA, N. D.
 PETERSON, O. P.
 PETROV, R. V.
 PETROV, V. A. - 236
 PETROVA, A. S.
 PETROVA, O. N. - 331
 PETROVICH, I. K.
 PETROVSKY, I. G. - 457
 PIGALEV, I. A.
 PINCHUK, V. G. - 184
 PINIGAN, M. A. - 398
 PINUS, A. A.
 PIONTKOVSKIY, I. A. - 332
 PITSKHELARI, G. Z.
 PLOKHoy, V. I. - 328
 PLYSHEVSKAYA, Ye. G. - 328
 POBEDINSKIY, M. N. - 236
 PODLYASHCHUK, L. D. - 470
 POGODAYEV, K. I. - 332
 POLENKO, V. K. - 278
 POLEZHAYEV, A. B. - 236
 POLIKARPOV, G. G. - 457-554
 POLIVODA, A. I. - 328
 POLIVODA, B. I. - 398
 POLUBOYARINOVA, E. I.
 POLYAK, B. L. - J
 POLYAKOV, V. P. - 406
 POMERANTSEVA, M. D. - 331
 PONOMARENKO, N. Ye. - 236
 PONOMARKOV, V. I.
 POPEL', L. V.
 POPLAVSKIY, N. K. - 236
 POPOV, O. V. - 457
 POSHERSTNIK, S. Yu.
 PRIGOZHINA, Ye. L. - 241
 PROKOFEYEVA-BELGOVSKAYA, A.A.
 PROKOPENKO, G. A. - 596
 PROKUDINA, Ye. A. - 236
 PRUSHIN, Ya.
 PSHENNIKOVA, M. G. - 457
 PUSHNITSYNA, A. D. - 236
 RABINOVICH, R. M.
 RABKINA, A. Ye. - 361
 RAKHMANOV, V. A. - 452
 RAPOPORT, I. A.
 RAPOPORT, S. Ye. - 328
 RAUSHENBAKH, M. O. - 392
 RAVDONIK, K. S.
 RAZGOVOROV, B. L.
 RED'KINA, Ye. K. - 414

REYNBERG, S. A. - 384
 RODINA, R. I. - 392
 RODIONOV, V. M. - 406
 ROGACHEVA, E. D.
 ROGACHEVA, L. S. - 392
 ROGOZKIN, V. D.
 ROKOTOVA, N. A.
 ROMANOV, L. R. - G
 ROMANOVA, Ye. S. - G
 ROMANTSEV, Ye. F.
 ROMANYUK, N. M. - 182
 ROSTOTSKIY, B. K. - 366
 ROTFEL'D, L. S. - 249
 ROZEN, V. B.
 ROZENBLIT, Ye. I.
 ROZMAN, I. M.
 RUBANOVSKAYA, A. A. - 414
 RUBINSHTEYN, Ya. G. - J
 RUDERMAN, A. I. - 470
 RUSANOV, A. M. - 236-274
 RUSETSKIY, I. I. - 124
 RYUMINA, Ye. N. - 398
 RYZHKOVA, M. N. - 414

 SAFRONOVA, M. I. - 457
 SAKHATSKAYA, T. S.
 SAMOKHVALOV, N. V.
 SAMOSHKINA, N. A.
 SAMTSOV, V. I. - J
 SAMUNDZHAN, Ye. M. - 167
 SANOTSKIY, V. A. - N
 SAUROV, M. M.
 SAVITSKIY, I. V. - R
 SAYTANOV, A. O. - 414
 SBITNEVA, M. F.
 SCHASTNYIY, V. A.
 SEITZ, I. F.
 SELETSKAYA, T. S. - 470
 SELIVERSTOVA, L. A. - 333
 SEMENOV, E. M. - 238
 SEMENOV, L. F. - 236-589
 SEMENOVA, Ye. M. - 238
 SEMENSKAYA, Ye. M.
 SEMGIN, V. N.
 SEMINA, V. A. - 236
 SEREBROV, A. I. - 241
 SERGEL', O. S. - 470
 SERGENEV, S. N. - J
 SERGIEV, G. B.
 SEVERTSOV, A. N. - 326

 SHABAD, L. M. - 241
 SHABADASH, A. L. - 328
 SHAL'NOV, M. I.
 SHAMOV, V. P.
 SHAMSHINA, Ye. V. - 392
 SHAPIRO, I. M. - 326
 SHAPIRO, N. I. - 328-457
 SHATERNIKOV, V. A.
 SHCHEPOT'YEVA, Ye. S.
 SHCHERBAN, E. I. - 236
 SHCHERBAKOV, N. I. - J
 SHCHERBAKOV, V. L.
 SHEKHTER, N. A. - 454
 SHEKHTMAN, Ya. L. - 328
 SHEPSHELEVICH, L. L. - 392
 SHERMAN, L. M. - 470
 SHERSHEVER, S. M.
 SHIFFER, I. V. - 236
 SHIFRIN, D. M. - 328
 SHIKHODYROV, V. V.
 SHIMANOVSKAYA, K. B. - 236
 SHISHLYANNIKOVA, L. I. - J
 SHITIKOVA, M. B. - 392
 SHKAPINA, V. A. - 561
 SHLYGIN, G. K. - 423
 SHNOL', S. Ye. - 384
 SHPARO, L. A. - 427
 SHRAMENKO, A. I.
 SHTERN, L. S. - 328
 SHTUKKENBERG, Yu. M.
 SHTURM, L. D. - 333
 SHUBINA, A. V. - 470
 SHUKURYAN, S. G.
 SHUKUTYAN, S. G. - 729
 SHUR'YAN, I. M. - 167
 SHVARTSER, I. V. - 40
 SICHARENKO, O. A.
 SIDORIK, Ye. P. - 182
 SIDOROV, V. N. - 328
 SIMONENKO, D. L.
 SIMONOV, P. V. - 278
 SIMONOVICH, N. M.
 SINENKO, L. F.
 SIPOVSKIY, P. V. - 268
 SISAKYAN, N. M. - 327
 SIVACHENKO, T. P.
 SIVERTSEVA, V. N. - 236
 SIZENKO, S. P. - 182
 SKLYANDSKAYA, Ye. I.
 SKOPINA, S. B. - 392
 SKURKOVICH, S. V. - 392

 SKVIRSKAYA, K. B. - 236
 SLEPOV, A. A. - 328
 SLINKO, V. G.
 SMIRNOVA-ZAMKOVA, A. I.
 SNEZHKO, A. D. - 328
 SOBOLEV, V. I.
 SOKOLOV, M. V. - 328
 SOKOLOV, S. S. - 268
 SOKOLOV, Yu. N. - 384
 SOKOLOVA, N. V. - 666
 SOLOV'YEVA, Ye. A. - 414
 SONDAK, V. A. - 328
 SOROKINA, M. I. - 326
 SOSOVA, V. G.
 SPASOKUKOTSKIY, Yu. A.
 SPASSKAYA, I. G. - 241
 SPEKTOR, Ye. B. - 399
 STEPANOVA, M. M. - 274
 STEPANOVA, V. I. - 414
 STEPANYAN, Ye. P. - D, 433
 STETSSENKO, N. D. - 167
 STOLYAROVA, L. B. - 167
 STOROZHENKO, E. P. - G
 STRASHININ, A. I. - 236
 STRAZHEVSKAYA, N. B. - 328
 STRELIN, G. S. - 236-264
 STREL'TSOVA, V. N.
 STRUTSOVSKAYA, S. V. - 236
 SUKHAREV, V. V.
 SUKHOV, K. S. - 331
 SUMARUKOV, G. V. - 457
 SUYETINA, I. A. - 326
 SYRKIN, A. B.
 SYRKIN, A. L. - 452
 SYROMYATNIKOVA, N. V.

 TAGIBEKOV, K. G. - 494
 TARASENKO, N. V.
 TARASENKO, N. Yu. - 414
 TARUSOV, B. N. - 457
 TEPLYAKOVA, Z. G. - C
 TERMAN, A. V. - 384
 TERSKOV, I. A. - 216
 TILIS, A. Yu. - C
 TIMOFEYEVA, T. A. - 40
 TIMOFEYEV-RESOVSKIY, N. V. - 591
 TIMOFEYEVA-RESOVSKAYA, E. A. - 591
 TINYAKOV, G. G. - F
 TKACH, V. K.
 TOLEYVA, M. N. - 414

~~UNCLASSIFIED~~

TOLKACHEVA, E. N. - 328
TOMSON, N. N.
TOPURIYA, Sh. R.
TOROPOVA, G. P.
TOROPTSEV, I. V. - 666
TRET'YAKOVA, K. A. - 361
TRINCHER, K. S. - 328
TRIUMFOVA, L. N. - 184
TROIITSKIY, E. Ye. - 470
TROIITSKIY, V. L. - 408
TRUBACHEV, V. I. - 268
TRUSOVA, N. E.
TSENTEROVA, L. G. - 414
TSVERAVA, Ye. N.
TSYBUL'SKIY, I. B. - 470
TSYGANKOV, G. M. - J
TSYGANOV, S. V. - 494
TSYPIN, A. B. - 720
TUL'TSEVA, N. M. - 326
TUMANYAN, M. A. - 408
TUMANYAN, V. A. - 720
TURPAYEV, T. M. - 326
TUZHILKOVA, T. N. - 264

UDGODSKAYA, L. N. - 384
UMANSKIY, Yu. A. - 182
USHAKOVA, V. F. - 414
USPENSKAYA, M. S.
USPENSKAYA, V. D. - 406
USPENSKIY, Yu. N. - 40
UTEKHIN, Ye. V. - 236

VAKHTANGISHVILI, T. A.
VALUYEVA, T. K. - 167
VANNIKOV, L. L.
VASILENKO, Yu. K.
VASILEVSKAYA, N. L. - 240
VASILEVSKIY, N. N. - 264
VASILEYSKIY, S. S.
VEKSLER, Ya. I. - J, L
VEPKHVADZE, R. Ya.
VERKHOVSKAYA, I. N.
VERSHININ, N. I.
VERSHININ, N. V. - 414
VIKTURIN, V. P. - 470
VINOGRAD-FINKEL', F. R. - 392
VINOGRADOVA, N. F. - 414
VINOKUROV, I. N. - 487
VLASOVA, Z. A. - 268

VOLKOV, L. F.
VOLKOVA, M. S. - 327
VOLKOVA, N. I. - 414
VOLKOVICH, M. V. - 331
VOLODINA, I. A.
VOLOKHOVA, N. A.
VOROB'YEV, V. N. - 268
VOROB'YEVA, Ye. I. - 457
VOSKRESENKIY, S. P.

YAKOVLEV, V. G.
YANSON, Z. Ya.
YARMONENKO, S. P.
YARULLIN, Kh. Kh.
YEFREMOVA, G. P.
YEFREMOVA, T. M.
YEGOROVA, A. P.
YELAPT'YEVA, G. N. - 470
YELEAZAROVA, M. P. - 470
YELISEYEVA, A. G.
YEMAYKINA, B. P.
YEMEL'YANOV, K. N. - 328
YEREMIN, G. P. - 423
YERMOLAYEVA, N. V.
YERZINKYAN, I. A. - 726-729
YUDELES, A. A. - 596
YUDIN, Yu. G. - 384-436

ZAGATSKAYA, A. A. - 729
ZAKHAROV, V. M. - 398
ZAKUTINSKIY, D. I.
ZAMYATKINA, O. G. - 406
ZARETSKAYA, Yu. M.
ZAVEL'SKIY, F. S. - 398
ZAYCHKINA, T. S. - 431
ZAYRAT'YANTS, V. B. - 470
ZEDGENIDZE, G. A.
ZELENSKIY, N. V.
ZEMLYANOV, A. G. - 268
ZHAKHOVA, Z. N. - 240
ZHEBRAK, A. R.
ZHGENTI, V. K.
ZHGUN, A. A. - 278
ZHIDKOVA, L. V. - 398
ZHIZHINA, N. Z. - 454
ZHOGA, N. A. - 167
ZHOGOVA, V. M.
ZHORNO, L. Ya. - 264
ZHUK, Ye. G. - J, 280

ZHULANOVA, Z. I.
ZHURAVLEV, K. I. - 328
ZIL'BER, L. A. - 408
ZIL'BERG, Yu. G. - 236
ZLOBINSKIY, B. M.
ZUBKOVA, S. R. - 328
ZUBOVSKIY, G. A. - 470
ZUYKOVA, Ye. A. - 470
ZYKOVA, A. S.
ZYUZIN, I. K. - 431

APPENDIX C

SUBSTANCES INVESTIGATED FOR PROPHYLACTIC EFFECT AGAINST IRRADIATION

fat	yeast
crocus	uracil
thiourea	validol
tyramine	kampolon
cysteine	phenamine
ephedrine	synestrol
phenatine	cobalt salts
glutathione	acetylcholine
unithiol	methylphenatine
adrenaline	methylthiourea
thiophenatine	phenylethylamine
propylphenamine	methoxytyramine
antianemin	diethylstilbestrol
properdin	beta-cytosterol
phthivazide	amino-mercaptocaproic acid
cysteineamine	mercaptocaproic acid
cystineamine	methylphenatine
cysteineamine chloride	phenylphenamine
cysteineamine ascorbate	para-aminobenzoldisulfide
cysteineamine nicotinate	B-mercaptoethyldiethylamine
cysteineamine salicylate	sodium chlorophyllin
N-acetylcysteineamine	cholinolytic agents
triacetylcysteineamine	isothiouronic derivatives
tetramethylcysteineamine	pyrogallol derivatives
tetraethylcysteineamine	thiodiazole derivatives
B-B-dimercaptoethylamine	para-aminobenzoic acid (PABA)
chondroitin sulfate	mercapto-caffeine-ethylamine
5-oxy-4-methyl-uracil	zymosan (a yeast extract)
5-amino-4-methyl-uracil	dithiocarbamino-acid-ammonia
5-amino-4-methyl-cytosine	somatotropic hormone (STH)
adrenocorticotropic hormone (ACTH)	chlorpromazine ("aminazine")

2-6-diamino-5-nitro-4-methyl-pyrimidine
antireticulocytotoxic serum of Bogomolets (ACS)
vitamins (A, B₁, B₆, B₁₂, C, folic acid, niacin)
S-2-B-aminoethylisothiuronium bromide hydrobromide (AET)
preparation-88 (1,6-hexamethylenebistrimethyl ammonium iodide)
anikhain (piperidylethanol diphenylacetate hydrochloride)
para-aminopropiophenone and derivatives
preserved tissue (therapy by Filatov method of biogenic stimulators)
hyaluronic acid (and its protein complexes)
pentoxyl (2,6-dihydroxy-4-methyl-5-hydroxymethylpyrimidine)
metacyl (2,6-dihydroxy-4-methyl-pyrimidine)
preparation-96 (bis-*β*-diethylaminoethylester of mesodiphenylsuccinic acid dihydrochloride)
sodium nucleinate (sodium salt of purified nucleic acids obtained by hydrolysis of yeast)
leucogen [2- α -phenyl- α -carbethoxymethyl)-thiazolidine-4-carboxylic acid]
Tezan-25 (pyrimidine derivative of unknown structure)

~~UNCLASSIFIED REFERENCES~~

8. JPRS-NY/Report 266. 25 Feb 58, Radiobiology in the USSR. Utilization of Radiation and Radioisotopes in Biology and Medicine in the USSR, U
10. UN. A-CONF. 15.P-2263. 23 Jul 58, Sievert, Rolf. M., The Work of the International Commission on Radiological Protection (ICRP), U
11. Morgan, K. Z., "Recent Changes in Maximum Permissible Exposure Values," A. M. A. Archives of Industrial Health, v 16, 1957, p 357-362, U
13. NBS Handbook 59. 24 Sep 54, Permissible Dose from External Sources of Ionizing Radiation, U
15. Ministry of Health in Soviet Russia (USSR). Regulations relating to the arrangement, installation and use of X-ray equipment in the institutions of the Ministry of Health, U
16. NE (59)1. 5 Jan 59, Steering Committee for Nuclear Energy Basic Standards for Radiation Protection, Organization for European Economic Co-Operation, European Nuclear Energy Agency, U
17. Recommendations of the International Commission on Radiological Protection, adopted 9 Sep 58, U
18. "Safety Regulations for Work with Radioactive Substances in Laboratories," Zdravookhraneniye Rossiyskoy Federatsii, no 3, 1958, p 35-36, U
19. Special Report. (Preliminary Statement of the National Committee on Radiation Protection and Measurement.), "Maximum Permissible Radiation Exposures to Man," AMA Archives Internal Medicine, v 100, 1957, p 353, U
20. NBS Handbook 52. 20 Mar 53, Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water, U
21. AEC. HW-52287, Oct 57, Bair, W. J., Calculation of Maximum Permissible Concentration in Air, MPC (air), for Ru¹⁰⁶ Particles, Hanford Atomic Products Operation, Richland, Washington, U
22. France. Protection Contre Les Radiations Ionisantes, Revue du Corps de Sante Militaire, no 4, Dec 57, U
23. Newell, R. R., "Common Sense Evaluation of Radiation Exposure in Clinical Radiology," The American Journal of Roentgenology, Radium Therapy, and Nuclear Medicine, v 80, no 6, 1958, U
24. UN. Suppl. 17 (A-3838), 1958, Report of the United Nations Scientific Committee on the Effects of Atomic Radiation, Official Records: Thirteenth Session, General Assembly, United Nations, New York, 1958, U

~~UNCLASSIFIED REFERENCES~~

25. IAEA. GOV-208. 16 Sep 58, Draft Manual of Practices for Safe Handling of Radioisotopes, Board of Governors, International Atomic Energy Agency (Item 11 of the provisional agenda, GOV-196-Rev.1), OFF USE
27. NBS-MEMO. 25 Mar 57, Draft Statement on Irradiation Injury, From L. S. Taylor to Herbert Scoville, U
28. JPRS-747-D. 4 Jun 59, Letavet, A. A. (Ed.), Proceedings of the All-Union Conference on Medical Radiology (Hygienic and Dosimetric Problems) (Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii) (Voprosy Gigiyeny i Dozimetrii), Moscow, Medgiz, 1957, U
30. JPRS-NY-L-270. 7 Aug 58, Parkhomenko, G. M., "Sanitary Regulations for Transportation, Storage, Registration and Handling of Radioactive Substances," Gigiyena i Sanitariya, v 23, no 1, 1958, p 43-45, U
32. Glazunov, I. S., Gorizontov, P. D., Zakutinskiy, D. I., Ivanov, I. I., Kanarevskaya, A. A., Krayevskiy, N. A., Kurshakov, M. A., Lebedinskiy, A. V., Peryshkov, V. N., and Shtukkenberg, Yu. M., Radiation Medicine. A Guide for Physicians and Students, Moscow, Medical Press, 1955, U. Book Review, Atomnaya Energiya, v 1, no 2, 1956, p 277-278, (Translation), U
36. CmlCSch. No. 587, Apr 53, "Standing Operating Procedure for Work Involving Radiation Hazards," The Chemical Corps School, Chemical Corps Training Command, Ft. McClellan, Alabama, U
37. Fries, B. A., "Radiological Safety in the Petroleum Industry," The Medical Bulletin, v 18, no 2, 1958, p 209-221, U
38. Gorodinskiy, A. M., and Parkhomenko, G. M., "Problems of Prophylaxis When Working with Radioactive Isotopes," Gigiyena i Sanitariya, no 4, 1953, p 22-28, U
39. Arkhipov, A. S., "Conference of Soviet Hygiene Institutes on the Problem of Ionizing Radiation," Gigiyena i Sanitariya, no 11, 1955, U
40. JPRS-DC-L-1035. 4 Nov 58, Viktorina, V. P., Troitskiy, E. Ye., Seletskaya, T. S., Frolova, A. V., and Pasynkova, I. Ye., "Concerning the Working Conditions of Personnel in Roentgenological and Radiological Rooms," Vest. Rentgenol. Radiol., v 32, no 6, 1957, p 82-87, U
41. Rozanov, L. S., "Scientific-Practical Conference on the Problem of Labor Hygiene and Industrial Sanitation," Gigiyena Truda i Professional'nyye Zabolevaniya, v 1, no 4, 1957, p 54-56, U
43. UK. Factories Acts 1937 and 1948; Factories (Ionizing Radiation), Special Regulations, Factories Acts, 1937 and 1948, Ministry of Labour and National Service, London, 1957, U
44. UK. Cmnd. 342, Jan 58, The Organization for Control of Health and Safety in the United Kingdom Atomic Energy Authority, report of the Committee appointed by the Prime Minister, London, U

~~UNCLASSIFIED REFERENCES~~

45. UK. Code of Practice for the Protection of Persons Exposed to Ionizing Radiations, Office of the Prime Minister and First Lord of the Treasury, Ministry of Health, Department of Health for Scotland and Ministry of Health for Northern Ireland, London, 1957, U
46. UK. Precautions in the Use of Ionizing Radiations in Industry, H. M. Factory Inspectorate, Ministry of Labour and National Service, London, 1957, U
49. AIR. IR-6826-58, Bad Soden Team, USAFE, 3 Sep 58, The Institute of Physiology at the Ukrainian SSR Academy of Sciences, 25 Sep 58, U
50. JPRS-DC-445. 22 Dec 58, Koyranskiy, B. B., "The Problem of Ionization in Labor Hygiene (Summary)," Gigiyena Truda i Professional'nyye Zabolevaniya, v 2, no 4, 1958, p 5-11, U
51. Mikhaylovich, Boris, Bezopasnost' rabot radioaktivnymi veshchestvami (Safety Measures in Handling Radioactive Substances), Moscow, Metallurgizdat, 1958, p 227, U
52. JPRS-453-D. 29 Dec 58, Unsigned Article, "Technology Safety and Labor Protection Work with Radioactive Isotopes," Vrachebnoye Delo, no 3, 1957, p 329-332, U
53. JPRS-1237-N. 9 Mar 59, "Soviet Work on Radiation Hygiene," Gigiyena i Sanitariya, no 10, 1958, p 3-92, U
54. Gusev, N. G., "Handbook on Radioactive Radiations and Protection," Spravochnik po Radioaktivnym Izlucheniya i Zashite, Moscow, Medgiz, 1956, p 5-127, U
55. JPRS-Report 110. Project NY-2/3, 4 Dec 57, Radiobiology in the USSR, U
57. AIR. IR-247-55, AF 661855, 6 May 55, Russia Helps Hungary and Bulgaria in Nuclear Energy Research, info 30 Apr 55, U
58. Ivanov, I. I., Modestov, V. K., Shtukkenberg, Yu. M. Romantsev, Ye. F., and Vorob'yev, Ye. I., "Preparation of Specimens for Measuring the Activity of Sr-89," Radioaktivnyye Izotopy v Meditsine i Biologii, Moscow, Medgiz, 1955, p 165-166, U
60. Displays on Peaceful Use of Atomic Energy at USSR Industrial Exhibition, Vsesoyuznaya Promyshlennaya Vystavka: Vystavka po Ispol'zovaniyu Atomney Energii v Mirnykh Tselyakh, Moscow, Ministry of Culture, info 1956, p 106, U
61. Author Unknown, "Questions of Medical Radiology Brought Up at the All-Union Conference of Public Health Workers," Atomnaya Energiya, v 2, no 1, 1957, p 83-84, (Translation), U
62. Bovin, V. V., and Mosharov, A. I., "Use of DK-p.2 Pocket Dosimeters for Individual Fast-Neutron Dosimetry," Atomnaya Energiya, v 2, no 2, 1957, p 213-214, (Translation), U

~~UNCLASSIFIED REFERENCES~~

63. Author Unknown, "At the Atom Pavilion in the All-Union Industrial Exhibition," Atomnaya Energiya, v 2, no 7, 1957, p 835-836, (Translation), U
64. Author Unknown, "Dosimetric Equipment," Atomnaya Energiya, v 2, no 10, 1957, p 1217, (Translation), U
65. Author Unknown, "The Development of Irradiation Facilities and of Apparatus for Radiobiological Work," Atomnaya Energiya, v 2, no 10, 1957, p 1223-1225, (Translation), U
66. Samokhvalov, N. V., "The Development and Introduction of Some Radiation Screening and Handling Devices," Atomnaya Energiya, v 2, no 10, 1957, p 1218-1221, (Translation), U
67. Grigoryants, A. N., "Certain Problems in the Operation of Atomic Power Stations," Atomnaya Energiya, v 2, no 2, 1957, p 123-133, (Translation), U
68. Roshan, L. M., and Zimmer, K. G., "Application of Plastic Scintillations in Dosimetry Measurements," Atomnaya Energiya, v 2, no 1, 1957, p 75-76, (Translation), U
69. Kononenko, A. M., "Calculation of the Intensity of the Alpha-Radiation Dose Arising from a Radioactive Substance Distributed Inside the Organism," Biofizika, v 2, no 1, 1957, p 98-117, (Translation), U
75. ARMY. TB-381-1-C2, 1 Sep 58, (Department of the Army Technical Bulletin) Combat Equipment Technical Intelligence Bulletin (CETIB), Changes No. 2, U
76. UN. A-CONF. 15-P-2025 USSR. 8 Aug 58, Bolshakov, K. A., Zvdonin, A. T., Borchev, V. T., Rauzen, F. V., and others, Pilot Plant for Decontamination of Laboratory Liquid Wastes, U
77. UN. A-CONF. 15-P-2078. 7 Jul 58, Istomina, A. G., and Keyim-Markus, I. B., Experiments Designed to Substantiate the Maximum Permissible Doses of Thermal Neutrons, U
78. Domshlak, M. P., and Khrushev, V. G., "An Experimental Gamma Irradiator. (EGG-2)," Atomnaya Energiya, v 2, no 2, 1957, p 197-189, U
79. Glushkov, Aleksey Petrovich, Markov, Leonid Kuz'mich, and Pilyugin, Lev Pavlovich, Atomnoye Oruzhiye i Protivoatomnaya Zashchita (Atomic Weapons and Anti-Atomic Defense), Moscow, Military Press, Min. Def. USSR, 1958, p 391, U

~~UNCLASSIFIED REFERENCES~~

81. 4 Dec 57, Official Report of the United States Delegation to the International Conference on Radioisotopes in Scientific Research, Paris, France, 9-20 Sep 1957, U
82. NAVY. London ONR 11-11, 1 Nov 57, European Scientific Notes, Office of Naval Research, London, U
84. Yemel'yanov, K. N., "Measurement of the Dose of Slow Electrons in Equivalent Roentgens," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 288-292, U
85. Shekhtman, Ya. L., "Problems of Radiation Dosimetry," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 122-235, U
88. AIR. IR-4900-58, AF-1181873, 23 May 58, New Type of Protective Suit Developed in the USSR, info 11 Apr 58, U
90. AIR. IR-3329-58, AF-1171453, 3 Apr 58, New Apparatus for Opening Containers with Radioactive Liquid - Vilnius, info 22 Mar 58, U
94. AIR. IR-6452, Bad Soden Team, USAFE, 21 Aug 57, Radiation Medicine Section in the All-Union Industrial Exhibition, info Jul 57, U
96. AIR. IR-8554-57, Bad Soden Team, USAFE, 5 Nov 57, State Institute of Oncology, info 18 Oct 57, U
97. AIR. IR-9338-57, Bad Soden Team, USAFE, 3 Dec 57, Dosimetrical Apparatuses, info Oct 57, U
98. AIR. IR-1657-56, AF-1011733, 23 Jul 56, Russian Technical Publications - "Medical Problems on Atomic Protection," info 1955, U
101. Selling Prices of Compounds With Radioactive and Stable Isotopes and Sources of Radiation. (Tr. of Otpusknyye Tseny na Soedinennyya c Radioaktivnymi i Stabil'nymi Isotopami i Istochniki Izlucheniya, Moscow, 1957, p 3-23, U
102. "Safety Control Measures during Work with a Gamma-Ray Defectoscope," Zdravookhraneniye Rossiyskoy Federatsii, no 3, 1958, p 34-35, U
104. TID-7549, Part I. 31 Oct 57, Reactor Safety Conference, jointly sponsored by American Nuclear Society, Atomic Industrial Forum, U.S., Atomic Energy Commission, New York, U
105. Author Unknown, Trudy Vsesoyuznoy Nauchno-Tekhnicheskoy Konferentsii Po Primeneniyu Radiosktivnykh I Stabil'nykh Izotopov I Izlucheniyy V Narodnom Khozyaystve I Nauke, (4-12 Apr 57) (Polucheniye Izotopov Moshchyye Gamma-Ustanovki Radiometriya I Dozimetriya), Academy of Sciences, USSR, Moscow, v 2, 1958, U

~~UNCLASSIFIED REFERENCES~~

107. JPRS-L-578-N. 15 Dec 58, Utekhin, Ye. V., "A Charging Gadget for Pocket Dosimeters," Meditsinskaya Radiologiya, v 3, no 3, 1958, p 68-69, U
108. JPRS-L-576-N. 15 Dec 58, Istomina, A. G., and Keyirm-Markus, I. B., "Experimental Installation for Irradiation of Animals by Neutron Fluxes (ENO-1), Report I," Meditsinskaya Radiologiya, v 3, no 3, 1958, p 51-61, U
109. AIR. IR-7277-58, Bad Soden Team, USAFE, Jul-Aug 58, Scintillating Dosimeters for X-Ray Irradiation, 20 Nov 58, U
111. Bibergal', A. V., Korotkov, M. M., and Arakelov, O. G., "An X-Ray Source (GIBE-800) for Radiobiological Experiments," Biofizika, v 3, no 1, 1958, p 116-121, (Translation), U
113. AIR. IR-7259-58, AF-1211360, 14 Nov 58, Development of Irradiation Instruments and Equipment for Radio-Biological Research, info Jul-Aug 58, U
115. JPRS-1322-N. 13 Mar 59, Utekhin, Ye. V., "Dosimetry in Irradiation of the Human Head by Gamma Rays," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 48-51, U
117. UN. A-3858. 23 Jul 58, Effects of Atomic Radiation - An Approach to a General Method of Computing Doses and Effects from Fall-out, Thirteenth Session, General Assembly, United Nations, U
118. Leypunskiy, O. I., "Radioactivity Dangers from Explosions of Pure-Hydrogen Bombs and Ordinary Atomic Bombs," Atomnaya Energiya, v 3, no 12, 1957, p 530-539, U
120. AFOSR TR 58-104. CIA-9032664, ASTIA AD-162, 246, 29 Jul 58, The Genetic Effects of Cosmic Rays. (Contract AF 49-(638)-51, Final Report to the Air Force Office of Scientific Research, Air Research and Development Command from The University of Texas), U
121. JPRS-Report 191. 26 Jan 58, Shternfel'd, Arie Abramevich, Artificial Satellites of the Earth, Moscow, State Publishing House of Technical and Theoretical Literature, U
122. HEW-140. 19 Sep 58, A release for 19 Sep 58 on the presence of radioactivity in milk, U.S. Dept. of HEW, Public Health Service, Washington 25, D.C., info May-Jul 58, U
123. Lebedinsky, A. V., "Radioactive Fallouts and Their Consequences for Humanity", U
126. AIR. 18 Mar 58, Taylor, Ellis R., "Physical and Physiological Data for Bioastronautics," Air University, USAF School of Aviation Medicine, Randolph AFB, Texas, U

~~UNCLASSIFIED REFERENCES~~

127. UN. A-CONF. 15-P-2130. 8 Aug 58, Chubakov, A. A., Polikarpov, V. I., and Kuleshova, V. A., Determination and Analysis of Air Contamination by Airborne Alpha-Emitters of Low Concentration, U
128. UN. A-CONF. 15-P-2310. 30 Jul 58, Klechkovsky, V. M., Sokolova, L. N., and Tselishcheva, G. N., The Sorption of Microquantities of Strontium and Caesium in Soils, U
130. JPRS-DC-L-504. 21 Jul 58, Gorshkov, S. I., "Some Problems in Radiation Hygiene Discussed at the All-Union Conference on the Use of Radioactive Isotopes and Radiation," Gigiyena i Sanitariya, no 12, 1957, p 76-78, U
131. AIR. IR-1543-58. AF-1189070, 10 Jul 58, Cosmic Rays and Sputniks, info 1958, U
132. Sep 58, Minutes of the Twelfth General Assembly, The World Medical Association, 15-20 Aug 58, at Christiansborg Palace, Copenhagen, Denmark, info 15-20 Aug 58; OFF USE
133. Dacquist, Michael P., Jacobus, David P., and McLaughlin, Mary M., "The Hazard of Strontium-90: A Review," Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Dept. of Biophysics, Washington, D. C., no date, U
146. The Hydrogen Bomb. London, Her Majesty's Stationery Office, 1957. Printed by Fosh & Cross Ltd., U
147. Great Britain. AGO 4302-C, Jun 51, Handbook of Atomic Weapons for Medical Officers. (prepared by the Armed Forces Medical Policy Council for the Depts. Army, Navy, and Air Force), U
148. JPRS-NY-Report 895. 5 Nov 58, The USSR Public Health Program, U
150. HEW-H82. 25 May 58, U.S. Dept. of HEW, Public Health Service, News Release Regarding Radioactivity in Milk Examined, U
151. UK-AERE. HP-R-2353, Aug 57, Bryant, F. J., Chamberlain, A. C., Morgan, A., and Spicer, G. S., Radiostrontium in Soil, Grass, Milk and Bone in UK, 1956 Results, United Kingdom Atomic Energy Authority Research Group, AERE, Harwell, Berkshire, 1957, U
152. UK-AERE. HP-R-2183, Apr 57, Booker, D. V., Radio-Caesium in Dried Milk, United Kingdom Atomic Energy Authority Research Group, Atomic Energy Research Establishment, Harwell, Berkshire, 1957, U
153. UK-AERE. HP-R-2182, 1957, Booker, D. V., Bryant, F. J., Chamberlain, A. C., Morgan, A., and Spicer, G. S., Radiostrontium Measurement in Biological Materials to Dec 1956, Atomic Energy Research Establishment, Harwell, Berkshire, 1957, U

~~UNCLASSIFIED REFERENCES~~

154. AIR. IR-1298-56, AF-1008648, 3 Jul 56, Hazards to Man of Nuclear and Allied Radiations, info Jun 56, U
155. State. Desp. 3152, CIA D212829, 29 Apr 55, Cockcroft, John, Radiological Hazards from Nuclear Explosions and Nuclear Power, U
156. State. Desp. 3168, CIA D214419, 2 May 55, British Medical Publication Calls for Ban on Nuclear Tests, U
157. State. Encl. to Desp. 2692, London, 25 Apr 57, Statement on Strontium Hazards, Atomic Scientists Association, U
158. Leipunskii, O. I., "Radioactive Hazard from Continuous Atom Bomb Test," Atomnaya Energiya, v 3, no 1, 1958, p 63-70, U
159. AIR. IR-316-58, Bad Soden Team, USAFE, 14 Jan 58, Plankton as an Indicator of Pollution of Fresh Water Reservoirs by Radioactive Substances, info Nov-Dec 57, U
160. UN. A/AC. 82/GR. 47, Isaev, B. M., and Simonenko, D. L. (eds.), Academy of Sciences of the USSR. (Preliminary Data on the Effects of Atomic Bomb Explosions on the Concentration of Artificial Radioactivity in the Lower Atmosphere and in the Soil), Moscow, 1956, U
162. NAVY. OEG. Report 78, (CIA 638652), 17 Jul 58, The Effects of Radiation on Populations, prepared by Operations Evaluation Group, Office Chief Naval Operations, U
163. ONRL-67-58. CIA 619699, 9 Sep 58, O'Donoghue, John A., Lausanne Symposium on Noxious Effects of Low Level Radiation, U
164. WHO. TR-1958, 151, Mental Health Aspects of the Peaceful Uses of Atomic Energy. Report of a Study Group, World Health Organization Technical Report Series No. 151, WHO, Geneva, 1958, U
165. Fremont-Smith, Frank, The Mental Health Aspects of the Peaceful Use of Atomic Energy, 6 Mar 58, U
166. Sams, Crawford F., "The Medical Aspects of Radiation Fall-Out-Current Concepts," J.A.M.A., v 166, p 930, 22 Feb 58, U
167. Rand. RM-1956, AF-9031467, 31 Jan 58, Latter, Albert L., and Plesset, Milton S., Note on the Sr⁹⁰ Hazard, U.S. Air Force Project Rand Research Memorandum, The Rand Corporation, Santa Monica, California, U
169. JPRS-NY-L-441. 26 Nov 58, Lebedeva, G. D., "Plankton - An Indicator of the Pollution of Fresh Water Reservoirs by Radioactive Substances," Med. Radiol., v 2, no 6, 1957, p 65-69, U

~~UNCLASSIFIED REFERENCES~~

170. JPRS-NY-L-442. 26 Nov 58, Zhogova, V. M., "Certain Data Concerning the Effect of Radioactive Strontium on the Self-Purification Process in Water Reservoirs," Med. Radiol., v 2, no 6, 1957, p 69-72, U
171. Clark, Evert, "Pioneer Indicates Restricted Radiation," Aviation Week, 20 Oct 58, p 20-33, U
173. Marey, A. N., "Hygienic Evaluation of Radioactive Strontium As a Factor in the Contamination of the External Environment," Meditinskaya Radiologiya, v 2, no 5, 1957, p 89-95, U
174. Lebedinskiy, A. V., "On the Consequences of the Fallout of the Radioactive Isotope of Strontium (Sr-90)," Meditinskaya Radiologiya, v 2, no 5, 1957, p 22-32, U
175. JPRS-L-577-N. 15 Dec 58, Doliva-Dobrovol'skaya, L. B., and Zavel'skiy, F. S., "The Question of Radioactive Potassium Content in Urban Sewage," Meditinskaya Radiologiya, v 3, no 3, 1958, p 65-67, U
176. Krassovsky, V. I., "The Soviet Exploration of the Ionosphere by Means of Rocket and Sputniks," IGY-CSAGI, 5th Meeting Moscow, 29-31 Aug 58, U
177. UCRL-8115. Jan 58, Tobias, Cornelius A., Radiation Hazards in Space Flight, University of California Radiation Laboratory, Berkeley, California, Contract No. Wa-7405-eng-48, U
179. JPRS-L-514-N. 9 Feb 59, Marey, A. N., "Sanitary Protection of Open Water Reservoirs from Contamination by Radioactive Substances," U. (Tr. of A. N. Marey, Sanitarnaya Okhrana Otkrytykh Vodoyemov ot Zagryazneniya Radioaktivnymi Veshchestvami, p 32-90, U)
181. Belonozhko, G. A., Minenko, Aleksey Yefremovich, Brechko, G. T., Danilenko, A. I., Lavrik, V. Ya., Levchuk, G. A., Luganskiy, N. I., Morgunov, I. N., Lokhmatyy, Ye. L., Organization of Medical Services in Connection with Widespread Contamination and Injury of the Population, Ed. A. E. Minenko, Kiev, Medgiz, USSR, 1957, p 494, U
182. Sterner, James H., "Industrial Health in the Atomic Energy Industry," A.M.A. Archives of Industrial Health, v 17, no 6, 1958, p 659-664, U
183. JPRS-NY/L-33. 10 Mar 58, Akhmerov, U. Sh., "A Case of Radiation Sickness (Total External Beta Irradiation)," Sov. Med., v 21, no 5, 1957, p 123-129, U
184. JPRS-DC-L-763. 19 Sep 58, Stepanyan, Ye. P., Klimov, V. S., and Gorbarenko, N. I., "The Content of Hyaluronidase and Histamine in the Blood of Persons Exposed to Ionizing Radiation in Industry," Med. Radiol., v 2, no 3, 1957, p 19-23, U

~~UNCLASSIFIED REFERENCES~~

185. De Courcy, Kenneth (editor), "Russian Nuclear Tests," Intelligence Digest, no 239, Oct 58, U
186. JPRS-DC-L-274. 13 May 58, Kuznetsov, V. I., and Luk'yanov, G. A., "The Condition of the Cardiovascular System During the Chronic Action of Ionizing Radiation," Voyenno-Meditsinskiy Zhurnal, no 5, 1957, p 15-17, U
187. JPRS-NY-L-208, Omel'yanenko, L. M., "Sequelae and Evaluation of Capacity for Work in Chronic Radiation Sickness," Vest. Rentgenol. Radiol., v 32, no 5, 1957, p 81-88, U
188. JPRS-NY-L-207. 21 May 58, Sergel', O. S., and Klimenko, A. A., "Luminescent Method of Investigating Blood and Bone Marrow in Radiation Sickness," Vest. Rentgenol. Radiol., v 32, no 5, 1957, p 76-81, U
189. JPRS-NY-363. CSO NY-1285, 15 Apr 58, Bagdasarov, A. A., Vinograd-Finkel', R. F., Aksenova, O. V., Bogoyavlenskaya, M. P., Boldysheva, G. M., Rodina, R. I., and Skopina, S. B., "The Use of Leukocyte Mass in the Therapy of Chronic Radiation Sickness," Klin. Med., v 33, no 6, 1955, p 28-36, U
192. Stepanyan, E. P., Klimov, V. S., and Gorbarenko, N. I., "Concerning the Question of Activity of the Enzyme Hyaluronidase in Blood Serum of People Subjected to Chronic Irradiation," Vest. Rentgenol. Radiol., v 32, no 1, 1957, p 18-23, U
193. TID-5360 (Suppl.). Aug 57, Hayes, Daniel F., A Summary of Incidents Involving Radioactive Material in Atomic Energy Activities, Jan-Dec 56, U.S. Atomic Energy Commission, TISE, Oak Ridge, Tenn.; U
194. JPRS-NY-L-437. 26 Nov 58, Denisova, Ye. A., "On the Problem Concerning the Functional Condition of the Liver in People Having Contact with Radioactive Substances," Med. Radiol., v 2, no 6, 1957, p 44-48, U
195. Khromov, B. M., "Anesthetization in Radiation Sickness," Tr. and printed abridged in Anesthesiology, v 19, no 6, 1958, p 792-797, U
196. Kuznetsov, V. I., Baranov, V. A., Titov, A. I., Fialkovskiy, V. V., Smirnov, K. K., Dovzhenko, G. I., Divnenko, P. G., Goryushin, G. S., Butomo, N. V., Preobrazhenskiy, P. V., and Tikhonov, K. A., "Clinical Symptoms in Persons Exposed for Long Periods to the Action of Ionizing Radiation," Voyenno-Meditsinskiy Zhurnal, no 2, 1957, p 40-43, U
197. JPRS-L-672-N. 10 Mar 59, Khazanov, M. A., and Korenovskaya, A. A., "Neuritis of the Femoral Nerve of Radioactive Genesis," Sov. Med., v 22, no 10, 1958, p 116-119, U
198. FBIS. Daily Report-89-58, Middle East and West Europe, 7 May 58, Atomic Disaster in Urals Reported, p P5-P6, OFF USE

~~UNCLASSIFIED REFERENCES~~

199. IAC 669928. AEC-Tr.-2964, Kiselev, P. N., Buzini, P. A., and Nikitina, K. I., "An Immunological Analysis of the State of Increased Resistance of the Organism to Ionizing Radiation," Meditsinskaya Radiol., v 1, no 1, 1956, p 43-49, U
200. Author Unknown, "Letter of the Editors Regarding Grayevskiy and Keylina's Paper 'Reduced Sensitivity to Lethal Doses of X-Rays in Animals Previously Given Sublethal Doses,'" Biofizika, v 2, no 5/6, 1957, p 733-734, (Translation), U
201. JPRS-NY-L-432. 26 Nov 58, Aleksandrova, M. F., "Blood Reaction to Repeated X-Ray Irradiation," Med. Radiol., v 2, no 6, 1957, p 12-18, U
202. JPRS-NY-289. 10 Mar 58, Voyenno-Meditsinskiy Zhurnal (Medical Military Journal), no 11, 1957, U
203. JPRS-NY-L-282. 7 Aug 58, Shitikova, M. G., "Blood Destruction in Radiation Sickness and the Effect of Hemotherapy on This Process," Patologicheskaya Fiziologiya i Eksperimental'naya, Terapiya, v 2, no 1, 1958, p 22-27, U
204. JPRS-NY-L-285. 7 Aug 58, Abdullina, R. N., and Lagno, Z. Ya., "Influence of Pentoxyl and Thesane on the Peripheral Blood Picture in Radiation Sickness," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 1, 1958, p 59-44, U
205. Pomerantseva, M. D., "Effect Anesthesia and Natural Hibernation on Radiosensitivity of Animals," Zhur. Obshch. Biol., v 18, no 3, 1957, p 194-207, OFF USE
207. Luchnik, N. V., "Time Distribution of Mortality in Irradiated Animals," Biofizika, v 2, no 4, 1957, p 477-484, (Translation), U
208. Yale. University News Bureau Report 63, 26 Sep 58, Luchnik, N. V., "Tests with Yeast Extract for Radiation Protection, published recently in a Moscow Journal," U
209. JPRS-DC-L-764. 19 Sep 58, Semenov, L. F., and Prokudina, Ye. A., "Application of Adrenalin and Acetylcholine in Combination for the Prophylaxis of Radiation Disease," Med. Radiol., v 2, no 3, 1957, p 35-40, U
210. JPRS-DC-L-766. 19 Sep 58, Domshlak, M. P., Ivanov, I. I., Belousova, O. I., and Yakovlev, V. G., "Experimentation of Biological Anti-Radiation Protection During Experimental X-Ray Therapy of Tumors," Med. Radiol., v 2, no 3, 1957, p 47-52, U
211. JPRS-DC-L-767. 19 Sep 58, Strashinin, A. I., "The Effectiveness of Cysteinamine for the Prevention of Radiation Disease Under Clinical Conditions," Med. Radiol., v 2, no 3, 1957, p 52-54, U

~~UNCLASSIFIED REFERENCES~~

212. AIR. IR-1693-58, AF-1187127, 3 Sep 58, Radiation Sickness Prevention by Medicines and Chemicals, info 1957, U
213. UN. A-CONF. 15-P-2238. 24 Jul 58, Bagdasarov, A. A., Vinograd-Finkel', F. K., Raushenbach, M. O., Bogoyavlenskaya, M. P., Rodina, R. I., Beliyayeva, B. F., Abdulayev, G. M., and Lagutina, N. Y., Experience of Treatment and Prophylaxis of Radiation Disease with Leucocyte and Thrombocyte Masses, U
214. Chochiya, K. N., "The Use of Tissue Transplantations in Radiation Leukopenia," Vest. Rentgenol. Radiol., v 33, no 4, 1958, p 79-80, U
215. JPRS-NY-L-136. 14 Apr 58, Abasov, I. T., and Beybutov, Sh. M., "Experience in the Use of Validol During Radiation Sickness Caused by X-Ray Therapy," Vest. Rentgenol. Radiol., v 32, no 4, 1957, p 71-72, U
216. Grayevsky, E. Ya., and Konstantinova, M. M., "The absence of Protection by Histotoxic Hypoxia Against Ionizing Radiation," D.A.N. SSSR. Biol. Sci., v 114, 1957, p 465-467, (Translation), U
217. Faleeva, Z. N., "The Dynamics of the Peripheral Blood Elements of Mice When Subjected to Irradiation Under Conditions of Shielding an Extremity or Irradiating It Locally," D.A.N. SSSR Biol. Sci., v 116, 1957, p 816-820, (Translation), U
218. AIR. IR-1902-58, AF-1163587, 21 Feb 58, The Effect of Phenatin Upon the Course and Outcome of Penetrating Radiation Sickness, info Dec 57, U
219. AIR. IR-6949-58, AF-1205924, 14 Oct 58, Soviet Remedy Against Radioactive Radiation, info 7 Oct 58, U
221. Lofstrom, et al., "U.S. Radar Disease Treatment," West. J. Surg., v 65, 1957, U
222. Mordvinova, N. P., Tsybul'skiy, I. B., and Garvey, N. N., "The Administration of Drugs for the Clinical and Experimental Therapy and Prophylaxis of Cutaneous Radiation Injuries," Vest. Rentgenol. Radiol., v 32, no 3, 1957, p 14-18, U
223. Symposium on Radiobiology, Academy of Sciences of the USSR, Inst. of Genetics and Inst. of Biophysics, Moscow, 1955, Consultants Bureau, Inc., U
224. US-JPRS-1077-N. 12 Jan 59, Grodzenskiy, D. E., Rebkina, A. Ye., and Bagramyan, E. R., "The Prophylactic and Therapeutic Action of Somatotropic Hormone in Radiation Affection," Prob. Endokrin. Gormon, v 4, no 4, 1958, p 31-37, U
225. Alekseyeva, V. M., "Cell Protection by Fatty Materials Against Radiation Damage," Biofizika, v 3, no 1, 1958, p 94-100, (Translation), U

~~UNCLASSIFIED REFERENCES~~

227. JPRS-L-515-N. 4 Feb 59, Yakovlev, V. G., and Ivanov, I. I., "Chemical Protection of Animals Against the Action of X-Rays," Med. Radiol., v 3, no 5, 1958, p 14-19, U
228. Grayevskiy, E. Ya., "Influence of Temperature Conditions on the Damage Inflicted by Ultraviolet Rays on Bacillus Coli Cells (Bacterium Coli Commune)," Doklady Akademii Nauk SSSR, v 72, no 1, 1950, p 149-152, U
229. Luchnik, N. V., "Radiation Protection Agents and Mortality Peaks," Biofizika, v 3 no 3, 1958, p 314-323, (Translation), U
230. JPRS-1388-N. 23 Mar 59, Bagramyan, E. R., "The Protective and Therapeutic Effect of Hormones on the Action of Ionizing Radiations on Animals and Humans," Problemy Endokrinologii i Gormonoterapii, v 4, no 2, 1958, p 115-122, U
231. JPRS-1390-N. 23 Mar 59, Soviet Research on Radiation Sickness, U
232. Anderson, Donald R., "The Radiation Protective Effects of AET on the Enzyme Creatine Phosphokinase," Archives Biochem. Biophysics, v 81, no 2, 1958, p 390-394, U
233. Morachevskaya, M. D., Zlobin, V. S., and Ptizyn, B. V., "Strontium Adsorption on Hydroxyapatite Crystals," Biokhimiya, v 23, no 4, 1958, p 564-567, U
234. Letavet, A. A., and Kurlyandskaya, E. B., editors, Materialy po Toksikologii Radioaktivnykh Veshchestv; Strontsiy, Tseziy, Ruteniy, Radon (Data on the Toxicology of Radioactive Substances; Strontium, Cesium, Ruthenium, Radon), Moscow, Medgiz, 1957, U
235. JPRS-DC-L-438. 27 Jun 58; Kurlyandskaya, Ye. B., "The Urgent Problems of Toxicology of Radioactive Substances," Vest. Akad. Med. Nauk, v 12, no 3, 1957, p 49-55, U
236. JPRS-DC-210. 8 Jul 58, Various Studies on the Use of Radioactive Substances in Medicine, U; Stanotskiy, V. A., "General Principles of the Treatment of Lesions Caused by Radioactive Substances," Med. Radiol., v 2, no 5, 1957, p 14-22, U
237. ANL-5732. Jul 57, Biological and Medical Research Division Semiannual Report, Argonne National Laboratory, Lamont, Ill., operated by University of Chicago under Contract W-31-109 eng-38, U
238. Technology Newsletter, Chemical Week, 27 Dec 58, U
239. JPRS-L-518-N. 4 Feb 59, Moskalev, Yu. I., and Budko, L. M., "The Effect of Complex-Formers on the Excretion of Radioactive Isotopes (Strontium, Yttrium, and Cerium)," Med. Radiol., v 3, no 5, 1958, p 50-57, U

UNCLASSIFIED REFERENCES

240. JPRS-L-640-N. 16 Feb 59, Khomutovs'kiy, O. A., "Elimination of SR⁸⁹ from the Rat Organism under Normal Conditions and under the Influence of Parathyreocrine, Campolene, and Sodium Citrate," Fiziol. Zhur., v 4, no 2, 1958, p 249-255, U
241. JPRS-Report 13. 26 Jul 57, Radiobiology in the USSR, U
242. JPRS-NY-L-279. 7 Aug 58, Petrov, R. V., and Rogozkin, V. D., "The Principles of Antibiotic Therapy in Acute Radiation Sickness," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 1, 1958, p 3-11, U
243. JPRS-NY-L-280. 7 Aug 58, Veksler, Ya. I., "Characteristics of the Course of Acute Radiation Sickness in an Artificially Cooled Organism," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 1, 1958, p 12-18, U
244. JPRS-NY-L-283. 7 Aug 58, Shepshelevich, L. L., "Iron Metabolism in Radiation Sickness," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 1, 1958, p 27-33, U
246. Miller, C. Phillip, Hammond, Carolyn W., Tompkins, Marianne, and Shorter, Gertrude, "The Treatment of Post-irradiation Infection with Antibiotics; and Experimental Study on Mice," Journal of Laboratory and Clinical Medicine, v 39, no 3, 1952, p 462-479, U
247. Miller, C. Phillip, Hammond, Carolyn W., and Tompkins, Marianne, "The Role of Infection in Radiation Injury," Journal of Laboratory and Clinical Medicine, v 38, no 3, 1951, p 331-343, U
248. AIR. IR-6222-58, Bad Soden Team, USAFE, 21 Jul 58, Data on the Administration of Urotropin in the Treatment of Radiation Sickness, info Mar-Apr 58, U
250. AIR. IR-2226-58, AF 1194010, 6 Aug 58, USSR Publication, "Radiation Sickness", info 1951 to 1958, U
251. JPRS-NY-Report 731. 23 Sep 58, Radiobiology in the USSR, U
252. Luchnik, N. V., "Alcohol and Ionizing Radiation," Atomnaya Energiya, v 2, no 5, 1957, p 819-821, (Translation), U
253. JPRS-DC-L-765. 19 Sep 58, Farber, V. B., "The Stimulation of Hematopoiesis in Acute Radiation Disease," Med. Radiol., v 2, no 3, info May-Jun 57, p 40-47, U
254. AIR. IR-6333-58, Bad Soden Team, USAFE, 31 Jul 58, Pharmacological Characteristics of Sodium Chlorophyl-Chlorophyllin, info May-Apr 58, U

~~UNCLASSIFIED REFERENCES~~

256. JPRS-DC-L-515. 22 Jul 58, Bagdasarov, A. A., Vishnevskiy, A. A., and Rusanov, S. A., "The Classification and Designation of Contemporary Blood Substitutes," Voyenno-Meditsinskiy Zhurnal, no 6, 1957, p 20-22, U
257. JPRS-DC-L-514. 22 Jul 58, Petrov, I. P., "The Current Status of the Problem of Plasma Substitutes and Anti-Shock Solutions," Voyenno-Meditsinskiy Zhurnal, no 6, 1957, p 9-20, U
258. JPRS-DC-L-380. 2 Jun 58, Bagdasarov, A. A., "The Basic Results of Scientific Research in the Field of Hematology and Blood Transfusion in the USSR," Terap. Arkh., v 29, no 10, 1957, p 56-68, U
259. JPRS-DC-L-273. 13 May 58, Butomo, N. V., and Shcherbakov, N. I., "The Use of Peptoxyl and Nucleinate During Leukopenia of a Radiation Origin," Voyenno-Meditsinskiy Zhurnal, no 5, 1957, p 12-14, U
260. JPRS-DC-L-272. 13 May 58, Farber, V. B., "Stimulation of Hematopoiesis During Radiation Sickness," Voyenno-Meditsinskiy Zhurnal, no 5, 1957, p 8-12, U
261. JPRS-NY-L-125. 10 Apr 58, Kurshakov, N. A., "The Development of Clinical Symptoms During Acute Radiation and its Pathogenic Treatment," Terap. Arkh., v 24, no 9, 1957, p 42-47, U
262. JPRS-NY-365. 20 Apr 58, Voyenno-Meditsinskiy Zhurnal (Medical Military Journal), no 12, 1957, U
263. AIR. 58-6. Nov 57, Gerstner, Herbert B., "Military and Civil Defense Aspects of the Acute Radiation Syndrome in Man," Air University, School of Aviation Medicine, USAF, Randolph AFB, Texas, Nov 57, U
269. JPRS-NY-L-439. 26 Nov 58, Gamaleya, A. N., Gyurdzhiyan, A. A., Zhgun, A. A., and Simonov, P. V., "Treatment of Acute Radiation Sickness in Dogs by Drip Blood Transfusion," Med. Radiol., v 2, no 6, 1957, p 56-60, U
270. JPRS-NY-L-440. 26 Nov 58, Papoyan, S. A., Alleverdyan, S. N., Demirchoglyan, I. G., and Yerzinkyan, I. A., "On the Problem of Utilizing Fibrin Films after Irradiation of the Skin Surface," Med. Radiol., v 2, no 6, 1957, p 61-64, U
271. JPRS-NY-Report 866. 24 Nov 58, Voyenno-Meditsinskiy Zhurnal (Military Medical Journal), no 6, 1958, U
272. JPRS-NY-L-419. 26 Nov 58, Medical Radiology - USSR. Meditsinskaya Radiologiya, v 3, no 1, 1958, (whole issue), U
274. Kireyev, P. M., "Clinical Picture and Treatment of Chronic Radiation Sickness," Meditsinskaya Radiologiya, v 2, no 5, 1957, p 72-79, U

~~UNCLASSIFIED REFERENCES~~

276. JPRS-DC-441. 23 Dec 58, Petrov, R. V., "Exogenous Infections in Radiation Sickness," Uspekhi Sovremennoy Biologii, v 46, no 1 (4), 1958, p 48-61, U
277. JPRS-L-568-N. 6 Dec 58, Arbuzov, S. Ya., "Protective Action of Certain Pharmacological Agents in Radiation Injuries," Vestnik Akademii Meditsinskikh Nauk SSSR, v 13, no 6, 1958, p 10-22, U
278. JPRS-1030-N. 24 Dec 58, Voyenno-Meditsinskiy Zhurnal (Medical Military Journal), no 8, 1958, U
279. JPRS-NY-Report 974. 8 Dec 58, Soviet Abstracts Biology Section V; Pharmacology, Toxicology, Tranquillizers, Anesthetics, Adrenergics, Anticoagulants, Various Preparations, Chemotherapeutical Preparations, Toxicology, Referativnyy Zhurnal - Biologiya, no 5, 1958, U
280. JPRS-1075-N. 6 Jan 59, Rogacheva, L. S., "The Use of Colloidal Infusion in the Combined Therapy of Radiation Sickness," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 4, 1958, p 38-42, U
282. JPRS-L-1437-D. 27 Jan 59, Nesterin, M. F., and Yeregin, G. P., "The Influence of Nutrition on the Course of Radiation Injuries in Animals," Voprosy Pitaniya, v 17, no 5, 1958, p 3-8, U
284. AIR. IR-7102-58, AF-1210188, 29 Oct 58, Russian Scientists Treat Skin Burnings with Aloe Emulsion, info 24 Oct 58, U
286. JPRS-1372-N. 19 Mar 59, Kurshakov, N. A., "Development of Leukoses as a Remote Sequence of Radiation Sickness," Vest. Akad. Med. Nauk, v 13, no 4, 1958, p 27-32, U
290. Dubinin, N. P., "Problems Concerning the Physical and Chemical Bases of Inheritance," Biofizika, v 1, no 8, 1956, p 677-695, OFF USE
301. FBIS. 1958, "Order of Lenin Awarded to Lysenko," Daily Report, USSR and East Europe, no 189, 29 Sep 58, p CC-2/CC-3, U
304. UN. A-CONF. 15-P-2074. 30 Jul 58, Dubinin, N. P., Mechanism of Radiation Effect on Heredity and Problem of Radio-sensitivity, U
305. UN. A-CONF. 15-P-2476. 7 Jun 58, Tinyakov, G., and Arsenyeva, M., Cytogenetic Effect of Ionizing Radiation on Nuclei of Germ Cells of Monekys, U
312. Muller, H. J., "Radiation and Human Mutation," Scientific American, v 193, no 5, 1955, p 58-68, U
328. WHO-RAD-5, 10 Nov 58, First Report, Effect of Radiation on Human Heredity. Investigations of Areas of High Natural Radiation, U

~~UNCLASSIFIED REFERENCES~~

329. Eydus, L. Kh., Kalamkarova, M. B., and Otarova, G. K., "The Migration Mechanism of Radiation Protection," Biofizika, v 2, no 5/6, 1957, p 564-566, (Translation), U
330. Pasynskii, A. G., "The Theory of the Biological Actions of Radiation," Biofizika, v 2, no 5/6, 1957, p 558-563, (Translation), U
331. UN. A-CONF. 15-P-2079. 7 Jul 58, Blumenfeld, L. A., and Kalmanson, A. E., Electronic Paramagnetic Resonance of Irradiated Amino Acids, Peptides, Proteins and Lyophilized Tissue, U
332. UN. A-CONF. 15-P-2080. 7 Jul 58, Grayevsky, E. Ya., Tissue and Cellular Reactions to the Effect of Ionizing Radiation, U
333. UN. A-CONF. 15-P-2237. 24 Jul 58, Frank, G. M., Aladzhalova, N. A., Snezhko, A. D., Some Problems of Biological Analysis of Radiobiological Effects, U
334. UN. A-CONF. 15-P-2248. 8 Aug 58, Tarusov, B. N., Primary Reactions in Biolipids Induced by Ionizing Radiation, U
335. UN. A-CONF. 15-P-2316. 24 Jul 58, Gorizontov, P., Pathophysiological Aspect of the Problem of Pathogenesis of Acute Radiation Disease, U
336. UN. A-CONF. 15-P-2319. 8 Aug 58, Kuzing, A. M., and Shabadash, A. L., On the Role of Nucleoprotein Native State Changes in Radiation Damage, U
337. UN. A-CONF. 15-P-2320. 7 Jul 58, Meysel', M., Galtsova, R., Medvedeva, G., Pomoshchnikova, N., Seliverstova, L., and Shalnova, M., Action of Ionizing Radiations and Radiomimetic Substances on the Microbe Cell, U
338. JPRS-NY-L-216. 10 Jun 58, Grayevskiy, E. Ya., and Shapiro, N. I., Contemporary Problems in Radiobiology (Sovremennyye Voprosy Radiobiologii), Moscow, 1957, p 7-80, U
339. Armstrong, Wallace D., "The Chemical Basis of Radiation Damage," Postgrad. Med., v 23, no 5, 1958, p 499-507, U
340. Shekhtman, Ya. L., "'Time Factor' in the Theory of Biological Action of Radiation," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 99-121, U
341. Tarusov, B. N., Principles of Biological Action of Radioactive Radiation, U, (Tr. of B. N. Tarusov, Osnovy Biologicheskogo Deystviya Radioaktivnykh Izlucheniya), Moscow, 1954, p 3-138, U
343. Kovalev, I. F., "On the Question of Specificity of the Biological Action of Ionizing Radiation," Med. Radiol., v 1, no 4, 1956, p 7-14, U

~~UNCLASSIFIED REFERENCES~~

344. Biofizika, v 3, no 2, 1958, (Translation), U
345. JPRS-L-675-N. 10 Mar 59, Shekhtman, Ya. L., "A Scientific Conference on the Problem, 'The Effect of Ionizing Radiations upon the Animal Organism'," Izv. Akad. Nauk SSSR; Ser. Biol., no 6, 1958, p 758-760, U
346. JPRS-1324-N. 13 Mar 59, Movsesyan, M. A., "On Certain Debatable Questions in Radiobiology," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 58-59, U
347. JPRS-1323-N. 17 Mar 59, Kovalev, I. F., "Critique of Certain Fundamental Conceptions in Radiobiology," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 52-57, U
348. UN. A-3864-Add. 1. 26 Aug 58, Effects of Atomic Radiation. Report of the Secretary-General on the strengthening and widening of scientific activities in the field of the effects of atomic radiation, Thirteenth Session, General Assembly, United Nations, U
350. Shchepotyeva, E. S., "The Energy of Radiations and Some Laws of Their Action on Biological Objects," Atomnaya Energiya, v 1, no 4, 1956, p 597-604, (Translation), U
351. Luchnik, N. V., "Effect of Exposure to Radioactive Cobalt on Nucleic Acid Content in Spleen Tissues," Biokhimiya, v 21, no 6, 1956, p 689-691, (Translation), U
352. Golubtsova, A. V., Moiseyenko, E. V., and Safronova, M. I., "Change in Cerebellum Tissue Metabolism with Irradiation by X-Rays," Byull. Eksp. Biol. Med., v 42, no 9, 1956, p 763-766, (Translation), U
353. Kuzin, A. M., and Ivanitskaya, E. A., "Influence of Ionizing Radiations on the Sorption Properties of the Tissues of Various Organs in Vivo," Biofizika, v 2, no 3, 1957, (Translation), U
354. JPRS-DC-L-762. 19 Sep 58, Kudritskiy, Yu. K., "Development of Adaptive Reactions Following Repeated and Frequent Exposure to Ionizing Radiation," Med. Radiol., v 2, no 3, 1957, p 8-13, U
356. AIR. IR-6589-58, AF-1196798, 26 Aug 58, Radioradiation and Its Biological Effect, info May 58, U
357. UN. A-CONF. 15-P-2239. 7 Jul 58, Seitz, I. F., Acetylating Function of the Co-Enzyme-A System in Radiation Sickness; U
359. JPRS-NY-L-225. 24 Jun 58, Toropova, G. P., "The Role of Starvation in the Metabolism of Hepatic Glycogen During Radiation Sickness in Animals," Voprosy Pitaniya, v 17, no 1, 1958, p 50-54, U

~~UNCLASSIFIED REFERENCES~~

360. JPRS-NY-L-198. 27 May 58, Pasechnik, A. M., "Effects of Ionizing Radiations on Microorganisms," Mikrobiol. Zhur., v 19, no 3, 1957, p 56-63, U
361. Shapiro, I. M., "The Humoral Mechanism of Distant Effects of Ionizing Radiations Upon the Process of Cell Division (As Investigated with the Use of Parabiosis)," D.A.N. SSSR Biol. Sci., v 116, 1957, p 805-808, (Translation), U
362. Aleksandrov, S. N., "Indirect Action of Ionizing Radiation on Tumor Cells Via a Neurohormonal Mechanism," D.A.N. SSSR Biol. Sci., v 113, 1957, p 209-211, (Translation), U
363. Aleksandrov, S. N., "Indirect Action of Ionizing Radiation on Tumor Cells Via a Neurohormonal Mechanism," Doklady Akademii Nauk SSSR, v 113, no 2, 1957, p 311-314, U
364. JPRS-NY-L-434. 26 Nov 58, Fokina, T. V., "Changes in the Morphological Picture of the Blood of Young Rats of Various Ages in Acute Radiation Sickness," Med. Radiol., v 2, no 6, 1957, p 26-36, U
365. JPRS-NY-899. 18 Nov 58, Radiobiology in the USSR, U
369. Mamamtavrishvili, D. G. (Ed.), "Table of Contents of Works of the First Transcaucasian Conference on Medical Radiology," U. (Tr. of Trudy Pervoy Zakavkazskoy Konferentsiy po Meditsinskoy Radiologii, Tbilisi, 1956, p 329-331, U)
370. JPRS-L-516-N. 4 Feb 59, Toropova, G. P., and Yermolayeva, N. V., "The Change in the Physico-Chemical Properties of Desoxyribonucleic Acid in Tissues of Irradiated Animals," Med. Radiol., v 3, no 5, 1958, p 24-29, U
371. JPRS-L-659-N. 5 Mar 59, Chepynoga, O. P., and Khilobok, I, Yu., "Peculiarities of Nucleoprotein Complexes in Rabbit Lungs after Irradiating the Animals with Sublethal Doses of X-Rays," Ukr. Biokh. Zhur., v 30, no 2, 1958, p 200-209, U
372. JPRS-L-692-N, 16 Mar 59, Stepanova, M. M., and Ivanov, I. I., "The Problem of the Metabolism of Vitamin C and Aromatic Amino Acids in Radiation Sickness," Vop. Med. Khim., v 4, no 5, 1958, p 370-372, U
373. JPRS-1321-N. 17 Mar 58, Mushina-Udgodskaya, L. N., "The Effect of Surrounding Temperature on the Course of Radiation Sickness," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 23-27, U
374. JPRS-1328-N. 17 Mar 59, Minasov, V. S., "The Effect of Certain Antihistaminic and Sedative Preparations on the Course of the Skin Reaction in Local Irradiation by Radioactive Phosphorus," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 76-79, U

~~UNCLASSIFIED REFERENCES~~

375. JPRS-DC-L-761. 19 Sep 58, Komarov, Ye. I., "Changes of Interoceptive Unconditioned Reflexes Produced by the Action of Ionizing Radiation," Med. Radiol., v 2, no 3, 1957, p 3-8, U
376. Gomberg, Henry J., "Radioisotopes in Russia," Nucleonics, v 16, no 8, 1958, p 136-141, U
379. JPRS-DC-L-892. 15 Oct 58, Biryukov, D. A., "Data on the Problem of the Effect of Penetrating Radiation on Central Inhibition," Problemy Fiziologii Tsentral'noy Nervnoy Sistemy, Moscow, Leningrad, 1957, p 73-83, U
380. Schwamb, H. H., "Effects of Acute Ionizing Radiation on the Brain," Medical Bulletin of the U.S. Army, Europe, v 15, no 12, 1958, p 269-273; 276-278, U
381. UN. A-CONF. 14-P-2315. 12 Aug 58, Livanov, M. N., and Biryukov, D. A., Changes in the Nervous System Caused by Ionizing Radiation, U
383. Biryukov, D. A., "Mode of Action of Penetrating Radiation of the Nervous System," Fiziologicheskii Zhurnal SSSR im I. M. Sechenova, v 43, no 7, 1957, p 593-597, (Translation), U
384. Kyandaryan, K. A., Papoyan, S. A., Beglaryan, A. G., Zagatskaya, A. A., and Arutyunyan, R. K., "Functional and Morphological Brain Changes Induced by the Action of Ionizing Radiation," D.A.N. SSSR Biol. Sci., v 112, 1957, p 1-4, (Translation), U
385. Beglaryan, A. G., Kyandaryan, K. A., and Papoyan, S. A., "Histopathology of the Nervous System During Different Periods of Experimentally Produced Acute Irradiation Sickness," D.A.N. SSSR Biol. Sci., v 112, 1957, p 5-8, (Translation), U
386. Toropova, G. P., "The Actions of X-Rays on Nucleic Acid Metabolism in the Liver," D.A.N. SSSR Biol. Sci., v 114, 1957, p 454-457, (Translation), U
387. Minayev, P. F., "Changes in the Central Nervous System from the Local Action of X-Rays on It," Zhur. Obshch. Biol., v 15, no 6, 1954, p 401-412, U
388. AIR. IR-2351-58, AF-1168668, 7 Mar 58, Non Surgical Operation on Inner Body Parts by Use of X-Ray, info 15 Feb 58, U
389. Denisova, Z. V., "Towards the Problem of the Physiological Action of Gamma-Rays on the Cerebral Cortex," Med. Radiol., v 2, no 4, 1957, p 3-10, U
390. Domshlak, M. P., Avrunina, G. A., Grigor'yev, Yu. G., and Darenskaya, N. G., "Data on the Study of the Specificity of Reaction of the Organism to Irradiation," Vest. Rentgenol. Radiol., v 32, no 2, 1957, p 3-10, U

~~UNCLASSIFIED REFERENCES~~

391. Grigor'yev, Yu. G., "On the Problem of the Primary Changes of the Functional State of the Human Cerebral Cortex during Irradiation," Vest. Rentgenol. Radiol., v 31, no 2, 1956, p 3-7, U
392. AIR. IR-6862-58, Bad Soden Team, USAFE, 14 Sep 58, Indication and Treatment of Diseases with Radioactive Isotopes, 2 Oct 58, U
393. JPRS-L-579-N. 15 Dec 58, Semenov, L. F., "The Development of the Most Acute Form of Radiation Sickness," Meditinskaya Radiologiya, v 3, no 3, 1958, p 70-77, U
394. Minayev, P. F., and Slepov, A. A., "The Influence Exercised by the Local Irradiation of the Nervous System with X-Rays on the Composition of Peripheral Blood," Dokl. Akad. Nauk. SSSR, v 109, no 2, 1956, p 303-304, U
396. Avakyan, Ts. M., "Disturbances in Retinal Function Caused by Weak Irradiation," Biofizika, v 3, no 1, 1958, p 109-112, (Translation), U
397. JPRS-L-519-N. 4 Feb 59, Ayrapetyants, N. G., "The Second Scientific Conference on the Effect of Ionizing Radiation of the Higher Divisions of the Central Nervous System," Med. Radiol., v 3, no 5, 1958, p 95-96, U
398. AIR. IR-7200-58, AF-1210201, 13 Nov 58, Animal Reactions to Drugs in Connection with Radiation Sickness, info May-Jun 58, U
399. JPRS-1343-N. 10 Mar 59, Piontkovskiy, I. A., "The Influence of Ionizing Radiation on the Upper Branches of the Central Nervous System (Conference at the Institute of Higher Nervous Activity)," Vest. Akad. Nauk SSSR, no 8, 1958, p 125-126, U
400. JPRS-L-714-N. 23 Mar 59, Fedorova, I. V., "The Changes in the Latent Period of the Flexor Reflex of the Shin in Rabbits Following General Irradiation with a 10 r Dose of X-Rays," Med. Radiologiya, v 3, no 2, 1958, p 32-36, U
401. JPRS-L-713-N. 23 Mar 59, Kosmarskaya, Ye. N., and Barashnev, Yu. I., "The Effect of a Single Irradiation with X-Rays on the Developing Rat Brain," Med. Radiologiya, v 3, no 2, 1958, p 23-31, U
402. JPRS-DC-L-590. 31 Jul 58, Kravchenko, A. A., "The Effect of Ionizing Radiation on Bone Regeneration," Ortoped. Travmat. Protez., v 18, no 4, 1957, p 30-34, U
403. JPRS-NY-L-281. 7 Aug 58, Barkagan, T. S., "Influence of External X- and Internal Beta- Irradiation on the Development of Aseptic Inflammation," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 1, 1958, p 19-21, U

~~UNCLASSIFIED REFERENCES~~

404. JPRS-NY-L-284. 7 Aug 58, Zhizhina, N. A., "The Influence of Generalized X-Irradiation on Mineral Metabolism in Bone Tissue," Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, v 2, no 1, 1958, p 34-38, U
405. Domshlak, M. P., Vannikov, L. L., and Grigoriyev, Yu. G., "Evaluation of Small Radioactive Influences on the Human Organism," Atomnaya Energiya, v 2, no 7, 1957, p 765-769, (Translation), U
406. Litvinov, N. N., "Tumor of the Bone Tissue Induced by Radioactive Substances," Byull. Eksp. Biol. Med., v 42, no 8, 1956, p 703-707, (Translation), U
407. Terskov, I. A., and Gitel'zon, I. I., "The Dynamics of the Changes in the Erythrocytes during Acute Radiation Sickness. Results of a Photoelectric Investigation of the Kinetics of Haemolysis," Biofizika, v 2, no 4, 1957, p 511-524, (Translation), U
408. Sondak, V. A., "Primary and Secondary Lesions in the Bone Marrows of X-Irradiated Animals," Biofizika, v 2, no 4, 1957, p 485-491 (Translation), U
409. Shtern, L. S., Rapoport, S. Ya., Gromakovskaya, M. M., and Zubkova, S. R., "Effect of X-Rays on the Permeabilities of Blood-Organ Barriers," Biofizika, v 2, no 2, 1957, p 188-197, (Translation), U
410. ORNL-2533. 15 Feb 58, Mendell, J. S., Evidence for the Uniform Radiation Life Shortening Predicted by Information Theory, Health Physics Division Oak Ridge National Laboratory, Oak Ridge, Tenn., U
411. UN. A-CONF. 15-P-2068.USSR. 8 Aug 58, Lebedinskiy, A. V., Grigoryev, U. G., and Demirchoglyan, G. G., On the Biological Effect of Small Doses of Ionizing Radiation, U
412. UN. A-CONF. 15-P-2077. 12 Aug 58, Burykina, L., Zakutinsky, D., Krayevsky, N., Kurlyandskaya, E., Litvinov, N., Moskalyev, Y., Novikova, A., Soloviov, Y., and Streltsova, V., Remote Effects of Exposure to Small Doses of Radioactive Substances in a Chronic Experiment, U
415. JPRS-DC-L-519. 22 Jul 58, Filatov, V. I., "The Course of Wounds in the Small Intestines During Radiation Disease," Voyenno-Meditsinskiy Zhurnal, no 6, 1957, p 37-40, U
416. JPRS-DC-L-518. 22 Jul 58, Rubinshteyn, Ya. G., "The Healing of Fractures During Various Stages of Radiation Disease," Voyenno-Meditsinskiy Zhurnal, no 6, 1957, p 33-37, U
417. JPRS-NY-L-206. 21 May 58, Zuykova, Ye. A., and Kas'yanov, I. S., "Intussusception of the Intestine as a Complication of Radiation Sickness," Vest. Rentgenol. Radioł., v 32, no 5, 1957, p 89-92, U

~~UNCLASSIFIED REFERENCES~~

418. JPRS-NY-L-139. 14 Apr 58, Nesterin, M. F., "The Influence of X-Ray Irradiation on the Fermento-Secretory Processes in the Intestines," Vest. Rentgenol. Radiol., v 32, no 4, 1957, p 81-83, U
419. JPRS-NY-L-137. 14 Apr 58, Gamaleya, A. N., Polenko, V. K., and Kinonov, P. V., "Changes in Blood System During Acute Radiation Injuries," Vest. Rentgenol. Radiol., v 32, no 4, 1957, p 17-23, U
420. JPRS-NY-L-114. 10 Apr 58, Shikhodyrov, V. V., "Changes in Mast Cells During Acute and Chronic Radiation Sickness," Arkhiv Patologii, v 19, no 9, 1956, p 35-42, U
421. JPRS-NY-L-113. 10 Apr 58, Pinus, A. A., "Pathological Anatomy of Late Stages of Radiation Sickness in Animals Due to Intoxication by the Products of Uranium Fission," Arkhiv Patologii, v 19, no 9, 1967, p 27-34, U
422. JPRS-NY-L-117. 10 Apr 58, Arutyunov, V. D., and Gamaleya, A. N., "Concerning Changes in the Hemopoietic System Associated with Treatment by Irradiation," Arkhiv Patologii, v 19, no 9, 1957, p 78-83, U
423. JPRS-NY-L-116. 10 Apr 58, Funshteyn, L. V., "Concerning Desquamation of Seminiferous Epithelium of the Testicle in Acute Radiation Sickness," Arkhiv Patologii, v 19, no 9, 1957, p 47-50, U
424. JPRS-NY-L-115. 10 Apr 58, Vlasova, Z. A., and Shcherban', E. I., "Morphological Changes in Kidneys During Acute Radiation Sickness Caused by Radioactive Phosphorus," Arkhiv Patologii, v 19, no 9, 1957, p 43-47, U
425. Aub, Joseph C., Evans, Robley D., Hempalmann, Louis H., and Martland, Harrison S., "The Late Effects of Internally-Deposited Radioactive Materials in Man," Medicine, v 31, 1952, p 221-329, U
426. Uspenskiy, Yu. N., "Effects of Ionizing Radiation on the Activity of the Digestive Organs in Dogs," Fiziologicheskii Zhurnal SSSR im I. M. Sechenova, v 43, no 4, 1957, p 304-311, (Translation); U
427. Barakina, N. F., "Effects of X-Rays on the Hematopoietic Organs When the Organism is Protected by Carbon Monoxide," D.A.N. SSSR Biol. Sci., v 114, 1957, p 461-464, (Translation), U
428. Levinson, L. B., Pankova, N. V., and Shapiro, N. I., "Irradiation Effects Observed in the Duodenum on the Intramural Auerbach Ganglia and Meissner Plexi," D.A.N. SSSR Biol. Sci., v 116, 1957, p 797-800, (Translation), U
429. Neyfakh, A. A., "The Role of the Maternal Organism in the Irradiation Illness of Fetal Mice," D.A.N. SSSR Biol. Sci., v 116, 1957, p 821-824, (Translation), U

UNCLASSIFIED REFERENCES

430. Pobedinskiy, M. N., "Blastomogenic Effect of Ionizing Radiation," Med. Radiol., v 1, no 5, 1956, p 30-40, U
431. Lemazhikhin, B. K., and Frank, G. M., "Determination of the Size of Erythrocytes by the Method of Diffraction of Light in Connection with the Problem of the Biological Action of Ionizing Radiation," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 276-287, U
432. Soviet Research on Remote Consequences of Injuries Caused by the Action of Ionizing Radiation; Consultants Bureau, Inc., New York, N. Y., U
433. Berlin, Nathaniel I., "Military Aspects of the Biological Effects of Radiation," United States Armed Forces Medical Journal, v 9, no 6, 1958, p 821-842, U
434. Cherkasskiy, L. A., "Changes in Bones Induced by the Introduction of Radioactive Strontium into Rats," Voprosy Onkology, v 2, 1956, p 275-284, U
435. Shtukkenberg, Yu. M., "Dependence of the Activity of Secretions on the Concentration of Radioactive Matter Within an Organism," Atomnaya Energiya, v 1, no 5, 1956, p 801-809, (Translation), U
436. AEC. HW-46150., 1 Apr 57, Ballou, J. E., and Thompson, R. C., The Long Term Retention of Cesium in the Rat Following a Single Intraperitoneal Injection; Hanford Atomic Products Operation, Richland, Washington, U
437. AEC. HW-52286., 1 Oct 57, Willard, D. H., Temple, L. A., and Bair, W. J., Turnover and Tissue Distribution of Radium-226 Oxide in the Lungs of Mice; Hanford Atomic Products Operation, Richland, Washington, U
438. AEC. Atomic Energy and the Life Sciences, U.S. Atomic Energy Commission, Jul 49, U
439. UCRL-3735. 19 Aug 57, Tobias, Cornelius A., Some Effects of Radiations on Cell Proliferation, University of California, Radiation Laboratory, Berkeley, California, U
440. JPRS-NY-L-433. 26 Nov 58, Andriyasheva, N. M., "Specific Changes in the Peripheral Blood of Pregnant Animals After Single Irradiation by X-Rays," Med. Radiol., v 2, no 6, 1957, p 19-25, U
441. JPRS-NY-L-435. 26 Nov 58, Uspenskiy, Yu. N., Tomofeyeva, T. A., and Shvartser, I. V., "The Activity of the Salivary Glands in Dogs After a Massive Single X-Ray Irradiation in the Area of Abdomen," Med. Radiol., v 2 no 6, 1957, p 37-41, U

~~UNCLASSIFIED REFERENCES~~

442. JPRS-NY-L-436. 26 Nov 58, Koroza, G. S., "Changes in the Sensitivity of the Heart to Cardiac Glucosides in Radiation Sickness," Med. Radiol., v 2, no 6, 1957, p 41-43, U
443. JPRS-NY-L-438. 26 Nov 58, Gurevich, I. B., "Roentgen Kymography of the Heart in Acute Experimental Radiation Sickness," Med. Radiol., v 2, no 6, 1957, p 49-55, U
444. Kasymov, Kh., "Disturbances of the Urea-Producing Function of the Liver of Dogs as a Result of Internal Gamma Radiation," Trudy Stalinabadskogo Meditsinskogo Instituta imeni Abuali Ibn Sino (Avitsenny), v 27, 1957, U
445. Strel'tsova, V. M., and Moskalev, Yu. I., "Radioactive Isotopes as Cancerogenic Agents," Meditsinskaya Radiologiya, v 2, no 5, 1957, p 39-51, U
446. Gorizontov, P. D., and Davydova, S. A., "On Revealing Toxic Properties of the Blood in Irradiated Animals in Experiments on Adrenalectomized Animals," Meditsinskaya Radiologiya, v 2, no 5, 1957, p 51-55, U
447. Krayevskiy, N. A., and Litvinov, N. N., "Blastomogenic Effect of Radioactive Strontium," Med. Radiol., v 2, no 5, 1957, p 33-38, U
448. Vasilevskiy, N. M., "Blood Blotting Following Exposure to Ionizing Radiation," Zdravookhran. Belorussii, no 1, 1957, p 36-37, U
449. JPRS-L-580-N. 15 Dec 58, Pigaley, I. A., "The Effect of Radioactive Strontium on the Organism," Meditsinskaya Radiologiya, v 3, no 3, 1958, p 80-84, U
450. JPRS-DC-449. 9 Jan 59, Kopylova, Ye. N., "The Effect of Chronic Gamma Irradiation on Mice Ovaries," Izv. Akad. Nauk SSSR. Ser. Biol., no 5, 1958, p 592-596, U
451. JPRS-1076-N. 12 Jan 59, Larina, M. A., and Sakhatskaya, T. S., "The Content of Corticosterone in Suprarenal Blood of Rats at Various Periods After Irradiation," Prob. Endokrin, Gormon., v 4, no 4, 1958, p 21-24, U
452. Brodskiy, V. Ya., and Suetina, I. A., "Ultra-Violet Microscopy and Cytophotometry of Normal and X-Irradiated Bone-Marrow," Biofizika, v 3, no 1, 1958, p 85-93, (Translation), U
453. Strel'tsova, V. N., "Data on the Toxicology of Radioactive Ruthenium Following Administration Through the Gastrointestinal Tract," Med. Radio., v 3, no 5, 1958, p 37-49, U

~~UNCLASSIFIED REFERENCES~~

454. Conference on "Effect of Environmental Radiations on Human Beings," Washington, D. C., 30 Sep-1 Oct 58, U
455. JPRS-L-690-N. 16 Mar 59, Rodinov, V. M., Uspenskaya, V. D., Zamyatkina, O. G., with the participation of Grunt T., and Polyakov, V. P., "The Effect of General Irradiation by X-Rays on the Restoration of Serum Proteins in Dogs After Hemorrhage," Vop. Med. Khim., v 4, no 5, 1958, p 327-338, U
456. JPRS-L-691-N. 16 Mar 59, Konstantinova, V. V., and Libinzon R. Ye., "The Content and Synthesis of Nucleic Acids in the Liver During Subacute Plutonium Intoxication," Vop. Med. Khim., v 4, no 5, 1958, p 339-344, U
457. JPRS-L-693-N. 17 Mar 59, Lebedeva, N. K., "The Protein Composition of the Kidneys, Blood Serum and Urine of Rats Following Damage Caused by the Administration of Heavy Salts," Vop. Med. Khim., v 4, no 5, 1958, p 373-378, U
458. JPRS-1325-N. 17 Mar 59, Stetsenko, N. D., "Changes of the Functional Condition of the Heart in Internal Irradiation by Radioactive Phosphorus (Electrocardiographic Investigation)," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 66, U
459. JPRS-1326-N. 17 Mar 59, Malenkova, K. M., "Changes of Certain Blood Biochemical Values Due to the Action of X-Rays," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 74, U
460. JPRS-1327-N. 17 Mar 59, Zyuzin, I. K., and Krasnova, A. I., "The Effect of Small Doses of Radioactive Phosphorus on the Nitrogen Metabolism, Hemopoiesis and the Function of Cardiovascular System," Vest. Rentgenol. Radiol., v 33, no 3, 1958, p 75-76, U
461. JPRS-1409-N. 25 Mar 59, Morozov, A. I., "The Surgical Treatment of Wounds of Soft Tissues in Radiation Sickness," Vest. Rentgenol. Radiol., v 33, no 2, 1958, p 86-87, U
462. JPRS-1408-N. 25 Mar 59, Zubovskiy, G. A., "Characteristics of the Clinical Course of Burn Shock Upon Irradiation of the Organism with Penetrating Radiations," Vest. Rentgenol. Radiol., v 33, no 2, 1958, p 84-88, U
463. JPRS-NY-59, CSO-1670. 29 Jul 58, Tsetlin, L. L., and Karapetyan, Sh. A. "The Chemical Action of Ionizing Radiations," Priroda, v 40, no 12, 1957, p 55-57, U
464. Tolkacheva, E. N., "Quantitative Aspects of the Recovery Processes in Organisms After General Irradiation," Biofizika, v 2, no 5/6, 1957, p 570-577, (Translation), U

~~UNCLASSIFIED REFERENCES~~

465. Author Unknown, Report on "First Inter-Institute Conference on Radiobiology," Biofizika, v 2, no 4, 1957, p 529-537, (Translation), U
466. Lomovskaya, E. G., and Vorob'yeva, E. I., "Some Developmental Regularities in the Progeny of Females X-Ray Irradiated During Pregnancy," Biofizika, v 2, no 4, 1957, p 492-500, (Translation), U
467. JPRS-NY-Report 377. 22 Apr 58, Radiobiology in the USSR, U
468. Perkins, Eugene H., and Marcus, Stanley, "The Effect of X-Irradiation on Preformed Anti-Body and Its Role in the Protection of X-Irradiated Mice," Journal of Infectious Diseases, v 102, 1958, p 81-87, U
469. AIR. IR-6888-58, AF-1204270, 7 Oct 58, Treatment of Diseases with Radioactive Isotopes, info 13 Sep 58, U
470. Luchnik, M. V., and Timofeyeva-Resovskaya, E. A., "Effect of Potassium Cyanide Upon the Mortality of Irradiated Animals," D.A.N. SSSR Biol. Sci., v 116, no 3, 1957, p 801-804, (Translation), U
472. JPRS-1108-N. 19 Jan 59, Voyenno-Meditsinskiy Zhurnal (Military Medical Journal), no 9, 1958, U
473. FBIS. Daily Report-13-59, USSR and East Europe, 20 Jan 59, Scientific Center, p CC 17, OFF USE ✓
474. State. Moscow Incoming Airgram G-406, 14 Mar 59, Re: Four members Sov Delegation to VI Session of UN Scientific Committee on Atomic Radiation, OFF USE ✓

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Agafonova, V. N., "X-Ray Therapy of Frostbite," Vestnik Rentgenologii i Radiologii, v 33, no 5, 1958, p 90-91, U
- Aglintsev, K. K., Bibergal', A. V., Margulis, U. Ya., and Vorob'ev, Ye. I., Zashchita ot Rentgenovskikh i Gamma-Luchey (Protection from X-Rays and Gamma Rays), Moscow, Medgiz, 1955, 246 p, U
- Aglintsev, K. K., Dozimetriya Ioniziruyushchikh Izlucheniy (Dosimetry of Ionizing Radiation), Moscow, Gostekhizdat, 1957, 503 p, U
- Aglintsev, K. K., Dozimetriya Ioniziruyushchikh Izlucheniy. Radiometriya i Rentgenometriya (Dosimetry of Ionizing Radiation. Radiometry and Roentgenometry), Moscow, Gostekhizdat, 1950, 500 p, U
- Aglintsev, K. K., Osnovy Dozimetrii Ioniziruyushchikh Izlucheniy (Fundamentals of Dosimetry of Ionizing Radiation), Leningrad, Medgiz, 1954, 287 p, U
- Agranat, V. Z., "Certain Data Concerning the Accumulation of Polonium ²¹⁰ by Water Organisms," Meditsinskaya Radiologiya, v 3, no 1, 1958, p 65-69, U
- Ald'yev, I. I., Primeneniye Atomnoy Energii v Mirnykh Tselyakh (Application of Atomic Energy for Peaceful Purposes), Moscow, Academy of Sciences, 1956, 160 p, U
- Aladzhalova, N. A., "On the Change in the Ultraslow Rhythmic Oscillations of the (Electrical) Potential of the Brain Under the Influence of Ionizing Radiation," Biofizika, v 1, no 7, 1956, p 642-652, U
- Aladzhalova, N. A., "The Dynamics of Early Ion Shifts in the Cerebral Cortex Upon the Local Action of X-Rays on the Abdominal Region and the Head," Biofizika, v 1, no 1, 1956, U
- Aleksandrov, S. N., Galkovskaya, K. F., Matveyev, O. G., and Petrov, V. A., "Concerning the Problem of the Biological Effect of External Irradiation with Beta Radiation," Meditsinskaya Radiologiya, v 3, no 4, 1958, p 6-8, U
- Aleksandrov, S. N., Galkovskaya, K. F., and Zil'berg, Yu. G., "Comparison of the Biological Action of X-Rays with that of the Radiation from Radioactive Cobalt," Meditsinskaya Radiologiya, v 1, no 2, 1956, p 80-87, U
- Aleksandrov, S. N., "Effect of Irradiation of the Brain on Induced Skin Cancer in Mice," Byulleten' Eksperimental'noy Biologii i Meditsiny, v 39, no 1, 1955, p 52-56, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Aleksandrov, S. N., "Factors Responsible for the Nature of Radiation Damage to the Tonic Fibers of Frogs," Doklady Akademii Nauk SSSR, v 103, no 1, 1955, p 169-171, U
- Aleksandrov, S. N., "On the Rate of Tracer Incorporation into the Proteins of Organs of Animals Exposed to Radiation; Rate of Tracer Incorporation into the Proteins in the Case of Subacute Radiation Sickness," Doklady Akademii Nauk SSSR, v 106, no 2, 1956, p 363-366, U
- Aleksandrov, S. N., "On the Rate of Tracer Incorporation into the Proteins of Organs of Animals Exposed to Radiation; Rate of Tracer Incorporation into the Proteins of the Encephalon, Kidney, Liver, and Spleen in Acute Radiation Sickness," Doklady Akademii Nauk SSSR, v 106, no 1, 1956, p 153-156, U
- Alikhanov, A. I., Vladimirovskiy, V. V., Petrov, P. A., and Khristenko, P. I., "Heavy-Water Reactor with Gas Coolant for Power Plants," Atomnaya Energiya, v 1, no 1, 1956, p 5-9, U
- Anan'yev, Ye. P., "Soviet Nuclear Power Economy," Vestnik Akademii Nauk SSSR, no 3, 1958, p 3-14, U
- Andreyeva, O. S., "Concerning the Effectiveness of Certain Existing Agents for Deactivation of Hands Contaminated with Radium Salts," Meditinskaya Radiologiya, v 2, no 3, 1957, p 59-62, U
- Andreyeva, O. S., and Kovalev, Ye. Ye., "Determination of Radium Aerosols in the Presence of Other Alpha-Active Aerosols," Gigiyena i Sanitariya, v 22, no 5, 1957, p 27-30, U
- Ardashnikov, S. N., Prigozhina, Ye. L., and Spasskaya, I. G., "Irradiating the Milk Factor with Massive Doses of Roentgen and Gamma Rays with the Purpose of Discovering its Carcinogenic Properties," Voprosy Onkologii, v 1, no 6, 1955, p 71-74, U
- Arkhipov, M. P., Osnovy Ustroystva Atomnogo Oruzhiya i Protivoatomnaya Zashchita (Principles of Design of Atomic Weapons and Anti-Atomic Defense), Moscow, Izdatel'stvo DOSAAF, 1956, 84 p, U
- Arlashchenko, N. I., "Effect of Ionizing Radiation on the Permeability and Barrier Functions of Ocular Vessels," Meditinskaya Radiologiya, v 1, no 3, 1956, p 29-35, U
- Astakhov, K. V., Atomnaya Energiya i Puti Yeye Prakticheskogo Ispol'zovaniya (Atomic Energy and Its Practical Utilization), Moscow, Voenizdat, 1957, 278 p, U
- Astashenkov, P. T., Atomnaya Promyshlennost' (Atomic Industry), Moscow, Voenizdat, 1956, 236 p, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Bagdasarov, A. A., Beliyayeva, B. F., and Rogacheva, L. S., "Hemotherapy in Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 5, 1956, p 45-50, U
- Balabanov, Ye. M., Yadernyye Reaktory (Nuclear Reactors), Moscow, Voenizdat, 1957, 210 p, U
- Balabanov, Ye. M., Solntse na Zemle. Chto Takoye Energiya i kak ona Sluzhit Lyudyam (Sun on Earth. The Meaning of Atomic Energy and Its Service to Mankind), Moscow, "Molodaya Gvardiya," 1956, 292 p, U
- Balaskho, Yu. G., Gusev, N. G., Dembrovskiy, M. A., and Kvasova, S. I., "Method to Determine the Amount of Radium in the Human Body," Gigiyena i Sanitariya, v 21, no 1, 1956, p 20-26, U
- Baldandorzh, D., "The Effect of Tissue Therapy on the Morphological Composition of the Blood of Rabbits Subjected to Total X-ray Irradiation," Vrachebnoye Delo, no 10, 1958, p 1073-1076, U
- Balmukhanov, S. B., "Effect of Novocaine and Sodium Amytal on the Course of Acute Radiation Sickness in White Rats," Trudy Instituta Klinicheskoy i Eksperimental'noy Khirurgii, Akademii Nauk, Kazakhskaya SSR, v 3, 1957, p 65-70, U
- Balmukhanov, S. B., "Effect of X-rays on Capillary Permeability. Report 2," Trudy Instituta Kraevoy Patologii, Akademii Nauk, Kazakhskaya SSR, v 4, 1956, p 235-241, U
- Barbashova, Z. I., "Effect of Acute Hypoxia on Resistance of the Organism to Ionizing Radiations," Doklady Akademii Nauk SSSR, v 102, no 6, 1955, p 1219-1221, U
- Barbashova, Z. I., "On the Mechanism of the Preventive Action of Chronic Hypoxia in Relation to Radiation Sickness," Doklady Akademii Nauk SSSR, v 107, no 5, 1956, p 761-764, U
- Bavro, G. V., "Concerning the Terminal Period of Acute Radiation Sickness," Meditsinskaya Radiologiya, v 2, no 2, 1957, p 31-41, U
- Belousov, A. P., "Some Ways to Avoid Hemolysis of Erythrocytes, Induced by Ionizing Radiation," Meditsinskaya Radiologiya, v 2, no 2, 1957, p 46-54, U
- Benevolenskiy, V. N., Korogodin, V. I., and Polikarpov, G. G., "Biophysical Fundamentals of the Action of Ionizing Radiation," Itogi Nauki, Biologicheskkiye Nauki, no 1, 1957, p 9-49, U
- Bibergal', A. V., et al., Primeneniye Radioaktivnogo Kobal'ta Tseyey Gamma-Defektoskopii (Use of Radioactive Cobalt in Gamma Defectoscopy), A. K. Trapenznikov, ed., Moscow, Academy of Sciences, 1951, 131 p, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Bibergal', A. V., and Korotkov, M. M., "New-Type Gamma Indicator," Biofizika, v 1, no 6, 1956, p 564-567, U
- Bibergal', A. V., and Margulis, U. Ya., "Protection Against X-Rays and Gamma Radiation," Biofizika, v 1, no 1, 1956, p 68-75, U
- Blokhin, N. N., Luganova, I. S., and Rotfel'd, L. S., "Carbohydrate Function of the Liver During the Development of Radiation Sickness," Doklady Akademii Nauk SSSR, v 111, no 3, 1956, p 723-726, U
- Blokhin, N. N., Luganova, I. S., and Rotfel'd, L. S., "Carbohydrate Function of the Liver in the Development of Radiation Sickness," Meditinskaya Radiologiya, v 1, no 6, 1956, p 40-46, U
- Blokhintsev, D. I., Dollezhal', N. A., and Krasin, A. K., "Reactor of the First Soviet Atomic Power Station of the Academy of Sciences, USSR," Atomnaya Energiya, v 1, no 1, 1956, p 10-23, U
- Blokhintsev, D. I., Minashin, N. Ye., and Sergeyev, Yu. A., "Physical and Thermal Calculations of the Reactor of the First Atomic Power Plant of the Academy of Sciences, USSR," Atomnaya Energiya, v 1, no 1, 1956, p 24-42, U
- Bochkarev, V., Keyirim-Markus, I., L'vova, N., and Pruslin, Ya., Izmereniye Aktivnosti Istochnikov Beta- i Gamma-Izlucheniya (Measurement of the Activity of Sources of Beta and Gamma Radiation), Moscow, Academy of Sciences, 1953, 241 p, U
- Borisov, Ye. V., edited by Gruzina, P. L., Tekhnika Bezopasnosti pri Rabote s Radioaktivnymi Izotopami (Safety Technique in Work with Radioactive Isotopes), Moscow, Profizdat, 1955, 115 p, U
- Brodskaya, I. A., and Merkulova, I. P., "Late Changes in the Brain Following X-Ray Irradiation," Vestnik Rentgenologii i Radiologii, v 31, no 2, 1956, p 7-13, U
- Bychkovskaya, I. B., Strelin, G. S., and Shiffer, I. V., "The Course of Radiation Sickness in Mice in Lowered Atmospheric Pressure," Meditinskaya Radiologiya, v 1, no 3, 1956, p 85-93, U
- Chaykovskaya, M. Ya., "Some Observations on the Development of Puppies Born of an Irradiated Dog," Vestnik Rentgenologii i Radiologii, v 30, no 4, 1955, p 34-38, U
- Chebotaev, Ye. Ye., "Treating Radiation Sickness with BK-8 Protein Blood Substitute, Vitamin B₁₂ and Streptomycin," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 3, 1956, p 157-163, U
- Cheremnykh, N., "Aviation Today," Tekhnika Molodezhi, 1955, Aug, p 14-21, U

UNCLASSIFIED BIBLIOGRAPHY

- Cherkasov, V. F., "Depressor Reflex from the Vagus Nerve in Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 2, 1956, p 57-64, U
- Cherkasov, V. F., "Some Pressor Reflexes in Radiation Sickness," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 41-47, U
- Cherkasskiy, L. A., "Lesions of the Nasal Mucosa in White Mice in Radiation Sickness," Vestnik Oto-rino-laringologii, v 18, no 3, 1956, p 36-42, U
- Chernichenko, V. A., "Mechanism of Disorders of Interoceptive Reflexes Induced by Ionizing Radiation," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 6, p 87-97, 1956, U
- Chuchukalo, A. I., "The Effect of Inflammation of the Phagocytic Reaction of the Reticuloendothelial System in Animals Injured by Polonium," Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii, (Works of the All-Union Conference on Medical Radiology); 1957, p 174-178, U
- Davydova, I. N., Manoylov, S. Ye., Strutsovskaya, S. V., and Chochiya, K. N., "Prevention and Treatment of Radiation Injuries of the Skin with Stickleback Oil; (Experimental and Clinical Observations)," Vestnik Rentgenologii i Radiologii, v 31, no 5, 1956, p 16-20, U
- Demirchoglyan, G. G., Adunts, G. T., and Avakyan, Ts. M., "Effect of Radioactive Phosphorus on the Functional State of the Retina," Izvestiya Akademii Nauk, SSSR, Seriya Biologicheskikh i Sel'skokhozyaystvennykh Nauk, v 10, no 2, 1957, p 3-13, U
- Denisov, N. N., and Astashenko, P. T., Atomnaya Energiya, Sbornik Statey (Atomic Energy; Collection of Articles) Moscow, Voenizdat, 1954, 53 p, U
- Detlaf, T. A., and Turpayev, T. M., "Specificity of the Action of Calcium in the Process of Fertilization, Activation, and Muscular Contraction, and the Possibility of Substituting it by Strontium," Izvestiya Akademii Nauk, SSSR, Seriya Biologiya, no 5, 1957, p 572-577, U
- Dolivo-Dobrovolskiy, L. B., and Zavel'skiy, R. S., "Concerning the Problem of the Content of Radioactive Potassium in Urban Sewage," Meditsinskaya Radiologiya, v 3, no 3, 1958, p 65-67, U
- Domareva, O. F., "Effect of Total X-ray Irradiation on the Testes of Mice of Various Age Groups," Zhurnal Obshchey Biologii, v 17, no 1, 1956, p 56-67, U
- Domshlak, M. P., and Darenskaya, N. G., "Comparative Effect of Different Types of Ionizing Radiations on the Animal Organism," Itogi Nauki Biologicheskaya Nauki, no 1, 1957, p 149-170, U
- Domshlak, M. P., Ivanov, I. I., Belousova, O. I., and Yakovlev, V. G., "Research on Biological Protection Against Radiation During Experimental X-ray Therapy of Tumors," Meditsinskaya Radiologiya, v 2, no 3, 1957, p 47-52, U

UNCLASSIFIED BIBLIOGRAPHY

- Drogichina, E. A., Byalko, N. K., Gel'fon, I. A., Ivanov, N. I., Kazakevich, M. A., Linevich, T. B., Osipova, V. G., Stepanova, V. I., Ryzhkova, M. N., Solov'yeva, Ye. A., and Tsenterov, L. G., "Clinical Course of Initial Stages of Chronic Effect of Ionizing Radiation on the Organism," Gigiyena Truda i Professional'nyye Zabolevaniya, no 2, 1958, p 3-8, U
- Duplishcheva, A. P., "Gastrointestinal Absorption of Certain Antibiotics into the Blood in Radiation Sickness," Meditinskaya Radiologiya, v 1, no 2, 1956, p 46-51, U
- D'yachenko, M. N., "New Methods of Dosimetry of Ionizing Radiations," Meditinskaya Radiologiya, v 3, no 4, 1958, p 75-78, U
- Dzyubko, N. Ya., "Effect of Several B-Vitamins on Acute Experimental Radiation Sickness," Vrachebnoye Delo, no 3, 1957, p 253-255, U
- Eydus, L. Kh., "Primary Mechanism of the Biological Effect of Radiation," Biofizika, v 1, no 6, 1956, p 544-554, U
- Fateyeva, M. N., Klimov, V. S., Gorbarenko, N. I., Denisova, Ye. A., Erina, Ye. V., and Ostapkovich, V. Ye., "Early Diagnosis of Chronic Radiation Sickness," Vestnik Rentgenologii i Radiologii, v 30, no 2, 1955, p 16-23, U
- Fedorova, T. A., "Nitrogen Metabolism in Experimental Radiation Sickness in Rats," Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii (Eksperimental'noy Meditsinskoy Radiologii) Works of the All-Union Conference on Medical Radiology; Experimental Medical Radiology), Moscow, Medgiz, 1957, p 103-108, U
- Fedorova, T. A., and Larina, M. A., "Creatine and Creatinine Level in the Urine of Rats after Roentgen Irradiation," Meditinskaya Radiologiya, v 1, no 6, 1956, p 36-40, U
- Fradkin, G. Ye., "Problem of Mechanisms of the Uptake and Elimination of Radioactive Isotopes of Alkaline Earths, Rare Earths, and Heavy Metals," Meditinskaya Radiologiya, v 2, no 2, 1957, p 13-18, U
- Frank, G. M., "Physics and Medicine," Meditinskiy Rabotnik, no 95, 28 Nov 1958, p 2, U
- Funshteyn, L. V., "Preservation of the Proliferative Capacity of Skin Epithelium under the Local Action of Ionizing Radiation," Meditinskaya Radiologiya, v 1, no 6, 1956, p 31-35, U
- Funshteyn, L. V., and Nevler, A., "Use of an Electron Microscope for Studying the Effects of X-rays and Radium Emanations on Bacterial and Cancer Cells," Vestnik Rentgenologii i Radiologii, v 30, no 3, 1955, p 20-26, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Fursov, V. S., Uran-grafitovyye Yadernyye Reaktory (Graphite-Uranium Nuclear Reactors), Moscow, Academy of Sciences, 1956, 38 p, U
- Gamaleya, A. N., Gyurdzhyan, A. A., Zhgun, A. A., and Simonov, P. V., "Effects of a Cervical Vagosympathetic Novocaine Block in Acute Radiation Sickness in Dogs," Meditinskaya Radiologiya, v 1, no 6, 1956, p 3-5, U
- Garvey, N. N., "Morphological Changes in Cutaneous Exteroceptors Following Penetrating Irradiation," Vestnik Rentgenologii i Radiologii, v 31, no 2, 1956, p 14-22, U
- Gladkov, K., "Atomnaya Energiya na Transport," (Atomic Energy for Transport Vehicles), Stalinskoye Pletnya, 18 Mar 56, p 1, 22 Mar 56, p 1, U
- Glazunov, I. S., "Problem of Neurological Symptoms in Acute Radiation Sickness," Zhurnal Nevropatologii i Psikiatrii imeni S. S. Korsakova, v 55, no 3, 1955, p 198-202, U
- Golubitskaya, M. B., "Concerning the Influence of Small Doses of Ionizing Radiation on the Blood Picture from the Standpoint of Occupational Damage," Meditinskaya Radiologiya, v 1, no 6, 1956, p 6-13, U
- Gorbatyuk, N. W., "Concerning Dosage of Radioactive Substances for Therapeutic Administration into Organism," Vestnik Rentgenologii i Radiologii, v 31, no 3, 1956, p 21-26, U
- Gorizontov, P. D., "Inhibition Processes in Experimental Radiation Sickness," Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, v 5, no 3, 1955, p 318-328, U
- Gorodetskiy, A. A., "Some Data on the Role of the Nervous System Manifestations of Radiation Sickness," Vestnik Rentgenologii i Radiologii, v 30, no 6, 1955, p 3-10, U
- Gorodetskiy, A. A., "Characteristic Features of the Course and Outcome of Acute Radiation Syndrome Produced by General, External and Internal Ionizing Irradiation," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 3, 1956, p 137-143, U
- Gorodinskiy, S. M., "Means for Individual Protection when Working with Radioactive Isotopes," Meditinskaya Radiologiya, v 1, no 5, 1956, p 84-91, U
- Gorodinskiy, S. M., and Fischevskaya, E. A., "Misconception Connected with the Possibility of Protecting Eyes and Body of Personnel from Gamma Radiation by Individual Protective Means," Meditinskaya Radiologiya, v 2, no 3, 1957, p 83-84, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Gorodinskiy, S. M., and Parkhomenko, G. M., "Industrial Hygiene Problems in Work with Radioactive Isotopes," in: Izucheniye Iznosa Detaley Mashin pri Pomoschi Radioaktivnykh Izotopov (Study of Wear of Machine Parts by Means of Radioactive Isotopes), edited by P. Ye. D'yachenko, Moscow Publishing House of the Academy of Sciences, USSR, 1957, p 135-142, U
- Gorodinskiy, S. M., and Shcherbakov, V. L., "Individual Protection During Repair Work Under Conditions of Radioactive Contamination," Atomnaya Energiya, v 3, no 8, 1957, p 141-148, U
- Granil'shchikov, V. P., and Parkhomenko, G. M., "Medical-Hygiene and Sanitary-Engineering Requirements in the Planning and Equipment of Laboratories Using Radioactive Materials," Medit'sinskaya Radiologiya, v 1, no 3, 1956, p 42, U
- Grayevskaya, B. M., and Keylina, R. Ya., "Changes in Carbohydrate Metabolism During General X-Ray Irradiation of the Living Body," Vestnik Rentgenologii i Radiologii, v 30, no 4, 1955, p 21-26, U
- Grayevskaya, B. M., and Keylina, R. Ya., "Decrease in the Sensitivity of Animals to Fatal Doses of X-Rays Following Irradiation With Nonfatal Doses," Biofizika, v 1, no 3, 1956, p 232-236, U
- Grayevskaya, B. M., and Keylina, R. Ya., "Effect of Ionizing Radiations on Certain Aspects of Carbohydrate Metabolism in the Animal Organism," Uspekhi Sovremennoy Biologii, v 40, no 2, 1955, p 230-238, U
- Grayevskaya, B. M., and Keylina, R. Ya., "Glycemic Curves in Dogs Following X-irradiation under Anesthesia," Medit'sinskaya Radiologiya, v 1, no 5, 1956, p 55-59, U
- Grayevskaya, B. M., Kononenko, A. M., and Manoylov, S. E., "Distribution of Radium in the Body of a Rat and Its Excretion Rate," Vestnik Rentgenologii i Radiologii, v 30, no 2, 1955, p 10-16, U
- Grayevskiy, E. Ya., and Korchak, L. I., "Sulfhydryl Groups in Muscle Tissue in Normal Conditions and Following Irradiation with Lethal Dose of Roentgen Rays," Doklady Akademii Nauk SSSR, v 102, no 5, 1955, p 939-941, U
- Grigor'yants, A. N., "Some Problems of Operating an Atomic Power Plant," Atomnaya Energiya, v 2, no 2, 1957, p 109-117, U
- Grigor'yev, Yu. G., "Some Data on the Use of Nicotinic Acid in Complications of Radiotherapy," Medit'sinskaya Radiologiya, v 1, no 1, 1956, p 67-70, U
- Grigor'yev, Yu. G., "Problem of Primary Functional Changes of the Cerebral Cortex Following Irradiation, Part 2," Vestnik Rentgenologii i Radiologii, v 31, no 2, 1956, p 3-7, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Gurvits, S. S., Mery Zashchity Rabotayushchikh s Radioaktivnymi Veshchestvami (Protective Measures for Those That Work With Radioactive Substances), V. M. Zhdanov, editor, Medgiz, 1958, 98 p, U
- Gusev, N. G., Gamma Izlucheniye Radioaktivnykh Izotopov i Produktov Deleniya; Teoriya i Tablitsy (Gamma Radiation of Radioactive Isotopes and Fission Products; Theory and Tables), Moscow, 1958, 208 p, U
- Il'yina, L. I., Blokhina, V. D., and Uspenskaya, M. S., "Effect of Ionizing Radiations on Proteins of Structural Elements of Hepatic Cellular Tissue," Meditsinskaya Radiologiya, v 2, no 4, 1957, p 23-30, U
- Isachenko, V. B., "Change in the Body's Reaction to Barbiturates and the Awakening Effect of Corazol after Total Body Irradiation," Meditsinskaya Radiologiya, v 1, no 5, 1956, p 59-64, U
- Isachenko, V. B., "Prophylactic Action of Some Cholinolytic Preparations and Thio Compounds in Radiation Injuries," Vestnik Rentgenologii i Radiologii, v 31, no 5, 1956, p 9-15, U
- Istomina, A. G., and Keyirim-Markus, I. B., "Experimental Installation for the Irradiation of Animals by "ENO-1" Neutron Fluxes (Report 2)," Meditsinskaya Radiologiya, v 3, no 4, 1958, p 69-75, U
- Ivanitskaya, A. F., "A Study of the Effect of Gamma Rays of Co⁶⁰ on Blood and Connective Tissue Cells of Mice Spleen after Explantation," Doklady Akademii Nauk SSSR, v 124, no 1, 1959, p 209-212, U
- Ivanitskaya, A. F., "Reactivity of Some Cellular Elements of the Axolotl to Total Body Irradiation by X-rays," Izvestiya Akademii Nauk, SSSR, Seriya Biologiya, no 5, 1956, p 85-96, U
- Ivanitskaya, A. F., "Tissue Culture Method for Studying the Effect of X-Rays on the Spleen in Mice," Doklady Akademii Nauk SSSR, v 109, no 6, 1956, p 978-981, U
- Ivanov, A. Ye., "Disorders of Pigment Metabolism in Radiation Sickness," Meditsinskaya Radiologiya, v 2, no 4, 1957, p 18-23, U
- Ivanov, A. Ye., and Sosova, V. G., "Peculiarities of the Inflammatory Reaction of the Skin in Radiation Injuries in Animals," Meditsinskaya Radiologiya, v 1, no 6, 1956, U
- Kachur, L. A., Petrov, V. A., Pobedinskiy, M. N., and Semenov, L. F., Luchevaya Bolezn' (Radiation Sickness), Moscow, Medgiz, 1956, 95 p, U
- Kalashnikov, B. P., "Effect of Gamma Rays on the Bioelectrical Activity of the Retina," Doklady Akademii Nauk SSSR, v 104, no 1, 1955, p 64-67, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Kalinin, I. A., and Vertebnyy, P. Ya., "Calculations of Physical Doses of Gamma Radiation," Zhurnal Fizicheskoy Khimii, v 30, no 2, 1956, p 457-463, U
- Karelina, Z. M., "Conference on Sequelae of Injuries Caused by the Effects of Ionizing Radiation," Meditsinskaya Radiologiya, v 2, no 3, 1957, p 86-89, U
- Kasavina, B. S., and Spektor, Ye. B., "Free Amino Acids of the Bone Marrow and Changes in Them under the Effect of X-Ray Irradiation," Meditsinskaya Radiologiya, v 1, no 3, 1956, p 72-80, U
- Kashchenko, L. A., "Effect of Radioactive Iodine on the Hypophysis and Ovaries in Mammals," Meditsinskaya Radiologiya, v 1, no 2, 1956, p 70-75, U
- Kashchenko, L. A., and Pushnitsyna, A. D., "Physiological Shifts Arising in an Organism Due to Irradiation of Sex Glands by X-Rays," Vestnik Rentgenologii i Radiologii, v 31, no 4, 1956, p 3-11, U
- Kaulen, D. R., "Effects of X-Irradiation on the Formation of Diphtherial Antitoxin," Meditsinskaya Radiologiya, v 1, no 6, 1956, p 51-56, U
- Kedrova, Ye. M., "Effect of ACTH on the Survival and Sulfhydryl Compound Content of Soluble Liver Proteins of White Rats Irradiated with Roentgen Rays," Meditsinskaya Radiologiya, v 2, no 2, 1957, p 42-46, U
- Kerova, N. I., "Polynuclease Activity of the Skin in Radiation Sickness," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 5, 1956, p 90-93, U
- Keylina, R. Ya., "Effect of Total Body X-Ray Irradiation of Animals on Glycogenolysis," Biokhimiya, v 20, no 4, 1955, p 420-424, U
- Kharchenko, A. M., and Vinokurov, I. N., "Functional and Histomorphological Changes in the Skin of Rabbits Following Applications of Radioactive Phosphorus," Vestnik Venerologii i Dermatologii, no 5, 1955, p 14-18, U
- Khenokh, M. A., and Lapinskaya, E. M., "Effect of Beta-Irradiation of Radioactive Phosphorus on Amino Acids," Doklady Akademii Nauk SSSR, v 102, no 5, 1955, p 993-996, U
- Khomutovskiy, O. A., "Blastomogenic Effect of Radioactive Strontium," Fiziologichnyy Zhurnal (Ukrainskiy), v 3, no 6, 1957, p 125-130, U
- Khomutovskiy, O. A., "Concerning the Question of Accelerating Ca⁴⁵ Elimination from an Organism," Sbornik Nauchnoy Raboti po Radiologii i Rentgenologii, Kievskogo Instituta Uovershenstvovaniya Vrachey (Compilation of Scientific Works on Radiology and Roentgenology, Kiev. Institute for the Advanced Training of Physicians), 1957, p 49-57, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Khromov, B. M., "Effects of Ionizing Radiation on the Bones," Ortopediya, Travmatologiya i Protezirovaniye, v 17, no 5, 1956, p 73-78, U
- Khruleva, L. N., "Simultaneous Study of Conditioned Reflexes of the Serous and Mucous Membranes of the Salivary Glands, Report 2; Conditioned Reflexes of the Serous and Mucous Membranes of the Salivary Glands of Dogs under the Effect of Radiation," Trudy Instituta Vysshey Nervnoy Deyatel'nosti, Seriya Fiziologii, v 2, 1956, p 267-272, U
- Kirpichnikova, Ye. S., Shapiro, N. I., Belitsina, N. V., and Ol'shevskaya, L. V., "The Influence of Ionizing Radiation on the Cells of Bone Marrow of Mice," Zhurnal Obshchey Biologii, v 17, no 5, 1956, p 340-354, U
- Kiselev, P. N., "Biological Action of Radioactive Phosphorus," Vestnik Rentgenologii i Radiologii, v 30, no 1, 1955, p 3-9, U
- Kiselev, P. N., and Buzini, P. A., "Lowering the Permeability of Irradiated Tissue Through the Use of Certain Substances," Vestnik Rentgenologii i Radiologii, v 30, no 5, 1955, p 17-26, U
- Kiselev, P. N., Buzini, P. A., and Semina, V. A., "Specificity of Protein Denaturation in the Body Following X-Ray Irradiation," Vestnik Rentgenologii i Radiologii, v 30, no 3, 1955, p 3-9, U
- Kiselev, P. N., and Karpova, Ye. V., "Effect of Preliminary Penetrating Radiations on the Course of Bacterial Toxicosis," Meditsinskaya Radiologiya, v 1, no 2, 1956, p 23-29, U
- Kiselev, P. N., and Karpova, Ye. V., "Peculiarities of Specific Prevention of Bacterial Toxicosis in Acute Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 4, 1956, p 31-35, U
- Kivman, G. Ya., "Antibiotics and Radiation Disease," Priroda, v 45, no 3, 1956 p 105-107, U
- Klimenko, O. S., "Effect of a Single General X-ray Irradiation on the Ascorbic Acid Content of the Blood and Tissues," Fiziologichnyy Zhurnal (Ukrainskiy), v 3, no 3, 1957, p 117-122, U
- Kolen'ko, A. B., "Diseases of the Organs of Sight in Radiation Sickness," Oftalmologicheskiy Zhurnal, v 11, no 5, 1956, p 264-271, U
- Komarova, O. I., "Changes in the Morphological Composition of Blood in Rabbits under the Influence of Beta-Radiation During Blood Loss," Meditsinskaya Radiologiya, v 1, no 6, 1956, p 21-24, U
- Komarovskiy, A. N., "Special Features in Building Heavy Concrete Shieldings for Reactors and Accelerators," Stroitel'naya Promyshlennost', no 2, 1958, p 2, U

UNCLASSIFIED BIBLIOGRAPHY

- Komarovskiy, A. N., "Evaluation of the Expediency of Using Heavy Concrete for Radiation Shields," Atomnaya Energiya, v 4, no 5, 1958, p 437-442, U
- Komarovskiy, A. N., Zashchitnyye Oboloshki Yadernykh Reaktorov (Shields for Nuclear Reactors); Moscow, Atomizdat, 1958, 66 p, U
- Konstantinova, M. S., "Changes of the Lymphoid Tissue of the Spleen in Mice Soon After Gamma-Irradiation," Meditinskaya Radiologiya, v 2, no 3, 1957, p 14-19, U
- Kornilov, A. N., "Motor Function of the Gastrointestinal Tract in Radiation Sickness," Voyenno Meditsinskiy Zhurnal, no 3, 1956, p 19-25, U
- Korobkina, I. P., "In the Atomic Pavilion of the All-Union Industrial Exhibit (Radiation Medicine Division)," Atomnaya Energiya, v 3, no 7, 1957, p 76-78, U
- Korogodin, V. I., and Polikarpov, G. G., "Primary Processes in Irradiation Injuries," Uspekhi Sovremennoy Biologii, v 44, no 1, 1957, p 93-102, U
- Kovalev, Ye. Ye., and Osanov, D. P., "Effect of the Length of a Flat Source on the Attenuation of Gamma Rays in Shielding," Atomnaya Energiya, v 2, no 6, 1957, p 555-558, U
- Kozlov, M. Ya., "The Condition of Hearing Following Radiation Sickness," Meditinskaya Radiologiya, v 3, no 4, 1958, p 64-69, U
- Koznova, L. B., "Olfactory Disturbances in People Subjected to Radiation Effects," Meditinskaya Radiologiya, v 2, no 2, 1957, p 26-30, U
- Krasin, A. K., Energeticheskiye Yadernyye Reaktory (Atomic Power Reactors), Moscow, "Znaniye," 1957, 36 p, U
- Krayevskiy, N. A., "Some Results and Possible Prospects in Research on Blood Changes in Radiation Sickness," Meditinskaya Radiologiya, v 1, no 3, 1956, p 6-11, U
- Krestinskaya, T. V., "Effect of X-Rays on the Neural Elements of the Cornea," Doklady Akademii Nauk SSSR, v 103, no 2, 1955, p 243-246, U
- Kruger, Yu. A., and Yelkhovskaya, Ye. S., "Changes in the Physicochemical Properties Due to Gamma-Ray Effects," Biofizika, v 3, no 6, 1958, p 711-716, U
- Kryzhanovskiy, G. N., and Lebedev, N. N., "Effect of Total Body Irradiation with X-Rays on the Action of Antitetanus Serum," Meditinskaya Radiologiya, v 1, no 3, 1956, p 59-62, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Kukhtevich, V. I., and Tsypin, S. G., "Physical and Engineering Problems in Designing Small-Size Shields," Atomnaya Energiya, v 5, no 4, 1958, p 393-402, U
- Kuzin, A. M., "Biological Action of Ionizing Radiations in the Light of Modern Views of the Nature of Deoxyribonucleic Acid," Izvestiya Akademii Nauk, SSSR, Seriya Biologiya, no 3, 1957, p 273-284, U
- Kuzin, A. M., and Budilova, Ye. V., "Change in the Structural Viscosity of Nucleic Acids of the Brain and Spleen under the Effect of Ionizing Radiation," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 79-83, U
- Kuzin, A. M., Eydus, L. Kh., and Strazhevskaya, N. B., "Investigations of the Effect of Roentgen Rays on Certain Properties of Protein and Its Synthesis with the Aid of Labeled Compounds," Doklady Akademii Nauk SSSR, v 102, no 2, 1955, p 267-270, U
- Kuzin, A. M., and Plyshevskaya, Ye. G., "Role of Complex Compound Formation in the Radioresistance of Myosin," Biofizika, v 1, no 2, 1956, p 141-142, U
- Kuzin, A. M., and Strazhevskaya, N. B., "Biochemical Effect of Ionizing Radiation," Itogi Nauki, Biologicheskkiye Nauki, no 1, 1957, p 50-99, U
- Kuznetsova, M. N., "Placental Histology in Radiation Sickness; Experimental Study," Akusherstvo i Ginekologiya, v 33, no 4, 1957, p 50-55, U
- Kuznetsova, N. N., "On the Role of Humoral Factors in the Organism's Response to Ionizing Radiation," Zhurnal Obshchey Biologii, v 19, no 1, 1957, p 53-63, U
- Lakhanin, V. V., and Shilov, N. M., Korabl' na Atomnoy Energii (Atomic-Powered Ship). Moscow, "Morskoy Transport," 1957; 151 p; U
- Lastovskiy, R. P., Vaynshteyn, Yu. I., Dyatlova, N. M., and Kolpakova, I. D., "New Complexions, Report 3: Benzylaminodiacetic Acid and Triamine-dibenzylidiphenylmethanehexaacetic Acid," Zhurnal Analiticheskoy Khimii v 13, no 1, 1958, p 31-35, U
- Layne, V. F., "Easy method for a General Hematological Examination of Persons Affected by Penetrating Radiation," Voyenno Meditsinskiy Zhurnal, no 7, 1956, p 33-34, U
- Lazarev, N. V., Karlinskaya, R. S., and Felistovich, G. I., "The Effect of Some Pyrimidine Derivatives on the Course of Spontaneous Leukosis in Mice," Voprosy Onkologii, v 2, no 2, 1956, p 216-220, U
- Lebedinskiy, A. V., "Some Neuroendocrine Relations in the Reaction of the Organism to Ionizing Radiations," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 35-41, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Lebedinskiy, A. V., "Reaction of the Cardiovascular System to Ionizing Radiation," Meditsinskaya Radiologiya, v 1, no 2, 1956, p 3-9, U
- Lebekhov, P. I., "The Course of Thermal Burns of the Cornea in Radiation Sickness in Rabbits," Vestnik Oftal'mologii, v 71, no 1, 1958, p 3-10, U
- Letavet, A. A., "Problems of Hygiene in Radiology," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 11-22, U
- Liberman, A. N., "Using Ionizing Radiations in Food Preservation," Voprosy Pitaniya, v 16, no 6, 1957, p 52-56, U
- Lipatova, N. Ya., Mayorov, F. P., and Pavlov, B. V., "Effect of Total Body Irradiation on the Higher Nervous Activity in Dogs," Trudy Instituta Fiziologii imeni I Beritashvili, v 6, 1957, p 310-321, U
- Lipkan, N. F., "Conversions of Nucleic Acids in the Skin in Radiation Sickness," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 5, 1956, p 86-89, U
- Lipkan, N. F., "Structural Proteins of the Skin in Radiation Lesions," Ukrainskiy Biokhimichnyy Zhurnal, v 29, no 1, 1957, p 90-95, U
- Litvinov, N. N., "Dynamics of the Development of Bone Sarcomas Originating under the Influence of Radioactive Substances," Voprosy Onkologii, v 2, no 3, 1956, p 285-294, U
- Litvinov, N. N., and Makarycheva, R. I., "Roentgeno-Morphological Study of the Development of Osteogenic Sarcomas in Animals Poisoned by Radioactive Strontium," Vestnik Rentgenologii i Radiologii, v 33, no 5, 1958, p 36-44, U
- Livanov, M. N., "Central and Peripheral Interrelationships in Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 1, 1956, p 19-27, U
- Livshits, N. N., "Conditioned Reflex Activity in Dogs as Affected by Continuous Ionizing Irradiation of the Head," Biofizika, v 1, no 3, 1956, p 221-231, U
- Livshits, N. N., "Effect of X-Ray Irradiations of the Cerebellar Region on Conditioned Reflex Activity in Dogs," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 50-62, U
- Livshits, N. N., "Effect of Repeated Total X-Ray Irradiation on Conditioned Food Reflexes in Dogs," Trudy Instituta Biologicheskoy Fiziki, no 1, 1955, p 63-78, U
- Lubenskiy, Yu. M., "Changes in the Secretory Function of the Kidneys in Acute Radiation Sickness; Experimental Research," Urologiya, v 21, no 3, 1956, p 33-38, U

UNCLASSIFIED BIBLIOGRAPHY

- Luchnik, N. V., "Effect of Fractionation and Size of the Dose on the Cytological Effect of Radiation," Biofizika, v 1, no 1, 1956, p 633-641, U
- Luk'yanchenko, B. Ya., "Some Problems of the Contemporary Idea of the Initial Phases of Radiation Injuries," Vestnik Rentgenologii i Radiologii, v 31, no 5, 1956, p 68-73, U
- Manoylov, S. Ye., Grayevskaya, B. M., and Shimanovskaya, K. B., "Chronic Effect of Radium Salts on the Animal Organism," Vestnik Rentgenologii i Radiologii, v 30, no 6, 1955, p 43-49, U
- Manoylov, S. Ye., and Ivanov, K. P., "Certain Characteristics of the Biological Effect of Penetrating Radiation," Doklady Akademii Nauk SSSR, v 105, no 1, 1955, p 180-181, U
- Marey, A. N., "Radioactive Wastes and Public Health Problems," Meditzinskaya Radiologiya, v 1, no 4, 1956, p 3-7, U
- Marey, A. N., "Some Problems in the Sanitary Protection of Waters from Radioactive Contamination," Gigiyena i Sanitariya, v 21, no 9, 1956, p 7-11, U
- Marey, A. N., "Water Organisms as a Sanitary Index of the Pollution of a Body of Water by Radioactive Substances," Gigiyena i Sanitariya, v 20, no 8, 1955, p 3-9, U
- Marey, A. N., Saurov, M. M., and Lebedeva, G. D., "The Problem of the Transmission of Radioactive Strontium Through the Food Chain from Open Reservoirs to Human Organisms," Meditzinskaya Radiologiya, v 3, no 1, 1958, p 69-76, U
- Markaryan, M. K. "Pollution of Water Sources by Radioactive Matter and Hygienic Problems of the Water Supply," Voyenno Meditsinskiy Zhurnal, no 10, 1955, p 43-49, U
- Maslova, M. N., "Effect of Radioactive Radiation (Radium Emanation) on Nerve Accommodation," Ucheniye Zapiski, Leningrad State University, no 222, 1955, p 60-65, U
- Matuzov, N. I., "Hygienic Significance of Changes in Food and Water Induced by Ionizing Radiations," Voyenno Meditsinskiy Zhurnal, no 1, 1956, p 49-53, U
- Mayorov, F. P., Pavlov, B. V., and Lipatova, N. Ya., "Changes in the Higher Nervous Activity of Dogs under the Effect of X-Irradiation of the Cervical Section of the Vegetative Nervous System" Trudy Instituta Fiziologii imeni Beritashvili, v 5, 1956, p 79-102, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Meysel', M. N., Pomoshchnikova, N. A., and Sokolova, T. S., "The Influence of Blocking Intracellular Structures on Cell Radiosensitivity," Doklady Akademii Nauk SSSR, v 117, no 1, 1957, p 142-145, U
- Meysel', M. N., and Sondak, V. A., "Fluorencence Microscopic Investigation of Early Changes in the Bone Marrow and Blood of Irradiated Animals," Biofizika, v 1, no 3, 1956, p 262-273, U
- Mirimova, T. D., "Mechanism of the Etiology of Hemorrhagic Diathesis in Growing Animals after Total Body X-Irradiation," Meditinskaya Radiologiya, v 1, no 4, 1956, p 55-61, U
- Morozov, A. I., and Nagrodskaya, A. Z., "Prevention of Radiation Injuries to the Eyes in Radiotherapy," Vestnik Rentgenologii i Radiologii, v 31, no 4, 1956, p 48-51, U
- Moskalev, Yu. I., and Strel'tsova, V. N., "Effects of Continuous Inflow of Radioactive Cerium Through the Gastrointestinal Tract on the System of Rat," Meditinskaya Radiologiya, v 1, no 6, 1956, p 14-20, U
- Movsesyan, M. A., and Oganesyan, A. A., "Changes in the Electrical Activity of the Heart and Brain of Animals in Acute Radiation Sickness," Izvestiya Akademii Nauk, Armyanskoy SSR, Seriya Biologicheskikh i Sel'skokhozyaystvennykh Nauk, v 9, no 8, 1956, p 13-20, U
- Mytareva, L. V., "Process of Tissue Respiration and of Associated Oxidative Phosphorylation in Radiation Sickness in Experimental Animals," Meditinskaya Radiologiya, v 1, no 1, 1956, p 35-39, U
- Nesterenko, G., "The Way to an Atomic Aircraft Engine," Kryl'ya Rodiny, no 12, 1956, p 10-12, U
- Nesterenko, G., "Atomic Aircraft of the Future," Kryl'ya Rodiny, no 1, 1956, p 12-14, U
- Nikitenko, R. D., "Effect of Trace Doses of Radioactive Strontium on the Peripheral Blood Picture in Rabbits," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 6, 1956, p 67-72, U
- Okulov, N. M., "Effect of Acute Radiation Sickness on the Change in Methionine Absorption by the Gastrointestinal Tract," Meditinskaya Radiologiya, v 1, no 5, 1956, p 41-45, U
- Oleynikova, T. N., "Morphological Changes in the Peripheral Nervous System Caused by Ionizing Radiation," Vrachebnoye Delo, no 2, 1956, p 127-132, U
- Orlov, A. S., "Inclusion of Phosphorus in Stable and Labile Protein Compounds Bound with Nucleic Acids in Certain Organs of White Rats Following Total Body Roentgen Irradiation," Meditinskaya Radiologiya, v 1, no 2, 1956, p 65-70, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Orlov, Vladimir, "On the Threshold of the Atomic Age," Teknika Molodezhi, no 11, 1955, p 1-6, U
- Orlova, L. V., and Rodionov, V. M., "Steroid Hormones in Adrenal Blood in Irradiated Rabbits," Meditsinskaya Radiologiya, v 2, no 2, 1957, p 54-59, U
- Osipov, Ye., "Protective Appliances Used in Medical Radiology," Meditsinskiy Rabotnik, no 94 (1633), 22 Nov 57, p 4, U
- Osipov, Ye., "Protective Clothing Against Radioactive Contamination of Air," Meditsinskiy Rabotnik, no 33, 25 Apr 58, p 4, U
- Pasynskiy, A. G., Volkova, M. S., and Blokhina, V. P., "Isotopic Determination of Denaturation Changes in Proteins," Doklady Akademii Nauk SSSR, v 101, no 2, 1955, p 317-320, U
- Pavlova, Ye. B., and Rabkina, A. Ye., "Some Data on the Effect of Radiation on Functional Conditions of the Adrenal Cortex," Problemy Endokrinologii i Gormonoterapii, v 3, no 4, 1957, p 3-9, U
- Perel'man, R. G., Yadernyye Dvigateli (Nuclear Engines), Moscow, Znaniye, 1958, 54 p, U
- Perel'man, R. G., "Atomic Engines," Nauka i Zhizn', no 1, 1956, p 26-35, U
- Petrov, P. A., Yadernyye Energeticheskiye Ustanovki (Nuclear Power Installations), Moscow, Gosudarstvennoye Energeticheskoye Izdatel'stvo, 1958, 256 p, U
- Petrov, V. A., "Apparatus for Monitoring Protection From Gamma Radiation (BB-DKZ)," Meditsinskaya Radiologiya, v 2, no 3, 1957, p 85, U
- Petrova, A. S., "Blood Platelet Change in Acute Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 4, 1956, p 52-56, U
- Petrova, N. D., Polikarpova, L. I., Sbitneva, M. F., Tutochkina, L. T., and Shikhodyrov, V. V., "Protective Effect of Chondroitin Sulfate Against Lethal Doses of X-rays," Meditsinskaya Radiologiya, v 3, no 4, 1958, p 34-41, U
- Pinchuk, V. G., "Morphological Changes in the Pancreas in White Rats in Acute Radiation Sickness Caused by Intraperitoneal Injection of Radioactive Strontium," Vrachebnoye Delo, no 4, 1957, p 427, U
- Pinus, A. A., "Pathomorphological Changes in Animals after Poisoning with Radon Through Respiratory Organs," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 55-63, U

UNCLASSIFIED BIBLIOGRAPHY

- Pobedinskiy, M. N., "Reaction of Bone Tissue to Roentgen Irradiation and to Radioactive Substances," Vestnik Khirurgii imeni I. I. Grekova, v 76, no 11, 1955, p 116-121, U
- Pogodayev, K. I., "Studying the Swelling and Moisture Content of Brain Tissues in Rats under Conditions of Excitation and Ionizing Radiation," Ukrainskiy Biokhimichnyy Zhurnal, v 29, no 4, 1957, p 428-436, U
- Pokrovskiy, G. I., "Atomic Airplane of the Future," Tekhnika Molodezhi, no 8, 1955, p 22, U
- Polyak, B. L., "Lesions of the Eyes Induced by Penetrating Radiation," Voyenno Meditsinskiy Zhurnal, no 9, 1955, p 13-16, U
- Ponomarenko, N. Ye., "Activity of Blood Cholinesterase and Some Tissues in Animals under the Effect of Ionizing Radiation in Lethal and Sublethal Doses," Meditsinskaya Radiologiya, v 1, no 5, 1956, p 13-16, U
- Poplavskiy, N. K., "Changes in Reflex Excitability Following Total Body X-ray Irradiation," Meditsinskaya Radiologiya, v 1, no 5, 1956, p 10-13, U
- Prokudina, Ye. A., "Changes in Adenosinetriphosphatase Activity During the Development of Acute and Subacute Forms of Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 6, 1956, p 46-51, U
- Reynberg, S. A., "Criticism of Some Basic Concepts in Radiobiology," Vestnik Rentgenologii i Radiologii, v 30, no 5, 1955, p 3-10, U
- Rozenblit, Ye. I., and Manikov, M. E., "Effect of Roentgen Irradiation on the Functional State of the Central Nervous System in Closed Brain Injuries; Clinical Chronaximetric Analysis," Zhurnal Nevropatologii i Psikhatrii imeni S. S. Korsakova, v 55, no 3, 1955, p 210-213, U
- Rozhdestvenskaya, M. A., "Hemoglobin Changes Due to the Effect of Roentgen Irradiation," in: Aktual'nyye Voprosy Perelivaniya Krovi (Pressing Problems of Blood Transfusion), Leningrad, v 5, 1957, p 81-85, U
- Rubanovskaya, A. A., and Ushakova, V. F., "Accumulation of Radioactive Strontium in Young Rats Born to and Nursed by Mothers who had Received Sr⁸⁹ and Sr^{89 + 90} Orally Over a Long Period," in: Materialy po Toksikologii Radioaktivnykh Veshchestv; Strontsiy, Tseziy, Ruteniy, Radon (Material on the Toxicology of Radioactive Substances Strontium, Cerium, Ruthenium, Radon), Moscow, Medgiz, v 1, 1957, p 23-31, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Ruderman, A. I., Zayrat'yants, V. B., and Sherman, L. M., "Weakening of Local Radiation Reactions," Meditsinskaya Radiologiya, v 1, no 6, 1956, p 61-65, U
- Rusanov, A. M., "Resistance of White Mice to X-rays in Various Stages of Development," Vestnik Rentgenologii i Radiologii, v 30, no 3, 1955, p 17-19, U
- Sanotskiy, V. A., "Some Questions on the Toxicology of Radioactive Substances," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 28-35, U
- Samundzhan, Ye. M., "Changes in Conditioned Reflex Activity in Mice Caused by Beta and Gamma Radiation," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 3, 1956, p 144-154, U
- Sanotskiy, V. A., "Some Problems in the Toxicology of Radioactive Substances," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 28-35, U
- Savitskiy, I. V., and Leshchinskiy, V. A., "Effect of Various Doses of Radioactive Phosphorus on Protein Metabolism," Meditsinskaya Radiologiya, v 1, no 6, 1956, p 82-90, U
- Seliverstova, L. A., "Effect of X-rays on Pantothenic Acid Synthesis and Accumulation in Yeasts," Zhurnal Obshchey Biologii, v 18, no 5, 1957, p 360-365, U
- Semenov, L. F., and Prokudina, Ye. A., "Adrenalin Used in Conjunction With Acetylcholine in the Prophylaxis of Radiation Sickness," Meditsinskaya Radiologiya, v 2, no 3, 1957, p 35-40,
- Semenov, L. F., and Prokudina, Ye. A., "Use of Compounds Containing Sulfur in the Prevention of Radiation Sickness," Meditsinskaya Radiologiya, v 1, no 4, 1956, p 70-75, U
- Shabadash, A. L., "Cytological and Histochemical Study of the Action of Ionizing Radiations on the Animal Organism," Itogi Nauki, Biologicheskkiye Nauki, no 1, 1957, p 171-188, U
- Shal'nov, M. I., "Tissue Doses From Fast and Superfast Neutrons," Atomnaya Energiya, v 4, no 6, 1958, p 557-570, U
- Shaternikov, V. A., "Absorption Disorders in the Small Intestine in Radiation Injuries of Animals Kept on Different Food Rations," Meditsinskaya Radiologiya, v 1, no 4, 1956, p 61-67, U
- Shchepot'yeva, Ye. S., "The Energy of Different Types of Radiation and Some Laws which Govern the Action of Radiation on Biological Objects," Atomnaya Energiya, v 1, no 4, 1956, p 139-146, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Shershever, S. M., "Lesions of the Brain in Radiation Sickness; Experimental Investigations," Zhurnal Nevropatologii i Psikiatrii imeni S. S. Korsakova, v 57, no 3, 1957, p 393-401, U
- Shiffer, I. V., "Mechanism of Repair of Tissue Lesions Induced by X-rays," Meditsinskaya Radiologiya, v 2, no 4, 1957, p 38-44, U
- Shkapina, V. A., "Morphology of the Blood During Inhibition of the Central Nervous System and Irradiation by Gamma Rays," Vrachebnoye Delo, no 4, 1957, p 423-425, U
- Shnol', S. Ye., "Some Details for Working with Radioactive Isotopes," Byulleten' Eksperimental'noy Biologii i Meditsiny, v 39, no 4, 1955, p 76-79, U
- Shramenko, A. I., Zashchita ot Izlucheniya Radiya i ego Zameniteley v Radioterapevticheskikh Uchrezhdeniyakh, (Protection from the Radiation of Radium and its Substitutes in Radiotherapeutic Institutions), Kiev, 1956, 32 p, U
- Shtukkenberg, Yu. M., Kalugin, K. S., and Bobkov, A. I., "Electrofilter for Determining the Concentration of Active Aerosols," in: Issledovaniya v Oblasti Dozimetrii Ioniziruyushchikh Izlucheny (Studies in the Field of Ionizing-Radiation Dosimetry), Moscow, Academy of Sciences, USSR, 1957, p 132-153, U
- Shur'yan, I. M., "Changes in the Blood and Hemopoietic Organs in Animals with Radiation Sickness Caused by X-rays and the Administration of P^{32} ," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 5, 1956, p 94-100, U
- Shur'yan, I. M., "Effect of External and Internal Irradiation on the Peripheral Blood and Bone Marrow of Rabbits," Fiziologichnyy Zhurnal (Ukrainskiy), v 1, no 3, 1955, p 109-117, U
- Sidorik, Ye. P., "Effect of Gamma and Beta-Radiation on the Development and Course of Schwartzman Phenomenon," Fiziologichnyy Zhurnal (Ukrainskiy), v 2, no 6, 1956, p 73-80, U
- Simonovich, N. M., and Rogacheva, E. D., "Detection of Ionizing Radiation," Fizika v Shkole, v 16, no 2, 1956, p 75-76, U
- Sivetseva, V. N., "Course of Paratyphoid Infection in Animals Subjected to General X-Ray Irradiation," Meditsinskaya Radiologiya, v 1, no 3, 1956, p 52-59, U
- Skvirskaya, K. B., "Concerning Neurological Symptoms Following Therapy by Radioactive Cobalt," Zhurnal Nevropatologii i Psikiatrii imeni S. S. Korsakova, v 56, no 11, 1956, p 877-881, U
- Sokolov, S. S., "Healing of Wounds in Radiation Sickness," Vestnik Rentgenologii i Radiologii, v 31, no 1, 1956, p 30-41, U

UNCLASSIFIED BIBLIOGRAPHY

- Sokolov, V. S., "Safety Problems in Gamma-Ray Radiography of Metals," Bezopasnost' Truda v Promyshlennosti, no 9, 1957, p 17-20, U
- Sondak, V. A., "Injury of the Organism Caused by the Introduction of Small Doses of Radioactive Phosphorus," Biofizika, v 1, no 3, 1956, p 211-220, U
- Sorokina, M. I., "Morphological Changes in the Nerve Cells of the Medulla Oblongata of White Mice During General X-Ray Irradiation," Doklady Akademii Nauk SSSR, v 106, no 1, 1956, U
- Strashinin, A. I., "The Effectiveness of the Use of Cysteineamine Preparations for the Prophylaxis of Radiation Sickness in the Clinic," Meditinskaya Radiologiya, v 2, no 3, 1957, p 52-54, U
- Strashinin, A. I., "Effect of Total Body Irradiation with X-Rays and Radiation with Radioactive Cobalt on the Excretion of Ascorbic Acid in the Urine of Guinea Pigs," Vestnik Rentgenologii i Radiologii, v 31, no 6, 1956, p 3-8, U
- Strelin, G. S., "Some Features of the Biological Action of Ionizing Radiations," Meditinskaya Radiologiya, v 1, no 1, 1956, p 27-35, U
- Strel'tsova, V. N., "Pathological Anatomy of Lesions Induced by Radioactive Lanthanum," Meditinskaya Radiologiya, v 2, no 4, 1957, p 78-83, U
- Strel'tsova, V. N., and Moskalev, Yu. I., "Late Results of Single and Repeated Administrations of Radioactive Isotopes (Ce^{144} , Ru^{106} , $Sr^{89,90}$) Through the Gastrointestinal Tract," Meditinskaya Radiologiya, v 2, no 3, 1957, p 23-24, U
- Syrkin, A. L., "Investigation of Hydrophilic Properties of the Skin by Using Radioactive Sodium; Mechanism of the Blister Test," Terapevticheskiy Arkhiv, v 28, no 5, 1956, p 59-63, U
- Syromyatnikova, N. V., "Certain Aspects of the Protein Function of the Liver Observed in the Course of Radiation Sickness," Doklady Akademii Nauk SSSR, v 111, no 3, 1956, p 730-732, U
- Tagibekov, E. G., "Effect of Small Doses of Radioactive Phosphorus on the Knitting Process of Bone Tissue Following Subperiosteal Resection," Vrachebnoye Delo, no 5, 1957, p 499-501, U
- Tarasenko, N. Yu., "Concerning the Question of Organization of Cleaning Clothing Made of Cotton Fabric from Radioactive Contamination," Meditinskaya Radiologiya, v 1, no 5, 1956, p 91-96, U
- Tarasenko, N. Yu., and Prostakova, I. G., "Hygienic Problems During Work at Atomic Electric Power Plants," Gigiyena Truda i Professional'nye Zabolevaniya, v 1, no 1, 1957, p 10-14, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Toroptysev, I. V., and Sokolova, N. V., "Morphological Characteristics of Radiation Sickness Induced by a Single Irradiation with 10 Mev Betatron," Meditsinskaya Radiologiya, v 1, no 4, 1956, p 41-47, U
- Tret'yakova, K. A., "Cholesterol and Ascorbic Acid Content of Rat Adrenal Cortex Following Effects of Ionizing Radiation," Problemy Endokrinologii i Gormonoterapii, v 3, no 3, 1957, p 72-74, U
- Trincher, K. S., "On the Decreased Resistance of Irradiated Erythrocytes in an Alkaline Medium and the Relationship of the Latent Period of Alkaline Hemolysis to Radiation Dose," Biofizika, v 4, no 1, 1959, p 78-83, U
- Triumfova, L. N., "Effect of Vitamin P Preparations on the Hemorrhagic Syndrome in Early Stages of Acute Radiation Sickness," Vrachebnoye Delo, no 8, 1957, p 817-819, U
- Troitskiy, V. L., and Tumanyan, M. A., "Using Rabbits to Study Autoinfection in Radiation Sickness," Vestnik Rentgenologii i Radiologii, v 30, no 2, 1955, p 3-6, U
- Trubachev, V. I., "Healing of Surgically Treated Wounds by Using Streptomycin in Experimental Radiation Sickness," Vestnik Khirurgii imeni I. I. Grekova, v 79, no 8, 1957, p 99-103, U
- Tsy-pin, A. B., "Effect of Ionizing Radiation on the Condition of the Visual Analyser in Rabbits," Meditsinskaya Radiologiya, v 1, no 5, 1956, p 22-30, U
- Tumanyan, M. A., "Radiation Sickness in Monkeys and the Study of the Effect of Radiation on Latent Dysenteric Infection in Monkeys," Vestnik Rentgenologii i Radiologii, v 30, no 3, 1955, p 9-17, U
- Tumanyan, M. A., and Izvekova, A. V., "Effect of Ionizing Radiation on Immunity to Enteric Infections," Meditsinskaya Radiologiya, v 1, no 1, 1956, p 59-65, U
- Tuzhilkova, T. N., "Effects of X-rays on the Regeneration of Muscular Tissue," Meditsinskaya Radiologiya, v 1, no 4, 1956, p 14-21, U
- Udgodskaya, L. N., and Yudin, Yu. G., "Effect of Physical Effort on the Clinicomorphological Characteristics of Acute Radiation Sickness," Meditsinskaya Radiologiya, v 2, no 4, 1957, p 68-74, U
- Umanskiy, Yu. A., "Effect of Radioactive Iron (Fe^{59}) on the Growth of Inoculated Tumors," Vrachebnoye Delo, no 11, 1956, p 1217, U
- Uspenskiy, Yu. N., "Effect of Ionizing Radiation on the Function of Digestive Organs," Meditsinskaya Radiologiya, v 1, no 1, 1956, p 66-68, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

- Varvarov, N., "The Aircraft of the Future," Sovetskiy Flot, 12 Jan 57, p 3, U
- Vasilenko, Yu. K., "Change in Periodic Hunger and Gastric Section Following Internal Administration of Radon Water, Report 1," Voprosy Kurortologii Fizioterapii, i Lechebnoy Fizicheskoy Kult'ury, v 22, no 4, 1957, p 45-48, U
- Vasilevskiy, N. N., "A Device for Ridding Pipettes, Syringes and Test Tubes of Radioactive Contamination," Vestnik Rentgenologii i Radiologii, v 31, no 4, 1956, p 64-65, U
- Veksler, Ya. I., "Effect of Radiation on the Permeability of Tissues in Man," Voyenno Meditsinskiy Zhurnal, no 9, 1955, p 16-20, U
- Yeleazarova, M. P., "Effect of Ionizing Radiations on the Choline Content of Certain Organs and Tissues," Vestnik Rentgenologii i Radiologii, v 31, no 2, 1956, p 22-25, U
- Yermakov, G. V., "Atomic Power Plants," Teploenergetika, no 10, 1957, p 88-93, U
- Yermakov, G. V., Moshchnyye Atomnyye Elektrostantsii (Large-Capacity Atomic Power Plants), Moscow, "Znaniye," 1958, p 31, U
- Volkov, L. F., and Yegorova, A. P., "Dynamics of the Blood Complement Titer in Radiation Sickness Combined with Other Lesions," Voyenno Meditsinskiy Zhurnal, no 4, 1956, p 27-30, U
- Volkova, N. I., "Radiation Hygiene Section at the Republic Session of Hygiene Institutes Held at the Institute imeni F. F. Erisman," Meditsinskaya Radiologiya, v 2, no 2, 1957, p 91-92, U
- Volkova, N. I., "Some Labor Hygiene Problems Connected with the Use of Radioactive Isotopes in Ferrous Metallurgy," Gigiyena Truda Professional'nyye Zabolevaniya, v 1, no 2, 1957, p 30-34, U
- Volkova, N. I., and Vershinin, N. I., "Hygiene Section of All-Union Conference on Medical Radiology," Meditsinskaya Radiologiya, v 2, no 2, 1957, p 88-91, U
- Zakutinskiy, D. I., "Sequelae of the Action of Ionizing Radiation," Meditsinskaya Radiologiya, v 2, no 1, 1957, p 22-28, U
- Zaretskaya, Yu. M., "Interceptive Reactions from Lymph Nodes under the Effect of Ionizing Radiation on the Organism," Meditsinskaya Radiologiya, v 1, no 3, 1956, p 20-29, U
- Zayrat'yants, V. B., "Changes of the Skeletal Musculature in Radiation Sickness," Vestnik Rentgenologii i Radiologii, v 30, no 6, 1955, p 32-42, U

UNCLASSIFIED BIBLIOGRAPHY

- Zemlyanov, A. G., "Healing of Fractures and Distribution of Radioactive Phosphorus in the Callus Following Preliminary Total Body Irradiation in Experimental Animals," Vestnik Khirurgii imeni I. I. Grekova, v 77, no 6, 1956, p 59-64, U
- Zhakhova, Z. N., and Braun, A. D., "Creatinuria in Nonpregnant and Pregnant Rats Following Ionizing Irradiation," Meditinskaya Radiologiya, v 1, no 3, 1956, p 80-85, U
- Zhoga, N. A., "Effect of Radioactive Phosphorus on the General Condition and Motor Function of the Gastrointestinal Tract in Dogs," Fiziologichnyy Zhurnal (Ukrainskiy), v 1, no 3, 1955, p 102-108, U
- Zhorno, L. Ya., "Modification of the Ascorbic Acid Content of the Adrenals in Guinea Pigs Irradiated with X-rays," Meditinskaya Radiologiya, v 1, no 1, 1956, p 79-87, U
- Zilber, L. A., Artamonova, V. A., Frank, G. M., and Snezhko, A. D., "Effect of Ionizing Radiations on the Antigenic Properties of Proteins," Meditinskaya Radiologiya, v 1, no 2, 1956, p 17-23, U
- Zisman, G. A., Mir Atoma (The World of the Atom), Moscow, Voenizdat, 1955, 136 p, U
- Zlobinskiy, B. M., Bezopasnost' Rabot s Radioaktivnymi Veshchestvami (Safety in Work with Radioactive Substances), Moscow, Gostekhizdat, 1958, 223 p, U
- Zvorkov, V., "Application of Atomic Energy in Transportation," Promyshlenno-ekonomicheskaya Gazeta, 21 Nov 56, p 4, U
- Zyuzin, I. L., "Effect of Radioactive Isotopes on Electrical Activity of the Brain in Epilepsy," Zhurnal Nevropatologii i Psikiatrii imeni S. S. Korsakova, v 55, no 3, 1955, p 205-209, U
- Zyuzin, I. K., and Zaychkina, T. S., "Effect of Radioactive Isotopes on Artificially Induced Convulsions in Animals," Zhurnal Nevropatologii i Psikiatrii imeni S. S. Korsakova, v 55, no 5, 1955, p 343-344, U
- Meropriyatiya Po Uluchsheniyu Okhrany Truda I Tekhniki Bezopasnosti v Rentgenovskikh i Radiologicheskikh Kabinetakh i Laboratoriyakh Meditsinskikh Uchrezhdeniy Uk SSSR (Measures for Improving Workers' Protection and Accident Prevention in Roentgenological and Radiological Rooms and Laboratories of Medical Institutions in the Ukrainian SSSR), Kiev, 1956, 29 p, U
- "Chronicle," Vestnik Rentgenologii i Radiologii, v 31, no 3, 1956, p 94-95, U

~~UNCLASSIFIED BIBLIOGRAPHY~~

Obmen Veshchestv Pri Luchevooy Bolezni, (Metabolism During Radiation Sickness),
Moscow, 1956, 251 p, U

"Change of Composition and Metabolic Processes of Bone Marrow Following
the Effects of Ionizing Radiation," Trudy Vsesoyuznoy Konferentsii
Po Meditsinskoy Radiologii (Eksperimental'noy Radiologii), Moscow,
Medgiz, 1957, p 130-135, U

"The Teaching of Radiological Hygiene Introduced," Meditsinskiy Rabotnik,
no 29, 11 Apr 58, p 4, U

"Chair of Radiation Hygiene," Meditsinskiy Rabotnik, no 32, 22 Apr 58,
p 2, U

"Measures for Improving the Protection of Medical Personnel Working With
Sources of Ionizing Radiation and Radioactive Substances," Ministry
of Health, USSR, Kiev, Vrachebnoye Delo, no 8, 1958, p 891, U

"Purification of Air From Radioactive Aerosols," Meditsinskiy Rabotnik,
no 96, 2 Dec 58, p 3, U

"Institute of Medical Radiology," Izvestiya, 21 Dec 58, U

"Fizika i Teplotekhnika Reaktorov," (Physics and Heat Engineering of
Reactors), Supplement No. 1 to Atomnaya Energiya for 1958, U