USSR UDC 621.3.035.2

KRAVETSKIY, G. A., DERGUNOVA, V. S., SLAVINA, L. M., GUSEVA, N. P., and SAMOSUDOV, V, V.

"Joining Graphite With Graphite and Metal by Electric-Arc Welding"

Moscow, Tsvetnyye Metally, No 7, Jul 71, pp 44-47

Abstract: A method of joining graphite parts with graphite and metallic parts by means of a metallic interlayer deposited on the surface of the graphite part by the electric-arc welding practice is discussed. The following materials with amean linear expansion coefficient with respect to graphite and metal were investigated for their utilization as interlayers: V, Ti, Mo, W, Zr, Nb, and Kovar. It was found that Ti and Zr are the most promising interlayer materials. The use of Kovar as an interlayer material. is recommended for welding graphite with stainless steel and other steel types. Three illustrations, three tables, six biblio. refs.

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USSR

UDC 669.782.053.2

SHURSHAKOV, A. N., DERGUNOVA, V. S., MEYERSON, G. A., SIZOV, B. A.

"Study of the Effect of Boron Additives on the Carburization of Silicon"

Tugoplavk. karbidy -- V sb. (Refractory Carbides -- collection of works), Kiev, Naukova Dumka Press, 1970, pp 77-82 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G219)

Translation: The effect of boron additives on the carburization rate of molten Si and the growth of the carbide layer formed at the graphite-melt interface is investigated. On introducing boron additives in the amount of 14%, the thickness of the carbide layer at the graphite-melt interface increases, and the C content in the melt increases simultaneously. There are 3 illustrations, 1 table, and a 9-entry bibliography.

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Graphite

USSR

UDC 669.3.035.2

YELYUTIN, V. P., KOSTIKOV, V. I., DERGUNOVA, V. S., SHURSHAKOV, A. N., POSOS'YEVA, G. D., and KHAKIMOVA, D. K.

"Effect of the Degree of Efficiency of a Graphite Grid on the Velocity of its Treatment with Liquid Zirconium"

Tsvetnye Metally, No 4, Apr 71, pp 51-52

Abstract: Studies were continued on the penetration of liquid metals, in this case, zirconium, into the pores of graphite. Previous work showed that the penetration of zirconium into the pores reached a maximum and that zirconium carbide was formed. In the present work, a study was made of the effect of the ideal structure of the porous graphite on the velocity of penetration by the liquid zirconium. Cylindrical samples of carbon 20 mm in diameter and 60 mm in length were prepared from PROG-2400 stock. The samples were fired in an annular kiln at 1250°C for 280 hours, placed in graphite crucibles, covered with coke, and graphitized in a vacuum of 5×20^{-2}mm at 2000, 2400, and 2800°C for one hour.

X-ray diffraction patterns were made to determine the degree of conversion and then the samples were saturated with liquid zirconium at 1800, 2100, and 2250°C. The contact time varied between 5 to 20 sec; the velocity

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USSR

YELYUTIN, V. P., et al., Tsvetnye Metally, No 4, Apr 71, pp 51-52

in the rise of the melt in the pores was determined. X-ray diffraction showed that the samples processed at 2000°C have a turbostratic carbon structure. Thermal processing at 2400 and 2800°C leads to the appearance and breakdown of a three-dimensional ordering. The method of Maur and Mering was used to determine the extent of graphitization. The increase in the height of the melt in the pore with time gives a parabolic curve.

The average velocity of penetration is decreased with an increase in the interplanar constant and is the largest at 2100°C. As the melt penetrates along the surface of the pore, a chemical reaction occurs at the liquid zirconium-graphite interface, forming zirconium decreases as a result of the precipitation of zirconium carbide and a diffusion of carbon across the carbide layer.

The viscosity of the liquid zirconium also increases due to the presence of zirconium carbide and this in turn slows the penetration. The extent of graphitization can change the velocity of the firing process even without temperature changes.

2/2

USSR

DERGYNOV, N. N., PAPERNIK, L. Kh., and RABOTNOV, Yu. N., Moscow

"Analysis of the Behavior of Graphite Based on the Theory of Nonlinear Heredity"

Novosibirsk, PMTF (Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki), No 2, 1971, pp 76-82

Abstract: The authors study the behavior of graphite, the description being based on the theory of nonlinear heredity, taking into consideration the temperature factor in the 20-3000°C range. The necessary characteristics are obtained from data on creep and stress-strain diagrams. An attempt is made to give the results a physical interpretation. Original article: two tables, four figures, 11 formulas, and nine bibliographic entries.

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USSR UDC: 622.235+621.791.1

DERIBAS, A. A.

"Some Phenomena in High-Speed Collision of Solid Bodies"

Novosibirsk, Fizika goreniya i vzryva, No 2, 1973, pp 268-281

Abstract: Some phenomena observed in the high-speed collision of solid bodies, typically metallic, are discussed in this article. To obtain the high velocities for the collisions, explosive materials were used. A gas-dynamic model for computing the phenomena in the metal up to very high pressures, amounting to several megabars, was developed as the result of an investigation of the shock compressibility of metals under conditions of normal surface collision at speeds of up to 15 km/s. These experiments were valuable in that they provided information for understanding processes in metals under explosive shock, and that they led to the discovery of hitherto unknown phenomena. This article, in the nature of a review of the work done in this direction, discusses the research of both Soviet and foreign scientists. A bibliography of 18 titles is appended.

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Composite Materials

②

USSR UDC 669.71:669.24.27.28

KARPINOS, D. M., TUCHINSKIY, L. I., VISHNYAKOV, L. R., PERESELENTSEVA, L. N., KLIMENKO, L. N., and DEYMONTOVICH, V. B., Kiev

"Effect of Alloying a Nickel Matrix With Reinforcing Metal Fibers on the Structural Stability of Ni-W and Ni-Mo Composites"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 107-113

Abstract: The problem of creating structurally stable composites for the Ni-W and Ni-Mo system was examined. By alloying the nickel matrix with tungsten up to the maximum saturation of the nickel solid solution, reinforced tungsten fibers were obtained in which the fibers did not dissolve at 1000-1200°C. At these temperatures the Ni-Mo composite was not so stable because an intermetallic compound is formed at the fiber-matrix interface and the maximum saturation of the nickel matrix with molybdenum does not prevent dissolution of the molybdenum fibers. Four figures, 2 tables, and 8 bibliographic references.

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USSR

UDC: 534.222.2

DERIBAS, A. A., KISELEV, A. N., KUZ'MIN, R. Ye., CHAGELISHVILI, E. Sh.

"Interaction Between Shock Waves and Ceramal"

V sb. Dinamika sploshn. sredy. Vyp. 8 (Dynamics of a Continuous Medium--collection of works, No 8), Novosibirsk, 1971, pp 103-117 (from RZh--Mekhanika, No 7, Jul 72, Abstract No 7B231)

Translation: The article contains a report on the results of calculations of the change in parameters of shock waves formed by detonation of an explosive charge as these waves propagate in three-component ceramals. The alloys were compositions made up of tungsten carbides -- chiefly WC -- and a softer metal -- cobalt. Two cases of interaction are calculated: propagation in a semi-infinite layer of material of a plane shock wave formed by detonation of a charge located on the surface of the material, and the action of a sliding detonation wave on a material surface. The system of equations used in the calculations contains equations of conservation of mass and momentum for the detonation and shock waves, and equations of state for the ceramals and the products of the explosion. The results of the calculations are given in tables and graphs.

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USSR

DERIBAS, A. A. et al., Dinamika sploshn. sredy. Vyp. 8, Novosibirsk, 1971, pp 103-117

To carry out the calculations experimentally by the method of reflection, the adiabatic shock curve was determined for VK-8 alloy in specimens 12 mm in diameter and 3-4 mm thick. The dimensions of the particles of hard carbide phase and softer cementing cobalt phase were of the order of 0.5-10 μ. The resultant adiabatic shock curve in the form of a linear relation between the wave velocity D and the mass velocity u is given as $D = 4.52 + 2.28u$ km/s, and is valid over the pressure range of approximately 10^{10}-$6 \cdot 10^{10}$ N/m^2. A method is proposed for calculating the adiabatic shock curves of three-component systems which utilizes knowledge of the adiabatic shock curves of each individual component. The adiabatic shock curve calculated for VK-8 alloy coincides satisfactorily with the experimental curve. The results of calculations of the adiabatic shock waves for WC, VK-11, VK-15, VK-20, VK-25 and VK-30 are given. It is pointed out that the results of experiments on x-ray analysis of the study specimens retained after impact compression to high pressures enable use of the calculated adiabatic shock curves in the pressure interval up to $2 \cdot 10^{11}$ N/m^2. Bibliography of 8 titles. O. K. Rozanov.

USSR UDC: 534.222.2

DERIBAS, A. A., KUZ'MIN, G. Ye.

"Motion of a Metal Tube Under the Effect of Products of Explosion"

V sb. Dinamika sploshn. sredy. Vyp. 8 (Dynamics of a Continuous Medium--collection of works, No 8), Novosibirsk, 1971, pp 56-70 (from RZh-Mekhanika, No 7, Jul 72, Abstract No 7B236)

Translation: The authors consider motion of a thin-walled metal tube when an explosive in contact with the tube is detonated in two cases: 1) the explosive charge is located on the outer surface of the tube around its circumference, has a finite thickness and borders with a vacuum, and 2) the charge is located inside the tube and fills it solidly throughout the entire cross section. It is assumed that in both cases the detonation front is flat, the detonation wave satisfies the Chapman-Jouguet rule, and the products of the explosion comprise a polytropic thermally non-conductive gas. The motion of the products of the explosion is analyzed in the cylindrical coordinate system which is tied to the detonation wave. The equations describing the motion of the products of the explosion are solved by the method of characteristics. The initial section was cal-

USSR

DERIBAS, A. A., KUZ'MIN, G. Ye., Dinamika sploshn. sredy. Vyp. 8, Novosibirsk, 1971, pp 56-70

culated by the power series method. The material on the initial section of the tube was considered compressible in calculating its motion. A system of transcendental equations is derived whose solution defines the maximum angle of turn of the flow on the initial section. The results of the calculations are presented graphically in the form of functions of the linear coordinate (along the wall of the tube), the thickness of the tube wall, its shape, the tangent of the angle of turn of the flow, etc. Bibliography of ten titles. O. K. Rozanov.

USSR UDC 662-215-2

DERIBAS, A. A.

"The Physics of Explosive Hardening and Welding"

Fizika Uprochneniya i Svarki Vzryvom [English Version Above], Nauka Press, Novosibirsk, 1972, 188 pages.

Translation of Annotation: This monograph systematically presents the basic physical phenomena accompanying the processes of welding and hardening of metals by explosions. The book is of interest for physicists and mechanical researchers studying metals at high pressures, and also for industrial workers using the processes of explosive welding and hardening of metals in production.

Translation of Table of Contents:

USSR

DERIBAS, A. A., Fizika Uprochneniya i Svarki Vzryvom, Nauka Press, Novosibirsk, 1972, 188 pages

2/2

Acc. Nr: AP0036881 -- Abstracting Service: CHEMICAL ABST. 4-70

Ref. Code: UR0456

78750a Reaction of p-toluidine with 1,2,3,4-tetrachloroanthraquinone under shock compression. Fokin, E. P.; Deribas, A. A.; Loskutov, V. A.; Mali, V. I. (Inst. Org. Khim., Novosibirsk, USSR). *Khim. Vys. Energ.* 1970, 4(1), 89-91 (Russ). A mixt. of 1,2,3,4-tetrachloroanthraquinone (I) and *p*-$MeC_6H_4NH_2$ (II) was subjected to 200 kbar pressure in a steel container to give the following results (amts. I and II before, and amts. I, 1-(phenylamino)-2,3,4-trichloroanthraquinone (III), and 2-(phenylamino)-1,3,4-trichloroanthraquinone (IV) after reaction in g given): 1.04, 0.31, 0.55, 0.48, 0.024; 1.04, 1.55, 0.84, 0.12, —; 1.04, 6.2, 1.00, —, —. Heating 1.04 g I and 0.62 g II in 40 ml Me_2SO 70 hr at 80° gave 0.9 g III and 0.13 g IV. J. Panchartek

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19721801

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UDC 621.315.592

BRODOVOY, V. A., DERIKOT, N. Z.

"Properties of GaAs: Cu in Strong Electric Fields"

Leningrad, *Fizika i Tekhnika Poluprovodnikov*, Vol 6, No 2, 1972, pp 276-280

Abstract: In phenomena for which the deviations of the current carrier concentrations from equilibrium are observed, the capture processes in the traps can play a significant role. If the formation of nonequilibrium current carriers is the result of internal ionization in the semiconductor as a result of an external electric field, it is possible to expect that the capture of the carriers by deep traps leads to characteristic features of the volt-ampere characteristics of the samples. A study was made of the behavior of semiinsulating GaAs: Cu in strong electric fields at T = 77° K. The parallel effect of two mechanisms -- generation of nonequilibrium current carriers as a result of a strong field mechanism and capture of them by deep traps -- leads to switching of the sample to the state with high currents. A study was made of the effect of infrared radiation from the photocurrent extinguishing region on the dark current through the sample. Negative photoconductivity was detected in the same spectral region as extinguishing of the photocurrent. Graphs are presented showing that the extinguishing and negative photocurrent spectra have a boundary

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USSR

BRODOVOY, V. A., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 276-280

at E_v = 0.41 electron volts which agrees with E_v = 0.39-0.45 electron volts for the energy position of the centers of sensitivity in GaAs: Cu. The step form of the growth of the photocurrent is connected with capture of the holes by deep traps.

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Devices

USSR UDC: 621.391.8

LESNICHENKO, P. S., NISHCHEV, P. A., POTAPOV, Ye. P., KARABANOV, G. G., DERIPALOV, B. D.

"A Device for Search of a Noise-Like Signal"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 5, Feb 71, Author's Certificate No 293304, Division H, filed 11 Aug 69, published 15 Jan 71, p 180

Translation: This Author's Certificate introduces a device for search of a noise-like signal with respect to time delay in correction of a pseudorandom sequence oscillator with correlation detection indicator and search interval scan. As a distinguishing feature of the patent, search is accelerated by connecting the counters for reference signals and measurement of the time of accumulation of radio pulses to a coincidence circuit whose output is connected to an integrator, to a zero-reset circuit, and to the input of the stage for feeding in correction of the integration time and the pulse elimination circuit. The output of the pulse elimination circuit is connected to the pseudorandom signal oscillator. A cadence pulse generator is connected directly to the elimination circuit, and also to a slave counter through a diode which is connected to the threshold device of the detection indicator.

USSR UDC 621.317.799:539:293:621.315.592

ROKAKH, A.G., DERIPASKO, R.N.

"Device For Investigation Of Electrical And Photoelectrical Properties Of Longitudinal Semiconductor Structures"

Elektron. tekhnika. Nauchno tekhn. sb. Materialy (Electronic Technology. Scientific-Technical Collection. Materials), 1970, No 3, pp 112-115 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract 12B239)

Translation: The properties of longitudinal structures based on photoconductive films require a complex measurement of their parameters. The proposed device makes it possible to measure the parameters of the equivalent circuits of longitudinal film structures and their dependence on d-c voltage and frequency, and the intensity and spectral composition of the light. The derivation is given of working formulas for determining the equivalent capacitance and resistance, and the range of measurable capacitances and resistances is given. 2 ill. 2 ref. Summary.

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1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--CONDITION OF THE ARGENTAFFIN APPARATUS OF APPENDIXS DURING
APPENDICITIS -U-

AUTHOR--DERIZHANOBA, I.S.

D

COUNTRY OF INFO--USSR

SOURCE--ARKH PATOL 32(1): 60-64. ILLUS. 1970.

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIGESTIVE SYSTEM DISEASE, MACROPHAGE, CELL PHYSIOLOGY,
HISTOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0238 STEP NO--UR/9056/70/032/001/0060/0064

CIRC ACCESSION NO--AP0134043

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0134043
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. ARGENTAFFIN CELLS OF THE MUCOSA OF 43 APPENDIXES EXCISED AT APPENDECTOMY WERE STUDIED. ARGENTAFFIN CELLS ARE AN INTEGRAL PART OF THE EPITHELIAL LINING. THE CELLS POSSESSING ARGENTAFFINE GRANULES OBSERVED IN THE STROMA AND CAPILLARIES ARE CONSIDERED TO BE MACROPHAGES WHICH RESORB AG REDUCING SUBSTANCES AND TRANSPORT THEM INTO LYMPH AND BLOOD CAPILLARIES. IN ACUTE APPENDICITIS A CONSIDERABLE DECREASE IN THE NUMBER OF ARGENTAFFIN CELLS, AS WELL AS IN THEIR GRANULAR CONTENT, TAKES PLACE IN THE ZONE OF INFLAMMATION. AT THE SAME TIME, IN THE CELLS OF THE ADJACENT AREAS THE NUMBER OF ARGENTAFFIN GRANULES IS INCREASED. THE NUMBER OF ARGENTAFFIN CELLS IN THE APPENDIXES EXCISED IN CHRONIC APPENDICITIS RANGED FROM 5-10 TO 100 AND UP. ATROPHIC PROCESSES ARE CHARACTERIZED BY A DECREASE AND THE HYPERPLASTIC PROCESSES BY AN INCREASE IN THE NUMBER OF ARGENTAFFIN CELLS.

FACILITY: DEP. PATHOL. ANAT., ROSTOV MED. INST., ROSTOV-ON-DON, USSR.

UNCLASSIFIED

Miscellaneous

USSR

UDC 669.71.472

DERKACH, A. S., KALUZHSKIY, N. A., KULAKOV, A. I., SHTERN, V. I.

"Calculating an Aluminum Electrolyzer on a Digital Computer by the Energy Balance Method"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 45-62 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G163)

Translation: Results and the procedure of computer calculation of an electrolyzer with side current lead-in are discussed. D, the energy yield, and a number of other parameters are calculated as functions of the selected current strength, anode width, and spacing between the ends of the pins in the anode. The effect of possible errors with errors in assigning the pole spacing, the electrochemical component of the voltage drop, the specific electrical conductivity of the electrolyzer, the magnitude of the current efficiency, and the heat losses of the electrolyzer on the final calculation result was analyzed. The procedure for calculating the electrolyzer can be used in design developments when selecting the optimal design of the electrolyzer. The directions in which it is necessary to continue work to refine the

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USSR

DERKACH, A. S., et al., Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti, 1970, No 71, pp 45-62

mathematical model of the electrolyzer and the calculation procedure are indicated. There are 8 illustrations and 1 table.

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, USSR

UDC 669.71.472

DERKACH, A. S., DMITRIYEV, A. A., KOROBOV, M. A., KOMERS, YE. G., KULAKOV, A. I., TSYPLAKOV, A. M.

"Improving the Design of Aluminum Electrolyzers"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 29-36 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G165)

Translation: A description of improvements of electrolyzers of various types is presented. In the last 10-15 years, electrolyzers with a side current lead-in have been modified significantly. Work has been started on creating powerful models for a current strength of 130 kiloamps. Since the first series of electrolyzers with top lead-in were put into operation, significant changes have been introduced into their structural design. These changes have promoted improvement of the technical and economic indexes. Operations have developed with respect to selecting the optimal parameters of powerful electrolyzers with roasted anodes. Electrolyzers of the given type for a current strength of 130 kiloamps are being tested successfully. For further improvement

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USSR

DERKACH, A. S., et al., Tr. Vses. n.-i. proyektn. in-ta alyumin., magn. i elektrodn. prom-sti, 1970, No 71, pp 29-36

of the design of electrolyzers of all three types, new ideas are needed based on theoretical research and the search for new, more efficient structural designs of the basic assemblies and baths, and creation of effective means of mechanization.

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USSR UDC 669.71.472

DERKACH, A. S.

"Ways of Reducing the Consumption of Electrical Power During Aluminum Production by the Electrolytic Method"

Sb. materialov Vses. seminara energetikov predpriyatiy tsvetn. metallurgii po ekon. elektroenergii (All-Union Seminar of Electrical Engineers of the Enterprises of Non-ferrous Metallurgy on the Question of Economizing on Electrical Power--collection of transactions), Moscow, 1970, pp 39-42 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G120)

Translation: Principal means are considered for reducing the consumption of power by electrolytic reduction cells: expansion and elongation of anodes coupled with reduced current density, strengthening and re-designing of leads, strengthening and differentiation of heat insulation of the cathode part, etc. Lately, the work indicators of electrolytic reduction cells with side current input have been improved. A considerable economy of power is attained during the application of silicon transformers at the substation. The application of electrolytic reduction cells
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USSR

DERKACH, A. S., Sb. materialov Vses. seminara energetikov predpriyatiy tsveyn. metallurgii po ekon. elektroenergii, Moscow, 1970, pp 39-42 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G120)

with calcinated anodes, the use in electrolytic reduction cells of high-conductivity materials (bottom blocks on a graphite base, and conducting rods made of borides and carbides and Li-salts) are very promising.

USSR UDC 547.26'118

SHOKOL, V. A., MOLYAVKO, L. I., MATYUSHA, A. G., and DERKACH, G. I.

"Tetraisocyanato-p-phenylene Diphosphite and Its Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 29-32

Abstract: Heretofore, only the synthesis of tetraisocyanatodiphosphine with a yield of 5% [H. Baudler, et al., Z. Naturforsch, No 20b, 494, 1965] and 3,9-diisocyanato-2,4,8,10-tetraoxy-3,9-diphosphaspiro-5,5)-undecane, its dioxides, mono and dithiooxides [P. M. Pivawer, et al., J. Heterocyclic. Chem., No 4, 599, 1967] has been described. On interaction of tetrachloro-n-phenylene diphosphite with sodium cyanate, tetraisocyanato-p-phenylene diphosphite is formed. The tetraisocyanato-n-phenylene diphosphite is easily oxidized by nitrogen oxides into tetraisocyanato-n-phenylene diphosphate, and on reacting with phosphorus thiooxychloride, it is converted into tetraisocyanato-n-phenylene phosphitophionphosphate or tetraisocyanato-p--phenylene-bis-thionphosphate. On storing tetraisocyanato-n-phenylene diphosphite and phosphate, they polymerize, apparently, with the formation of uretidine dionic rings. The tetraisocyanates reacting easily with alcohols and amines with the formation of the corresponding urethanes and ureas.

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USSR UDC 547.241

SHOKOL, V. A., GOLIK, G. A., LEVCHUK, Yu. N., YEGOROV, Yu. P., and DERKACH, G. I. (Deceased), Institute of Organic Chemistry, Academy of Sciences, UkrSSR

"Structure of the Reaction Products of Amidoesters of Alkylphosphonic Acids With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43(105), No 2, Feb 73, pp 267-274

Abstract: Reactions of phosphorus pentachloride with the amides of ethyl and aryl esters of methyl-, chloromethyl-, dichloromethyl-, and trichloromethyl phosphoric acid were studied in an attempt to determine under what conditions isometic products could be obtained. Analyzing the products by the IR, NMR^{31}P, and NMR ^{1}H spectroscopical methods, it was shown that depending on the alkyl radical attached to the phosphorus atom, the reaction products could either be trichlorophosphazoalkylchloro- and alkylaroxyphosphonyls, or their isomers -- alkyldichloro- and alkylaroxychlorophosphazodichlorophosphonyls or their mixture.

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USSR UDC 546.185

SHOKOL, V. A., GOLIK, G. A., LEVCHUK, Yu. N., YEGOROV, Yu. P., and DERKACH, G. I. (deceased), Institute of Organic Chemistry, Academy of Sciences, UkrainianSSR

"Acidolysis of Reaction Products of Amidoesters of Alkylphosphonic Acids With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 4, Apr 73, pp 747-750

Abstract: Alkyldichlorophosphazo- and alkylaroxychlorophosphazodichlorophosphonyls react with anhydrous formic acid yielding alkyldichlorophosphazo- and alkylaroxychlorophosphazochloroxyphosphonyls. Acidolysis of trichlorophosphazotrichloromethylchlorophosphonyl yields the chloroanhydride of N-dichlorophosphonylamidotrichloromethylphosphonic acid. The structures of the products were proposed on the basis of NMR^{31}P and IR spectroscopic data. All of these products are dense liquids soluble in benzene, dioxane, and acetone, insoluble in petroleum ether.

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USSR

UDC 632.95

PROTOPOPOVA, G. V., REYDALOVA, L. I., DZYUBAN, A. D., MOLYAVKO, L. I., DOROSHENKO, V. V., MIKHAYLYUCHENKO, N. K., SHOKOL, V. A., DERKACH, G. I.

"Insecticidal Activity of Esters of bis-(3-arylcarbamido) phosphoric and thiophosphoric Acids"

Fiziol. aktivn. veshchestva. Resp. mezhved. sb. (Physiologically Active Materials. Republic Interdepartmental Collection), 1972, vyp. 4, pp 9-11 (from RZH-Khimiya, No 5 (II), 1973, Abstract No 5N579)

Translation: A study was made of the insecticidal activity of esters with the formula $ROP-(X)(NHCONHR')_2$ (I) (X = 0 or S; R = alkyl, aryl; R' = Ph, C_6H_4SCN-π, α-pyridyl) for rice weevils, housefly larvae and imago and greenbugs. The I containing the SCN-group have the highest insecticidal activity, and among them the activity rises on going from the methyl to the propyl and isopropyl radicals.

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Inorganic Compounds

USSR UDC 541.49 + 546.65

DAVIDENKO, N. K., BIDZILYA, V. A., DERKACH, G. I. (Deceased), and YATSIMIRSKIY, K. B., Institute of Physical Chemistry Imeni L. V. Pisarzhevskiy, Acad. Sc. USSR

"Reaction of the Lantanum and Neodinium Nitrates With New Types of Organophosphorus Ligands"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 17, No 9, Sep 72, pp 2369-2375

Abstract: Reaction of lantanum and neodinium nitrates with ligands $(C_2H_5O)_2P(O)CH_2COOC_2H_5$ (L-1), $(C_2H_5O)_2P(O)CH_2COO\text{-tert-}C_4H_9$ (L-2), and $(C_6H_5)_2P(O)CH_2C(O)CH_3$ (L-3) in tetrahydrofuran was studied by the conductometric, spectrophotometric, and proton magnetic resonance methods. The equilibrium constants of the formation of equimolar complexes in tetrahydrofuran have been determined by the differential spectrophotometric method. Solid complexes of the composition $Ln(NO_3)_3 \cdot 2L\text{-}3 \cdot nH_2O$, where Ln = La or Nd, and n = 1 or 2, have been isolated. It has been shown by means of IR spectra that the ligands are coordinated with the metal through the oxygen atom of the phosphoryl group. The complex formation ability of the ligands depends on the substituents at P=O and C=O. OR-substituted ligands at P=O and C=O give less stable complexes than the R-substituted ones (R = alkyl or aryl groups).

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USSR

UDC 546.185

SHOKOL, V. A., MOLYAVKO, L. I., MATYUSHA, A. G., MIKHAYLYUCHENKO, N. K.,
and DERKACH, G. I. (deceased)

"Diisocyanates of Phosphorus Thioacids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,380-2,383

Abstract: Twenty-four derivatives of alkyl- and aryl diisocyanothiophosphates $ROP(S)(NHCOR')_2$, and the diisocyanate of phenylthiophosphonic acid, were synthesized by reacting alkyl- and aryl diisocyanophosphites and diisocyanate of phenylphosphonic acid with phosphorus thiochloride. The isocyanate groups of these compounds were found to react with substances containing active hydrogen atoms. Details of experimental procedures and tables of physical constants are given.

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USSR UDC 632.95

PROTOPOPOVA, G. V., RAYDALOVA, L. I., KOLODYAZHNYY, O. I., SAMARAY, L. I., and DERKACH, G. I., Institute of Organic Chemistry, Academy of Sciences of the UkrSSR

"A Pesticide"

USSR Author's Certificate No 253483, filed 25 Nov 68, published 8 Apr 70 (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N553 P)

Translation: N-(O-alkyl-S-alkylthiophosphono)-S-ethylurethanes have LD_{50} 170 mg/kg for warm-blooded animals and have systemic and contact insecticidal and acaricidal action. Most toxic for houseflies is $(CH_3O)(CH_3S)$-$(P(O)NHCOSC_2H_5$ (I); 0.01 mg per fly, this compound was 92% fatal (the corresponding figure for chlorophos is 53%); for weevils of the rice and cereal type, most toxic is $(CH_3O)(C_2H_5S)P(O)NHCOSC_2H_5$ which was 100% fatal at 0.25 mg/dm^2 and 100% lethal for aphids at 0.005 mg/dm^2. Compound I is most effective for systemic action on aphids. In field experiments on controlling beet weevils, compound I in a dose of 1 kg/ha was nearly as effective as heptachlor at 2 kg/ha, and is at least as persistent in its effect. Compound I at 0.5 kg/ha was nearly as effective against beet aphids as rogor at 0.3 kg/ha.

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USSR

UDC 547.26'118

SHOKOL, V. A., MOLYAYEKO, L. I., and DERKACH, G. I., Institute of Organic Chemistry, Ukrainian Academy of Sciences

"Alkyl Esters of Alkoxy-Bis(dimethylamido)- and Dialkoxy(dimethylamido)carbonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,379-2,380

Abstract: As part of their work on synthesizing and studying the insecticidal activity of the N-phosphorylated derivative amides of carbonic acid, the authors synthesized the alkyl esters of alkoxy-bis(dimethylamido)- and dialkoxy(dimethylamido)phosphazocarbonic acids from the azides of the alkyl esters of carbonic acid and the alkyl bis(dimethylamido)- and dialkyl (dimethylamido)phosphites. The previously unknown isopropy bis(dimethylamido)-phosphite was also obtained. Physical constants and yields of these substances are given.

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USSR

UDC 546.183

GUBNITSKAYA, Ye. S., and DERKACH, G. I. (deceased), Institute of Organic Chemistry, Academy of Sciences of the UkrSSR

"The Reaction of Acyl Azides With Triisocyanatophosphite"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 296-298

Abstract: Acyl azides react with triisocyanatophosphite to give N-aryl-N'-diisocyanatophosphinourethidindiones--2,4, which give tris(3-arylureido)-phosphites when treated with aromatic amines. These phosphites are fairly high-melting colorless crystals which are poorly soluble in ordinary organic solvents. They do not react with carboxylic acid azides even after prolonged boiling in a dioxane solution.

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USSR

UDC 547.241'244

LIPTUGA, N. I., VASIL'YEV, V. V., and DERKACH, G. I. (deceased), Institute of Organic Chemistry, Academy of Sciences UkrSSR

"Derivatives of Trimethylsilylmethylphosphonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 293-296

Abstract: Derivatives of trimethylsilylmethylphosphonic acid were synthesized in order to study the physiological properties of organophosphorus compounds containing silicon. The reaction of trimethylsilylmethylphosphonic acid dichloride with alcohols in the presence of ethylene oxide or triethylamine yields mono- or diesters of trimethylsilylmethylphosphonic acid, depending on the ratio of the reagents. With sodium cyanate or potassium thiocyanate, trimethylsilylmethylphosphonic acid dichloride gives the diisocyanate and the diisothiocyanate, respectively, of trimethylsilylmethylphosphonic acid; these react with alcohol and aniline to form urethanes, ureas and thioureas. With aniline, trimethylsilylmethylphosphonic acid dichloride gives the dianilide or the acid chloride of the anilide of the corresponding acid, while reaction with ethylenimine produces the bisethylenimide. Trimethylsilylmethylphosphonic acid dichloride reacts with antimony trifluoride to form the corresponding acid difluoride. The chloride of the ethyl ester of

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LIPTUGA, N. I., et al., Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 293-296

trimethylsilylmethylphosphonic acid reacts with ammonia or aniline to form the corresponding amide or anilide of the ethyl ester. Antimony trifluoride with the chloride of the ethyl ester produces the corresponding acid fluoride. When the acid chloride of the ethyl ester reacts with potassium thiocyanate, the isothiocyanate of the ethyl ester of trimethylsilylmethylphosphonic acid is formed. All the resultant compounds are colorless crystals or liquids.

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USSR UDC 547.241

MATYUSHA, A. G., KOLOTILO, M. V. and DERKACH, G. I. (deceased), Institute of Organic Chemistry, Academy of Science, Ukrainian SSR

"Derivatives of Isocyanates of Phosphorus Thioacids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 996-1003

Abstract: Dialkyl(diaryl)isocyanatophosphites when allowed to react with thiophosphoryl chloride or elemental sulfur to form the corresponding dialkyl (diaryl) isocyanatothiophosphites and dialkyl(diaryl)isocyanatophosphine sulfides.

Dialkyl(diaryl)isocyanatophosphates and thiophosphates, oxides and sulfides of dialkyl(diaryl)isocyanatophosphines, react with amines, alcohols and mercaptans to give the corresponding addition products at the isocyanato group.

The yields, melting points, and other physical data are presented in tabular form.

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UDC 547.26'118

GAMALEYA, V. F., SLYUSARENKO, Ye. I., and DERKACH, G. I., (deceased)

"Derivatives of Isocyanates of Dialkylphosphoric Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 992-995

Abstract: Di- and triurethanes were synthesized by the reaction of diesters of isocyanatophosphoric acid with glycols and glycerines. This same group of diesters react with aminoalcohols to give the corresponding phosphorylated urethane ureas. Various specific compounds were synthesized by these reaction series; physical data are given.

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USSR UDC 547.26'118

SHOKOL, V. A., MOLYAVKO, L. I., MIKHAYLYUCHENKO, N. K., and DERKACH, G. I. (deceased), Institute of Organic Chemistry, Academy of Sciences Ukr. SSR

"Alkyl Esters of tris-Dimethylamido-, Methyl-bis-dimethylamido- and Dialkyl-dialkylamidophosphazocarbonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 2, Feb 71, pp 318-319

Abstract: The reaction of tris-dimethylamidophosphite, methyl bis-dimethylamidophosphonite, and dialkyldialkylamidophosphinite with the azides of carbonic acid esters yields corresponding alkyl esters of phosphazocarbonic acids. To a solution of 0.1 g-mole of the azide of carbonate ester in 20 ml of absolute ether, 0.1 g-mole of the respective phosphite, phosphonite in 20 ml of solvent is added dropwise. The reaction is exothermic. After the addition is completed, the mixture is heated for 30 min, the solvent is removed and the product is distilled under vacuum.

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UDC 547.241 + 547.74/75

NGUYET FYUNG, IVANOVA, Zh. M., DERKACH, G. I. (deceased), and BABICHEV, F. S.

"Reactions of Indolicine and Pyrrolo[1,2-a]-benzimidazole With Isocyanates and Isothiocyanates of Phosphorus Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 2, Feb 71, pp 319-322

Abstract: 2-Methylindolicine and pyrrolo[1,2-a] benzimidazole react with isocyanates and isothiocyanates of phosphorus acids to yield N-phosphorylated amides (or thioamides) of 2-methylindolicine-3-carboxylic acid and the pyrrolo[1,2-a]benzimidazole-1-(or -3-)-carboxylic acid respectively. The products are crystalline, unstable to heat, so they cannot be purified by recrystallization. A petroleum ether solution of freshly distilled isocyanate of a phosphorus acid is added dropwise to pure 2-methylindolicine with stirring at room temperature. The product crystallizes at the end of reaction; separated, washed with petroleum ether and dried under vacuum.

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USSR

UDC 547.26'118

GUBNITSKAYA, Ye. S., MATYUSHA, A. G., DERKACH, G. I. (deceased) Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Derivatives of Isocyanatophosphites"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1205-1210

Abstract: Acyl azides react with $(C_2H_5O)_2PNCO$ to form $RCON{=}P(OC_2H_5)_2NCO$ (I). The reaction rate is relatively slow. For instance, in benzene at room temperature, the reaction is completed after 5 days, whereas at 70-80° it is completed within 6-8 hrs. I are dense, viscious liquids and can not be vacuum distilled without decomposition. With aromatic amines and dilute hydrochloric acid, I yield N-phosphorylated ureas. The following ureas were prepared: AlkOPO(X)NHCONHAr, where (alk, Ar, X given) C_2H_5, p-ClC_6H_4, Cl; C_2H_5, C_6H_5, C_6H_5; iso-C_3H_7, C_6H_5, Cl; iso-C_3H_7, p-ClC_6H_4, Cl; iso-C_3H_7, p-$C_6H_4COOC_2H_5$, Cl; iso-C_3H_7, p-$C_6H_4COOC_2H_5$, p-$C_6H_4COOC_2H_5$; iso-C_4H_9,C_6H_5, Cl; iso-C_4H_9, p-$C_6H_4OCH_3$, Cl; C_6H_{13},C_6H_5, Cl; C_6H_{13}, p-$C_6H_4OCH_3$,Cl; C_6H_{13}, C_6H_5, C_5H_5; C_6H_{13}, p-$C_6H_4OCH_3$, p-$C_6H_4OCH_3$.

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UDC 547.26'118

BODNARCHUK, N. D., MALOVIK, V. V., DERKACH, G. I. (deceased), Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"Derivatives of Phosphonocarboxylic Acids"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1210-1217

Abstract: The esters of dialkylphosphonoacetic acids (I) are alkylated with methyl iodide; one or both hydrogen atoms of the methylene group are replaced. When I are treated with aqueous ammonia, the corresponding amides are formed. The latter react with oxalyl chloride to yield phosphorylacyl isocyanates. Treatment of I with phosphorus (V) chloride will produce replacement of either one or both of the alkoxy groups at the phosphorus atom of I by chlorine. With sodium cyanate, I yield isocyanates which, when treated with amines, yield substituted ureas.

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UDC 547.297'26.118'241.07

BODNARCHUK, N. D., MALOVIK, V. V., and DERKACH, G. I., Institute of Organic Chemistry, Academy of Sciences of the Ukrainian SSR

"A Method of Making Dialkoxyphosphonoacetyl Chlorides"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 277779, class 12, filed 22 May 69, published 5 Aug 70, p 26

Translation: This Author's Certificate introduces a method of making dialkoxyphosphonoacetyl chlorides. As a distinguishing feature of the patent, tert-butyl esters of dialkoxyphosphonoacetic acids are treated with phosphorus pentachloride at a temperature of not more than 20°C with subsequent isolation of the products by conventional methods.

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USSR

UDC 547.26'118

IVANOVA, ZH. M., STUKALO, YE. A., TISHCHISHINA, N. S., DERKACH, G. I. (DECEASED), Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Isocyanates of Cyclic Ethers and Etheramides of Phosphorus Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1942-1948

Abstract: In continuation of previous work, 2-chloro-4-methylphosphorinane, N-methyl- and N-phenyl-2-chloro-1,3,2-oxazaphospholanes were reacted with sodium cyanate to yield 2-isocyanato-4-methylphosphorinane and N-methyl- and N-phenyl-2-isocyanato-1,3,2-oxazaphospholanes. These products are soluble in most organic solvents except petroleum ether; they react slowly with water and easily add a sulfur atom when heated with phosphorus thiochloroxide. 2-Isocyanato-2-oxophospholane and 2-isocyanato-2-oxo-4-methylphosphorinane react violently with water and easily add alcohols, oximes, enamines, and hetero cyclic methylene bases at the isocyanate group. Their thioanalogues react much slower with water and other nucleophilic compounds.

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USSR

UDC 547.26'118

SHOKOL, V. A., DOROSHENKO, V. V., DERKACH, G. I. (DECEASED),
Institute of Organic Chemistry, Kiev, Academy of Sciences
Ukrainian SSR

"Reaction of Chloromethylisocyanate With the Salts of Thiophosphoric and Thiocarbonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1692-1696

Abstract: Reaction of chloromethylisocyanate with potassium salts of 0,0-dialkylthio- and dithiophosphoric acids yields 0,0-dialkyl-S-isocyanatomethylthio- and -dithiophosphates, and with the potassium salt of 0-ethyldithiocarbonic acid, 0-ethyl-S-isocyanatomethyldithio carbonate. Chloromethylisocyanate in anhydrous benzene is added dropwise to a solution of the potassium salt of 0,0-diethyldithiophosphoric acid in anhydrous benzene at 20° and refluxed for 5-10 hours. The precipitate is separated, the filtrate evaporated, and the residual 0,0-dialkyl-S-isocyanatothio- or dithiophosphates are redistilled. p-Chloromethylphenylisocyanate in benzene is added to the potassium salt of 0,0-dimethyldithio-

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SHOKOL, V. A., et al, Zhurnal Obshchey Khimii, Vol 40, No 8,
Aug 70, pp 1692-1696

phosphoric acid in benzene and refluxed for 11 hours, the precipitate is centrifuged and the filtrate evaporated to give a product with b.p. 75-78°/1mm, n_D^{20} 1.5668. The 0-ethyl-S-isocyanatomethyl-dithiocarbonate, b.p. 70-71/0.2 mm, d_4^{20} 1.2562, n_D^{20} 1.5536 is obtained analogously to 0,0-dialkyl-S-isocyanatomethylthiophosphate. To obtain 0,0-dialkyl-S-(carbalkoxyaminomethyl)-dithiophosphates, a solution of anhydrous alcohol in absolute ether is added dropwise to a solution of 0,0-dialkyl-S-isocyanatomethyldithiophosphate in absolute ether, stirred, and after 16-20 hours the solvent is removed at 10-15 mm, and the residue is kept at 0.2 mm (40-50°) until constant weight. The 0,0-diethyl-S-(carbalkoxyaminomethyl)-thiophosphates and 0-ethyl-S-(carbalkoxyaminomethyl)-dithiocarbonates are obtained analogously.

USSR

UDC 547.241

SHOKOL, V. A., GOLIK, G. A., and DERKACH, G. I., (deceased), Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Azidoisocyanate of the Methylphosphonic Acid and Its Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 3, Mar 71, pp 545-550

Abstract: Reaction of chloroanhydride of methylphosphonic acid azide with a suspension of sodium cyanate in chloroform yields the azidoisocyanate of methylphosphonic acid (I) -- a colorless liquid with a sharp odor. Reacting (I) with alcohols, phenol, and aniline yields the azides of carbalkoxy- and carbophenoxyamides and phenylcarbamide of methylphosphonic acid which, when reacted with phosphites and phosphine give corresponding carbalkoxy- and carbophenoxyamides, and phenylcarbamide of (P-phosphazo)-methylphosphonic acid. IR spectra of these azides exhibited an intensive band at 2158-2179 cm^{-1}, characteristic of the azido group.

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USSR

UDC 546.185

BODNARCHUK, N. D., GAVRILENKO, B. B., and DERKACH, the late G. I., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphapyrimidine Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1466-1469

Abstract: 1,1,3-Trichloro-4-cyano-5-trichloro(dichloro)methyl-1-phosphapyrimidines (I) react with aliphatic amines to give mono-, di- or triamino-substituted phosphapyrimidine derivatives depending on the basicity, structure and quantity of the amine. Heating of I with aromatic amines gives only monoamino derivatives regardless of the quantity of the amine. The interaction of I with alcohols and phenols gives trialkoxy(aroxy) phosphapyrimidine derivatives. Preliminary biological tests of the phosphapyrimidines showed high antimycotic activity, particularly in the case of those containing halide atoms in the benzene rings.

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USSR

UDC 546.185

BODNARCHUK, N. D., GAVRILENKO, B. B., and DERKACH, the late G. I.,
Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorylation of Enamines with Methyltetrachlorophosphorus and Diphenyltrichlorophosphorus"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1469-1473

Abstract: Enamines readily react with methyltetrachlorophosphorus and diphenyltrichlorophosphorus to give substituted methyldichloro- and diphenylchlorophosphazoethylenes. The latter are also obtained from the interaction of N,N-dichloroenamines with methyldichlorophosphine and diphenylchlorophosphine. Chlorophosphazoethylenes react with amines to give anilides.

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USSR

UDC 547.26'118

IVANOVA, ZH. M., MIKHAYLIK, S. K., and DERKACH, the late, G. I., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Mono- and Diisocyanates of Alkylthiophosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1473-1476

Abstract: Heating of diisocyanates of alkylphosphonous acids with thiophosphoryl chloride gives diisocyanates of alkylthiophosphonic acids. Fluorination of the latter with antimony trifluoride gives equal quantities of isocyanatoalkylthiophosphonic acid fluoride and alkylthiophosphonic acid difluoride. The diisocyanates of alkylphosphonic and alkylthiophosphonic acids and the acid fluorides of isocyanatoalkylphosphonic and isocyanatoalkylthiophosphonic acids give adducts with 1-piperidyl-1-phenylethylene.

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USSR

UDC 547.26'118.07

SHOKOL, V. A., MIKHAYLYUCHENKO, N. K., DERKACH, G. I., KIRSANOV, A. V., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"A Method of Producing trichlorophosphazo Compounds"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, Author's Certificate No 271520, filed 18 Mar 69, p 24

Abstract: This Author's Certificate introduces: 1. A method of producing trichlorophosphazo compounds by interacting an amine or amide with a phosphorus-containing reagent and chlorine in an organic solvent in the presence of heat with subsequent isolation of the goal product by conventional methods. As a distinguishing feature of the patent, the process is simplified by using red or white phosphorus as the phosphorus-containing component. 2. The method described in (1) is distinguished by the fact that the process is carried out at 50-80°C.

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USSR UDC 547.26'118

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SHOKOL, V. A., GOLIK, G. A., TSYBA, V. T., YEGOROV, YU. P., DERKACH, G. I. (DECEASED), Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Phosphoazoalkylphosphonic Acid Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1680-1691

Abstract: Reaction of trialkylphosphites, triamidophosphites, dialkyl- and diamidophosphonites, and triphenylphosphine with the azides of alkylphosphonic acid esters yields esters of phosphazoalkylphosphonic acids -- compounds with pesticidal activity. The reaction is exothermic and occurs easily at room temperature either in ether or in benzene. After evaporation of the solvent, liquid phosphazophosphinyls are obtained. Depending on heating conditions, the esters of trialkyl- and methyldialkylphosphazoalkylphosphonic acids rearrange into diesters of the alkyldialkoxyphosphazophosphoric acid or into esters of N-alkyl-N-dialkylphosphonoamidoalkylphosphonic acid. In all cases the side products consist of the

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SHOKOL, V. A., et al, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1680-1691

diethyl ester of methylphosphonic acid and a yellow, viscous fluid, probably polyphosphorene formed by condensation. Detailed analysis of the IR and NMR spectra of the above compounds is reported and characteristic bands and shifts are listed. Physical properties of the products obtained are tabulated, but no biological data are reported.

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1/2 006 UNCLASSIFIED PROCESSING DATE--

TITLE--ISOSELENOCYANATES OF N SUBSTITUTED IMINOCARBOXYLIC ACIDS -U-

AUTHOR-(02)-KIRSANOVA, N.A., DERKACH, G.I.

COUNTRY OF INFO--USSR

SOURCE--UKR. KHIM. ZH. 1970, 36(4), 372-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SELENIUM COMPOUND, CYANATE, IMINE, HETEROCYCLIC BASE COMPOUND, ORGANOSELENIUM COMPOUND, UREA DERIVATIVE, POLYNUCLEAR HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0896

STEP NO--UR/0073/70/036/004/0372/0374

CIRC ACCESSION NO--AP0137924

UNCLASSIFIED

2/2 006
CIRC ACCESSION NO--AP0137924

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. R EQUALS PHC(:NPH) AND R PRIME1 EQUALS P,CLC SUB6 H SUB4 C(:NC SUB6 H SUB4 CL,P) THROUGHOUT THIS ABSTR. RCL AND NASECN FORM RNCSE (I), M. 62-3 (LIGROINE). I WITH PHNH SUB2 AND P,MEOC SUB6 H SUB4 FORM THE CORRESPONDING SELENOUREAS RNHCSENHPH (II), IN. 144-5DEGREES, AND RNHCSENHC SUB6 H SUB4 OME,P M. 158-60DEGREES, RESP. II REACTS WITH CL AT 20-40DEGREES, SO SUB2 CL SUB2 AT 20DEGREES, OR BZN:CCLSCL AT 20DEGREES TO FORM RN:CCLSECL, M. 185-7DEGREES, WHICH WITH PHNH SUB2 GIVES N,PHENYL,N PRIME,2,BENZOSELENAZOLYBANZAMIDINE HCL SALT(III, Y EQUALS H, X EQUALS H), M. 191-4DEGREES (C SUB6 H SUB6 LIGROINE) AND WITH P,CLC SUB6 HSUB4 NH SUB2 YIELDS III (Y EQUALS CL, X EQUALSH), M. 195-7DEGREES. R PRIME1 CL YIELDS BY SIMILAR REACTIONS R PRIME1 NCSE, M. 100-2DEGREES; R PRIME1 NHCSENHPH, M. 152-4DEGREES; R PRIME1 N:CCLSECL, M. 193-5DEGREES; AND III(Y EQUALS H, X EQUALS CL), M. 208-9DEGREES. RN:CCLSECL WITH PIPERIDINE FORMS THE GUANIDINE DERIV. IV, M. 136-7DEGREES (C SUB6 H SUB6 LIGROINE MIXT.). FACILITY: INST. ORG. KHIM., KIEV, USSR.

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ALKYLTHIONOPHOSPHONIC ACID FLUORIDE CHLORIDES -U-

AUTHOR-(03)-IVANOVA, ZH.M., MIKHAYLIK, S.K., DERKACH, G.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 702

DATE PUBLISHED---------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, PHOSPHONIC ACID, FLUORINATED ORGANIC COMPOUND, CHLORINATED ORGANIC COMPOUND, PHOSPHORUS SULFIDE, ORGANIC PHOSPHORUS COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0887 STEP NO--UR/0079/70/040/003/0702/0702

CIRC ACCESSION NO--AP0124550
UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124550

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEATING 0.4 MOLE MEP(O)FCL AND 0.1 MOLE P SUB2 S SUB5 4 HR AT 150-60DEGREES GAVE 38PERCENT MEP(S)FCL, B. 109-11DEGREES, D PRIME20 1.3890, N PRIME20 SUBD 1.4755. SIMILARLY WAS PREPD. 40PERCENT ISO,PRP(S)FCL, B SUB8 41-3DEGREES, 1.2641, 1.4770.

FACILITY: INST. ORG. KHIM., USSR.

UNCLASSIFIED

1/5 017 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ACID DIHALIDES AND MONOHALIDES OF ISOCYANATOMETHYL,PHOSPHONIC ACID ALKYL ESTERS -U-

AUTHOR-(03)-SHOKOL, V.A., DOROSHENKO, V.V., DERKACH, G.I.

D

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 535-42

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ISOCYANATE, PHOSPHONIC ACID, ESTER, ORGANIC PHOSPHORUS COMPOUND, CATALYTIC ORGANIC SYNTHESIS, CHLORINE, FLUORINE, AMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0896 STEP NO--UR/0079/70/040/003/0535/0542

CIRC ACCESSION NO--AP0124559
UNCLASSIFIED

2/5 017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124559

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING EQUIMOLAR AMTS. OF ROPCL SUB2, ROPF SUB2, OR (RO) SUB2 PCL AND CLCH SUB2 NCO IN THE PRESENCE OF 0.01 MOLE DRY FECL SUB3 CATALYST RESULTED IN A MILDLY EXOTHERMIC REACTION, COMPLETED BY HEATING TO 45-50DEGREES TO ELIMINATE THE EVOLVING ALKYL HALIDE TO GIVE THE FOLLOWING RP(O)(CH SUB2 NCO)X (X AND R SHOWN): CL, CL 56-75PERCENT (FROM ME, ET, OR ISO,PR ESTERS), B SUBOTIMES15 59-60DEGREES, D PRIME20 1.5744, N PRIME20 SUBD 1.4980; CL, ETO (I), 37-53PERCENT, B SUBOTIMES35 82-3DEGREES, 1.3334, 1.4625; CL, ISO,PRO, 16PERCENT, B SUBOTIMES0.4 75-6DEGREES, 1.2664, 1.4590; F, F (FROM BUOPF SUB2), 57PERCENT, B SUB15 68-9DEGREES, 1.5490, 1.4085; AND F, ETO (II), 17PERCENT, B SUBOTIMES2 68-70DEGREES, 1.3002, 1.4180. ALTERNATIVELY, HEATING EQUIMOLAR AMTS. CLCH SUB2 NCO AND EITHER ETOPCL SUB2 OF (ETO) SUB2 PCL TO 65-75DEGREES ALSO GAVE ETCL, BUT IN THE 1ST INSTANCE THE PRODUCT FORMED A TAR, WHILE IN THE 2ND CASE I WAS ISOLATED. EQUIMOLAR AMTS. (ETO) SUB2 PF AND CLCH SUB2 NCO WITH FECL SUB3 CATALYST REACTED AT 50DEGREES TO GIVE ETCL, 17PERCENT ETP(O)(OET)F, B SUB12 50-1DEGREES, 1.1130, 1.3884; AND 17PERCENT II. SIMILAR REACTION WITH (C SUB8 H SUB17 O) SUB2 PCL 6 HR AT 110DEGREES GAVE 75PERCENT C SUB8 H SUB17 CL, WHILE THE REST OF THE MATERIAL POLYMD. ON BEING HEATED. EQUIMOLAR AMTS. MEOPCL SUB2 AND CLCH SUB2 CH SUB2 NCO WITH FECL SUB3 CATALYST REFLUXED 12 HR GAVE NO MECL, AND THER REACTANTS WERE RECOVERED.

UNCLASSIFIED

3/5 017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSICN NO--AP0124559

ABSTRACT/EXTRACT--EQUIMOLAR AMTS. CL SUB2 P(O)CH SUB2 NCO AND ROH IN ER SUB2 O GAVE OVERNIGHT UNDISTILLABLE RR PRIME1 P(O)CH SUB2 NHCOR PRIME2 (III) (R EQUALS R PRIME1 EQUALS CL, R PRIME2 EQUALS ETO), D PRIME20 . 1.4560, N PRIME20 SUBD 1.4945; ATTEMPTED DISTN. GAVE ETOH AND AN ISOCYANATE AS CONFIRMED BY THE IR SPECTRUM. REACTION OF THE CRUDE DICHLORIDES, PREPD. AS ABOVE, WITH 2 MOLES DRY ROH AND ET SUB3 N IN ET SUB2 O AT 5DEGREES AND FINALLY AR TOOM TEMP. GAVE THE FOLLOWING III, ALSO PREPD. GROM 3 MOLES ROH, 2 MOLES ET SUB3 N AND 1 MOLE CL SUB2 P(O)CH SUB2 NCO (OR SIMILARLY FROM OCNCH SUB2 P(O)(OR)CL) (R, R PRIME1, AND R PRIME2 GIVEN): F, ETO, ETO, (IIA), B SUBOTIMES05 100-12DEGREES, 1.2497, 1.4368; MEO, MEO, MEO, B SUBOTIMES03 122-5DEGREES, 1.3250, 1.4578; MEO, MEO, ISO,PRO, B SUBOTIMES06 11-12DEGREES, A.1929, 1.4495; MEO, ETO, MEO, B SUBOTIMES03 115-18DEGREES, 1.2404, 1.4525; MEO, ISO,PRO, MEO, B SUBOTIMES05 114-16DEGREES, 1.1765, 1.4503; ETO, ETO, ETO, B SUBOTIMES2 131-3DEGREES, 1.1516, 1.4465; AND ISO,PRO, ISO,PRO, ETO, B SUBOTIMES05 137-40DEGREES, 1.1149, 1.4486. EQUIMOLAR AMTS. OCNCH SUB2 P(O)(OET)F AND ETOH IN ET SUB2 O 3 DAYS GAVE UNDISTILLABLE IIA, ALSC FORMED FROM 2 MOLES ETOH IN ET SUB2 O AND 1 MOLE OCNCH SUB2 P(O)F SUB2 IN 3 DAYS.

UNCLASSIFIED

4/5 .017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124559

ABSTRACT/EXTRACT--REACTION OF 1 MOLE ETOH WITH THE LATTER DIFLUORIDE (FOLLOWED BY IR SPECTRA) PROCEEDED WITH DECLINE OF NCO BANC INTENSITY OVER 10 HR, AFTER WHICH THIS NO LONGER TOOK PLACE OVER 3 DAYS, BUT NO PRODUCTS COULD BE ISOLATED INDIVIDUALLY, OCHCH SUB2 P(O)(OCHME SUB2)CL AND 1 MOLE MEOH IN ET SUB2 O AT NEGATIVE 10DEGREES, THEN AT ROOM TEMP. OVERNIGHT, GAVE AN UNDISTILLABLE MIXT. OF THE STARTING MATERIAL AND EVIDENTLY (ISO,PRO)CIP(O)CH SUB2 NHCO SUB2 ME; SIMILAR REACTION OF ETOH WITH (ETO)P(O)CLCH SUB2NCO GAVE ONLY CRUDE (ETO)P(O)CLCH SUB2 NHCO SUB2 ET AND STARTING MATERIAL, WHICH WERE NOT SEPARABLE. OCNCH SUB2 P (O)F SUB2, OR OCNCH SUB2 P(O)(OET)F, TREATED WITH 1 MOLE PHNH SUB2 IN ET SUB2 O AT NEGATIVE 15DEGREES, THEN WARMED TO ROOM TEMP. GAVE III (R EQUALS R PRIME1 EQUALS R, R PRIME2 EQUALS PHNH), DECOMPD. 128-31DEGREES; OR III (R EQUALS F, R PRIME1 EQUALS ETO, R PRIME2 EQUALS NHPH), M. 93-5DEGREES, RESP. SIMILARLY, REACTIONS WITH ET SUB2 NH AND OCNCH SUB2 P(O)CL SUB2 OR OSNCH SUB2 P(O)(OET)CL, GAVE III (R EQUALS R PRIME1 EQUALS R PRIME2 EQUALSET SUB2 N), B SUBOTIMES05 152-5DEGREES, 1.0711, 1.4740; OR III (R EQUALS R PRIME1 EQUALS R PRIME2 EQUALS ET SUB2 N) B SUBOTIMES05 140-3DEGREES, 1.0470, 1.4850. REACTION OF OCHCH SUB2 POCL SUB2 WITH 0.9 MOLE PHNH SUB2 IN ET SUB2 O AT NEGATIVE 10DEGREES, COMPLETED AT ROOM TEMP., GAVE CL SUB2 P(O)CH SUB2 NHCONHPH, CONTAMINATED WITH MUCH STARTING MATERIAL AND M. 142-5DEGREES; THIS CONTAINED ALSO SOMEP,AMIDE MATERIAL. SN OCTOATE AS A CATALYST GAVE A SIMILAR RESULT. REACTION OF AMINES OR ALCS. WITH OCHCH SUB2 P(O)(OR)CL RESULTED IN INVOLVEMENT OF BOTH CL AND NCO GROUPS SO THAT PURE PRODUCTS COULD NOT BE ATTAINED.

UNCLASSIFIED

5/5 017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124559

ABSTRACT/EXTRACT--OCNCH SUB2 POCL SUB2 AND 5 MOLES ET SUB2 NH GAVE ET SUB2 NCONHCH SUB2 PO(NET SUB2) SUB2, AS EXPECTED. FACILITY: INST. ORG. KHIM., KIEV. USSR.

UNCLASSIFIED

Acc. Nr: AP0041537 Abstracting Service: CHEMICAL ABST. 4/70 Ref. Code: UR0366

D

90006v New method for preparing acyl isocyanates. Samarai, L. I.; Belaya, V. P.; Galenko, G. F.; Derkach, G. I. (Inst. Org. Khim., Kiev, USSR). *Zh. Org. Khim.* 1970, 6(1), 85-8 (Russ). The reaction of RC(:NH)OEt or RC(:NH.HCl)-OEt (I) with $(COCl)_2$ gave RC(OEt):NCOCOCl (II) (R is CCl_3, CH_2ClCCl_2, Ph, p-ClC_6H_4, p-$O_2NC_6H_4$, or 3-piperidyl). The reaction of PhC(:NCl)OEt with $(COCl)_2$ also gave II (R = Ph). Heating II at 110-30° gave RCONCO; II react with moisture in the air giving I, with R^1OH giving RC(OEt):$NCOCO_2R^1$, or with R^1NH_2 giving RC(OEt):$NCOCONHR^1$. CPJR

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REEL/FRAME
19751405

UDC: 547.185

USSR

PROTSENKO, L. D., SKUL'SKAYA, N. YA., and DERKACH, G. I. (Deceased)

"Ethylenimine Derivatives of Phosphorylated Polyatomic Alcohols"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 464-466

Abstract: The article describes the synthesis of ethylenimine derivatives of phosphorylated glycerol and D-sorbitol. Isocyanatophosphoric acid dichloride reacts readily with polyatomic alcohols and their derivatives to give dichlorophosphonyl derivatives of polyatomic alcohols of various degrees of substitution, depending on the number of hydroxyl groups and the ratio of reagent amounts. Subsequent action of ethylenimine on these chlorine derivatives in the presence of triethylamine gives corresponding ethylenimine derivatives. Dialkyl esters of isocyanatophosphoric acids react with polyatomic alcohols analogously to isocyanatophosphoric acid dichloride.

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USSR UDC: 547.539.2

MIKHAYLOV, V. S., MATYUSHECHEVA, G. I., DERKACH, G. I. (DECEASED), and YAGUPOL'SKIY, L. M., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

" A Study of the Reactions Between Carboxlynic Acids and Phosphorus Pentachloride, 1. The Effect of Solvents"

Leningrad, Zhurnal Organicheskoy Khimii, Akademiya Nauk SSSR, Vol VI, No 1, Jan 70, pp 149 - 151

Abstract: The hydrazides of certain aromatic carboxylic acids react with phosphorus pentachloride to form benzal chloride and benzotrichloride.

Experiments run by the authors indicate that the particular solvent used (benzene, CCl_4, chlorobenzene, etc.) has a marked influence on the relative proportion of the two products indicated. In general, use of polar solvents increases the content of benzal chloride.

A table, and also structural formulation of the reactions, accompany the paper.

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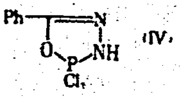
Acc. Nr AP0048821 • Abstracting Service: CHEMICAL ABST. 4/70 Ref. Code: UR0346

90373n **Reaction of hydrazides of carboxylic acids with phosphorus pentachloride.** I. Solvent effects. Mikhailov, V. S.; Matyushecheva, G. I.; Derkach, G. I.; Yagupol'skii, L. M. (Inst. Org. Khim., Kiev, USSR). *Zh. Org. Khim.* 1970, 6(1), 149-51 (Russ). Heating $BzNHNH_2$ (I) with PCl_5 at 80-120° in CCl_4, C_6H_6, PhCl, $POCl_3$, $MeNO_2$, o-$O_2NC_6H_4Cl$, or tetrahydrothiophene *s,s*-dioxide gave mixts. of $PhCHCl_2$ (II) and $PhCCl_3$ (III). The proportion of III in the mixt. increased with the temp. and the amt. of PCl_5. In polar solvents more II than III was formed. The formation of II and III proceeds as follows: I → $BzNHNHPCl_4 \rightleftharpoons PhC(OH){:}NNHPCl_4 \rightarrow IV \rightleftharpoons V$; V + $PCl_5 \rightarrow II + POCl_3 + PCl_3 + N_2$; IV.HCl → stable VI, which reacts with PCl_5 to give III, $POCl_3$, PCl_3, and N_2. Only the end products (II and III) of the above sequence were identified.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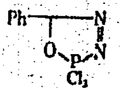
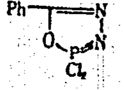

(V)


(VI)

CPJR

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REEL/FRAME
19800584

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UDC: 547.26'118

USSR

SAMARAY, L.I., KOLODYAZHNYY, O.I., and DERKACH, G.I., (Deceased), Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Reaction of Amides of Pentavalent Phosphorus Acids With Phosgene"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 754-758

Abstract: The interaction of amides of dialkylphosphoric and dialkylthiophosphoric acids with phosgene gives a mixture of products, viz. isocyanates of the corresponding acids and adducts of the amides with hydrogen chloride. The direction of the reaction of phosgene with amides of pentavalent phosphorus acids is discussed. Two possible reaction schemes are suggested, with the likelier scheme being one in which the initial event is the formation of an O-acyl derivative of the amidophosphate. This is confirmed by the results of a study of the interaction of phosgene with dialkyl esters of N-monoalkylamidophosphoric acid, which show that acid chlorides of alkyl esters of N-alkylamidophosphoric acid are mainly formed. An exception is diethyl ester of N-methylamidophosphoric acid, which is phosgenated to give diethyl ester of N-methyl-N-chlorocarbonylamidophosphoric acid.

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USSR

UDC: 547.26'118

SAMARAY, L.I., KOLODYAZHNYY, O.I., VISHNEVSKIY, O.V., and DERKACH, G.I. (Deceased)
Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Isocyanates of Phosphoric and Thiophosphoric Acids. III"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 750-754

Abstract: Isocyanates of phosphoric acids react with hydrazoic acid to give N-azidocarbonylphosphamides. The latter readily enter into oxidative imination reactions with phosphines and phosphites to give corresponding phosphazo compounds. Isocyanates of phosphoric acid esters interact with ϵ-caprolactam on heating in a benzene solution to give N-phosphonocarbamoyl-ϵ-caprolactams. Isocyanates of dialkylthio- and dialkylphosphoric acid react with alcohols (mercaptans) to give N-phosphorylated urethanes and thiolurethanes possessing high insecticidal activity, both systemic and contact. N. I. LIPTUGA took part in the work.

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UDC: 547.239 - 661.718.1

USSR

KOLOTILO, M.V., MATYUSHA, A.G., and DERKACH, G.I., (Deceased), Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Derivatives of Isocyanates of Trivalent Phosphorus Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 758-766

Abstract: Dialkyl-, diaryl-, diamidophosphorous, dialkyldithiophosphorous and dialkyl(diaryl)phosphinous acid chlorides react with sodium cyanate to give the corresponding isocyanates of trivalent phosphorus acids, which are monomers or dimers depending on the nature of the substituents at the phosphorus. Isocyanates of phosphorous and phosphinous acids react with nitrogen dioxide to give isocyanates of phosphoric and phosphinic acids. Isocyanates of dialkyl(diaryl)phosphorous and dialkyl(diaryl)phosphinous acids add amines to form N-phosphorylated ureas. Chlorine atoms react in the action of amines on isocyanatophosphorous acid dichloride. Consecutive displacement of the second chlorine atom by a dialkylamido group results

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KOLOTILO, M. V., et al., Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 758-766

in instant dimerization of the isocyanate. Isocyanatophosphorous acid dichloride also reacts on the chlorine under the action of alcohols in the presence of bases to give isocyanates of dialkylphosphorous acids.

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USSR UDC: 546.185

SHOKOL, V.A., GOLIK, G.A., TSYBA, V.T., and DERKACH, G.I., (Deceased), Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Structure of Reaction Products of Amidoesters of Alkylphosphonic Acids With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 931-932

Abstract: A detailed study of the reaction product of amide of ethyl ester of methylphosphonic acid with phosphorus pentachloride showed that in its physicochemical constants it is identical to the isomeric product obtained by the authors from amide of diethyl ester of phosphoric acid and methyltetrachlorophosphorus. A comparison of IR spectra, P^{31} NMR and especially Cl^{35} NQR spectra shows that the compounds obtained in both cases have the structure of methyldichlorophosphazophosphoric acid dichloride $CH_3(Cl_2)P_\alpha = NP_\beta OCl_2$ rather than isomeric trichlorophosphazomethylphosphonic acid $CH_3PO(Cl)N=PCl_3$.

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UDC 547.26'118

SAMARAY, L. I., KOLODYAZHNYY, O. I., and DERKACH, G. I., (DECEASED),
Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Reaction of Pentavalent Phosphorus Acid Amides With Oxalyl Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 994-998

Abstract: Diesters of N-alkylamidophosphoric acid react with oxalyl chloride to give 2,3-disubstituted phosphaoxazolidine-4,5-diones. The interaction of diethyl ester of N-isopropylamidophosphoric acid ($R=C_2H_5$, $R'=iso-C_3H_7$) with oxalyl chloride gives, along with 4,5-dione, the acid chloride of ethyl ester of N-isopropylamidophosphoric acid. Phosphaoxazolidine-4,5-diones are hydrolyzed by water to N-alkyloxaminic acids and alkyl phosphates and react with alcohols to give N-phosphorylated oxaminic acids.

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USSR D UDC 547.26'118

SHOKOL, V. A., MOLYAVKO, L. I., and DERKACH, G. I., (DECEASED),
Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Alkyl Esters of Alkyldialkoxyphosphazocarbonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 998-1001

Abstract: Dialkyl phosphonites react with azides of alkyl esters of carbonic acid to give alkyl esters of alkyldialkoxyphosphazocarbonic acid. Heating of alkyl esters of alkyldimethoxyphosphazocarbonic acid (120-140°, 3-5 hrs) gives methyl esters of N-methylalkylurethanmethylphosphonic acid, with a side reaction resulting in the formation of dimethyl phosphonates. The structure of the resultant compounds was confirmed by IR spectra.

1/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--ISOCYANATES OF PHOSPHORIC AND THIOPHOSPHORIC ACIDS -U-

AUTHOR-(04)-SAMARAY, L.I., KOLODYAZHNYY, O.I., VISHNEVSKIY, O.V., DERKACH, G.I.

COUNTRY OF INFO--USSR

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SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 750-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, AMIDE, PHOSPHORUS SULFIDE, INSECTICIDE, ORGANIC ISOCYANATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1486 STEP NO--UR/0079/70/040/004/0750/0754

CIRC ACCESSION NO--AP0128883

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0128883
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDN. OF 1 MOLE NH SUB3 IN ET SUB2 O TO R SUB2 P(O)NCO GAVE (OVERNIGHT) THE FOLLOWING AMIDES: SHOWN ON MICROFICHE. FACILITY: INST. ORG. KHIM., KIEV, USSR.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ALPHA ALKENYL ISOCYANATES -U-

AUTHOR-(03)-VISHNEVSKIY, O.V., SAMARAY, L.I., DERKACH, G.I.

D

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 468-72

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC ISOCYANATE, CHEMICAL SYNTHESIS, CHLORINATION, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1656 STEP NO--UR/0366/70/006/003/0468/0472

CIRC ACCESSION NO--AP0112650

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0112650

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF RR PRIME1-CHCPH:NH WITH COCL SUB2 GAVE 70-5PERCENT RR PRIME1 C:CPHNCO (I) (R, R PRIME1 GIVEN): SHOWN ON MICROFICHE. FACILITY: INST. ORG. KHIM., KIEV, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--ETHYLENIMINE DERIVATIVES OF PHOSPHORYLATED POLYHYDRIX ALCOHOLS -U-

AUTHOR-(03)-PROTSENKO, L.D., SKULSKAYA, N.YA., DERKACH, G.I.

D

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 464-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IMINE, GLYCEROL, TRIETHYLAMINE, ORGANIC PHOSPHATE, ETHYL CARBAMATE, CHEMICAL DECOMPOSITION, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1468 STEP NO--UR/0079/70/040/002/0464/0466

CIRC ACCESSION NO--AP0116905

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0116905
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING EQUIMOLAR AMTS. GLYCEROL IN DIOXANE WITH OCNPOCL SUB2 AT 20-5DEGREES, KEEPING THE MIXT. 20 HR AT ROOM TEMP., TREATING IT WITH 3.3 MOLES ETHYLENIMINE AND ET SUB3 N AND KEEPING THE WHOLE 1 HR GAVE 65PERCENT DIAZIRIDIDE OF 1,GLYCERYLURETHANE PHOSPHATE, ISOLATED AS DIPICRATE, DECOMPD. 139-40DEGREES. SIMILARLY WERE PREPD.: DIPICRATE OF 1,3,DIACETYL,2,GLYCERYL URETHANE PHOSPHATE, DECOMPD. 157-9DEGREES; 1,3,DITRITYL,2,GLYCERYL URETHANE PHOSPHATE, M. 115-17DEGREES; 1,2,3,GLYCERYL TRIURETHANE PHOSPHATE HEXAAZIRIDIDE, M. 40-2DEGREES; AND 1,6,DIBENZOYL,D,SORBITYL,2,3,4,6,TETRAURETHANE PHOSPHATE OCTAAZIRIDIDE, ISOLATED AS OCTAPICRATE, DECOMPD. 130-2DEGREES. REACTION OF 2,3,4,6,TETRA,O,ACETYL,D,GLUCOSE WITH (MEO) SUB2 PO(NCO) IN ET SUB2 O GAVE DI-ME 2,3,4,6,TETRA,O,ACETYL,D,GLUCOS,5,YL URETHANE PHOSPHATE, M. 95-7DEGREES.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT7
TITLE--METHODS OF PRE ESTIMATION OF OVERHAUL COSTS -U-

AUTHOR-(03)-VASHCHENKO, V.K., DERKACH, G.M., SULPOVAR, L.B.

D

COUNTRY OF INFO--USSR

SOURCE--STANDARTY I KACHESTVO, 1970, NR 5, PP 76-77

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL SCIENCES
TOPIC TAGS--ENGINE MAINTENANCE, ECONOMIC INCENTIVE, COST ESTIMATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1551 STEP NO--UR/0422/70/000/005/0076/0077

CIRC ACCESSION NO--AP0120330
UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120330

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE CONSIDERS THE METHODS OF PRELIMINARY ESTIMATION OF EXPENSIS FOR ENGINE OVERHAUL REPAIRS. THE EXPENSES ARE REGARDED AS INFLUENCED BY THREE GROUPS OF FACTORS, VIZ., THOSE DEPENDENT ON THE DESIGN, MANUFACTURING METHODS, AND OPERATIONAL CONDITIONS. THE DIFFERENT LOVELS OF INFLUENCE OF THESE FACTORS UPON TH OVERHAUL COSTS SUBDIVIDE THE EXPENSES INTO CONVENTIONALLY CONSTANT AND CONVENTIONALLY VARIABLE ONES. FORMULAS FOR CALCULATION OF THE EXPENSES ARE GIVEN IN THE ARTICLE.

UNCLASSIFIED

USSR UDC 8.74

GUMETSKIY, R. Ya., GURA, B. M., DERKACH, M. F., MISHIN, L. N.

"An Algorithm for Recognizing Simple Sentences"

Tallin, VI Vses. seminar "Avtomat. raspoznavaniye slukhovykh obrazov (ARSO VI)". Dokl. i soobshch.--sbornik (Sixth All-Union Seminar on Automatic Recognition of Audible Patterns. (ARSO VI). Papers and Reports--collection of works), 1972, pp 85-88 (from RZh-Matematika, No 1, Jan 73, abstract No 1V850 by the authors)

Translation: The paper discusses an attempt to extend a model of word recognition in such a way as to enable recognition of meaningful sentences with simple grammatical construction compiled from a limited set of words. Indefinite decisions on words are made more precise by meaning analysis, and, when necessary, by reference to differentiating procedures of lower levels of the model. The result of sentence recognition is a sequence of words united by unity of meaning and compatible with the acoustic characteristics of the speech flow.

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USSR

GUMETSKIY, R. Ya., GURA, B. M., DERKACH, M. F., MISHIN, L. N.

"Algorithm for Recognition of Simple Phrases"

VI Vses. Seminar "Avtomat. Raspoznavaniye Slukhovykh Obrazov [ARSO VI) Dokl. i Soobshch. [Sixth All-Union Seminar on "Automatic Recognition of Auditory Patterns (ARSO VI), Reports -- Collection of Works], Tallin, 1972, pp 85-88 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V850 by the authors).

Translation: An attempt is studied to expand the model of recognition of words so as to allow recognition of intelligent phrases with a simple grammatic structure, composed of a limited set of words. Uncertain decisions on words are refined by semantic analysis, and when necessary by the use of differentiated procedures in the lower levels of the model. The result of recognition of a phrase is a sequence of words combined into a semantic unit and compatible with the acoustical characteristics of the speech stream.

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USSR UDC 547.247

DERKACH, N. Y., KIRSANOV, A. V., Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"Reaction of 5-Phosphaspiro[4,4]nonene-4, 5 with Carbonyl Compounds"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1424-1425

Abstract: All attempts to isolate the title compound (the ylid of phosphaspirononane), which must be formed as a result of the action of hydrogen halide acceptors (triethylamine, potassium tert-butoxide, lithium or sodium hydride, ethylene oxide) on the iodide or bromide of 5-phosphaniumspiro[4,4]nonane gave unsatisfactory results. It could be shown, however, that the ylid is formed when sodium hydride acts on phosphaspirononane in dimethyl sulfoxide solution. The reaction was run in the presence of carbonyl compounds, which react with the ylid to form the corresponding phosphine oxides. The phosphine oxides of 1-(5,5-diphenylpenten-4-yl)phospholane, 1-(5-phenylhexen-4-yl)phospholane, 1-(5-phenylhexen-4-yl) phospholane, and 1-(5-p-nitrophenylpenten-4-yl)-phospholane were prepared.

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USSR UDC 678.85.01:53

DERKACH, N. YA., and KOSIK, A. K.

"Polymers Containing Phosphorus and Carbon in the Main Chain"

Moscow, Plasticheskiye Massy, No 6, 1973, pp 3-5

Abstract: Alkylation of phosphorus diiodide or red phosphorus in presence of iodine with 1,3-propylidene diiodide, 1,6-hexylidene diiodide, or 1,10-decylidene diiodide yields crosslinked polymers -- polymethylenephosphine oxides. When other alkyl diiodides are used in the reaction, after hydrolysis of the iodine containing products, complex mixtures are formed consisting principally of polymers containing phosphorus atoms of various degrees of alkylation. The qualitative and quantitative composition of these mixtures depends on the starting alkyldiiodide. It has been established that some polymethylenephosphine oxides are resistant to heat up to 320°C. They may find application as complex forming agents.

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USSR

UDC 539.376+532.135

DERKACH, V. F., UDOVENKO, S. A.

"On the Possibility of Using the Time Characteristics Method for Solving Applied Problems on the Bending of Three-Layer Plates Considering Creep of the Materials"

Samoletostr. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb. (Aircraft Construction and Engineering of the Air Force. Republic Interdepartmental Thematic Scientific-Technical Collection), 1972, No. 27, pp 79-85 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8V423)

Translation: An approximation method for calculating three-layer plates on a plastic base considering creep of materials of the layer is discussed from assumptions of the theory of aging. An approximation method based on the use of time characteristics was proposed for solving the problem in the linear formulation. A large number of examples are solved to evaluate the effect of the basic factors on the stress-deformation state of a three-layer plate. The thickness of the outer and inner layers, the magnitude of the moduli for instantaneous deformation of the layers, the magnitude and form of creep measures and the Poisson coefficients were varied in solving the examples. The change in the σ curve with time obtained by solving the

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DERKACH, V. F., UDOVENKO, S. A., Samoletostr. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb., 1972, No. 27, pp 79-85

examples can be of practical help to builders in selecting optimal solutions for three-layer plates. 9 ref. Authors abstract.

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UDC 624.073.044

DERKACH, V. E., Khar'kov

"Design of Thin Orthotropic Plates and Plates of Variable Thickness Clamped in an Isotropic Half-Space Considering Creep of Materials"

Prikladnaya Mekhanika, Vol 8, No 3, 1972, pp 18-23.

Abstract: An approximate solution is presented of the problem of bending of thin, isotropic and orthotropic plates of constant thickness, intentionally orthotropic (ribbed) plates and plates of variable thickness, clamped in an isotropic half-space, considering the creep of the material of the plate and base. The rheological equations are composed from the standpoint of the linear theory of ageing. A method of time characteristics in combination with finite differences is suggested for approixmate solution of the problem.

USSR D UDC: 536.4:621.791.85

DERKACH, V.P., KORSUNSKIY, V.M., and MEDVEDEV, I.V.

"The Kinetics of Thermal Processes Involved in Electron-Beam Alloying of Silicon"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 70, pp 14-24

Abstract: The problem of computing temperature fields in semiconductors during electron-beam alloying is formulated. Thermal conductivity is handled on an approximation basis (assuming a Gaussian distribution of energy over radius and depth, an independence of thermal and physical parameters from temperature, the conductor as a semi-infinite body with an adiabatic boundary, etc. Formulas are derived to correspond to single and double electron-beam pulses or series of pulses, and to steady-state and transitional temperature fields during "constant" alloying. The control of thermal processes by regulating the energy and time parameters of the beam is illustrated by calculations.

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GLUSHKOV, V. M., DERKACH, V. P., MAKAROV, G. T., RAKITSKIY, V. R., ZGUROVETS, L. YA., KLIMENTOVICH, V. A., BLASENKO, V. M. and ZHURIBIDA, V. I.

"Automated System for Control of Technological Processes in the Microelectronics of the 'Kiev-70'"

Metody Minnatyuriz. i Avtomatiz. Proiz-va Komponentov EVM [Methods of Miniaturization and Automation of the Production of Computer Components -- Collection of Works], Kiev, 1972, pp 3-11 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V662)

Translation: An automated control system for technological processes in microelectronics (Kiev-70) is described on the example of the basic application of automated programmed control of a cathode-ray (ion-ray) installation. A structural plan of the "Kiev-70" system is presented.

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UDC 621.385.833.28:[621.385.832:621.317.755]002

DERKACH, V.P., KIYASHKO, G.F., KUKHARCHUK, M.S.

"Scanning Microscope Using Oscillographic Tube"

Elektron. tekhnika. Nauch.-tekhn. sb. Kontrol'no-izmerit. apparatura (Electronics Technology. Scientific-Technical Collection. Monitoring And Testing Equipment), 1971, Issue 1(22), pp 89-98 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10A265)

Translation: A device is described which acts according to the principles of the scanning electron microscope and which makes it possible to study the physical pattern of the surface of objects. The small dimensions of the pickup unit make it possible for all practical purposes to place it in any functioning vacuum chamber and to fulfill investigations as part of the preparation or processing of an object without depressurizing the chamber. Summary.

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USSR UDC 612.1-06:612.865/.867 (6)

NAVAKATIKYAN, A. O., KUNDIYEV, Yu. I., LYSINA, G. G., TOMASHEVSKAYA, L. I., DERKACH, V. S., KAPSHUK, A. P., KOVALEVA, A. I., STANISLAVSKAYA, TS. D., OSINSKAYA, L. S., and PARLYUK, A. F., Kiev Institute of Industrial Hygiene and Occupational Diseases

"Effect of Mental Work Accompanied by Nervous and Emotional Stress of Varying Degrees on the Cardiovascular System"

Moscow, Kardiologiya, No 3, 1973, pp 50-56

Abstract: In addition to making a statistical analysis of 1,585 cases of myocardial infarction among Kiev workers, the authors ran physiological studies on engineers, typesetters, mathematicians, and neurosurgeons. They found that the effects of mental work on the cardiovascular system vary with the degree of nervous tension and some other factors. The manifestations range from incipient functional disturbances of regulation to severe pathology. Moderate tension elevates blood pressure, the increase in systolic and diastolic pressures being related. Great tension, however, tends to disrupt the relationship probably because the centers regulating vascular tonus become uncoordinated. Intense nervous and emotional strain increases the heart beat as well as the "slow" waves among the periodic constituents of the correlation function of

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(6)

NAVAKATIKYAN, A. O., et al., Kardiologiya, No 3, 1973, pp 50-56

the cardiac rhythm, an indication of an intensification of central neuroendocrine influences on cardiac activity. As the tempo of work and degree of emotional stress increase, the amount of catecholamines and 17-hydroxycorticoids excreted with urine also gradually increases. Thus, tense mental work markedly affects the cardiovascular system. The resulting changes correlate with the functions of the sympathico-adrenalin system and adrenal cortex.

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UDC 612.8+612.766.1

NAVAKATYKYAN, O. O., KUNDIYEV, Yu. I., LYSYNA, G. G., BUZUNOV, V. P., HRYSHKO, F. I., DERKACH, V. S., KAPSHUK, O. P., KYRYENKO, A. Ye., KARAKASHYAN, A. N., KOVAL'OVA, G. I., RATUSHNA, A. M., TOMASHEVC'KA, L. I., NAGORNA, A. M., and MAYDYKOV, Yu. L., Kiev Institute of the Work Hygiene and Occupational Diseases, Kiev

"Nervous Emotional Stresses as a Problem of Modern Work Physiology"

Kiev, Fiziolohichnyy Zhurnal, Vol 18, No 4, Jul/Aug 72, pp 535-546

Abstract: The introduction of machines and automatic control instrumentation into production lines at plants and factories and at many other institutions requires of workers rapid coordination of actions combined with mental activity. The volume of information input which requires a combination of physical and mental ability has been increasing tremendously for the last decade. This has produced nervous and emotional stresses and disturbances in the normal functions of many human organs. Analysis of many workers from various branches of industry as well as people occupied with mental work has shown that modern technology imposes heavy stresses on an individual which are accompanied by abnormal function of the adrenal glands, and hypothalamus, and the hypophysial and sympathoadrenal systems. Measurements have shown that corticosteroid blood and urine

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NAVAKATYKYAN, O. O., et al., Fiziolohichnyy Zhurnal, Vol 18, No 4, Jul/Aug 72, pp 535-546

levels exceed the norm by as much as 42-57% in people under heavy stress. Emotional stress with distortion in the function of many systems were more often encountered among the young (17-18 year olds). These malfunctions included the secretion of adrenalin and noradrenalin, and disturbances in hemodynamics. Shifts in physiological functions among different occupational groups under identical stresses occur at different times and are closely related to age. They were more pronounced among older people (31-40 years old). The cardiovascular system occupies a prominent place in labor physiology, and there are many methods and approaches to study it. Some literature methods and those of the authors are described, including instrumentation. Mental work which is accompanied by nervous-emotional stresses influences profoundly the cardiovascular system within a wide range of deviations, including pathological functional disturbances and hypertension. The same is true for other occupations as well. The authors recommend the rational use of working hours and rest periods to avoid overstresses.

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UDC 613.6:612.766.1

NAVAKATIKYAN, A. O., KUNDIYEV, Yu. I., AKHRIMENKO, A. P., MAKSIMOVA, O. F.
VASILENKO, Yu. I., SAVENKO, N. P., BUZUNOV, V. A., TOMASHEVSKAYA, L. I., and
DERKACH, V. S., Institute of Industrial Hygiene and Occupational Diseases,
Kiev

"Principles for Quantitative Evaluation of the Difficulty and Strenuousness of Work on the Basis of Physiological Data"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, 1971, pp 3-9

Abstract: A four-level classification of jobs by difficulty and stress is proposed on the basis of research conducted by the Institute and the literature data. The criteria used to measure the amount of effort involved as well as the changes therein during the course of the workday include energy consumption (ranging from under 150 kcal/hour for class 1 work, e.g., computer programming, to 351 kcal/hour or more for class 4 work, e.g., steel casting), muscular, cardiovascular, central nervous, and endocrine functions. A table lists average values of several physiological functions in different kinds of work while another evaluates the difficulty and strenuousness of different kinds of jobs (e.g., operation of office machines is classified as class 1 in difficulty and class 2 in strenuousness, lathework 2 and 2, steel casting 4

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AVAKATIKYAN, A. O., et al., Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, 1971, pp 3-9

and 3). The article also discusses some of the theoretical and practical problems in establishing adequate criteria and in applying them to specific jobs, work conditions, and various groups of people (e.g., adolescents, females, elderly workers).

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Acc. Nr: AP0044024 DERKACH V.V. Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i
Immunobiologii, 1970, Nr 2, pp 59-61

THE EFFECT OF COBALT ON FORMATION OF PRECIPITINS AND ON DEVELOPMENT OF ARTHUS' PHENOMENON

V.V. *Derkach*, *L. I. Burmakina*

The influence of cobalt chloride on the formation of precipitins and on the development of Arthus' phenomenon was studied. Rabbits were sensitized by subcutaneous injection of normal horse serum. Cobalt chloride was solution injected intravenously in doses of 14, 28 and 42 γ per kg of body weight.

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